The role of the exercise instructor in older adults’ uptake and adherence to exercise classes.

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Helen Hawley

School of Nursing, Midwifery & Social Work
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Encouraging older adults to become more active and maintain that activity is critical to the promotion of their health and well-being, social networks and independence. Leadership behaviour and quality of instruction is important in influencing engagement of older adults in exercise classes. Instructors’ attitudes could influence older adults’ uptake and adherence to classes, but little is known about the relationship between attitudes and characteristics of instructors and their delivery in relation to uptake and adherence of older adults to exercise classes.

Methods:
Underpinned by the Theory of Planned Behaviour and using a mixed methods approach this thesis uses three studies to:

1) Survey 731 United Kingdom exercise instructors with Level 3 older adults exercise qualification to investigate instructors’ characteristics and attitudes towards older-adults’ participation in exercise.

2) Interview 19 instructors to further explore instructors’ attitudes, experiences and beliefs in relation to their exercise classes for older adults and how their attitudes, experiences and beliefs are influenced by their training and characteristics.

3) Follow up a cohort of 16 instructors and 193 of their class participants over 6 months to explore what characteristics of exercise instructors, the group and class participants influence adherence and also whether instructors influence uptake and adherence to home exercise.

Results and Conclusion:
The first study establishes that there is a relationship between instructors’ training, experience, characteristics and their attitudes. The second study supports these findings and demonstrates how instructors’ think that these factors and others not only influence how they deliver and promote their classes but also influence older adults’ uptake and adherence to exercise classes. The final study enables us to look at the relationship between instructor variables and the participant within the exercise class setting. Class participants’ mental well-being, education and housing were key factors related to their attendance. Having attended the class for more than six months at baseline was an important factor related to adherence. Individual factors such as participants’ attitudes, beliefs about group cohesion and instructor variables such as personality traits and experience emerged in the final models both in relation to participant attendance and adherence.

There are a series of complex interactions between the instructor, participant, the group and others which influences beliefs and attitudes. It is clear that the instructor can influence participants and they have an important role to play in creating an atmosphere and environment of which participants want to be a part of.
DECLARATION

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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Chapter 1: Background and broad overview of the literature.

Encouraging older adults to become more active and maintain that activity is critical to the promotion of their health and well-being, maintenance of social networks and independence. This thesis outlines the evidence for this statement and explores what factors promote intention, uptake and adherence to exercise classes, including the role of the exercise instructor, and why this is important.

The thesis is divided into ten chapters. This first chapter introduces the overall context to the study by giving a broad outline of the importance of physical activity for older adults and the policy context. It first looks at definitions of adherence and then goes on to examine the different specific factors related to intention, uptake and adherence to physical activity and exercise. The literature around the intention, uptake and adherence to general physical activity and exercise is fairly well-developed and therefore provides us with some relevant evidence to consider which has not yet been explored in more exercise specific literature. Chapter 2 then concentrates on refining the research area and presenting the specific literature around exercise classes using systematic review techniques. Once the context for the study has been clearly outlined in Chapters 1 and 2, Chapter 3 gives an overview of the three studies which constitute the research and the overall methodological approach and theoretical perspectives which form the background to the research. Chapters 4, 5, 6, 7, 8 and 9 then introduce the three studies, presenting both their specific methodology and methods and then their results and overall findings in the context of the current literature. The final Chapter draws all three studies together reflecting on the findings and considering the overall methodological approach and the potential impact of the research.

1.1 An ageing population and older age.

The post-war baby boom, coupled to a rapid decline in fertility rates since, means that the average age of the United Kingdom (U.K) population is rapidly on the rise. By 2025 the number of people over the age of 80 is set to increase by almost half and those aged over 90 will double (Hayes & Webster, 2008). Growing numbers of older adults and increasing life span, coupled to early detection and treatment of previously fatal conditions, such as type 2 diabetes and ischemic heart disease, has led to a growing prevalence of long-term conditions (DH, 2008). Older adults are living longer, but increasingly with more
disability. The impact of this can be seen across the health and social care spectrum, in secondary care two thirds of acute hospital beds are being used by people aged over 65 (DH, 2008). With an ageing population living with a wide variety of long term conditions there is a need to support people to manage their own health for as long as possible, healthy active ageing through exercise is an important part of this (WHO, 2002).

The older population considered in this thesis are those adults aged 60 and above. There are many different definitions of older age which often range from aged 50 upwards (WHO, 2011). However, this thesis adopts the age of 60 because it is currently seen as the point when adults often retire and the point when their lifestyles can change (HDA, 2008). It is acknowledged that older age does not necessarily equate to levels of frailty and definitions of frailty and function can also be important when looking at older adults’ participation in exercise (BHF, 2007).

1.2 Benefits of physical activity and exercise

Promoting physical activity amongst the older population is an important public health issue (DH, 2011), as exercise can help to prevent the onset of many conditions. In later life exercise brings physiological and psychological benefits, reducing illness, improving functional ability and improving well-being (Baker et al, 2007; Bean et al, 2004; Stead et al, 1997). Physical activity has been found to have an ‘inverse dose response association’ with coronary heart disease, type 2 diabetes and some cancers (DH, 2011: 39). There is also a clear relationship between reduced depression and dementia (DH, 2011). There is increasing evidence that exercise programmes that include specific strength and balance exercises can significantly reduce the occurrence of falls (Davis et al, 2009; Sherrington et al, 2008; Skelton et al, 2005; Robertson et al, 2001). Falls are also an important public health issue, each year, 35% of over-65s experience one or more falls. About 45% of people aged over 80 who live in the community fall each year. Between 10 and 25% of such fallers will sustain a serious injury (DH, 2009). This has massive implications in terms of independence, quality of life and also cost to the health service (DH, 2001; DH, 2009). Hip fracture is the most common serious injury related to falls in older people, resulting in annual costs to the NHS of around £1.8 billion for England (DH, 2009).
1.3 Policy context.

The promotion of independence and self-help is encompassed in health and social policy. There has been a move towards delivering an increasing amount of services in patients’ local communities and empowering individuals to be more independent, including the self management of chronic medical conditions (DH, 2006; DH, 2009). Although now dated, the National Service Framework (NSF) for Older People (DH, 2001) supports the promotion of physical activity for older adults through both its Standard 6 (Falls) and Standard 8 (Promoting health and well-being) and is still a guiding policy to NHS practice. More recently the Department of Health’s Older People’s Prevention Package again re-iterates the importance of staying active and specific strength and balance exercises (DH, 2009) and this is further supported by the more recent Department of Health UK Physical Activity Guidelines (DH, 2011) which give specific guidance for those aged 65 and above. Since the election of the coalition government in 2010 there has been no policy directly written around older adults. However, the Healthy Lives, Healthy People public health strategy (DH, 2010) still identifies ageing well and falls and fractures as important public health issues.

Specific targeted exercise identified in the literature as requiring important elements of strength and balance (Sherington et al, 2008) is an important part of the falls care pathway and an integrated falls and fracture service (DH, 2009). It enables older people to regain mobility and can also prevent those who have fallen, falling again (NICE, 2004; DH, 2009). The NICE guidance, *Falls: The assessment and prevention of falls in older people* (2004) also highlights strength and balance exercises as an evidence based preventative measure and an essential part of rehabilitation. More recent NICE guidance on mental health and older people (NICE, 2008) emphasises the importance of physical activity and mental health, with an emphasis on meaningful activity and physical activity for promoting older adults health and well-being.

1.4 The issue of non-adherence.

Despite all of the known health benefits of exercise, inactivity has been shown to increase with ageing and only 30% of those aged 65+ report any regular exercise (Skelton et al, 1999; Heath et al, 2002; Department of Health, 2010; Department of Health, 2011). Engaging older adults in physical activity is a difficult task. Physical deterioration with
ageing is often accepted by both older people themselves and health care professionals and there is therefore reluctance to consider preventative measures (Stead et al, 1997; Sarkisian et al, 2005). Even when older adults initiate exercise they will often discontinue their involvement within the first 6 months (Robison & Rogers, 1994; Jancey et al 2007). Encouraging older adults who have experienced a major health issue (Stroke, Coronary Heart Disease, and a fall) to maintain exercise after rehabilitation is equally as difficult. Campbell et al (2001) found that in their study long-term compliance to physiotherapist set exercises was poor. It is not only national research that shows maintenance of exercise to be difficult but also compliance to exercise on a local service level. Community based falls rehabilitation projects in Rotherham (North of England) have shown that patients followed up in the community six months after falls rehabilitation, deteriorate almost back to their pre-rehabilitation state. This may be due to a lack of maintenance of physiotherapy set exercise and also a lack of community based exercise classes (Hawley, 2009). Therefore, it is important that we successfully engage and maintain older adults in exercise.

1.5 Definitions of physical activity and exercise

Exercise has been defined as ‘planned, structured and repetitive bodily movement done to improve one or more components of physical fitness’ (ACSM, 2005: 3). Strength and balance training (SBT) is included in this definition and has been described as ‘carrying out exercise that increase muscle strength in the legs and improve balance’ (Yardley et al, 2008: 554). For the purpose of this study we are examining exercise rather than physical activity. Physical activity is less structured and includes activities such as gardening and housework (ACSM, 2005). Exercise is typically defined by older adults as something which is deliberately planned, involves commitment, routine and exertion (Stead et al, 1997). For the majority of frailer participants exercise has been found to lack relevance, keeping the mind active and doing daily chores are given higher priority (Stead et al, 1997).

1.6 Definitions of adherence.

In the literature there are a broad range of definitions of adherence used. In the general exercise literature adherence is successful if participants adhered to a prescribed exercise routine for two thirds of the time (King et al, 2007). This definition is very much related to
functional improvements, as consistent exercise is needed to see improvements such as strength and balance (Sherrington et al, 2008). Self-reported methods of physical activity both in terms of minutes or hours of exercise carried out, such as the Community Healthy Activities Model Programme for Seniors (CHAMPS) physical activity questionnaire have also been used (Fielding et al, 2007). In relation to classes, adherence has often been defined by looking at the number of classes attended (Oldridge, 1982; Dishman, 1988; Hughes et al, 2006; Lucidi et al, 2006), or by giving the number of attendances a weight. Sjosten et al’s (2007) study looked at percentage of attendance and defined 0% as non-adherence, 0.1-33.3% as low adherence, 33.4%-66.6% as medium adherence and 66.7%-100% as high or full adherence. Finally, adherence can simply be defined as whether the participant is still exercising or attending the class at follow-up, this can range from one month to considerably longer (Mills et al, 1997; Estabrooks & Carron, 1999; Damush et al, 2001; Seymour et al, 2009).

1.7 Motivators and barriers to exercise

Early work in the area of motivators and barriers to exercise in older people (Finch 1997; King 1998) concentrates on the younger older adult (50+ years). However, pre-retirement age adults are likely to have different attitudes and barriers to exercise (e.g. work commitments, HDA, 2004), this study will focus on older adults of retirement age. There are many complex social, physical and psychological intrinsic and extrinsic factors which interact to motivate older adults to take part and then adhere to exercise (King, 2001). Often the combination of these factors can be unique to each individual person. However, these factors have been grouped into three categories, personal characteristics, programme characteristics and environmental characteristics (King, 2001; Wilcox & King, 2005; Skelton & Laventure, 2007).

Personal characteristics (also identified as intrinsic factors) include an individual’s attitudes and beliefs about exercise. For example, the primary motivation for exercising in Stead et al’s study (1997) was to gain perceived psychological and emotional rewards. Older adults who acknowledge the benefits of exercise and have fewer barriers are more likely to engage in activity (Wilcox & King, 2005). Poor health and pain are one of the major personal barriers to being active both directly and indirectly through causing fear of exercise (Booth et al, 1997; Clark, 1997; Clark et al 1999; Grossman & Stewart, 2003; Rasinaho et al, 2006). However, maintaining health is often cited as a key motivator
(Clark, 1999; Rasinaho et al 2006). Stead et al (1997) found that major life events and deteriorating health was likely to reduce participation in exercise and even basic daily activities. However, they also found that a serious illness or recovery from an operation could often cause older adults to reassess their lifestyle and instigate activity (Stead et al, 1997). Therefore, if the perceived benefits of taking part outweigh the perceived risk and fears are allayed, participation is more likely. It has been found that intention to exercise is shown to relate to coping appraisal in older adults, including enjoyment of the session and improvement in health and well-being, such as confidence, mood, function, and independence (Yardley et al, 2007).

Confidence in their own ability to carry out the exercise (self-efficacy) has been found to be a significant predictor of exercise in older adults (McAuley, 1993; Conn, 1998; Clark et al, 1999; Perkins et al, 2008). This also links with past exercise behaviour, if they have been active in the past then they are more likely to understand the positive benefits of exercise and have stronger self-efficacy (Biddle & Ashford, 1988; Rhodes et al, 1999; Hawley, 2009). Rhodes et al (1999) argue that elderly women may have grown up in a traditional background where they never experienced regular exercise (e.g. not ladylike) and therefore have little prior knowledge of exercise. For those who do exercise regularly it can be an important part of their life and integral to their daily routine, giving them improved confidence and motivating them to maintain the behaviour (Stead et al, 1997).

Exercise as a means of falls prevention has been welcomed by older adults as it is viewed as a positive step that individuals can take for themselves (Yardley et al, 2006; Yardley et al, 2006a). However, this should be promoted through the adoption of a healthy, active lifestyle rather than with a specific focus on falls. This is seen as more acceptable to older adults as it is something with which they can identify with. They often do not perceive themselves as old or at risk of falls and therefore would not always engage in exercise purely for the reason of falls prevention (Yardley et al, 2006; Yardley et al, 2006a; BHF, 2007; Yardley et al, 2007; Hawley, 2009; Horne et al, 2009).

Demographic factors which cannot necessarily be changed have also been found to relate to regular exercise. Umstattd and Hallam (2007) found that being white, male, married, having a higher income, and better education were all linked to being regularly active. Whereas Stigglbout et al (2006) found that women were more likely to initiate exercise. When looking at intention associated with attending a strength and balance class, more
woman than men indicated they would attend a group session and exercise at home (Yardley et al, 2008), something we can find reflected in exercise class attendance (Nigg et al, 2002; Hughes et al, 2005). Rhodes et al (1999) go on to assert that greater education may indirectly raise awareness of health benefits and increase the acceptability of physical activity amongst middle and upper class. Higher socio-economic status may also mean that they live in an environment where physical activity is perceived as an everyday leisure time pursuit (Rhodes et al, 1999). In Jancey et al’s study (2007) when looking at walking, it was found that those lost to attrition came from areas of lower socioeconomic status. Older age has also been found to relate to less intention to exercise; those with higher intention and engagement in exercise are likely to be younger older adults (Warren-Findlow et al, 2003; Stigglbout et al, 2006). This could be related to exercise beliefs and also higher rates of ill-health. Age does not only effect exercise participation but also the types of exercise engaged with. In Yardley et al’s (2008) study looking at strength and balance training (SBT) in relation to falls prevention, older age was associated with a much greater likelihood of carrying out SBT at home. Those aged 64-75 were somewhat more likely to attend groups (Yardley et al, 2008).

Program factors include the set-up (this can include factors such as the venue and length of the class) and structure of the activity and also financial costs and access (Wilcox & King, 2005). The cost of attending exercise sessions and lack of transport have been cited as barriers (Yardley et al, 2006; Newson & Kemps, 2007). Access has been cited as an important issue for older people, particularly where there is a lack of self-confidence. It has been found to be more difficult to encourage isolated frailder older people to arrange and then use transport (Stead et al, 1997). In Stead et al’s (1997) study concessionary fares for ‘OAPs’ were regarded as patronising, private gyms as too expensive and council gyms as becoming increasingly privatised. The type of exercise offered can have a role to play; older adults prefer something which is convenient and not expensive. It has also been found that frailder older adults from lower socio-economic backgrounds prefer home exercise (Yardley et al, 2008).

The quality of the instructor and the quality of the program delivered have also been found to be specifically important to exercise adherence in older adults (Dinan, 2001; Ecclestone & Jones, 2005; Stigglbout et al, 2006). Leadership has been described as ‘the most important determinant of participation in physical activity groups’ (Estabrooks et al, 2004: 233). Leadership is defined as ‘a process of social influence in which one person is able to
enlist the aid and support of others in the accomplishment of a common task’ (Chemers, 2000: 27). Chemers argues that based on a history of leadership research, (albeit general leadership and not exercise leadership) leaders must appear competent and trustworthy. They must coach, guide and support their followers in a way that allows them to contribute to the group attainment while satisfying their own personal needs and goals. He argues that to achieve this the leader must understand the abilities, values, and personalities of those in the group so that they can provide the most effective support (Chemers, 2000). Utilising the resources of the group by creating a sense of confidence and empowerment encourages each member to participate (Chemers, 2000: 40). More recent work has found a relationship between the instructor’s experience of leading a programme and adherence of the class attendees (Seguin, 2010).

Both commitment to quality and interaction with the task shown by exercise instructors has been linked to both satisfaction with involvement and satisfaction with service (Loughead & Carron, 2004). However, this has not yet been directly linked with maintenance in older adults. Leadership has only been studied in relation to older adults through qualitative research and two other studies (Rosenkranz, 2001, Seguin, 2010), mostly with a focus on participants’ perceptions of instructors (Estabrooks et al, 2004). In Estabrooks et al’s (2004) study participants felt that they needed to feel that the instructor was appropriately qualified and that they were a good example. They needed to consider each individual and their needs, giving personalised feedback, individual encouragement and show an understanding of the needs of each class member. It was felt that they needed to show that they can set an appropriate environment; facilitate group integration, vary the pattern of activities and monitor group progress. Participants also felt that it was important to have appropriate music, an ‘instructional’ voice, as well as facilitating social interaction (Estabrooks et al, 2004: 241). Incorporating music into exercise programs can add interest and facilitate exercise participation and adherence (Schutzer & Graves, 2004). Instructors have stated that respect for participants, a person centred approach and consideration of the social impact of the class is important to participants from their perspective (Stathi et al, 2010).

Certain aspects of environmental factors are closely related to program factors as this encompasses social and physical factors which can influence participation (Wilcox & King, 2005). For example, the cohesiveness of the group, such as a strong belief in the classes’ ability to withstand disruption, reduced absenteeism and lateness can all lead to
better adherence to exercise for older adults (Estabrooks & Carron, 1999a: 439). Cohesion in the group has been shown to play a major role in attendance both in the short and long term (Carron et al, 1988; Estabrooks & Carron, 1999a). Leader behaviour has been argued to have the greatest impact on individuals’ perceptions about personal motivations that retained them in a group (Loughead & Carron, 2004). Although the research was carried out with a younger population, Loughead and Carron found that participants were more likely to feel cohesion with the class as a group if the leader was interactive (2004). They suggest that leaders who focus on task related behaviours are more likely to foster an environment which develops perceptions of group cohesion (Loughead & Carron, 2004).

In a study with younger adults (Fox et al, 2000) where a class was run with an enriched style of leadership (encouragement, social interaction and positive performance feedback) and social environment, (relaxed and interactive) and compared with a class with a bland environment (lack of warmth and interaction) and leadership (technical corrections, did not show supportive behaviours although didn’t act negatively), the level of enjoyment was significantly higher. It was found that enjoyment during physical activity was optimised when a positive and supportive leadership style is coupled with an enriched and supportive group environment (Fox et al, 2000).

Other social factors can have an influence on exercise participation. Social support from family, friends and health professionals has been found to play a role (Wilcox & King, 2005). In a study looking at undertaking strength and balance exercises as part of falls prevention, social support was cited as important including practical support from family members (transport) and encouragement (Yardley et al., 2006). In a study by Resnick et al (2002), friend support was found to be statistically significant. Social contact has been found to be both a desired outcome but also a prerequisite for participants to engage in exercise (Stead et al, 1997). Social support from peers can also influence engagement with exercise indirectly through increased self-efficacy. It has been suggested that if older adults see that their peers are able to participate, they are more likely to initiate activity (Resnick et al, 2001). It is not only family and friends who can influence older adults’ intention and maintenance of exercise, Schutzer and Graves (2004) argue that physicians play a key role in promoting exercise behaviour in the elderly. Yardley et al (2006) and Horne et al (2009) also found that an invitation from a health professional could make a difference. This again could also be related to increased self-efficacy and confidence if an older adult believes it is safe to carry out exercise.
Factors related to the physical environment can also cause barriers to participation. Environments with high crime are also known to decrease the likelihood of people becoming more active (Schutzer & Graves, 2004). Environmental barriers have also been cited more frequently by women than men (Clark et al, 1999). Poor weather has also been cited as a major barrier to being active (Brittain et al, 2002).

**In Summary**

This chapter has identified the importance of exercise for older adults in terms of the health benefits and also its importance within national policy. It outlines the personal, programme and environmental characteristics which can interact to encourage or prevent older adults in participating in exercise. This provides a broader scope of evidence around uptake and adherence to general exercise. We can see that there are many complex social, physical and psychological intrinsic and extrinsic factors which interact to motivate older adults to take part and then adhere to exercise. There is a broad spectrum of factors dependent on the individual, their environment and the type of exercise considered.

Although there is a broad body of evidence related to generic exercise, there is less evidence focused specifically on exercise classes. Chapter 2 presents a systematic review which will provide a more focused consideration of the specific factors related to intention, participation and adherence to exercise classes and also outlines the rationale for the specific focus of this study.
Chapter 2: Systematic review

In the last chapter we provided an overview of the general evidence examining older adults exercise participation, identifying the many complex social, physical and psychological intrinsic and extrinsic factors which relate to older adults intention, uptake and adherence to exercise. This provides a context to the thesis as specific evidence around exercise classes is limited. The following systematic review examines the specific evidence around intention, participation and adherence to exercise classes in the community which is the main focus of the three studies which comprise this research. Large sections of this chapter are taken from a submitted paper (Hawley et al, 2011).

2.1 Methods

2.11 Types of study

All types of study designs were included. Most studies in this area of research are exploratory and there are few randomised controlled trials (RCTs). Both quantitative and qualitative studies are included, but summarised in separate data extraction tables. Where there are mixed method studies they are summarised by the dominant method.

2.12 Inclusion/exclusion criteria

Participants

This review considers all studies which include older adults aged 50 and above. As pre-retirement age adults have different attitudes and needs (HDA, 2008), the study participant mean age had to be ≥60 years.

Types of interventions.

This review focuses on community based exercise classes or strength and balance classes (not just looking at increasing general physical activity). This also includes community based exercise classes in trials. The classes had to have more than one fitness component as this is the requirement evidenced for preventing/managing many conditions (Nelson et
Studies considering Pilates and Tai Chi are excluded as there is sufficient evidence for a separate specific systematic review. Studies had to include at least one of the following outcomes: intention to exercise, uptake of exercise or adherence to an exercise class.

There is no agreed definition of an exercise class. We combine the standard definition for exercise (ACSM, 2005) with the concept of a directed class to define the exercise classes included in the study as ‘a group of people gathered together to follow a leader or instructor to carry out planned, structured and repetitive bodily movement done to improve more than one component of physical fitness’. Studies use different markers for adherence. Therefore we have defined adherence as continued participation in the class on follow-up (still attending at follow-up, missing three month follow-up but returned at six months would be classed as adherence). Due to a large number of studies basing adherence on attendance in weeks, this is also used as a measure of adherence (Tables 2.1 and 2.2). If adherence in the study was based on a mixture of attendance to class and self-reported exercise we have still included the study, but have included a separate table (Table 2) for studies where the adherence outcome is a mixture of self-report and attendance registers and the results are not easily differentiated. We also consider long-term adherence to be over 6 months, as this is the commonly used period, required to ensure behaviour is adopted (Prochaska & DiClementi, 1983; Stiggelbout et al, 2006).

2.13 Search strategy and selection criteria

We undertook systematic searches of MEDLINE, EMBASE, CINAHL and PsychINFO. No date restrictions were placed on the search and all relevant evidence was included if in the English language. A direct journal search was also carried out on Age and Ageing and Journal of Aging and Physical Activity and a full search carried out at www.profane.eu.org. We identified grey material by discussion with experts, search terms were both free-text and MESH headings and were combined with Boolean operators. Key search terms included ‘older adults’, ‘seniors’, ‘exercise’, ‘strength’ and ‘balance’, ‘uptake’ and ‘adherence’ (Appendix 1). The electronic searches are up to date at 01 June 2011.
Data extraction and quality assessment

Once a study had been included, detailed study quality assessment was conducted. Methodological quality was assessed by two reviewers independently (H.H and M.H.), using a modified version of the Scottish Intercollegiate Guidelines Network (SIGN) evidence based guidelines (SIGN, 2008). Additionally, the Critical Appraisal Skills Programme (CASP) appraisal tool was used for qualitative studies (CASP, 2006). If divergence between the scoring could not be resolved by consensus, a third reviewer (DS) re-assessed and scored the paper.

2.2 Results

2.21 Study flow and characteristics

We identified 241 potentially relevant papers, which were assessed against inclusion criteria, 69 papers were considered for quality review and 34 studies (42 papers) satisfied all inclusion and quality criteria (Figure 2.1). The main reason for rejection was inability to differentiate between age groups $\leq 50$ years and those above, and mixed interventions (i.e. interventions could not be differentiated in results). Characteristics of the included studies are described in Tables 2.1, 2.2 and 2.3.
Figure 2.1-Flow of studies included and excluded in review

Relevant Papers (n=241)

Excluded as looked at physical activity and not exercise classes, classes only had one component of fitness, not in a community setting (n=172)

Papers considered for quality review (n=69)

Excluded (n=27)
Did not meet quality criteria (n=6)
On further investigation did not meet inclusion criteria (n=21)

Included papers (n=42)

Intention/Uptake (n=7)
Adherence (n=23)
Intention/Uptake and Adherence (n=12)
2.22 Study quality.

The consensus assessment of study quality, using SIGN and CASP lists are presented in Tables 2.1, 2.2 and 2.3. Papers were allocated a score from 1 (poor) to 5 (good/rigorous) dependent on the combined assessment (Appendix 2). There is limited evidence about exercise classes for older adults looking across the whole spectrum at intention through to adherence (Figure 2.1). There are also few quantitative studies that have carried out long-term follow-up (1 year). Those studies that do follow up intention/uptake to exercise through to adherence, (Howze et al, 1992; Mills et al, 1997; Brenes & Storanndt, 1998; Estabrooks & Carron, 1999a; Damush et al, 2001; Litt et al, 2002; Hays et al, 2005; Lucidi et al, 2006) examine a range of factors which are associated with intention/uptake and then adherence to exercise. However, they do not consider all of the factors known to impact on attitude and behaviour, and thus potential confounding factors are ignored. Comparison between studies is difficult as there is no uniformity in the scales used to collect data, for example those used to collect data on older adults’ attitudes (see Tables 2.1 and 2.2). The studies included examine a range of factors associated with intention, uptake or adherence, from self-efficacy and affect (McAuley et al, 2003; McAuley et al, 2003a) to more complex models based on Theory of Planned Behaviour (TPB) (Lucidi et al, 2006), but where the same measurements were used in studies (Tables 2.1 and 2.2), findings did correlate with each other. Outcomes were reported in different formats, and therefore it was not possible to pool results for meta-analysis.

2.23 Cohorts

In general, inclusion criteria for study cohorts recruited relatively healthy, community based older adults. Cohorts over-represented women and white ethnicity (Tables 2.1, 2.2, 2.3).

2.24 Intention/Uptake

2.241 Barriers and Motivators

Some ten quantitative studies investigated intention/uptake of exercise classes (seven included adherence); all ten studies are exploratory. Three studies are of particularly good quality (Estabrooks & Carron, 1999a; Damush et al, 2001; Hays et al, 2010; Hays et al, 2005; Lucidi et al, 2006) and four of quite poor quality (Litt et al, 2002; Duda & Tappe, 2003).
Findings from those studies found to be of poor quality must be considered with caution.

The majority of reasons identified for intending to or taking up the class were intrinsic to participants and either related to outcomes that could be achieved, preferences, behaviours (including a positive attitude), or support for the behaviour (influencing attitudes) and demographic factors. However, ease of accessible venue was cited several times in qualitative research. Older adults who were more likely to take-up classes were those who preferred classes over home based exercise (Mills et al, 1997), felt they were more competent at the activity, that the class met their needs and that they could master the task (MacLeod & Stewert, 1994; Duda & Tappe, 1998 Estabrooks & Carron, 1999a; Hays et al, 2010). Participants with positive expectations (Howze et al, 1989; Hays et al, 2005; Hays et al, 2010), and those attracted to these types of classes because of enjoyment, and because they felt it maintained or improved their health, were more likely to take them up (Stiggelbout et al, 2008). Readiness to exercise and social support were also found to predict uptake of exercises (Litt et al, 2002). Several studies used the TPB to predict intention to exercise (Brenes & Storandt, 1998; Lucidi et al, 2006). In the Lucidi et al (2006) study the model accounted for 55% of variance in intention, with self-efficacy and perceived behavioural control (PBC) being particularly important. In Brenes et al’s (1998) study PBC (perceived ability to carry out the task) was the only independent contributor to predicting intention to exercise. Those who did take up exercise classes were younger, on less medication, and had higher education (MacLeod & Stewert, 1994). Those who smoked were found to be less likely to take up a class (Damush et al, 2001).

The qualitative studies support these findings. Four studies were of good methodological quality (Whaley & Ebbeck, 1997; Yardley et al, 2006; Vernon & Ross, 2008; Hardy & Grogan, 2009) and two of fair quality (Fox et al, 2007; Stathi et al, 2010; De Groot & Fagerstom, 2011). There were a large number of intrinsic factors cited by study participants as motivators to take up a class, with a particular focus on outcomes which could be achieved such as improved health, strength, mobility, independence, confidence, appearance and mood (Whaley & Ebbeck, 1997; Yardley et al, 2006; Fox et al, 2007; Hardy & Grogan, 2009; Stathi et al, 2010; De Groot & Fagerstom, 2011). Those who had previously participated in exercise already had an understanding of the benefits and were more likely to take up opportunities (Yardley et al, 2006; Fox et al, 2007). Social influences through support and encouragement from family, friends and health
professionals were important (Whaley & Ebbeck, 1997; Yardley et al, 2006; Fox et al, 2007; Hardy & Grogan, 2009; De Groot & Fagerstom, 2011). The barriers to taking up an exercise class were both intrinsic and extrinsic. Poor health, fear of negative outcomes, beliefs that they got enough exercise through everyday life, and concern about meeting new people were common (Whaley & Ebbeck, 1997; Yardley et al, 2006; Vernon & Ross, 2008; De Groot & Fagerstom, 2011). Lack of transport, cost of classes (Yardley et al, 2006; Vernon & Ross, 2008; De Groot & Fagerstom, 2011) and that class attendees were predominantly female (Hardy & Grogan, 2009) were extrinsic barriers for some.

2.25 Adherence

Overall 21 quantitative studies investigated adherence to exercise classes (7 included uptake); 5 studies were Randomised Controlled Trials all of fair or good quality (Table 1 and 2). The remaining 16 were exploratory studies, five good quality (Williams & Lord, 1995; Estabrooks & Carron, 1999a; Damush et al, 2001; Hays et al, 2005; Lucidi et al, 2006; Seymour et al, 2009) and five of fair quality (Howze et al, 1989; Brener & Storandt, 1995; Ecclestone & Patterson, 1998; Grove & Spier, 1999; Estabrooks & Carron, 1999). Six studies were of quite poor quality and results should be considered with caution (Hickey et al, 1995; Mills et al, 1997; Nigg et al, 2002; Litt et al, 2002; Tu et al, 2004; Sin et al, 2005). Reasons for adherence or non-adherence to exercise classes were found to be both intrinsic and extrinsic. Seven qualitative studies investigated adherence, four were of good quality (Resnick et al, 2006; Chiang et al, 2008; Vernon & Ross, 2008; Hedley et al, 2010), two of fair quality (Fox et al, 2007; Stathi et al, 2010; De Groot & Fagerstom, 2011) and one of quite poor quality (Hedley et al, 2010).

2.251 Intrinsic Barriers and Motivators

Health

Poor health and pain are major personal barriers to being active (Booth et al, 1997; Clark, 1997; Clark & Nothwehr, 1999; Grossman & Stewart, 2003; Rasinaho et al, 2006; Hedley et al, 2010; Phillips et al, 2010). Conversely maintaining health is a key motivator (Clark & Nothwehr, 1999; Rasinaho et al, 2006). Phillips et al (2010) report significant differences between those who stopped exercise for medical reasons and never resumed and those who returned to the class. Returners reported better health than non-returners. Other studies
also report better health and lower fall risk amongst those who maintain exercise (Howze et al, 1989; Hickey et al, 1995; Williams & Lord, 1995; Caserta & Gillett, 1998; Ecclestone et al 1998; Nigg et al, 2002; Sjostedt et al, 2007; Tu et al 2007; Chiang et al, 2008; Vernon & Ross, 2008; Seymour et al, 2009; Phillips et al, 2010).

Outcomes and benefits

Experience of beneficial outcomes from exercise is a key reason why older adults adhere to classes. Health status, health improvement, and function have all been demonstrated routinely to relate to adherence (Hickey et al, 1995; Williams & Lord, 1995; Nigg et al, 2002; McAuley et al, 2003a; Fielding et al, 2007; Sjostedt et al, 2007; Phillips et al, 2010).

Qualitative research suggests adherence is related to participants feeling empowered (Stathi et al, 2010). Improvements are also related to optimism, morale and self-efficacy, and qualitative work also identifies such benefits (Hickey et al, 1995; Sin et al, 2005; Hughes et al, 2006; Hughes et al, 2004; Resnick et al, 2006; Chiang et al, 2008; Seymour et al, 2009; Hedley et al, 2010; Stathi et al, 2010).

2.252 Extrinsic Barriers and Motivators

Social support

Social support plays a key role in adherence to exercise (McAuley et al, 2003a; Litt et al, 2007). Support from family, friends, the group and the instructor influence participants’ attitudes and beliefs about exercise and encourage them to keep attending. McAuley et al (2003) found that greater support in the exercise setting is related to greater exercise effect, self-efficacy and higher levels of participation. Factors found to aid adherence include: health professional leadership (Grove & Spier, 1999) and team building within the group (Estabrooks & Carron, 1999). Peer support is not always found to relate to exercise frequency (Caserta & Gillett, 1998) but was emphasised as important by exercisers. Support through the leadership of the instructor was also found important in several qualitative studies (Estabrooks et al, 2004; Fox et al, 2007), particularly the importance of having a trusting relationship with the instructor (Stathi et al, 2010). Group based activity, group support and support from family and friends also help adherence (Estabrooks et al,
Class type/format

The format or preference for classes over exercising alone is important for adherence, with greater adherence amongst those in groups (Mills et al, 1997; Hedley et al, 2010). Whether physical therapists or exercise instructors deliver classes makes very little difference (Seymour et al, 2009). Qualitative research suggests it is important that the exercise is appropriately paced, tailored and monitored (Gillett & Caserta, 1996; Gillett et al, 1996; Estabrooks et al, 2004; Stathi et al, 2010).

Environment

Weather conditions may impact on attendance to exercise, but this seems to relate to extremes rather than the normal range and to intermittent non-attendance rather than complete dropout and, therefore, adherence (De Groot & Fagerstom, 2011; Tu et al, 2007).

2.3 Discussion

Current evidence suggests that exercise is a key way to promote independence and both physical and mental well-being for older people, but there is a lack of evidence about how to promote uptake and adherence to such classes. The main findings from this review are that factors related to uptake and adherence revolve around health, attitudes and expectations, and whether those expectations are fulfilled. Once there is a commitment to attend the class, it is health issues which pre-dominantly relate to drop-out, which suggests that once committed, participants remain so unless the choice is taken away from them. Social support is another important factor in promoting long term adherence, mediated through direct encouragement, the group as a social gathering and physical support to attend classes. A supportive environment, mediated indirectly through its effect on attitudes, gives older adults greater confidence and stronger beliefs in the outcomes which can be achieved. The qualitative findings from these studies complement quantitative results helping us to understand changes in older adults’ attitudes and expectations as they move from intention and first attendance to long term adherence. Leadership and the support of the group emerged as something which older adults felt was important (Estabrooks & Carron, 1999; Grove & Spier, 1999; McAuley et al 2003; Estabrooks et al,
There are various limitations to the review. The methods adopted means that only studies which are published and are in English have been included. The majority of the evidence is exploratory, making it difficult to provide robust conclusions. Where RCTs are included, data collected on adherence is often secondary to the main aim of the trial and only collected in one arm of the study (Gillett et al, 1996; McAuley et al, 2003; McAuley et al, 2003a; Fielding et al, 2007; Phillips et al, 2010). As there are few studies which focus on follow-up from uptake to long term adherence are of fair to poor quality (Mills et al, 1997; Brenes et al, 1998; Litt et al, 2002), with the exemption of one study of good quality (Damush et al, 2001), or they are qualitative studies. There is also an over dependence on self-reported physical activity, or a mixture of self-reported data and attendance records used to assess adherence which prevents us from drawing strong conclusions. Finally, these results can only be generalised to fairly healthy, community living older adults and there are overall problems in the representativeness of samples.

There is a need for studies to follow classes through from uptake to long term adherence, following up on all of the key factors identified in this review. This is a difficult task when considering the population of interest and the different confounding factors which can arise in ageing groups. There is also a requirement for studies to look at uptake and adherence to classes in less healthy older adults who may be coping with a wide range of conditions. Particularly if we are successfully to maintain improvements gained through rehabilitation. This systematic review highlights the lack of evidence examining the role of the instructor in exercise classes and therefore it is suggested that further exploration be carried out in this area. We can see from the broader literature that the instructor has the potential to play an important role. The role of the instructor could be examined in more detail, particularly in relation to long-term adherence of classes as an independent factor, but also in relation to attitudes. This would help our understanding of how we can ensure the long term success of exercise classes in the community.

It can be concluded that older adults’ attitudes and beliefs are important when considering promoting uptake of classes and that the outcomes, fulfilment of expectations and support
given in and outside of the class setting are important determinants of long term adherence. This review and the broader literature helps to provide the rationale for further investigation of the exercise instructor as well as informing the choice of variables considered important in relation to older adults adherence to exercise classes which needed to be included in data collection in the third study. The following chapter will outline how the review has informed the three studies which comprise this research and how they take the recommendations from this review forwards.
### Table 2.1: Description of design, main findings and quality of quantitative studies with adherence outcome based on attendance records (or a mixture of attendance records and self-report but the results can be differentiated).

<table>
<thead>
<tr>
<th>Authors, Date, Location</th>
<th>Study Design</th>
<th>Sample</th>
<th>Intervention</th>
<th>Follow-up</th>
<th>Outcomes*</th>
<th>Main Findings</th>
<th>Quality rating (5) good - (1) poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fielding et al, 2007. U.S †</td>
<td>Randomised Controlled Trial</td>
<td>N=213‡ (mean age=76.5) 68.5% women, 75.1% white Caucasian, healthy sedentary community dwelling</td>
<td>Intervention: Group exercise 3 times per week, reduced to 2 times a week after 8 weeks and then reduced to 1 a week at 25 weeks. Intervention delivered by: instructor. Control: Successful ageing education.</td>
<td>12 months</td>
<td>Adherence (based on attendance and self-reported home exercise). Measurements: Demography Medical suspension- 3 or more centre-based or more than 2 weeks home exercise due to health event. Exercise maintenance- Community Healthy Activities Model Program measure (Stewart et al, 2001). Physical Function- SPPB (Guralnik et al, 1994). Method: Practical tests, questionnaire and some telephone follow-up.</td>
<td>91 (42.7%) suspended 48 (53%) of those suspended successfully re-started. At 12 months 116 (54%) still participating. Adherence relates to: Those attending regularly when offered a class 3 times a week more likely to attend regularly after 8 weeks and 25 weeks (p&lt;0.001). Based on minutes of activity, those with higher reported activity had more improved SPPB scores (p=0.02).</td>
<td>4</td>
</tr>
<tr>
<td>Sjosten et al 2007. Finland</td>
<td>Randomised Controlled Trial</td>
<td>N= 293‡ (mean age=73) 86% women. no ethnicity stated community dwelling fallers</td>
<td>Intervention: Multi-factorial falls program including multi-component class twice a month for 12 months. Intervention delivered by: physiotherapist. Control: one off counselling.</td>
<td>12 months</td>
<td>Adherence Measurements: Demography Depressive symptoms- Geriatric Depression Scale (Brink et al, 1982). Cognitive function- Mini Mental State Examination (Folstien et al, 1975). Medication. Risk of falling, feelings of loneliness, self-perceived risk of falling, self-perceived health all study specific measure. Physical/functional abilities- Berg Balance Scale (Berg et al, 1992) and other study specific measures Method: Geriatrician led interview</td>
<td>Adherence rate 58% (SD= 30.2). Adherence relates to Univariate analysis: lower age (p&lt;0.001) low self-perceived risk of falling at home (p&lt;0.001) better functional abilities (p&lt;0.001) Multivariate: lower perceived risk of falling at home (p&lt;0.047) better physical/functional abilities (p&lt;0.001)</td>
<td>4</td>
</tr>
<tr>
<td>McAuley, Jerome, Marquez et al, 2003a.</td>
<td>Randomised Controlled Trial</td>
<td>N= 89‡ (mean age=66.0) 74.2% women 94% white</td>
<td>Intervention: Walking Control: exercise class 3 times a week for 1 hour, 6 months. Control delivered by:</td>
<td>6 months</td>
<td>Adherence Measurements: Demography Fitness-V02peak (Boileau et al, 1999).</td>
<td>Average attendance out of 70 days, 57.61 (SD 13.49) Adherence relates to: more positive response to exercise effect and higher</td>
<td>4</td>
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<tr>
<td><strong>Caucasian healthy sedentary community dwelling</strong></td>
<td><strong>Randomised Controlled Trial/Exploratory Intervention</strong></td>
<td><strong>Randomised Controlled Trial</strong></td>
<td></td>
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</tbody>
</table>
| **trained exercise specialists** | **Intervention: Walking**  
Control: exercise class 3 times a week for 1 hour, 6 months.  
Control delivered by: trained exercise specialists | **Intervention group (mean age=66.0)**  
74.2% women  
94% white  
Caucasian healthy sedentary community dwelling |
| **Exercise habits- study specific measure.**  
**Exercise frequency- study specific measure.**  
Exercise affect-Feelings Scale (Rejeski et al, 1987).  
**Method:** self-completed questionnaire. | **Adherence** (only based on class attendance for 6 months then self-reported) | **Exercise group**  
**Measurements:**  
Demography  
Fitness-V02peak (Boileau et al, 1999).  
Exercise habits- study specific measure.  
Exercise frequency- study specific measure.  
The Perceived Importance Profile (Fox et al, 1990).  
Follow-up physical activity-Physical Activity Scale for the Elderly (Washburn et al, 1999).  
Exercise affect-Feelings Scale (Rejeski et al, 1987).  
**Method:** self-completed questionnaire. |
| **Adherence results relate to both intervention and control group as outcomes where found not to differentiate between groups.**  
**Adherence relates to:** Higher self-efficacy which was predicted by increased exercise frequency, exercise affect and social support (during the control period).  
Accounted for 40% of variance in long term maintenance at 18 months. | **Adherence** (self-reported but includes attendance to class for first 16 weeks)  
**Measurements:**  
V02 Max- modified Astrand Rhyming protocol (Pollock & Wilmore, 1990).  
BMI  
skin fold- based on (Jackson et al, 1980).  
7-day physical activity records. | **Exercise group had improvement in V02**  
(p<0.001) at post-test. Improvements in BMI (p<0.05), handgrip compared to other groups and flexibility (p<0.001) compared to control.  
**Adherence:** Attendance of 86% of class sessions. 75% of reported activity was attendance to the class.  
Individualised exercise and good role- |
| Seymour et al, 2009 | Exploratory Intervention/2 group pre/post-test design study | dwelling. | 2 identical multi-component exercise classes, 90 minutes, 3 times a week. Intervention delivered by: Therapist (PT) or exercise instructor (CEI). | Blood pressure, Dynamic muscle strength, Flexibility- based on work by Heywood (1991) | Adherence (based on attendance of 8 week intervention) | 6 months | Adherence: 83% class attendance for PT, 80% for CEI. At 8 weeks 73% PT and 79% CEI group dropped out. No significant difference between those who adhered and those who dropped out in all outcomes or between groups. Self-efficacy for symptom management increased and barriers adherence efficacy reduced significantly. Frequency of activity, calorie expenditure, timed stand test, 6 minute walk, stiffness and function improved significantly across both groups. Significant differences favouring PT (p=0.001) led class on self-efficacy and barriers adherence efficacy at 8 weeks, only the latter maintained at 6 months. | 5 |
| Hays et al, 2010† | Exploratory intervention study | N=192 (mean age=64) 100% women 64.2% African-American 92% hypertension community dwelling | Multi-component community, 5 days week. Intervention delivered by: exercise physiologist. | Intention/uptake | Measurements: Demography and health status-Medical records. Self efficacy and outcomes-based on Damush et al (2001). Exercise self-definition- based on Hays et al (2005). Mobility and physical health- study specific scale based on previous research (Clark & Nothwehr, 1999; Clark, 1999; Guralnik et al, 1991). | 2 months | Uptake: 44% completed at least 1 session, Value of exercise scores related to exercise adoption (p<0.01). Exercise definition, self efficacy and outcome expectations were significant in explaining adoption in the final model R² 0.06. Value of exercise predicted independently (p=0.03). | 4 |

