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**Investigating Changes in Sport Participation in Older Adults.**

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**16th April 2020**

**A dissertation submitted in partial fulfillment of the requirements for the degree of BSc with Honours in Sport and Exercise Science at The University of the West of Scotland.**

**The work reported here was granted approval by the School of Health and Life Sciences Ethics Committee (approval number 8998-7927)**

**BSc (HONS) Sport & Exercise Science**

**University of the West of Scotland**

**Word Count: 6924**

# Acknowledgements

I would like to thank my dissertation supervisor, Richard Davison for all of his support and assistance with my thesis. Likewise, I would like to thank my family and friends for their support and encouragement throughout my degree. Furthermore, I acknowledge each individual who completed this survey and assisted with the data collection.

# Abstract

**Introduction:** Physical activity levels decline as we age, however it has been suggested that participation levels in certain sports are increasing. It is important to investigate why these levels have increased and how this has changed throughout a lifetime. **Purpose:** The purpose of this study was to investigate whether more adults are taking up sport in older age or if already active adults are doing more sport. **Methods:** A total of 427 adults (age 57.6 ± 5.9. years) completed a short online survey using recall methodology to obtain lifetime sport participation levels. Socioeconomic status (SES) and its association with sport participation, gender differences, motivations and barriers that older adults face regarding participating in sport were also explored. **Results:** Sport participation levels and time spent participating in sport were highest between the ages of 60 and 70, compared to any other stage of life for these individuals. There was a significant association between SES and if individuals participated in sport since leaving school (*P* = 0.002). More males than females participated in sport at school (M = 86%, F= 76%) and more males participated in sport for more than 5 hours per week, although the association between gender and sport participation is not significant (*P* = 0.385, *P=* 0.284). Motivations for sport changed throughout life from enjoyment to fitness, while time remained the main barrier to sport throughout. **Conclusion:** Participation in sport was highest between the ages of 60 and 70 compared to any other stage of life, therefore it can be suggested that more adults are taking up sport at an older age. **Key Words:** SPORT, PARTICIPATION, AGEING

Table of Contents

[Acknowledgements I](#_Toc37789125)

[Abstract I](#_Toc37789126)

[Literature Review 1](#_Toc37789127)

[Benefits, Barriers and Motivations 2](#_Toc37789128)

[Socioeconomic Status 3](#_Toc37789129)

[Adapted Sport 4](#_Toc37789130)

[Research in Sport 5](#_Toc37789131)

[Methods 7](#_Toc37789132)

[Participants 7](#_Toc37789133)

[Experimental Design 7](#_Toc37789134)

[Procedure 7](#_Toc37789135)

[Statistical Analysis 8](#_Toc37789136)

[Results 9](#_Toc37789137)

[Discussion 15](#_Toc37789138)

[Lifetime Sport Participation 15](#_Toc37789139)

[What is sport? 17](#_Toc37789140)

[Motivations and Barriers 18](#_Toc37789141)

[Socioeconomic Status 19](#_Toc37789142)

[Gender 19](#_Toc37789143)

[Limitations 20](#_Toc37789144)

[Conclusion 21](#_Toc37789145)

[References 22](#_Toc37789146)

[Appendices 27](#_Toc37789147)

[Appendix 1 – Survey Questions 27](#_Toc37789148)

[Appendix 2 – Informed Consent 33](#_Toc37789149)

[Appendix 3 – Socioeconomic Score Sheet 34](#_Toc37789150)

# Literature Review

With today’s ‘ageing population’, there is an increasing demand for physical activity (PA) and sport to improve the overall quality of life. With an increase in older adults, there are higher levels of those not meeting PA or sport guidelines, placing a burden on healthcare systems despite the known benefits of sport and exercise. Current recommendations for older people over the age of 65 in Scotland are to be active every day, complete at least 150 minutes of moderate aerobic activity or 75 minutes of vigorous aerobic activity every week and include muscle-strengthening activity on at least two days a week using major muscle groups (NHS Scotland, 2020). In Scotland, PA levels decline with age, with 80% of adults aged 25-34 meeting guidelines but only 53% of adults aged 65-74 and 31% of adults over 75 meeting the guidelines. Including this, 49% of adults over 75 were seen to have very low activity levels per week. With regards to gender, 66% of men and 60% of women aged 55-64 are meeting guidelines as well as 56% of men and 50% women aged 65-74. For over 75’s, 39% of men met the guidelines compared to 26% of women (Scottish Health Survey, 2018). However, these levels differ greatly in specific sports such as gymnastics or aerobic fitness which are predominately viewed as female orientated sports (Tischer et al., 2011). Sport is a key contributor to PA and is defined as a casual or organised activity that involves improving fitness, mental health and social relationships or obtaining results in competitions (SportScotland, 2003). Sport, PA and exercise are all inter-related, as achieving PA guidelines can be done through exercise or participating in sport or recreation. The World Health Organization have defined ‘exercise’ as a subcategory of PA that is planned, structured, repetitive and improves components of physical fitness (World Health Organization, 2018) and recreation can be defined as an enjoyable activity that people participate in their free leisure time (Ball et al., 2014).

