

# Keeping Them in the Game: Taking Up and Dropping Out of Sport and Exercise in Ireland

Pete Lunn  
Elish Kelly  
Nick Fitzpatrick

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THE  
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AN CHOMHAIRLE SPÓIRT





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## The Authors

Pete Lunn is a Senior Research Officer and Elish Kelly is a Research Analyst, both at the Economic and Social Research Institute (ESRI). Nick Fitzpatrick was an intern at the ESRI when the research was undertaken.

The paper has been accepted for publication by the Institute, which does not itself take institutional policy positions. The authors are solely responsible for the content and the views expressed.

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## Overview

Growing evidence linking low levels of physical activity to poor health means that sports policy has become an important contributor to public health. A primary policy goal is to raise levels of participation in sport and exercise. This report provides evidence for policy from three large, nationally representative surveys. It is thus the most comprehensive study of participation in sport undertaken in Ireland to date. The analysis focuses on how and why people take up and drop out from sport and recreational exercise, from childhood to old age.

The results show that participation in regular sporting activity is almost universal among primary school children – what happens subsequently is what matters. Many children drop out during the second-level years. Drop-out is faster among early school leavers. Children are more likely to give up extra-curricular sport at school than activities undertaken outside of school. Girls are more likely to drop out than boys. The public examination system has a strong negative impact on participation in sport: students are far less likely to participate during exam years and this has a lasting effect on participation later. Nevertheless, those who do play sport get, on average, better Leaving Certificate results.

As people progress through adulthood, whether they participate in regular sporting activity is less related to attitudes and beliefs about the benefits of sport than to other transitions that occur in their lives. Most people believe participation is good for wellbeing and want to be more active. But leaving school or college, work commitments, relocations and increased family responsibilities mean that the rate of drop-out exceeds the rate at which adults take up new sporting activities. Individual sports have a lower rate of drop-out and higher rate of take-up than team sports. Cycling and, in particular, swimming are more likely to persist into later adulthood. Among the more popular sports, Gaelic games have a high rate of drop-out. Most adults who take up a new activity do so through a social connection – friends, colleagues or family. Taken together, the factors driving drop-out and take-up lead to a widening gap between socio-economic groups. Better off individuals are more likely to participate in sport, mainly because of different opportunities rather than different attitudes or beliefs.

The report discusses the policy implications of the findings. Based on the evidence, it concludes that: (1) The greatest challenge for sports policy is not getting children involved but maintaining the involvement of teenagers and young adults; (2) Cycling and (especially) swimming merit greater investment; (3)

Action is needed to reduce the negative impact of exams, adding weight to the argument for Physical Education (P.E.) to be an examinable subject; (4) Better links are needed between schools and sports clubs; (5) The GAA might seek to address the reasons for its high rate of drop-out; (6) Limited public funding should not be spent on facilities but on participation programmes; (7) Such programmes should be designed to overcome time constraints and to exploit social connections; (8) Policymakers should consider the potential contribution of behavioural science to designing better participation programmes.

## Executive Summary

### Background

This report presents the most comprehensive statistical analysis of active participation in sport and physical exercise in Ireland undertaken to date. We employ three large, nationally representative data-sets, which together contain information on the participation of people in Ireland from the last years of primary school through to old age. The research takes as its starting point that the predominant concern for society and, hence, for sports policy, is to increase the proportion of the population who engage in regular sport and physical exercise. This presumption is based on compelling evidence that low levels of physical activity increase the likelihood of developing serious degenerative diseases, including heart disease and various cancers. While participation in sport also makes a significant social and cultural contribution to society, improving physical and mental wellbeing is the primary motivation for participants and increasing the numbers who participate is a public health goal.

An increase in the proportion of the population that participates regularly in sport can be achieved in one of two ways: either the rate at which individuals take up activities must increase, or the rate at which they drop out from activities must decrease. Accordingly, the report analyses transitions into and out of regular sporting activity at different stages in the life-course. We make use of modern multivariate statistical techniques and specially designed survey modules to uncover when transitions in sporting activity are most likely to take place and what factors contribute to them.

The report contains many significant findings and discusses some of the implications for policy. Yet, over and above specific findings, a constant theme recurs in the data and throughout the analysis. Whether people remain active across their lifetimes is not *primarily* determined by whether they are active as children, but by transitions that occur as they grow up, mature and progress through adulthood. The large majority of young people have engaged regularly with sport and physical exercise and a very large majority of modern children participate regularly. Consequently, the overall level of participation in sport and physical exercise among the population of Ireland is not determined by how active our children are, important though that is, but by what happens to them as they progress through life.

## Data and Methods

The three data-sets employed in this analysis are: the *Children's Sport Participation and Physical Activity Study (CSPPA)*, conducted in 2009; the *2007 School Leavers' Survey (SLS)*; and the *Irish Sports Monitor (ISM)*, carried out between 2007 and 2009. The CSPPA is a representative survey of schoolchildren in Ireland, covering primary school students in fifth and sixth class and second-level students from first year through to sixth year. The samples analysed are 1,275 and 4,101 respectively. The SLS is a survey of 2,025 individuals who left school in 2007, completed one to two years after they left school. The ISM is a nationally representative survey of 26,377 adults aged 16 years and over, sampled throughout the three-year period from January 2007 to December 2009.

The CSPPA is a cross-sectional survey. Accordingly, the primary method of statistical analysis is to examine how participation in sport and exercise and the factors associated with it change between single school years. Although also based on cross-sectional samples, the two other surveys record information about changes in activity over time. The SLS contains information about sporting activities students undertook in each school year and whether they were still involved in that activity after leaving school. Most transitions during this phase of the life-course involve drop-out from sport and the SLS therefore permits us to analyse factors related to individuals dropping out. The ISM survey contained flexible modules that allowed different questions to be inserted to investigate specific issues of interest. Five different modules were employed between 2007 and 2009. Three asked about how participants came to take up an activity or how ex-participants came to drop out; two others explored people's understanding of the link between sport and health and their motivations for participation.

## Research Questions

The definition of 'sport' employed accords with that used by the Irish Sports Council. Active participation covers not only competitive games but recreational sport and personal exercise activities such as leisure cycling, going to the gym, attending exercise classes and so on. Although recreational walking is an important part of physical activity, it is not covered by this report; nor is walking and cycling for transport. Since we are interested in continuing participation across the life-course, the focus of the analysis is on participation in sport undertaken on a voluntary basis, i.e., school Physical Education (P.E.) lessons are excluded.