**Control:** Test taken but no further intervention.
<table>
<thead>
<tr>
<th>Study</th>
<th>Design Type</th>
<th>Sample Characteristics</th>
<th>Intervention Details</th>
<th>Study Method</th>
<th>Findings/Implications</th>
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</thead>
</table>
| Stigglbott et al, 2008, Netherlands | Cross-sectional study | N=583, MBvO, N=186 Fysiosport (mean age=63.5) 73.5% women no ethnicity stated community dwelling | 10 exercise classes Only More Exercise for Seniors Gymanstics (MBvO) and Fysiosport met criteria for inclusion. Intervention delivered by: Fysiosport delivered by physical therapists. MBvO not stated. | No follow up | Intention/uptake  
Method: Postal questionnaire. | MBvO attracted older participants (Mean 67.7) with lower levels of educational attainment. Compliance to recommended physical activity levels 29.3% Pysiosport and 36.5% MBvO gym. Motivation related to: MBvO was related to the motivation category relax and enjoy (pleasure, quality of instruction, relaxation, fitness) and Fysiosport was related to care and care (doctors advice, health, weight reduction, self-esteem). |
| Lucidi et al, 2006, Italy | Cross-sectional study | N = 1,095 (mean age=69) 77.4% women. no ethnicity stated Community dwelling | 2 multi-component classes a week. Participants enrolled in exercise class for minimum of 6 months. Intervention delivered by: physical trainers. | 3 months | Intention/uptake and adherence  
Method: Questionnaire | Intention: model accounted for 55% of variance in behavioral intention, with Self-efficacy (B= 0.38) and PBC (B= 0.37) strongest factors and attitudes and subjective norms (B=0.18) only partially contributing.  
Adherence: model predicted only 9% of attendance; intention strongest predictor, all other factors had indirect effect through intention. |
| Sin et al, 2005, U.S | Exploratory intervention study | N=13, (mean age=77) 61.5% women 100% Korean immigrants supported housing. | Evidence based exercise class 3 times a week, 12 weeks. Intervention delivered by:  
Korean/American exercise instructor. | 3 months | Adherence  
Measurements: Health outcomes-arm curl tests, 8-foot up-and-go tests, blood pressure.  
Method: Practical test and focus group (led by class instructor). | Improved outcomes, muscle strength (p<0.01), blood pressure (p= 0.03).  
Adherence: Good attendance >80% (n=9), 60-79% (n=4). Positive qualitative feedback and reported improvements both physically and mentally, no statistical evidence to relate to adherence. |
| Hays et al, 2005, U.S † | Exploratory intervention study | N=192 (mean age=64) 100% women 64.2 African-American 92% hypertension community dwelling | Multi-component community class available 2 times a day, 5 days week. Intervention delivered by: not stated. | 6 months | Intention/uptake and adherence  
Measurements: Demography and health status-Medical records. Mobility and physical health- study specific scale based on previous research (Clark & Nothwehr, 1999; Clark, 1999; Guralnik et al, 1995). | Uptake: Only 45% (n=86) completed 1 exercise sessions. Value of exercise scores related to completion of sessions up to 8 weeks (p<0.01).  
Adherence: In 24 weeks mean number of exercise sessions attended were 11 (SD 20.0), compared to recommended 72. Acknowledgement and competence related to attendance over 24 weeks (p=0.03). Baseline to 6 month self- |
<p>| Tu et al, 2004. U.S. | Exploratory Intervention study | N=110 (mean age=63.7) 100% women. 66% African American, 34% white Caucasian. community dwelling | 2 multi-component classes each day offered 5 days a week for 2 years. Intervention delivered by: exercise instructors. | 24 months | Exercise self definition-study specific measure based on work by Kendierski et al (1998). Adherence | Measurements: Demography and clinical information (including co-morbidities) Physical and clinical measures- skinfold’s, anthroporates measurements, heart rate, systolic and diastolic blood pressure, glycosolated haemoglobin, BMI. Health Status and perceived health measure by Gulralnik et al (1995). Mental health- Mental Health Index-5 (McHorney &amp; Ware, 1995). Health related behaviours-study specific measure. Dietary fat intake-Northwest Lipids Research Center Diet Survey (Retzlaff et al, 1997). Social factors- Study specific measure Efficacy and outcomes expectations-Damush et al, 2001. Exercise Barriers- (Clark, 1997; Clark, 1999). Weather- meteorological records. Distance from home to class. Socioeconomic environment-2000 Census. Method: Practical test and interview. | definition scores improved (p&lt;0.01). 2. Non-adherence/early drop out: associated with fair/poor perceived health (p&lt;0.001), pain at baseline (p=0.003). Based on census data those who lived in an area of higher reported walking were less likely to drop out (RR 0.889). Daily attendance: resting diastolic blood pressure (p=0.02), number of sun hours negatively associated (p&lt;0.001), wind chill (p&lt;0.001) very high (p=0.01) and very low (p&lt;0.001) temperatures. Cloudy (p=0.03), snow (p&lt;0.001), low atmospheric pressure (p=0.007) associated with lower attendance. This final model explained 82% of the variance in attendance. |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Damush et al, 2001. U.S† | Exploratory intervention study | N=500, (mean age= 64). 100% women 60.7% (N=496) African-American healthy community dwelling | Multi-component community classes available once a day, 5 days week for 1 year. Intervention delivered by: study personnel (no other information provided) | 1 year | Intention/uptake and adherence | Measurements: Demography and health status-Medical records. Smoking status Health behaviour- questions adapted from Clark et al, 1999. Dietary fat intake-Northwest Lipids Research Center Diet Survey (Retzlaff et al, 1997). | 500 screened, 131 (28%) participated in at least 1 class, 37 exercising at 1 year (9.2%). Uptake defined as attendance at exercise test. Adherence defined as attendance at class. Uptake: Only higher outcome expectations at baseline significant (p&lt;0.001). Chronic disease/health issues, baseline fat consumption, minutes walk per week, social support were not predictors. | 4. |  |  |  |</p>
<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>N=</th>
<th>Attendance/Exercise Details</th>
<th>Measurement</th>
<th>Method</th>
<th>Adherence</th>
<th>Adherence Notes</th>
</tr>
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<tbody>
<tr>
<td>Estabrooks et al, 1999a, Canada</td>
<td>Exploratory intervention study</td>
<td>N=179 (mean age=67) 73% women no ethnicity stated healthy community dwelling</td>
<td>Existing classes 2-3 times a week, mix of strength, cardiovascular, walking and tai chi. Followed for 4 weeks. Intervention delivered by: exercise instructors.</td>
<td>4 weeks</td>
<td>Intention/uptake and adherence</td>
<td>Mental health: Mental Health Index (Ware et al, 1992). Mobility: study specific scale based on previous research (Guralnik et al, 1993; Clark, 1997; Clark et al, 1999). Social cognitions: efficacy and outcome expectation measures, study specific measure based on Clark et al (1999). Social Support: study specific questions. <strong>Method:</strong> Practical tests and questionnaires.</td>
<td>Adherence: Only smoking at baseline meant less likely to attend (p&lt;0.01).</td>
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<tr>
<td>Estabrooks et al, 1999 Study 2, U.S</td>
<td>Exploratory experimental intervention study</td>
<td>N= 33 (mean age=75.1) N=12 intervention, placebo N=11, control N=11. 91% women no ethnicity stated healthy sedentary community dwelling</td>
<td><strong>Intervention:</strong> Exercise class including instructor led team building 2 times a week, 6 weeks. <strong>Placebo:</strong> Exercise class 2 times a week, 6 weeks with visit from researcher enquiring how participants progressing. <strong>Control:</strong> Basic exercise class 2 times a week, 6 weeks. Intervention delivered by: exercise instructors.</td>
<td>12 weeks</td>
<td>Adherence (based on attendance but also return rate after 10 week break)</td>
<td><strong>Measurements:</strong> Attitude: based on TPB (Ajzen and Fishbein, 1980). Perceived Behavioral Control: based on TPB (Ajzen and Fishbein, 1980). Group cohesion: Group Environment Questionnaire (GEQ) (Carron et al, 1988). Intention: study specific questions based on Courneya (1994). <strong>Method:</strong> Questionnaire.</td>
<td><strong>Adherence and Intention:</strong> Social cohesion (p&lt;0.05) and task cohesion were the best predictors of attitude (p&lt;0.05). Task cohesion significantly related to perceptions of control (p&lt;0.01). Perceptions of control predicted intention (p&lt;0.01). <strong>Adherence/attendance:</strong> Intention and perception of control predicted attendance (p&lt;0.01)</td>
</tr>
<tr>
<td>Grove &amp; Spier, 1999, U.S</td>
<td>Exploratory intervention study</td>
<td>N=14 (mean age=78) 100% women 100% white Caucasian</td>
<td>Multi-component exercise group 2 times a week. Intervention delivered by: exercise video with nurses</td>
<td>6 months</td>
<td>Adherence</td>
<td>No measurements apart from adherence. <strong>Method:</strong> Evaluation-Informal discussion</td>
<td><strong>Adherence:</strong> Participants in team building attended more classes (p&lt;0.05) than participants in control and placebo (p&lt;0.05). Also had significantly higher return rate (p&lt;0.05). 8 (57%) members attended more than 50% of sessions. First 6 weeks 11 (79%) members attended at least half the sessions, same for next 6 weeks where nurse and peer shared sessions. Last 3</td>
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<tr>
<td>Study</td>
<td>Intervention Details</td>
<td>Attendance</td>
<td>Adherence</td>
<td>Notes</td>
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<td>Eccleston et al, 1998, Canada</td>
<td>Healthy community dwelling support from a nurse for 6 weeks, then once a week for 4½ months and a peer captain after 6 weeks.</td>
<td>Attendance declined, only 6 (43%) attended more than half.</td>
<td>Health Professional leadership and media cited effective. Only descriptive analysis.</td>
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<td>Mills et al, 1997, U.S</td>
<td>Exploratory intervention study N=67 and N=31 (mean age=75 and 73) 96.5% women no ethnicity stated healthy community dwelling.</td>
<td>57% of overall participants dropped out after 3 years.</td>
<td>Overall classes increased participation related to retention although stronger in men (p&lt;0.05) than women (p&lt;0.001). Most common reason for dropout health/illness.</td>
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<td>Williams &amp; Lord, 1995, Australia.</td>
<td>Exploratory intervention study N=102 (mean age=71.6) 100% women no ethnicity stated healthy community dwelling</td>
<td>33 dropped out mostly health reasons.</td>
<td>Adherence: 10 weeks (and follow up weeks 20, 30 and 40): Reaction time, psychoactive drug and sway best predictors (14.8% variance). 12 months: Reaction time, strength, psychoactive drug use (20.3% variance). N=54 followed further 6 months: Improved strength, sway significantly, reasoning ability and depression associated with continuation (p&lt;0.05).</td>
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**Intention/uptake and adherence** (based on self-report monthly activity logs, supported by class attendance records) **Measurements:** Physical activity format preference- study specific measure. **Method:** Questionnaire and follow-up telephone calls.

<table>
<thead>
<tr>
<th>Study</th>
<th>Type</th>
<th>N</th>
<th>Age/ethnicity</th>
<th>Intervention</th>
<th>Uptake</th>
<th>Adherence</th>
<th>Method</th>
</tr>
</thead>
</table>
| Hickey et al, 1995, U.S      | Exploratory intervention    | 90 | 72.6 (mean age) | 4 structured low-intensity exercise classes, 2 times a week. Intervention delivered by: exercise instructor for 6 weeks, followed by peer led group with instructor support up to 18 weeks. | 4.5 months | Ill health primary reason for dropout.  
**Adherence:** 6 weeks, N=77 (86%): self reported improvements mobility (p<0.001), flexibility (p<0.03) supported by walk times (p<0.01) and steps (p<0.02). Optimism, Morale (p<0.001) and self-efficacy also increased (p<0.01). Intention to continue 97%.  
**18 weeks, N=32 (35%):** those who continued maintained improvements in mobility etc. Only Optimism still significant (p=0.02) out of psychological measures. | Structured interview |
| Macleod & Stewart, 1994, Canada. | Exploratory intervention study | 75 | 75.9 (mean age) | 2 established low intensity multi-component classes (no frequency cited). Intervention delivered by: peer led. | None | Reported intention/uptake with those who participated (N=30) and those who didn’t (N=45).  
**Uptake:** Participation related to intrinsic motivation, being younger, on less medication, higher education, greater competency (p<0.05). Income and living alone not significant. | Interview |
| Howze et al, 1989, U.S       | Exploratory multiple intervention | 102 | 60-64 (median range) | Exercise class 2 hours, twice a week. 10 week. Intervention delivered by: not stated | 10 weeks | Attendance 70% until week 6 then dropped to 51%. All dropouts due to ill health. 62 (61%) high attendees.  
**Uptake:** 43% viewed class as opportunity for social networks.  
**Attendance/Adherence:** High attenders: male, younger, better health, more favourable expectations | Interview |
| Duda & Tappe, 1988 | Exploratory Intervention study | N=47 (mean age= 65.3), mixed gender, percentage not stated. 100% white Caucasian healthy community, middle class. | Multi-component exercise program. Running for 1 month before data collection (no further detail about classes). Intervention delivered by: not stated | None |

**Intention to continue** (based on self-reported future physical activity).

**Measurements:**
- Future physical activity- study specific measure.
- Personal Incentives for Exercise Questionnaire (Duda and Tappe, 1987).
- Sense of competence- Perceived Physical Ability subscale (Ryckman et al, 1982).
- Perceived Health Status- Study specific measure based on Mancini & Quinn (1981).
- Self-reliance- Fitness Status Locus Control Scale (Whitehead & Corbin, 1985).
- Social identity- study specific measure.
- Perceived options- Perceived Opportunities for Exercise Questionnaire (Maehr and Braskamp, 1986).

**Method:** Questionnaire

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*unless stated otherwise attendance registers only used for adherence outcome measure.

† Several papers for one study.

‡ Where only one arm of a trial meets inclusion criteria of review, only that sub-sample is reported.

baseline, higher self-efficacy and exercise knowledge. Low attenders: less confident of abilities, belief of injury and worried about appearances.

Commitment to exercise (p<0.05), perceived benefits (p<0.10), number of days/weeks (p<0.05) needed for outcomes, number of minutes/time (p<0.10) needed for outcomes in regression model explained 34% of variance in exercise behaviour.
Table 2.2: Description of design, main findings and quality of quantitative studies with outcome of adherence based on self-report or a mixture of self report and attendance records where results cannot be differentiated.

<table>
<thead>
<tr>
<th>Authors, Date, Location</th>
<th>Study Design</th>
<th>Sample</th>
<th>Intervention</th>
<th>Follow-up</th>
<th>Outcomes*</th>
<th>Main Findings</th>
<th>Quality rating (5) good- (1) poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phillips et al, 2010. U.S †</td>
<td>Randomised Controlled Trial</td>
<td>N=213 ‡ (mean age=76.5) 68.5% women, 75.1% white Caucasian. healthy sedentary community dwelling</td>
<td><strong>Intervention:</strong> Group exercise 3 times per week, reduced to once per week after 8 weeks until 12 months. Intervention delivered by: instructor  <strong>Control:</strong> Successful ageing education.</td>
<td>12 months</td>
<td><strong>Adherence</strong> (based on class attendance until 7 months then self-reported).  <strong>Measurements:</strong> Demography Chronic health conditions BMI, blood pressure, radial pulse, height, weight, abdominal circumference, ECG abnormalities. Depression- Center for Epidemiologic Studies Depression Scale (Radloff, 1977). 400m walk Grip Strength-Jaymer handheld dynamometer Physical Function- Short Physical Performance Battery (SPPB) (Guralnik et al, 1994). Health and Activities of Daily Living (ADL) self reported study specific measure.  <strong>Method:</strong> Face to face interviews, practical tests and some telephone follow-up.</td>
<td>Age, gender, ethnicity, smoking, education, marital status did not significantly distinguish between those never medically suspended from class, those suspended who returned and those suspended and never returned.  <strong>Suspended and never returning (poor adherence) relates to:</strong> ill health (p=0.003), high levels of medication use (p=0.02), higher difficulty with ADL (p=0.05), poor physical function (p=0.02), slower walking speed (p=0.03).</td>
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<tr>
<td>Hughes, Seymour et al, 2006. U.S †</td>
<td>Randomised Controlled Trial</td>
<td>N=115 ‡ (mean age=73.3) 80.6% women. 69.4% white Caucasian mild to moderate osteoarthritis. community dwelling</td>
<td><strong>Intervention:</strong> multi-component class and behaviour change 90 minutes, 3 times a week, 8 weeks. Intervention delivered by: Physical Therapists.  <strong>Control:</strong> Waiting list.</td>
<td>12 months</td>
<td><strong>Adherence</strong> (only based on class attendance for 2 months then self-reported)  <strong>Measurements:</strong> Demography Maintenance of physical activity- study specific measure Functional lower extremity muscle strength- Timed-Stands test (Guralnik et al, 1995). Functional exercise capacity-6 minute walk test (Guyatt et al, 1985). Pain, function and stiffness- Western Ontario and McMasters University</td>
<td>N= 83 participants at the end of 2 months intervention. On average participants attended 18.9 (SD 4.3) of 24 sessions. Retention in study at 12 months, 50.4%.  <strong>Adherence relates to:</strong> Exercise in minutes declined after the 2 month intervention period but was above 30 minutes 3 times a week. Self efficacy at 6 and 12 months, confidence to adhere to exercise over time was significant in the exercise group (p&lt;0.01) and there were continuous benefits from 2 month intervention.</td>
<td>3</td>
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<tr>
<td>Authors</td>
<td>Type of Study</td>
<td>N=80‡ (mean age=73.5), 81.0% women, 84.6% white, community dwelling</td>
<td>Intervention: multi-component class and behaviour change, 90 minutes, 3 times a week, 8 weeks. Intervention delivered by: Physical Therapists. Control: Waiting list.</td>
<td>Adherence (only included class attendance for 2 months then self-reported). Measurements: Demography, Maintenance of physical activity, study specific measure, Functional lower extremity muscle strength, Timed-Stands test (Guralnik et al, 1995). Functional exercise capacity-6 minute walk test (Guyatt et al, 1985). Pain, function and stiffness- Western Ontario and McMaster University Osteoarthritis Index (Belamy, 1989). Pain-Geri-AIMS Pain Scale (Hughes et al, 1991). Self-Efficacy for Arthritis Self-Management (Lorig et al, 1989). The Barriers Adherence Efficacy Scale (McAuley et al, 1993). Time Exercise Adherence Scale (McAuley et al, 1993). Lower extremity joint pain-physical examination (Hughes et al, 1991). Method: Face to face interviews and some telephone follow-up.</td>
<td>N=68 (85%) at end of 2 months intervention. Participants attended 18.9 (SD 4.3) out of 24 sessions. Outcomes improved at 2 months but not linked to adherence. Adherence: Barriers to adherence reduced (p&lt;0.05) and adherence (calculated on reported minutes of exercise per week) improved by 68.7% from baseline to 2 months and 48.5% from baseline to 6 months (p&lt;0.05). Self-efficacy increased at 2 months and just remained above baseline at 6 months (p&lt;0.05). Borderline reductions in lower extremity pain and improvements in efficacy to adhere present at 6 months (p=0.052).</td>
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<tr>
<td>Hughes, Seymour et al, 2004 U.S †</td>
<td>Randomised Controlled Trial</td>
<td>N=76† (mean age=64.7). 100% women, 98% white, Caucasian</td>
<td>Intervention: exercise/education program 3 times a week, 16 weeks Intervention delivered by: Nurse. Control: Health education</td>
<td>18 months Adherence (self-reported for primary outcome but includes attendance to class for first 16 weeks) Measurements: Feelings about exercise- Gillett Feelings</td>
<td>91% retention across groups during intervention, Declined to 62% at 18 months. Non-exercise related medical problems, loss of interest, time conflicts most cited reasons for drop-out.</td>
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<tr>
<td>Caserta et al, 1998 †</td>
<td>Randomised Controlled Trial</td>
<td>N=76† exercise group (mean age=64.7). 100% women, 98% white, Caucasian</td>
<td>Intervention: multi-component class</td>
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<tr>
<td>Study</td>
<td>Design</td>
<td>Sample Description</td>
<td>Intervention</td>
<td>Method</td>
<td>Findings</td>
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<tr>
<td>Gillett &amp; Caserta 1996</td>
<td>Randomised Controlled Trial</td>
<td>N=76 † exercise group (mean age=64.7), 100% women, 98% white Caucasian sedentary, overweight community dwelling.</td>
<td>Intervention: exercise/education program 3 times a week, 16 weeks. Intervention delivered by: Nurse. Intervention 2: Health education sessions where encouraged to exercise 3 times a week at home, 16 weeks. Control: Test taken but no further intervention.</td>
<td>Adherence (self-reported but includes attendance to class for first 16 weeks) Measurements: V02 Max- modified Astrand Rhyming protocol (Pollock &amp; Wilmore, 1990). BMI Skin fold- based on Jackson et al (1980). 7-day physical activity records. Method: Self-reported measures</td>
<td>Exercise group had improvement in V02 (p&lt;0.001) at post-test and maintained, and reduction in BMI (p&lt;0.001) at last follow-up. Adherence: Attendance of 86% of class sessions. Based on self report adherence, 94.3% at post-test (end of intervention), 77.3% at 3 after months, 69.4% at 6 months after. Individualised exercise and good role-model cited as important.</td>
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<td>Litt et al, 2002, U.S</td>
<td>Exploratory intervention study</td>
<td>N=189 (mean age=67.4) randomised to upper (n=92) or lower body (n=97) exercise. 100% women no ethnicity stated low bone density. community dwelling</td>
<td>2 classes a week for 2 months, 1 a week for 2 months, 1 a fortnight for 2 months. Then two classes a month. Intervention delivered by: not stated.</td>
<td>Intention/uptake and adherence (based on self-reported retrospective 30-days exercise rather than class attendance). Measurements: Adherence self-efficacy- study specific measure. Exercise confidence- McAuley et al (1991). Readiness for exercise- Exercise Adoption Scale (Marcus et al, 1992) based on Stages of Change model (DiClemente et al, 1999). Decisional balance- Orientation Towards Exercise Scale (Marcus et al, 1992). Social support- The Social Provisions Scale (Cutrona &amp; Russell, 1987) and The Social Support Questionnaire (SSQ).</td>
<td>Exercise type made no difference so responses pooled. Uptake: initial uptake predicted by readiness to exercise (p&lt;0.001) and social support (p&lt;0.05) explaining 45% of the variance. Adherence: by 12 months, social support (p=0.05) was the only significant factor, predicting 48% of the variance.</td>
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<td>Study</td>
<td>Design</td>
<td>Sample Characterization</td>
<td>Intervention</td>
<td>Adherence Measure</td>
<td>Other Measures</td>
<td>Method</td>
<td>Results</td>
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<td>Nigg et al, 2002. U.S</td>
<td>Exploratory intervention study</td>
<td>N= 48, (mean age 78.2) 90% women, 98% white Caucasian community dwelling</td>
<td>Pamphlets on benefits of exercise and 45 min in-house exercise class 2 times a week for 7 months. Intervention delivered by: certified exercise therapist.</td>
<td>Adherence (based on self-report stage of exercise).</td>
<td>Demography Nutritional risk- DETERMINE checklist (Nutrition Screening Initiative, 1991), Health- sections of the SF36 (Ware and Sherbourne, 1992). Exercise stage-Based on Trantheoretical Model of Health Behaviour Change (Marcus and Simkin, 1993; DiClemente et al, 1999).</td>
<td>Interview/questionnaire</td>
<td>14 attended 80% of sessions. 32 participants remained active, 5 relapsed, but 9 of 11 inactive became active. Adherence: maintainers of activity had higher health perception at baseline (p&lt;0.05) then those who were not active at start, and higher scores post-test (p&lt;0.05) for those who had relapsed and even for those who had moved to being active, they also had higher physical functioning at post test (p&lt;0.05) than those who had relapsed to inactive.</td>
</tr>
<tr>
<td>Brenes et al, 1998. U.S</td>
<td>Exploratory intervention study</td>
<td>N= 105 (mean age= 68.3) 89% women, 66% white Caucasian 31% African-American healthy community dwelling</td>
<td>Older adults new to exercise attending existing exercise groups. Not stated how often classes offered. Intervention delivered by: not stated.</td>
<td>Intention/uptake and adherence (based on self reported exercise in previous 1, 3 and 9 months).</td>
<td>Attitudes, PBC and Subjective norms-based on TPB (Ajzen and Fishbein, 1980; Godin &amp; Shepard, 1986). Behavioural intention- study specific measure. Motivation- The Self-Motivation Inventory (Dishman &amp; Ickles, 1981). Exercise habit- study specific measure.</td>
<td>Self-report questionnaire</td>
<td>Uptake: TPB explained 7% of variance (p=0.05) at uptake. At 1 month it explained 9% of variance, PBC was the only independent contributor (p=0.002). Indirect measures of PBC and subjective norms influenced behaviour at 1 month. Adherence: 3 and 9 months TPB no longer significant, but at 9 months, motivation was significant (p=0.02). Exercise behaviour at 1 month was a predictor at 3 months (15% variance, p=0.001). At 9 months exercise behaviour at 1 and 3 months still explained 11% of variance but only exercise behaviour at 3 months was significant (p=0.008).</td>
</tr>
</tbody>
</table>

*Unless stated otherwise attendance registers only used for adherence outcome measure.  
† Several papers for one study.  
‡ Where only one arm of a trial meets inclusion criteria of review, only that sub-sample is reported.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Study Design</th>
<th>sample</th>
<th>Intervention</th>
<th>Follow-up</th>
<th>Outcome measures*</th>
<th>Main Findings</th>
</tr>
</thead>
</table>
| De Groot & Fagerstrom, 2011. Norway. | Exploratory | N= 10 (mean age= 83) 50% women no ethnicity stated falls risk community dwelling | Strength and balance falls prevention classes 2 times a week, first 3 months in hospital, last 3 months in local community. Intervention delivered by: physiotherapists. | 6 months | Intention/uptake and adherence  
Method: Semi-structured interviews | Uptake: To maintain independence and for health reasons. Felt they needed a push from health professionals.  
Adherence: Those who had adhered to the community classes had higher motivation to adhere to those who did not. The social aspect was appreciated.  
Barriers: Reduced health and this was combined with symptoms but also psychological barriers. Negative experiences in the class and having to organise own transport was an issue, as well as issues related to winter weather. |

| Hedley et al, 2010. U.K. | Evaluation | N=5 (mean age= 77) 100% women falls risk community dwelling | Strength and Balance falls prevention classes once a week as well as a home exercise programme. Two 8 week sets of classes with home exercise in-between. Intervention delivered by: Postural Stability (evidence based falls prevention) instructor. | 8 months | Adherence  
Method: Semi-structured interview’s, focus group. Practical tests. | 80% attendance rate for group exercise.  
Adherence: Found group easier to adhere to than home exercise. Physical and psychological benefits were felt and fear of losing these was key motivator. Peer support and group cohesion important. Free Transport and the venue were important and transport seen as barrier to accessing other community classes. |
<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Sample Details</th>
<th>Intervention Details</th>
<th>Intentions/Adherence</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stathi, McKenna &amp; Fox, 2010. U.K†.</td>
<td>Exploratory Intervention study</td>
<td>N=21 (mean age=75.8) 66.7% women no ethnicity stated falls risk community dwelling</td>
<td>Structured research based exercise programme (based on falls prevention programme), 2 times a week for 12 months, and one home-based session, 2 sites. Intervention delivered by: exercise instructors.</td>
<td>12 months</td>
<td>93% adherence 12 months class. 85% adherence to home exercise. Uptake- need for discipline/routine, physical decline something local. For previous exerisers there were expectations of outcomes, non-exerisers curiosity. Appropriately paced exercise, support when sore muscles etc, increased self-efficacy. Individual tailoring, one to one support by instructor. Developing adherence- Functional exercises, increased empowerment. Enjoyment of strength training, quick results. Trusting relationship with instructor. Group and social network-preferred support of group. Giving something back to research. Barrier- transport, time and cost. Maintenance- If new class or that class had continued in same setting, easier to maintain. Support from instructor helped. Barriers were reduced.</td>
</tr>
<tr>
<td>Fox, Stathi, McKenna &amp; Davis, 2007. U.K†.</td>
<td>Exploratory Intervention study</td>
<td>*N=24 (mean age=75.5). Part of wider study does not describe specific participants recruited. community dwelling</td>
<td>Structured research based exercise programme (based on falls prevention programme), 2 times a week for 12 months, and one home-based session. Intervention delivered by: exercise instructors</td>
<td>12 months</td>
<td>*Motivators Those who entered programme had high outcome expectations, some active before, felt improvements. Enjoyment through support and class leadership. Group based activity enjoyable, main reason why attended. Group support, family and friends helped. Empowerment and independence, giving something back.</td>
</tr>
<tr>
<td>Hardy &amp; Grogan, 2009. U.K</td>
<td>Exploratory</td>
<td>N=48 (mean age=69) 87.5% female no ethnicity stated healthy community dwelling</td>
<td>Either from older people’s clubs (non-exercise) or 3 local council gym exercise classes. Intervention delivered by: not stated.</td>
<td>None</td>
<td>Motivators Preventing health decline, Enjoyment, Support from group and family. Barriers Dark at night, accessibility and also understanding of cost. Lack of promotion of suitable classes.</td>
</tr>
<tr>
<td>Vernon &amp; Ross, 2008. U.K.</td>
<td>Exploratory</td>
<td>N= 22 (Age range=65-94) 90.8% women 72.7% white Caucasian. Fall in last year or afraid of falling. community dwelling</td>
<td>Had attended falls prevention community exercise class for 6 months. Intervention delivered by: specialist exercise instructors (including evidence based postural stability and Otago instructors)</td>
<td>6 months</td>
<td>Reasons for not participating: fear, laziness, lack awareness of classes. Concern over meeting others. Barriers to continuing: Doctors appointments, health, transport, cancellation of class Reasons for continuing: Improved balance, confidence, being able to get up from seated position, effect on well-being, increased confidence, felt reduction in falls risk. Appreciation of social opportunities, ease of access to venue.</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>N</td>
<td>Demographics</td>
<td>Intervention</td>
<td>Adherence</td>
</tr>
<tr>
<td>-------</td>
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</tr>
<tr>
<td>Chiang et al 2008, U.S</td>
<td>Exploratory</td>
<td>52</td>
<td>Mean age=76, 85% female, 40% Chinese, 35% African American, 19% white Caucasian healthy community dwelling</td>
<td>Evidence based multi-component classes delivered 3 times a week. Attendance minimum 1 month. Intervention delivered by: exercise instructors.</td>
<td>3.7 years</td>
</tr>
<tr>
<td>Yardley et al 2006, European</td>
<td>Exploratory</td>
<td>69</td>
<td>Mean age=78.9, 72.5% female, 6 European countries no ethnicity stated</td>
<td>Two thirds offered a falls intervention which could include strength and balance training. Intervention delivered by: physiotherapists</td>
<td>None</td>
</tr>
<tr>
<td>Resnick et al, 2006, U.S</td>
<td>Exploratory</td>
<td>148</td>
<td>Mean age=72.9, 79% women, 77% African American healthy community dwelling</td>
<td>12 week exercise programs delivered 2 times a week across 12 sites. Intervention delivered by: lay exercise leaders.</td>
<td>12 weeks</td>
</tr>
<tr>
<td>Study</td>
<td>Type</td>
<td>N</td>
<td>Recruitment</td>
<td>Adherence</td>
<td>Method</td>
</tr>
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</tr>
<tr>
<td>Estabrooks et al, 2004. U.S.</td>
<td>Exploratory</td>
<td>23</td>
<td>Healthy community dwelling</td>
<td>None</td>
<td>Interviews</td>
</tr>
<tr>
<td>Whaley &amp; Ebbeck 1997. U.S.</td>
<td>Exploratory</td>
<td>17</td>
<td>Healthy community dwelling</td>
<td>None</td>
<td>Interviews, used feminist approach</td>
</tr>
</tbody>
</table>

*Where only one aspect of the study relates to the criteria of review, only that information is reported.
† Several papers for one study.
Chapter 3: Theoretical background of the thesis.

The previous literature and systematic review highlights the instructors’ potential to play an important role in older adults’ engagement with exercise classes and also the lack of evidence that there is around this role. The research reported in this thesis explores the role of the instructor in older adults’ take-up and adherence to exercise classes. This will add to our understanding of the instructors’ role, but will also help us to understand how their role interacts with other important factors which can influence uptake and adherence.

Overall the research adopts an integrated mixed method approach. The use of this approach enables us to establish initial findings through quantitative methods and then explore the context and reasoning behind this knowledge through the uses of qualitative methods, helping us to interpret the data and provide a broader and fuller picture as well as providing triangulation (Bryman, 2008). There is growing recognition that significant advances in health care are made when both methods of enquiry are used (Johnson and Onwuegbuzie, 2004). As getting older adults to participate in exercise could be classed as a complex intervention we use an MRC approach (MRC, 2000; MRC, 2008). Therefore, this research can be seen in the context of a Medical Research Council Framework/Guidance for complex interventions (MRC, 2000; MRC, 2008), each study helps us to establish the most important variables to be tested as part of a Randomised Controlled Trial of a complex intervention.

The thesis reports three complementary studies. Using survey methods we establish whether there are relationships between instructors’ training, characteristics and attitudes. Following the findings from this study and the systematic review we have then used semi-structured interviews to further understand these relationships and also how these and other factors may impact on the delivery of classes and the responses from the participant. Finally, we have returned to the use of survey methods to follow instructors and their older participants over six months to establish how all of the factors influence long term adherence.
3.1 Behaviour change models.

Older adults’ attitudes have been identified as paramount in understanding their intention, uptake and adherence to exercise classes (as demonstrated in Chapter 2). Therefore, it is important to consider behaviour change models and models assessing attitudes of older adults.

3.11 Transtheoretical model.

The Transtheoretical model is used to understand the stages that individuals’ progress through when adopting a behaviour change such as starting to exercise. This model considers the cognitive and behavioural processes they use when adopting the behaviour. The model suggests that individuals engaging in this new exercise behaviour move through stages of precontemplation (not even thinking of exercising), contemplation (considering exercise), preparation (preparing to start a program), action (attending a program), and maintenance (maintaining that attendance). Sometimes individuals can move forwards and backwards within this cycle and may also repeat the cycle before they achieve their goals. The amount of progress the individual makes through the cycle can be dependent on the stage that they are in at the start of the behaviour (Prochaska & DiClementi, 1983).

Although it has been used successfully to explain and identify stages of changing exercise behaviour among older adults (Nigg et al, 2002), it does not help us to understand instructors’ attitudes. It may be useful as a diagnostic tool for instructors to use as part of an intervention with older adults (Nigg et al, 2002) but cannot be easily used to assess instructors’ attitudes and has not been found to be any more successful in predicting exercise attitudes and exercise behaviour than other models (Rhodes et al, 1999).

3.12 Health Belief Model and Protection Motivation Theory.

The Health Belief Model is primarily based on the work of Rosenstock et al (1966). It considers the perceived susceptibility (the risk the person perceives themselves at in their sedentary state), perceived severity (the severity of the consequences if they remain as they are), and the perceived threat, which is the level of motivation they have to adopt the behaviour as a consequence of the perceived susceptibility and severity. It also considers the benefits they believe they can obtain from the behaviour, the barriers they think that they will have to overcome, their self-efficacy (belief that they can carry out the task), their
expectations (which are partly a result of their beliefs about the benefits and their beliefs in their own ability to carry out the behaviour) and their cues to action (external reminders of prompts), as well as demographic and social variables. The Health Belief Model has had more limited use in the exercise domain, particularly in relation to older adults, but has been used to look at adherence to community based coronary heart disease exercise programs (Mirotznik et al, 1995). The Health Belief Model has been criticised for not being clearly or adequately specified and often being inconsistently applied in the literature (Armitage & Connor, 2000; Yarbrough & Braden, 2001). Protection Motivation Theory is largely a re-worked version of the Health Belief Model and sees the intention to protect ourselves as the main determinant of the behaviour (Roger, 1975). This has been used before alongside other models to assess uptake and adherence to strength and balance exercises (Yardley et al, 2006). Both of these theories put the emphasis for motivation on health (and in essence a medical model of health which focuses on disease and conditions rather then a holistic model of health) and as demonstrated in Chapter 2, there are other important fundamental motivators such as the influence of peers and social motivations (Hawley et al, 2011) which also need to be considered.

3.13 Self-determination Theory

The Self-determination Theory (SDT) is traditionally concerned with the motivation behind the choices that people make (Deci & Ryan, 2002), excluding external influence and interference. It focuses on the extent to which an individual’s behavior is self-motivated and self-determined (Deci & Ryan, 2002). This has been used successfully in relation to older adults’ physical activity but has been combined with other approaches due to its limited scope (Dacey et al, 2008). It was felt that this theory had too narrow a scope to be the main theory which informs this thesis and its fundamental concepts are considered within other behavioral models such as the TPB (Ajzen, 1988).

3.14 Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) is based on three main concepts (Ajzen, 1988), perceived behavioural control (PBC), social influences and attitude (outcome expectations). It has been argued that PBC and self-efficacy constructs are interchangeable (Ajzen, 1988; Ajzen and Driver, 1992). Therefore we consider PBC to be the perceived ease or difficulty of performing the behaviour. Social influence can include several
constructs, subjective norms (beliefs of important people e.g. family, professionals), perceived social support (support from others for the behaviour) and modelling (following observed behaviour of others). Attitudes concern the advantages and disadvantages of a particular behaviour (outcome expectations) and, when considered in relation to exercise maintenance can include how closely those outcome expectations are met. The central aspect of TPB is the individual’s intention to perform a given behaviour (Ajzen & Driver, 1992). Ajzen argues that intentions are indicators of how hard people are willing to try, or how much effort they are planning to exert in order to perform a behaviour. The stronger the intention is then the more likely that the action will take place (Figure 3.1) and the three elements of the TPB are important in influencing this intention (Ajzen & Driver, 1992). Intention has then been shown to directly influence adherence (Lucidi et al, 2006). Therefore the TPB can be used to assess attitudes in relation to both intention and adherence. It is a model which could be adapted for use with instructors, as instructors could be asked about their attitudes around older adults’ social influences, perceived behavioural control and the outcomes that they think they can achieve through attending a class.

There are other theories, which we have discussed earlier that could have helped us to understand the influences on older adults’ attitudes (Rhodes et al, 1999). However, the TPB was chosen as the predominant theory/model because it can be made applicable to both the instructor and the participant and intention and adherence to exercise. It is a model which reflects wider extrinsic influences on attitudes (e.g. the support of others) and is one of the most referenced evidence based models in the general exercise literature (Hagger et al, 2002) and when looking at older adults’ attitudes to exercise (Gravelle, 1997; Rhodes et al, 1999; Lucidi et al, 2006). It has also been used to predict older adults’ attitudes to strength and balance exercises (Brenes & Storandt, 1998; Yardley et al, 2006; Yardley et al, 2006a; Yardley et al, 2007), as well as towards general exercise classes for older adults (Lucidi et al, 2006).
This research does not only consider behaviour in relation to attitudes, it reflects a social model of health, and sees health in its broadest sense, a holistic concept considering physical, mental, and social well-being (World Health Organization, 1946). The social model of health identifies the health of individuals as dependent on a complex interaction between social, economic, environmental and personal factors (Dahlgren & Whitehead, 1991). The choice made by the individual to participate in exercise can be seen as important health behaviour. Based on this model of health and the TPB, Figure 3.2 outlines the potential interactions between individual factors, the instructors’ potential influence and group factors which could all influence the participant’s desired behaviour, exercise adherence. The complex interaction of factors on all levels is difficult to depict and this figure is designed only as a guide to illustrate potential relationships (Figure 3.2). All factors on an individual, group or instructor level could have the potential to impact on older adults’ participation and adherence to exercise classes and therefore their health. All of the factors on all three levels could also indirectly influence adherence through their influence on attitudes. There are also variables where the influence could be a two-way process, for example it could hypothesised that older adults’ adherence also has a positive interaction with their attitudes e.g. as they begin to experience positive outcomes (Figure 3.2). Using the Theory of Planned Behaviour this thesis explores variables related to the instructor and how these variables, alongside older adults’ individual variables and broader
extrinsic factors, could influence uptake and adherence (see Figure 3.2).

**Figure 3.2:** Figure depicting the theoretical model

In summary.

This chapter outlines the key theory and methodological approaches influencing the thesis. TPB is used throughout the research to consider both instructors and participants' attitudes. This is considered in relation to both intrinsic and wider extrinsic factors, which can directly or indirectly (through influence on attitudes) influence intention, uptake and adherence to an exercise class (Figure 3.2). Chapters 4 to 9 will present the three studies illustrating how each one builds on our understanding and knowledge of the role of the exercise instructor in older adults' uptake and adherence to exercise classes. The final chapter (Chapter 10) will consider the overall impact of the research and future implications for research, policy and practice.
Chapter 4: Study 1, U.K. survey of exercise instructors.

This chapter outlines the first study and establishes how this will build on existing evidence. Large sections of this chapter are taken from a published paper on the study (Hawley et al, 2011a).

The study adds to the evidence base by examining instructor characteristics and attitudes, and relates these to the types of classes they deliver. As demonstrated by the overview and systematic review there is a dearth of information in this area both specifically around exercise instructors, but also around their relationship with older adults and their role in uptake and adherence to classes. As there is a dearth of evidence on exercise instructors and what influences their attitudes and delivery to older adults, we started with an initial scoping exercise and surveyed instructors across the U.K who were qualified to deliver exercise to older adults. Data were collected about a large number of instructors who deliver in a variety of settings, establishing a broad picture of instructors and their classes. This was then used to inform the sampling framework for the further studies reported in this thesis, ensuring the recruitment of sufficient numbers of participants to those studies. It is intended that this work will inform practice by enabling us to identify successful qualities of an instructor.

4.1. Research Question.

Are attitudes of exercise instructors who work with older adults influenced by their training and personal characteristics?

4.2 Aims and Objectives

4.21 Aims:

- To establish a broad picture of exercise sessions delivered to older adults across the U.K

- To determine whether there are relationships between instructors' training, characteristics, type of class delivered and attitudes.
4.22 Objectives:

- To identify a sample of instructors and exercise participants for a future longitudinal cohort study looking at intention and uptake of exercise through to maintenance.

- To explore the relationships between instructor training, characteristics and type of classes delivered and instructors' attitudes.

4.3 Hypotheses

- Instructors who have undergone training courses with a company focusing specifically on older adults exercise are more likely to demonstrate attitudes which support older adults to exercise.

4.4 Methodology.

In specific relation to older adults, TPB has become increasingly used to predict intention to exercise. It has also been used to a lesser extent to predict maintenance of that exercise as already outlined in previous chapters. It has not previously been used to look at instructors' attitudes. This study adopts the TPB by asking questions based on the Attitudes to Falls-Related Interventions Scale (AFRIS) (Yardley and Todd, 2008) with instructions that have been made applicable to exercise instructors. This tool identifies the acceptability of different interventions (including exercise to prevent falls) and also aims to identify the different reasons why people reject an intervention. By asking the instructor about older adults’ participation in an exercise class and what outcomes, beliefs about social factors and perceptions they have about older adults’ abilities to participate we can start to create a picture of instructors’ attitudes. Little is known about instructors’ attitudes and how they promote their classes, even though this has the potential to influence class participants’ attitudes. It is clearly possible that if an instructor has (1) negative beliefs about an older adult’s ability to participate in classes, (2) does not believe that older adults can achieve positive outcomes through attending the class, (3) are not convinced of their own and other’s (e.g. family, friends and professionals) ability to encourage participation, then these beliefs are likely to negatively influence older adults’ attitudes.
One way that instructors gain knowledge that may influence their attitudes is through training. In the UK when this study was carried out, in order for an exercise instructor to deliver classes to older adults paid for by the National Health Service (NHS), the instructor normally needed to possess a nationally recognised qualification in exercise class provision at Level 3 or above (Register of Exercise Professionals (REPs, 2010)). This level of qualification permits an instructor to be described as an advanced instructor (REPs, 2009). Level 3 and above training enables instructors to deliver to people with a mix of complex, but stable, conditions and disabilities (e.g. Osteoporosis, Coronary Heart Disease). Level 3 and above qualifications can be obtained via a number of training schemes (REPs, 2010a). Exercise instructors may initially deliver general exercise or physical fitness training and complete Level 1 and 2 qualifications, before taking an older adult Level 3 qualification. There are also specialist older adult exercise training companies which offer the choice of only taking a Level 3 older adult qualification permitting instructors only to deliver to older adults. One specialist company, Later Life Training (LLT) allows participants to take a Level 4 older adults qualification, although if they have no previous exercise qualifications they are normally expected to have a clinical background e.g. physiotherapist.

In the UK, the specialist older adult exercise training companies and charities (LLT, 2010; EXTEND, 2010) include considerable information on motivation of older adults to exercise, whereas other training providers (e.g. YMCAfit, 2010) do not specifically cover this. It is therefore likely that some schemes foster more positive attitudes towards older adults than others. LLT’s and EXTEND’s sole focus is to provide specialist, exercise training for people working with vulnerable older populations or people with health problems or disabilities. The qualifications these companies provide can be obtained without any previous background in the leisure and fitness industry, whereas the majority of other training providers offer a range of qualifications for the leisure industry with the older adult courses only representing a small proportion of their training portfolio. Thus those who obtain qualifications from either EXTEND or LLT are likely to have different backgrounds and deliver in different settings to those who obtain qualifications from the other training providers. It would seem logical that these instructors are likely to have different attitudes to those who have received training from other sources.

Experience of instruction, professional background, where classes are offered, age and gender are characteristics likely to influence instructors’ attitudes. Although, there has
been little research in this area, qualitative research with older adults suggests these are important attributes of a leader (Estabrooks et al, 2004, Fox et al, 2007; Chiang et al, 2008). One recent study found that exercise leader experience related to adherence in older women (Seguin et al, 2010). The aim of the present study is to explore, using a UK wide survey design, the relationship between training, characteristics of the instructor and their attitudes towards older adults’ participation in exercise classes.

4.5 Recruitment and sampling.

This initial study adopted a whole population (complete enumeration) approach as one of its aims was to establish a U.K wide picture of delivery to older adults. To achieve this, we have tried to approach all instructors trained at a Level 3 and above to deliver exercise to older adults across the U.K. Participants were recruited between March and July 2009. The inclusion criteria for this study was any instructor who has a Level 3 qualification or above to deliver to older adults. This study excluded instructors who did not have this qualification and that included instructors with only Level 1 or 2 qualifications, those with a level four older adults qualification were eligible to take part.

Instructors with a Level 3 or above older adults’ qualification were approached through three different organisations to ensure a wide representation of instructors. The Register of Exercise Professionals (REPs) is the regulatory body for exercise professionals in the UK and it was arranged they would contact everyone on the national register with a Level 3 or above older adults qualification (REPs, 2010). Whilst feedback from both REPs and training providers indicates the majority of instructors register with REPs as a way to ensure they can independently demonstrate that fitness professionals are competent and qualified to do their job, this is at present not mandatory. Therefore instructors were also approached through the two main organisations who provide older adults qualifications, EXTEND and LLT. These are also the two organisations where REPs insurance is not required for delivery. REPS had 2918 registered instructors who had a Level 3 older adults qualification, which included eight different categories of qualification (Appendix 3).

Some of LLT and EXTEND instructors are registered with REPs and some are not. EXTEND had 1,700 instructors who were trained to provide recreational movement to music for men and women over-sixty and less able people of all ages. Only just under a third of EXTEND instructors (497) were registered with REPs, therefore this approach has
enabled us to reach the other 1,203 instructors who were not registered. LTT is a training provider who runs specialist courses in exercise for the prevention of falls and injuries in frailer older people. They have two particular courses whose instructors are eligible to take part in this study (Appendix 3 and 4) and are a major provider of Level 3 older adult qualifications. These courses are Exercise for the Prevention of Falls and Injuries in Frailer Older People (PSI) with 1,027 trained instructors (only 128 registered with REPs) and Otago Exercise Leaders Award with 331 trained instructors (none of which are registered with REPs).

This study has also recruited participants (included within the REPs numbers) through word of mouth and through organisations who have seen the information sent out through REPs and then promoted it with their own instructors (for example, the Exercise, Dance and Movement Partnership which includes qualifications such as Keep Fit Association, Laban and Medau, Appendix 4).

At the time of the survey we estimated that there were 3000-3,500 older adult instructors with a valid Level 3 qualification in the UK (due to instructors having more than one qualification). This calculation was based on the number of instructors who were trained, reported by both REPs and the training companies (N=5351, Appendix 3). We then used the percentage of instructors in our sample with two or more qualifications to calculate an estimated number of participants who may have two or more qualifications in the wider population and subtracted this from the figure we had been provided with. A sample size calculation was not undertaken, as this survey attempted to contact the entire eligible population of Level 3 instructors.

4.6 Methods

To collect the data required to provide a national overview of exercise sessions for older adults, a survey was used. The survey was distributed using an internet based questionnaire and through a postal questionnaire. If the questionnaire was completed online or completed and returned via post this was taken as implicit consent to take part in the study. Both questionnaires were identical in content, giving participants the opportunity to express their interest in being involved in the larger study. Full participation information was made available via a participant information sheet and a covering letter (see link bottom of Appendix 5). So to ensure as accurate response as
possible and to test the usability of the questionnaire, the questionnaire underwent a pre-test before commencing data collection. The questionnaire was reviewed by several colleagues who have knowledge of the field, to ensure the survey design maximised response rates (Fowler, 1993).

4.61 Distribution of the internet survey.

4.611 REPs.

REPs sent out information to exercise instructors via their ‘Enzine’ which is a fortnightly online magazine. The article in the Enzine discussed the importance of exercise for older adults and the role that the instructor plays (Appendix 5). The article included a link to a webpage on the study, which is on the University of Manchester website; this provided further information and the link to the online survey (Appendix 5). It had been agreed with REPs that the article could only be sent out in this format as they did not deem it suitable for us to use this medium to directly invite participation. For data protection reasons we were not allowed to access the instructor’s addresses to send out the information directly. This was the only medium offered by REPs for the recruitment of potential participants. Although we have had some response rates through REPs, it has been more useful in that it has encouraged other organisations to send out the information to their instructors.

4.612 EXTEND and Later Life Training (LLT).

EXTEND and LLT have sent out group emails to all instructors on their database trained to a level three and above. This asked instructors if they would like to take part in the study and provided a link to the study webpage on the University website.

The internet survey was chosen as the most pragmatic way to reach the majority of exercise instructors. It has enabled us to collect information from a wider group of instructors and has engaged more training providers than a full postal questionnaire as it has fewer resource implications. Online methods have also been used effectively in previous studies as a feasible way of collecting data from large numbers of participants (Reips, 2002). We had a good response rate by using this method and it enabled us to reach instructors that we would have been unable to reach if we had just used postal questionnaires.
4.62 Distribution of the postal survey

The postal survey was used to reach participants who had the EXTEND Level 3 qualification who did not have access to the internet, it was also available by request for others who did not wish to complete the survey online. Through discussion with EXTEND it was established that EXTEND instructors tend to be older and this is the organisation’s preferred method of contact with their instructors. EXTEND distributed the questionnaire from their head office to ensure data confidentiality. A pre-paid envelope was provided to enable the participant to return it without incurring any personal expenses.

4.63 Follow-up.

Because additional training providers chose to circulate the information (these respondents would come under the REPs instructors figures), we decided that little could be gained from sending out formal reminders. The original intention was for REPs to send out another article in their Enzine to act as a reminder. However, due to a change in management this was not possible. Some training providers independently chose to encourage their instructors to engage with the research over the three months data collection period. Paper questionnaires and handouts which included the website address were also made available at EXTEND Continued Professional Development (CPD) days by EXTEND Course Directors.