The Scottish Household Survey suggests that for adults over the age of 60, sport and PA levels have remained relatively stable from 2007-2018, with only a slight increase from 31 % to 34% (Scottish Household Survey, 2018). However, within specific sports such as organised running events or Masters sports, there are very different participation trends. Masters sports enable older adults to compete against others of a similar age in different activities for fun, friendship and fitness and are becoming increasingly popular (Baker et al., 2010). As per ParkRun data, participation trends in those over 55 has increased significantly from 2008 to 2018, from just over 700 males and 159 females to 34000 males and nearly 21000 females (Davison and Cowan, 2020). Not only is this trend interesting as it differs so much from general sport participation trends, the gender difference in participation rates is also very significant. Therefore, it is important to investigate if the people participating in these sports have been active their entire life or have taken up sport in older age.

## Benefits, Barriers and Motivations

Whilst we understand that more older adults are participating in these sports, it is important to understand the benefits, barriers and motivations that older adults experience when participating in sport. Jenkin et al., (2018) conducted a study using focus group interviews, comprising of a total 49 participants to discuss the benefits and barriers to participating in sport. The outcomes of the interviews suggested that the main benefits discussed were social health, such as reduced loneliness and meeting friends, and physical health including improved fitness, injury rehabilitation and reduced effects of aging. Some mental health benefits were also suggested, such as increasing relaxation and improving self-confidence. Interpersonal benefits were explored, with participants suggesting that sport participation can increase relationships with family members, with the opportunity to play sports with younger generations such as grandchildren. This is enhanced by studies which suggest that competitive sport participation can increase the value of older adults’ lives, providing them with achievement, growth, social belonging and in turn, can promote successful aging (Heo et al., 2013). In addition to these mental health benefits, research has investigated the effects of sport and exercise on medical issues such as hypertension in elderly adults. The study found that exercise reduced and controlled blood pressure in elderly hypertensive participants (Westhoff et al., 2007). Moreover, life expectancy, cardiovascular function, prevention of muscle abnormalities and diseases, organisation of daily life, increased self-confidence and communication are also among the list of perceived benefits of sport participation for older adults (Tokarski, 2004).

On the other hand, there are a number of barriers to sport participation which have been investigated. These barriers are mainly personal reasons such as time constraints and cost as well as physical health problems and social factors. Moreover, another important barrier to participation in sports within older adults was the lack of opportunities available for this age group and inappropriate facilities (Jenkin et al., 2016; Jenkin et al., 2018). Likewise, pre-existing medical conditions can pose as a barrier to sport participation. One study comparing the effects of Tai Chi on Atrial Fibrillation (AF) in the elderly found that people without AF were more likely to participate in sport in older age than the participants with AF. This study also suggested that the participants with long-term sport history had an increased risk of AF compared with general elderly people (Myrstad et al., 2014).

However, for some older athletes, these barriers become motivations. In a previous study, one athlete suggested that their main motivation was challenging age-appropriate norms, making them feel proud and lucky that they were not as slow and inactive as a stereotypical older person and could prove these stereotypes wrong. Another motivation was the belief that their participation in sport and exercise delayed the aging process and improving the quality of the remainder of their life. More motivations discussed were maintaining independence, enjoyment, and social aspects (Dionigi, 2006). This study was useful as a detailed interview was conducted, obtaining personal, real-life stories from athletes which is said to be important for providing an insight into the effect of sports on aging (Phoenix et al., 2010). One study has looked at intrinsic and extrinsic motivations for older athletes between the ages of 45 and 80. Intrinsic motivations are associated with increased adherence to sport and better sportsmanship, whereas extrinsic motivations are associated with participating for prizes and sport dropouts. The study found that extrinsic motivations are more common in aging athletes compared to younger athletes who tend to be motivated by self-determination (De Pero et al., 2009). However, this study does not specify the nature of the sports and did not find a gender difference between outcome measures.

## Socioeconomic Status

There is very limited research on the relationship between socioeconomic status (SES) and sport participation in older adults. The available research regarding SES and health is mainly investigating PA rather than specifically sport. Although this is relevant, more research is required into how SES can impact sport participation. However, it has been suggested that demographic factors such as age, gender, nationality and ethnicity and socio-economic factors including income, education, time and profession play a huge role in determining sport participation (Breuer et al., 2010). A higher education is said to increase knowledge about the benefits of PA and sport and people with lower incomes may be restricted by the cost of some sports. It has also been suggested that people with lower educational attainment and lower incomes are more likely to participate in more casual sports such as fishing, boxing and racing whereas people of a higher SES tend to participate in elite sports such as golf, fencing, skiing and tennis (Federico et al., 2013). The study found that females and those in employment spent less time participating in sport and females are also less likely to spend money on sports than men. On the other hand, those with higher incomes and increased education are more likely to spend on sports (Breuer et al., 2010). Furthermore, a study looking at SES and PA in elderly women found that those in different socioeconomic groups had different barriers to PA and sport. For women with a high SES, the main barriers to exercise were psychological, cognitive and emotional such as motivation, whereas women with a low SES found environmental factors such as cost were the largest barriers. This study recommends that for elderly women of a low SES, there should be an increase in facilities and availability and for women with a high SES, there should be an increase in group activities (Cassou et al., 2011). However, there is a need to investigate how the SES influences sport participation as the person ages.