The report analyses a series of research questions chronologically over the life-course, beginning with young children. We look at what types of sport primary



schoolchildren take up, both in and outside of school, and how this relates to their gender and social class. We consider whether participation in a range of non-sport activities, including computer use, video games, television and arts activities, is positively or negatively associated with participation in sport. The transition to first year at second-level school is then analysed. We ask how this transition affects participation and whether there is any change in the factors associated with participation. A similar analysis is then extended to cover the transitions through the second-level years. We examine the participation of early school leavers and how the relationships between participation, gender, social class and non-sport activities change across the school years. We look for an influence of exam years and Transition Year. Lastly, we ask what determines whether individuals continue in their chosen activity when they leave school.

Turning to participation in sport and exercise as adults, the report seeks to explain the established strong pattern in participation by gender, age and socio-economic status. We probe the influence on this pattern of perceptions and beliefs about the benefits of sport and exercise, the link between participation and health, the social norms that surround participation, and the extent to which people feel in control of their decisions. We go on to ask how taking up sport as an adult differs from taking up sport as a child. We consider the types of activities adopted, where and how participation begins, who else is involved, and whether finding facilities is a problem. We assess who is most likely to take up an activity and the motivations involved. The equivalent analysis is then conducted for dropping out from sport. We ask when this is most likely to occur, from which activities, and why; we pay special attention to some of the most popular sports.

## Findings

The take-up of sporting activities among young children is almost universal. By the end of primary school, the very large majority of students, 88 per cent, are regular participants in either extra-curricular or extra-school sport, with no significant difference between girls and boys. A majority who participate play multiple sports. Even among those who do not participate in such organised activity, most play sport with friends. Based on comparison with previous research, the current generation of primary school children is probably more active in organised sporting activity than any that preceded it. However, even at this initial stage of taking up sport, gender and class differences are apparent. Girls are more inclined towards individual sports, boys towards team sports. Children from families in lower occupational classes have similar rates of participation in extra-curricular sport to middle-class children, but are less likely to play extra-school sport (i.e., to participate in clubs, at sports centres and at other locations not linked to their school). Lifestyle effects are also apparent.

Controlling for background characteristics, primary schoolchildren who use computers and play video games do less extra-school sport. Arts-related activities (e.g., music, drama) and sporting activities do not seem to be in competition: children who do one are also more likely to do the other. We find no impact on participation of time spent watching television at this age, although watching sport on television is positively related to participation.

Rates of participation in sport and exercise drop when students leave primary school and go on to second level. We estimate that the scale of this effect amounts to roughly one-in-ten regular participants dropping out, with those who continue to participate also, on average, reducing their number of activities. The fall in participation is confined to the six most popular activities at primary school (Gaelic football, soccer, swimming, hurling/camogie, dance and basketball); participation in all other activities combined does not change significantly among either boys or girls. At this transition, however, an effect of television watching emerges: students who watch less than one hour a day are more likely to participate in sport and exercise, while those who do not watch television every day are more so again.

The pattern of participation across the years of second-level school is distinctive. Team sports remain more attractive to boys and individual sports to girls, but participation in both falls substantially across the school years. The only activity that increases its participation rate over the second-level years is personal exercise. The overall decline in participation is greater for extra-curricular sport at school than for activities undertaken outside of school. The fall is more severe for students who leave school early, i.e., those who do not go on to senior cycle. The decline is also sharper for females. There is a clear effect of public examinations, with participation falling off towards third year, rising for those who do Transition Year, and falling again during fifth and especially sixth year. This pattern, including the rise during Transition Year, is also more pronounced for females. Overall, therefore, there is much greater volatility in female participation than male participation. One possibility is that girls are less attached to the sports they participate in during the school years and are consequently more inclined to give them up when time becomes a scarce resource.

The relationship between participation and examination years varies also by social class. Students with parents in professional or managerial occupations have higher participation rates in most school years for extra-curricular and, especially, extra-school sport. But the gap narrows and even reverses in sixth year. Students from middle-class backgrounds may be more likely to be affected by the points race for third-level places. The impact of impending exams also alters the

relationship between participation in sport and other leisure activities. While students who participate in arts-related activities are generally more likely to play sport, this effect disappears or even reverses during exam years. The negative effect of television and video games on participation also strengthens in exam years. All these findings suggest that as exams approach students' behaviour reflects time constraints and that something has to give. Yet, in spite of these results, the relationship between participation in sport and exam performance in our data is positive: controlling for background characteristics and type of school, those who participate in sport tend to get better results. Note that this does not necessarily imply that participation improves performance, as the result could be explained by students who are confident of doing well in exams being happier to keep participating in sport. However, given this finding, it seems unlikely that participation in sport negatively affects results.

Dropping out of sport during fifth and sixth year has a negative impact on the likelihood of continuing activities undertaken at school after leaving. Females are generally more likely to drop an activity when they leave, perhaps again suggesting less attachment than males to the activities they are involved in at school. Dropping out of sport on leaving school is less likely for students who had a job outside term time and more likely for those who go into a spell of unemployment when they leave. Continuing connections to workplaces and third-level institutions after leaving school make dropping out less likely.

As in previous studies, we find that by the time individuals reach adulthood, participation is strongly associated with socio-economic status (measured by educational attainment, income and occupational class), age and gender. This pattern may partly be explained by beliefs and perceptions. The message that exercise is linked to health is broadly understood: more than 90 per cent of people believe that exercise is good for their health and the same proportion are aware that it reduces the risk of heart disease. However, there are some differences in beliefs and perceptions across social groups. Above 50 years of age, individuals' belief in the benefits *to them* of exercise is less strong than is the case for younger adults. This may well be a cohort rather than an age effect – this older generation was significantly less active when younger. Individuals in this group also perceive weaker social norms regarding the benefits of exercise and are more likely to believe that they cannot, for one reason or another, increase their level of activity. This last belief, regarding constraints to increased participation, also varies by socio-economic status. While those in lower socio-economic groups differ little regarding beliefs about the benefits of sport and associated social norms, they perceive themselves on average to have less control over their own participation. We find a strong effect of income: those

with lower income are much more likely to feel that they cannot take up sport even though they believe in the benefits.