4.64 Questionnaire Design

Section one of the questionnaire collected demographic data and information on the instructor’s background, experience and qualifications (Appendix 6) to establish the characteristics of instructors trained at a Level 3 or above. Section two included filter questions to establish whether the instructors were currently delivering classes, if they were not, it established their reasons for this. If they were not currently delivering classes then they had completed the questionnaire and we required no further information from them.

The rest of the questionnaire collected information about delivery of classes. Section three asked the instructors about the classes that they deliver in order to establish whether they
delivered ‘mostly seated’ or ‘mostly standing’ classes, or both. This was so that respondents only had to fill in one of the two following sections if they deliver only one type of class. Questions asked about exercises classes and instructor’s attitudes were split into two separate sets, one for ‘mostly seated’ classes and ones for ‘mostly standing’ classes. This permitted investigation of the types of classes delivered and whether training and instructor characteristics influenced attitudes differently depending on the type of class. Some instructor training companies (e.g. EXTEND) expect instructors to deliver classes with a seated element. Other companies teach instructors to deliver more traditional standing aerobics (e.g. YMCA) or dance. Therefore, someone with a YMCA qualification is unlikely to deliver mostly seated classes and someone with only an EXTEND qualification will deliver mostly seated classes. Some instructors have received more than one type of training and therefore may deliver both types of classes. As a result instructors may have differing attitudes with regards to older adults’ participation, related to the type of class they deliver and the clientele they attract. It is important to note that the type of people attending different classes may not be determined by age but by the conditions the person has. Mostly seated classes are aimed at a less active audience, who are more likely to have a range of health problems than those attending mostly standing classes. “Mostly standing classes” were defined as those which were fully standing or ≤25% of the time seated. Classes >25% seated were classed as “mostly seated”. The split between mostly seated and mostly standing was agreed through discussion with those with experience in this field and because the different training qualifications lead to instructors delivering different kinds of class.

Sections four (‘mostly seated’) and five (‘mostly standing’) of the questionnaire (Appendix 6) collected information on factors which are known to affect intention and maintenance of exercise for older adults such as class venue, transport and cost. It also asked questions about instructor’s attitudes regarding the participation of older adults in their exercise classes. For attitudes, an amended version of the 6-item TPB based Attitudes to Falls-Related Interventions Scale (AFRIS) (Yardley & Todd, 2008) was administered. The original AFRIS was written to establish older adults’ attitudes and beliefs about an intervention. As we were using the AFRIS to ask instructors about their attitudes about older adults’ participation in classes, the scale anchors were changed and additional questions were added based on work carried out by Yardley et al (Todd et al, 2009). In the original AFRIS there was an identity question and a question about intention. Both of these questions were not adopted for the amended AFRIS as the identity question was not
related to the TPB and therefore did not fit with the exploration of the three individual concepts within TPB. Intention was removed as we were not looking at instructors’ intention to carry out behaviour. Our modified AFRIS comprised 13 items. Following discussions with exercise professionals, 6-point Likert type scales (strongly agree to strongly disagree) were used to force respondents to express an opinion. Comments boxes were provided to permit participants to articulate issues about answering questions. It was felt more appropriate to give comments boxes that gave participants the opportunity to articulate any issues with answering questions rather than to provide a middle option which could lead to misleading data.

Additional questions were asked as part of the social influences scale to reflect current evidence about the instructors’ influence (Estabrooks et al, 2004; Fox et al, 2007; Chiang et al, 2008), and to ascertain whether instructors believed their support made a difference during classes and outside of the class. Rather than providing an overall attitude score as the original AFRIS score does, this amended tool was divided into separate scales for the different constructs to permit understanding of instructors’ attitudes. This was deemed important due to the exploratory nature of this first study. From the study data, the whole attitude scale has a Cronbach’s $\alpha=0.79$ for responses for those delivering mostly seated classes and $\alpha=0.81$ for mostly standing classes, indicating good internal reliability for the attitude scales (Cronbach, 1951).

Instructors’ attribution of older persons’ PBC (attributed PBC) was measured using a single question in each section, investigating whether the instructor thought “an older adult would find it easy to participate in a mostly seated/mostly standing exercise class”. Social influence was measured using three questions which asked the instructors whether they thought that “encouragement from other people (friends, family and health professionals) whose opinions matter, makes a difference to older adult’s participation in a mostly seated/mostly standing exercise class”. Another question asked the instructor whether they felt “the support that is given to participants by an instructor during a mostly seated/mostly standing class can make a difference”. The social influences subscale had $\alpha=0.58$ for ‘mostly-seated’ and $\alpha=0.55$ for ‘mostly standing’. Although this is perhaps low, it is acceptable as the scale measures slightly different concepts, social norms (influence of opinions of others) and social support. Finally, beliefs about perceived positive/negative outcomes were measured using nine questions including items such as “attending a mostly seated/standing exercise class would be good for an older adult” and “doing a mostly
seated/standing exercise class could cause an older adult to harm themselves”. The beliefs about perceived outcomes subscale had $\alpha=0.74$ for ‘mostly seated’ and $\alpha=0.79$ for ‘mostly standing’. The overall outcome measure was a positive attitude score for each aspect of the TPB. The final section asks the participants if they are interested in further participation and asks them to leave their contact details if they answer positively.

4.7 Ethical Considerations.

The population included in this study are not classed as a vulnerable group. The risks involved in participation in surveys are quite minimal and well under the control of the respondent (Fowler, 1993: 133). Some instructors did not wish to give personal information (even though they were unidentifiable) such as date of birth and therefore chose to leave that response blank.

There was the potential for some risk using an online survey. However, participants who complete the questionnaire were not identifiable unless they ask to receive further information about the larger study. Participant information completed online was encrypted and password protected so that only the lead researcher could access it. Instructors may have had concerns that they would be compared unfavourably with other instructors. However, only non-identifiable information will be shared with training providers and this was made clear in the participant information sheet.

As some of the instructors registered with EXTEND and LLT were also affiliated to REPs, they may have received the information twice. However, the impact of this was minimised through the approach taken by REPs. The article in the Enzine did not directly invite participation in the study as direct advertisement would. No direct follow-up information was sent out by the researcher or requested to be sent out through training providers, if individual training providers chose to send reminder emails that was their individual decision.

This study was with healthy members of the public and no patients were recruited (participants may be NHS staff but they were not be recruited as such). Therefore only ethical approval from the University of Manchester Committee on the Ethics of Research on Human Beings was sought and granted (Appendix 7).
4.8 Analysis

Data were analysed using SPSS Release 15.0 (SPSS Inc, 2006) for descriptives, bivariate analysis and multiple regression analysis. Instructor age, gender, working background, training (including additional motivational training), place of delivery and experience (months of delivery) were considered to be theoretically important in a model to predict instructors’ attitudes. Ethnicity was excluded from the model as 90.3% (660/731) reported that they were white British. The remaining participants were from a range of different ethnic backgrounds, and were too few to permit meaningful analysis. The categories for instructor training were collapsed to permit meaningful analysis. As the hypothesis states that instructors with qualifications from older adults only exercise training companies would have more positive attitudes, those with either EXTEND or LLT and ‘other L3’ were categorised as either EXTEND or LTT only as this was deemed to be the more influential qualification. Those with YMCA did not have any of the 'other L3' qualifications. When the categories were collapsed in this way only EXTEND, LLT and YMCA had sufficient numbers to permit meaningful analysis and therefore all others were collapsed into ‘other L3’. All qualifications in the ‘other L3’ category had similar characteristics as they had undertaken a variety of other older adult qualifications awarded by training companies who provided a range of exercise qualifications (not just involving older adults).

Multiple regression was used to determine which variables predict each of the three attitude measures (total scores for attributed PBC, social influences and beliefs about perceived outcomes) for instructors delivering mostly seated and those delivering mostly standing classes. Predictors were initially considered for multiple regression modelling if they showed an individual association with an outcome at a conservative level of significance (p≤0.25) (Hosmer & Lemeshow, 2000). Thus variables which could be important were not removed from the regression too early. Those variables selected were then entered into exploratory regression models with backward selection used to remove variables one at a time. Backward selection is less likely to avoid excluding variables involved in suppressor effects and has a lower risk of missing good predictors (Field, 2009). The underlying assumptions of the final regression models were assessed and found to be broadly satisfactory. There was evidence of heterogeneity of variance in two of the six models (‘mostly seated’ social influences and ‘mostly standing’ perceived outcomes); the pattern of results was not affected after transformation, so untransformed
results are presented for ease of comparison. This chapter establishes the rationale and methods used for this first study. Combinations of postal and online questionnaires were used to establish instructors’ training, characteristics and attitudes. Multiple regression was chosen to explore the relationships between these factors. The next chapter reports the results of this first study and the implication of these results for the rest of the thesis.
Chapter 5: Study 1, Results and discussion.

5.1 Participants.

A total of 776 instructors returned questionnaires, but 45 were excluded as the instructors did not report having a UK Level three older adults qualification. Of the 731 eligible participants, 200 completed paper questionnaires and 531 participated online (Figure 5.1). In recruiting 731 participants, we estimate that approximately a quarter of instructors trained and a third of instructors actively delivering with Level 3 qualification participated. Due to research governance rules, it was not possible to calculate a response rate or collect data on those who did not respond. Most participants were women (N=668, 91%); were of white British ethnicity (N=660, 90.3%) and had a mean age of 51.5 (SD 13.2) years, with ages ranging from 20 to 94. A total of 635 (88%) were currently delivering a total of 2944 (Median 3.0, Range 0 to 701) classes which included participants over the age of 60. Most had undergone LLT, EXTEND training or YMCA training (Table 5.1). Others had undertaken a variety of other older adult qualifications awarded by training companies who provided a range of exercise qualifications (not just involving older adults). The instructors’ background, experience, ethnicity and type of class delivered are reported in Table 5.2 as well as the final training categories used for analysis. The majority of instructors had generally positive attitudes (Table 5.2).

There were significant differences in ages between those who completed the questionnaire on paper and those who completed it online (Mean (M) 61.1 v Mean (M) 47.8, t=14.42, df= 414.35, p<0.001). There were also significant differences in experience between paper and online completion for both mostly seated (M 54.8 v M 68.8, Z=-3.08, p=0.002) and mostly standing classes (M 143.3 v M 99.6, Z=-1.94, p=0.053). Paper questionnaires were only sent routinely to EXTEND instructors (who were expected to be older than other instructors). The only significant difference found in attitudes between those who completed the questionnaire online and those who completed it on paper was for attributed PBC for those who delivered mostly standing classes (M 4.2 v M 4.7 t=2.77, df=262, p=0.006), with those who completed paper questionnaires having higher attributed PBC scores. However, this is likely to be due to factors such as age and experience of the instructor (as reflected in the regression models below).

1 Instructors who also managed other instructors sometimes stated the number of classes delivered by their team and not just their own classes.
To test the hypothesis that there are differences in attitudes between those who delivered mostly seated and those who delivered mostly standing classes we tested for differences between those who delivered mostly seated only and those who delivered mostly standing classes only and found that there were significant differences for attributed PBC (mostly seated mean=5.1 vs mostly standing mean=4.2, t=-8.87, df=394, p<0.001). We also tested within-group differences for those who delivered and answered both sets of attitudes questions: there were statistically significant differences for attributed PBC (mostly seated mean= 4.9 vs mostly standing mean= 4.3, t=5.43, df=116, p<0.001) and beliefs about perceived outcomes (M 42.4 v M 44.1, t= 3.28, df=117, p=0.001).

**Figure 5.1:** Instructor recruitment

![Instructor recruitment diagram]

**Table 5.1:** Number of participants with each individual training qualification

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Numbers with this qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTEND (REPs L3)</td>
<td>369</td>
</tr>
<tr>
<td>Later Life Training (LLT- REPs L4 PSI)</td>
<td>230</td>
</tr>
<tr>
<td>Northern Fitness (REPs L3 Older Adult)</td>
<td>5</td>
</tr>
<tr>
<td>YMCA/ YFIT (REPs L3 Older Adult)</td>
<td>63</td>
</tr>
<tr>
<td>KFA (REPs L3)</td>
<td>61</td>
</tr>
<tr>
<td>Later Life Training Otago Exercise Programme Leader (REPs L3 CPD)</td>
<td>58</td>
</tr>
<tr>
<td>Fitness League (REPs L3)</td>
<td>20</td>
</tr>
<tr>
<td>Laban (REPs L3)</td>
<td>3</td>
</tr>
<tr>
<td>Margaret Morris (REPs L3)</td>
<td>2</td>
</tr>
<tr>
<td>Medau (REPs L3)</td>
<td>8</td>
</tr>
<tr>
<td>Other</td>
<td>121</td>
</tr>
</tbody>
</table>
### Table 5.2- Characteristics of participating instructors of older adults

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<tr>
<th>Characteristic</th>
<th>N (%)</th>
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</thead>
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<tr>
<td>Age</td>
<td>51.5 (SD 13.2)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>63 (9%)</td>
</tr>
<tr>
<td>Female</td>
<td>668 (91%)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>White British</td>
<td>660 (90%)</td>
</tr>
<tr>
<td>Other</td>
<td>71 (10%)</td>
</tr>
<tr>
<td>Background</td>
<td></td>
</tr>
<tr>
<td>Fitness and sports</td>
<td>301 (41%)</td>
</tr>
<tr>
<td>National Health Service clinical</td>
<td>197 (27%)</td>
</tr>
<tr>
<td>Social care</td>
<td>64 (9%)</td>
</tr>
<tr>
<td>Community/voluntary</td>
<td>61 (8%)</td>
</tr>
<tr>
<td>Education</td>
<td>27 (4%)</td>
</tr>
<tr>
<td>Other</td>
<td>64 (9%)</td>
</tr>
<tr>
<td>Missing</td>
<td>17 (2%)</td>
</tr>
<tr>
<td>Training</td>
<td></td>
</tr>
<tr>
<td>YMCA only</td>
<td>40 (6%)</td>
</tr>
<tr>
<td>EXTEND only</td>
<td>333 (46%)</td>
</tr>
<tr>
<td>Later Life Training (LLT) only</td>
<td>229 (31%)</td>
</tr>
<tr>
<td>LLT and EXTEND</td>
<td>36 (5%)</td>
</tr>
<tr>
<td>LLT and YMCA</td>
<td>23 (3%)</td>
</tr>
<tr>
<td>Other Level 3 Older Adults</td>
<td>70 (10%)</td>
</tr>
<tr>
<td>Type of exercise class delivered</td>
<td></td>
</tr>
<tr>
<td>Not delivering</td>
<td>96 (13%)</td>
</tr>
<tr>
<td>Mostly seated</td>
<td>378 (52%)</td>
</tr>
<tr>
<td>Mostly standing</td>
<td>269 (37%)</td>
</tr>
<tr>
<td>Both</td>
<td>121 (17%)</td>
</tr>
<tr>
<td>Missing</td>
<td>109 (15%)</td>
</tr>
<tr>
<td>AFRIS- Mostly Seated</td>
<td></td>
</tr>
<tr>
<td>Attributed PBC</td>
<td>5.1 (0.9)</td>
</tr>
<tr>
<td>Social Influences</td>
<td>16 (1.6)</td>
</tr>
<tr>
<td>Beliefs about perceived outcomes</td>
<td>43.3 (5.1)</td>
</tr>
<tr>
<td>AFRIS- Mostly Standing</td>
<td></td>
</tr>
<tr>
<td>Attributed PBC</td>
<td>4.3 (1.0)</td>
</tr>
<tr>
<td>Social Influences</td>
<td>15.9 (1.6)</td>
</tr>
<tr>
<td>Beliefs about perceived outcomes</td>
<td>44.2 (5.2)</td>
</tr>
</tbody>
</table>

2 Total number of instructors who provided data on delivery of mostly seated classes (including those who deliver both).

3 As above for mostly standing classes.

4 Those who said they delivered classes but did not complete information about classes.
5.2 Results

5.21 Mostly seated classes

For mostly seated classes, backwards regression reveals that instructors who have undertaken EXTEND training have significantly higher (more positive) attitude scores than those who have not undertaken EXTEND training for attributed PBC (p=0.005) (Table 5.3). Compared to those delivering in other settings, instructors who deliver classes in NHS settings (p=0.038) have significantly lower scores, and those who deliver in nursing homes have almost significantly (p=0.055) lower scores for attributed PBC (Table 5.3). Instructors who deliver in NHS settings (p=0.005) also have significantly lower social influences scores than those delivering in other settings.

Instructors who came from ‘other’ backgrounds (including administrative, management and health promotion) have more positive beliefs about perceived outcomes than those from community/voluntary, education, social care or NHS clinical backgrounds (p=0.017). Women have more negative beliefs about perceived outcomes than men (p=0.026), as do those with LLT training compared with those without LLT training (p=0.003).

Compared to those delivering in other venues, instructors who deliver in NHS settings (p<0.001), leisure centres, gyms (p=0.002) or nursing homes (p=0.005) have more negative beliefs about perceived outcomes.

Overall, however, the p-values should be interpreted with caution as backwards selection of variables is exploratory and the sample size large. The amounts of variance explained by the three multiple regression models are: Adjusted $R^2=0.06$ for attributed PBC, Adjusted $R^2=0.03$ for social influences and Adjusted $R^2=0.16$ for beliefs about perceived outcomes. When interpreting $R^2$ for regression one should consider 0.02 as small, 0.13 as medium and 0.26 as a large effect size (Cohen, 1992).

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5 All significant variables in the final model are highlighted in the tables in bold.
Table 5.3. Association with outcomes for ‘mostly seated’ classes using simple regression and multiple regression with backwards selection

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<tbody>
<tr>
<td><strong>Attributed Perceived Behavioural Control</strong></td>
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<td>Community/Voluntary</td>
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<td>-0.16</td>
<td>1.15*</td>
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<td>Education</td>
<td>-0.11</td>
<td>-0.05</td>
<td>1.29</td>
<td></td>
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</tr>
<tr>
<td>Social Care</td>
<td>0.32*</td>
<td>0.09</td>
<td>0.31</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>NHS Clinical</td>
<td>-0.05</td>
<td>-0.29*</td>
<td>-1.71**</td>
<td></td>
<td></td>
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<tr>
<td>Other</td>
<td>0.03</td>
<td>0.18</td>
<td>1.75* 2.12* 0.38 to 3.85</td>
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<tr>
<td>Female</td>
<td>-0.13</td>
<td>-0.60*</td>
<td>-1.72 -2.22* -4.18 to -0.27</td>
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<td>Motivational training</td>
<td>0.22*</td>
<td>0.20 -0.02 to 0.41 0.31* 1.25*</td>
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<td>Age</td>
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<td>0.01*</td>
<td>0.08***</td>
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<td><strong>Social influences</strong></td>
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<tr>
<td>YMCA</td>
<td>0.19</td>
<td>0.30</td>
<td>0.52</td>
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</tr>
<tr>
<td>EXTEND</td>
<td>0.36***</td>
<td>0.31**  0.09 to 0.53 0.33* 2.53***</td>
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<tr>
<td>LLT</td>
<td>-0.31**</td>
<td>-0.22*</td>
<td>-2.80*** -1.86** -3.09 to -0.63</td>
<td></td>
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<td><strong>Place of delivery</strong></td>
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<td></td>
</tr>
<tr>
<td>Leisure Centre/Gym</td>
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<td>-0.25</td>
<td>-2.75** -3.32** -5.41 to -1.24</td>
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<td></td>
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</tr>
<tr>
<td>Community</td>
<td>0.22*</td>
<td>0.32*</td>
<td>1.27*</td>
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<td>0.19</td>
<td>1.25* 1.10 -0.03 to 2.23</td>
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<td>-0.29 -0.59 to 0.01 0.27</td>
<td>-1.14* -2.29** -3.89 to -0.69</td>
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<td>EMI</td>
<td>-0.09</td>
<td>-0.11</td>
<td>-0.11</td>
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<tr>
<td>NHS</td>
<td>-0.44**</td>
<td>-0.33* -0.65 to -0.02 -0.75** -0.75** -1.26 to -0.23 -3.99*** -3.12*** -4.86 to -1.38</td>
<td></td>
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<tr>
<td>Day centre</td>
<td>0.32*</td>
<td>0.52*</td>
<td>2.37*</td>
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<td></td>
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<tr>
<td>How long delivering</td>
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<td>0.09*</td>
<td>0.47* 0.47 -0.02 to 0.97</td>
<td></td>
<td></td>
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</tbody>
</table>

6 EMI-Elderly and Mentally Infirm, normally those with a diagnosis of dementia.

7 NHS- National Health Service in the United Kingdom
<table>
<thead>
<tr>
<th>(log months)</th>
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<tbody>
<tr>
<td>Online</td>
<td>-0.09</td>
<td>-0.07</td>
<td>-0.94*</td>
</tr>
</tbody>
</table>

+ p≤0.25, * p≤0.05, ** p≤0.01, *** p≤0.001

1 N=323; R²=0.07, Adjusted R²=0.06; F=5.82, df=4,318, p<0.001

2 N=325; R²=0.02, Adjusted R²=0.02; F=8.07, df=11,323, p=0.005

3 N=314; R²=0.18, Adjusted R²=0.16; F=8.43, df=8,305, p<0.001

NB. N differs dependent on whether instructors completed the attitudes section and also due to missing data (some instructors did not complete all the questions in each subscale).
5.22 Mostly standing classes

For mostly standing classes\(^8\), (Table 5.4) instructors’ experience (based on months delivered) (p=0.003) is significantly related to a more positive attributed PBC score, whereas having undertaken LLT (p=0.001) or YMCA (p=0.037) training is related to a more negative attributed PBC than those who have undertaken neither. Undertaking LLT training (p<0.001) and delivering in a leisure centre or gym (p=0.032) has a positive effect on social influences compared to other locations of delivery (Table 5.4). Those from an NHS clinical background have more negative beliefs about perceived outcomes than those from other backgrounds (p=0.018). The amounts of variance explained are: Adjusted R\(^2\)=0.10 for attributed PBC, Adjusted R\(^2\)=0.01 for social influences and Adjusted R\(^2\)=0.04 for beliefs about perceived outcomes.

\(^8\) All significant variables in the final model are highlighted in the tables in bold.
Table 5.4. Association with outcomes for ‘mostly standing’ classes using simple regression and multiple regression with backwards selection

<table>
<thead>
<tr>
<th>Variable</th>
<th>Attributed Perceived Behavioural Control</th>
<th>Social influences</th>
<th>Beliefs about perceived outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Background</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community/Voluntary</td>
<td>0.20</td>
<td>-0.78*</td>
<td>-0.34</td>
</tr>
<tr>
<td>Education</td>
<td>0.48</td>
<td>-1.33*</td>
<td>0.09</td>
</tr>
<tr>
<td>Social Care</td>
<td>0.10</td>
<td>-0.25</td>
<td>0.99</td>
</tr>
<tr>
<td>NHS Clinical</td>
<td>-0.35*</td>
<td>-0.29</td>
<td>-1.78*</td>
</tr>
<tr>
<td>Other</td>
<td>0.21</td>
<td>-0.09</td>
<td>1.56†</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>0.42†</td>
<td>-0.11</td>
<td>-0.30</td>
</tr>
<tr>
<td>Motivational training</td>
<td>0.21†</td>
<td>0.31†</td>
<td>0.77</td>
</tr>
<tr>
<td>Age</td>
<td>0.02***</td>
<td>-0.02*</td>
<td>0.04†</td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YMCA</td>
<td>-0.21*</td>
<td>-0.35*</td>
<td>-0.67 to -0.02</td>
</tr>
<tr>
<td>EXTEND</td>
<td>0.25†</td>
<td>-0.45*</td>
<td>0.27</td>
</tr>
<tr>
<td>LLT</td>
<td>-0.48***</td>
<td>-0.43***</td>
<td>-0.69 to -0.18</td>
</tr>
<tr>
<td><strong>Place of delivery</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leisure Centre/Gym</td>
<td>-0.14</td>
<td>0.48*</td>
<td>0.46*</td>
</tr>
<tr>
<td>Community</td>
<td>0.31*</td>
<td>-0.45*</td>
<td>0.58</td>
</tr>
<tr>
<td>Sheltered Housing</td>
<td>0.16</td>
<td>0.16</td>
<td>1.72†</td>
</tr>
<tr>
<td>Residential Home</td>
<td>0.63†</td>
<td>0.68</td>
<td>0.06 to 1.42</td>
</tr>
<tr>
<td>NHS</td>
<td>-0.54***</td>
<td>0.46*</td>
<td>-1.55*</td>
</tr>
<tr>
<td>Other</td>
<td>0.04</td>
<td>0.56*</td>
<td>-0.56</td>
</tr>
<tr>
<td>How long delivering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(log months)</td>
<td><strong>0.20</strong>*</td>
<td><strong>0.19</strong></td>
<td><strong>0.06 to 0.31</strong></td>
</tr>
<tr>
<td>Online</td>
<td>-0.48**</td>
<td>0.37*</td>
<td>-0.50</td>
</tr>
</tbody>
</table>

+ p≤0.25, * p≤0.05, ** p≤0.01, *** p≤0.001

1 N=249; R²=0.11, Adjusted R²=0.10; F=7.69, df=4,244, p<0.001
2 N=252; R²=0.01, Adjusted R²=0.01; F=4.46, df=2,249, p<0.001
3 N=249; R²=0.04, Adjusted R²=0.03; F=5.33, df=2,246, p=0.005

N.B Comm/voluntary, Education and Residential home were excluded from results as n<less than 20.
5.3 Discussion

This study looks at whether training and characteristics of instructors influence their attitudes towards older adults’ participation in classes. A UK national survey has been used to establish broad representation of instructors. The majority of instructors score the attitude questions indicating positive beliefs about older adults’ participation in exercise classes. Due to the number of explanatory variables, the regression analyses should be considered exploratory (i.e. hypothesis-generating rather than hypothesis-demonstrating).

Very few quantitative studies have been conducted that have specifically looked at the role of the instructor. Seguin et al (2010) found that the experience of the instructor is related to adherence levels to the class. We find that instructors who deliver mostly standing classes and who have been delivering classes for longer, have more positive attitudes, which possibly explains the increased adherence levels found by Seguin et al (2010).

Instructors who express beliefs that older adults can participate in exercise classes, will achieve positive outcomes through attending and also who think that they and others have a role to play in encouraging older adults’ to participate in classes’ could have the potential to influence older adults’ attitudes’. These factors are from the TPB and have been identified in previous research (Lucidi et al, 2006; Yardley et al, 2006; Yardley et al, 2007) as influencing both older adults’ intention and maintenance of exercise. Those who deliver mostly seated classes and have undertaken EXTEND training demonstrate some of these positive attitudes. One might hypothesise that instructor’s positive attitudes about older adults’ abilities to participate, as well as instructors’ understanding of their own potential influence, are the underlying factors explaining levels of older adults attendance and adherence found previously (Estabrooks et al, 2004; Fox et al, 2007; Chiang et al, 2008). This is supported by qualitative comments in the open comments section of the questionnaire. For example, one instructor wrote that an important attribute was “being sensitive to their limitations and an awareness that they are really trying hard and should be praised accordingly”. EXTEND instructors are trained to adapt to participants’ limitations and to believe that all older adults, even ones with limitations, can participate.

Qualitative studies reveal that health professionals influence older adults’ attitudes to exercise (Hawley, 2009; Horne et al, 2009). The present study finds that for instructor’s who deliver mostly standing classes an NHS clinical background has a negative effect on
beliefs about outcomes which older adults could achieve. Delivering in an NHS setting also has a negative effect on attributed PBC, social influences and beliefs about outcomes for those who delivered mostly seated classes. Delivery in (NHS) rehabilitation settings imposes limitations on the effect of exercise, as the usual length of NHS funded classes is 6-8 weeks. Clinicians may have more positive and supportive attitudes about older adults’ participation in exercise classes delivered in the community and also home exercise as these are delivered for longer and in a person’s own environment. This is not reflected here but has been found in older adults qualitative accounts of the support that they receive from their health professional (Hawley, 2009; Horne et al 2009) to exercise at home and in the community.

Instructors who have undertaken LLT training and those who deliver in gym/leisure centre settings have less positive views about ‘mostly seated’ classes. It is possible that this is because their participants are either more active older adults, whom do not require a mostly seated class (gym/leisure centre) or because there is a focus on improving balance which requires participants to stand (LLT). For example, one instructor who was LLT trained wrote, “I think mostly seated exercise groups are good to introduce patients into exercise but for real balance and independence gains progression to mostly standing is required”. However, this requires further exploration. There are also differences in attitudes depending on the setting (e.g. care homes, sheltered housing) and the gender of the instructor, which also require further exploration.

Future qualitative work is required to explore instructors’ attitudes and beliefs and what other factors influence these. Future quantitative studies are required to further understand how instructors’ attitudes may influence participants. This present study is exploratory so it is difficult to make firm recommendations. However, we have established that instructors with more experience are more likely to have positive attitudes towards older people’s participation. Previous research reveals that previous experience relates to adherence. Therefore, we suggest that when new classes are started (before behaviour is established) the use of an experienced instructor may help promote adherence levels of older adults. Training which enables instructors to have positive attitudes about the support and motivation they provide to older adults may also enhance older adults’ experience of exercise classes.
5.31 Limitations

There are several limitations to the study. Instructors’ attitudes have not previously been examined and therefore this survey was exploratory. Participants may have self selected into the survey as due to the nature of the data collection and restrictions imposed by research governance we were unable to target non-responders for follow up. Therefore, it is possible that only the most enthusiastic instructors responded which may introduce bias. However, there were responses from instructors who were not currently delivering, which suggests we actually accessed the population quite widely. Although the attitude questions were based on an existing tool, this had only previously been used with older adults and had to be adapted for use with instructors. Instructors said they found it difficult to generalise, as evidenced by the comments to the open questions and further investigation is required, using qualitative methods.

To enable meaningful analysis the instructors training category had to be collapsed. Although, this was done to reflect theoretical understanding of the issues, there could be subtle differences between qualifications which were lost when qualifications were combined. Qualitative methods will permit these to be explored in the next phase of the study.

Due to how we defined “mostly seated” and “mostly standing” classes, the mostly seated definition was quite broad and could create within category variance. This definition captures classes where participants are seated for 50% or even 100% of the time. However, this was chosen because of differences observed between classes where participants were only seated for 25% of the time (often only for the strength exercises) and classes where participants were seated for longer. Our study design does not permit us to establish whether the differences in instructor’s attitudes between mostly seated and mostly standing classes reflect the training they have undertaken, abilities of participants who attend their classes, a combination of both, or other potentially causal factors. Some instructors have more than one type of qualification and deliver both types of classes, with differing attitudes to mostly seated and mostly standing classes.

It is possible that LLT and YMCA training were negatively associated with attributed PBC for ‘mostly standing’ classes because of the wording of the PBC question. This asked whether an older adult would find it easy to participate. Those who have attended either of
these training programmes are unlikely to perceive these classes as easy, as they are
designed for quite active older adults (YMCA) and to challenge participant’s strength and
balance (LLT). This needs to be further explored.

Finally, small-to-medium values of adjusted $R^2$ suggested that most of the variance of the
dependent variables was left unexplained and therefore other factors which might influence
instructors’ attitudes, such as personality need to be considered.

5.4 Recommendations and Conclusion

In overview this study shows that there are important relationships between background
variables such as experience, training received by instructors (and thus the sort of exercise
class provided) and attitudes. Further research is required to fully understanding how
attitudes of instructors are formed and how they can be influenced. At this stage, based on
experience within this field we have some rationale for the results, but we cannot support
this with evidence from the literature. Further qualitative research is required to explore
the findings from this study and to understand the context in which instructors attitudes are
influenced. The regression models fitted in this study only explain small amounts of
variance and other factors such as personality may be more influential, the following study
enables us to explore other factors which may influence instructors. The following two
chapters have been informed by the findings from this study and the next study has been
designed to enable further understanding of instructors’ experiences and influences.
Informed by the systematic review it also enables us to explore instructors’ experiences
and beliefs around the motivators and barriers to older adults’ uptake and adherence to
exercise classes.
Chapter 6: Study 2, Qualitative study of exercise instructors.

The previous chapter has presented results from Study 1 and starts to build a picture of how instructors’ attitudes relate to their background and training. However, it is clear that to fully understand how training and instructor characteristics can influence instructors' attitudes with regards to older adults’ participation in exercise classes we need to explore instructors’ experiences and beliefs in more depth. We know from the findings from Study 1 that certain training can influence instructors' attitudes and that characteristics such as experience can lead to more positive attitudes. This may influence delivery and could support older adults to take up and adhere to classes. However, we do not know which aspects of training and other characteristics can influence attitudes and the ways that it does this.

Based on the data collected in Study 1, we purposively sampled instructors and used semi-structured interviews to further understand their attitudes and how this might relate to their training and characteristics. We also explored instructors’ experiences and beliefs around the motivators and barriers to older adults’ uptake and adherence to exercise classes. This chapter outlines this second study and develops and builds on the findings of the previous study discussed in Chapters 4 and 5.

6.1 Research Question

In what ways are instructors influenced (in relation to older adults) by their training and characteristics?

6.2 Aims and Objectives

6.21 Aims.

- To establish how instructors’ training and characteristics influence exercise instructors’ regarding their exercise classes for older adults.

- To establish instructors’ experiences and beliefs around the motivators and barriers to older adults’ uptake and adherence to exercise classes
- To further understand the attitudes and experiences that instructors’ have around older adults’ participation in exercise classes.

6.22 Objectives

- To explore instructors' experiences of their training and other life experiences which they feel relates to their exercise class delivery.

- To explore instructors’ beliefs and experiences around older adults’ participation in exercise classes.

6.3 Methodology

This descriptive qualitative study aims to enrich the wider research by building on and developing further understanding of the quantitative findings from Study 1. It can be seen in the context of a Medical Research Council Framework for complex interventions and will provide background information to a future Randomised Controlled Trial (MRC, 2000, MRC, 2008). We wanted to use qualitative methods in this study to further explore findings from Study 1 and also to obtain instructors direct thoughts, beliefs and experiences. Qualitative methodology enables us to explore the instructors’ perceptions and experiences of their world as an instructor and to explore their own and their perceptions of their class participants’ human behaviour, motives, views and barriers (Neergaard et al, 2009). This study uses qualitative description and remains very close to the data, giving a comprehensive summary of events (Sandelowski, 2000). Qualitative description has been found to link closely to existing knowledge, experience and clinical practice and because of this has been argued to fit well with quantitative data as part of a mixed methods approach (Neergaard et al, 2009).

Criticisms of qualitative work have been that they lack rigour when compared to quantitative methods, particularly due to the subjective nature of qualitative research (Neergaard et al, 2009). However, it has been argued that is possible to establish rigour, by ensuring a range of techniques are in place to ascertain authenticity, credibility, criticality and integrity (Milne & Oberle, 2005; Neergaard et al, 2009). These have been applied throughout the research process and are considered in this chapter, which goes on to outline the methods used in this study to collect the data.
6.4 Recruitment and Sampling.

This study recruited participants who were Level 3 instructors from Yorkshire and the Humber, North East, North West, East Midlands and West Midlands areas. We excluded instructors from other areas of England such as London as well as other areas of the U.K such as Scotland, Wales and Ireland. This was for pragmatic reasons as the lead researcher was required to keep research costs to a minimum. Purposeful (judgemental) sampling, which includes opportunistic sampling (Patton, 2002) was used to recruit participants. This is a deliberate non-random method which aims to sample a group of people with particular characteristics to enhance understanding of the selected individuals or group experiences (Patton, 2002; Guest et al 2006). To achieve maximum representation of important variables, 40 instructors were asked to participate. First, instructors were sampled by age and gender. Second, by the type of training they had undertaken, how long they have been delivering and working background. Last, participants were sampled by the place of exercise delivery. This was based on the findings from analysis of Study 1 data, which says that these are key variables which can affect attitudes. There was a particular emphasis on recruiting participants with a wide range of different qualifications, so that the subtle differences not identified in the first study could be explored further.

Instructors approached had already agreed to receive further information about the second study during Study 1. Instructors who agreed to take part in the third study (which ran alongside Study 2) were excluded from this qualitative study to ensure the interviews did not affect attitudes and delivery of classes.

We sampled from 126 instructors (all instructors identified as living in the identified counties in England who had agreed to receiving information about the second study, excluding those who took part in the third study), approaching approximately 40 instructors and interviewing 19 instructors. The instructors were sent information on the study via post and asked if they wished to take part. If they were willing to participate they sent back the consent form in a pre-paid envelope. The lead researcher then phoned the instructors and explained the interview process, arranging to interview the instructor in a location where they felt comfortable. Informed consent was given and interviews were digitally recorded with the instructors’ consent, allowing a return to the data in its original form (Silverman, 2000).
6.5 Methods

Semi-structured interviews were undertaken to explore the influence of training and other characteristics on instructors and also their experiences and beliefs around the motivators and barriers to older adults’ uptake and adherence to exercise classes. Semi-structured interviews were chosen for both practical and theoretical reasons. The interview takes many forms on a continuum with structured interviews at one end and unstructured interviews at the other (May, 2001). Semi-structured interviews were chosen over structured interviews as although we wanted to explore specific areas, we wanted to avoid leading the participant into answering in a specific way (Kvale, 1996; Bryman, 2008). Unstructured interviews may have been too open-ended (Kvale, 1996; Bryman, 2008) and are unlikely to have provided us with the information we required to understand Study 1. Semi-structured interviews allow us enough structure to explore specific areas of interest, whilst ensuring that the participants can still lead the interview process (Kvale, 1996; Bryman, 2008).

The alternative method considered to collect the desired data was focus groups (Bryman, 2008). The practical restrictions to using focus groups were mainly caused by the location of the instructors. Instructors came from a wide variety of locations and therefore we would have been unable to group them together. We also chose not to sample large numbers of instructors in one area as we wanted a broad range of instructors’ experiences with different training and characteristics. Therefore, a more individual, in depth approach to exploring and understanding the similarities and differences between instructors (Kvale 1996; Bryman, 2008), which may be dependent on differences in training and characteristics, was required. We were particularly interested in similarities and differences between instructors with regards to their experiences and beliefs. One of the limitations of the focus group and its subsequent group dynamics is that the articulation of group norms could silence individual voices that have alternative views (Kitzinger, 1995). The presence of other research participants also compromises the confidentiality of the research session (Kitzinger, 1995). Instructors may not have been as open or honest if there were other peers there, especially those who have been trained by the same organisations.
6.51 Interview schedule design.

The interview schedule was split into two mains sections, both of which consisted of open ended questions which were designed to initiate further discussion and reflection (Appendix 8). First, we asked instructors to discuss their classes and their experiences in relation to older adults’ attendance to their classes. This was to explore instructors’ views on older adults perceived and experienced outcomes, social influences and participants’ perceived behavioural control, as well as the broader context of their experiences of motivators and barriers to intention, uptake and adherence of classes. This was informed by the wider literature and systematic review (Chapters 1 and 2). Second, we asked instructors more about themselves and how they think their background, experience, training and knowledge has influenced them and the way that they deliver. These questions were primarily informed by the first study in this thesis (Chapters 3 and 4). This approach reflects the use of qualitative description in health research, where the interview schedule is often influenced by existing knowledge (Sandelowski, 2000; Neergaard et al, 2009).

6.6 Ethical considerations.

The population was exercise instructors working with older adults 60 and over, who are not classed as a vulnerable group. Although the interviews were one to one, the participants were given the opportunity to choose the location where the interview took place. When the interview took place in the instructor’s home the interviewer adopted a lone worker policy, informing someone of her whereabouts at all times. The questions asked were not of a sensitive nature and were about the instructor’s experiences and attitudes. However, the questions were open-ended which gives the participant flexibility in their answers, they could choose not to answer or end the interview at any time.

The instructors had already consented to being contacted with further information about future studies in the first study. Before the interview commenced, informed consent was taken (Appendix 9). All data collected has been kept in a secure and locked place and when transcribed was anonymised and encrypted and kept on a password protected computer and on a password protected memory stick. This was required to meet the University of Manchester research code of good practice and information /data protection regulations
Ethical approval was granted from the University of Manchester Committee on the Ethics of Research on Human Beings (Appendix 10).

6.7 Analysis

Content analysis is advised by the literature and adopted for this study as it is recommended as appropriate for qualitative description as it enables us to remain close to the data (Neergaaurd et al, 2009). Because this research adopts a thematic version of content analysis, responses are not counted as they are in summative content analysis, instead exact words were highlighted which capture key concepts and themes (Hsieh & Shannon, 2005). Open coding identified a large number of themes and was then followed by selective coding where the codes were grouped together into emerging categories (Hsieh & Shannon, 2005; Stanley, 2006). The research is inductive and although we seek to understand the findings from Study 1 (which has informed the interview schedule) we have sought to generate categories and explanations directly from the data rather than based on previously set aims and objectives. The steps that were taken in the analysis are illustrated in Table 6.1. Once main themes were established ‘deviant’ data were identified and explained. The data were analysed using QSR International’s NVivo 8 qualitative data analysis software (2008). The rigour of the analysis has been checked by returning to the data once themes had been identified and also through the use of a second researcher (MH) who has checked samples of coding and analysis. Any disagreements were discussed with the wider research support team.

Table 6.1: Analytical strategy

<table>
<thead>
<tr>
<th>1. Coding of data from interviews and notes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Recording insights and reflections on the data.</td>
</tr>
<tr>
<td>3. Sorting through the data to identify similar phrases, patterns, themes, sequences and important features.</td>
</tr>
<tr>
<td>4. Looking for commonalities and differences among the data and extracting them for further consideration and analysis.</td>
</tr>
<tr>
<td>5. Gradually deciding on a small group or generalisations</td>
</tr>
<tr>
<td>6. Examining these generalisations in the light of existing knowledge.</td>
</tr>
</tbody>
</table>

This table is taken from Neergaaurd et al (2009). Originally adapted from Miles and Huberman (1994).
6. 8 Ensuring rigour.

Rigour can be established in qualitative research by ensuring a range of techniques are in place to ascertain authenticity, credibility, criticality and integrity (Denzin & Lincoln, 2000; Milne & Oberle, 2005; Neergaard et al, 2009). Authenticity can be facilitated by ensuring there is purposive and flexible sampling and participant driven data collection. This was supported through the sampling and interview process. Although there were some specific issues we wanted to ensure were covered, questions were open ended enough to enable the participant to lead the process. In the analysis it was important that the richness of the data came through and that participants were accurately portrayed. Through the use of qualitative description which remains very close to the original data and by continuously returning to the data it is felt that the participants’ voices are heard and represented. Also, a thematic approach to analysis, a form of content analysis was adopted which ensured the coding was data driven (Milne & Oberle, 2005; Neergaard et al, 2009). As the instructor has stepped into the participants’ environment and constantly tried to see the data through the participants’ eyes, there is credibility to the research. Criticality has been carried out through the whole process of the study. This has been done by reflecting on the representativeness of the participants at the sampling and recruiting stages. Continuous reflection on the interview process to ensure the participant was not influenced by the researcher and ensuring participants were allowed to take control of the interview process at the data collection stage, and by continuously returning to the data and the themes throughout analysis. The integrity of the data has been maintained through the use of a second researcher (MH) who checked samples of coding and analysis. The integrity of the data was also established through discussion with participants if anything was not clear, alongside the opportunity for them to check the transcript. Continuous reflective practice has been carried out throughout the research process and is carried out in more depth through the following reflexive account.
6.9 Reflexive account.

In this account as is common in qualitative reflexive accounts the pronoun ‘I’ will be used to reiterate that as the person who carried out the interviews this is my personal experience and reflection. One of both the criticisms and advantages of qualitative research is that it is open to the influence and interpretation of the researcher (Bryman, 2008). Reflexive practice can be seen as a way to ensure that the subjectivity of the researcher does not compromise the rigour of their findings. Ways of strengthening the rigour of the study throughout the research process has already been discussed, but reflexivity is an important element of this which needs to be considered in more depth. The process of reflexivity has been described as ‘an attempt to identify, do something about, and acknowledge the limitations of the research…how accounts recognize that the construction of knowledge takes place in the world and not apart from it. …’ (Shacklock & Smyth, 1998: 6-7). As one of the underlying principles of qualitative research is that you immerse yourself in the participant’s social world, this account aims to consider both the influence of the researcher on the participant and on the interpretation of the participants account. It tries to recognise the different positions of each participant, and to understand each different individual’s separate viewpoint and experiences (Kippax and Kinder, 2002). To facilitate this process notes were taken after each interview in order to reflect on body language, participant response and atmosphere.

I have a broad experience of working with exercise instructors in my local area and have supported them to work closely with health professionals to establish pathways from health services to their classes. Some of the participants involved in both the quantitative and qualitative studies of this thesis are known to me either because they work directly in the area where I have worked or because they deliver in other local areas and they have met me at regional or national events. This may have influenced the response of the participant when being interviewed. I was careful to present myself as a researcher and not a practitioner, therefore I did not to share any of my experiences of setting up exercise classes and initiatives in the community until after the interview was completed so as not to lead participants. The qualitative study used a semi-structured interview process that was pre-dominantly led by the participant to ensure that they took full ownership of the research process. This method was also used to ensure that power dynamics were addressed (Kvale, 2006) and that there was not an imbalance of power between interviewer and interviewee. It was felt that my experience and knowledge in this area made the
instructors feel more comfortable and relaxed in discussing their experiences. I think that my existing relationship with some of the instructors only influenced the interview process on one occasion. This was because the instructor felt that I already had knowledge of her delivery and therefore felt uncomfortable talking about her delivery style (something she felt I already had knowledge of). On reflection almost all instructors seemed to enjoy the interviews as they had the opportunity to discuss their experiences. There was very little difference between the instructors who I had met previously and the ones I had not. Most instructors said that they often felt isolated in their delivery of exercise classes to older adults and enjoyed the chance to discuss their work with someone.

My knowledge of this field, of some of the instructors and different types of training has helped me to further immerse myself into the instructor’s world when interpreting the data. I think it has helped me to retain a balanced view and to consider the similarities and differences between each individual’s experiences. At times I have been aware that my knowledge of different types of training may influence my interpretation, and therefore I have took care to discuss my interpretation and knowledge with my supervisors, reflecting on my analysis, discussing the data and interpretation.

In writing up the findings from the qualitative research I have made an effort to explore both similarities and differences between instructors providing data to support a range of experiences and viewpoints. The use of qualitative description should enable the reader to come to their own conclusions and interpretations of the study as they consider the following chapter.

**Summary**

This chapter has considered the methodology that informs this study and the rationale for the use of qualitative description, semi-structured interviews, the sampling framework and content analysis. It outlines how the chosen approach complements the mixed methods approach which is used in this thesis. The following chapter reports the findings elicited from the data collected and how this relates to existing evidence, implications for practice and future research.
Chapter 7: Study 2, findings and discussion.

7.1 Participants

Sixteen interviews lasting between 30-90 minutes were carried out with 19 participants. Three of the interviews were carried out with two of the participants together on the participants’ request. Sixteen of the participants were women and three were men, all of the participants were white British. The instructors’ mean age was 56.3, with a range from 23 to 78. Instructors were chosen both with both a wide range of experience (some had been delivering for more than 30 years, some for 12 months) and with a wide range of qualifications and backgrounds (Table 7.1 and 7.2). Instructors with all of the Level 3 older adults qualifications identified through Study 1 and eligible for this study were approached to participate in this second study, although not all of them are represented in the final sample. The instructors delivered in a variety of community settings as well as care homes and NHS clinical settings.