## Adapted Sport

Sport can be a team or individual activity, with sports clubs and recreational activities providing an outlet for achieving recommended PA levels but also offering an enjoyable and social environment (Ball et al., 2014). To determine which category an activity falls into, many individuals will follow the ‘physical activity pyramid’, which suggests that moderate PA includes walking, gardening and housework; vigorous aerobic activities include jogging, cycling, swimming and aerobic dance; vigorous sport and recreation includes activities such as tennis, football, skating, skiing or dancing; muscle fitness exercises include resistance training, plyometrics etc. and finally, flexibility exercises include stretching, yoga and gymnastics (Pangrazi and Corbin, 1999).

Certain sports have been adapted in recent years to encourage the older generation to overcome some of the previously discussed barriers that they face. Football as a sport is one of the most popular to be involved in throughout a lifetime, however, can be intense and difficult to keep up with in a competitive manner in older age groups, as the risk of injury increases (Loadman, 2019). Walking football was introduced in the early 2010’s with the aim of engaging adults over the age of 50 in a sport which is accessible and adaptable. The obvious difference from classic football is that no running is allowed, and other rules such as tackling and kicking the ball too high are prohibited. However, adaptations such as a smaller pitch and goals and smaller teams contribute to the idea of reducing physical contact and risk of injury and increasing participation in an adapted environment. The main benefits explored for walking football are suggested to be increased health and wellbeing, enjoyment and the feeling of inclusion. Moreover, one of the most common benefits suggested was increased social engagement, suggesting that increasing the sense of community and friendships leads to an improvement in mental health in some older adults (Loadman, 2019). Furthermore, research by Arnold et al., (2015) has investigated the specific health benefits of walking football, measuring BMI, maximal oxygen consumption, heart rate, exhaustion levels and strength at baseline and post intervention. The intervention used was twelve weeks of walking football for two hours per week. The results indicated that the intervention reduced BMI and positively affected other measures of health and fitness. According to this study, walking football is safe for both healthy individuals and in populations with limiting comorbidities (Arnold et al., 2015). However, like any activity, there are risks and limitations to walking football, for example, physical pain, muscle discomfort, confusion over rules and inter-team tensions. Also, organisational issues such as freedom and flexibility may cause problems if older adults feel they do not wish to be managed and different levels of experience between players may contribute to this (Loadman, 2019). Overall, the benefits seem to outweigh the risks, however, there is very limited research on walking football and studies tend to use a very small number of participants with no control group comparison.

Similarly, sitting volleyball is another adapted sport, which was originally introduced as an adapted sport and rehabilitation tool for people with disabilities (Vute, 2009). Although there is not a vast amount of research into sitting volleyball for the elderly, the benefits still stand with regards to athletes suggesting that participation increased mood and social interactions, enhanced rehabilitation from injury/disability, improved fitness levels and increased the feelings of inclusion and friendship. On the other hand, a lack of motivation to continue playing, frustration due to lack of financial support and recognition of the sport are said to be barriers for some athletes, although this probably would not be a barrier for elderly participants, who play sitting volleyball recreationally. This study is limited, however, as only 5 participants were used to explore the experiences of sitting volleyball (Charalampos et al., 2015).

## Research in Sport

Many national health surveys such as the Scottish Health Survey use periodic cross-sectional sampling to obtain a large number of responses, representing a population at a specific point in time. Cross-sectional research is widely used as it can help researchers understand the relationship between variables, however, the direction of the relationship is often difficult to determine (Tew et al., 2016). Likewise, cross-sectional research can only determine associations between variables and not causation therefore results may not be reliable to draw conclusions (Sedgwick, 2014). Since cross-sectional research is obtained at a specific point in time, common method variance bias may be present, including the mood of the respondent or a sudden increase in activity levels in the weeks leading up to the survey which would raise the overall results (Spector, 2019). If a change at the individual level is the aim of research, longitudinal research or recall methodology would be preferred, which are more useful at evaluating how strong relationships between variables. Similarly, statistical analysis can be used more effectively on this type of research to assess changes over time for a group, or an individual (Caruana et al., 2015).

Overall, the main facts that we currently know are that sport and PA levels decrease as we age, however, in specific sports such as organised running events and some Masters sports, there has been significant increases in participation rates amongst the older population (Baker et al., 2010; Davison and Cowan, 2020). There is a strong relationship between social stratification and sport participation rates and is even stronger when looking at the lifetime participation rates (Breuer et al., 2010). The largest gender gap in participation rates lies within the over 75 age group, with men having 13% higher participation rates then women (Scottish Health Survey, 2018). However, this differs in specific sports such as gymnastics and aerobic fitness which are seen as predominantly female sports (Tischer et al., 2011). Currently, there is a huge gap in the research regarding sports participation levels, specifically in the older population and with the research that does explore this, information on the nature of sport and exercise that older adults participate in is scarce. Although the relationship between SES and PA and sport has been explored, the research is still lacking. It also has not been greatly researched if motivations and barriers influencing sport participation change from younger adults to older adults throughout their life. The impact of new sporting activities on participation levels such as ‘walking football’ has been investigated somewhat but information on how popular these sports are is still lacking. The main gap in the research is if lifelong participation levels change and what the reasons behind sport participation, or the lack of, in older adults are. This is an important area to be researched to understand why older adults are increasingly participating in certain sports and how these levels have changed throughout their lives. It is also clear that most research that explores sport participation in older adults tend to be cohort or cross-sectional studies instead of longitudinal which does not help determine changes in participation throughout a lifetime. Therefore, the aim of this study is to investigate if more adults are taking up sport in older age or if already active older adults are doing more sport.