When the amount of participation in sport and exercise is considered across the whole life-course, the importance of taking up new activities as an adult becomes apparent. By 40 years (i.e., still below the average age of adults), more than half of sporting activity undertaken has been taken up since age 18. Only a few activities taken up at a young age show strong persistence. Swimming accounts for over 40 per cent of activity undertaken by those aged over 40 years that was first taken up at primary school. Cycling also persists into later adulthood, while participation in soccer continues farther into adulthood than is the case for other popular team sports. More generally, the pattern of take-up by age is strongly associated with the type of activity. Just 2 per cent of adult sporting activity consists of team sports taken up after age 17. Activities taken up from age 18 onwards are dominated by personal exercise activities such as going to the gym or exercise classes (31 per cent), golf (22 per cent), swimming (12 per cent) and jogging (7 per cent).

Almost 70 per cent of children who take up a sport are introduced to the activity by parents or teachers. Other people remain important influences when adults take up sports too, since 74 per cent of adults who take up a sport or exercise activity are introduced to it by a friend, colleague or family member. The majority of adults who take up a new sport do so at a sports club or organisation, underlining their importance for providing opportunities for participation. More than 95 per cent of new participants had no problem finding facilities, while less than 2 per cent had a lot of difficulty. This last figure was just 0.3 per cent for those who took up a team sport. Women are as likely as men to take up a new activity as an adult, but the likelihood of take-up is strongly linked to all measures of socio-economic status. Those with lower educational attainment, lower income and lower occupational class are many times less likely to take up an activity. Meanwhile, students and retired people are significantly more likely to do so. Take-up is most likely during people's twenties and particularly unlikely among middle-aged men. For those who do participate, the primary motivation is to improve their physical wellbeing. Mental wellbeing is also important for a majority of participants. Social benefits are important for a significant minority. Competing with others and improving performance are important for a majority of players of team sports, but these motivations remain second to health benefits.

As they progress through young adulthood, the rate at which individuals take up new sport and exercise activities is surpassed by the rate at which existing

participants drop out, with the result that the fall in participation that began during the school years continues before flattening out somewhat as middle age approaches. Individuals are particularly likely to drop out from sport at age 18 and again at 21-22 years. Dropping out from all sport and exercise activity is much more likely if a person participates in only team sport. The rate of drop-out from team sports played at school and college is severe. Our estimates are that among participants aged 16 and over, more than 75 per cent of basketball players, 53 per cent of hurlers and 52 per cent of Gaelic football players will have dropped out of the sport within 3-4 years. The estimate for soccer is lower, at 23 per cent, while for the most popular individual activities the rate of drop-out is lower again. Work commitments are the most common reason given for dropping out from all types of activity. Among team sports, leaving school or college is cited as a factor by more than one-third of drop-outs; moving house or losing touch with other players also features as a more important factor for dropping out from team sports than from individual activities. Family commitments are more commonly cited by those who drop out from individual sports. Controlling for other background factors, drop-out from all sport and exercise activity is more likely among young women, less likely among students, more likely among the disabled, and more likely among those with young children.

Given the figures in the preceding paragraph, we undertake a specific comparison of reasons for dropping out from soccer and from Gaelic games. Some factors are more likely to be listed by those dropping out from Gaelic games: leaving school or college, moving house, losing touch with other players, a change in the way the sport was organised, losing interest. Most of these factors suggest that, relative to soccer, there is some source of inflexibility in playing Gaelic games that makes it difficult for young people to continue playing either side of other important transitions in their lives.

### **Policy Implications**

There is a tendency in many policy areas to assume that effective interventions that promote certain attitudes and behaviours among children are likely to have continuing benefits that last a lifetime. This assumption may be sound in many areas of education and socialisation, but perhaps not with respect to participation in sport and exercise. By 10-12 years of age almost all children are involved in regular activity. Although many children do not meet the national guideline levels of physical activity (more than 60 minutes moderate to vigorous activity every day), it appears that this is not due to lack of participation in organised sport and exercise. The greater policy challenge is that, given present trends, around half will drop out over the next 10-20 years. The initial involvement of children in sport and exercise is only part of the policy challenge

and, given the pattern of participation revealed here, probably a less urgent one than the need to maintain the involvement of teenagers and young adults.

The findings show that some sporting activities are more likely to have lasting benefits than others. In particular, children who learn to cycle and, especially, to swim, are more likely to participate in these activities later in life and right into old age. In effect, the return to any investment made by policymakers, teachers and parents in teaching these skills at a young age, in terms of future health benefits across the life-course, is likely to be higher than the return to teaching most other skills. Given this, swimming (especially) and cycling could receive greater attention from policymakers, both in the design of programmes to promote activity and in raising awareness of the lasting benefits among parents and teachers, who are the most likely people to introduce children to activities.

The evidence we uncover reveals that, on the one hand, there is a very high rate of drop-out from sport and exercise among students in exam years and, on the other hand, that participation is unlikely to affect exam performance negatively and may well, in fact, tend to have a positive impact. Some parents and teachers may be surprised by this finding. It seems, moreover, that dropping out from sport in the final year at school can have a lasting impact. The present data do not tell us whether drop-out in exam years reflects the choices of students, advice (or perhaps pressure) from parents and teachers to concentrate on schoolwork, or students being given fewer opportunities and less encouragement to play sport in exam years. Arguably, however, the finding adds weight to the argument for making P.E. an examinable subject that can contribute meaningfully to qualifications, since at least for some students such a move would reduce the perceived conflict between participation in sport and exercise and obtaining good exam results.

While drop-out in exam years contributes to declining participation across students' time at school, it is not the only factor – participation also declines in non-exam years and when students leave school. The rate of drop-out during adolescence is particularly high among females. Contrastingly, however, girls are as likely as boys to get involved in sport prior to adolescence and women are no less likely to take up sports as adults. Furthermore, it is notable that for those students who undertake Transition Year, there is a marked increase in extra-curricular activities, especially individual sports. The implication of these findings may be that the spectrum of sports offered in most second-level years is straightforwardly less appealing to girls than to boys. This is perhaps unsurprising, given that the range of activities offered is likely still to be influenced by those activities that were offered in a previous era when sport was primarily designed

to appeal to males. If so, then efforts need to be made by schools and education policymakers to broaden the range of activities offered.