**Table 7.1: L3 and above older adults qualifications* held by instructors.**

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>N= 19</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTEND (REPS level 3)</td>
<td>8 (42%)</td>
</tr>
<tr>
<td>Later Life Training (LLT- REPS L4 PSI)</td>
<td>7 (36.8%)</td>
</tr>
<tr>
<td>YMCA/ YFIT (REPS L3 Older Adult)</td>
<td>6 (31.6%)</td>
</tr>
<tr>
<td>KFA (REPS L3)</td>
<td>4 (21%)</td>
</tr>
<tr>
<td>Later Life Training Otago Exercise Programme Leader (REPS L3 CPD)</td>
<td>1 (5.3%)</td>
</tr>
<tr>
<td>Laban (REPS L3)</td>
<td>1 (5.3%)</td>
</tr>
<tr>
<td>Medau (REPS L3)</td>
<td>1 (5.3%)</td>
</tr>
</tbody>
</table>

* see description of each qualification in appendix 4

**Table 7.2: Working background of instructors.**

<table>
<thead>
<tr>
<th>Background</th>
<th>N=19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>1 (5.3%)</td>
</tr>
<tr>
<td>Fitness or sports background</td>
<td>6 (31.6%)</td>
</tr>
<tr>
<td>Army</td>
<td>2 (10.5%)</td>
</tr>
<tr>
<td>Falls prevention: non-clinical</td>
<td>2 (10.5%)</td>
</tr>
<tr>
<td>Falls prevention team: Physiotherapist</td>
<td>3 (15.8%)</td>
</tr>
<tr>
<td>Voluntary and community</td>
<td>4 (21%)</td>
</tr>
<tr>
<td>Mental health occupational therapy</td>
<td>1 (5.3%)</td>
</tr>
</tbody>
</table>
7.2 Findings

Data analysis has identified four main themes with a series of sub-themes. The first two themes, *instructors’ training* and *personal characteristics* help us to further understand how instructors are influenced by their training and characteristics. The second two themes, *class participant uptake* and *class participant adherence* help us to explore instructors’ experiences and beliefs about the motivators and barriers to older adults’ uptake and adherence to exercise classes. Through the data the instructors interviewed have built a picture, which starts at the beginning of their journey as an exercise instructor through to their perspectives of what influences the class participant. The structure of this section directly reflect the aims of the study, the interview schedule and the focus of the thesis, which starts with the instructor and then considers the relationship between the instructor, other factors and participants’ adherence to classes. However, the data were not analysed using pre-set themes and the following findings stay close to the original data.

7.21 Instructors’ Training

7.21.1 Experiences of training.

This theme starts at the beginning of the instructors’ experience as an instructor and outlines their experiences of training and how this prepares them to conduct exercise classes to older adults.

*Basics:*

The instructors talked about how their initial training established the basics and enabled them to begin to deliver to older adults. It gave them the knowledge of how to deliver and an understanding of how the body ages, a framework for delivery. For some instructors the Level 3 older adults qualification was their first exercise training course:

‘*Through EXTEND training I know more about, about how bodies work as well, so I mean having the ergh, the anatomical training, physiology and kinesiology, I mean a background*’.

**Participant: ME1. (Male, aged 65, EXTEND).**
‘I couldn’t have done it without the training that we’ve got…how to make your class…how it follows on and how to, um, develop your actual exercises that you’re doing.’

PARTICIPANT: FE3. (Female, aged 66. EXTEND).

For others it was a progression from delivering other types of classes to other cohorts. For those already delivering exercise it enabled them to develop their delivery and open up their classes.

‘It added to it, it added possibilities so you could extend, uh, what you were doing, yeah open up, give opportunity to more people to come and exercise isn’t it, opening up more classes’.

PARTICIPANT: FO3. (Female, aged 69, KFA).

Instructors indicated that their initial training was extremely important in ensuring they had the basic knowledge to deliver. Even if they delivered to other cohorts, the Level 3 older adults qualification was still seen as important in preparing instructors to deliver to this specific client group. There is no evidence available which compares the content and benefits of older adults’ instructors training.

Importance of Continuous Professional Development (CPD):

For all of the instructors the initial training seemed to spark a positive response in the instructor and evoked a desire to learn more both to develop what they could deliver and also to deepen their understanding of the people they were delivering to.

‘If I go back to my, earliest days, the instructor I learnt with EXTEND with, was, urm, very very motivated, very very good at music and incredibly enthusiastic, which lit my fire…they were responsible for starting me off, if you like and when I had finished training, I felt like hungry for more knowledge.’ Participant: FP1. (Female, aged 53, EXTEND, BACR, PSI).
All instructors discussed the importance of continuing to learn and develop, especially to keep up to date with the latest evidence:

‘... it is important and that’s why the CPD days are important, but they need to be good, and they need to give you, updated, even if its updated information, or how processes have changed...’

Participant: FE2. (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).

They emphasised the importance of CPD, and whether it was formal CPD:

*You need that time, you can’t just do it in like a weekend, that’s why we have Continued Professional Development. Because even in the courses there’s a lot we need to get across to people...’*

Participant: ME1. (Male, aged 65, EXTEND).

Further training provided by their training company:

‘Then you can move on to be an advanced teacher, so you study Laban in a lot more detail...so there is like that ladder of progression, you don’t have to take it, but if you want to its there.

Participant: FO1. (Female, aged 45, Laban).

Progression to more specific qualifications related to specific conditions:

‘I was certainly very lucky, I certainly, I was hungry for the depth of knowledge that xxxx was telling us about...EXTEND was a tiny little flicker of a flame, but when I got to xxxx (PSI), I was, I just felt so enthused.’

Participant: FP1. (Female, aged 53, EXTEND, BACR, PSI).

‘I enjoy looking up things and researching, and I still do that now because I’ve gone on to do GP referral and that sort of thing’.

Participant: FO4. (Female, aged 44, YMCA, Exercise referral).
They could also relate to other types of CPD, such as continuous reflection. All were seen as essential for delivery:

‘I see examples of good practice, so you take those things on board.’

Participant: FO1. (Female, aged 45, Laban, KFA).

Regular CPD was extremely important from the instructors’ perspective, but it was equally important that this CPD was of good quality. This was not always the case and caused some frustration as it did not meet their needs or requirements:

'Their (CPD instructors) experience may be a long time ago, or maybe at lot less than yours, and I find that frustrating.'

Participant: FP3. (Female, aged 48, BACR, IV COPD, PSI).

'Bit like what we have said about the training really (CPD), that didn’t light my motivational fuse (Interviewer laughs)...and, and so I know my, frustrations, on that day.'

Participant: FE2. (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).

Previous research suggests that older adults think that it is important that the exercise is appropriately paced, tailored and monitored (Gillett et al, 1996; Estabrooks et al, 2004; Statthi et al, 2010). Therefore, it could be suggested that an instructor requires continuous CPD to ensure that delivery is appropriate. We know from previous work (Stacey et al, 2010) that although maintaining up to date knowledge is considered important very little is known about how instructors maintain and incorporate new evidence base into their practice.

Worries about safety:

Worries about the safety of what was being taught only seemed to arise in those instructors who had gone on to do specific condition related qualifications, although there were worries expressed about people delivering with no qualifications. Several instructors expressed a concern that instructors with a general older adults Level 3 qualification did not have enough knowledge to deal with older adults with complex conditions who could attend their classes.
'You have almost got to say, it’s the persons responsibility instead of the instructors really, because they haven’t got the know how to back it up, unless you make it social exercise, with a little bit of mobility'.

Participant: FP1. (Female, aged 53, EXTEND, BACR, PSI).

In the next quote the instructor discusses working with an EXTEND instructor and getting a class participant to go down on the floor, she suggests it was not safe for them to do that at this point. As EXTEND instructors are not normally trained to get people onto the floor, it is not clear whether the issue was with the training or whether some instructors with only a general Level 3 qualification believe that they can do more (i.e. get participants on the floor) than their training has qualified them to do.

‘I can remember going to a class where somebody else...who was an EXTEND instructor not a PSI, but with us, we got them, down on the floor in five weeks, and when I look back to that now, how, there was no point in doing that...it was neither safe, nor, advantageous to him in anyway.’

Participant: FP1. (Female, aged 53, EXTEND, BACR, PSI).

Evidence shows that older adults can often be worried about hurting themselves when exercising (Rasinaho et al, 2006) and also that they feel more confident if they know that the instructor is adequately trained (Estabrooks et al, 2004). This would suggest that safety is an important aspect of an instructor’s training.

Motivational training:
Quite a few of the instructors have done additional motivational training, which focused on promoting uptake and adherence to exercise classes. Most of the instructors who did attend motivational training reported that they did not feel that it gave an immediate solution to the issues around engaging older adults in exercise, more that it gave them a further understanding of the issues older adults faced which over time they felt they benefited from:

‘So I didn’t feel that receptive on the day...No, and it took a while...’

Participant: FP1 (Female, aged 53, EXTEND, BACR, PSI).
'You almost expected it to be like an immediate thing, where as actually it didn’t, it drip feeds in over a period of time...But then you find yourself thinking, actually, perhaps this woman's not in the right state, perhaps this woman, needs to be re-approached…'

**Participant: FP2. (Female, aged 46. PSI, EXTEND, BACR).**

However, instructors also found it difficult to engage new participants. It was those potential participants who instructors said needed the class the most and who needed motivating:

‘It’s, it’s getting your new people in through the door and how you motivate them, um. And how you also make, make them see the benefits of coming and how you actually sell those benefits to that person’.

**Participant: FO5. Female aged 44, YMCA, Personal Training, Otago.**

One of the instructor's felt that motivational training should be offered along side the Level 3 qualifications. They saw it as an important element of delivery and perceived themselves as having an important role, this type of training enabled them to fulfil this role:

'I think it as important that, perhaps if it’s offered side by side...the offer of a, motivational type, training, is the way forward maybe, or could be the difference between a session being successful or not, because it comes down to the person leading it doesn’t it?'

**Participant: FE2 (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).**

There is no current evidence about how or whether motivational training impacts on instructors’ delivery and therefore encourages uptake and adherence of their class participants. However, we do know that where instructors deliver in a more motivational and enthusiastic manner there are higher levels of participant enjoyment (Fox et al, 2000).
7.212 Training influences on delivery.

The following theme outlines from the instructors’ perspective how they felt these training experiences then influenced their delivery in older adults’ exercise classes.

**Style:**
Although all training programmes delivered the basics and enabled instructors to deliver exercise classes to older adults, there appeared to be distinct differences between the way instructors who have only done a general Level 3 older adults qualification talked about delivery and those who have gone on to do the more specific Level 4 qualifications such as Postural Stability Instructor (PSI) (strength and balance for falls prevention) or the BACR (which is a non older adults specific cardiac rehabilitation qualification). The general Level 3 qualification had a focus not only on the physical benefits but also the music and social outcomes, i.e. That a movement can be carried out for pure enjoyment:

‘So because we use Laban’s Analysis on, uh, what the body can do, where it can do it, how it can do it, who it can do it with, so relationships and socialising is very, very much part of it’

**Participant:** FO1. (Female, aged 45, Laban, KFA).

‘Music is key…but all of it has to suggest a movement to me’.

**Participant:** FO6 Female, aged 65. Medau, KFA, YMCA

This led to a variety of delivery which was seen as important by the instructors:

‘I never do the same work, I keep the variety for them...keep fit, exercise, movement and dance and I follow all of those elements in the class.’

**Participant FO7:** (Female, aged 65. KFA).

Where as those instructors who had a condition specific qualification said they were much more structured, focussed and in-depth in their approach to exercise delivery:

‘The very preciseness of it...PSI is very structured and it is rigid’.

**Participant:** FP7 (Female, aged 56, PSI, Physiotherapist).
For condition specific classes the music is not considered to be an important element of the class:

’No we don’t use music at all in any of the PSI…when I came into the post we stopped using it basically because we found that it was too much of a distraction, they were more concentrating on the music than what they were actually, on performing the exercises in the correct way …’

Participant: FP4 (Female, aged 41, PSI).

Compared to the more spontaneous delivery of exercise classes instructors with only the general older adults qualifications, those with condition specific classes indicated that nothing is done without a considered reason behind it:

’I don’t worry if the music doesn’t work…It’s just the whole, the whole difference between going there and saying, ‘that dress is nice’, and ‘that dress suits you because of the colour matches your hair’, do you know what I mean? …it’s the reason behind it all, and to make them realise, with certain health conditions, what you should do and what you shouldn’t really’.

Participant: FP1. (Female, aged 53, EXTEND, BACR, PSI).

The delivery of the condition specific classes was based on reaching outcomes (e.g. improved strength and balance) and there was a specific emphasis on the importance of goal setting so that participants knew that they had achieved an outcome. This received more emphasis in specific condition related delivery:

’Targeted dates, sort of dates by which time we want to achieve certain things, so it is very prescriptive isn’t it really?’

Participant: FP2. (Female, aged 46. PSI, EXTEND, BACR).

Goal setting was also mentioned in relation to the more generic classes, but the targets were often less defined as outlined by this instructor that also commented on her PSI classes being very targeted:
'Where's as community classes I am trying to get in bits of endurance, but they are small targets, if you like…'

Participant: FP1. (Female, aged 53, EXTEND, BACR, PSI)

Or they had a more general functional purpose:

'Our work is based on the whole body and not just exercising one part of the body, so it relates and especially for older people it relates very well to daily activities…'

Participant: FO1. (Female, aged 45, Laban, KFA)

There were also some distinct differences in style of delivery within the Level 3 older adults qualifications which were not condition specific. This seemed to be dependent on whether they had originated from a dance, movement or aerobic exercise background. The following quote illustrates the different approaches to delivery dependent on training, as an instructor who has done both the Medau qualification and the YMCA exercise to music qualification discusses the differences in style.

'Medau was about the person and what suited that person…it was about physical well being, having fun, beautiful posture and postural things, urm, and if you saw an exercise to music person working to the same piece if music as a Medau person, it would seem, jaggedy to me, and smooth and velvety, polyester…silk.'

Participant: FO6. (Female, aged 65. Medau, KFA, YMCA).

Previous research with older adults has highlighted the importance they place on social outcomes (Caserta & Gillett, 1998), music (Schutzer & Graves, 2004), goal setting and outcomes (Chiang et al, 2008; Seymour et al, 2009; Stathi et al, 2010). However, there is no research to date that has identified these distinct differences in delivery related to exercise instructor training. These findings may help us to further understand the differences found between exercise instructors recruited to the first study (chapters 4 and 5).
7.22 Personal Characteristics

7.22.1 Life Experiences

Instructors described a range of experiences which influenced them and their approach to their classes. These life experiences encompass this theme and are outlined as follows:

**Personal:**

Personal background provided an important role in shaping instructors’ approach to their classes. They may not have experience of working with older adults or of delivering classes to them, but a personal experience of spending time with older adults or of other experiences could still influence them:

’*My personal background would probably help as well, urm, being quite close to, my grandparents and stuff like that, working with those and just generally just having fun with them.*’

**Participant: ME2. (Male, aged 23, EXTEND).**

’*My own life as well, would I want to do that?’*

**Participant: FO6. (Female, aged 65. Medau, KFA, YMCA).**

Having experience of being sporty recreationally had an impact on instructors and built on their understanding of their own and their participants’ bodies:

’*From being, about 25, say 25, I did martial arts training...until I became a blackbelt, I was, um, until that time, things you do learn about your body, both from what you do, from um injuries, from being bashed around a bit*.’

**Participant: ME1. (Male, aged 65, EXTEND).**

They talked about how this experience gave them a personal love and understanding of what they were delivering:

’*But I suppose your background, your experience, I mean I danced, I’ve danced all my life I danced from being young so I’ve always liked*
music, dancing'.
Participant: FO3. (Female, aged 69, KFA).

Experiences of attending other people’s exercise classes as a consumer also influenced instructors and caused them to reflect on how they might deliver:

'My, bad experiences ...exercise sessions that I’ve been to myself in the past. An un-motivating, monotone instructor wouldn’t motivate me to go back to a session, so I think you have to absorb all of those things and when you come to be, a facilitator, or a leader or a mentor or whatever you want to call it, is looking at the reasons perhaps why you didn’t go back to something or didn’t continue with something, and making sure you don’t make the same mistakes'.
Participant: FE2. (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi.)

This quote particularly supports the idea that the instructor has to believe that the participant can carry out the exercises and in return this should increase the participants’ confidence in their own ability (self-efficacy).

'Because I have been to classes where I have thought, oh god, she doesn’t seem very bothered and you think that person doesn’t enthuse, excite or motivate you, so you have to be that person, to believe they can do it…'
Participant: FP1. (Female, aged 53, EXTEND, BACR, PSI)

A personal experience of the ageing process was also stated as an important factor which influenced the instructor. The ageing process influenced their attitudes towards participants and made them feel better able to empathise with their class participants:

'Seeing how the bodies age, urm and then from observations, so as your getting older and as your dealing with older people, urm, cause I’m getting older I know how their feelings as well, so you can relate, relate your feelings to your class, and they know, you know how they feel'.
Participant: ME1. (Male, aged 65, EXTEND).
‘I think that as you grow older you do appreciate certain people’s aches and pains more. As a young person, you’ve got this immortal sort of persona haven’t you? I’m going to live forever so I’ll walk in front that bus it’ll stop for me sort of approach. To, um, as you get older you get wiser, allegedly, and I think that’s how I’ve changed mine’.

Participant: MYE1. (Male, aged 78, YMCA, EXTEND).

Experience was sighted as one of the most important factors related to delivery and beliefs by instructors. This has previously been linked to attitudes in Study 1 and participant adherence in a previous study (Seguin et al, 2010).

Working background:
Working background was stated as very important in its influence on instructors’ approach and beliefs to older adults’ participation in exercise classes. In the first study in this thesis, background was a factor which did influence instructors' attitudes, an NHS clinical background was found to have a negative impact on instructors' attitudes. However, this was not something which arose as an issue at this stage. The instructors’ background of working with older adults or of delivering exercise to other age groups gave them an understanding of conditions:

‘I think my background is mostly through work and just developed in that field of work…learning about the different health conditions’.

Participant: FP4. (Female, aged 41, PSI).

A confidence in what they were doing:

‘...but then I was a physio so I know about your body and what you’re meant to be doing with it.’

Participant: FO3. (Female, aged 69, KFA).

It also in one case gave an instructor, who had previously been a physiotherapist, experience from both a clinical and community perspective and helped her to link in with health services now that she was a freelance exercise instructor:
‘I mean to me it just seems natural, and I would do it but I’m not everybody because I can see both sides of it, you know’.

Participant: FO3. (Female, aged 69, KFA).

There were instructors who did not come from an exercise background but had experience of working with older adults. This gave them an insight and helped them to consider how they should speak to and approach older adults:

‘I actually worked on a warden round so I used to visit old people... you learn fast that some of um don’t want to be bothered in a morning (laugh) and others are glad to see you but some aren’t, um and also I find from that background, that they don’t appreciate being patronised or talked down to’

Participant: FO8. Female, aged 43, GP referral Level 3, IFI L2, YMCAFIT.

‘It has influenced me and certainly not to, I think its just about not going in with an expectation, you know, having a plan, but don’t expect to complete it... cause I started in mental health, in a nursing home setting, um, on a very active EMI floor and a nursing level floor, which was very different um and 10 years on a day centre in a hospital, but I was an Occupational Therapy Assistant for 10 years’.

Participant: FE2. (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).

Not all instructors had a background of working with older adults, but they felt that a general experience of working with people had a positive impact on them:

‘I worked, for a charity for ten years, and the way that you treat people, um, or when I was even training... you’d always have respect for people and be very politically correct, and it wasn’t in my nature, because you wouldn’t stand up in a training session and shout, so when I moved into being a fitness instructor I, I actually don’t find shouting at the class do something very motivating’.

Participant: FO5. (Female, aged 44, YMCA, Exercise referral, Otago).
Working background did not only influence instructors directly but could also have an indirect effect for some instructors through training as it could dictate the type of training they did. All those working around falls prevention had done the PSI or Otago course.

*Observation:*
Instructors did not only gain experience from training and their personal and working environments, but also from the observation of others. The observation could be of other peoples’ classes:

'You might have a group of 60 to 70 year old tenants of a sheltered housing scheme, you may have a group in a place for learning disabilities, who are much younger in age, but mentally, aren't as capable as that group of 60 and 70 year olds, so I think the more, the more, variant that you can observe on, as I say not necessarily leading it, but actually just going and sitting in.'

**Participant: FE2. (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).**

Or of their own classes:

'Learning from the people that you’re actually delivering to. Um, they, I mean they don’t realise how much feedback that they’re giving you, but they give you an awful lot of, of feedback and, um, motivation to, to do better all the time'. **Participant: FE3. (Female, aged 66. EXTEND).**

This observation enabled instructors to learn how to deliver appropriately to older adults:

'...it was just watching them to see how they did the sessions, how they spoke to the participants, what kind of activities they did, what activities they stayed clear of'.

**Participant: ME2. (Male, aged 23, EXTEND).**
‘...from, when I first started, I look back on the classes I delivered then, looking at the ones now, my participants get a lot more benefit out of it, because, its at the level that they need, and I’m able to observe that'.

Participant: FO1. (Female, aged 45, Laban, KFA).

There is no known evidence about the role of observation in instructor development and delivery. However, in interviews with older adults that looked at their adherence to exercise classes the importance of monitoring participants was raised (Estabrooks et al, 2004).

7.222 Personality.

Although instructors believe that training and experience is important in shaping them, they are not the only factors which influence them. Most instructors believe that their personality is important in their approach. It is difficult to define personality, for this study it is the participants’ perceptions of their personal characteristics and approach which they feel represents their personality. Enthusiasm was considered by the instructors to be the most important personality trait, as illustrated by this instructor:

‘I enjoy it so I am enthusiastic, I’m enthusiastic about what I’m giving them, I’m enthusiastic about what they’re giving back to me in how they’re responding for what I’m asking of them. Uh, I’m enthusiastic about seeing them improve and progress.’

Participant: FO3. (Female, aged 69, KFA).

It was perceived as more important than qualifications:

‘Oh god my personality. I’m enthusiastic, I think. I think it’s my enthusiasm more than anything. They can, anybody can hold qualifications that I’ve got, I’m not upping myself on my quals because I’m no better qualified than anybody else and there’s lots of people out there with better qualifications than me. But I am certainly enthusiastic about what I teach, and I think I ooze that.’

Participant: FO4. (Female, aged 44, YMCA, Exercise referral).
It is important that they have a passion to do the job and the right attitude:

'Knowing how to speak to them and having the right attitude to work with the people, I think as well, because I think not everybody has talents for working with older people...I think everybody has their own sort of, you know, bits where they will thrive.'

Participant: FP4. (Female, aged 41, PSI).

That they listen, are understanding and approachable:

'So, in other words, you're a very, urm, a very through person that really listens and very understanding, approachable...'

Participant: FP1. Female, aged 53, EXTEND, BACR, PSI (referring to one of the other instructors).

That they know how to have fun:

'If you have met the instructor, that does our healthy bones classes, just, all the patients love her...she is so open and funny I think if you have those attributes to your personality...I think exercise becomes fun and it becomes easier...'

Participant: FP5. (Female, aged 28, PSI (Physiotherapist))

Several instructors now manage and employ other instructors and observe how these characteristics are important and picked-up by the class participants:

'What I look for when I am employing instructors is not necessarily their qualifications, its their people skills...because I am looking for is people who like people... Most of what those people are going to pick up is your body language, your attitude and your enthusiasm'

Participant: FP3. (Female, aged 48, BACR, IV COPD, PSI).

There is a dearth of literature looking at the personalities of instructors. We identified in Study 1 that personality is a factor which needs to be explored as it could influence instructors’ attitudes.
7.223 Characteristics influence on delivery.

This theme examines how the personal characteristics identified as important in the instructors’ interviews, directly influence their delivery. Instructors said that all of the personal characteristics described by them in the previous two sections had an influence on how they approached delivery of exercise classes to older adults.

*Person centred and adaptive:*

The most important influence of personal characteristics such as experience was that they encouraged instructors to ensure their delivery was person centred i.e. tailored to older adult’s needs and requirements. All of the instructors spoke about how they delivered to the people, situation and surroundings that they were faced with on the day:

>'As a teacher you teach the class that’s in front of you on that day. Okay? So you adapt, give alternatives, adapt things, um, depending on how many people have come and what the temperatures like or you know what, we have to deal with what’s in front of you, and if people are a bit down today then we need something that’s going to jolly us all up a bit, brighten us up yeah'.

**Participant: FO3. (Female, aged 69, KFA).**

Quite a few instructors made the point (also made in the qualitative comments of the first study) that when approaching the classes, what is delivered should not be dictated by the participants’ age. It was about knowing the participants and their needs:

>‘You might have a 90 year old who, who is much more agile than a 50 year old, and, so I think it’s knowing your audience, it’s knowing your participants, um, not just knowing them as in, they turn up once a week to do an exercise session, its making a bigger effort than that’.

**Participant: FE2. (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).**

Experience had a very important influence on instructors’ confidence to deliver person centred classes. It gave them confidence to communicate with their participants effectively:
‘If I had not been doing it with children before, urm, similar sessions, so it it, my background as in my coaching has probably helped, urm me then go on to do the sessions with older people, and have the confidence to speak to them, have the confidence to tell them how to do certain things’.

Participant: ME2. (Male, aged 23, EXTEND).

As well as confidence in the actual delivery of the sessions:

‘Because I’m older, and I’ve got more life skills, and I’ve got greater appreciation of the less able and the need to adapt the class so that you actually, what are you doing it for? Your not doing it for yourself, your doing it so that they can share in the joy that you’ve had’.

Participant: FO1. (Female, aged 45, Laban, KFA).

The confidence to make mistakes and understand that this may in fact have a positive effect on class participants:

‘I’m not frightened of making mistakes...I do things wrong me self, and I don’t worry about, and that makes the class feel um, more at home, they don’t feel intimidated, so I’m always approachable, I’m always approachable’.

Participant: ME1. (Male, aged 65, EXTEND).

Age was something that was highlighted as important in influencing instructors, with regards to how they perceived their older adults. This influenced their delivery as instructors said that they thought it made them more able to be person centred and adaptive:

‘They have grown older with me...I realised there are certain things I can’t do, that I used to do, so I think I am more sympathetic and give more alternatives’.

Participant FO7: (Female, aged 65, KFA).

Whether the class was active or less active, seated or standing or a mixture of both was predominantly influenced by the participants who attended:
'My classes are all standing, I know how to adapt for seated but I have not personally done seated exercise, with, with older adults, the older adults that I teach are those that are urm active elderly…urm, but that goes up to, I mean I have taught people that are in their 90’s that are active elderly…'

Participant: FO1 (Female, aged 45, Laban, KFA)

‘There’s no routine with that one, obviously, its just standing or sitting mobility, stretches, and then the dyna-bands, and we tend to have a little rest in-between…Um and so, that’s a different pace completely, its not, its not as active.’

Participant: FO8 (Female, Aged 43, GP referral Level 3, IFI L2, YMCAFIT).

Instructors’ delivery could also be influenced by the venue, but this was largely the difference in participants’ abilities in these venues and the instructors resulting approach to these differences. This was particularly the case in care homes:

'I would say, if you going into a nursing home, then you would probably have lower expectations, but you’d be looking at different things…I’ve looked at the quality of the exercises there doing, urm, I’ve slowed things down and I’ve speeded things up… Just because they are in a nursing home don’t necessarily mean they are at the end of the road and pack in.'

Participant: ME1 (Male, aged 65, EXTEND).

‘...and very much more, um, not able, not to, to do things...that had to be a completely different approach...we had to always start off with things that they could remember from childhood...That sort of got them motivated then to be able to, um, to go on to doing actual exercises that might do them a little bit more, bit more good.’

Participant: FE3. (Female, aged 66. EXTEND).

Participant centred delivery was one of the most important and reoccurring themes to emerge from the interviews. In Study 1, one of the factors explored was the relationship between training, type of delivery and attitudes. However, although training could relate to
style of delivery, the instructors’ suggest it is the class participants themselves who are the primary dictators of the type of delivery provided. Previous qualitative work suggests that class participants want to feel that the instructor is considering their individual needs when delivering a class (Estabrooks et al, 2004). Previous work with instructors also suggests a person centred approach is an important part of delivery (Stathi et al, 2010).

Respect:
All of the instructors had a respect for their participants that came through in the way that they spoke about them and was associated with experience and an enjoyment of the company of the class participants. The notion of respect was something that arose in the interviews frequently and was also related to participant centred delivery. Respect was seen as essential for appropriate delivery:

‘How I’d like to be treated, myself, and hopefully, urm, you know, that would come through, cause you want respect, you want to be listened to, you want to be open and friendly, you want them to engage, you want, you know you’ve got to be open to their ideas as well, you can’t dismiss it, if somebody sort of said to me ‘could we not do this one like this’ I wouldn’t dismiss it and I wouldn’t say no, if I felt we couldn’t do it like that, I would explain why it couldn’t be done like that...’

Participant: FE2. (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).

‘It’s two way travel, rather than one-way...I don’t tell them what to do all the time.’

Participant: MYE1. (Male, aged 78, YMCA, EXTEND).

Lack of respect was also a criticism of other instructors:

‘They’d got people teaching older people, and they were skinny youngsters in leotards and tights trying to, talking down to older people doing. I mean it was supposed to be an example of a good exercise class for older people, and it was, it was appalling it really was appalling’.

Participant: FO3. (Female, aged 69, KFA).
Quite a few of the instructors said that they felt that participants saw them not only as an instructor, but also as a friend:

‘I think that counts for a lot, you’re not just delivering a class, you’re actually their...friend, and they feel that they can come up and ask questions, or sometimes not related to fitness class, um, or they feel that they can tell you their troubles...’.

Participant: FO8. (Female, Aged 43, GP referral Level 3, IFI L2, YMCAFIT).

Instructors’ respect for their participants often culminated into compassion and a sensitive approach to the older adults attending the class:

'On occasions it’s it's not been beyond having a cry with that person, if they have been really upset, just coming alongside and comforting them, because, they've lost someone'.

Participant: FO8. (Female, Aged 43, GP referral Level 3, IFI L2, YMCAFIT).

'Even during a session, a mood can change, you know, or if somebody’s having an off day, recognise it, don’t make a big thing out of it, but, let them know that you've realised that their not quite, their jolly self and that’s ok, just do what you feel like you can do'.

Participant: FE2. (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).

Instructors who now employ other instructors talked about an enjoyment and enthusiasm for delivery as being an essential characteristic of instructors. The interviews suggest that this then translates into a respect and sensitivity when delivering exercise to older adults. The importance of mutual respect has been related to older adults’ satisfaction with classes and has been thought to be an important factor by exercise instructors in previous small scale work (Stathi et al, 2010).
Cohesive delivery:
Instructors also talked about the importance of facilitating an environment which was cohesive and bonded the group together. This seemed to be something which either related to the instructors’ personality or experience:

'I try and bring to the classes, uplift, urm I try and, make it an hour, where they feel they’ve have come to something positive, urm. I try not to talk about negative things, I try to to get them thinking on on, positive things, fun things...’

Participant: FO8. (Female, Aged 43, GP referral Level 3, IFI L2, YMCAFIT).

'I try to make it, like I mentioned about fun, so I hope I’d bring enjoyment to the lesson and just make them think, how easy it is to do...and just try to be as chatty as possible really, and just hopefully get other people talking and just getting them talking to themselves...’

Participant: ME2. (Male, aged 23, EXTEND).

To achieve this instructors put quite a lot of focus on the social occasion, whether it was during the sessions:

'I hope I give an atmosphere that, that makes them, you know, we always have it as a bit, it’s always fun, so I like to make it so that we have it a bit of a laugh as well and, um, and it, it’s a social occasion, you know, so they all get, it’s time for them to get together and have a little natter and, um, we have a few jokes...’

Participant: FE3. (Female, aged 66. EXTEND).

or staying to ensure there was social interaction after the class:

'...and having an openness and a friendliness, about you...I wasn’t an instructor, if you like, I was on their level, I just happened to be, leading, the programme that we were doing, so it was not putting up, a barrier of a them and us, kind of thing, and I’d stay and have a cup of tea with them after, you know, it wasn’t, well I’ve done my bit, see you...’
Participant: FE2. (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).

Progression and the importance of stretching participants and encouraging them to improve was something which arose as important in delivery. This did not have to relate to specific condition related outcomes but could be more about a group aim, although it still had to meet each individual’s requirements:

'So at the end of each, um, half term or term you’ve got something which you’ve been working on, something that you’ve been working towards, and then you’ve got something which is a finished product, and so it’s a, um, uh, what’s the word, um, an achievement, yes?'

Participant: FO3. (Female, aged 69, KFA).

Delivery from the instructor which promotes group cohesion and group cohesion itself has been found to relate to higher levels of satisfaction amongst older adults (Estabrooks et al, 2004). In Fox et al’s (2000) study with younger adults an enriched style of leadership, which gave encouragement, social interaction and social environment showed that participants had higher levels of enjoyment.

Instructor as motivator:
The instructor did not only play a role in creating a positive atmosphere they also talked about having an important motivating role.

'I am conscious all the time that no matter what I feel like I really do, try and encourage, motivate, give my whole self, my voice and which is why I am usually hoarse, because everything, you know you have got to be enthusing, motivating, none stop really, to GRAB their attention, to show they can do it...'

Participant: FP1. (Female, aged 53, EXTEND, BACR, PSI).

Again this seemed to be related to the personal characteristics of the instructor:
'You’re the person, that makes us feel better...you lift our spirits...people want to be encouraged by you, they want to leave thinking ‘ohh I feel better for that’.

Participant: FO6. (Female, aged 65. Medau, KFA, YMCA).

Instructors have already outlined the importance of motivational training, but their role as a motivator also seemed to be related to their personal characteristics and their enthusiasm for what they are delivering. Although not specifically looking at delivery to older adults, leader behaviour has been argued to have the greatest impact on individual’s perceptions about personal motivations that retained them in a group (Loughead & Carron, 2004).

Style:
Style of exercise delivery was not only influenced by the instructors’ training but also influenced by an instructors’ working role. If the class was a specific falls prevention class it would be delivered in a specific way. Exercise instructors said this was because they had undertaken PSI training, but also because the instructors’ working role demanded delivery in a specific way:

'Basically I would approach the class on what the focus was, so if it was a falls class I would be teaching to a certain format because of that.'

Participant: FP3. (Female, aged 48, BACR, IV COPD, PSI).

Ensuring the exercises where functional and related to an activity of daily living was again raised as a very important aspect of the instructors’ delivery. They said that they learnt this not only from training but from experience, that it was important to tap into their participants’ desire for independence:

'Because I think we also related everything we did, and still do to, an activity of daily living, rather than saying this is a set of exercises with a non-purpose, if you can...so you know if you lose your wrist movement you can’t hold or grip the cup, so you couldn’t have a cup of tea, you can’t tip a kettle, so we get, we used to get them to relate to all of that’.

Participant: FE2: Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi.
To ensure exercises were progressive and that class participants were kept engaged, instructors said it was essential to have variety in the delivery of the class. It was also essential to adapt, a point already illustrated when discussing the importance of a person centred approach.

'I think, ergh, lack of variation, people become bored with the same old, same old and that’s why I was saying I think you need to have, an awareness, of a little bit more and adaptability’

Participant FO7: (Female, aged 65. KFA).

The use of equipment was another way to add fun, diversity and progression. This again came from experience:

‘Working with the small balls, their actually, their co-ordination and dexterity... you get about 20 ladies who are... some of um are 80, but the people, when they start to bounce the ball across the circle...it can be, bedlam, really’.

Participant: MYE1. (Male, aged 78, YMCA, EXTEND).

Most of the instructors said that music was essential and extremely important to their delivery, the fun and variety of the exercise session. It was something that some of them learnt to use in training but their specific approach was influenced by their personal characteristics and relates to a person centred delivery:

‘I think music’s got a big key in that, cause I know there’s some exercise sessions who don’t use music and I cant think of anything more boring to be perfectly honest. But, I also think its knowing, your music, your choice of music and knowing the age range of people, you know... why don’t a few of you bring cd’s in, if you’ve got a favourite track, bring it in, and we will do at least part of the session to your, choice of music.’

Participant: FE2: (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).
It was also important as a tool for engaging participants in care homes:

‘sI try and keep it quite upbeat, the seated, and in the dementia care homes, because a lot of them sing along, and I know whose is whose favourite record as well now, so.’

Participant: FO5. (Female aged 44, YMCA, Personal Training, Otago)

As all ready discussed, music was not used within a large number of the falls classes due to the advice given in training. However, it was used in most of the general classes apart from by one instructor who in fact stated that it distracted from the social opportunities in the classes:

‘The fact that we don’t use music, is because I encourage them to talk... and if you have got 20 ladies chattering and talking to each other and telling each other stories...its amazing’

Participant: MYE1. (Male, aged 78, YMCA, EXTEND).

It is interesting to note that most of the instructors with the same training as this participant delivered classes with the use of music, which supports the argument that style is influenced by a range of factors.

There is no previous evidence of which we are aware that has identified these distinct delivery characteristics and related them to instructor experience or other personal characteristics. However, we do know that instructors with longer experience of delivery have more positive attitudes about their older adults’ participation (Hawley et al, 2011a) and that instructor experience is related to participant adherence (Seguin et al, 2010).

7.23 Participant Uptake.

Having explored what shapes the instructor’s delivery. The next two sections of the chapter begin to help us to explore instructors’ experiences and beliefs about the motivators and barriers to older adults’ uptake and adherence to exercise classes. It also helps us to understand in more depth the instructor’s role in this uptake and adherence.
7.231 Barriers.

When talking about instructors’ experiences of their classes, there are a range of barriers which arose that they believed stopped older adults from attending their classes.

*Branding and language:*

The instructors said that the way that the class was promoted was often dictated by either the working background of the instructor (if they were delivering the class for a specific purpose or under a local branding) or related to their training. They said that the class branding used could be seen as a barrier to older adults to even attend for the first time. Two of the instructors re-branded their falls classes because of feedback from participants saying that they did not wish to come to a ‘falls class’:

“I don’t want to come to a falls class’...so what we did was term it as functional ability.’

**Participant: FP4. (Female, aged 41, PSI).**

Language links very closely to branding. The way in which the classes were described was seen as quite important, a point that has already been illustrated by the reference to a ‘falls’ class. If the wrong language was used then some of the target audience could be dissuaded from attending. Instructors had strong views on how a class should be described which was influenced partly through training and the purpose of the class but particularly through their experience. How the classes were described was identified by instructors as very important:

‘I think the word exercise puts older people off full stop, so don’t use the word exercise, we use the word movement...urm, movement, I think is a good alternative, because I think people relate to that more, I think what we’ve, I’ve found in the past is that they see movements as having a sense and a purpose, exercise is something that you just want me to do’.

**Participant: FE2: (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).**
Also, instructors seemed to avoid making the exercise class sound too strenuous:

'I try and steer away from calling it aerobics'
Participant: FO5. (Female aged 44, YMCA, Personal Training, Otago).

The way that the classes were promoted was very similar. Classes were initially advertised through leaflet and poster campaigns. All of the exercise instructors in this study reported that this had limited success in recruiting older adults to classes:

'You can spend £100 leaflet dropping or whatever, um, we have found that you don't get anything back'.
Participant: ME1. (Male, aged 65, EXTEND).

One instructor suggested that this could be related to the language or the branding of the exercise class:

'we are not experts in marketing if you...if you get the image wrong, if you get the wording wrong...'
Participant: FP3. (Female, aged 48, BACR, IV COPD, PSI).

There are recommendations around how strength and balance classes should be promoted which suggest that classes should not be promoted as an intervention to prevent falls (Help the Aged, 2005; Yardley et al, 2006a). This considers the negative impact of promoting classes as falls prevention, suggesting classes should be promoted as an opportunity for healthy active ageing (Yardley et al, 2006a). However, there is no other known evidence around the language used for the promotion of general exercise classes for older adults.

**Attitudes:**
Instructors believed that participants’ attitudes were key to their first attendance and that was why the branding and language used could be critical to uptake. Often these attitudes were one of the major barriers to attendance and instructors felt that it was outside their sphere of influence. All of the following factors identified by the instructors as barriers to older adults’ participation were related to attitudes. Instructors said that they felt that potential participants did not feel that exercise was relevant to them personally or that they needed it:
'For people not to come it’s because one they don’t think that they need it, there’s nothing wrong with me, you know, I can do, oh, oh, oh, I’m all right just doing my housework, that’s enough exercise’.

Participant: FE3. (Female, aged 66. EXTEND).

'This age old one of, I have never exercised why should I bother now...?'

Participant FO7: (Female, aged 65, KFA).

They also felt that potential participants did not always link attending a class with their health and therefore it was not seen as a priority:

'So, you know, if health isn’t a priority in your life or exercise isn’t, then you’re not going to do it because you’ve always got an excuse’.

Participant: FO5. (Female, aged 44, YMCA, Exercise referral, Otago).

The issue of cost was cited as a problem but more that instructors believed that potential participants did not feel that they should pay for classes:

'Well, some of it’s price, and because urm, people are so used to getting things free, like they go to the urm NHS class, the NHS courses and they get picked up by a coach or a taxi or something, and that’s for 10 weeks. And then, if you have got to then go to a class”.

Participant: ME1. (Male, aged 65, EXTEND).

Instructors said that some older adults had a fear of the unknown, and about their abilities to do the exercise:

'Sometimes its fear of the unknown, um, you know the, um, are they going to either show themselves up, embarrass themselves, its gonna be too hard, generally they think they, they’ve got the belief that they are not going to be able to do it’.

Participant: ME1. (Male, aged 65, EXTEND)
'...where there’s a big element of a depression to overcome as well, or they’ve got, lost their self-esteem, they have lost their confidence, there’s the fear factors...'

Participant: FE2: (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).

Instructors also said that potential participants were also worried about holding others back in the group:

‘...and think that they’ll, they’ll hold every, everybody else back'.

Participant: FE3. (Female, aged 66. EXTEND).

The literature around older adults’ intention and uptake of exercise supports instructors’ comments about the important role that attitudes can play (Yardley et al, 2006; Yardley et al, 2006a; Yardley et al, 2007; Horne et al, 2010; Hawley et al, 2011).

Venue:
The instructors said that the choice of venue could be a barrier to older adults engaging in exercise classes. This seems to interlink with older adults’ attitudes and beliefs, for example the instructors said that the venue could either strengthen the participant’s confidence in attending or undermined it. This may relate to older adults’ perceptions of why they are attending the class:

'Some of the NHS environments, very clinical, we are trying to get away from clinical, we are trying to get people to think that this is a normal part of their everyday activity, social. You go into a leisure centre it can be quite big, quite intimidating, you get the person on reception whose, not really interested...'

Participant: FP3. (Female, aged 48, BACR, IV COPD, PSI).

Specific issue were raised by instructors in relation to older adults’ attendance to exercise classes in sheltered housing:

'...but the people who do come, do enjoy it, but its much harder to try and motivate them I find in sheltered housing, I don’t I don’t have a reason
for that particularly, I don’t really know why... but it is’.

Participant: FO8. (Female, Aged 43, GP referral Level 3, IFI L2, YMCAFIT).

‘Quite often, people start coming and then they will stop coming, in sheltered housing, they seem quite reclusive these people and often very reluctant to come...’

Participant: ME1. (Male, aged 65, EXTEND).

We explored whether instructors said that they believed it was the abilities of the participants within sheltered housing compared to community venues that made exercise attendance different or more difficult for older adults in this setting. But instructors suggested that it was a mix of issues and often less about ability, but about participants’ approach and attitude to exercise classes:

‘So there's this cosseted mental approach in, for a, to a certain degree in the sheltered schemes unlike when your more of an independent liver’

Participant: FO4. (Female, aged 44, YMCA, Exercise referral).

Occasionally, exercise instructors discussed how they felt the barrier was the lack of support of staff at the venue and that this could influence older adults’ attitudes:

‘the warden was very negative, extremely negative, um, which makes, which makes it quite difficult, never ever joined in, would sometimes walk through the back just to see if you were working, if you know what I mean, but never ever got any, any positive feedback at all and didn’t encourage anybody to, to join in who were in the building’.

Participant: FE3. (Female, aged 66. EXTEND).

They also discussed example of when staff at venues had physically prevented participants from attending the class:

‘Urm, when in care homes and residential homes, it’s the help of the care assistants or lack of, urm to bring people into your session...’

Participant: FE2: (Female, aged 48, EXTEND, Chair Based Leaders.
Tai Chi).

Perhaps some of these findings highlight potential reasons why instructors delivering in certain venues had more negative attitudes in Study 1. There is a dearth of literature which looks at venues as a barrier to initial attendance to exercise classes, although, it has been cited in a qualitative study as a potential barrier to adherence (Hedley et al, 2011).

Choice:
Exercise instructors discussed the importance of whether the participants felt they had a choice and wanted to attend the class, they said that participants would only want to attend and engage fully if it had been their decision to attend. Some instructors discussed how health professionals could make older adults feel that they didn’t have any choice in attending a class.

'I think it’s the telling, you know ‘I’m referring you for a 12 week exercise programme’, ‘oh no you’re not, cause I’m not going’, and you see it, you know, I mean we’ve had people in the past and we’ve sort of said, ‘ooh how did you find out about it, you know, do you know so and so?’ ‘no, I was told to come’ and they just don’t want to be there, because it’s not been their choice’

Participant: FE2: Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi.

Instructors said that family and partners could also make older adults feel that they didn’t have a choice in attending:

'I’ll take you to this class and drop you off and I’ll go and do my thing, you know and they might just feel that there being dumped, so, you know being pushed into it so they won’t enjoy that, so that’s a reason their against coming... they say, no I’m not going...'

Participant: ME1. (Male, aged 65, EXTEND).

Instructors also said that rather than encouraging attendance, family could also influence participants by making them feel that they couldn’t or shouldn’t be attending a class:
'Urm, they are influenced you know... ‘are you sure this is doing you good mum? Sit down, put your feet up, I’ll get your groceries...’

Participant: FP1. (Female, aged 53, EXTEND, BACR, PSI).

As could health professionals:

'If you have got the ones who are ‘well your eighty, what do you expect?’ You know, ‘you should be doing your knitting and watching EastEnders’, you know. Your up against...’

Participant: FP1. (Female, aged 53, EXTEND, BACR, PSI)

'I’ve got my GP referral qualification; it's a nightmare to get doctors on your side. And if I haven’t got the doctors I haven’t got the customers because the doctors won’t refer them through'.

Participant: FO4. (Female, aged 44, YMCA, Exercise referral).

This may help us to understand why some instructors held more negative social influences scores than others in Study 1. The majority of the instructors who worked freelance, worked on their own (did not come under a local banner) and found it difficult to engage health professionals. We know from previous literature and from the TPB that social influences have an important positive impact on older adults intention to participate (Yardley et al, 2006; Wilcox and King, 2005; Litt et al, 2002). However, we know very little about how choice impacts on the uptake of an exercise class or the negative effects of social influences.

Transport and weather:

Instructors mostly associated issues older adults had around the cost of the exercise classes with their attitudes towards the classes and their value. However, transport and the weather where extrinsic factors that instructors said could affect older adults’ participation:

'The problem is getting to the venue, and if they live a bit away they have got to pay for a taxi and you can imagine it gets quite expensive'

Participant: FP8 (Female, aged 28, PSI, Physiotherapist)

'The roads have been alright, but the paths haven’t... what you end up with,
Extrinsic factors such as transport and weather have emerged from the literature previously as barriers to older adults uptake to exercise classes (De Groot et al, 2011; Tu et al, 2004). This previous evidence from older adults’ perspectives supports instructors’ comments.

7.232 Motivators.

When talking about their experiences of their classes, exercise instructors’ discussed a range of motivators which instructors said they believed encouraged older adults to initially attend their classes.

Language:
Instructors said that the language used to describe the classes was not only a barrier. It could also be seen as a motivator if it focused on offering something different to mainstream exercise opportunities (identified by instructors as gym and leisure service provision):

'usually say something about if you like movement and dance come and try it. Or, you know, you should be exercising but you can’t find something to suit you because the gym isn’t for everybody. I mean, you know, it is for loads of people and that’s fine but, um, we just offer something that’s a bit different'.

Participant: FO3. (Female, aged 69, KFA)

Instructors described offering exercise classes as an alternative to a gym, which they said was more of a positive motivator for older adults, as they believed it was a less intimidating environment.

'I personally have put, things like, um, referring to gyms and things like that, because quite a lot of people are put off by gyms, so not exactly these words but something like ‘frightened of going to the gym but want to exercise?’

Participant: ME1. (Male, aged 65, EXTEND).

Issues around older adults identifying interventions as relevant to them have been explored
in relation to falls interventions and strength and balance classes (Yardley et al, 2006; Yardley et al, 2006a; Horne et al, 2009). This has not been explored in relation to more general exercise classes, but the instructors’ experiences here illustrate that the language used in the promotion of classes has to fit with older adults’ perceptions of themselves.

Instructor promotion of classes:
Instructors said it was often more important to have a ‘personal touch’ when promoting the classes. Through advertisement it was difficult to get across to potential participants what the classes entailed and therefore instructors perceived their encouragement as very important to uptake of classes. Instructor encouragement may help to give potential class participants more confidence and self-efficacy with regards to their attendance to the class. Instructor encouragement was identified as being carried out through the exercise instructor visiting groups of older adults and discussing what they delivered:

'Urm, very often with over 50’s they’re not quite sure that they really should be doing this and their sometimes a little bit worried that, urm its not going to do them as much good as what they think, urm and so I tend to, allay their fears'.

Participant: FO8. (Female, Aged 43, GP referral Level 3, IFI L2, YMCAFIT).