# Methods

## Participants

Individuals over the age of 50 who are actively involved in sport were recruited for this study through the use of social media and the JogScotland over 50 membership. A link to an online survey was supplied to individuals at point of recruitment, resulting in 427 complete responses (age 57.6 ± 5.9. years). Incomplete responses and data from respondents under the age of 50 were removed from the results. Country codes for each response were provided and nearly 97% of participants were from the United Kingdom. The remaining 3% of responses were from Australia, USA, France, Norway, Azerbaijan, Canada, Germany and Denmark. Informed consent was available on the introduction page of the survey and was obtained by choosing to start the survey (Appendix 2). The study was approved by the School of Health and Life Science Ethics Committee at the University of the West of Scotland (approval number: 8998-7927).

## Experimental Design

The design of this study was recall methodology using an online survey. This design was chosen as many surveys such as the Scottish Health Survey use cross-sectional research, however, a more longitudinal view of sport participation was desired in this study. Therefore, questions were designed based on information from the Scottish Health Survey but longer recall questions were used. The survey platform used was the QuestionPro software and consisted of 18 questions (QuestionPro, 2020). Included in the survey were questions regarding demographic information and sport participation from childhood to the present, using information from the Scottish Health Survey to design the questions, with the aim of determining if more older adults are taking up sport in older age or if already active adults are doing more sport (Appendix 1).

## Procedure

Once participants had given informed consent by choosing to start the online survey, the survey began and was timed to give an average completion time. The question types varied, including single row text answers, radio button answers, checkbox for multiple options and numeric slider answers. At the end of the survey, a ‘Thank You’ page was provided to participants, thanking them for their help and providing contact details if they had any questions or feedback regarding the survey.

## Statistical Analysis

All statistical analysis was completed using the QuestionPro software, Microsoft Excel and IBM SPSS (version 25). The QuestionPro software provided analytics of survey responses and incomplete/unusable responses were manually removed from the data. The data was then exported to IBM SPSS Statistics software (version 25) for analysis.

Socio-economic status (SES) was determined by combining responses from the demographic questions regarding employment status, income, education, and if they were a homeowner which were then given a score (Appendix 3). Profession was answered in an open-text answer box, therefore the National Statistics Socio-economic classification derivation table for analytic classes was used to manually determine each individual class score for individual professions (NS-SEC, 2010). This combined with the socioeconomic scores, were all added together and divided by 5 (the number of demographic variables) to provide an overall score from 1-6.

Cross Tabulation was used for quantitative analysis of the data to analyse the relationship between variables. A chi-square test was performed to test for association between nominal and ordinal variables. If P>0.05, there was not a significant association between variables. Microsoft Excel was used to determine mean ± standard deviation of age, the frequency of gender, SES, barriers and motivations to sport, types of sport participated in at school and since leaving school, to analyse open-ended text data and then presented in figures and tables.

# Results

A total of 852 participants began the survey, with 157 dropouts. Of the remaining 695 responses, only 521 of these stated their age in the single-row text box answer and of this, 427 respondents were over the age of 50. These remaining responses make up the following data.

Table 1: Participant characteristics including frequency of gender and social economic status (SES) grouping (%) with SES 1 being the highest classed group and SES 4 the lowest.

|  |  |
| --- | --- |
| Characteristic | Frequency |
| Male | 32.47 % |
| Female | 67.29 % |
| Other | 0.24 % |
| SES 1 | 11 % |
| SES 2 | 53.4 % |
| SES 3 | 34.4 % |
| SES 4 | 1.2 % |

**Socioeconomic status** (SES) was calculated based on the demographic questions included in the survey and presented below. Participants in this study only fell in to the top 4 SES groups. (Table 1). Nearly 95% of participants owned their own home and 41.6% of participants were full-time employed. For current household income, the highest percentage of participants fell in the £43,431-£150,000 at 38.97%. Similarly, for qualifications, 37.65% of participants had a higher education qualification. There was no significant statistical association between SES and participation in sports at school as P = 0.858. However, there was a statistically significant association between SES and if participants have participated in sport since leaving school as P = 0.002. (Figure 1). A total of 86.65% of participants said they had participated in sport since leaving school and 13.35% had not.

Figure 1: Average levels of sport participation throughout each stage of life. 4 = once a week, 5=twice a week, 6=three times a week, 7=four times a week.

Figure 2: Average weekly time spent participating in sport throughout each stage of life. 2=30-60minutes, 3=1-2 hours, 4=2-3 hours, 5=3-4 hours.

Figure 3: The percentage of each sports participated in at school. “Other” included sports such as water sports, equestrian, trampolining, cricket, climbing, shinty, figure skating and cycling.

Figure 4: The percentage of sports participated in since leaving school. Other included yoga, aerobic classes, sailing, water sports, hiking, equestrian, squash, American football, body building, kettlebells and archery.