A significant amount of drop-out from sport and exercise occurs at the point when individuals leave full-time education – disproportionate numbers of drop-outs occur at age 18 and again at 21-22 years. These transitions have lasting impacts on later participation and contribute to a lower overall rate of adult participation. Drop-out on leaving school has a bigger impact on members of lower socio-economic groups who participate less in sports clubs outside of school. There is, therefore, a good argument for participation programmes that explicitly target young adults and school leavers. The new National Sports Facilities Strategy is likely to make a priority of improving links between schools and sports clubs with a view to more efficient use of facilities. Better links are needed also to ensure that students leaving schools have the necessary social contacts, encouragement and opportunity to continue participation outside of school. Local Sports Partnerships (the national network of county-level organisations for promoting sport) can potentially foster such links.

The problem of drop-out appears to be particularly acute for Gaelic games. Young people who participate regularly in Gaelic football and hurling/camogie and who then leave school or college, or relocate to a new area, often drop out from the sport during the transition. This problem is far less severe among soccer players. It may stem from greater local loyalty among GAA players, or perhaps some other aspect of how the sports are organised. The GAA itself might do well to investigate this issue further: why do participants in Gaelic games not connect with other clubs when they move to new life stages or new areas? Can something be done within the GAA to promote such ongoing contact and reduce the high rate of drop-out?

The evidence uncovered here, as with other previous research projects based on large representative national surveys of participation, once again highlights the (perhaps to some surprising) fact that, in modern Ireland, lack of facilities is not an important factor in whether people participate in sport (with the possible exceptions of swimming pools and access to indoor facilities for schoolchildren). Additionally, it is notable that there is no apparent relationship between the relatively large sums (in the context of sports policy) that were invested in facilities over recent decades and levels of participation in those sports that received most funding. Policies that rest on the idea that more and better facilities will result in higher participation rates are, straightforwardly, not informed by evidence but by other considerations. In the context of Ireland's fiscal crisis, cuts to the sports budget have been applied more to funding for

facilities than to other areas of sports policy. Given the primary goals of policy, this is in line with evidence. What limited funding is available ought to be directed at programmes more likely to increase participation.

What might such programmes look like? Most obviously, because the majority of adults who take up a new sport do so at a local club or facility, policymakers need to involve these organisations in participation programmes and to spread awareness about how and why most new participants get involved. It is clear from the contribution of work and family commitments to the rate of drop-out, from the higher drop-out rate of those with young children, and from higher take-up among students and retired people, that time constraints matter. Therefore, participation programmes need to fit opportunities to participate around busy lives. But the findings on take-up reveal that in the majority of cases new participants are introduced to a sport by friends, colleagues or family members. This is an important reason for the wide socio-economic gap in sport: people who went on to third-level education or who work in professions are more likely to have friends and colleagues who are participants, leading to more opportunities to take up new activities on an ongoing basis as they progress through adulthood. Very few people take up a new activity entirely on their own initiative or simply in response to information or advertisements. Thus, as well as targeting participation programmes at those in lower socio-economic groups, the findings suggest the importance of establishing social contact with non-participants. It may be important to account for the role of social networks, perhaps by aiming to engage groups rather than individuals or by exploiting existing social networks to entice people to try something new. Local Sports Partnerships remain the obvious vehicles for designing, piloting and evaluating such interventions.

While it makes sense for policymakers to continue to promote the benefits of participation in sport to the general public, it is apparent that the central message of such promotion has now largely been absorbed. The findings show that very few people in modern Ireland do not believe that participation in sport and exercise is linked to better health and reduced risk of disease. A very large majority of non-participants as well as participants hold this belief and a majority also perceive it to have become received wisdom; most see belief in the benefits of sport as a social norm. These views are somewhat weaker among older adults, however, who might be considered the best target for public health messages associated with participation. Overall, that these widespread positive beliefs about the benefits of active participation do not translate into higher participation rates suggests that non-participants must overcome other barriers to participation. Many non-participants in lower socio-economic groups do not



feel able to get involved, though the reason for this perception is not obvious. Policies aimed at re-engaging them need to develop a better understanding of why people who believe in the benefits of sport and exercise feel unable to participate in it. To this end, it may be useful at this stage to consider the potential contribution of behavioural science. Sports policy might benefit from a systematic study of the growing number of interventions undertaken in other countries with the aim of achieving behavioural change, both in physical activity and in other policy domains.



# Chapter 1

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## Introduction

### 1.1 BACKGROUND

The past decade or so has witnessed a large expansion in the volume of research that essentially asks three questions: why are some people more physically active than others, what impact does this have on well-being, and what can be done to increase levels of activity? For medical and public health professionals, this expansion has been driven by an accumulation of findings linking low levels of physical activity to poor health outcomes, including chronic disease and obesity. What to do about the latter, in particular, is emerging as one of the political issues of our time.

For those with an interest in sport and sports policy, these developments represent an opportunity. Sport is a policy area that is frequently viewed as peripheral. In common with arts policy, it is often seen as a domain for enthusiasts, and one which those who do not share their passion can choose to ignore. Yet once sports policy is situated squarely within the debate over physical activity and its consequences for public health, the perspective changes. How sport is organised and the way government promotes it take on added importance. With this opportunity to raise the profile of sports policy, however, comes additional responsibility. If sports policy really can help to fight chronic disease and to slow the alarming spread of obesity, then it must become more like other areas of public health policy. It must take its evidence base seriously, search for and attempt policy solutions, and scrutinise their impact. Traditionally, the role of sports policy has been to build venues, to support national sports stars and the mostly amateur organisations from which they emerge, and to enthuse the next generation of children. Worthwhile though these tasks may be, if sports policy is to grow into its evolving and more wide ranging public health role, it must reorient itself towards the primary goal of increasing the numbers of people who actively participate. Modern sports policymakers need to grapple with problems such as getting overweight middle-aged people to take exercise, finding sporting activities that enthuse teenage girls more than getting muddy chasing balls in the rain, or convincing stressed out busy parents that they can still find at least some time each week to play sport. In sum, modern lives and lifestyles make sports policy increasingly relevant to health and wellbeing, but they also demand that it adapts to the modern era.