Instructors used strategies such as providing free tasters sessions and encouraging potential participants to come and watch a class:

'If people ring up I say come and try it, you know, it’s fine, you’re very welcome, uh, you know, you don’t have to pay anything come and see if you think it suits you, sometimes they ring and say oh can I come in and watch, and I say well you can if you want to but, um, just come in’

Participant: FO3. (Female, aged 69, KFA)

They also attended showcase events:

'Urm, we attended events, we always did a display at events, even if it was just ourselves, so people, remembered you when you’d gone, ‘ohh I could actually do that meself’, ergh, as I say, we went to coffee
mornings, anything where there was, a group, of people that met’.

Participant: FE2: (Female, aged 48, EXTEND, Chair Based Leaders.
Tai Chi).

Instructors said when promoting the classes with potential new participants the emphasis was always on the outcomes to be gained, such as the social occasion:

'Just had a little chat about things that they were already doing, but also the incentives to, make them feel part of something bigger’.

Participant: FE2: (Female, aged 48, EXTEND, Chair Based Leaders.
Tai Chi).

They also emphasised health benefits, such as physical improvements:

'...then I might put we’re going to do a bit of toning...I always try and put a bit in about, you know, if we can use bands or stuff like that but, I try and make it so it’s more from the benefit side and not to keep, not too technical'.

Participant: FO5. (Female, aged 44, YMCA, Exercise referral, Otago)

Instructors also discussed the mental health outcomes that older adults would get if they attended a class:

‘...also with the co-ordination training and things its also mind exercise as well as body exercise’.

Participant: FO8. (Female Aged 43, GP referral Level 3, IFI L2,
YMCAFIT).

Some instructors said that having an older exercise instructor deliver the class made a difference to older adults’ views of attending and the class became a more attractive proposition:

'Most of them see me as...yeah role model, they think urm, because your active and bright'

Participant: FO6. (Female, aged 65. Medau, KFA, YMCA).
Also, if the potential participants perceive the instructor as more than just an instructor, for example as a friend:

‘I suppose they see it, they saw us and still do over their, more as a friend than an instructor and that can be a huge, barrier, removed to whether they are going to join in or not’.

Participant: FE2: (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).

or even as a peer:

'We also, obviously used the train mentors to deliver on a voluntary basis, most of whom, were 50+ themselves, urm, and I do think that’s encouraging, peers, having, peers delivering to peers can be more encouraging than having, a young keep fit instructor, trying to tell an older group of people what they should be doing’.

Participant: FE2: (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).

We have already established that if potential participants believe they will get positive outcomes from the class they are more likely to attend (Howze et al, 1989; Hays et al, 2005; Hays et al, 2010). The instructors said that they had an important role in promoting these outcomes. The experiences discussed by the instructors support the arguments made in Study 1 that there is the potential for instructors’ positive attitudes and support around outcomes to influence participants’ behaviour.

Peer promotion:

The role of peer support and promotion in uptake and adherence was one of the most recurring themes throughout all of the interviews with instructors. Peer promotion and word of mouth were the main ways that instructors said that they recruited new class participants:

'So, the friends of those members are aware of it, you tend to find a lot of our new participants come because, their neighbour is a KFA member
and they have suggested that they come along’.

Participant: FO1. (Female, aged 45, Laban, KFA).

Exercise instructors said that they believe that it is peer recommendation which makes older adults attend for the first time. Then it is important that their first experience is one of enjoyment:

‘I don’t get the impression, it necessarily starts with a erh wanting to, to be fit, urm sometimes it can be that friend says ‘come on, you know come along with me...its its fun!’ I’ve heard one or two of them say, well we’ve told her it were, it were interesting and that we have, have a real, good time on an afternoon, for that hour, you know. So their friends come, urm and they try it out, and they say ‘ooh yeah’ you know...’

Participant: FO8. (Female Aged 43, GP referral Level 3, IFI L2, YMCAFIT).

This peer influence also occurred in instructors’ descriptions of falls classes. Even though the classes may be referral only, older adults were more willing to attend if someone they knew had been on the course:

‘But definitely, peers as well, don’t they? We have had, ‘Ooh, so and so has been on that course, you’ll love it, you’ll find it really good’, you get, definitely influenced by it...’

Participant: FP1 (Female, aged 53, EXTEND, BACR, PSI)

Instructors’ views about the important role that peer promotion plays in the uptake of a class are supported by the literature on older adults' views on why they start to attend classes (Fox et al, 2007) or exercise opportunities (Resnick et al, 2001; Stead et al, 1997).

Family support:

Exercise instructors did not only discuss families as a barrier to older adults’ uptake of exercise classes through their negative influence on attitudes and choice, but also as a motivator as families could also have a positive influence on attitudes:
'The daughter will phone you up at the initial stage and say I think it will do her good, put her down. Urm, they are influenced you know'

Participant: FP1. (Female, aged 53, EXTEND, BACR, PSI)

Family support could also have a positive influence through family and spouses attending the exercise class together:

'The support of the partner, whether the partner comes, because we do get about four couples come to Village now. I know it’s really it’s quite good'.

Participant: FO4. (Female, aged 44, YMCA, Exercise referral).

'The encouragement of partners and relatives, I have a gentlemen at the moment who I am trying to get in the Parkinson's healthy bones class, and both his daughters are going to go with him'.

Participant: FP8. (Female, aged, PSI, Physiotherapist)

There was also a belief that family could directly influence attendance by providing practical support such as transport and access to classes:

'I have got one, her husband takes her everyday, drops her off...'

Participant: FP7 (Female, aged 56, PSI, Physiotherapist).

The instructors discussed how family could positively encourage participation and also support self-efficacy, which we have seen is an important element of older adults’ attitudes towards exercise interventions (Yardley et al, 2006; Yardley et al 2006a; Yardley et al, 2007). This finding supports Study 1’s findings around instructors’ positive social influences scores and positive PBC scores.

Referral/signposting:

The other way that instructors promoted uptake to their classes was either through referral or signposting to classes. The falls classes tended to be referral only:
... most of our people come to the falls programme because they have been, advised to be there, by a health professional, and that has taken many years to achieve, so that we know have doctors who are saying ‘I think you ought to go, to this’, um, and obviously, they take that, quite seriously then... ours are all, um referral’"

Participant: FP2. (Female, aged 46. PSI, EXTEND, BACR)

There are also referral schemes in some areas which refer directly to community exercise programmes:

'Because in City we’re recognised by the um BEEP scheme, which is City Encouraging Exercise Participation, um, so we do get a few referrals from that...I do feel that they need educating...it might be something the doctors need to ask ‘what is your activity level?’ ‘What did you used to do?’ ‘What do you do know?’ to try and get people thinking that they should be doing, just that little bit more than they are.'

Participant: ME1. (Male, aged 65, EXTEND).

Informal signposting has also been identified as helping to encourage class participant uptake:

'We have health trainers who go out and about in the city, they can talk to people'.

Participant: FP3. (Female, aged 48, BACR, IV COPD, PSI).

Instructors felt that participants saw it as an important reason to attend, either because they felt they have to:

'If they have been referred, for a lot of them they feel that they have to do what a health professional tells them'.

Participant: FP3. (Female, aged 48, BACR, IV COPD, PSI).

Or they would attend out of respect for the health professional advising them:
'Initially, I would say that yes they do get influenced. GP referrals, we take GP referrals into our classes and um that certainly is um, gets them through the door.'

Participant: FO1. (Female, aged 45, Laban, KFA).

Exercise instructors said that this referral to the class also made older adults’ feel more confident about the quality of the delivery and also confident that the class instructor was aware of their health issues.

'...that you know what my, in your case, what my blood pressure is, you know what tablets I take, you know what’s wrong with me, therefore I feel confident to come here, knowing that I’m, ok to exercise'.

Participant: FP1 (Female, aged 53, EXTEND, BACR, PSI)

'99% of the GP’s in Town know about the programme...we have had a few that have asked 'is it ok if I carry on the exercise class' and they say, Yeah I want you to go back and carry on'.

Participant: FP9. (Female, aged 43, YMCA, PSI).

All instructors thought that professionals had an important role to play in promoting exercise classes with older adults. Instructors said that older adults will often attend if a health professional asks them to attend. This is supported by research with older adults (Horne et al, 2010).

Control:
The themes discussed highlight extrinsic factors that influence potential participants’ attitudes to exercise classes. Instructors discussed how potential participants could be motivated by a decision to take back control in their life. This could be about a desire to feel better about themselves and lose weight:

'I think, what motivates them to start to come, is that they feel that they need to get fitter, they want to actually lose weight'.

Participant: FO1. (Female, aged 45, Laban, KFA).
It could be a way of coping with bereavement and the loss of a loved one, often as a way to fill a gap and get themselves out and about:

'From the being depressed point of view, why don’t you get out and do something...their spouse has died, often that’s a huge motivation'.

Participant: FO6. (Female, aged 65. Medau, KFA, YMCA).

Instructors also discussed participants being not only motivated by the positive outcomes they could achieve but the fear of the loss of their health or independence:

'If they have had an event or they are particularly worried about a medical condition'.

Participant: FP3. (Female, aged 48, BACR, IV COPD, PSI).

'They want to keep themselves fit...we want a long life, but we want a quality of life'.

Participant FO7: (Female, aged 65, KFA).

Again this links back to the earlier theme around instructor promotion as they felt that this could be used as a motivational tool to engage older adults in exercise:

‘if you can’t get out that chair, or even if you can, but you’ve not got this movement...you’ve got to sit there and wait for someone to help you get dressed, make you a cup of tea, feed you...and it’s that look of, horror really on their face.’

Participant: FE2: (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).

Instructors believed that the barriers to older adults attending classes were mostly intrinsic and related to their attitudes about exercise. The motivators are a mix of intrinsic (e.g. attitudes related to outcomes) and extrinsic (e.g. family) factors, instructors talked about extrinsic factors having a direct influence on attitudes particularly related to the outcomes participants hoped to achieve. This is supported by the findings of the systematic review where intention and uptake has been found to relate mostly to intrinsic factors (Hawley et al, 2011) and previous research which emphasises independence as a key motivator to
exercise uptake and adherence (Yardley et al, 2006; Hawley et al, 2009; Horne et al, 2010).

**7.24 Participant Adherence**

7.241 Barriers.

After the initial motivation to attend, instructors said that participants would either stay in the class long-term or drop out. Instructors said that they believed the reason for the dropout was often related to both the participants' attitudes but also whether the instructors’ delivery and the class met the needs of the participant and their expectations.

*Expectations:*

Instructors said that to engage older adults’ in regular class attendance their expectations had to be met when they first attended the class:

'It wasn’t the sort of thing that they wanted'.

**Participant FO7: (Female, aged 65, KFA).**

If they had been very active all of their life and they felt the class did not meet their needs (e.g. was not active enough) they may not continue to attend:

'She came and she said it wasn’t hard enough, because she says, I used to come here before, a lady teacher doing it, it wasn’t EXTEND, it was, not an aerobics class, but um more of a dance class, so it was all standing, and um... so she said, in her mind she new how fit she had been in the past, and she was wanting to try and maintain that level, and the class wasn’t the level for that'.

**Participant: ME1. (Male, aged 65, EXTEND).**

Sometimes even if the class was ‘gentle’ instructors found the class to be too much for some participants.

'...other times they come and its too hard, cause they’ve got problems, they maybe it makes them hurt or ache, they’ve got arthritis, or they’ve got a trapped nerve, all these sort of things, it might be too hard, so...'

**Participant: ME1. (Male, aged 65, EXTEND).**
There is limited literature around the issue of the class meeting participants’ expectations when first attending (Horne et al, 2007; Horne et al, 2010, Hawley et al, 2011). Instructors talked about the importance of person centred delivery which is supported by a previous study (Stathi et al, 2010). However, instructors indicated in discussions that even if delivery was person centred on some occasions if the participant has unrealistic expectations or attends the wrong type of class then drop out may be unavoidable.

**Peer dropout:**
Instructors believed that peers played a major role in motivating potential class participants to attend initially. However, if a peer dropped out this could then cause the friend to withdraw from the exercise class.

_'They drop out because their friends isn’t coming anymore, which always saddens me, if they’ve, if they’ve come and enjoyed it and been but then a friend doesn’t come, because they’ve usually, you hope that they’ve got into a friendship group'._

**Participant: FO3. (Female, aged 69, KFA)**

This was often associated with a lack of confidence to attend alone:

_'They tend to go in two's, as well, so if one drops off, the other one will drops off... so they lose confidence'_

**Participant: MYE1. (Male, aged 78, YMCA, EXTEND).**

The literature from an instructor’s perspective is very limited, but literature considering older adults’ participation highlights the importance of peer support (Fox et al, 2007; Horne et al, 2010). Therefore it is understandable that the loss of specific peer support could lead to loss of confidence and drop out from the exercise class. Hence, group cohesion seems to be critical to maintaining participant adherence, even if their peers drop out.

**Poor health or caring:**
Instructors said that if class participants had not dropped out right at the beginning of attending a class because the class did not meet their needs and expectations, then they
often dropped out only because they were left with no choice. This could be because of ill health:

'The reason why people don’t, usually it’s been to ill health, um, (pause) an operation...So, um, dropout usually tends to be for a reason. Um, well that’s what I’ve tended to find. Not that they’ve not enjoyed the sessions'.

Participant: FO5. (Female, aged 44, YMCA, Exercise referral, Otago).

caring for partners, relatives or grandchildren:

‘...caring for, an older sister urm a brother or whatever... ur, the other one is, grandparents going to stay with children that live away from home, to look after grandchildren'.

Participant: FO8. (Female Aged 43, GP referral Level 3, IFI L2, YMCAFIT).

Or because they have moved into care:

‘People have gone into nursing homes, gone into care, urm, sheltered housing, gone to move nearer to relatives, passed away, so there’s a lot, a lot of that wastage’.

Participant: ME1. (Male, aged 65, EXTEND).

This finding is supported by the literature as life events or health issues have been cited as a reason for older adults starting an exercise class (Clark & Nothwehr, 1999; Rasinaho et al, 2006), but also as a major reason why they also drop-out (Booth et al, 1997; Clark, 1997; Clark & Nothwehr, 1999; Grossman & Stewart, 2003; Rasinaho et al, 2006; Hedley et al, 2010; Phillips et al, 2010).

Change of instructor:

Exercise instructors commented on older adults leaving exercise classes when a new instructor takes over the class. This was felt to be related to the personality of the new instructor or how they deliver the exercise class, despite the fact that both instructors had the same training:
'Not everyone might like you, you know...I took over from a lady who had taught a class for 20 years...when her husband died and she moved areas, I took her class on...and they were waiting to catch me out...most people I kept ... but one lady walked out because she was a friend of the previous lady and because she didn’t like the way I did it'.

Participant: FO6. (Female, aged 65. Medau, KFA, YMCA).

‘One of the ladies stopped coming purely and simply because I wasn’t taking the class anymore, um, which I found, I really didn’t think that that was a valid reason’.

Participant: FE3. (Female, aged 66. EXTEND).

The qualitative literature looking at older adults’ adherence to classes has shown that a trusting relationship with the instructor is important (Stathi et al, 2010). It is likely that if the instructor changes, this relationship may take time to re-build.

7.242 Motivators

Exercise instructors found that if class participants did not drop out quickly they tended to stay in the class for the long term. The instructors identified key reasons for this adherence which are considered below.

Commitment:
Instructors said that once class participants became established attendees of the exercise class they often did not drop out and tried not to miss sessions unless they had a very valid reason. These participants became long term adherers and loyal to the group and the instructor:

‘...even one week when I couldn’t get there because the snow was that deep, one lady did manage to turn up, (laughs) and she’d walked it there, urm, to my surprise. So, you know, they’re really determined’.

Participant: FO8. (Female Aged 43, GP referral Level 3, IFI L2, YMCAFIT).
Participants who were established in the group only tended to missed classes if they did not have a choice:

'I find that they want to come, only, my private classes, it is either a hospital appointment, they are not very well or a holiday'.

Participant: FP1. (Female, aged 53, EXTEND, BACR, PSI).

They may miss classes for a while but when they were able to physically attend they would return:

'I rang to find out how she was and she said “I’m fine, but me husband’s sick and he doesn’t want me to leave him, but when, when things you know, obviously progress to the conclusion, I will come back”, and she has done, and she says it has helped her because its helped get her out of the house, its helped her to focus on the life that she’s got to start now, which is a new life'.

Participant: FO8. (Female Aged 43, GP referral Level 3, IFI L2, YMCAFIT).

'because they go off to the caravan or they go away and we do lose some in the summer because it’s bowling so we see them in the winter'.

Participant: FO4. (Female, aged 44, YMCA, Exercise referral).

We know that class participants who have been attending for more than six months are less likely to drop out as they have established the behaviour (Stiggelbout et al, 2006; Prochaska & DiClementi, 1983). This theme illustrates the commitment shown by those participants who have been attending the class for some time.

Achieving outcomes:

One of the reasons that instructors said that they believe class participants adhere in the long term was due to the gains that they received from the class and the outcomes that they achieved. These benefits were often functional outcomes related to everyday living:

‘…after about five weeks she could manage to get all the way up without stopping and that motivated her to be able to come back, to keep coming back to, um,'
and that has happened with, with several people that, that they have actually physically improved and can actually see the, the improvement themselves and that actually motivates them to, to keep going'.

Participant: FE3. (Female, aged 66. EXTEND).

The physical benefits were emphasised as more important to adherence in the condition specific classes:

‘...find what motivates each individual...and if you can key into that, and then find out what they need and what they actually want to achieve, even though it’s in a group, it's orientated to their individual goals. I think that’s important because then they can see a reason for doing things.’

Participant: FP8. (Female, aged 56, PSI, Physiotherapist).

These feelings of achievement were consolidated by feedback from the instructor. This demonstrates the positive attitudes instructors hold about the potential outcomes and benefits participants can get from attending the exercise classes and also illustrates how instructors think that these positive outcomes can assist in consolidating adherence for participants.

'We give the class feedback, yeah, on how they’re going, and we discuss with them, um, and at the end of class and at the end of a term you, you’d praise them for what they’ve achieved, and so they know how they’re progressing’.

Participant: FO3. (Female, aged 69, KFA).

'When we do our sessions we will say, this will help with your walking, this will strengthen your legs, and then they feel the benefit'.

Participant: YP1. (Female aged 43, YMCA, PSI).

Instructors also said that they thought participants’ feelings of achievement were strengthened by feedback between class participants on outcomes and benefits. In this way participants motivated each other to continue:
‘She said ‘oh well actually in six weeks, I have been able to cut me toenails, something I've not been able to do for five years…that, triggers something else, ohh, well if she can do that… I wonder what…?’

Participant: FE2. (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).

This could be facilitated and encouraged by the instructor:

‘Do you remember when you first came you couldn’t do this? And we frequently ask, can anybody think of anything they can do now that they couldn’t do before? Like somebody yesterday would say, when I went on holiday last year I couldn’t get up the chalet steps, this year I got up them'.

Participant: FP1. (Female, aged 53, EXTEND, BACR, PSI).

These findings potentially support the positive attitudes around outcomes older adults could achieve shown by instructors in Study 1. They are also supported by the literature emphasising the importance of outcomes to older adults’ adherence to classes (Hawley et al, 2011).

Social cohesion:
The most important factors which instructors discussed that they said kept participants attending long term were the social aspects of the group and group cohesion. This actually arose in every interview, even if instructors said that classes might have different aims and set outcomes. The social element was perceived by instructors as important to adherence in a general older adults class:

‘I think that they get, um a real sense of a social group, egh that’s not necessarily in a pub or bingo based, or playing cards, um its its something that they can come, that’s actually motivational, and I think they have a feeling of well-being and and being positive when they’ve done it, um some of them gather and go out for a meal after it’.

Participant: FO8. (Female Aged 43, GP referral Level 3, IFI L2, YMCAFIT).
It was also discussed as important by instructors who delivered condition specific classes (although they acknowledged that adherence was limited to a set period of time due to the length of the programme):

“I love Tuesdays because it’s my day where I, I see people, but also that I do something that’s positive”, I think, it definitely becomes, quite a big part, and I suppose from our classes, because it’s a 20 week programme that is the down side, isn’t it, where we see the end of that where there…”

Participant: FP1. (Female, aged 53, EXTEND, BACR, PSI).

It was said that they believed the exercise class provided each participant with something which they did not get from other forms of social activity, for example it provided more than just a social opportunity, it provided something unique:

'They get social network which is beyond their family that is, that understands them, that has maybe gone through the same thing or they know someone that has, and they do it for themselves and they don’t get much for themselves cause there either nurturing their children or their looking after elderly relatives or whatever, it’s the one thing that they love for themselves'.

Participant: FO1. (Female, aged 45, Laban, KFA).

Instructors discussed how it often helped participants to feel as though they were part of something bigger:

‘They do get that ergh sense of community as well with it…it’s a contact, and and they’ll have rung each other in the week and said “how’s so and so” or whatever, and if ones of them is missing for a while, they’ll say “have you heard anything?”…so there’s a care, it increases sort of a care circle'.

Participant: FO8. (Female Aged 43, GP referral Level 3, IFI L2, YMCAFIT).

‘It’s the fact that they have now got a social group, a feeling of belonging, particularly as I mentioned earlier, because of our membership process, they might not actually go to the same class, but there’s a whole community there, of keep fitters…It sees them through periods of stress, it sees them
through periods of illness; they have got this network that they can turn to'.

Participant: FO1. (Female, aged 45, Laban, KFA).

The exercise instructors said that they had a role in facilitating this wider social cohesion. This could be achieved by introducing other activities outside of the exercise class which helps to provide variety and strengthen the cohesion in the group:

‘So basically what we said was, if you’re a member of a hip and heart group, then 4 times a year there was a tea dance that, they got invited to, again free of charge, it was two hours one Monday afternoon, but they could have a dance, so again, that was sort of being part of something that bit bigger…'

Participant: FE2. (Female, aged 48, EXTEND, Chair Based Leaders. Tai Chi).

'Not only do I have classes we go out socially as well…we go to the cinema once a month, we have our lunch out'

Participant FO7: (Female, aged 65, KFA).

For some participants, especially those attending falls rehabilitation (often frailer) it was their only social opportunity:

'I was just going to say, you quite often get the comment that, this is the best day of the week…this is the only time I come out…'

Participant: FP2. (Female, aged 46. PSI, EXTEND, BACR).

The instructors’ views here are supported by previous qualitative work where instructors saw the importance of social elements and put increased emphasised on them (Stathi et al, 2010) and from older adults’ perspectives about exercise classes (Horne 2007). This also highlights why it is important for the instructor to facilitate a cohesive group atmosphere.
7.3 Discussion.

Current evidence suggests that instructors could have a role to play in older adults’ uptake and adherence to exercise classes (Hawley et al, 2011). We have established in the first study of this thesis that there is a relationship between instructors’ characteristics and training and their attitudes towards older adults’ participation in classes. This qualitative study has explored what shapes instructors’ beliefs and also their experiences of older adults’ attendance to their classes. We establish that instructors have said that they believe they are influenced by their training, characteristics and experiences and that they think that this does then relate to their delivery and from their perspective has an impact on the participant.

Based on findings from the first study (Hawley et al, 2011a) we expected there may be some differences in experience and approaches between instructors who had undertaken qualifications with general exercise provision and instructors who had obtained their qualifications from specific older adults companies. However, these instructors tended to voice similar experiences and beliefs and differences were drawn more clearly between non-specific (general Level 3 older adults’ qualifications) and specific condition training (such as PSI). Those who had undertaken specific condition related training such as PSI, had a more evidence based and target based approach, their main aim seemed to be about functional outcomes and ensuring they followed the evidence base taught to them on their training. Although this was important for instructors with the general Level 3 qualification, their main focus in their reports was about fun and the social occasion, perhaps as their training is not based on certain exercises proven in research but more on years of delivery experience.

Where instructors had undertaken both types of training then the distinction was still there between their general community classes and their condition specific classes. However, all instructors discussed social elements, fun, function and outcome as important parts of their delivery. The instructors emphasis on condition specific training following the evidence base supports our argument in Study 1 that participants who had undertaken LLT training may have scored less positively for PBC for mostly seated classes because they are trained that their delivery must be standing to challenge balance (challenging, not easy as the question asked).
Although instructors talked about training clearly having an influence on their beliefs and delivery, it was not the sole important factor, they discussed a combination of training, their willingness to continue learning, experience and personality was essential. Personal traits described by instructors included enthusiasm, passion, being understanding and approachable. According to those interviewed they had to enjoy what they did and that then translated to key elements of delivery such as being participant centred, cohesive and motivational. This study supports both the previous study (Hawley et al, 2011a) and other research (Seguin et al, 2010) which has established that instructors’ experience could have a role to play in participants’ adherence. We have already established that experience relates to positive attitudes, this finding is supported in this study where the data demonstrates how important instructors believe experience is to the quality of what they deliver and the atmosphere that they create in the classes.

Discussions with instructors revealed that their challenge was not motivating their existing participants but how to engage new ones. They did discuss strategies to do this, a personal engagement of potential participants or the role of someone else to try and allay fears and tap into participants' attitudes to engage them in attending the class was seen as important. The systematic review has already illustrated the importance of attitudes in intention to attend a class and is further supported by the work of Yardley et al (2006, 2006a, 2007 & 2008). All of the instructors said that others could have a role in motivating participants, supporting the findings around instructors' positive attitudes around social influences in Study 1. Whether instructors said this encouragement came from health professionals, as already evidenced by Horne et al (2010), or families (Yardley et al, 2006; Fox et al, 2007; Hardy & Grogan, 2009), they could support or dissuade participants from attendance. Instructors said that peers were ultimately the most important promoter of classes (Fox et al, 2007) and the main way that instructors recruited new participants. In referral only classes this wasn’t as prominent but instructors said it could still be a factor.

As instructors who were from an NHS clinical background, delivered in NHS settings or delivered in leisure centres or care homes were found to have more negative attitudes in Study 1 (Hawley et al, 2011a), we did explore the issue of instructors’ working background and the settings in which instructors delivered. Although those who delivered falls classes tended to indicate that they have slightly more rigid delivery and their classes were more outcomes based, their experiences were not significantly different to other instructors. They also discussed the importance of social cohesion for adherence. However, they did
mention the restrictions to long term adherence caused by length of time participants could stay on their programmes. This may help us to understand the more negative social influences and perceived outcomes scores found in Study 1. We found from the interviews that all of the settings mentioned above could provide potential barriers whether it was lack of support from staff, or the expectations or beliefs that older adults may have in relation to the choice of venue.

The findings from this study show that from the instructors’ perspective, the majority of the barriers that older adults face in relation to attending exercise classes are intrinsic and related to their attitudes. The instructors said that they could tackle some of these barriers that older adults’ faced through fostering positive attitudes towards the classes through direct contact with potential participants. Instructors discussed both intrinsic and extrinsic motivators for older adults to begin an exercise class, although they said that key extrinsic factors such as peer promotion clearly influenced potential class participants’ attitudes.

From the instructors’ perspective once an older adult had taken up a class, leaving was related to their expectations not being met or poor health, this finding echoes feedback given by older adults’ (Hawley et al, 2011). However, instructors said that once class participants had attended the class for a while they tended to get “hooked” in by the social outcomes but also the additional physical improvements they achieved. It is interesting to reflect that carrying out home exercise has been found to relate to a desire to maintain independence, with social support helping to support that motivation (Hawley, 2009). Attendance to groups was thought by instructors to be mostly about social outcomes with additional physical and functional outcomes as a secondary reason. They said that people saw the class as more than just a class; often there were important social networks and events which emerged from the classes, and they reported that older adults appreciated being “being part of something bigger”. Perhaps this is why in Study 1 instructors delivering in NHS settings or from NHS clinical backgrounds had more negative attitudes around outcomes as they were less able to facilitate wider social benefits than other instructors due to the constraints of their role or constraints on their time with participants.

The findings from this study suggest that instructors believe that once class participants have built a relationship with both the instructor and group, very few drop-out unless they have to. This finding is supported by previous work looking at group cohesion (Carron et al, 1988; Estabrooks & Carron, 1999; Loughead & Carron, 2004). The instructors in this
study said that they had an important role to play in facilitating this positive social and cohesive environment as well as delivering a rewarding physical class. This is again supported by accounts from older adults in previous studies (Estabrooks et al, 2004; Fox et al, 2007; Chiang et al, 2008). This study suggests that from an instructors’ perspective, social aspect of classes are important in relation to long term adherence, which has already been highlighted earlier in this thesis in the systematic review. This study adds to the findings from the systematic review and also helps us to understand further some of the findings from the first study.

7.31 Limitations

There were several limitations of this study. It is likely that all the instructors who engaged in the interviews were keen and enthusiastic, whilst instructors with more negative attitudes from the first study where not recruited, this is likely to have introduced bias. Although we purposively sampled with the intention to gather a wide range of representation of different backgrounds, training, gender, ages and experience, not all training qualifications are represented. We did try to engage instructors with other training qualifications in the chosen area and if we had not been restricted for practical reasons we could have recruited instructors U.K wide in an attempt to ensure complete representation. However, a wide range of variation in the sample is accounted for and saturation was reached where there were no new themes emerging. It must be acknowledged that several of the instructors recruited were also course directors for the training provider with which they were affiliated, this could have the potential to bias views but may have also led to a further dimension being added to the research, this has been reflected on during the coding and analysis stages. Finally, the lead investigator/interviewer had previously met some of the instructors before within her working role and commissioned exercise training. This may have influenced the response both from the participant and the interviewer, although it is possible that this could have put participants at ease and assisted the interview process. The interviewer did not discuss her working role before or during the interviews to try to mediate this effect and a second researcher was used to check the coding and analysis of the data to ensure that the instructors’ previous contact with the instructors did not influence interpretation of the data. Reflexive practice has already been discussed and was carried out throughout the research study.
7.32 Recommendations.

It is recommended that when new classes are started (before behaviour is established) the use of an experienced instructor may help promote adherence levels of older adults. New instructors should be offered opportunities to observe a variety of classes before they set up classes. However, although the participants may benefit from a more experienced instructor, the instructor’s willingness to continue to adapt and learn, respect for class participants and enjoyment in delivering the class could be argued to be more important.

The support and education of professionals and also families is important, especially in motivating older adults to attend for the first time. The use of peer mentors and referral schemes have had some success in practice (Stewart et al, 2006; Laventure et al, 2008; Dorgo et al, 2011) and there is the potential for this to be adopted more widely.

The importance of the social element of all of the classes cannot be underestimated and it is suggested that the instructor could look at introducing additional events and facilitating an atmosphere which helps to improves group cohesion if they wish to retain their participants in the long term. Also variety of delivery, progression and fun are all elements that should be included in a class with an emphasis on the benefits that are being gained, with an acknowledgment of each participant’s individual needs and achievements. It could be suggested that those instructors delivering condition specific classes and those delivering general classes could learn from each others’ experience. Falls classes with a more social and fun element may increase adherence levels which can sometimes be poor (Nyman & Victor, 2011) and this may also assist the transition to community classes. An increased focus on outcomes in community classes may increase achievements at least as perceived by the class participants and this may also increase their confidence and their adherence. However, it may be a delicate balance which needs to be achieved particularly for community classes as participants are often paying to attend and their main motivation from the instructors’ perspective is a social one.

A clear pathway between rehabilitation classes and community classes where the instructors delivering both types of classes work closely together to support participants to make the transition from rehabilitation to the community is also important in encouraging long term maintenance of exercises.
In response to some instructors concerns it may also be important for training providers to ensure that the boundaries of what each qualification enables instructors to deliver are made clear, and opportunities for further continued professional development are always made available.

7.4 Conclusion

In overview, it is clear that there are a range of factors which combine to ultimately lead to either class participant drop-out or long term adherence. The instructor plays an important but not isolated role in this. Instructors' beliefs and the way they deliver classes are influenced by a complex interaction of factors including personality, training, experience and the participants in their classes. Further research is required to explore the attitudes of the class participants to collaborate instructors’ experiences. We have established that instructors’ training and characteristics can influence their attitudes and beliefs and also that these factors can also influence their delivery. It would also be interesting to explore the extent to which instructors can influence participants’ attendance taking into account the complex interactions between different influences. The third study, which is the final component of this thesis, considers this by following a cohort of instructors, their groups and their participants over six months.
8. Study 3, longitudinal cohort study.

Study 3 builds on the two previous studies by trying to understand in more depth the relationship between the instructor and their participants. Study 1 and Study 2 have used quantitative and qualitative methods to explore the instructor, their attitudes, beliefs and delivery and also their experience of older adults’ uptake and adherence to exercise classes. Using quantitative methods, this study looks at instructors, their classes and class participants through a longitudinal cohort study. The intention is to recruit whole classes, in an attempt to capture data on new and long standing class participants and follow them up over time to investigate the factors which influenced their attendance and adherence.

Instructors and their class participants were recruited from the original sample from Study 1 and exercise class participants were followed through to long-term adherence. Using questionnaires the participants’ demographics, health, attitudes, group cohesion and home exercise were examined and explored alongside data collected on instructors’ personality, characteristics and attitudes. We also investigated other group aspects of the classes such as area of deprivation, charges, type of class etc, to permit us to take these into account when constructing a multivariate multi-level model which explored the effect of these variables on both attendance to the class and adherence. We explored whether there was any relationship between class participants’ home exercise and instructor encouragement. This study follows instructors and their class participants for 12 months, but because of time constraints only data up to six months follow-up is considered within this thesis. To include data from the 12 months follow-up would have meant late submission of the thesis, beyond the timescales allocated.

8.1 Research question.

How do instructor, group and individual factors relate to older adults’ attendance and adherence to exercise classes?
8.2 Aims and Objectives

8.21 Aims.

To establish:

- Whether instructors' attitudes and characteristics relate to participants long term adherence to the exercise class.

- Whether group and participants individual characteristics relate to their long term adherence to the class.

- Whether instructors can influence the practice of home exercise by class participants.

8.22 Objectives.

- To follow participants for six months examining the relationships between instructors’ attitudes and characteristics, participants attitudes and characteristics and group variables.

- To explore any changes in participants’ attitudes and beliefs around the class, their health and the group cohesion.

- To explore what factors influences class attendance and adherence and whether the instructor influences home exercise.

8.3 Hypotheses

- Instructors who demonstrate supportive attitudes towards older adults’ participation in exercise classes (based on amended AFRIS) are more likely to have participants with positive attitudes.

- Participants with positive attitude scores are more likely to adhere to an exercise class.

- Instructors who encourage their participants to carry out home exercise are more likely to have participants who carry out home exercise.
8.4 Methodology.

The third study of this research builds on the first two studies and explores the relationship between class participants, the instructor and also the group itself. It considers the class participants’ behaviour in the context of the participants’ broader environment and their social context, as well as in relation to the instructor’s influence. Health related behaviour is increasingly being examined in this context and multiple layers of influence are being considered through the use of multi-level models (Duncan et al, 1996). All variables chosen on the instructor, group and individual level are informed by the existing literature on older adults’ uptake and adherence to exercise and also by the first two studies in this thesis. Using the Theory of Planned Behaviour this study seeks to look at participants’ attitudes over several stages of their participation. Previous research suggests that attitudes and beliefs can change over time, for example Stigglbout et al’s (2006) study showed how self-efficacy was less significant in its relationship with long-term adherence than with initial intention. This study will explore whether attitudes and beliefs of participants can be influenced by the exercise instructor or other potential causal factors overtime and how this relates to attendance and adherence, something never previously explored in this way before. This study has tried to recruit new participants as well as existing participants as it is believed that it can take up to six months for behaviour to be adopted (Prochaska & DiClementi, 1983; Stiggelbout et al, 2006). Therefore, you would expect to see the largest variation in participants’ attitudes in their first months of attendance. For practical reasons the sample was not isolated to only new participants as this would have not enabled us to recruit sufficient numbers unless we had worked with new instructors. As we have established from the previous studies in this thesis, instructor experience is an important variable in relation to attitudes (Hawley et al. 2011a) and adherence (Seguin et al, 2010) and therefore recruiting only new instructors could have skewed the results making them less generalisable to practice.
8.5 Recruitment and sampling.

During Study 1 instructors were asked if they would be willing to take part in further studies, those who agreed and were eligible for this study were contacted. The inclusion criteria were that they had agreed to receive further information about future studies after Study 1 and that they delivered in the community (community venue, sheltered housing and gym/leisure centre) and also that they might establish new classes (with the aim to target increased numbers of participants new to the class). The class had to be community based as NHS classes, which are delivered by health professionals in clinical settings, are traditionally only a maximum of 12 weeks long, which is not long enough for the purpose of this study. Nursing, residential and elderly and mentally infirm (EMI) homes were excluded as they require a different approach due to the environment and attendees (often suffering from dementia). The inclusion criterion for participants of the exercise classes was that they must be aged 60 years or more. This study aimed to recruit all eligible instructors (n=62) in the Yorkshire and the Humber, Lincolnshire, East Midlands, Derbyshire, Staffordshire, Lancashire, Cheshire, Greater Manchester and the North East areas. This was for pragmatic reasons as the lead researcher was required to develop a close relationship with the group and this geographical area kept research costs down and enabled this to happen.

8.6 Methods

Information was collected on instructors’ characteristics such as training and personality and their attitudes. Demographic data was also used which was collected on the instructors in Study 1. Characteristics of the classes included type of class (seated/standing), whether the classes were open or closed to the wider community (a day centre class would be closed), whether there was a charge to the class or transport provided, and whether the class was held in an area of socio-economic deprivation reported by the instructor. Participants’ demographics, health conditions, perceptions of their physical and mental health, attitudes, group cohesion and home exercise were examined. Information around attitudes, perceptions of health and group cohesion were of particular interest, as they were to be examined to see if they had changed over time. All of these variables were informed by the wider literature and systematic review as well as data from Study 1 in this thesis. To collect sufficient data to explore the relationship between instructors and participants, a multi-component questionnaire was used. A multi-component questionnaire was also
administered to collect data on the instructor. We attempted to survey all class participants who attended each of the classes.

8.61 Adherence

The main outcome measure for this study was class adherence, with a secondary outcome of attendance in weeks, which was used to support the data on adherence. We measured adherence and attendance in weeks through the use of attendance records (registers) provided by the instructor. Non-adherence was defined as 'those not attending at follow-up and have not attended for four weeks, and have not given a reason for non-attendance or those who have stated they are dropping out'. Adherence in a large proportion of previous studies has been based on self-reported exercise (Fielding et al, 2007; King et al, 2007). However, we were specifically interested in adherence to the specific class because of the additional benefits which have been demonstrated by attendance to classes (Hawley et al, 2011 and as demonstrated by Study 2). The collection of attendance records is seen as a more reliable and robust indicator of attendance and adherence than self-reported measures.

8.62 Procedures

Before the participants in the classes were asked to participate in the study, the instructors were sent information on the study by post and asked if they wished to take part (Appendix 11). If they were willing to participate they were then asked to contact the lead researcher by sending back the consent form in a pre-paid envelope. The researcher then visited the instructors and explained the recruitment procedure fully, giving out the instructors’ survey. The instructors’ survey was distributed both at baseline and one year (to check that attitudes had not changed).

During this visit, class participants were given full participant information, a consent form and questionnaire (Appendix 12) and the researcher explained the recruitment procedure (additional information and questionnaires were left for participants not present on the day of the visit). The class participants could then return the consent form and questionnaire to the researcher using pre-paid envelope if they wished to participate. The survey was distributed at each time-point by the researcher (at each point participants could choose to participate or to withdraw). The questionnaires were returned in sealed envelopes to either
the researcher during the visit or by freepost to ensure blinding of the instructor and to reduce risks of bias. The researcher collected attendance records either at these visits or they were sent by the instructor using freepost envelopes.

8.63 Questionnaire Design

8.631 Class participant questionnaire

Section one of the questionnaire collects demographic data and information about the participants (gender, ethnicity, date of birth) (Appendix 12) to establish the characteristics of participants as well as how long they have been attending the classes (how many months and weeks). Section two then asks whether they suffer from any health conditions (based on The World Health Organisation ICD, 2007) and asks older adults about their perceptions of their mental and physical health status by using the validated SF12 tool (Ware et al, 1996). Section three uses the validated AFRIS (Yardley & Todd, 2008) which is based on the Theory of Planned Behaviour and was used to find out about the attitudes of older adults towards the class. This scale had a Cronbach α=0.70. Additional questions about whether they carry out home exercise were also asked in this section. The final section asks them about class and group cohesion using the validated PAGEQ (Estabrooks & Carron, 2000 &1999). This tool aims to establish whether in pursuit of objectives or in satisfaction of the needs of a group the group can stick together and remain united (Estabrooks & Carron, 1999). This tool has four scales, the first measures the Individuals attraction to the task (ATG-T, the class participants perceptions of their involvement in the group task) with a Cronbach α=0.94. The second measures Individual attractions to the groups social (ATG-S, individual perceptions of their acceptance and interaction with the group), with a Cronbach α=0.94. The third scale measures Group integration task (GI-T, the individuals perceptions of the group and how it bonds together around its collective task), with a Cronbach α=0.85. The final element of group cohesion was the group integration social scale (GI-S, the individuals perceptions of how the group bonded together as a social entity), with a Cronbach α=0.77. This questionnaire is based on several validated tools and therefore did not require a pre-test to ensure it would achieve maximum response.
8.632 Instructor questionnaire

Section one of the questionnaire asks the instructor about any training they may have undertaken since completing the previous survey in Study 1 (Appendix 13). Section two (mostly seated classes) and section three (mostly standing classes) of the questionnaire asks questions about instructors’ attitudes regarding the participation of older adults in their exercise classes. This is the same amended AFRIS used in Study 1 but with an additional PBC question (older adults are capable of participating in a ‘mostly seated/mostly standing’ class), this is used as an additional measure of PBC. It is hoped that these two measures will better reflect instructors' attitudes (see limitations of Study 1). For the purpose of this study the combined attitudes score adding together all three concepts of the TPB was used so easier comparisons could be made with the class participant AFRIS. An additional identity question was also included which was removed from the first study because of the exploration of TPB (I think that an older adult would feel that they are the kind of person who should attend a 'mostly seated/mostly standing' class), this is because the scale then better reflects the original AFRIS and in the original analysis for first study its inclusion did increase the Cronbach alpha. Overall the measure included 15 questions. Cronbach α is not reported as the sample was too small to provide a robust result. The original Cronbach α for the full scale used in study 1 including the identity question (but excluding the additional PBC question) was Cronbach α=0.80 for responses for those delivering mostly seated classes and α=0.81 for mostly standing classes.

Section four of the questionnaire consists of a personality scale. The personality scale used is Saucier’s ‘mini markers’ which are based on the big five personality traits includes:

- **Extraversion** which encompasses traits such as being talkative, energetic, and assertive.
- **Agreeableness**, which includes traits such as being sympathetic, kind, and affectionate.
- **Conscientiousness** which includes being organized, thorough and planning.
- **Emotional Stability**, which includes being calm and relaxed.
- **Intellect**, which includes being imaginative and insightful.

The Big Five structure originated from a series of studies and statistical analyses examining which traits tend to co-occur in people's descriptions of themselves or other people (Digman et al, 1990). Saucier’s markers were chosen as they form a relatively
short scale and have been shown to have excellent validity and reliability (Saucier, 1994). The Cronbach $\alpha$ are not provided for the subscales as the sample size was too small to provide a robust result. As personality is an enduring construct it was only measured at one timepoint, baseline.

This questionnaire is based on a validated tool and also a tool used in the Study 1 survey and therefore did not require a pre-test.

8.64 Group measures

Characteristics of the classes (transport, cost, venue, type of class, and area of deprivation) were provided by the instructor at baseline. As we do not have access to individual class participants addresses, the Index of Multiple Deprivations (IMD) score was calculated through the venue's postcode and based on Super Output Level data from 2007 held by the Office of National Statistics (ONS, 2011).

8.65 Outcome measures

Weekly attendance records were collected at each follow-up point. The weekly attendance registers required no formal consent from participants as they were collected as standard by the instructor, although it was included on the consent form. Both participants of the class and the instructor were asked if they agreed to sharing records of attendance before baseline data was collected. Attendance in weeks were calculated by registers and adherence levels were calculated at each follow-up period.

8.7 Ethical considerations

Although the participants of the exercise classes could be classed as a vulnerable group, the choice of methods did not lead to any distress as the participants answered closed questions in a questionnaire. Some of the questions asked the participants personal information but this was restricted to demographic details, they did not have to discuss experiences unless they chose to in the open text boxes.

The instructors had already consented to being contacted with further information in Study 1 and were only sent information about this study if they said they were happy to receive
further information. The instructors were asked to complete the questionnaire, which asks questions about their attitudes and personality. However, they were made fully aware of what this involved before they consented and one instructor chose not to complete the personality questions. The risks involved in participation in surveys are quite minimal and well under the control of the respondent (Fowler, 1993).

For the class participant questionnaire all participants were allocated a participant number so that there was no directly identifiable information on the questionnaires. Only the researcher is aware of which number correlates to which participant, to ensure correct distribution of follow-up questionnaires. All of the information was either sent via post from the participant directly to the researcher or was collected from the participants by the researcher on visits. They were given back in sealed envelopes to ensure that the instructor did not see the participant’s responses. This reduced the risk of bias and ensured that participants felt comfortable and confident that their responses would remain anonymous. All data were kept in a secure and locked place and when transferred to SPSS (SPSS Inc, 2006) was kept on a password protected computer and on a password protected memory stick.

This study is with healthy members of the public and no patients were recruited. No one can be identified or were recruited via their status as NHS patients. The research has taken place in community venues not NHS premises. Therefore only ethical approval from the University of Manchester Committee on the Ethics of Research on Human Beings was sought and granted (Appendix 14).

8.8 Analysis

Data were analysed using SPSS V.15.0 (SPSS Inc, 2006) for descriptives and statistical tests. Paired t-tests (2-tailed) were carried out for AFRIS, SF12 scores and group cohesion (to see whether there were any changes between follow-up). Independent group t-tests (2-tailed) were used for those who attended for less than six months/more than six months and differences at baseline for those with missing data and those lost to follow-up. Chi square was used to test for these differences in categorical data, such as health conditions and socio-demographic variables like housing. Pearson product-moment correlation coefficient was used to test for correlation between instructor and class participant AFRIS. SPSS (SPSS Inc, 2006) was also used to analyse the original flat multivariate linear and
logistic multiple regression analysis. Bivariate tests were only applied as a useful decision making tool (in helping identify key influences) and to enable further understanding of the final multivariate models and results should be considered with caution.

A large number of observational data collected in health research has hierarchical or clustered structure (Goldstien, 1995). The design of this study which collects data about the individual, the group and the instructor creates a data hierarchy. Multi-level modelling, also known as hierarchical linear modelling considers modelling with variables measured at different levels of hierarchy (Kreft & De Leeuw, 1998). Looking at the relationships between the instructor, group and class participant results in a 'nested' data structure (Peugh, 2010), with the participant nested within the group, and the group then nested within the instructor variables (see figure 8.1). This three level structure violates the independence assumption often required by traditional multiple regressions and can produce excessive type 1 errors and issues with biased parameter estimates (Peugh, 2010). Ignoring the relationships between the instructors, groups and individuals by using traditional regression modelling overlooks the importance of group effects (Goldstien, 1995). For example, response variable scores for class participants with the same instructor are more likely to be correlated than class participants with a different instructor because they share the same instructor and class environment. Therefore, multi-level modelling is used to ensure that group effects are considered. MLwiN (Rabash et al, 2009) has been used for multi-level modelling to look at the three tiered model.

Class participants' age, gender, socio-economic background, time exercising, health conditions, perceptions of physical and mental well-being measured by the SF12v2 (Ware et al, 1996), group cohesion measured by the PAGEQ (Estabrooks & Carron, 2000) and attitudes measured by the AFRIS (Yardley & Todd, 2008) were all considered theoretically important on a participant level. These variables were therefore used in a model to predict participants’ adherence, their previous influence has already been discussed in the literature overview and systematic review within this thesis. Instructor age, gender, motivational training, experience (months of delivery), attitudes and personality were considered to be theoretically important on an instructor level in a model to predict class participants’ adherence, their previous potential influence have already been outlined in Study 1. Experience and attitudes questions were asked for both mostly seated and mostly standing classes. However, for analysis we chose the response relevant to the specific class delivered by the instructor (e.g. if the class was a mostly seated class the response to
the mostly seated attitudes questions and experience given for delivering mostly seated classes was used). There was not sufficient variance in instructor background, ethnicity or training or participant ethnicity to permit meaningful analysis. Venue of delivery, charge, transport, whether classes were open to everyone (or closed such as day centres, falls classes), mostly seated or mostly standing (see previous definition) or in an area of deprivation (using Index of Multiple Deprivation scores) were considered to be theoretically important on a group level in a model to predict class participants adherence (again these variables can be associated with the previous literature as potential motivators and barriers for attendance). For one group and set of participants there was a change of instructor, this happened at the very start of the study (within the first few weeks and the new instructor had previously delivered sessions to the group) and therefore the new instructor’s (instructor 2, Table 9.1) data was used in analysis.