Figure 5: Motivations for sport when individuals were younger vs current motivations for sport. “Other” past motivations included compulsory at school, parental pressure requirements for career. “Other” present motivations included improving mental health or setting personal challenges.

Figure 6: Barriers to sport participation when individuals were younger vs current barriers to sport. “Other” past motivations included careers, mental health, self-confidence, male orientated environments, lack of role models or encouragement. “Other” current motivations included weather, careers, lack of motivation and a lack of rural based activities.

Figure 7: Participation in sport since school and at school for each socioeconomic group.

Figure 8: Participation in sport in the last 4 weeks for each socioeconomic group. No significant statistical interaction was found between social economic status and sport participation over the last 4 weeks as p = 0.285.

Figure 9: Total time spent participating in sport per week (hours) by gender (%). There is no significant statistical interaction between gender and time per week participating in sport as P=0.284.

Figure 10: Participation in sport at school for males and females (%). There is no significant statistical interaction between gender and sport participation at school as P= 0.385.

# Discussion

The main findings of the present study are that sport participation levels and time spent participating in sport were highest between the age of 60 and 70 compared to other stages of life, suggesting that more adults are taking up sport in older age. The main motivations for participating in sport changed from past to present from *enjoyment* to *fitness*, however the main barrier to participating in sport has remained *time* from past to present. Further findings include that socio-economic status (SES) has a significant effect on whether or not an individual has participated in sport since leaving school, and those in a higher SES group saw higher levels of sport participation in the previous four weeks. Furthermore, gender is not significantly associated with sport participation in this study, although there were some gender differences in the data with a higher percentage of males stating that they participated in sport at school than females, and males spending more time in sport every week than females.

## Lifetime Sport Participation

The primary purpose of this study was to investigate whether more adults are taking up sport in older age or if already active adults are doing more sport. From the results, it is clear that for this specific group of participants, sport participation levels were highest between the ages of 60 to 70. The average level of sport participation at school was between two and three times a week, then decreased to only once a week until the age of 40. After the age of 40, sport participation increased steadily, with adults between the age of 50 and 70 participating in sport between three and four times a week. For adults between 70 and 80 years old, there was a decline in participation levels back down to around once a week (Figure 1). Additionally, when asked about the number of days individuals had participated in sport in the last four weeks, the most common answer was three days a week (Figure 8). These results are unconventional when compared to those at national level. The Scottish Household Survey 2018 suggests that sport participation declines with age, with 68% of those aged between 16 and 24 participating in sport, with this rate declining steadily to 23% of people participating in sport by the time they are 75, whereas the present results show that sport participation was highest between ages 60 to 70. This specific group of participants were recruited on the basis that they were over 50 and actively involved in sport, which may explain the difference in results. The overall participation in sport for those aged 60 and above in Scotland is only 34% (Scottish Household Survey, 2018), whereas nearly 87% of individuals in this study have participated in sport since leaving school and the majority of participants were recruited through JogScotland correspondence, therefore were most likely already active. Research into this type of sport has shown that for those over the age of 55, participation rates have increased steadily and significantly over the past ten years, therefore explaining the high levels of participation rates in the present study (Davison and Cowan, 2020).

A screenshot of a cell phone

Description automatically generated

Figure extracted from Park Run Data from Davison and Cowan (2020).

Time spent participating in sport was similar, with the average weekly time in sport at school being around 2-3 hours, decreasing slightly to around 1-2 hours between the ages of 20 and 30. Then, time spent in sport increases steadily to the age of 70, with those aged between 60 and 70 having the highest time in sport at 3-4 hours a week. After the age of 70, average time in sport declined to just over 1 hour a week (Figure 2). When matching these results up to the National Physical Activity guidelines (NHS Scotland, 2020), guidelines were not met between the ages of 20 to 40 and 70 to 80, where on average, less than 150 minutes per week of PA were completed. This is in contrast to the Scottish Health Survey where 80% of adults aged between 25 and 34 and 31% of adults aged over the age of 75 were meeting PA guidelines (Scottish Health Survey, 2018). However, this may be due to a misunderstanding of what constitutes a sport, as participants were asked about their sport participation levels, they may have been meeting guidelines by participating in other activities that they do not class as a sport such as jogging or running.

## What is sport?

It is clear from these results that the nature of sports participated amongst older adults varies greatly (Figure 4), therefore it is important to attempt to establish what constitutes as a sport. When asked about which sports were participated in at school, hockey was the most common, followed closely by athletics, swimming and netball (Figure 3). However, currently, the general population tends to participate in multigym/weight training or running at a younger age (Scottish Household Survey, 2018) while school children tend to participate in football or swimming (Gov.UK, 2013). The participants of this study were likely to have been of school age during the 1970s and 80s, and since then there has been a growing ‘gym culture’ and expansion of the fitness industry, increasing desire for the ideal body and fitness levels which explains why young people are primarily interested in the gym or weight training (Andreasson and Johansson, 2014). However, from the age of 44 onwards in Scotland, swimming and cycling are the more popular sports. For the over 75s, aerobics or golf are participated in more than any other sport (Scottish Household Survey, 2018). The results from the present study are similar, as they show that the main sport participated in amongst older adults is swimming, followed by cycling and ‘other’ which included mainly jogging as well as yoga, aerobics, water sports, hiking, equestrian, squash, American football, body building, kettlebells and archery (Figure 4).