This report aims to assist that process of modernisation, by offering insight into how active participation in sport varies across the lives of Ireland's population. It builds on previous work that has employed large nationally representative surveys to record, in considerable statistical detail, the patterns of participation in sport among children, adults and different social groups in Ireland, and how these patterns have changed over recent decades. This present report is able to offer something more, because it is based on particular survey designs and statistical techniques that permit investigation of *transitions*. Rather than addressing the question of who participates in sport and how, the analysis instead looks at the ways and times during the life-course when sporting activities are taken up and dropped. If active participation in sport is to increase, one of two things must happen: either the rate of take-up must go up, or the rate of drop-out must go down. The primary aim of this report is to understand these transitions into and out of participation, in the hope that such understanding assists policymakers to find ways to reap greater benefits from sport.

### 1.2 WHY DOES SPORT MATTER?

The greater emphasis on physical activity in public health is partly driven by research revealing the consequences of activity for health and partly down to the type of health benefits physical activity confers. Advances in medical science mean that serious health problems in developed societies increasingly surround degenerative rather than infectious diseases, and the risk of developing serious degenerative diseases has been shown to be in part determined by physical activity. More detailed references can be found in Fahey, Layte and Gannon (2004) and Lunn (2007b).

In terms of public attention, however, the health issue that is most commonly associated with physical activity is obesity. There can be little doubt at this stage that obesity has become a major health concern across the developed and much of the developing world, with only Japan among the richer nations thus far escaping the problem (Swinburn *et al.*, 2011). Obesity is undeniably a huge public health problem (for review and references, see Layte and McCrory, 2011). Its impact on wellbeing is likely to extend beyond the link between obesity and serious physical health problems such as diabetes, to psychological issues faced by those who become obese and wish not to be. Childhood obesity reduces employment prospects and the likelihood of partnership as an adult (Viner and Cole, 2005), both of which are determinants of overall wellbeing. Yet there is a danger that the focus on obesity may distract attention from the fact that physical activity is directly linked to the likelihood that an individual develops serious disease, whether that individual is obese or otherwise. Moreover, the extent to which the unprecedented and rapid growth of obesity over just a few

decades has its roots in changed diet or in changed patterns of physical activity is a live debate among medical and public health scientists, as is the degree to which more effective solutions might be sought in improving diets or promoting activity. Increasing physical activity would doubtless assist in tackling obesity, but it is essential to recognise the range and seriousness of the other health problems linked to levels of physical activity. Obesity is a vivid health problem; heart disease and cancer claim their victims more covertly.

The literature linking physical activity to health outcomes is now so extensive that it is impossible in the present context to provide a thorough review. Arguably the most comprehensive account of the literature produced in recent years remains the report of the Physical Activity Guidelines Advisory Committee (2008) for the United States Department of Health and Human Services. In summarising their findings, based on an extensive overview of the available medical literature, the Committee concluded:

Strong evidence demonstrates that, compared to less active persons, more active men and women have lower rates of all-cause mortality, coronary heart disease, high blood pressure, stroke, type 2 diabetes, metabolic syndrome, colon cancer, breast cancer, and depression. Strong evidence also supports the conclusion that, compared to less active people, physically active adults and older adults exhibit a higher level of cardiorespiratory and muscular fitness, have a healthier body mass and composition, and a biomarker profile that is more favourable for preventing cardiovascular disease and type 2 diabetes and for enhancing bone health. Modest evidence indicates that physically active adults and older adults have better quality sleep and health-related quality of life (*US Physical Activity Guidelines Advisory Committee Report, 2008, p. A-3*).

The primary consequence of this growing body of medical literature has been that increasing the level of physical activity has been adopted as a public health goal in both developed and developing countries, as well as internationally (World Health Organisation, 2002). Ireland is no exception: national guidelines for physical activity were published in 2009 (Department of Health and Children, Health Service Executive, 2009).

Participation in sport and exercise is far from the only component of physical activity. Although less common than in the past, many workers are in physically active jobs. Individuals can be physically active in walking or cycling for transport. Some people are physically active in and around their homes, engaging in gardening, housework, DIY and so on. Yet, defined broadly, sport constitutes a

major component of physical activity for those who participate. The definition adopted here is that of the Irish Sports Council Act (1999), which is itself derived from the Council of Europe's 1992 European Sports Charter. It includes both competitive and recreational sport:

“competitive sport” means all forms of physical activity which, through organised participation, aim at expressing or improving physical fitness and at obtaining improved results in competition at all levels;

“recreational sport” means all forms of physical activity which, through casual or regular participation, aim at expressing or improving physical fitness and mental well-being and at forming social relationships

(Irish Sports Council Act, 1999, Part 1, Sect. 2(1)).

The inclusive nature of this definition and the explicit recognition of health benefits as a motivating factor for participation make it appropriate for research designed to inform policy. It is the public benefits of sport that provide the justification for public investment.

It is important to note that recreational walking falls under this definition of sport and exercise. Walking makes an important contribution to physical activity, especially among women. Indeed, given the greater participation of men in most forms of sport and exercise, walking among women has an important counterbalancing effect, such that there is little difference between the sexes regarding the overall proportions who appear to be effectively sedentary (Lunn, Layte and Watson, 2009). However, an important limitation of the present report is that walking is the one activity that falls under the definition that we do not analyse. The reason for this is purely practical: the survey questions employed in the data-sets we use were mainly designed to obtain detail about participation in sport and exercise (not including walking) and the equivalent detail on recreational walking is not available.

As the definition also states, sport plays a social role too. Delaney and Fahey (2005) present a thorough treatment of the conceptual issues of measuring the social and economic value of sport. They balance the largely positive contribution sport makes to social capital against some potentially negative social side-effects, primarily the link between participation in sport and alcohol consumption. They conclude that the balance sheet is positive and that greater recognition is needed of the overall social contribution of sport, not only for active participants but for volunteers, club members and spectators. Nevertheless, the health rather than

social benefits of sport are by some distance the main motivation for active participation among Irish adults (Central Statistics Office, 2007; see also Section 6.6).