Due to the low drop-out levels to the exercise classes, adherence (non-adherence defined as 'those not attending at follow-up and have not attended for four weeks, and have not given a reason for non-attendance or those who have stated they are dropping out') could not be used as an outcome measure from baseline to three months (drop out N=9). Four of these dropouts were only temporary due to ill health and participants returned to subsequent sessions (i.e. they are missing data rather than attrition), two were due to death, one moved away from the area, but two remain unexplained. Therefore we had to consider the class participants attendance in weeks as an outcome (total number of classes attended over the follow-up period). Although there was not large variability between the number of weeks offered in the first three months, due to holidays and poor weather there was a great level of variability between three and six months. The number of weeks offered was used as a variable in the multiple regressions to control for any differences in attendance in weeks caused by variance in what was offered. We considered using percentage of weeks as the outcome variable to allow for this, but because of limited variability in weeks offered in the first three months it would not have been possible to analyse the variable as scale data. Therefore, it would have to be analysed as an ordinal outcome variable. This is more difficult when modelling in MLwiN and provides less information (you cannot calculate how much variance in the model is explained) than using a scale outcome variable. Linear multiple regression was decided as the most appropriate method as it provided us with the most information about the model (Rabash et al, 2009). It was used for both three months and six months attendance to ensure consistency.
Before any analysis was carried out in either SPSS or MLwiN a null model was tested in MLwiN to assess whether it was appropriate to model the hierarchical structure (Rabash et al, 2009). The natural structure of the data (Table 9.1) initially suggests a three level structure. However, a decision was then made based on the results of the null model (Rabash et al, 2009) to analyse the data using a two (instructor and participant) level model. Initially the data were examined using multiple linear regressions for attendance in weeks and multiple logistic regressions for adherence using SPSS as a flat model. Then a multi-level multiple linear regression model was used to determine which variables predict attendance in weeks and a multi-level, multiple logistic regression was used for adherence (Rabash et al, 2009). Before any of the models were examined in MLwiN we checked for assumptions made in all three models examined. The residuals for the flat models looking at adherence in weeks were approximately Normal and homogeneity of variance was found to be ok. There was no evidence of multicollinearity (tolerances all > 0.10) in any of the three models. Therefore it is reasonable to assume that if the assumptions for the flat model are not being strongly violated, then they are unlikely to be violated in the multilevel model.

For multi-level multiple linear regressions we used a maximum likelihood method known as iterative generalised least squares (IGLS) regression. IGLS is an iterative procedure based on estimating the random and fixed parts of the multi-level model assuming the estimates for the other part are correct (Goldstein, 1986; Goldstein, 1995). These are the normal response methods recommended by the Centre for Multilevel Modelling (Rasbash, et al, 2009a). Predictors were initially considered for multiple regression modelling in MLwiN if they showed an individual association with an outcome at a conservative level of significance (p≤0.25) (Hosmer & Lemeshow, 2000). Thus variables which could be important were not removed from the regression too early. Each variable was removed from a full model (all variables) to examine their effect on the likelihood score and to enable the calculation of p values. This process was then repeated removing the variables until the final model was agreed. As recommended by Rabash et al (2009) all continuous variables included in the models were centred on the grand mean (Dedrick et al, 2009). The final model was one including only variables with levels of significance (p≤0.10) and with a final significance level of (p≤0.05)
8.81 Missing data.

There were a number of class participants who did not complete the follow-up questionnaires as well as some missing data within responses where participants chose to (or accidently) left questions blank. Only those participants with a full data set of all included variables in the model were included in multiple regression models. For tests exploring changes between baseline, three and six months, only those with complete follow up data were included. We tested for differences at baseline for the variables that follow-up data was collected on, to check whether there were any significant differences between those who completed follow-up questionnaires and those who did not. We also tested for differences at baseline between those participants who were included and those who were excluded from the regression models on the key variables which emerged as significant in the final regression models. Advanced methods for dealing with missing values such as imputation were considered but dismissed. These methods are extremely complex (McKnight et al, 2007; Carpenter & Kenward, 2008) and are not without their own limitations, particularly as there were many different reasons for missing data in this sample (loss to follow-up, non-completion of questions, withdrawal of group by the instructor). The plausibility of assumptions made in advanced missing data analysis has been found to be unverifiable (Vandenbroucke et al, 2007)
Chapter 9: Results and discussion for Study 3

9.1 Participants

In total 16 instructors, 27 groups and 200 class participants agreed to participate in the study. One group agreed to participate in the study and received questionnaires, but when the researcher went to visit the class none of the participants chose to return any complete questionnaires and therefore we have no data for them. Seven participants were excluded from the study as they were under the age of 60, leaving 193 participants (Table 9.2). Based on class attendance records we have recruited approximately 53.5% of the 361 eligible participants in the classes. All 193 class participants completed baseline questionnaires, with 126 class participants completing three months and 109 participants completing six months questionnaires. One instructor chose to opt her participants out of completing the questionnaires after baseline but continued to provide attendance records. Attendance records were available for 189 participants from baseline to six months (with four participants unidentifiable). Most instructors were women (n=14, 87.5%), with a mean age of 54.5 (SD 12.6), ages ranging from 29 to 75. The majority of instructors were EXTEND exercise trained (80%), with a wide range of experience from 3 to 120 months. The majority of instructors had generally positive attitudes (Table 9.2). Most class participants were also women (n=175, 90.7%), with a mean age of 76.1 (SD 7.8), ages ranging from 60 to 100. A large number of the participants had a long term conditions (Table 9.2). 47 (24.4%) of participants had been attending the class for less than six months.
Table 9.1: Structure of sample and data, showing instructors, group and class participants.

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Group</th>
<th>*N= 361</th>
<th>Participants recruited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor 1</td>
<td>Group 1</td>
<td>N= 36</td>
<td>N= 12</td>
</tr>
<tr>
<td>Instructor 2</td>
<td>Group 2</td>
<td>N= 19</td>
<td>N= 15</td>
</tr>
<tr>
<td></td>
<td>Group 3</td>
<td>N= 17</td>
<td>N= 12</td>
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<tr>
<td>Instructor 3</td>
<td>Group 4</td>
<td>N= 15</td>
<td>N= 10</td>
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<td>Instructor 4</td>
<td>Group 5</td>
<td>N= 8</td>
<td>N= 8</td>
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<tr>
<td>Instructor 5</td>
<td>Group 6</td>
<td>N= 13</td>
<td>N= 9</td>
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<td></td>
<td>Group 17</td>
<td>N= 7</td>
<td>N= 7</td>
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<td>Instructor 6</td>
<td>Group 7</td>
<td>N= 10</td>
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<td>Group 8</td>
<td>N= 12</td>
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<td>N= 30</td>
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<td>Group 20</td>
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<td></td>
<td>Group 21</td>
<td>N= 19</td>
<td>N= 2</td>
</tr>
<tr>
<td></td>
<td>Group 22</td>
<td>N= 7</td>
<td>N= 3</td>
</tr>
<tr>
<td>Instructor 11</td>
<td>Group 18</td>
<td>N= 12</td>
<td>N= 6</td>
</tr>
<tr>
<td>Instructor 12</td>
<td>Group 23</td>
<td>N= 6</td>
<td>N= 3</td>
</tr>
<tr>
<td>Instructor 13</td>
<td>Group 27</td>
<td>N= 14</td>
<td>N= 4</td>
</tr>
<tr>
<td>Instructor 14</td>
<td>Group 26</td>
<td>N= 9</td>
<td>N= 6</td>
</tr>
<tr>
<td>Instructor 15</td>
<td>Group 24</td>
<td>N= 28</td>
<td>N= 14</td>
</tr>
</tbody>
</table>

*N= based on all participants on the register attending within the month that the questionnaires were handed out.
Table 9.2: Descriptive statistics for all baseline variables across the nested three level model.

<table>
<thead>
<tr>
<th>Class participants N=193</th>
<th>Group factors N=26</th>
<th>Class instructors N=16</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>175 (90.7%)</td>
<td>Women</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>Mean 76.1 (SD 7.8)</td>
<td>Age</td>
</tr>
<tr>
<td>Range (60 to 100)</td>
<td></td>
<td>Mean 54.5 (SD 12.6)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td>White British 182 (94.3%)</td>
<td>No transport provided</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>Age left school: Mean 15.2 (SD 1.2)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td></td>
<td>No education since school 114 (62.0%)</td>
<td>Mean 24.45 (SD 14.2)</td>
</tr>
<tr>
<td><strong>Economic</strong></td>
<td>Own home 141 (73.1%)</td>
<td>Range (2.5 to 54.79)</td>
</tr>
<tr>
<td><strong>Medical conditions</strong></td>
<td>Nervous system 57 (29.5%)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td></td>
<td>Circulatory 81 (42.0%)</td>
<td>Mean 24.45 (SD 14.2)</td>
</tr>
<tr>
<td></td>
<td>Musculoskeletal 92 (47.7%)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td></td>
<td>Respiratory 37 (19.2%)</td>
<td>Mean 24.45 (SD 14.2)</td>
</tr>
<tr>
<td></td>
<td>Endocrine/metabolic 40 (20.7%)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td><strong>Less than 6 month attendance</strong></td>
<td>47 (24.4%)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td><strong>Attitudes (AFRIS score)</strong></td>
<td>Mean 36.35 (SD 3.6)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td></td>
<td>Range (19 to 42)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td><strong>Number of mostly seated classes</strong></td>
<td>21 (80.8%)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td><strong>Number of groups with a charge</strong></td>
<td>21 (80.8%)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td><strong>No transport provided</strong></td>
<td>23 (88.5%)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td>White British 15 (93.8%)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td><strong>Training:</strong></td>
<td>Extend 10 (62.5%)</td>
<td>PSI</td>
</tr>
<tr>
<td></td>
<td>Extend and PSI 3 (18.8%)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td></td>
<td>PSI 1 (6.2%)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td></td>
<td>Extend and YMCA 1 (6.2%)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td></td>
<td>Otago 1 (6.2%)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td></td>
<td>Motivation Training: 8 (50.0%)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td><strong>Experience (months)</strong></td>
<td>Mean 3 (3 to 120)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td><strong>Attitudes (amended AFRIS score)</strong></td>
<td>Mean 71.88 (SD 6.5)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td></td>
<td>Range (63 to 89)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td><strong>Personality scores (Saucier’s mini markers):</strong></td>
<td></td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td></td>
<td>Extraversion Mean 6.34 (SD 1.3)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td></td>
<td>Range (4.38 to 8.25)</td>
<td>Deprivation score (IMD Score)</td>
</tr>
<tr>
<td></td>
<td>Group cohesion (PAGEQ scores)</td>
<td>Agreeableness Mean 8.13 (SD 0.7)</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td></td>
<td><strong>Ind Group Task</strong>: Mean 7.66 (SD 1.1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range (3.67 to 9.00)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Ind Group Social</strong>: Mean 7.68 (SD 1.2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range (2.83 to 9.00)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Group Task</strong>: Mean 7.20 (SD 1.2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range (4.20 to 9.00)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Group Social</strong>: Mean 7.64 (SD 1.4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range (2.25 to 9.00)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SF12 Physical</strong>: Mean 38.24 (SD 11.6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range (9.94 to 62.33)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SF12 Mental</strong>: Mean 50.72 (SD 9.8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range (17.02 to 70.98)</td>
<td></td>
</tr>
<tr>
<td>Does home exercise</td>
<td>165 (85.5%)</td>
<td></td>
</tr>
<tr>
<td>Instructor encourage home exercise</td>
<td>162 (83.9%)</td>
<td></td>
</tr>
<tr>
<td>Number of classes offered over 6 months</td>
<td>Mean 21.58 (SD 2.3)</td>
<td></td>
</tr>
<tr>
<td>Number of classes attended over 6 months</td>
<td>Mean 14.76 (SD 5.1)</td>
<td></td>
</tr>
</tbody>
</table>

- Group cohesion (PAGEQ scores): Ind Group Task: Mean 7.66 (SD 1.1), Range (3.67 to 9.00); Ind Group Social: Mean 7.68 (SD 1.2), Range (2.83 to 9.00); Group Task: Mean 7.20 (SD 1.2), Range (4.20 to 9.00); Group Social: Mean 7.64 (SD 1.4), Range (2.25 to 9.00).
- SF12 Physical: Mean 38.24 (SD 11.6), Range (9.94 to 62.33); SF12 Mental: Mean 50.72 (SD 9.8), Range (17.02 to 70.98).
- Does home exercise: 165 (85.5%); Instructor encourage home exercise: 162 (83.9%).
| Total non-adherence at 6 months | 17 (9.0%) |   |   |
9.2 Results

9.21 Loss to follow up and missing data.

9.211 Loss to follow-up.

To check whether there were any significant differences between those who completed follow-up questionnaires and those who did not.

We looked at the differences at baseline between key variables for which follow-up data has been collected. There was no difference in attitudes scores at baseline using the AFRIS (Yardley & Todd, 2008) for those who completed three months questionnaires and those who did not (36.04 vs 36.95, t=1.50, df=104.32, p=0.14) and for those who completed six months questionnaires and those who did not (36.26 vs 35.76, t=0.82, df=154, p=0.41).

This was the same for group cohesion scores using the PAGEQ (Estabrooks & Carron, 1999). There was no significant differences in individual’s attraction to the task scores at baseline for those who completed questionnaires and those who did not at three months (7.55 vs 7.89, t=1.87, df=185, p=0.06) and at six months (7.60 vs 7.50, t= 0.54, df=156, p=0.59). There was also no significant differences at baseline in individual attractions to the group social for those who completed questionnaires and those who did not at three months (7.59 vs 7.84, t=1.40, df=186, p=0.16) and at six months (7.69 vs 7.42, t=1.21, df=77.19, p=0.23). For group integration task there was no significant difference at baseline between those who completed the questionnaires and those who did not at three months (7.11 vs 7.34, t=1.47, df=183, p=0.14) and for those who completed the questionnaires and those who did not at six months (7.15 vs 6.90, t=1.25, df=154, p=0.21).

Finally, there was no significant differences between group integration social scores at baseline for those who completed questionnaires and those who did not at three months (6.55 vs 6.81, t=1.18, df=183, p=0.24) or at six months (6.63 vs 6.41, t= 0.97, df=154, p=0.34).

The only variable found to be significantly different between those who completed follow-up questionnaires and those who did not was perceptions of physical well-being measured by the SF12 (Ware et al, 1996). There was a significant difference in physical well-being scores between those who completed six months questionnaires and those who did not
(39.2 vs 35.0, t= 2.11, df=149, p=0.04). This could indicate that class participants who did not complete the follow-up questionnaires had poorer health than those who did. However, this does not impact on the multiple regression models as only baseline data was used for these analyses. Bivariate analysis for this variable should be considered with caution.

Large numbers of class participants who did not complete three or six months questionnaires did not in fact make the choice to withdraw from completing follow-up questionnaires, they had the choice taken away from them by their instructor who removed them from the study. The tests indicate that the three and six month data are still likely to be representative of the sample as a whole.

9.212 Missing data.

The final multi-level models were performed excluding any cases with missing data. To consider the impact of the missing data on the overall findings from these models we have compared key variables at baseline for those included in the analysis and those excluded. This was carried out on the class participants included and excluded in the six month attendance model as this was the model with the most excluded cases with a sample of N=131. All models had one instructor (and therefore her participants N=26) excluded from the analysis as she refused to complete the personality scale. Those participants excluded from the final regression model have no significant differences from those included, in attendance in weeks (13.7 vs 15.1, t=1.76, df=186, p=0.08). There were also no significant difference in percentage of drop-out between those who were included and those who were excluded from the regression (58.8% vs 41.2%, $\chi^2 = 0.97$, df=1, p=0.33).

There was no difference in attitudes scores at baseline using the AFRIS (Yardley & Todd, 2008) between those who were included in the analysis and those who were excluded (36.11 vs 36.94, t= 1.41, df=183, p=0.16). There was no difference in mental well-being scores based on the SF12 (Ware et al, 1996) at baseline between those who were included in the analysis and those who were excluded (51.01 vs 49.89, t=0.67, df=175, p=0.50). When looking at the two group cohesion measures (PAGEQ, Estabrooks & Carron, 1999) which came out as significantly related to the outcome in the multivariate models there was no significant differences in individual attractions to the group social scores at baseline between those who were included in the analysis and those who were excluded (7.62 vs
7.80, t= 0.92, df=186, p=0.36). However, there was a significant difference in group integration task scores at baseline between those who were included in the analysis and those who were excluded (7.05 vs 7.54, t= 2.38, df=83.39, p=0.02), with those missing from the final analysis actually having higher perceptions of how the group bonded together around the task. There were also differences in personality scores for instructors, with a significant difference in conscientiousness scores for those participants who were included in the regression compared to those who were not (7.35 vs 7.04, t=2.28, df=165, p=0.02). There was also a significant difference in extraversion scores for those participants who were included in the regression compared to those who were not (6.53 vs 5.67, t=4.18, df=66.91, p<0.001). Those participants included in the regression had instructors with more extravert and more conscientious personalities.

There were some differences between those people excluded from the final regression model for six month attendance in weeks and those who were not on key variables. However, there are no key differences between the two groups for attendance in weeks or adherence. This suggests that the results from using a reduced sample in the multiple regression models are not likely to be different from the full sample.

9.22 Adherence

At six months N=17 (8.8%) participants had dropped out of the classes and four additional participants were lost to follow-up. It has been argued that it takes six months to adopt a specific behaviour (Stigglebout et al, 2006; Prochaska & DiClementi, 1983), and thus we were particularly interested in exploring whether there was a difference in drop-out between those participants who had attended for less than six months prior to baseline and those participants who had attended for longer. There was a significant difference in drop-out at the six month stage between those who had attended for less than six months prior baseline and those who had attended for more than six months at baseline (21.7% v’s 4.9%, $\chi^2 =12.06$, df=1, p=0.001). There were higher levels of non-adherence at six months follow-up amongst those who had attended for less than six months prior baseline.

9.23 Changes between baseline and 6 months.

It was thought likely that variables such as attitudes measured by AFRIS (Yardley & Todd, 2008) group cohesion measured by the PAGEQ (Estabrooks & Carron, 1999) and
perceptions of mental and physical health measured by the SF12 (Ware et al, 1996) would change over time with attendance to the class. Therefore the descriptives at each follow-up point are reported in Table 9.2 and paired sample t-tests are carried out to establish whether there are significant changes at each follow up. Test statistics are only reported for N=95, these are the participants that have provided us with complete follow-up data.

9.231 Health conditions

Health conditions were recorded at each follow-up point so that they could be examined in relation to the outcome (Tables 9.3 and 9.4). We were also interested in whether they changed through the six month period of follow-up. Significantly more class participants reported diseases of the nervous system at three months than they did at baseline (31 vs 22, $\chi^2=44.23$, df=1, $p<0.001$) and again at six months than at baseline (30 vs 22, $\chi^2=27.66$, df=1, $p<0.001$). However, there was a decrease in the number of participants who reported circulatory disease both between baseline and three months (42 vs 36, $\chi^2=46.91$, df=1, $p<0.001$) and baseline and six months (42 vs 37, $\chi^2=49.71$, df=1, $p<0.001$). There was also a decrease in reported musculoskeletal disorders both between baseline and three months (47 vs 43, $\chi^2=59.60$, df=1, $p<0.001$) and between baseline and six months (47 vs 42, $\chi^2=2$, df=1, $p<0.001$). This could relate to improvements from attending the class. Changes in other diseases could not be tested as cells had an expected count lower than 5.

9.232 Attitudes

There is a significant difference between baseline and three months attitudes (AFRIS scores, Yardley & Todd, 2008), with class participants having significantly more positive attitudes at three months (36.2 vs 36.9, t= 2.02, df= 90, p=0.05) than baseline. Attitudes did not significantly change from baseline to six months (36.2 vs 36.6, t= 0.85, df=92, p=0.40) or from three months to six months (36.9 vs 36.4, t=1.25, df=91, p=0.21) indicating that the effect is in the initial three months (Tables 9.3 and 9.4).

It could be hypothesised that changes in attitudes are more likely in the sub-group who have attended for less than six months than those that have adopted the behaviour for a longer length of time. However, there was no significant differences in attitudes between those who had been attending for more than six months and those who had attended for less than this time at baseline (36.3 vs 36.0, t=0.35, df=91, p=0.73) three months (36.9 vs
One of the hypotheses of this study was to test whether there was any relationship between instructors’ attitudes and their class participants’ attitudes and then to see if this had a relationship with adherence. There was no significant correlation between instructors’ attitudes and participants’ attitudes at baseline ($r = -0.003, p = 0.97$), three months ($r = -0.075, p = 0.48$) or six months ($r = 0.072, p = 0.49$).

9.23. Group Cohesion

For *individual’s attraction to the task* the first element of the PAGEQ (Estabrooks & Carron, 1999) there was a significant difference between baseline and three months with the score increasing, indicating that participants were becoming more positive about their involvement in the task ($7.61$ vs $7.87$, $t=2.08$, $df=91$, $p=0.04$). However, there was no significant difference between three and six months ($7.87$ vs $7.76$, $t=1.11$, $df=93$, $p=0.27$) or baseline and six months ($7.62$ vs $7.79$, $t=1.58$, $df=92$, $p=0.12$). This suggests that improvements in participants’ perceptions of their involvement in the group task took place in the first three months (Tables 9.3 and 9.4). We examined the differences in group cohesion scores between those who had been attending for less than six months and those attending for longer. For *individual attraction to the task* there was no significant differences between groups at baseline ($7.43$ vs $7.68$, $t=0.95$, $df=91$, $p=0.35$), three months ($7.81$ vs $7.89$, $t=0.28$, $df=92$, $p=0.77$) or six months ($7.92$ vs $7.72$, $t=0.85$, $df=93$, $p=0.40$). This indicates that there was no difference across the six months in participants’ perceptions of their involvement in the group task between participants who had attended the class for less than six months at baseline and those who had attended for longer than six months. Therefore all participants regardless of how long they had been attending the classes had increased attraction to the task over the first three months.

For *individual attractions to the group social* the second element of the PAGEQ (Estabrooks & Carron, 1999) there was no significant difference between baseline and three months ($7.70$ vs $7.82$, $t=-1.27$, $df=92$, $p=0.21$), three months and six months ($7.82$ vs $7.81$, $t=0.19$, $df=93$, $p=0.85$) or consequently baseline and six months ($7.70$ vs $7.83$, $t=1.54$, $df=93$, $p=0.13$). This indicates that there was no significant change in participants’ perceptions of their acceptance and interaction within the group. We examined the differences in group cohesion scores between those who had been attending for less than
six months and those attending for longer. For *individual attractions to the group social* there was no significant difference between those who had been attending for less than six months at baseline and those who had been attending longer, at baseline (7.40 vs 7.79, t=1.40, df=92, p=0.16), three months (7.65 vs 7.88, t=0.79, df=92, p=0.43) and six months (7.94 vs 7.77, t= 0.57, df=93, p=0.57). Therefore all participants regardless of how long they had been attending the classes had no significant change in their perceptions of their interaction with the group.

For *group integration task* the third element of the PAGEQ (Estabrooks & Carron, 1999), there was no significant difference between baseline and three months (7.14 vs 7.30, t=-1.15, df=85, p=0.16), three months and six months (7.30 vs 7.30, t=-0.06, df=88, p=95), or consequently baseline and six months (7.17 vs 7.33, t=-1.50, df=90, p=0.14). This indicates that there was no significant change in participants’ perceptions of how the group bonds together around the task. We examined the differences in group cohesion scores between those who had been attending for less than six months and those attending for longer at baseline. For *group integration task* there was a significant difference between those who had been attending for less than six months at baseline and those who had been attending longer, at baseline (6.47 vs 7.40, t=3.41, df=90, p=0.001). The difference for *group integration task* did not quite reach significance between those who had been attending for less than six months at baseline and those who had been attending longer at baseline at three months (6.97 vs 7.41, t=1.75, df=87, p=0.08), and was not significant at six months (7.24 vs 7.21, t=0.23, df=92, p=0.82). This suggests that for perceptions of how the group bonded together around the task participants who had been attending for less than six months were less positive at baseline but that their perceptions became more positive over time and similar to those who had been attending for longer.

For *group integration social* the final element of the PAGEQ (Estabrooks & Carron, 1999), there was a significant difference between scores at baseline and three months (6.63 vs 6.96, t=-2.74, df=86, p=0.007) and baseline and six months (6.61 vs 7.13, t=-4.72, df=90, p<0.001). However, there was not a significant difference in *group integration social* scores between three and six months (6.93 vs 7.09, t=1.47, df=87, p=0.15). This suggests that improvements in individuals’ perceptions of how the group bonded together as a social entity took place in the first three months. We examined the differences in group cohesion scores between those who had been attending for less than six months and those attending for longer. For *group integration social* the final element
of the PAGEQ (Estabrooks & Carron, 1999) there was a significant difference between those who had been attending for less than six months at baseline and those who had been attending longer, at baseline (5.69 vs 6.91, t=3.94, df=91, p<0.001). The difference for group integration social did not quite reach significance between those who had been attending for less than six months at baseline and those who had been attending longer at baseline at three months (6.42 vs 7.07, t=1.94, df=87, p=0.06), and was not significant at six months (6.73 vs 7.20, t=1.54, df=91, p=0.13). This again suggests that changes in group cohesion related to participants’ perceptions of how the group bonded as a social entity are in the first three months and are particularly prominent in those who have attended for less than six months.

9.234 Perceptions of physical well-being

Based on SF12 physical health scores (Ware et al, 1996) there was no significant difference between baseline and three months scores of perceptions of physical health (38.47 vs 38.21, t=0.31, df=80, p=0.76), three months and six months (38.09 vs 38.50, t=-0.39, df=79, p=0.67) and therefore baseline and six months (38.59 vs 38.41, t=1.90, df=82, p=0.85).

There were also no significant differences between those who had been attending the class for less than six months and those who had been attending longer at baseline in perceptions of physical health at baseline (35.15 vs 39.29, t=1.46, df=87, p=0.15), three months (34.14 vs 38.44, t=0.82, df=85, p=0.41) or six months (34.64 vs 39.02, t=0.06, df=86, p=0.15). This suggests that attending the class made no difference to participants’ perceptions of their physical well-being. However, we did find that there was a difference in baseline scores for perceptions of physical well-being for those who complete six months questionnaires and those who did not. Those who did not complete six month follow-up questionnaires had poorer perceptions of their physical health at baseline. We do not whether those participants had an increase or decrease in physical perception scores if we had collected follow-up data on them.

9.235 Perceptions of mental well-being

Based on SF12 mental well-being scores (Ware et al, 1996) there was no significant difference between baseline and three months scores of perceptions of mental well-being
(51.32 vs 52.42, t=-1.20, df=79, p=0.23) and between three and six months (52.59 v's 52.66, t=-0.07, df=79, p=0.94) scores. The difference between baseline and six months scores just failed to reach significance (50.75 vs 52.88, t=-1.87, df=81, p=0.07). This indicates that there was a gradual improvement in perceptions of mental well-being between baseline and six months which has accumulated to near significance.

There was no significant difference between those who had been attending for less than six months and those who had been attending longer at baseline in perceptions of mental well-being at baseline (49.42 vs 51.40, t=0.82, df=86, p=0.41), three months (50.67 vs 52.97, t=1.21, df=44.89, p=0.23) or six months (50.50 vs 53.42, t=1.23, df=86, p=0.22). This suggests that all class participants had similar perceptions of their mental well-being over the six month follow-up period regardless of how long they had been attending the class at baseline.

9.236 Home exercise.

We could not test whether there was a significant difference between baseline, three months and six months in the number of participants who reported carrying out home exercise, as cells had an expected count lower than 5. We also could not test whether there was a difference in reported home exercise behaviour between those participants who reported that the instructor had encouraged them to carry out home exercise and those who did not encourage them, at baseline, three months or six months as cells again had an expected count lower than 5. The majority of participants reported carrying out home exercise throughout the six month follow-up period, and also reported that they were encouraged to do so by their instructor (Table 9.3 and 9.4).
Table 9.3: Changes from baseline to 6 months follow up with full available sample.

<table>
<thead>
<tr>
<th></th>
<th>Baseline N=193</th>
<th>3 months N=126</th>
<th>6 months N=109</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attitudes (AFRIS score)</strong></td>
<td>36.35 (SD 3.6)</td>
<td>36.6 (SD 3.8)φ</td>
<td>36.34 (SD 4.3)</td>
</tr>
<tr>
<td><strong>Group cohesion scores:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind Group Task</td>
<td>7.66 (SD 1.1)</td>
<td>7.67 (SD1.0)ψ</td>
<td>7.74 (SD 0.9)</td>
</tr>
<tr>
<td>Ind Group Social</td>
<td>7.68 (SD 1.2)</td>
<td>7.61 (SD 1.2)ψ</td>
<td>7.75 (SD 1.2)</td>
</tr>
<tr>
<td>Group Task</td>
<td>7.20 (SD 1.2)</td>
<td>7.18 (SD 1.2)π</td>
<td>7.26 (SD 1.1)*</td>
</tr>
<tr>
<td>Group Social</td>
<td>7.64 (SD 1.4)</td>
<td>6.79 (SD 1.3)π</td>
<td>7.03 (SD 1.3)φ</td>
</tr>
<tr>
<td><strong>SF12 Physical</strong></td>
<td>38.24 (SD 11.6)</td>
<td>37.28* (SD 11.4)</td>
<td>38.50 (SD 11.4)ψ</td>
</tr>
<tr>
<td><strong>SF12 Mental</strong></td>
<td>50.72 (SD 9.8)</td>
<td>52.13* (SD 8.9)</td>
<td>52.51 (SD 8.9)ψ</td>
</tr>
<tr>
<td>Participants who report doing home exercise</td>
<td>165 (85.5%)</td>
<td>103 (81.7%)</td>
<td>88 (80.1%)</td>
</tr>
<tr>
<td>Reports instructor encourages home exercise</td>
<td>162 (83.9%)</td>
<td>94 (74.6%)</td>
<td>86 (78.9%)</td>
</tr>
<tr>
<td>Reports chronic disease of:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nervous system</td>
<td>57 (29.5%)</td>
<td>40 (31.7%)</td>
<td>35 (32.1%)</td>
</tr>
<tr>
<td>Circulatory</td>
<td>81 (42.0%)</td>
<td>51 (40.5%)</td>
<td>38 (34.9%)</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>92 (47.7%)</td>
<td>57 (45.2%)</td>
<td>48 (44.0%)</td>
</tr>
<tr>
<td>Respiratory</td>
<td>37 (19.2%)</td>
<td>22 (17.5%)</td>
<td>22 (22.2%)</td>
</tr>
<tr>
<td>Endocrine/metabolic</td>
<td>40 (20.7%)</td>
<td>15 (11.9%)</td>
<td>14 (12.8%)</td>
</tr>
</tbody>
</table>

* N=112  \( \Phi \) N=123  \( \psi \) N=124  \( \Psi \) N=101  \( \pi \) N=117  \( \phi \) N=108
Table 9.4: Changes from baseline to 6 months follow-up for those with complete follow-up data N=95.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>3 months</th>
<th>6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes (AFRIS score)</td>
<td>36.25 (SD 2.9)*</td>
<td>36.87 (SD 3.7)¥</td>
<td>36.36 (SD 4.4)</td>
</tr>
<tr>
<td>Group cohesion scores:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind Group Task</td>
<td>7.63 (SD 1.1)*</td>
<td>7.87 (SD 0.9)π</td>
<td>7.77 (SD 0.9)</td>
</tr>
<tr>
<td>Ind Group Social</td>
<td>7.70 (SD 1.1)π</td>
<td>7.83 (SD 1.2)π</td>
<td>7.81 (SD 1.1)</td>
</tr>
<tr>
<td>Group Task</td>
<td>7.19 (SD 1.2)¥</td>
<td>7.30 (SD 1.2)Φ</td>
<td>7.30 (SD 1.1)*</td>
</tr>
<tr>
<td>Group Social</td>
<td>6.63 (SD 1.3)*</td>
<td>6.93 (SD 1.3)Φ</td>
<td>7.09 (SD 1.2)π</td>
</tr>
<tr>
<td>SF12 Physical</td>
<td>38.36 (11.3 SD)Φ</td>
<td>37.91 (SD 10.9)ε</td>
<td>38.08 (SD 11.8)§</td>
</tr>
<tr>
<td>SF12 Mental</td>
<td>50.96 (9.5 SD)§</td>
<td>52.44 (SD 9.0)ε</td>
<td>52.79 (SD 9.2)§</td>
</tr>
<tr>
<td>Participants who report doing home exercise</td>
<td>81 (85.3%)</td>
<td>79 (83.2%)</td>
<td>79 (83.2%)</td>
</tr>
<tr>
<td>Reports instructor encourages home exercise</td>
<td>76 (80.0%)</td>
<td>72 (75.8%)</td>
<td>74 (77.9%)</td>
</tr>
<tr>
<td>Reports chronic disease of:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nervous system</td>
<td>22 (23.2%)</td>
<td>31 (32.6%)</td>
<td>30 (31.6%)</td>
</tr>
<tr>
<td>Circulatory</td>
<td>42 (44.2%)</td>
<td>36 (37.9%)</td>
<td>37 (38.9%)</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>47 (49.5%)</td>
<td>43 (45.3%)</td>
<td>42 (44.2%)</td>
</tr>
<tr>
<td>Respiratory</td>
<td>18 (18.9%)</td>
<td>20 (21.1%)</td>
<td>18 (18.9%)</td>
</tr>
<tr>
<td>Endocrine/metabolic</td>
<td>23 (24.2%)</td>
<td>13 (13.7%)</td>
<td>12 (12.6%)</td>
</tr>
</tbody>
</table>

* N=93, ¥ N=92, π N=94, Φ N=89, ε N=88, § N=87

NB. Mean scores may differ slightly from those reported in t-tests in the text due to rounding and missing data.

9.24.1 Attendance in weeks

*Attendance in first 3 months*

**Null model:**
We tested the null model for baseline to three months attendance in weeks to examine whether to look at a two level model (individual and instructor) or a three level model (individual, group, instructor). For the three level model we found that 73% of the variation in attendance in weeks could be found at level one (individual), only 0.03% was found at level two (group), but 23% was found at level three (instructor) (Appendix 15). Therefore the group did not seem to explain variation in attendance, this is likely to be due to lack of variation within the variables as there were in some cases only a small number of participants per instructor (Range 2 to 28) and only four instructors had more than one group with little variation within these group variables (Table 9.1 and Table 9.2). This tells us that variation in the outcome is located primarily at the individual level but that the instructor does seem to have a role, therefore a two level model was adopted. The final two level null model used to explain baseline to three months attendance in weeks accounted for 73% of the potential variance at level one (individual) and 27% of variation at level two (instructor) (Table 9.5 and 9.6). The final model which follows accounted for 23% of the 73% of variance identified by the null model at level one and 100% of the 27% of variation identified by the null model at level two (Table 9.6). This leaves no variance left to be explained on the instructor level, but 50% of the potential variance on the participant level is left unexplained by our final model.

*Individual variables included in multivariate model:*
In the first three months, owning your own home had a significantly negative effect on attendance in weeks compared to renting (p<0.05). Leaving school later (p<0.05) and carrying on with further education (p<0.001) had a positive effect on attendance in weeks. Class participants who rated their health better with higher SF12 (Ware et al, 1996) scores for perceptions of mental health were less likely to attend (p<0.001). Class participants who had higher PAGEQ scores (Estabrooks & Carron, 1999) for *individual attractions to the group social* and therefore more positive perceptions of their social interaction with the group were more likely to attend (p<0.05). Class participant’s who had higher PAGEQ
scores (Estabrooks & Carron, 1999) for group integration task and therefore more positive perceptions of how the group bonded together around the task were less likely to attend the class (p<0.001). Class participants with higher AFRIS scores (Yardley & Todd, 2008) and therefore more positive attitudes were more likely to have higher attendance in weeks (p<0.001).

Instructor variables:
Being lead by a female instructor rather than a male had a negative impact on attendance in weeks (p<0.001). Increased age of the instructor was also negatively related to participant attendance (p<0.05). However, the experience of the instructor was positively related to participant attendance (p<0.05). Instructors who had undertaken motivational training were more likely to have participants with higher attendance in weeks (p<0.05). Instructors who had more extravert, agreeable and more intellectual personality traits using mini markers (Saucier, 1994) had participants with poorer attendance in weeks (p<0.05). Instructors who showed conscientious personality traits were more likely to have participants with higher attendance in weeks (p<0.05).

Attendance for the full 6 months

Null model:
To ensure consistency with the model reported above we examined a two level model (individual and instructor) to look at baseline to six months attendance in weeks. The null model accounted for 79% of variance at level one (individual) and 21% of variation at level two (instructor). The final model which follows accounted for 21% of the 79% of variance identified by the null model at level one and 100% of the 21% of variation identified by the null model at level two (Table 9.5 and 9.6). This leaves no variance left to be explained on the instructor level, but 58% of the potential variance on the participant level is not explained by our final model.

Individual variables:
As with the three month analysis, over the full six months, owning your own home had a significantly negative effect on attendance in weeks compared to renting (p<0.05). Leaving school later (p<0.05) and carrying on with further education (p<0.001) had a positive effect on attendance in weeks.
Class participants who rated their mental health better with higher SF12 scores were less likely to attend (p<0.05). Class participants with higher PAGEQ scores for *individual attractions to the group social* and therefore more positive perceptions of their social interaction with the group were more likely to attend (p<0.001). Class participant’s who had higher PAGEQ scores for *group integration task* and therefore who had more positive perceptions of how the group bonded together around the task were less likely to attend the class (p<0.001). Class participants with higher AFRIS scores and therefore more positive attitudes were more likely to have higher attendance in weeks (p<0.001). Perhaps unsurprisingly the more weeks offered the higher number of weeks attended (p<0.05).

**Instructor variables:**

Only the instructor’s personality measured by mini markers was significantly related to attendance over the full six months. Instructors who had more extravert personality traits had participants with poorer attendance in weeks (p<0.05). Instructors who showed conscientious personality traits were more likely to have participants with higher attendance in weeks (p<0.001).

9.242 Adherence

**Null model:**

To ensure consistency with previous analysis we only tested a two level null model in MLwiN for the adherence outcome. There was no variance explained in the null model on the instructor level (Appendix 15). This was thought to be due to lack of variance in the outcome measure. Due to the lack of variance in the variables caused by a small drop-out rate at six months we could not enter the full model in MLwiN to carry out single level multiple logistic regression as it produced instability in the model. We entered all variables which came out as significant from forwards and backwards multiple logistic regression in SPSS and any other variables which had been found to be significant from previous regressions looking at adherence in weeks into a single level multiple logistic regression in SPSS. Any variables with values above p<0.25 were removed and a final regression was carried out (Table 9.7). The amount of variance explained by the final model (Table 9.8) was pseudo-\(R^2=0.34\) (Menard, 1995).
**Individual variables:**
As already illustrated in the between groups test, having attended the class for less than six months meant participants were less likely to adhere at six months (p=0.05). Higher SF12 mental well-being scores indicating better mental health (p=0.09) and higher PAGEQ scores for *individual attractions to the group social* and therefore more positive perceptions of social interaction with the group (p=0.07) were related to adherence, but these associations were not significant. Positive attitudes towards the class identified by higher AFRIS scores were found to be significantly related to adherence (p<0.05) as were the number of classes offered (p<0.05).

**Instructor variables:**
Only instructor experience and conscientiousness measured by mini markers (Saucier, 1994) were related to class participant adherence. Instructor experience was negatively associated with adherence (p<0.05), whereas increased instructor conscientiousness (p<0.05) was positively associated with adherence.
### Table 9.5-Attendance in weeks: MLwiN (2 Level) Model, with non-significant variables removed at p<0.10.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B(SE) CI</td>
<td>B(SE) CI</td>
</tr>
<tr>
<td><strong>Individual Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td>-1.180 (0.536) **</td>
<td>-2.940 (0.928)**</td>
</tr>
<tr>
<td>Education Age left school</td>
<td>0.168 (0.187) **</td>
<td>0.263 (0.354)**</td>
</tr>
<tr>
<td>Education Education since school</td>
<td>0.796 (0.449) ***</td>
<td>0.912 (0.844)**</td>
</tr>
<tr>
<td>SF12 Physical</td>
<td>-0.012 (0.023) ***</td>
<td>-0.005 (0.043)**</td>
</tr>
<tr>
<td>Cohesion</td>
<td>0.321 (0.237)**</td>
<td>0.699 (0.442)**</td>
</tr>
<tr>
<td>Ind Group Social Task</td>
<td>-0.343 (0.234)**</td>
<td>-0.494 (0.448)**</td>
</tr>
<tr>
<td>AFRIS (Attitudes)</td>
<td>0.166 (0.073) ***</td>
<td>0.400 (0.137)**</td>
</tr>
<tr>
<td>Do you carry out exercises at home?</td>
<td>0.867 (0.505)*</td>
<td>-</td>
</tr>
<tr>
<td>Weeks offered</td>
<td>0.240 (0.237)*</td>
<td>0.505 (0.183)**</td>
</tr>
<tr>
<td><strong>Instructor variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender (female)</td>
<td>-4.396 (1.307)**</td>
<td>-6.958 -1.834</td>
</tr>
<tr>
<td>Age</td>
<td>-0.139 (0.071)**</td>
<td>-0.278 0.000</td>
</tr>
<tr>
<td>Experience (in months)</td>
<td>0.053 (0.019)**</td>
<td>0.021 (0.011)*</td>
</tr>
<tr>
<td>Motivational Training</td>
<td>2.631 (1.003)**</td>
<td>1.601 (0.820)*</td>
</tr>
<tr>
<td>Personality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extraversion</td>
<td>-2.455 (0.875)**</td>
<td>-1.381 (0.443)**</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-3.804 (1.175)**</td>
<td>-2.492 -0.513</td>
</tr>
<tr>
<td>Consciousness</td>
<td>1.746 (0.585)**</td>
<td>2.811 (0.670)**</td>
</tr>
<tr>
<td>Emotional Stability</td>
<td>0.749 (0.437)*</td>
<td>1.498 4.124</td>
</tr>
<tr>
<td>Intellect</td>
<td>-0.554 (0.263)**</td>
<td>-1.069 -0.038</td>
</tr>
</tbody>
</table>

*Not significant
**Significant at p<0.05
***Significant at p<0.001

N.B. Negative relationships with the outcome are shown in red.
<table>
<thead>
<tr>
<th>Table 9.6- Attendance in weeks model assessments and evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Null Model</strong></td>
</tr>
<tr>
<td>Instructor Level 2</td>
</tr>
<tr>
<td>Participant Level 1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Percentage of variance explained by final model</strong></td>
</tr>
<tr>
<td>Level 2</td>
</tr>
<tr>
<td>Level 1</td>
</tr>
<tr>
<td><strong>Individual Variables</strong></td>
</tr>
<tr>
<td>Housing</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>SF12 Physical</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>SF12 Mental</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Cohesion</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>AFRIS (Attitudes)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Do you carry out exercises at home?</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Weeks offered</td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>Instructor variables</td>
</tr>
<tr>
<td>Gender (female)</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Experience (in months)</td>
</tr>
<tr>
<td>Motivational Training</td>
</tr>
<tr>
<td>Personality</td>
</tr>
<tr>
<td>Extraversion</td>
</tr>
<tr>
<td>Agreeableness</td>
</tr>
<tr>
<td>Consciousness</td>
</tr>
<tr>
<td>Emotional Stability</td>
</tr>
<tr>
<td>Intellect</td>
</tr>
</tbody>
</table>
Table 9.7- Adherence at six months using SPSS multiple logistic regression with non-significant variables removed at p<0.10.

<table>
<thead>
<tr>
<th>Variable</th>
<th>B(SE)</th>
<th>OR</th>
<th>CI Lower</th>
<th>CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 6 month attendance</td>
<td>-1.593 (0.807)*</td>
<td>0.20</td>
<td>0.042</td>
<td>0.990</td>
</tr>
<tr>
<td>SF12 Mental</td>
<td>0.084 (0.049)</td>
<td>1.09</td>
<td>0.988</td>
<td>1.196</td>
</tr>
<tr>
<td>Cohesion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind Group Social Group Task</td>
<td>0.677 (0.375)</td>
<td>1.87</td>
<td>0.944</td>
<td>4.103</td>
</tr>
<tr>
<td>AFRIS (Attitudes)</td>
<td>0.229 (0.109)*</td>
<td>1.26</td>
<td>1.015</td>
<td>1.558</td>
</tr>
<tr>
<td>Weeks offered</td>
<td>0.371 (0.157)*</td>
<td>1.45</td>
<td>1.066</td>
<td>1.970</td>
</tr>
<tr>
<td><strong>Instructor variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience (in months)</td>
<td>-0.043 (0.016)*</td>
<td>0.96</td>
<td>0.928</td>
<td>0.989</td>
</tr>
<tr>
<td>Personality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>1.583 (0.701)*</td>
<td>4.87</td>
<td>1.233</td>
<td>19.244</td>
</tr>
</tbody>
</table>

* p<0.05  
N.B. Negative relationships with the outcome are shown in red.

Table 9.8- Adherence at six months, model assessment and evaluation

<table>
<thead>
<tr>
<th>Model</th>
<th>Baseline questionnaire to 6 months adherence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null Model</td>
<td>2 Log Likelihood 78.035</td>
</tr>
<tr>
<td>Final Model</td>
<td>2 Log Likelihood 51.347</td>
</tr>
<tr>
<td></td>
<td>pseudo-R² 0.34</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Relative explanatory power of final model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Variables</td>
</tr>
<tr>
<td>Less than 6 month attendance</td>
</tr>
<tr>
<td>SF12 Mental</td>
</tr>
<tr>
<td>Cohesion</td>
</tr>
<tr>
<td>Ind Group Social Group Task</td>
</tr>
<tr>
<td>AFRIS (Attitudes)</td>
</tr>
<tr>
<td>Weeks offered</td>
</tr>
<tr>
<td>Instructor variables</td>
</tr>
<tr>
<td>Experience (in months)</td>
</tr>
<tr>
<td>Personality</td>
</tr>
<tr>
<td>Conscientiousness</td>
</tr>
</tbody>
</table>
9.3 Discussion.

The central findings of this chapter are that the instructor does play a role in influencing participants’ attendance to exercise classes. However, the instructors’ attitudes do not seem to influence class participants’ attitudes or participants’ attendance or adherence to the class. Individuals’ mental well-being, education and housing were key factors related to participant attendance. Having attended the class for more than six months at baseline was an important factor related to adherence. Individual factors such as participants’ attitudes, beliefs about group cohesion and instructor variables such as personality traits and experience emerged in all three of the final models both in relation to participant attendance and adherence. However, it is still unclear what role the instructor plays in adherence. The lack of variance on the instructor level in the adherence model seems unlikely to be because the instructor does not have an influence, but rather because the variation was too small in relation to the outcome across this level. This is the same for the group level variables in relation to both the attendance and adherence outcomes. Therefore the role of the instructor and the group in promoting adherence are still not clearly established.

Class participants’ education and home ownership appear to relate to class attendance but not to overall adherence. Higher education level seems to relate to more regular participation, although this has not been found to widely relate to class attendance (Hawley et al., 2011), it has been associated with some adherence rates (Macleod & Stewart, 1994) and to increased general physical activity (Umstattd & Hallam, 2007). Home ownership has been related to increased affluence and therefore more active lifestyles (Rhodes et al., 1999). In this study it negatively impacted on attendance but was not related to adherence. If home ownership does relate to affluence, participants who can afford to go away for long periods of time on holiday (as indicated in study two), may not have high attendance in weeks but may return to the class. The Index of Multiple Deprivation (IMD), another indicator of potential affluence did not seem to influence attendance as there was no variance found on the group level. Although there was a lack of variance within most of the group variables, the IMD was different for every group and therefore it is likely that there is not a significant relationship between IMD and attendance. However, the IMD did relate to the venue of the class and not where class participants necessarily lived.

Whether the participant had attended the class for less than six months at baseline was
significantly related to whether they dropped out (OR=0.20). This supports the existing literature which suggests that it takes six months for behaviour to be adopted (Stiggelbout et al, 2006; Prochaska & DiClementi, 1983). It is also supported by the results reported in Study 2 where instructors said that if participants were going to drop out it was in the initial stages of their attendance, those who stayed tended to adhere for the long term.