As mentioned earlier, sport is defined as a casual or organised activity that involves improving fitness, mental health and social relationships or obtaining results in competitions (SportScotland, 2003). This being said, there is an ongoing debate around which activities can actually be defined as a sport. Since sport, PA and exercise are all inter-related, it can be difficult to differentiate activities into categories (Ball et al., 2014). There has been debate into whether events such as organised jogs or runs are classed as a sport. Clearly, running is a discipline of ‘athletics’ in the Olympics and is therefore classed as a sport in this environment, as well as an activity called ‘race-walking’ (International Olympic Committee, 2020). Some activities such as Cross-Fit are being classed as ‘borderline’, meaning they can fit the definition of what sport is in some ways yet not in others, and can also be categorised as training for events such as Tough Mudder (Carlson et al., 2016). Moreover, activities like this including the Park Runor jogging eventswould therefore be classed as sport since these are organised activities, and they improve fitness, mental health and social relationships (Sport Scotland, 2003). Overall, it is fair to suggest that many activities such as running and jogging can be defined as a sport, depending on the context they are being performed in, and in other cases can be referred to more generally as exercise.

## Motivations and Barriers

In this case it is important to investigate the motivations and barriers behind older adults’ sport participation. When asked about their motivations for sport at a younger age, enjoyment was the most frequently given answer, accounting for nearly 30% of participants. However, when asked about their current motivations for participating in sport, 26% of participants answered fitness, followed closely by 25% answering health reasons and 24% answering enjoyment (Figure 5). In comparison, the Scottish Health survey found that the majority of adults in the UK under the age of 64 participated in sport to keep fit, and those aged between 55 and 75 participated in sport primarily for enjoyment and fitness (Scottish Health Survey, 2018). Again, young people’s motivations for sport and PA are bound to differ currently to when the participants in this study were younger due to the increase in gym culture and the fitness industry, with many younger people wanting to have an ideal body to show off on social media (Kelly, 2018). However, for older adults, the results from the present study are similar to other research, as fitness, health concerns and enjoyment seem to be recurring themes within the physically active older adult population (Costello et al., 2011). Nevertheless, research has suggested that motivations for sport in older adults depends greatly on the level of competition, with extrinsic motivations mainly encouraging athletes at local level, compared to those competing at national or international level who are mainly driven by self-determination (De Pero et al., 2009).

On the other hand, despite nearly 87% of participants in this study stating that they have participated in sport since leaving school, the barriers to sport that adults over 50 face is still worth investigating. Barriers to sport when participants were younger appeared to be time, accounting for 27% of responses, as well as lack of interest, accounting for 24%. Likewise, when asked about current barriers to sport, 50% of the participants stated that time was their main barrier to doing sport (Figure 6). The results are similar to those from the Scottish Health Survey, as “difficult to find the time” and “not really interested” were the two most popular answers given by those aged between 16 and 54. However, for the over 55’s, “Health isn’t good enough” was the most popular answer, followed by “difficult to find the time” and “not really interested”, in contrast to the present study (Scottish Health Survey, 2018). Lack of time seems to be a recurring theme within barriers to sport in older adults, with some suggesting that they have too many other responsibilities such as looking after family, employment or volunteering if retired. (Costello et al., 2011; Jenkin et al., 2018). In this instance, perhaps introducing more ‘intergenerational’ sporting activities such as tennis would break down these barriers so that individuals could play in the same settings as their children and grandchildren and could also improve social health (Jenkin et al., 2018).

## Socioeconomic Status

From the results in this study, it is clear that the participants were primarily from a higher SES group. Over half of the participants in this study fell in to the second highest SES group (Table 1) and nearly 37% of participants’ household income were between £43,431 and £150,000. This is comparable to the Scottish Household Survey, in which the majority of household incomes were over £40,001 (Scottish Household Survey, 2018). However, the participants in this study earn above average when compared to the UK average income, which is currently £29,400 per year (Office for National Statistics, 2019). In this case, it is important to investigate if SES directly affected sport participation levels in this study. From the results, there is a significant relationship between SES and whether or not an individual has participated in sport since leaving school (*P =* 0*.*002*)*. For the three highest SES groups, there was a significantly higher number of individuals who have participated in sport since school than those who have not. However, for the lowest SES group, more individuals had not participated in sport since school than those who had (Figure 7). Similarly, those in the second highest SES group had participated in sport on more days per week in the last 4 weeks than any other group (Figure 8). The gap is most likely due to those with higher educational attainment and higher incomes having more money to spend on sports, including equipment, facilities, travel and clothing (Breuer et al., 2010). On the other hand, regardless of SES, the majority of individuals did participate in sport at school (Figure 7). This confirms previous research, which suggests that children from poorer socioeconomic backgrounds usually have similar levels of PA to other children due to compulsory physical education at school but are less likely to be active or participate in sport as adults (Cruickshank et al., 2015). However, in contrast to the current results, children from poorer backgrounds are less likely to participate in sport out-with school (Cruickshank et al., 2015), which is probably due to parents’ inability to pay for children to attend sports clubs or classes, as most families with a higher income are more likely to have a child specializing in a sport (Post et al., 2018). The contrast in these results may be due to the participants in the current study interpreting the question as asking about participating in physical education at school and not a specific sport.