### 1.3 INTERNATIONAL TRACKING STUDIES

The fundamental premise of this report is that to increase active participation in sport and exercise, and thereby to increase levels of physical activity, requires either an increase in the rate of take-up of sporting activities or a decrease in the rate at which people drop out of such activities. For the most part, research in this area has not adopted this perspective of studying transitions, but rather has concentrated on identifying the determinants of participation, i.e., which social groups are more likely to participate. Nonetheless, a large and relatively recent volume of international research has built up around what are referred to as 'tracking studies'. These studies record physical activity at one point in time, then revisit the same sample of people at a later stage. They usually employ a survey-based methodology, though the types of activity measured vary greatly between surveys, e.g., whether only organised sport and exercise is considered, whether walking is included, etc. Some studies have used 'objective' measures of activity such as accelerometers or pedometers. The primary question of interest is the degree of 'tracking', i.e., to what extent activity at the first point in time predicts activity at the second point in time.

From a policy perspective, the concept of tracking is significant and merits some discussion. If tracking is high, meaning that activity at one point in the life-course is strongly correlated with activity later on, then policymakers might emphasise early interventions. For instance, if individuals who are active as children are much more likely to be active as adults, then a policy that increases childhood activity is likely to have lasting effects and a high return. Conversely, if tracking is low, then policy might consider interventions later in the life-course. Thus, where the link between childhood activity and adult activity is modest or low, a policy that concentrates on getting children active will have only a limited impact and a lower return than if tracking is high. Given this, low tracking might at first glance appear more problematic from a policy perspective. Yet it is important to understand that low tracking offers policymakers opportunities, for as well as implying that individuals who are active when young may not be active when old, it also implies the opposite, that individuals who are not active may become more so. In fact, successful policies are likely to alter tracking. A policy that reduces drop-out increases tracking, while one that increases take-up reduces it. The key point is that the measurement of tracking provides an estimation of the extent of behavioural change as people age. The greater the degree of behavioural change,

the more policy needs to consider interventions at older ages as well as younger ones.

So what does the international evidence tell us? Malina (2001) is often cited as the seminal work in this area, but the volume of subsequent studies is such that here we rely on three recent reviews and meta-analyses, which have combined information over many high-quality controlled studies to draw the most consistent findings. Telama (2009), Dumith *et al.* (2011) and Craigie *et al.* (2011) cover 48, 26 and 28 studies respectively (with some overlap). All find that the precise method used to measure activity does not have a great bearing on the outcome; survey-based estimates and objective measures produce similar findings. Telama (2009) splits the life-course into three, estimating the degree of tracking in childhood or adolescence, between adolescence and adulthood, and during adulthood. During childhood and adolescence, he records that tracking over periods of around three years is moderate, but with much variation across studies, depending on the precise ages of the children studied. The suggestion is hence that there may be periods of childhood when differences in activity across children are fairly stable, but other periods when there is much change in who is active and who is not. The most telling result, however, surrounds tracking between childhood and adulthood. To quote:

The tracking of physical activity from childhood to adulthood has been shown to be low or non-significant (Telama, 2009, p. 191).

Telama goes on to show that tracking is at best modest between adolescence and young adulthood, especially among females for whom it is non-significant in some studies, and that tracking during adulthood is significant but fairly low. For instance, the correlation between physical activity as a young adult and activity 20-30 years later is of the order of 0.18 to 0.33.

Dumith *et al.* (2011) focus on adolescence. All but one of the 26 studies they review records a decline in physical activity during this period of the life-course, with a mean drop in overall activity of 7 per cent per year. The fall is somewhat greater among females, albeit only in more recent studies, but more clearly greater among those with lower socio-economic status. Craigie *et al.* (2011) concentrate on the extent of tracking between the activity of under-18s and over-18s. Correlation coefficients range across 28 studies from -0.1 to 0.47. The earlier the baseline age the weaker the correlation, while correlations are stronger for males.



Overall, what emerges from these studies is a fairly consistent pattern. Behaviour relating to physical activity changes across the life-course. Behaviour change is strongest during adolescence, especially among females. The result is that activity as a child is only weakly related to activity as an adult, which itself changes considerably during the course of adulthood. This conclusion, based on a large number of international studies, has strong policy implications. Getting children physically active, although an important and worthwhile aim, has little impact on how active they are as adults. Drop-out during adolescence is one cause of this finding, though there are probably others. Keeping adolescents active has a greater impact on adult activity, as tracking improves with age. Yet many individuals change their physical activity behaviour during adulthood, suggesting the potential for supportive interventions that might increase activity.

#### **1.4 INTERNATIONAL RESEARCH ON DETERMINANTS OF CHANGE**

The reviews described above offer findings at a very general level. They tell us much about the extent of change in physical activity but little about the reasons for it. A substantial number of studies have sought to isolate the determinants of change in activity. Most employ longitudinal surveys that record activity at different points in time. They analyse the statistical relationships between change in activity and individual-level characteristics, such as employment status, marital status, age, gender, parenthood, etc. A brief review of relevant studies is offered here, but it is important to understand their limitations. Where longitudinal studies contain sufficient information on physical activity, they are often based on small or local samples, rather than nationally representative ones. Thus, the extent to which the results can be generalised beyond the specific context in which they were generated is questionable. Below we primarily consider only those based on the larger and higher-quality samples. Even where results are based on nationally representative samples, local factors may matter for whether results can be considered relevant to Ireland. For instance, some studies in the United States report a significant impact of marriage and parenthood on physical activity, but people marry and form families at a younger age in America than in Ireland, so the impact may differ between the two countries. Other factors to bear in mind are that the definition of activity or participation varies across studies (especially with respect to whether non-organised activities such as walking are included in the activity measure), statistical methods differ, and studies concentrate on different age ranges, although many are particularly concerned with adolescence and young adulthood. These differences may be critical to certain results. Given such issues, the international findings should perhaps be thought of as suggestive of effects that might also apply in Ireland and are hence worthy of investigation using Irish data.