Positive perceptions of mental well-being were shown negatively to affect attendance in weeks but positively relate to adherence. It could be that those with better mental health had more active lifestyles and therefore didn’t attend as often as those who perhaps had fewer networks, but ultimately they were more likely to adhere to the class. There were improvements in mental health scores over the six months supporting the arguments made in previous research that improved outcome and health relates to adherence (Hickey et al, 1995; Williams & Lord, 1995; Nigg et al, 2002; Yardley et al, 2006; Sjosten et al, 2007; Phillips et al, 2010).

The individual class participant's positive perceptions of their social interaction with the group increased over the first three months and were associated with both increased attendance and adherence to the class. This supports both previous research and feedback from instructors in Study 2 about the importance of group cohesion and the class as a social occasion (Carron et al, 1988; Estabrooks & Carron 1999; Estabrooks & Carron, 1999a; Estabrooks et al, 2003; McAuley et al, 2003; Loughead & Carron, 2004; Stathi et al, 2010; Hawley et al, 2011). The class participants’ positive perceptions of how the group bonds together around the task had a negative impact on attendance despite previous research finding it has a positive effect (Estabrooks & Carron, 1999). This could be about fear of not being able to keep up with the rest of the class (see Study 2), although this does not relate to adherence and needs to be further explored. Class participants' attitudes towards the class grew more positive in the first three months and were both positively related to attendance to the class and to adherence to the class, supporting previous evidence (Lucidi, 2006, Yardley et al, 2006; Yardley et al, 2007) and also instructors’ comments made in Study 2 about the relationship between attitudes and adherence. This explained a large amount of the variance both in attendance and adherence and also explained variance on the instructor level when looking at attendance, suggesting that there may be a relationship between the instructor and participants' attitudes.

The number of classes’ participants could attend over the six month period related to both
attendance and adherence. Some classes were cancelled because instructors were away travelling for quite long periods of times and others due to the harsh winter weather (ice and snow). It is not surprising that non-delivery of classes relates to attendance as some participants had the opportunity to attend significantly more classes than others especially between three and six month follow-ups. However, it is interesting that this was also related to adherence rates. There is no literature around this variable although one instructor in the qualitative interviews did point out that once a class had stopped for sometime it was very hard to re-engage participants. This therefore requires further exploration. However, it is recommended that instructors’ aim for continuity of delivery and ask another instructor (ideally someone who has come to the class to meet participants beforehand) to cover their classes if they are unable to deliver them.

Instructors’ characteristics were found to very important in relation to attendance in weeks and had some significance in relation to class participants’ adherence. Instructor age and being female had a negative effect on attendance. However, being a mature instructor was mentioned by instructors in the qualitative study as a positive thing and there were only two male instructors in the sample. Being female did have a negative effect on attitudes in Study 1 and therefore these findings require further research. The experience of the instructor did have a positive relationship with attendance in weeks in the first three months particularly. However, experience had a negative relationship with adherence at six months. The two previous studies in this research, the relationship with attendance and other research (Seguin et al, 2010) has established that instructors’ experience could have a role to play in participants’ adherence and therefore this requires further exploration. If the instructor has participated in motivational training they are more likely to have participants who attend more frequently, this is significant in the first three months. It is likely that this is the stage in which the participants are encouraged to stay (supported by Study 2) and when the instructors’ motivational role could be key.

As hypothesised, based on Study 1, instructor personality does have a role to play. Personality is significantly related to attendance as being too extravert, too agreeable and coming across as too intelligent (imaginative and insightful), can negatively influence class participants’ attendance especially in the first three months. However, conscientiousness has a positive effect on both attendance in weeks and adherence at six months. Although this supports the findings from the qualitative study, some of the key personality traits discussed by instructors as important to delivery (enthusiasm, passion, understanding and
being approachable) in Study 2 could also fit within several of the big five personality traits (Saucier, 1994) measured within this study, including those which had a negative impact on attendance such as extraversion. This may require further exploration with class participants.

Finally, we know that support and encouragement from family, friends and peers can increase home exercise (Hawley, 2009). However, the relationship between the encouragement of home exercise by the instructor and class participants self report of exercise at home could not be tested. The majority of participants in the sample reported home exercise and also reported that their instructors encouraged them to do home exercise.

9.31 Limitations

There are various limitations to the study. Instructors’ attitudes and characteristics have not previously been examined in this way and therefore this study was exploratory. Instructors and class participants who agreed to participate in the study are likely to be the most enthusiastic ones, which may have introduced bias. Approximately half of the potential participants were recruited. We could have found that those class participants who did not participate in the study had different outcomes. As the instructors and participants who were recruited are likely to be the most enthusiastic ones it may also explain why there was a low drop-out rate from the classes.

There were issues with loss to follow-up. Although attendance and adherence data was still available for participants they did not all complete three or six month questionnaires. One instructor let us recruit six classes she delivered and we were able to obtain baseline data from them. However, following this she changed her mind and refused to let us approach her participants (N=26) to complete further follow up questionnaires. Although she did continue to provide us with attendance data, this withdrawal of participants from follow-up could have biased the data but was unavoidable. This study was intended to be transferable to practice, to make this possible we have worked with existing classes and instructors. This has raised issues such as drop out and mixed recruitment of new and long term class participants. However, to have recruited enough new participants to follow first attendance through to adherence in reality would have meant recruiting only newly trained instructors. This would have introduced bias as we know that experience of the
instructor has a relationship with participant adherence.

To ensure the findings of this study are generalisable to classes across the U.K we tried to recruit a variety of instructors and classes across a broad area of England. However, the majority of the instructors did have the EXTEND, PSI or Otago qualification, with some having a combination of these qualifications. Only one instructor had the YMCA qualification and none of the other qualifications (Medau, KFA, Laban, Fitness League) are represented. This may have impacted on the instructors’ attitudes and approach to their classes. As already illustrated in Study 1, EXTEND instructors had more positive attitudes about older adults’ participation in classes than instructors with other qualifications, although instructors’ attitudes were not found to relate to attendance and adherence in this study. There may also be regional differences between classes and instructors across other parts of England and the U.K, which are not represented by the sample recruited in this study.

We did not find any correlation between instructors’ attitudes and participants’ attitudes. This could have been due to the measure used to collect instructors’ attitudes. Instructors’ attitudes have only previously been explored through the use of an adapted AFRIS in Study 1 and this adapted measure has not yet been validated.

Due to lack of variability in the group variables, such as type of class (mostly seated/mostly standing and open/closed), whether there was a charge or transport and the level of deprivation where the class was held (IMD scores; ONS, 2011), we were unable to include them in the models. This means that we still do not know whether variables on a group level have an impact on the attendance or adherence of the group participants. This also relates to the recruitment of predominantly EXTEND trained instructors who only deliver mostly seated classes. Also, due to low numbers of drop out at three months and low numbers of dropout at six months we were unable to look at adherence at three months as an outcome or adherence using a multi-level model at six months. It is believed that there is likely to be some variation explained in these models and therefore this study could be replicated with a larger sample size, which may provide broader results. However, the use of both attendance in weeks and adherence does provide us with a fuller picture and there are correlations between the models, although further research is required.
9.4 Recommendations and conclusion.

There are factors that can influence attendance and adherence that cannot be changed easily such as the education and housing of the participant. However, it is recommended that the instructor and others can play an important role in influencing participants’ attitudes. Class participants’ attitudes about the class are important to both their attendance and their adherence and it is therefore important that the class is able to meet participants' expectations and give them positive physical, mental and social outcomes, particularly in the first three months of attendance. The instructor and the group have a role to play in ensuring that participants feel positive both about the group as a social entity but also about the participant’s confidence in participating in the task. It is clear that continuity of classes is important to attendance and adherence. Therefore, it is recommended that instructors try to cover their classes if they are not able to deliver. It may be advised that instructors attend motivational training and that when new classes are started (before behaviour is established) the use of an experienced instructor may help promote attendance levels of older adults. If we want to encourage adherence and frequent attendance it is recommended that conscientious instructors are recruited or that instructors focus on ensuring that participants feel they are being provided with the best class that the instructor can deliver. Finally, these results are still exploratory and further data collection is being carried out looking at 12 months attendance and adherence, it is hoped that these data will provide further understanding of the relationships between the instructor and the individual.
Chapter 10: Overall conclusions and reflection.

This thesis reports a systematic review and three studies using mixed methods to build on our existing knowledge of older adults’ intentions, uptake and adherence to multi-component exercise classes with an emphasis on the role of the exercise instructor. The use of mixed methods enables us to build knowledge around this area and to further explore issues and areas of interest as the research has progressed.

The systematic review examines what factors promote older adults’ uptake and adherence to exercise classes. It reveals that older adults’ attitudes and beliefs are important when considering promoting uptake of classes and that the outcomes, fulfilment of expectations and support given in and outside of the class setting are important determinants of long term adherence. Leadership and the support of the group emerged as something which older adults indicated was important (Estabrooks & Carron, 1999; Grove & Spier, 1999; McAuley et al 2003; Estabrooks et al, 2004; Fox et al, 2007; Hedley et al, 2010; Stathi et al, 2010). However, there was limited quantitative literature in this area and it was identified as an area which required further exploration.

Study 1 uses quantitative methods to look at whether training and characteristics of instructors influenced their attitudes towards older adults’ participation in classes. We found that most instructors had positive attitudes. Those instructors who had been delivering classes for longer or had undertaken the EXTEND qualification and were delivering mostly seated classes had more positive attitudes. Those instructors who deliver in settings such as NHS premises or care homes had more negative attitudes about older adults’ participation in classes. This first study establishes that there are important relationships between background variables such as experience and training received by instructors (and thus the sort of exercise class provided) and attitudes.

Study 2 uses qualitative methods to investigate further how instructors’ training and characteristics influence their beliefs and also to explore their experiences around older adults’ participation in exercise classes. Instructors tend to voice similar experiences and beliefs. However, there were differences between their delivery dependent on whether they had undertaken the qualifications which enabled delivery to participants with specific conditions or whether they had a general older adults Level 3 qualification. Instructors expressed beliefs indicating that it is a combination of training, experience and personality,
which both influences beliefs, and approach, is essential for good delivery. Enthusiasm, passion and being understanding and approachable were all cited as important personality traits by instructors. The hardest task was not in motivating their current participants (instructors felt that there participants who attended were dedicated), but engaging new participants. They indicated that peer promotion and the social elements of the classes were most important in attracting and maintaining older adults' attendance. Instructors said that they had a key role in creating a positive atmosphere. The second study illustrates how the instructor plays an important but not isolated role in promoting uptake and adherence to classes. Instructors' beliefs and delivery are influenced by a complex interaction of factors including personality, training, experience and the participants in their classes.

Study 3 further builds on our knowledge of the instructor by using quantitative methods to look at how the instructor and other factors directly influence participants' attendance and adherence to classes in practice. It also looks at whether the instructor influences participants' home exercise habits. This study supports previous research which suggests that exercise behaviour is adopted in the first six months of the activity as it found that those who had been attending the class for longer than six months at baseline were more likely to adhere. We also established that mental well-being, group cohesion and participant attitudes all had a role to play in attendance and adherence to the group; these findings are supported by the qualitative study. Finally, we establish that instructor experience and instructor personality are important to participant attendance and adherence, which again is supported by both the first and second study in this research.

There are some limitations to the research as a whole; the sample of instructors who engaged with all three of the studies may have been influenced by self-selection bias as it is likely that only the most enthusiastic instructors engaged. Due to the nature of this recruitment and the decision to recruit existing classes to ensure this research was valid to everyday practice, it is likely that we only recruited successful instructors. Therefore this research may not adequately help us to understand why instructors fail to recruit sufficient participants to their classes. It has been clear throughout the research that the factors which promote older adults’ uptake and adherence to exercise classes are complex and can be highly individualised. Therefore the recommendations from this research are only tentative as the studies were exploratory and the methods do not allow us to provide a direct causal link between the instructor and participant adherence.
Finally, the concept of adherence needs to be considered carefully as its use must clearly relate to the overall outcome of why we want participants to increase their attendance and adherence to classes. In Study 3 we have defined non-adherence to be 'those not attending at follow-up and have not attended for four weeks, and have not given a reason for non-attendance or those who have stated they are dropping out'. There are numerous definitions of adherence in the literature (Sjosten et al, 2007; Hughes et al, 2006; King et al, 1997; Dishman, 1988; Oldridge, 1982), our definition of non-adherence accounts for those who may go away on holiday for long periods of time or those who may be away from the class due to illness but return. However, we also use attendance in weeks as an outcome, which has been frequently used as an outcome of adherence in the literature (Hawley et al, 2011). If we want the participant to adhere for health reasons, for example for maintenance of strength and balance and reduced falls risk then our definition of adherence (that they may have missed a substantial number of classes but can still be called adherers) ultimately may need to be challenged. This definition could mean that participants are adhering to the class, as they always come back, but are not maintaining the physical or mental gains that a class can provide. If in practical terms adherence is also important to ensure that the class can continue to be provided and is economically viable our definition of adherence could again be inadequate, as participants are adhering but if large numbers of participants are away from the class for long periods of time the class may become unviable. However, overall our definition of adherence allows for real life situations which may be unavoidable. We believe it is a good measure of participants' attitudes towards and commitment to the class, as well as their satisfaction with the class in terms of both physical and social outcomes. The use of attendance in weeks as an outcome in this study also helps to support our findings around the adherence outcome.
10.1 Recommendations for policy, practice and research.

Taking the combined findings from all three studies the following recommendations should be considered.

10.11 Policy.

Both health and social care policies should ensure they consider the following recommendations:

1. **Emphasis on the social benefits of classes:**
   When considering the benefits of exercise classes for older adults, not only the physical benefits should be considered but its importance in creating new social networks and the important mental and emotional benefits for participants as illustrated by the systematic review (Chapter 2), the qualitative study (Chapters 6 & 7) and the longitudinal study (Chapters 8 & 9). Group exercise should be actively focused on in policies such as the Department of Health’s Physical Activity guidelines particularly for the ≤65 (DH, 2011) as exercising in a group provides wider social and mental health benefits that cannot be achieved through exercising alone. It also provides the opportunity for progression and further development which may not be available to participants if exercising on their own.

2. **Established links between rehabilitation services and community exercise provision:**
   Due to these additional wider social and mental health benefits and based on findings within the qualitative study (Chapter 7), policy should suggest that services need to be commissioned to ensure that there are better links between rehabilitation services and community based exercise classes. It is important that clinicians and community instructors work together to manage the transition for patients from rehabilitation to maintenance in the community and take into consideration both health and function.

3. **Professionals directly signposting to community provision and discussing the benefits of both strength and balance and general provision with patients and the general public:**
   The qualitative study (Chapter 7) illustrates that health professionals and other professionals have an important role to play in older adults’ exercise behaviour and can influence older adults’ attitudes. Policy should outline an expectation that primary health
and social care teams and community staff should encourage participants to engage in exercise.

10.12 Practice

Training organisations, instructors, supportive professional organisations, sports development and Public Health departments and health professionals should consider the following guidance:

1) *All instructors should undertake motivational training:*
Result reported in Chapters 5, 7 and 9 (Table 9.6) imply that all training organisations who provide Level 3 older adults qualifications should offer motivational training as part of their course, as a strongly recommended option additional to their course or signpost to other providers or offer such courses. Organisations who employ instructors or commission services or training should consider motivational training as an important part of an instructors' competency.

2) *The use of an experienced instructor:*
Result reported in Chapters 5, 7 and 9 indicate that an experienced instructor should be used for the delivery of exercise classes, especially at the beginning of a new class, as they may increase the chance of participants’ attendance and adherence. However, exercise instructors should ensure all their delivery is participant centred and recommendation 3) should also be considered.

3) *Observation of a range of classes with a range of participants:*
Alongside the previous recommendation it is strongly recommended that new instructors are given the opportunity by the training organisation to shadow other instructors and attend a range of different classes in order to improve their participants’ chance of successful adherence when they begin to deliver classes (Study 2; Chapter 7).

4) *Clear boundaries of delivery:*
Training companies are advised to make the boundaries of the qualifications they provide explicit to ensure that instructor's delivery is safe and suitable for their participants (Study 2; Chapter 7).
5) **Active engagement by health professionals:**
Following on from policy recommendation 2 above health professionals, especially primary care teams and those delivering rehabilitation services should ensure they forge close links with their local exercise instructors.

6) **Continuity of delivery:**
If the instructor is going to be unable to deliver the class for more than several weeks then they should arrange for another instructor to cover the class in their absence to ensure continuity of delivery. The issue of continuity also applies to NHS commissioned rehabilitation services, short term commissioning of services makes it sometimes difficult for services to become established and well known. It is important that there is continuity of services and also continuity of community services which follow on from rehabilitation.

10.13 Future research.

This research provides a basis on which further work can be developed. It is suggested that further qualitative and quantitative work is carried out with both instructors and class participants to consolidate and further develop this study’s findings, to further understand the complex interactions between instructors, the group, class participants and others.

To collect instructors’ attitudes in this study we used an amended AFRIS (Yardley & Todd, 2008). In Study 1 (Chapters 4 & 5) our final models only explained a small amount of variance in attitudes, this could relate to the way that we asked the attitudes questions. Future work should concentrate on establishing the most appropriate way to measure instructors’ attitudes.

This study has primarily focussed on community based classes with fairly healthy class participants. It is suggested that further work could be carried out looking specifically at classes in care homes, further condition specific classes (e.g. Parkinson’s, Stroke) and rehabilitation. There is scope to focus on health professionals’ attitudes and delivery in rehabilitation, we have identified that instructors from a clinical background or who deliver in clinical settings have more negative attitudes that other instructors. It would be therefore interesting to explore the attitudes of those delivering different forms of rehabilitation, particularly falls rehabilitation and how this influences the patients’ uptake and adherence to rehabilitation but also whether and in what ways the clinician influences
the transition to community classes or home exercise.

There is further scope to look at the delivery of falls classes (clinical versus community) in different setting and by different types of instructors (physiotherapist versus exercise instructor). The feedback from instructors is that there are distinct difference between strength and balance classes and general community classes. Strength and balance classes such as the Otago programme have been shown to be effective in reducing falls and preventing deaths from falls (Robertson et al, 2001; Sherrington et al, 2008; Davis et al, 2009, Sherrington et al, 2011), and Otago has been found to be a cost-effective intervention (Davis et al, 2009). However, a recent systematic review looking at home-based Otago has shown that of the 747 (out of 1503) participants who remained in the studies at 12 months, only 274 (36.7%) were still exercising three or more times per week (Thomas et al, 2010). We know that a minimum dose of twice a week for 25 weeks is required to be effective (Sherrington et al, 2008). Although this delivery was home based, Otago is delivered in groups through the NHS in the U.K. It could be possible that if delivered in its structured form it provides evidence based outcomes, but the likelihood of achieving these outcomes are reduced by non-compliance/non-adherence and lack of maintenance when offered mainstream classes. We were unable to compare adherence to Otago and PSI classes with more general classes in our research, due to the lack of variance in the type of class recruited into the study. Also, most instructors recruited for the third study did not follow Otago/PSI principles strictly and incorporated music and other elements into their delivery. We propose a study where we aim to investigate the delivery of the Otago programme in a non-clinical group setting delivered by an exercise instructor in the community and compare this with a clinically delivered group and also a home exercise group. We also propose using the same settings for groups but exploring the programmes delivery in an adapted form, incorporating music and a more social focus in an aim to explore outcomes and adherence levels. The provision of group and home based strength and balance exercises are often commissioned by NHS organisations and therefore this is intended to closely mirror current clinical practice. This would enable us to explore the effectiveness and outcomes achieved by each format of delivery, also exploring the impact of clinical and community settings and delivery on patient choice and attitudes.

Key research questions which need to be asked as a result of this study include:
- What is the most appropriate way to measure exercise instructors’ attitudes?
- What is the clinician’s role in older adults’ transition to community classes after rehabilitation?
- What factors relate to adherence to an exercise class for new class participants?
- What role do socio-economic and group factors play in older adults’ uptake and adherence to exercise classes?
- What are the attitudes and beliefs of those who deliver rehabilitation?
- What promotes uptake and adherence to exercise classes in conditions specific populations and in long term care environments?
- How do instructor characteristics, and the format and delivery of evidence based exercise programmes relate to adherence?

10.2 Final conclusion.

Overall, this research has started to establish the evidence around the role of the instructor in older adults’ exercise classes. It is the first series of studies which have attempted to consider instructors' attitudes in relation to their class participants. We have established that there is a relationship between an instructor’s training, experience, characteristics and his/her attitudes. We have then gone on to explore this in more detail and found that personality also interacts with these variables to influence how the instructor delivers and promotes their classes. We have developed our understanding further by exploring how these factors then interact with the participant and their uptake, adherence or drop out from the class. The final study enables us to directly look at the relationship between instructor variables and the participant within the exercise class setting and whether the instructor can influence home exercise. It is clear that there are a series of complex interactions between the instructor, participant, the group and others which influences beliefs and attitudes. One of the original hypotheses of this research was that instructors' attitudes may influence participants' attitudes which may then influence adherence. No direct link has been established between instructors' attitudes and participants' attitudes. However, through all three studies it is clear that the instructor can influence participants and they have an important role to play in creating an atmosphere and environment of which participants want to be a part of. This research has been exploratory, but it does enhance our knowledge of how to promote uptake and adherence to exercise classes and creates a base on which we can continue to build.
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Appendix 1: Search Strategy for Systematic Review

Search History

1. MEDLINE; "older people",ti,ab; 8987 results.
2. MEDLINE; "older adults",ti,ab; 17593 results.
3. MEDLINE; seniors.ti,ab; 2996 results.
4. MEDLINE; elderly.ti,ab; 128415 results.
5. MEDLINE; "frail older people",ti,ab; 178 results.
6. MEDLINE; ageing.ti,ab; 16261 results.
7. MEDLINE; "senior citizen*",ti,ab; 920 results.
8. MEDLINE; aged.ti,ab; 252346 results.
9. MEDLINE; geriatric.ti,ab; 20610 results.
10. MEDLINE; AGED/; 1813287 results.
11. MEDLINE; "AGED, 80 AND OVER"/; 416132 results.
12. MEDLINE: 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11; 2017733
13. MEDLINE; exercise*.ti,ab; 148118 results.
14. MEDLINE; "strength and balance",ti,ab; 117 results.
15. MEDLINE; EXERCISE/; 47505 results.
16. MEDLINE; "exercise therapy",ti,ab; 1342 results.
17. MEDLINE; EXERCISE THERAPY/; 18700 results.
18. MEDLINE; "physical exertion",ti,ab; 1381 results.
19. MEDLINE; "physical fitness",ti,ab; 3994 results.
20. MEDLINE; PHYSICAL FITNESS/; 16812 results.
21. MEDLINE; PHYSICAL EXERTION/; 49579 results.
22. MEDLINE; 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21; 206616
23. MEDLINE; uptake.ti,ab; 197344 results.
24. MEDLINE; intention.ti,ab; 18181 results.
25. MEDLINE; maintenance.ti,ab; 134854 results.
26. MEDLINE; compliance.ti,ab; 58625 results.
27. MEDLINE; COMPLIANCE/; 3231 results.
28. MEDLINE; PATIENT COMPLIANCE/; 37116 results.
29. MEDLINE; attitudes.ti,ab; 52807 results.
30. MEDLINE; ATTITUDE/; 34085 results.
31. MEDLINE; adherence.ti,ab; 40638 results.
32. MEDLINE; 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29 OR 30 OR 31; 535125
33. MEDLINE; 12 AND 22 AND 32; 5349 results.
34. MEDLINE; 33 [Limit to: Humans and English Language]; 4829 results.

Search History

1. EMBASE; "older people",ti,ab; 6648 results.
2. EMBASE; "older adults",ti,ab; 13861 results.
3. EMBASE; "seniors",ti,ab; 1885 results.
4. EMBASE; "elderly",ti,ab; 108495 results.
5. EMBASE; "frail older people",ti,ab; 126 results.
6. EMBASE; ageing.ti,ab; 13482 results.
7. EMBASE; "senior citizen*",ti,ab; 560 results.
8. EMBASE; aged.ti,ab; 195546 results.
9. EMBASE; geriatric.ti,ab; 15511 results.
10. EMBASE; AGED/; 1027477 results.
11. EMBASE; GERIATRIC CARE/; 8975 results.
12. EMBASE; 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11; 1200404 results.
13. EMBASE; exercise*.ti,ab; 120124 results.
14. EMBASE; "strength and balance",ti,ab; 122 results.
15. EMBASE; "exercise therapy",ti,ab; 867 results.
16. EMBASE; "physical exertion",ti,ab; 722 results.
17. EMBASE; "physical fitness",ti,ab; 2981 results.
18. EMBASE; EXERCISE/; 77297 results.
19. EMBASE; 13 OR 14 OR 15 OR 16 OR 17 OR 18; 142635 results.
20. EMBASE; uptake.ti,ab; 166822 results.
21. EMBASE; intention.ti,ab; 14885 results.
22. EMBASE; maintenance.ti,ab; 109303 results.
23. EMBASE; compliance.ti,ab; 50964 results.
24. EMBASE; ATTITUDE/; 23093 results.
25. EMBASE; attitudes.ti,ab; 34033 results.
26. EMBASE; adherence.ti,ab; 33672 results.
27. EMBASE; "patient compliance".ti,ab; 4509 results.
28. EMBASE; PATIENT COMPLIANCE/; 48195 results.
29. EMBASE; 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28; 434639 results.
30. EMBASE; 12 AND 19 AND 29; 3942 results.
31. EMBASE; 30 [Limit to: Human and English Language]; 3537 results.

Search History
1. CINAHL; "older people".ti,ab; 6963 results.
2. CINAHL; "older adults".ti,ab; 10511 results.
3. CINAHL; "seniors".ti,ab; 1803 results.
4. CINAHL; "elderly".ti,ab; 28524 results.
5. CINAHL; "frail older people".ti,ab; 142 results.
6. CINAHL; ageing.ti,ab; 2087 results.
7. CINAHL; "senior citizen".ti,ab; 316 results.
8. CINAHL; aged.ti,ab; 32604 results.
9. CINAHL; geriatric.ti,ab; 6068 results.
10. CINAHL; AGED/; 201928 results.
11. CINAHL; AGED, 80 AND OVER/; 69338 results.
12. CINAHL; 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11; 236989 results.
13. CINAHL; exercis*.ti,ab; 33201 results.
14. CINAHL; "strength and balance".ti,ab; 132 results.
15. CINAHL; EXERCISE/; 14328 results.
16. CINAHL; "exercise therapy".ti,ab; 369 results.
17. CINAHL; THERAPEUTIC EXERCISE/; 7843 results.
18. CINAHL; "physical exertion".ti,ab; 113 results.
19. CINAHL; "physical fitness".ti,ab; 1041 results.
20. CINAHL; PHYSICAL FITNESS/; 5250 results.
21. CINAHL; PHYSICAL ACTIVITY/; 9105 results.
22. CINAHL; EXERTION/; 2301 results.
23. CINAHL; 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22; 54735 results.
24. CINAHL; uptake.ti,ab; 4472 results.
25. CINAHL; intention.ti,ab; 4308 results.
26. CINAHL; maintenance.ti,ab; 10601 results.
27. CINAHL; compliance.ti,ab; 10784 results.
28. CINAHL; "patient compliance".ti,ab; 864 results.
29. CINAHL; PATIENT COMPLIANCE/; 10067 results.
30. CINAHL; attitudes.ti,ab; 18911 results.
31. CINAHL; adherence.ti,ab; 7497 results.
32. CINAHL; 24 OR 25 OR 26 OR 27 OR 28 OR 29 OR 30 OR 31; 59411 results.
33. CINAHL; 12 AND 23 AND 32; 1533 results.
34. CINAHL; 33 [Limit to: (Language English)]; 1504 results.

Search History
1. PsycINFO; "older people".ti,ab; 5295 results.
2. PsycINFO; "older adults".ti,ab; 14854 results.
3. PsycINFO; "senior".ti,ab; 14230 results.
4. PsycINFO; "elderly".ti,ab; 34510 results.
5. PsycINFO; "frail older people".ti,ab; 93 results.
6. PsycINFO; "ageing".ti,ab; 2264 results.
7. PsycINFO; "senior citizen".ti,ab; 665 results.
8. PsycINFO; aged.ti,ab; 176346 results.
9. PsycINFO; geriatric.ti,ab; 7671 results.
10. PsycINFO; AGING/; 18159 results.
11. PsycINFO; 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10; 235879 results.
12. PsycINFO; exercis*.ti,ab; 30369 results.
Appendix 2: Systematic review scoring system.

5-4 Applies if all or most of the criteria from the combined checklist are fulfilled; where criteria are not fulfilled, the conclusions of the study are thought very unlikely to alter.

3-2 Applies if some of the criteria from the combined checklist are fulfilled; where criteria are not fulfilled or are not adequately described, the conclusions of the study are thought unlikely to alter

1 - Applies if few or no criteria from the combined checklist are fulfilled; where the criteria are not fulfilled or are not adequately described, the conclusions of the study are thought likely or very likely to alter (the study was therefore not included in the review).

Based on SIGN 2008 & CASP, 2006
Appendix 3: Instructors with L3 Older Adults.

TOTAL
5351 Instructors

REPS REGISTERED
EXTEND= 497
Frailer Older Adults and Falls (PSI) = 128
L3 Older Adults (including YMCA/YFI and Northern Fitness) = 1,448
L3 Fitness League = 97
L3 KFA = 693
L3 Laban = 7

NON-REPS REGISTERED
Targeted through EXTEND and LLT
EXTEND= 1,203
Frailer Older Adults and Falls (PSI) = 899
Otago = 331
### Appendix 4: Outline of L3 and above older adults qualifications held by instructors.

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>Description</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTEND (REPS level 3)</td>
<td>Provides gentle movement to music for older people and for anyone of any age with a disability.</td>
<td><a href="http://www.extend.org.uk/home">http://www.extend.org.uk/home</a></td>
</tr>
<tr>
<td>Later Life Training (LLT-REPS L4 PSI)</td>
<td>Provides a range of professionals the skills to deliver effective and fun exercise opportunities, which includes strength and balance exercises for older people with a fear or history of falls.</td>
<td><a href="http://www.laterlifetraining.co.uk/courses/postural-stability-instructor/">http://www.laterlifetraining.co.uk/courses/postural-stability-instructor/</a></td>
</tr>
<tr>
<td>YMCA/ YFIT (REPS L3 Older Adult)</td>
<td>Can specialise in exercise to music, chair based exercise, weights or circuit training suitable for older adults.</td>
<td><a href="http://www.ymcafit.org.uk/courses/exercise-and-ageing">http://www.ymcafit.org.uk/courses/exercise-and-ageing</a></td>
</tr>
<tr>
<td>KFA (REPS L3)</td>
<td>Older Adults classes are non-competitive exercise, movement and dance based sessions. Enhance your daily life with sessions designed to maintain a good level of posture, mobility, and co-ordination. Ideal for the active retired.</td>
<td><a href="http://www.keepfit.org.uk/about-us/Older-Adults">http://www.keepfit.org.uk/about-us/Older-Adults</a></td>
</tr>
<tr>
<td>Later Life Training Otago Exercise Programme Leader (REPS L3 CPD)</td>
<td>Provides evidence based home exercise and small group exercise options based on strength and balance exercises to prevent falls, injuries and improve cognition amongst older people.</td>
<td><a href="http://www.laterlifetraining.co.uk/courses/otago-exercise-programme-leader/">http://www.laterlifetraining.co.uk/courses/otago-exercise-programme-leader/</a></td>
</tr>
<tr>
<td>Laban (REPS L3)</td>
<td>See KFA. KFA based on Laban principles. No other information available.</td>
<td></td>
</tr>
<tr>
<td>Medau (REPS L3)</td>
<td>Working with a variety of music and rhythms, Medau movement encourages the body to move with energy, strength, stamina, suppleness and co-ordination. Focusing on correct posture and body alignment, Medau movement has a natural, flowing quality, whilst at the same time being dynamic, lifting the spirits and increasing confidence.</td>
<td><a href="http://www.medau.org.uk/">http://www.medau.org.uk/</a></td>
</tr>
<tr>
<td>Fitness League (REPs L3)</td>
<td>Fitness League teachers instruct in Bagot Stack which is part dance, part exercise to energise and strengthen the whole body. This unique system which is based on yoga, remedial health exercises and movement, offers a complete approach to body fitness and mobility. The focus is on strengthening abdominal muscles to achieve ‘central control’ which provides the basis of good posture from which all movement can be performed safely and effectively.</td>
<td><a href="http://www.thefitnessleague.com/">http://www.thefitnessleague.com/</a></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Margaret Morris (REPs L3)</td>
<td>Margaret Morris Movement (MMM) described as comprehensive structured technique encompassing recreational, therapeutic, athletic and creative elements.</td>
<td><a href="http://www.margaretmorrismovement.com/">www.margaretmorrismovement.com/</a></td>
</tr>
<tr>
<td>Northern Fitness (REPs L3 Older Adult)</td>
<td>If you are already working in a gym or studio environment this course will give you the skills and knowledge to take sessions for the older adult. The course covers age related physical and physiological changes, resources for teaching older people and advanced teaching methods to improve performance and prevent injury in both the studio and gym.</td>
<td><a href="http://www.pfetraining.co.uk/index.php">http://www.pfetraining.co.uk/index.php</a></td>
</tr>
</tbody>
</table>
Appendix 5: Enzine article

Motivating and sustaining older adults in exercise programs.

The University of Manchester is running a study looking at how to engage older people in exercise classes as well as maintaining their involvement and needs the help of REPs Level 3 members for it.

The benefits of regular and appropriate exercise training for older adults both in terms of improving functional abilities and over-all well-being are well known but feedback shows engaging older adults in physical activity is a difficult task. There is often a general acceptance of physical deterioration and therefore a reluctance to consider preventative measures (Stead et al, 1997). Even when older adults initiate exercise they will often discontinue their involvement within the first 6 months (Robinson and Rogers, 1994).

No single factor predicts whether an older adult might consider and then continue with an exercise programme. Participation is determined by a range of factors, often unique to the individual, they have been described as personal characteristics, environmental characteristics and programme characteristics (Laventure & Skelton, 2007). Personal characteristics might include the individual’s attitudes and beliefs about exercise (Yardley et al, 2007), their health status and also their perception of their ability to be able to carry out the activity (McAuley et al, 1993). Environmental characteristics might include support from family and friends, type of venue, location of venue and transport issues. Programme characteristics might include design and delivery of the class and your interpersonal skills (Laventure & Skelton 2007, Dinan 2001). These are factors which are within your control as an instructor.

The University would like to hear from all Level 3 instructors qualified to work with older people to talk about your commitment to your classes and your interaction with your participants as both have been shown to have a huge impact on your participant’s involvement and enjoyment of exercise.

They are also interested in building a picture of how many qualified L3 older people instructors are delivering exercise classes to older people in the U.K, in particular what types of classes are being taught and what characteristics those have. Researchers at the University hope that the results of these investigations will lead to greater understanding of not only the role of instructors but also improve the uptake and maintenance of classes by older adults.

For more information please visit: www.forms.manchester.ac.uk/surveys/qqi/ 1

1 Follow this link for the information sheets and to see the survey.
Appendix 6: Extracts from the online survey and full postal survey
Factors which engage and maintain older people in community exercise classes.

Questionnaire for Qualified Instructors of Exercise to Older People
General Instructions

Thank you for agreeing to help us with our research. Before continuing with this questionnaire please make sure that you have read the information sheet that has been provided. If you choose to complete this questionnaire you do not have to commit to continuing with this study, the questionnaire will give you the option to opt out of any further involvement in the study. If you do choose to continue your involvement with the study your participation is entirely voluntary and you are free to withdraw at anytime without giving a reason.

All of the information that you give us is COMPLETELY CONFIDENTIAL and will not be seen by anyone other than university staff directly involved in the research. There are some sections of the questionnaire which you may not be required to fill in. For the sections which you do fill in, can we ask you to answer ALL of the questions?

For most of the questions you will simply need to tick a box.

Here is an example of some questions which have already been filled in:

For example, Do you charge participants for your classes?

Yes √ No ○ Donation ○

If yes, how much?
E.g. £1.50 per person/£20 per session

---£1.50-------------

Some questions will ask you to give a number:

For example, If you are currently delivering sessions approximately how many new participants have enrolled on one of your classes in the last 6 months?

-12--

How did you hear about this questionnaire?

Register of Exercise Professionals ○ EXTEND ○

Later Life Training ○ Other (please specify) ○

.............................

SECTION 1 - ABOUT YOU.
1. Are you Male □ Female □

2. What is your Date of Birth (Day/Month/Year)?

……/……/……

3. What is the postcode of your office or base?

....................

4. Please tick the appropriate box which best describes your ethnic origin

   a) Black or Black British
      - Caribbean □
      - African □
      - Any other Black background within a) □

   b) White
      - British □
      - Irish □
      - Any other White background within b) □

   c) Asian or Asian British
      - Indian □
      - Pakistani □
      - Bangladeshi □
      - Chinese □
      - Any other Asian background within c) □

   d) Mixed
      - White & Black Caribbean □
      - White & Black African □
      - White and Asian □
      - Any other mixed background within d) □

   e) Any other ethnic groups
      - Prefer not to say □
      - Any other ethnic group, please specify □

---------------------------------------------------------------

5. Do you deliver classes as (you can tick as many as apply):

   a) An employee (e.g. of an NHS Trust or Local Authority,
Scheme Manager, Nursing home).

b) A freelance instructor (primary occupation)

c) A freelance instructor (secondary occupation)

d) As a volunteer (unpaid)

e) Other, please specify

6. If you are a freelance instructor (primary occupation), do you deliver classes to other age groups?

Yes ☐ No ☐

7. Please tick the category which best describes your background

Care Worker ☐ Nurse ☐

Physiotherapist ☐ Sports Coach ☐

Fitness Instructor ☐ Social Worker ☐

Sheltered Housing Scheme Manager ☐

Gym Instructor ☐

Voluntary sector worker ☐ Occupational Therapist ☐

Community Development worker ☐

Other, please specify ☐

8. Which exercise qualification(s) do you have which enables you to deliver exercise to older adults?

Later Life Training (LLT- REPS L4 PSI) ☐

EXTEND (REPS L3) ☐

Northern Fitness (REPS L3 Older Adult) ☐

YMCA/ YFIT (REPS L3 Older Adult) ☐

KFA (REPS L3 Older Adult) ☐

Leicester College/Later Life Training (REPS/CYQ - Chair Based Exercise Leader) ☐
Later Life Training Otago Exercise Programme Leader (REPS L3 CPD) □

Fitness League (REPS Level 3) □

Laban (REPS Level 3) □

Margaret Morris (REPS Level 3) □

Medau (REPS Level 3) □

Other: □

Please specify  -------------------------------

9. When did you qualify as an instructor with the above qualification(s)?

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Month/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Have you undertaken any additional motivational training? (To encourage uptake and adherence to exercise amongst older adults)

Yes □ No  □

If yes, please give details of the training course

-----------------------------------------------

SECTION 2- FILTER QUESTIONS

1. Please indicate whether you deliver any exercise sessions with participants aged 60 and over (these may be dedicated over 60s classes or classes with a mix of participants including those aged 60 and over)

Yes □ No  □
If no, could you tell us the reason for this?

-----------------------------------------------------

Thanks, you have now completed the Questionnaire if you do not currently deliver exercise to anyone aged 60 and over. We thank you for your time.

If you have answered “yes” to question 1 then please continue onto the next set of questions.

2. How many classes a week during November 2008 did you deliver with participants aged 60 and over (these may be dedicated over 60s classes or classes with a mix of participants including those aged 60 and over)?

☐

3. Is this typical or not?

Yes ☐ No ☐

4. Can you give us the postcode of the class which you deliver furthest away from your home address? (We only require the first part e.g. S61)

.................................

4. Please indicate how many classes in November 2008 per week you delivered under the following categories (e.g. If you chose ‘25% seated’, participants would be seated for up to 25% of the exercises). The classes are delivered so that participants are:

- Fully standing
- 25% seated
- 50% seated
- 75% seated
- 100% seated

For the rest of this questionnaire we ask about ‘mostly seated’ and ‘mostly standing’ delivery. For the purpose of this questionnaire we have defined them as:

‘Mostly Seated’

50% seated, 75% seated, 100% seated.

‘Mostly Standing’

Fully standing and 25% seated
If you deliver ‘mostly standing’ classes ONLY please miss section 3 and go to section 4.

SECTION 3- ABOUT YOUR ‘MOSTLY SEATED’ CLASSES

1. Please indicate the number of ‘mostly seated’ classes you delivered per week in November 2008 in each venue (please put a ‘0’ if you did not deliver any sessions in the venue).

   a) Leisure Centre/gym.
   b) Community venue e.g. church hall, village hall etc.
   c) Sheltered Housing.
   d) Residential care home (or unit)
   e) Nursing care home (or unit)
   f) EMI (Dementia unit) care home
   e) Other, (please specify)

   ------------------------
   -----------------------------------

2. Please indicate how long you have been delivering ‘mostly seated’ classes?

   Years ------  Months ------

3. How do you describe your ‘mostly seated’ classes in order to recruit people to take them up (you can tick as many as apply)?

   Strength and balance  ☐  Promoting Independence  ☐
   Providing social opportunities  ☐  Improve fitness levels  ☐
   Improve functional fitness  ☐  Prevent falls  ☐
   Other, please specify  ☐

   ------------------------
   -----------------------------------

4. a) Do you receive any support (e.g. promotion, signposting, referral, funding) for these classes from the (you can tick as many as apply):

   NHS  ☐  Council  ☐  Voluntary Sector  ☐
   Other (please specify)  ☐  No support received  ☐

   ------------------------
b) If you do receive support, what type of support do you receive (tick as many as apply)?

Promotional ☐  Signposting ☐  Referral ☐  
Funding ☐  Other (please specify) ☐  

5. Do you charge participants for your classes?
You can tick more than one answer e.g. you may charge for some classes and ask for a donation for others

Yes, for all of them ☐  Yes, for some of them ☐  
No ☐  Donation ☐  

If yes, how much?
e.g. £1.50 per person/£20 per session

If yes, please state the number of classes that you charge for:

☐

6. a) Is transport arranged for your participants?
You can tick more than one answer e.g. some classes may have transport and for some it may be N/A

Yes, for all of the classes ☐  Yes, for some of the classes ☐  
No ☐  N/A (the participants live at the venue). ☐  

If yes, is transport provided free to your participants?
You can select more than one answer

Yes (completely free) ☐  Yes (partially subsidised) ☐  
No ☐  Don’t Know ☐  

b) If transport is provided can you indicate the number of classes (per week) in November (please put 0 if there were no classes) where there was:

Transport arranged ☐  
Free transport ☐  
Subsidised transport ☐  

7. If you are currently delivering sessions approximately how many new
participants have enrolled on one of your ‘mostly seated’ classes in the last 6 months (if no new participants have enrolled please put ‘0’)?

☐

8. If you are currently delivering classes, approximately how many participants have been in your sessions for more than 6 months (if you have no participants who have been in your sessions for more than 6 months please put ‘0’)?

☐

9. Are you intending to set up any new ‘mostly seated’ exercise classes?

Yes ☐ No ☐ Don’t Know ☐

The next part of the questionnaire is exploring what YOU think about older adult’s participation in ‘mostly seated’ exercise classes, thinking about older adults similar to the ones who attend your classes. Please tick the answer which is closest to your opinion. There are no right or wrong answers, we really want to know what you think about older adult’s participation in ‘mostly seated’ classes.

10. Attending a mostly seated exercise class would be good for an older adult.

Disagree strongly ☐ Disagree ☐ Disagree slightly ☐ Agree slightly ☐ Agree ☐ Agree strongly ☐

11. Taking part in a ‘mostly seated’ class would make an older adult feel more confident

Disagree strongly ☐ Disagree ☐ Disagree slightly ☐ Agree slightly ☐ Agree ☐ Agree strongly ☐

12. The support that is given to participants by an instructor during a ‘mostly seated’ class can make a difference

Disagree strongly ☐ Disagree ☐ Disagree slightly ☐ Agree slightly ☐ Agree ☐ Agree strongly ☐

13. The support that is given to participants by an instructor in between ‘mostly
seated' classes can make a difference
e.g supportive phonecalls, birthday cards etc

14. An older adult would find it easy to participate in a ‘mostly seated’ exercise class.

15. I think that encouragement from other people (friends, family and health professionals) whose opinions matter makes a difference to older adult’s participation in a ‘mostly seated’ exercise class.

16. I think that an older adult would feel that they are the kind of person who should attend a ‘mostly seated’ class.

17. If an older adult attended a ‘mostly seated’ exercise class it would mean they would be able to get out and about more easily.

18. If an older adult attended a ‘mostly seated’ class then they would be less likely to fall and be injured.

19. Attending a ‘mostly seated’ exercise class would enable an older adult to
maintain their independence.

20. A 'mostly seated' exercise classes would give an older adult an opportunity for social interaction

21. A 'mostly seated' class would give an older adult an opportunity for social interaction outside of the class.

22. Doing a ‘mostly seated’ exercise class could be tiring or painful for an older adult

23. Doing a ‘mostly seated’ exercise class could cause an older adult to harm themselves.
24. How important do you think the following factors are in making a 'mostly seated' exercise class initially attractive to an older adult?

Please rate the following factors below

<table>
<thead>
<tr>
<th>Factor</th>
<th>Very unimportant</th>
<th>Unimportant</th>
<th>Slightly unimportant</th>
<th>Slightly important</th>
<th>Important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easily accessible venue</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Free admission or subsidised admission</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Free transport or subsidised transport</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The instructor's enthusiasm and interaction</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The level of the class</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The type of music</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Social opportunities (e.g. refreshments afterwards)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>An inviting group environment</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The time of the class</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Encouragement to attend by a health professional</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Other, please specify</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

-----------------------------------------------
25. How important do you think the following factors are in maintaining an older adult's interest in a 'mostly seated' exercise class? 
Please rate the following factors below

<table>
<thead>
<tr>
<th>Factor</th>
<th>Very unimportant</th>
<th>Unimportant</th>
<th>Slightly Unimportant</th>
<th>Slightly Important</th>
<th>Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easily accessible venue</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
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<tr>
<td>Free admission or subsidised admission</td>
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<tr>
<td>Free transport or subsidised transport</td>
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<td>☐</td>
</tr>
<tr>
<td>The instructor's enthusiasm and interaction</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>The level of the class</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>The type of music</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Social opportunities (e.g. refreshments afterwards)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>An inviting group environment</td>
<td>☐</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>The time of the class</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>The exercise progression (as participants improve the movement’s progress)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Other, please specify</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
26. If there are any other comments that you would like to make about your ‘mostly seated’ exercise classes or this questionnaire, please write them here.

If you do not deliver anything other than ‘mostly seated’ classes you have come to the end of the questionnaire, thank you very much for your contribution. We may wish to contact you again and ask you and your class attendees to be involved further in the study. Please go to the end of the questionnaire to state whether you would be willing to be involved any further in the study. Please tick ‘yes’ or ‘no’. If you tick ‘yes’ please fill in the contact details.

SECTION 4- ABOUT YOUR ‘MOSTLY STANDING’ CLASSES.

1. Please indicate the number of ‘mostly standing’ classes you delivered per week in November 2008 in each venue (please put a ‘0’ if you did not deliver any sessions in the venue).

   a) Leisure Centre/gym.

   b) Community venue e.g. church hall, village hall etc.

   c) Sheltered Housing.

   d) Residential care home (or unit)

   e) Nursing care home (or unit)

   f) EMI (Dementia unit) care home

   e) Other, (please specify)

2. Please indicate how long you have been delivering ‘mostly standing’ classes?

   Years ------ Months ------

3. How do you describe your ‘mostly standing’ classes in order to recruit people to take them up (you can tick as many as apply)?

   Strength and balance ☐   Promoting Independence ☐
Providing social opportunities  ☐  Improve fitness levels  ☐
Improve functional fitness  ☐  Prevent falls  ☐
Other, please specify  ☐  ---------------------------------

4. Do you receive any support (e.g. promotion, signposting, referral, funding) for these classes from the (you can tick as many as apply):

NHS  ☐  Council  ☐  Voluntary Sector  ☐
Other (please specify)  ☐  No support received  ☐

---------------------------------------------

If yes, what type of support do you receive (tick as many as apply)?