## Gender

Gender differences in sport are commonly studied within the sport research field, with the majority of research suggesting that men have higher levels of sport and PA adherence than women (Scottish Health Survey, 2018; Talleu, 2011; Bengoechea, 2010). The present study’s results suggest that a higher percentage of males participate in sport for more than 5 hours a week, although the gender differences are not significant as females also had high levels of sport participation (Figure 9). However, Figure 10 shows a large difference between male and female participation in sport at school, with 83% of males and only 76% of females answering that they participated in sport at school. Nevertheless, there is still no statistically significant interaction between gender and sport participation at school (Figure 10), although the reasons behind this difference should still be discussed. Research (Bengoechea, 2010) has suggested that although physical education in school should be an outlet for equal gender opportunities, there are still inequalities as girls are less likely to participate than boys. Moreover, girls are less likely to participate in unorganized PA in and outside of school, and an opinion is that more should be done to enhance female participation in organized activities to make up for this lack of participation (Bengoechea, 2010). Talleu (2011) has suggested that this is due to girls and boys having different attitudes towards sport, enjoying different activities, requiring different settings or environments and having different motivations for sport. In this case, it is important to find a way to ensure physical education and sport in school is diverse and suited to everyone (Talleu, 2011).

## Limitations

There are some limitations to this study that should be acknowledged. As the study used recall methodology, there is most likely an element of recall bias present, affecting the validity of the study. However, this design methodology was preferred to gain a lifelong perspective on sport participation (Caruana et al., 2015). On reflection, the survey questions could have been designed to ensure adequate analysis was completed. For example, participants profession was answered in free text, making error a possibility when analysing the results. However, it would have been impossible to have a list short enough for the nature of the study, which included such a vast number of professions. Additionally, since nearly 68% of the participants were female, it is questionable that these results are applicable to an entire population of older adults. Finally, as the study used an online survey, some older adults may have found it difficult to navigate through the questions, leading to dropouts or misrepresentative results if answers were unintentional.

Overall, the research on sport participation in older adults is limited. Future research could implement both online and paper questionnaires to the desired population to eradicate the risk of technology error. Similarly, future research could investigate sport participation levels in older males and older females separately, to ensure changes in sport participation levels are applicable to the entire population. Lastly, looking at older adult’s participation levels in specific sports will provide an understanding of how to increase participation as a whole.

## Conclusion

To conclude, it can be suggested from this study that more adults are taking up sport in older age, as sport participation levels were highest between the ages of 60 and 70 for this specific group of participants when asked about their participation levels over the course of their lifetime. The only statistically significant result from this study is that SES is directly associated with whether an individual has participated in sport since leaving school or not, as more individuals in the higher SES groups have participated in sport since school and more individuals in the lower SES groups have not. It should also be noted that gender is not significantly associated with sport participation levels in this study, although males were still more likely to participate in sport at school and had spent more time per week participating in sport. Finally, motivations for sport tend to change as individuals get older, from enjoyment to fitness and health reasons, respectively. However, from a young age, time has remained the main barrier to participating in sport. Enhancing sporting activities which can include all of the family such as tennis would break down these barriers to sport.

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# Appendices

## Appendix 1 – Survey Questions

Hello. You are invited to participate in this survey as part of our Honours dissertation project. We are investigating if more adults are taking up sport in older age or if already active older adults are doing more sport. You have been asked to help us with this survey as you are currently an adult over the age of 50 who is actively involved in sport at present. This survey includes questions about your past and present sport participation and also personal questions regarding your household income, employment and qualifications to determine your socio-economic group, which is suggested to be linked to sport participation levels. It will take approximately 20 minutes or less to complete the questionnaire. Your participation in this study is completely voluntary. There are no foreseeable risks associated with this project. However, if you feel uncomfortable answering any questions, you are free to withdraw from the survey at any point without giving reason. This survey has received ethical approval from the school ethics committee. Your survey responses will be strictly confidential and data from this research will be reported only in the aggregate. Your information will be coded and will remain confidential as you will not provide us with any identifiable data. The data collected from this survey will be analysed and used as part of our dissertation project and may also be published in academic journals. If you have questions at any time about the survey or the procedures, you may contact Rachel Kidd by email at B00302317@studentmail.uws.ac.uk or my supervisor Richard Davison at Richard.Davison@uws.ac.uk. By agreeing below, you are consenting to take part in this survey and acknowledge that you have been given all of the relevant information and understand you can withdraw at any time without reason. Thank you very much for your time and support. Please start with the survey now by clicking on the "Next" button below.

Please state your age below:

|  |
| --- |
|  |

To which gender do you identify?

1. Male

2. Female

3. Other \_\_\_\_\_\_\_\_\_\_

Are you currently a homeowner?

1. Yes

2. No

What is your current employment status? Select all that apply:

1. Full-time employed

2. Part-time employed

3. Unemployed

4. Retired

5. Self-employed

What is/was your profession?

|  |
| --- |
|  |

Which of these represents your current household income?

1. £0-12,500

2. £12,501 - £14,549

3. £14,550 - £24,944

4. £24,945 - £43,430

5. £43,431 - £150,000

6. over £150,000

What is the highest qualification you have?