Most but not all studies record greater falls in activity during young adulthood among females. Socio-economic status during young adulthood also emerges as a potentially important factor for continued physical activity. In general, a spell of unemployment during young adulthood is linked to declining activity (e.g., Horn *et al.*, 2008; Bell and Lee, 2005), though other studies have also highlighted a reduction in activity coinciding with starting work (e.g., Brown and Trost, 2003). In addition to unemployment, other measures of disadvantage such as low income, low educational attainment and leaving full-time education earlier, have been associated with declining activity (Barnett *et al.*, 2008; Zick *et al.*, 2007). Partnership and having children have also been associated with changes in physical activity. Zick *et al.* (2007) report lower odds of meeting physical activity guidelines among women in the US after having a child, and lower odds among men following marriage. In Australia, several studies have recorded a decrease in women's activity following marriage and starting a family (e.g., Brown and Trost, 2003; Brown, Heesch and Miller, 2009). Reviewing findings across a number of studies, however, Allender, Hutchinson and Foster (2008) note that this result is not found consistently. Similarly, retirement is linked to increases in physical activity (Chung *et al.*, 2009; Brown *et al.*, 2009), but not in all studies (e.g., Slingerland *et al.*, 2007) and not among those in physically demanding jobs.

Finally, one interesting potential finding is a 'relative age' effect among children of school age. Some studies (e.g., Delorme, Chalabaev and Raspaud, 2011) have documented higher drop-out from sporting activities among those who are born later in the competition year, i.e., the children who are younger for their particular school year may be more inclined to drop out. It is possible that such effects are more prevalent in competitive activities where size and strength are of particular importance – the study referenced above examined drop-out from basketball.

Two generalisations can be made when considering these studies as a whole. First, changes in physical activity recorded among young adults, even over relatively short periods of a few years, primarily consist of individuals dropping out from activities rather than taking them up. Second, despite variability in the significance or otherwise of different individual characteristics on the likelihood of increasing or decreasing activity, the estimated sizes of the effects linking changes in participation to life-course transitions tend to be substantial in comparison with effects linking changes in participation to individuals' personal sporting histories. That is, life changes that are not obviously connected with physical activity are associated with increases or decreases in physical activity to a similar and perhaps even greater degree than the initial pattern of physical activity itself. In other words, the finding that there is considerable ongoing

behavioural change with respect to physical activity, as concluded in relation to the tracking studies discussed in the previous section, is echoed also in these longitudinal studies.

Many of the studies cited are published in the academic medical and public health literature. From the perspective of these disciplines and this literature, the amount of overall physical activity matters more than the types of physical activity that constitute it. However, this may mean that some subtleties within the data do not get picked up. For example, only a very few studies have considered whether some types of physical activity, including specific sports, are more likely than others to be continued into young adulthood and beyond. Those studies that have examined this question find such effects (e.g., Kjønnsen, Torsheim and Wold, 2008), though the results may not be consistent across nations. Other factors that might be more familiar to social than medical scientists have also received less attention. These include such measures as perceived competency in the physical activity (e.g., Jose *et al.*, 2011). Qualitative studies of smaller groups of adolescents have suggested that autonomy and choice might be important factors. For instance, Coakley and White (1992) noted that when young people make decisions regarding participation in sport they view them in the context of their overall development towards adulthood, considering such aspects as how the activity might affect their independence. Competing activities may also matter. Some attention has been given to whether the amount of 'screen time', i.e., time spent watching television, using computers and playing video games is linked to levels of physical activity. In a study using World Health Organisation data from 39 countries, Melkevik *et al.* (2010) did indeed report negative effects, but noted that they were not consistent across different countries.

Taken as a whole, the findings presented in this section are suggestive of factors that influence the likelihood of taking up and, in particular, dropping out of sport and exercise. These factors may be important from a policy perspective, but many are not consistently linked with physical activity across countries and studies. Consequently, while helpful for framing the analysis, it is important to examine these questions in the Irish context.

## 1.5 SPORTS PARTICIPATION IN IRELAND

The volume of research that has built up on participation in sport in Ireland since the establishment of the Irish Sports Council is now considerable. For reasons of space, only a brief review is offered here, which concentrates on those findings

that are of most relevance to transitions into and out of sporting activity. An accessible summary of some relevant earlier findings is provided by Lunn (2007a).

Fahey *et al.* (2004) were the first to conduct quantitative analysis of transitions across the life-course on participation in sport and exercise. Based on the 2003 Survey of Sport and Physical Exercise (SSPE), they reported that the majority of Irish adults had been active at some point in their lifetimes, even though only a minority remained so. Drop-out was common, especially among younger women but also among men, with drop-out from Gaelic games being particularly common. Those who continued participation often switched from playing competitive team sports as children and young adults to participating in individual activities, such as swimming, golf and aerobics, which might or might not be competitive. People who had dropped out cited leaving school or college, losing interest or pressures of time as their main reason for giving up. Lastly, this study noted that the likelihood of dropping out had little relation with self-assessed ability in the sport people used to play.

This life-course approach to participation was extended in subsequent work on the same data-set by Lunn and Layte (2008) and Lunn (2010). Survey questions that asked respondents to list sports that they used to play, together with starting and stopping ages, were used to reconstruct the individual sporting histories of a representative sample of over 3,000 Irish adults. The analysis established that recent cohorts of young Irish people have been more active in sport and exercise at each age than previous generations were. Active participation followed a particular pattern, rising to a peak at around 14 years of age and declining thereafter. This fall-off was driven by drop-out from team sports in particular, especially during young adulthood. The gender gap in sport had its roots in childhood, where large differences in participation were apparent. During adulthood, men and women were similarly likely to drop out from sporting activity and to take it up. Conversely, the socio-economic gap in sport widened over the life-course, with those in higher socio-economic groups, defined by income, educational attainment and occupational class, less likely to drop out and more likely to take up an activity. In particular, those in higher socio-economic groups were much more likely to take up an individual activity that they could participate in until late adulthood.

While offering insights into some of the factors affecting take-up and drop-out from sport, and providing a starting point for the present study, these previous analyses are subject to some limitations. First, they rely entirely on recall data spanning decades of past activity. In addition to the danger of inaccurate recall, this means that many of the findings are inferred from behaviour that took place

during the 1970s, 1980s and 1990s. There is no guarantee that the effects identified apply equally to modern Ireland. Second, the information available in the SSPE regarding take-up and drop-out is limited with respect to what can be inferred about when, how and why these transitions took place. Third, the analysis is coarse. By asking only for the age at which an activity was taken up and the age at which it stopped, the SSPE does not allow for the possibility that participation in activities might fluctuate across the life-course. For example, non-participation may be temporary, affecting only exam years, a short period after a major life event such as relocation or childbirth, and so on. A more fine grained analysis is needed to examine such effects. Lastly, the SSPE is a survey of adults aged 18 and over conducted in 2003. Consequently, it cannot address transitions among the present cohort of Irish children, other than by inference based on the immediately previous cohort. Since Ireland was changing rapidly following the turn of the century, and has continued to do so, this is perhaps the most important limitation.