Promotional  ☐  Signposting  ☐  Referral  ☐
Funding  ☐  Other (please specify)  ☐

-------------------

5. Do you charge participants for your classes?
You can tick more than one answer e.g. you may charge for some classes and ask for a donation for others

Yes, for all of them  ☐  Yes, for some of them  ☐
No  ☐  Donation  ☐

If yes, how much?
e.g. £1.50 per person/£20 per session

---------------------------------------------

If yes, please state the number of classes that you charge for:

☐

6. a) Is transport arranged for your participants?
You can tick more than one answer e.g. some classes may have transport and for some it may be N/A

Yes, for all of the classes  ☐  Yes, for some of the classes  ☐
No  ☐  N/A (the participants live at the venue).  ☐
If yes, is transport provided free to your participants? 
You can select more than one answer

Yes (completely free) ☐ Yes (partially subsidised) ☐ 
No ☐ Don’t Know ☐

b) If transport is provided can you indicate the number of classes (per week) in November (please put ‘0’ if there were no classes) where there was:

Transport arranged ☐
Free transport ☐
Subsidised transport ☐

7. If you are currently delivering sessions approximately how many new participants have enrolled on one of your ‘mostly standing’ classes in the last 6 months (if no new participants have enrolled please put ‘0’)?

☐

8. If you are currently delivering classes, approximately how many participants have been in your sessions for more than 6 months (if you have no participants who have been in your sessions for more than 6 months please put ‘0’)?

☐

9. Are you intending to set up any new ‘mostly standing’ exercise classes?

Yes ☐ No ☐ Don’t Know ☐

The next part of the questionnaire is exploring what YOU think about older adult’s participation in ‘mostly standing’ exercise classes, thinking about older adults similar to the ones who attend your classes. Please tick the answer which is closest to your opinion. There are no right or wrong answers, we really want to know what you think about older adult’s participation in ‘mostly standing’ classes.

10. Attending a ‘mostly standing’ exercise class would be good for an older adult.

Disagree strongly ☐ Disagree slightly ☐ Disagree ☐ Agree slightly ☐ Agree ☐ Agree strongly ☐
11. Taking part in a 'mostly standing' class would make an older adult feel more confident

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
</tr>
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</table>

12. The support that is given to participants by an instructor during a 'mostly standing' class can make a difference

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<thead>
<tr>
<th>Disagree strongly</th>
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<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
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</table>

13. The support that is given to participants by an instructor in between 'mostly standing' classes can make a difference e.g supportive phonecalls, birthday cards etc

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
</tr>
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</table>

14. An older adult would find it easy to participate in a 'mostly standing' exercise class.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
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</table>

15. I think that encouragement from other people (friends, family and health professionals) whose opinions matter makes a difference to older adult’s participation in a 'mostly standing' exercise class.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
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</table>

16. I think that an older adult would feel that they are the kind of person who should attend a 'mostly standing' class.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
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</table>
17. If an older adult attended a ‘mostly standing’ exercise class it would mean they would be able to get out and about more easily.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
</tr>
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</tbody>
</table>

18. If an older adult attended a ‘mostly standing’ class then they would be less likely to fall and be injured.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
</tr>
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</tbody>
</table>

19. Attending a ‘mostly standing’ exercise class would enable an older adult to maintain their independence.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
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</table>

20. A 'mostly standing' exercise classes would give an older adult an opportunity for social interaction

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
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</tbody>
</table>

21. A 'mostly standing' class would give an older adult an opportunity for social interaction **outside** of the class.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
</tr>
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</tbody>
</table>

22. Doing a ‘mostly standing’ exercise class could be tiring or painful for an older adult

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>
23. Doing a ‘mostly standing’ exercise class could cause an older adult to harm themselves.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>
24. How important do you think the following factors are in making a 'mostly standing' exercise class initially attractive to an older adult? Please rate the following factors below.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Very unimportant</th>
<th>Unimportant</th>
<th>Slightly Unimportant</th>
<th>Slightly Important</th>
<th>Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easily accessible venue</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Free admission or subsidised admission</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Free transport or subsidised transport</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>The instructor's enthusiasm and interaction</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>The level of the class</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>The type of music</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Social opportunities (e.g. refreshments afterwards)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>An inviting group environment</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>The time of the class</td>
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<td>☐</td>
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<tr>
<td>Encouragement to attend by a health professional</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Other, please specify</td>
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</tbody>
</table>
25. How important do you think the following factors are in maintaining an older adult's interest in a 'mostly standing' exercise class?  
Please rate the following factors below  

<table>
<thead>
<tr>
<th>Important</th>
<th>Very unimportant</th>
<th>Unimportant</th>
<th>Slightly Unimportant</th>
<th>Slightly Important</th>
<th>Important</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easily accessible venue</td>
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<td>Free admission or subsidised admission</td>
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<td>Free transport or subsidised transport</td>
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<tr>
<td>The instructor's enthusiasm and interaction</td>
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<td>The level of the class</td>
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<td>The type of music</td>
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<td>An inviting group environment</td>
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<tr>
<td>The time of the class</td>
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<tr>
<td>The exercise progression (as participants improve the movement’s progress)</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
</tr>
<tr>
<td>Other, please specify</td>
<td>☐</td>
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</table>
26. If there are any other comments that you would like to make about your exercise classes, this questionnaire or any specific questions, please write them here.

You have come to the end of the questionnaire, thank you very much for your contribution. We may wish to contact you again and ask you and your class attendees to be involved further in the study. If you are willing to be contacted again please tick the ‘yes’ box and complete the details below.

Yes ☐ No ☐

Name:

Signature Date:

Address:

Email: Contact number:

Thank you for filling in this questionnaire. Please return it in the pre-paid envelope provided.
Appendix 7: Ethics approval for Study 1

Miss Helen Hawley
PhD Student
The School of Nursing, Midwifery and Social Work.
The University of Manchester
University Place
Oxford Road
Manchester
M13 9PL

3 December 2011

Dear Ms Hawley

Title of Project: What makes a successful exercise instructor for older adults?

Thank you for the clarifications and amendments to the above study as requested by the Research Ethics Committee.

I am of the opinion that no major concerns or objections are evident of an ethical nature. Therefore on behalf of the Committee I am happy to grant full ethical approval.

During the progress of the study please inform the committee of any changes or amendments that may be necessary. Furthermore, on completion of the study please provide the Committee with a “Completion of Study Report”.

In order to arrange University of Manchester Insurance cover please forward a completed Insurance Form (enclosed) along with your Research Proposal and a copy of this letter to the Purchasing Office at the address printed on the form.

With every good wish for the successful completion of your study

Yours sincerely

Dr Ann Wakefield
Senior Lecturer Nursing
Quality Assurance and Enhancement Officer Post-Graduate Education
Acting Chair School Ethics Committee
Appendix 8: Interview schedule for qualitative Study 2.

Your classes

1. Can you tell me about how you approach your classes?
2. If you deliver more than one class, what are the differences between them?
3. How do you promote your class and encourage participants to attend?
4. What do you think motivates participants to attend?
5. What do you think is the impact of the class for your participants?
6. How important do you think the class is to your participants and why?
7. Do you think others (families, friends, and professionals) influence your participant’s attendance?
8. What do you think the barriers are to participants attending your classes?

Your experience

1. What do you think has shaped the way you deliver your classes?
2. Do you think your background has made any difference to the way you deliver?
3. Do you think your training has influenced the way you deliver and how?

LLT- ask about differences between seated and standing- how do they perceive their standing classes.

4. Do you think that your approach has changed over time?
5. What do you feel you bring to the class?
6. Do you feel the setting you deliver in constrains what you can achieve?

  e.g. particularly NHS/care home settings.

Motivational training

- If you have attended motivational training, can you tell me a bit about this experience?
- Can you tell me how it has influenced your delivery?
Appendix 9: Informed Consent for qualitative Study 2.

PARTICIPANT INFORMATION SHEET

You are being invited to take part in a research study which is part of an educational project, supporting PHD study. Before you decide whether or not you would like to participate it is important for you to understand why the research is being done and what it will involve. Please take the time to read the enclosed information sheet carefully and to discuss it with others if you wish. Please contact the research team if there is anything which is not clear or if you would like more information (contact details are available at the end of the information sheet). Please remember that if you consent to participate, you can withdraw at any time without any consequences.

This information sheet has been divided into two parts, please read part 1 first. If you are still interested in participating in the study after reading part 1, then please read part 2 for more detail about the conduct of the study.

PART 1.

What is the purpose of the study?

This study is looking at how we can engage and maintain older adults in exercise classes. It is expected that this research will enable us to work with instructors to help attract and then encourage older people to continue to attend exercise classes. At the moment we are not sure about the role that you play in older adult’s adherence to your classes. We are interested in establishing how your attitudes and personality might help to promote older adults adherence but also how other factors such as age, health and group dynamics can influence participants’ adherence to the class.

Why have I been chosen?

We have approached you because you have consented to receive information about this study after completing a previous questionnaire. You are one of 430 instructors who previously consented to receive information on this phase of the study and who meet our eligibility criteria and live in England.

Do I have to take part?

It is up to you to decide whether or not to take part. If you decide to take part you are still free to withdraw at any time and without giving a reason. If you choose not to take part, that is entirely up to you.

If you do decide to help us, please complete the slip that is enclosed with this information and return it to us in the freepost envelope. We will then contact you to arrange a convenient time for your interview.

---

1 We gained ethics to contact instructors across England to enable flexibility even though we chose to sample from those instructors living in selected counties for pragmatic reasons.
What will happen to me if I take part and what do I have to do?

Once we have received consent from you we will ask you to participate in an interview at a time convenient to you. This interview will be quite informal and will ask you to discuss your background and training and how you feel this has informed your knowledge of older people. It will also ask you your opinions about older adult’s participation in exercise classes.

The interview should take a maximum of an hour and with your consent will be recorded. The interview can take place at a venue of your choice. If you wish you can see a copy of the transcript once written up to confirm it is a true account.

What are the possible disadvantages and risks of taking part?

The only disadvantage is the time that it will take to participate in the interview. All notes and recordings of the interview will remain anonymous.

What are the possible benefits of taking part?

It is hoped that this research will enable us to improve the uptake and maintenance of classes by older adults, though there is no guarantee of this. This may lead to increased support given to exercise instructors in their delivery of classes to older adults. We will inform you of the results when the study is complete.

What if there is a problem?

Any complaint about the way you have been dealt with during the study will be addressed. A more detailed explanation is given in part 2.

Will my taking part in the study be kept confidential?

Yes, we will follow ethical and legal practice and all information about you will be handled in strictest confidence. The details are included in Part 2.

PART 2

What if something goes wrong?

If you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study, you should ask to speak to the researchers who will do their best to answer any questions. If you remain unhappy then you can contact Dr Ann Caress on 0161 3067818 at the University of Manchester. This study is covered by insurance through the University of Manchester.

Will my taking part in this study be kept confidential?

All the information which is collected about you during the course of the research will be kept strictly confidential. Identifiable information will not be shared between instructors
or with your training providers or class participants. You will not be identifiable in any report or publication. No personal or named information will be sent to your training provider and when we analyse the results all information will be anonymous and treated in strict confidence. All data are processed by computer in accordance with the University of Manchester’s registration under the Data Protection Act 1998 and the University’s policy ensuring compliance with Department of Health Research Governance Framework for Health & Social Care (2001). The data will only be accessed by the lead researcher and her supervisors and will be retained for 10 years before being destroyed.

What will happen to the results of the research study?

The results will be written up as part of a report and results may be published in journals. However, you will not be identified in any report or publication. A summary of the findings from the research will be accessible on School of Nursing, Midwifery and Social Work, University of Manchester website in the future. If you would like a copy of the results but do not have access to the internet we are happy to send you a copy.

Who is organising and funding the research?

This research is being carried out as part of a Strategic PHD Studentship and the Medical Research Council and the University of Manchester are funding the research.

Who has reviewed the study?

All research within the university is looked at by an independent group of people, called a Research Ethics Committee. This is to protect your safety, rights, well-being and dignity. This study has been reviewed by the University of Manchester Committee on the Ethics of Research on Human Beings.

Contact for further information

Helen Hawley
The School of Nursing, Midwifery and Social Work
The University of Manchester
University Place
Oxford Road
Manchester
M13 9PL

Email: Helen.Hawley@postgrad.manchester.ac.uk
Tel: xxxxxxxxxxx

Thank you for your time in reading this information sheet.
CONSENT FORM

Title of Project: **Older Adults’ participation in exercise classes: why are exercise instructors’ attitudes influenced by their training and characteristics?**

Name of Researcher: **Helen Hawley**

Please initial box

1. I confirm that I have read and understand the information sheet dated June 2010 (version 1) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my legal rights being affected.

3. I understand that this project has been reviewed by, and received ethics clearance through the University of Manchester Committee on the Ethics of Research on Human Beings.

4. I understand that the interview will be recorded, who will have access to personal data provided, how the data will be stored; and what will happen to the data at the end of the project and I agree that this is acceptable.

5. I agree to take part in the above study.

Name of Participant

Date

Signature

Name of Person taking consent

Date
Appendix 10: Ethics approval for qualitative Study 2

Ms Helen Hawley  
School of Nursing, Midwifery & Social Work  
University of Manchester  
Jean McFarlane Building  
Manchester M13 9PL

9th September 2010

Re: Older Adult’s Participation in Exercise Classes: Why are exercise instructors attitudes influenced by their training and characteristics?  
Proposal Number: 10/1043/NMSW

Dear Ms Hawley,

Thank you for clarification and amendments to the above study as requested by the Research Ethics Committee.

I am of the opinion that no major concerns or objections are evident of an ethical nature. Therefore on behalf of the Committee I am happy to grant full ethical approval.

Please submit the enclosed Insurance Form along with a copy of your full proposal to the Purchasing Office as noted on the second page of the form.

Best wishes for your study.

Yours sincerely

Howard Shilton  
Chair: School Research Ethics Committee

c.c. Professor Chris Todd
Appendix 11: Information sent to instructor in Study 3.

Understanding how we can engage and maintain older adults in exercise classes: the role of the exercise instructor.

We are writing to ask you to help us in a research project looking at ‘what makes successful exercise classes for older adults’. The study is part of a PhD funded by the Medical Research Council. You kindly participated in the first phase and gave us permission to contact you again.

This study simply involves you completing a short questionnaire which will take you approx 10 minutes, you will be asked to complete the questionnaire at the start of the study and at the end of the study. You will also be asked if you will share attendance registers with the researcher and if the researcher can approach your class participants to discuss participating in the study. You will be asked to inform your class participants that the researcher will be visiting to discuss the study with them. Your participation is totally voluntary and you do not have to complete the questionnaire or approach your participants. However, it would be extremely useful for the researchers to get as many responses as possible from both instructors and class participants so as to ensure findings are representative.

The instructor questionnaire asks about any training you have undertaken since you completed the phase 1 study questionnaire and also asks you questions about your personality traits and attitudes. We will also ask you to let us know about each class’s characteristics (if there are participants from more than one class). We will distribute a questionnaire to your participants at four time points over a 12 month period (at the start of the study, after 3, 6 and 12 months). All your class participants have to do is complete the questionnaire and send it back to us in the self addressed freepost envelope or give the questionnaire, in a sealed envelope, to the researcher when she visits. The researcher will come and meet you and the class participants at regular time points.

From phase 1 of the study, we identified 48 instructors who meet our eligibility criteria and live in the Lancashire, Cheshire and Greater Manchester, Yorkshire and the Humber, Derbyshire and the East Midlands (excluding Northampton). We are writing to all of the 48 instructors, including yourself, to see if they would like to participate. Before you decide whether or not you would like to participate it is important for you to understand in more detail why the research is being done. Please take the time to read the enclosed information sheet carefully and to discuss it with others if you wish. Please contact the research team if there is anything which is not clear or if you would like more information (contact details are available at the end of the information sheet). If you decide that you wish to participate in the research, please complete the consent form and return it in the freepost envelope. The researcher will then contact you to discuss the research.

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1 Please note, an amendment to ethics was granted to widen the recruitment areas following initial recruitment stages.
further and to arrange a visit.

Thank you for taking the time to read this letter and considering taking part in this research.

Yours sincerely

Helen Hawley

PARTICIPANT INFORMATION SHEET

Understanding how we can engage and maintain older adults in exercise classes: the role of the exercise instructor.

You are being invited to take part in a research study which is part of an educational project, supporting PhD study. Before you decide whether or not you would like to participate it is important for you to understand why the research is being done and what it will involve. Please take the time to read the enclosed information sheet carefully and to discuss it with others if you wish. Please contact the research team if there is anything which is not clear or if you would like more information (contact details are available at the end of the information sheet). Please remember that if you consent to participate, you can withdraw at any time without any consequences.

This information sheet has been divided into two parts, please read part 1 first. If you are still interested in participating in the study after reading part 1, then please read part 2 for more detail about the conduct of the study.

PART 1.

What is the purpose of the study?

This study is looking at how we can engage and maintain older adults in exercise classes. It is expected that this research will enable us to work with instructors to help attract and then encourage older people to continue to attend exercise classes. At the moment we are not sure about the role that you play in older adult’s adherence to your classes. We are interested in establishing how your attitudes and personality might help to promote older adults adherence but also how other factors such as age, health and group dynamics can influence participant’s adherence to the class.

Why have I been chosen?

We have approached you because you have consented to receive information about this study after completing a previous questionnaire. You are one of 48 instructors who previously consented to receive information on this phase of the study and who meet our eligibility criteria and live in the Lancashire, Cheshire and Greater Manchester, Yorkshire and the Humber, Derbyshire and the East Midlands (excluding Northampton). We are
interested in working both with you and your class participants.

**Do I have to take part?**

It is up to you to decide whether or not to take part. If you decide to take part you are still free to withdraw at any time and without giving a reason. If you choose not to take part, that is entirely up to you.

If you do decide to help us, please complete the consent form that is enclosed with this information and return it to us in the freepost envelope. We will then ask you to inform your class participants that we will be visiting to talk to them at the end of one of your classes. If some of your class participants (it does not have to be all participants) agree to take part in the study we will then begin the study. Both you and your participants will be asked at this stage if you consent to sharing class attendance registers.

**What will happen to me if I take part and what do I have to do?**

Once we have received consent from you and your class members we will ask you to complete a short questionnaire. This asks about any training you have undertaken since you completed the last study questionnaire and also asks you questions about your personality traits and attitudes. The questionnaire should only take you 10 minutes to complete. All you have to do is complete the questionnaire and send it back to us in the self addressed freepost envelope or give the questionnaire, in a sealed envelope, to the researcher when she visits. We will ask you to complete this questionnaire twice, at the start of the study and at the end of the study. We will also ask you to let us know about each class’s characteristics (if there are participants from more than one class). We will only ask you to provide this information once at the start of the study.

We will also ask if we can distribute a questionnaire to your participants at four time points over a 12 month period (at the start of the study, after 3, 6 and 12 months). All your class participants have to do is complete the questionnaire and send it back to us in the self addressed freepost envelope or give the questionnaire, in a sealed envelope, to the researcher when she visits. The questionnaire should take approximately 10 minutes for your participants to complete and they will be asked to do this outside of class time so that it does not impact on your delivery or other class members. At each time-point, we will also request copies of the class attendance registers, the researcher will collect these when she comes to visit. If there is only one copy, a photocopy will be taken and the original returned to you.

**What are the possible disadvantages and risks of taking part?**

There is the possibility that some class participants who are not involved in the study will feel that they are left out or that the completion of the questionnaire by class participants takes up class time. However, class participants will be encouraged to complete the questionnaire out of class time to minimise this risk.

If you feel that the study is effecting class participation at anytime you are able to withdraw involvement. Class participants will be told they can provide their home address if they wish to continue participating in the study.

The only disadvantage is the time it takes to complete the questionnaire. If you do not wish to answer any of the questions you can choose to leave it blank. Your questionnaire
will take about 10 minutes at the start and the end of the study. Your participants will have
to complete their questionnaires on 4 occasions, each lasting about 10 minutes.

What are the possible benefits of taking part?

It is hoped that this research will enable us to improve the uptake and maintenance of
classes by older adults, though there is no guarantee of this. This may lead to increased
support given to exercise instructors in their delivery of classes to older adults. We will inform you of the results when the study is complete.

What if there is a problem?

Any complaint about the way you have been dealt with during the study will be addressed.
A more detailed explanation is given in part 2.

Will my taking part in the study be kept confidential?

Yes, we will follow ethical and legal practice and all information about you will be handled in strictest confidence. The details are included in Part 2.

PART 2

What if something goes wrong?

If you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study, you should ask to speak to the researchers who will do their best to answer any questions. If you remain unhappy then you can contact Dr Ann Caress on 0161 3067818 at the University of Manchester. This study is covered by insurance through the University of Manchester.

Will my taking part in this study be kept confidential?

All the information which is collected about you during the course of the research will be kept strictly confidential. Identifiable information will not be shared between instructors or with your training providers or class participants. You will not be identifiable in any report or publication. No personal or named information will be sent to your training provider and when we analyse the results all information will be anonymous and treated in strict confidence. All data are processed by computer in accordance with the University of Manchester’s registration under the Data Protection Act 1998 and the University’s policy ensuring compliance with Department of Health Research Governance Framework for Health & Social Care (2001). The data will only be accessed by the lead researcher and her supervisors and will be retained for 10 years before being destroyed.

What will happen to the results of the research study?

The results will be written up as part of a report and results may be published in journals. However, you will not be identified in any report or publication. A summary of the findings from the research will be accessible on School of Nursing, Midwifery and Social Work, University of Manchester website in the future. If you would like a copy of the results but do not have access to the internet we are happy to send you a copy.
Who is organising and funding the research?

This research is being carried out as part of a Strategic PHD Studentship and the Medical Research Council and the University of Manchester are funding the research.

Who has reviewed the study?

All research within the university is looked at by an independent group of people, called a Research Ethics Committee. This is to protect your safety, rights, well-being and dignity. This study has been reviewed by the University of Manchester Committee on the Ethics of Research on Human Beings.

Contact for further information

Helen Hawley
The School of Nursing, Midwifery and Social Work
The University of Manchester
University Place
Oxford Road
Manchester
M13 9PL

Email: Helen.Hawley@postgrad.manchester.ac.uk
Tel: xxxxxxxxxxxxx

Thank you for your time in reading this information sheet.
CONSENT FORM
Title of Project: Understanding how we can engage and maintain older adults in exercise classes: the role of the exercise instructor.

Name of Researcher: Helen Hawley

Please initial box

1. I confirm that I have read and understand the information sheet dated January 2010 (version 2) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my legal rights being affected.

3. I understand that class attendance registers will be shared with the researcher during the study and I give permission for the researcher to have access to these records.

4. I understand that this project has been reviewed by, and received ethics clearance through the University of Manchester Committee on the Ethics of Research on Human Beings.

5. I understand who will have access to personal data provided, how the data will be stored; and what will happen to the data at the end of the project and I agree that this is acceptable.

6. I agree to take part in the above study.

Name of Participant
Date
Signature

Name of Person taking consent
Date
Signature
Appendix 12: Information and questionnaire given to participant in Study 3.

PARTICIPANT INFORMATION SHEET

Understanding how we can engage and maintain older adults in exercise classes: the role of the exercise instructor.

You are being invited to take part in a research study which is part of an educational project, supporting PhD study. Before you decide whether or not you would like to participate it is important for you to understand why the research is being done and what it will involve. Please take the time to read the enclosed information sheet carefully and to discuss it with others if you wish. Please contact the research team if there is anything which is not clear or if you would like more information (contact details are available at the end of the information sheet). Please remember that if you consent to participate, you can withdraw at any time, without any consequences.

This information sheet has been divided into two parts, please read part 1 first. If you are still interested in participating in the study after reading part 1, then please read part 2 for more detail about the conduct of the study.

PART 1.

What is the purpose of the study?

This study is looking at how we can engage and maintain the attendance of older adults in exercise classes. It is expected that this research will enable us to work with instructors to help attract and then encourage older people to continue to attend exercise classes. At the moment we are not sure about the role that the instructor plays in encouraging you to attend and keep attending classes and we would like to explore this. We are also interested in finding out more about your health, your attitudes and your group environment and whether these factors effect your decisions about attending an exercise class.

Why have I been chosen?

We have approached 48 instructors who have been involved in a previous study and stated that they would like to work with us again. Your class instructor is one of the 48 who agreed to participate. We are interested in working both with the instructors and their class participants. We are writing to all of the participants who attend one of the instructor’s classes who are over the age of 60 to see if they would like to participate. This is so we get a broad range of opinions from a large group of people.

Do I have to take part?

It is up to you to decide whether or not to take part. If you decide to take part you are still free to withdraw at any time and without giving a reason. If you choose not to take part, that is entirely up to you. Participants will be asked to complete the questionnaires out of class time; therefore it should not affect your class experience. Should you choose to leave

1 Consent form is identical to the instructor consent form in Appendix 11.
the class over the time the study takes place but you still wish to participate in the study, you can do. If you contact the research team they can send the study information directly to you.

If you do decide to help us, please complete the consent form that the researcher gives to you. When you have completed the study questionnaire please return it to the researcher in the sealed envelope, or you can return it to us in the pre-paid envelope.

What will happen to me if I take part and what do I have to do?

A questionnaire will be given to you at four time points over a 12 month period (at the start of the study, after 3, 6 and 12 months) all you have to do is complete the questionnaire and send it back to us in the self addressed freepost envelope or give the questionnaire, in a sealed envelope, to the researcher when she visits. We will ask you to keep the questionnaire in a sealed enveloped to ensure your answers are confidential. The questionnaire should take approximately 10 minutes to complete on each occasion. We will also ask the instructor for a copy of the class attendance register; these will only be provided with both yours and the instructors consent. There is nothing else to do.

What are the possible disadvantages and risks of taking part?

The only disadvantage is the time it takes to complete the questionnaire. If you do not wish to answer one of the questions you can choose to leave it blank. All the questions asked have been carefully selected and are based on previous research.

What are the possible benefits of taking part?

It is hoped that this research will enable us to improve the uptake and maintenance of classes by older adults, though there is no guarantee of this. This may lead to increased support given to exercise instructors in their delivery of classes to older adults.

What if there is a problem?

Any complaint about the way you have been dealt with during the study will be addressed. A more detailed explanation is given in part 2.

Will my taking part in the study be kept confidential?

Yes, we will follow ethical and legal practice and all information about you will be handled with confidence. The details are included in Part 2.

PART 2

What if something goes wrong?

If you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study, you should ask to speak to the researchers who will do their best to answer any questions. If you remain unhappy then you can contact Dr Ann Caress on 0161 3067818 at the University of Manchester. This study is covered by insurance through the University of Manchester.
Will my taking part in this study be kept confidential?

All the information which is collected about you during the course of the research will be kept strictly confidential. Identifiable information will not be shared between instructors or with other participants and the instructors will not see your completed questionnaires. You will not be identifiable in any report or publication. No personal or named information will be sent to your instructor and when we analyse the results all information will be anonymous and treated in strict confidence. All data are processed by computer in accordance with the University of Manchester’s registration under the Data Protection Act 1998 and the University’s policy ensuring compliance with Department of Health Research Governance Framework for Health & Social Care (2001). The data will only be accessed by the lead researcher and her supervisors and will be retained for 10 years before being destroyed.

What will happen to the results of the research study?

The results will be written up as part of a report and results may be published in journals. However, you will not be identified in any report or publication. A summary of the findings from the research will be accessible on School of Nursing, Midwifery and Social Work, University of Manchester website in the future. If you would like a copy of the results but do not have access to the internet we are happy to send you a copy.

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This research is being carried out as part of a Strategic PhD Studentship and the Medical Research Council and the University of Manchester are funding the research.

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Contact for further information

Helen Hawley
The School of Nursing, Midwifery and Social Work
The University of Manchester
University Place
Oxford Road
Manchester
M13 9PL

Email: Helen.Hawley@postgrad.manchester.ac.uk
Tel: xxxxxxxxxx

Thank you for your time in reading this information sheet.
Factors which engage and maintain older people in community exercise classes.

GENERAL INSTRUCTIONS

Thank you for agreeing to help us with our research. Before continuing with this questionnaire please make sure that you have read the information sheet that has been provided. If you do choose to continue your involvement with the study your participation is entirely voluntary and you are free to withdraw at anytime without giving a reason.

All of the information that you give us is COMPLETELY CONFIDENTIAL and will not be seen by anyone other than university staff directly involved in the research.

For most of the questions you will simply need to tick a box.

SECTION 1 - ABOUT YOU

1. Are you  Male   Female

2. What is your Date of Birth  

3. Please tick the appropriate box which best describes your ethnic origin

   a) Black or Black British   b) White
   Caribbean                  British                   
   African                    Irish                      
   Any other Black background within a)  Any other White background within b) 

   c) Asian or Asian British   d) Mixed
   Indian                     White & Black Caribbean
   Pakistani                  White & Black African
   Bangladeshi                White and Asian
   Chinese                    Any other mixed background within d)
   Any other Asian background within c) 

   e) Any other ethnic groups
   Prefer not to say
   Any other ethnic group (please specify) 

4. How old (in years) were you when you left school?  
   (Please write '0' if you did not go to school)  

5. Have you had any full or part time further or higher education since you left school?  Yes  No 

ID  Name 

6630592225 

261
6. Which best describes the accommodation in which you live in? If you live with your family then answer for your family.
   Own outright or have a mortgage (by yourself or with your family) ☐
   Rent privately from a landlord ☐
   Provided by local authority, housing association or charity ☐
   Rent free accommodation ☐

7. Are you:
   (you may tick more than one option)
   Retired ☐
   In full time employment ☐
   In part time employment ☐
   Involved in voluntary work ☐

8. How long have you been attending this particular exercise class?
   ☐☐ Months ☐☐ Years

9. Do you attend any other exercise classes?
   Yes ☐
   No ☐

10. How long have you been attending formal exercise classes?
    ☐☐ Months ☐☐ Years
SECTION 2 - ABOUT YOUR HEALTH

1. Do you suffer from any of the following conditions? (you can tick as many as apply)
   Diseases of the nervous system
   Rheumatoid arthritis □
   Parkinson’s □
   Alzheimer’s □
   Multiple sclerosis □
   Other □
   Please specify Other

   Diseases of the circulatory system
   Chronic rheumatic heart diseases □
   Hypertensive diseases □
   Ischemic heart diseases □
   Pulmonary heart disease □
   Stroke □
   Other □
   Please specify Other

   Diseases of the musculoskeletal system
   Osteoporosis □
   Osteoarthritis □
   Other □
   Please specify Other

   Diseases of the respiratory system
   Bronchitis □
   Chronic obstructive pulmonary disease □
   Asthma □
   Other □
   Please specify Other

   Endocrine, nutritional and metabolic diseases
   Diabetes mellitus □
   No conditions □
   Any other conditions □
   Please specify Other
SECTION 3 - ABOUT YOUR ATTITUDES

Your views on your exercise class

We want to know whether or not you think the class is right for YOU, and the reasons why it would or would not be right for you. We know that often people have very good reasons for deciding that an exercise class is not suitable for them - and we need to know what these reasons are. So there are no right or wrong answers - we really want to know what YOU think of your exercise class. It is very important that you fill in every question. Please tick the box that is closest to your opinion.

1. Doing the exercise class would be good for me

<table>
<thead>
<tr>
<th>Disagree Strongly</th>
<th>Disagree</th>
<th>Disagree Slightly</th>
<th>Neither Agree Nor Disagree</th>
<th>Agree Slightly</th>
<th>Agree</th>
<th>Agree Strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 6</td>
<td>□ 7</td>
</tr>
</tbody>
</table>

2. Doing the exercise class would make me feel confident

<table>
<thead>
<tr>
<th>Disagree Strongly</th>
<th>Disagree</th>
<th>Disagree Slightly</th>
<th>Neither Agree Nor Disagree</th>
<th>Agree Slightly</th>
<th>Agree</th>
<th>Agree Strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 6</td>
<td>□ 7</td>
</tr>
</tbody>
</table>

3. Other people whose opinions matter to me (e.g. family, friends, doctor) would think it was a good idea for me to do the exercise class

<table>
<thead>
<tr>
<th>Disagree Strongly</th>
<th>Disagree</th>
<th>Disagree Slightly</th>
<th>Neither Agree Nor Disagree</th>
<th>Agree Slightly</th>
<th>Agree</th>
<th>Agree Strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 6</td>
<td>□ 7</td>
</tr>
</tbody>
</table>

4. If I wanted to, it would be easy for me to do the exercise class

<table>
<thead>
<tr>
<th>Disagree Strongly</th>
<th>Disagree</th>
<th>Disagree Slightly</th>
<th>Neither Agree Nor Disagree</th>
<th>Agree Slightly</th>
<th>Agree</th>
<th>Agree Strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 1</td>
<td>□ 2</td>
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<td>□ 4</td>
<td>□ 5</td>
<td>□ 6</td>
<td>□ 7</td>
</tr>
</tbody>
</table>

5. I am the kind of person who should do the exercise class

<table>
<thead>
<tr>
<th>Disagree Strongly</th>
<th>Disagree</th>
<th>Disagree Slightly</th>
<th>Neither Agree Nor Disagree</th>
<th>Agree Slightly</th>
<th>Agree</th>
<th>Agree Strongly</th>
</tr>
</thead>
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<td>□ 1</td>
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<td>□ 4</td>
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<td>□ 7</td>
</tr>
</tbody>
</table>

6. I intend to do the exercise class if I am offered the opportunity

<table>
<thead>
<tr>
<th>Disagree Strongly</th>
<th>Disagree</th>
<th>Disagree Slightly</th>
<th>Neither Agree Nor Disagree</th>
<th>Agree Slightly</th>
<th>Agree</th>
<th>Agree Strongly</th>
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<td>□ 7</td>
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</tbody>
</table>
SECTION 4 - ABOUT YOUR HOME EXERCISE

1. Do you carry out any of the exercises you have learnt in your exercise class at home?
   - Yes
   - No, but I carry out other types of exercises (please specify)

2. Does your instructor encourage you to carry out exercises at home?
   - Yes
   - No

SECTION 5 - ABOUT THE GROUP

PART A.
The following questions are designed to assess your feelings about YOUR PERSONAL INVOLVEMENT with your physical activity group.

Using the following scale, please write down a number from 1 to 9 to indicate your level of agreement with each of the statements.

If you neither agree nor disagree or you do not know simply respond by using the number '5'.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Strongly Disagree</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Neither Agree Nor Disagree</td>
<td>Agree</td>
<td>Strongly Agree</td>
<td>Very Strongly Agree</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. I like the amount of physical activity I get in this program.  
2. This physical activity group is an important social unit for me.  
3. I enjoy my social interactions within this physical activity group.  
4. This physical activity group provides me with a good opportunity to improve in areas of fitness I consider important  
5. I like meeting the people who come to this physical activity group.  
6. I am happy with the intensity of the physical activity in this program.  
7. I like the program of physical activities done in this group.  
8. If this program were to end, I would miss my contact with the other participants.  
9. I enjoy new exercises done in this physical activity group.  
10. In terms of the social experiences in my life, this physical activity group is very important.  
11. This physical activity group provides me with good opportunities to improve my personal fitness.  
12. The social interactions I have in this physical activity group are important to me
PART B
The following questions are designed to assess your feelings about YOUR PHYSICAL ACTIVITY GROUP AS A WHOLE.

Using the following scale indicate your level of agreement with each of the statements.

If you neither agree nor disagree or you do not know simply respond by using the number ‘5’.

<table>
<thead>
<tr>
<th></th>
<th>1 Very Strongly Disagree</th>
<th>2 Strongly Disagree</th>
<th>3 Disagree</th>
<th>4 Neither Agree Nor Disagree</th>
<th>5 Agree</th>
<th>6 Strongly Agree</th>
<th>9 Very Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Members of our physical activity group often socialize during exercise time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Our group is united in its beliefs about the benefits of the physical activities offered in this program.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Members of our physical activity group would likely spend time together if the program was to end.</td>
<td></td>
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</tr>
<tr>
<td>4.</td>
<td>Our group is in agreement about the program of physical activities that should be offered.</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Members of our group are satisfied with the intensity of physical activity in this program.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Members of our group sometimes socialize together outside of activity time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>We spend time socializing with each other before or after our activity sessions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Members of our group enjoy helping if work needs to be done to prepare for the activity sessions.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>9.</td>
<td>We encourage each other in order to get the most out of the program.</td>
<td></td>
<td></td>
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</tbody>
</table>

If there are any other comments that you would like to make about this questionnaire, please write them here.
Your Health and Well-Being

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. Thank you for completing this survey!

For each of the following questions, please tick the one box that best describes your answer.

1. In general, would you say your health is:

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Very good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>▼</td>
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<tr>
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<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
</tr>
</tbody>
</table>

2. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

<table>
<thead>
<tr>
<th>Yes, limited a lot</th>
<th>Yes, limited a little</th>
<th>No, not limited at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>▼</td>
<td>▼</td>
<td>▼</td>
</tr>
</tbody>
</table>

- Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf

- Climbing several flights of stairs
4. During the **past 4 weeks**, how much of the time have you had any of the following problems with your work or other regular daily activities **as a result of any emotional problems** (such as feeling depressed or anxious)?

<table>
<thead>
<tr>
<th>All of the time</th>
<th>Most of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
</tr>
</tbody>
</table>

1. **Accomplished less than you would like** ........................................ [ ] 1  ........................................ [ ] 2  ........................................ [ ] 3  ........................................ [ ] 4  ........................................ [ ] 5

2. **Did work or other activities less carefully than usual** .................. [ ] 1  ........................................ [ ] 2  ........................................ [ ] 3  ........................................ [ ] 4  ........................................ [ ] 5

5. During the **past 4 weeks**, how much did pain interfere with your **normal work (including both work outside the home and housework)**?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>A little bit</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>▼</td>
<td>▼</td>
<td>▼</td>
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</tr>
</tbody>
</table>

Page 2
6. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks...

<table>
<thead>
<tr>
<th>All of the time</th>
<th>Most of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
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</thead>
<tbody>
<tr>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
</tr>
</tbody>
</table>

- Have you felt calm and peaceful? .................................................. □ 1 ........ □ 2 .......... □ 3 ........ □ 4 ........ □ 5
- Did you have a lot of energy? ....................................................... □ 1 ........ □ 2 .......... □ 3 ........ □ 4 ........ □ 5
- Have you felt downhearted and low? ............................................... □ 1 ........ □ 2 .......... □ 3 ........ □ 4 ........ □ 5

7. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

<table>
<thead>
<tr>
<th>All of the time</th>
<th>Most of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
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</table>

Thank you for completing these questions!
Appendix 13: Instructor questionnaire for Study 3.

Instructor questionnaire

Understanding how we can engage and maintain older adults in exercise classes: the role of the exercise instructor.
Thank you for agreeing to help us with our research. Before continuing with this questionnaire please make sure that you have read the information sheet that has been provided. If you do choose to continue your involvement with the study your participation is entirely voluntary and you are free to withdraw at anytime without giving a reason.

All of the information that you give us is COMPLETELY CONFIDENTIAL and will not be seen by anyone other than the university staff directly involved in the research. For most of the questions you will simply need to tick a box or enter a number.

SECTION 1- TRAINING

1. Have you undertaken any of the following Level 3 Older Adults qualifications SINCE completing the questionnaire in the first study (April 2009)? Please tick all that apply.

- Later Life Training (LLT- REPS L4 PSI)
- EXTEND (REPS L3)
- Northern Fitness (REPS L3 Older Adult)
- YMCA/ YFIT (REPS L3 Older Adult)
- KFA (REPS L3 Older Adult)
- Later Life Training Otago Exercise Programme Leader (REPS L3 CPD)
- Fitness League (REPS Level 3)
- Laban (REPS Level 3)
- Margaret Morris (REPS Level 3)
- Medau (REPS Level 3)
- Other:

Please specify  __________________________
2. Have you undertaken any additional motivational training since you completed the questionnaire in the first study (April 2009)? (To encourage uptake and adherence to exercise amongst older adults)

Yes ☐  No ☐

If yes, please give details of the training course

--------------------------------------------------------------

For the rest of this questionnaire we ask about ‘mostly seated’ and ‘mostly standing’ delivery. For the purpose of this questionnaire we have defined them as:

**‘Mostly Seated’**

Any class which has more than 25% of the exercises delivered by the instructor as seated.

**‘Mostly Standing’**

Any class which has at least 75% of the exercises delivered by the instructor as standing.

If you ONLY deliver ‘mostly standing’ classes please tick here ☐
And skip section 2 and go to section 3.
SECTION 2- ATTITUDES ABOUT MOSTLY SEATED CLASSES

The next part of the questionnaire is exploring what YOU think about older adults’ participation in ‘mostly seated’ exercise classes. Think about older adults similar to the ones who attend your classes. Please tick the answer which is closest to your opinion. There are no right or wrong answers, we really want to know what you think about older adults’ participation in ‘mostly seated’ classes.

1. Attending a ‘mostly seated’ class would be good for an older adult.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
</tr>
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</tbody>
</table>

2. Taking part in a ‘mostly seated’ class would make an older adult feel more confident

<table>
<thead>
<tr>
<th>Disagree strongly</th>
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<th>Disagree slightly</th>
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</table>

3. The support that is given to participants by an instructor during a ‘mostly seated’ class can make a difference

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
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</table>

4. The support that is given to participants by an instructor in between ‘mostly seated’ classes can make a difference e.g supportive phonecalls, birthday cards etc

<table>
<thead>
<tr>
<th>Disagree strongly</th>
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5. An older adult would find it easy to participate in a ‘mostly seated’ class.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
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</table>
6. I think that encouragement from other people (friends, family and health professionals) whose opinions matter makes a difference to older adults’ participation in a ‘mostly seated’ class.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree Slightly</th>
<th>Agree Slightly</th>
<th>Agree</th>
<th>Strongly Agree</th>
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7. I think that an older adult would feel that they are the kind of person who should attend a ‘mostly seated’ class.

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8. If an older adult attended a ‘mostly seated’ class it would mean they would be able to get out and about more easily.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree Slightly</th>
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<th>Agree</th>
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</table>

9. If an older adult attended a ‘mostly seated’ class then they would be less likely to fall and be injured.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
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10. Attending a ‘mostly seated’ class would enable an older adult to maintain their independence.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
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</table>

11. A ‘mostly seated’ class would give an older adult an opportunity for social interaction

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree Slightly</th>
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<th>Agree</th>
<th>Strongly Agree</th>
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</tbody>
</table>
12. A 'mostly seated' class would give an older adult an opportunity for social interaction outside of the class.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree slightly</th>
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<th>Agree</th>
<th>Agree strongly</th>
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</table>

13. Doing a ‘mostly seated’ class could be tiring or painful for an older adult

<table>
<thead>
<tr>
<th>Disagree strongly</th>
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<th>Agree slightly</th>
<th>Agree</th>
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</table>

14. Doing a ‘mostly seated’ class could cause an older adult to harm themselves.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree slightly</th>
<th>Agree slightly</th>
<th>Agree</th>
<th>Agree strongly</th>
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</table>

15. Older adults are capable of participating in a ‘mostly seated’ class.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
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</table>

If you only deliver ‘mostly seated’ classes please tick here □ skip section 3 and go to section 4.
SECTION 3- ATTITUDES ABOUT MOSTLY STANDING CLASSES

The next part of the questionnaire is exploring what YOU think about older adults’ participation in ‘mostly standing’ exercise classes. Think about older adults similar to the ones who attend your classes. Please tick the answer which is closest to your opinion. There are no right or wrong answers, we really want to know what you think about older adults’ participation in ‘mostly standing’ classes.

1. Attending a ‘mostly standing’ class would be good for an older adult.

Disagree strongly  Disagree  Disagree slightly  Agree slightly  Agree  Agree strongly

☐         ☐         ☐         ☐         ☐         ☐         ☐

2. Taking part in a ‘mostly standing’ class would make an older adult feel more confident

Disagree strongly  Disagree  Disagree slightly  Agree slightly  Agree  Agree strongly

☐         ☐         ☐         ☐         ☐         ☐         ☐

3. The support that is given to participants by an instructor during a ‘mostly standing’ class can make a difference

Disagree strongly  Disagree  Disagree slightly  Agree slightly  Agree  Agree strongly

☐         ☐         ☐         ☐         ☐         ☐         ☐

4. The support that is given to participants by an instructor in between ‘mostly standing’ classes can make a difference e.g supportive phonecalls, birthday cards etc

Disagree strongly  Disagree  Disagree slightly  Agree slightly  Agree  Agree strongly

☐         ☐         ☐         ☐         ☐         ☐         ☐

5. An older adult would find it easy to participate in a ‘mostly standing’ class.

Disagree strongly  Disagree  Disagree slightly  Agree slightly  Agree  Agree strongly

☐         ☐         ☐         ☐         ☐         ☐         ☐
6. I think that encouragement from other people (friends, family and health professionals) whose opinions matter makes a difference to older adults’ participation in a ‘mostly standing’ class.

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9. If an older adult attended a ‘mostly standing’ class then they would be less likely to fall and be injured.

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10. Attending a ‘mostly standing’ class would enable an older adult to maintain their independence.

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11. A ‘mostly standing’ class would give an older adult an opportunity for social interaction.

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13. Doing a ‘mostly standing’ class could be tiring or painful for an older adult

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# MINI-MARKERS

## How Accurately Can You Describe Yourself?

Please use this list of common human traits to describe yourself as accurately as possible. Describe yourself as you see yourself at the present time, not as you wish to be in the future. Describe yourself as you are generally or typically, as compared with other persons you know of the same sex and of roughly your same age. Before each trait, please write a number indicating how accurately that trait describes you, using the following rating scale:

<table>
<thead>
<tr>
<th></th>
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<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Extremely Inaccurate</td>
<td>Very Inaccurate</td>
<td>Moderately Inaccurate</td>
<td>Slightly Inaccurate</td>
<td>Neither Inaccurate</td>
<td>Slightly Accurate</td>
<td>Moderately Accurate</td>
<td>Very Accurate</td>
<td>Extremely Accurate</td>
</tr>
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<tbody>
<tr>
<td>Bashful</td>
<td>Energetic</td>
<td>Moody</td>
<td>Systematic</td>
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<tr>
<td>Bold</td>
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<td>Talkative</td>
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<td>Touchy</td>
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<td>Unemotional</td>
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<td>Rude</td>
<td>Unintellectual</td>
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<td>Shy</td>
<td>Unsympathetic</td>
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<td>Sloppy</td>
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<td>Sympathetic</td>
<td>Withdrawn</td>
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</table>
Appendix 14: Ethics approval for Study 3.

Our Ref: HS/MH
Ms Helen Hawley
PhD Student
School of Nursing, Midwifery & Social Work
Jean McFarlane Building
University of Manchester
Oxford Road
Manchester
M13 9PL

25 February 2010

By email and internal post.

Re: Understanding how we can engage and maintain older adults in exercise classes: the role of the exercise instructor.

Proposal Number: 10/1039/NI/MSW

Dear Ms Hawley,

Thank you for the clarifications and amendments to the above study as requested by the Research Ethics Committee.

I am of the opinion that no major concerns or objections are evident of an ethical nature. Therefore on behalf of the Committee and taking Chair's Action, I am happy to grant full ethical approval.

During the progress of the study please inform the Committee of any changes or amendments that may be necessary.

On completion of the study would you please provide the Committee with a "Completion of Study Report".

Direct Contact: Jean McFarlane Building, University Place

Howard Snijders
Tel: +44 (0)161 306 7642 Fax: 0161 306 7787
Email: HowarD.Snijders@manchester.ac.uk

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In order to arrange University Insurance Cover please forward the completed Insurance Form (enclosed) along with your Research Proposal and a copy of this letter to the Purchasing Office at the address printed on the form.

Best wishes for your study.

Yours sincerely

Howard Shilton
Chair, School Research Ethics Committee

Enc.

c: C Todd
    D Skelton
Appendix 15: Null models which reject proposed structure for attendance in weeks and adherence with low variance highlighted in yellow.

Null model assessment for 3 level multi-level model looking at attendance in weeks at three months.

<table>
<thead>
<tr>
<th>Null Model</th>
<th>Baseline questionnaire to 3 months attendance</th>
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<tr>
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<td>B (SE)</td>
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<tr>
<td>Instructor Level 3</td>
<td>2.213 (1.082)</td>
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<tr>
<td>Group Level 2</td>
<td>0.026 (0.380)</td>
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<tr>
<td>Participant Level 1</td>
<td>6.011 (0.656)</td>
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<td>Variance</td>
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<td>0.003</td>
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<td></td>
<td>0.729</td>
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</tbody>
</table>

Null model assessment for 2 level multi-level model looking at adherence at six months.

*Logistic regression does not give information on variance in MLwi