1. School qualifications (O-grades/GCSE/Higher etc)

2. Further Education (NQ/HNC/HND)

3. Higher education (Degree/Honours)

4. Master’s Degree

5. PHD

6. Other

Did you participate in sport at school?

1. Yes

2. No

If yes, please select the sports you participated in at school. (Select all that apply)

1. Football

2. Basketball

3. Rugby

4. Tennis

5. Badminton

6. Swimming

7. Netball

8. Gymnastics

9. Hockey

10. Athletics

11. Table Tennis

12. Martial Arts

13. Volleyball

14. Snow sports

15. Other \_\_\_\_\_\_\_\_\_\_

Have you participated in sports since leaving school?

1. Yes

2. No

If yes, which sports have you participated in since leaving school? (Select all that apply)

1. Football

2. Basketball

3. Athletics

4. Tennis

5. Badminton

6. Rugby

7. Swimming

8. Hockey

9. Gymnastics

10. Cycling

11. Golf

12. Martial arts

13. Continued sport from school

14. Volleyball

15. Snow sports

16. Other \_\_\_\_\_\_\_\_\_

In the last 4 weeks, how many times per week have you participated in sport?

1. once/twice a week

2. 3 days a week

3. 4 days a week

4. 5/6 days a week

5. everyday

6. None

How much time per week do you spend participating in sport?

1. 30-60 minutes

2. 1-2 hours

3. 3-4 hours

4. 5 hours and above

5. Up to 30 minutes

How has your sports participation changed over your life? (1-10)(1 = rarely , 2 =once a month, 3= few times a month, 4= once a week, 5= twice a week, 6= three times a week, 7= four times a week, 8= five times a week, 9=6 times a week, 10=everyday)

|  |  |
| --- | --- |
|  |  |
| School Age | ❏ |
| Age 20-30 | ❏ |
| Age 30-40 | ❏ |
| Age 40-50 | ❏ |
| Age 50-60 | ❏ |
| Age 60-70 | ❏ |
| Age 70-80 | ❏ |

How has your weekly time spent participating in sport changed throughout your life? (1 = up to 30 minutes, 2 = 30-60 minutes, 3 = 1-2 hours, 4 = 2-3 hours, 5 = 3-4 hours, 6 = 4-5 hours, 7 = 5+ hours)

|  |  |
| --- | --- |
|  |  |
| School Age | ❏ |
| 20-30 | ❏ |
| 30-40 | ❏ |
| 40-50 | ❏ |
| 50-60 | ❏ |
| 60-70 | ❏ |
| 70-80 | ❏ |

What were your motivations for sport when you were younger? (Select all that apply)

* + Fitness
  + Competition
  + Enjoyment
  + Health Reasons (to stay healthy)
  + Social Aspect
  + Other \_\_\_\_\_\_\_\_\_\_

What are your motivations for sport now? (Select all that apply)

* Fitness
* Competition
* Enjoyment
* Health Reasons (to stay healthy)
* Social Aspect
* Other \_\_\_\_\_\_\_\_\_\_

What were your barriers to sport when you were younger? (Select all that apply)

* Time
* Health reasons (injury, illness etc.)
* No opportunities
* Cost
* Not interested
* No facilities/clubs
* Other

What are your barriers to sport participation now? (Select all that apply)

* Time
* Health Reasons (injury, illness etc.)
* No opportunities
* Cost
* Not interested
* No facilities/clubs
* Other \_\_\_\_\_\_\_\_\_\_

## Appendix 2 – Informed Consent

**Information Sheet and Consent Form**

Hello.  
You are invited to participate in this survey as part of our Honours dissertation project. We are investigating if more adults are taking up sport in older age or if already active older adults are doing more sport. You have been asked to help us with this survey as you are currently an adult over the age of 50 who is actively involved in sport at present. This survey includes questions about your past and present sport participation and also personal questions regarding your household income, employment and qualifications to determine your socio-economic group, which is suggested to be linked to sport participation levels. It will take approximately 20 minutes or less to complete the questionnaire.  
  
Your participation in this study is completely voluntary. There are no foreseeable risks associated with this project. However, if you feel uncomfortable answering any questions, you are free to withdraw from the survey at any point without giving reason. This survey has received ethical approval from the school ethics committee.  
  
Your survey responses will be strictly confidential and data from this research will be reported only in the aggregate. Your information will be coded and will remain confidential as you will not provide us with any identifiable data. The data collected from this survey will be analysed and used as part of our dissertation project and may also be published in academic journals. If you have questions at any time about the survey or the procedures, you may contact Rachel Kidd by email at [***B00302317@studentmail.uws.ac.uk***](mailto:B00302317@studentmail.uws.ac.uk)or my supervisor Richard Davison ***at*** [***Richard.Davison@uws.ac.uk***](mailto:Richard.Davison@uws.ac.uk) ***.***  
  
By clicking continue below, you are consenting to take part in this survey and acknowledge that you have been given all of the relevant information and understand you can withdraw at any time without reason.  
  
Thank you very much for your time and support. Please start with the survey now by clicking on the **"Next"** button below.

## A screenshot of a cell phone Description automatically generatedAppendix 3 – Socioeconomic Score Sheet