## 1.6 AIMS OF THE PRESENT STUDY

The primary aim of this report is to exploit three recent data-sets to shed light on transitions in sporting activity in recent years, with the intention of informing policy. The surveys that are employed allow a more fine-grained analysis than was previously possible, especially during childhood and adolescence, but also during young adulthood and later in life. Specially designed survey modules also probe the beliefs, attitudes and perceptions of Irish adults regarding the benefits of sport and their relationship to it. Thus, we attempt to provide new insights into the timing, extent and, hopefully, causes of transitions into and out of sport and exercise activity.

The report covers the life-course approximately chronologically. The findings begin with primary school children, then move to transitions that occur at second level, before considering various aspects of transitions during adulthood. Before describing those findings, however, it is necessary to provide more detailed information about the surveys, the data they produced, the research questions they can be used to address and the statistical methods employed to do so.



# Chapter 2

## Data, Methods and Research Questions

### 2.1 THREE DATA SOURCES

The three data sources used in this report are the 2009 Children’s Sport Participation and Physical Activity (CSPPA) Study, the 2007 School Leavers’ Survey (SLS), and the 2007-2009 Irish Sports Monitor (ISM). Each survey instrument has particular advantages and disadvantages for investigating transitions into and out of sporting activity. This chapter gives a concise overview of the survey characteristics, the research questions they are used to address, and the statistical methods employed.

### 2.2 CHILDREN’S SPORT PARTICIPATION AND PHYSICAL ACTIVITY (CSPPA) STUDY

The CSPPA was conducted in 2009 using a nationally representative sample of 53 primary and 70 second-level schools. The study was conducted by a team of researchers from Dublin City University, University of Limerick and University College Cork.<sup>1</sup> Students completed a detailed questionnaire about their physical activity and participation in sport and exercise over the preceding year, as well as a series of background questions that included information on their parents’ occupations, which we use as an individual-level indicator of family socio-economic status.<sup>2</sup> For the present report, the usable sample of the CSPPA consists of 1,275 fifth and sixth class primary students (aged 10-12) and 4,101 second-level students (aged 12-18).<sup>3</sup> In addition to the survey responses supplied by students, information is available at the school level in relation to the type of school, the residential area, and whether the school is designated as ‘disadvantaged’ (DEIS) by the Department of Education and Skills.

<sup>1</sup> Detailed accounts of the inception, design and methods employed by the team that carried out the survey can be found in Woods *et al.* (2010); Walsh, Woods and Tannehill (2010); and Woods, Tannehill and Walsh (2012).

<sup>2</sup> This latter information was coded into an approximate family-level occupational class variable, with three or four categories. While in most cases the information provided allowed a classification to be made, given that the information was provided by children ranging in age from 10-18 years, the variable is likely to be subject to a greater degree of measurement error than an equivalent categorical variable derived from an adult survey. It is also subject to a greater number of missing values, which based on results obtained were mostly grouped with the lower occupational class category for deriving the findings as presented.

<sup>3</sup> The transition from primary to second-level school in Ireland takes place around 12 years of age. First public examinations (Junior Certificate) are taken after three years (‘junior cycle’) at second-level school. ‘Senior cycle’ lasts a further two years and ends with a second set of public examinations (Leaving Certificate), the results of which determine entry to third-level institutions for those who continue in education. Many students undertake a voluntary ‘Transition Year’ as their fourth year, between junior and senior cycle, which involves less academic study and participation in a variety of non-academic activities, such as voluntary work, the organisation of events and publications, and lessons in non-academic skills.

The CSPPA does, however, have some important limitations. Most notably, it is entirely cross-sectional in nature. This means that the inferences we draw about transitions into and out of sporting activity arise from comparison of the pattern of participation in different school years. The assumption here is that any difference between school years reflects likely transitions in behaviour between the years, not differences between successive cohorts of children. This assumption is probably fairly sound when comparing adjacent school years, but when making comparisons of, say, participation rates in the first years at second level with those of sixth years, it is possible that some of the difference reflects generational differences between the cohorts, not transitions that occur between these school years. While we expect differences between neighbouring cohorts to be small in comparison to the large year-on-year differences we highlight, the possibility of cohort effects should be borne in mind.

The CSPPA questionnaire is fairly comprehensive in its coverage of physical activity, in that it asked respondents about their overall levels of physical activity and separately about regular participation in any of a specified list of 24 sporting activities.<sup>4</sup> This allows us to examine the types of activities undertaken in some detail. The questionnaire did not ask in detail about some popular activities that fall under the Irish Sports Council's definition of sport and are likely to be undertaken by some students during senior cycle, including going to the gym and jogging. Indeed, data from the SLS survey (see below) indicate that older pupils engage in significant amounts of these activities. More generally, while the questionnaire asked directly about regular participation in 24 listed activities, both in extra-curricular activity in the school (at lunchtime or after school with the help of a teacher) and outside of the school (in sports clubs or other organisations), it did not obtain detailed information on activities carried out on a casual basis with friends, e.g., in parks, gardens, homes, etc. This is potentially an important omission, since the amount of such activity is likely to be significant. Some correction is possible via one question that inquired as to whether respondents engaged in (non-specific) sporting activity with friends.

More importantly, there is a difficulty with the balance of the CSPPA sample across the second-level school years. Of the 4,101 second-level students in the sample, 2,309 (56 per cent) are in first or second year – a much higher proportion than within the school population. Meanwhile, just 298 (7 per cent) and 235 (6 per cent) of the sample are in third and sixth year respectively. This problem of

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<sup>4</sup> Adventure Activities, Aerobics, Athletics, Badminton, Baseball/Rounders, Basketball, Camogie, Cross Country Running, Dance, Gaelic Football, Gymnastics, Handball, Hockey, Horse Riding, Hurling, Martial Arts, Rugby, Soccer, Squash, Swimming, Tennis, Weight Training.



balance across the years is compounded by the fact that the gender and social class balance across the school years is also not constant. For example, 59 per cent of the first year sample are female and 41 per cent male, such that females outnumber the males in the ratio 1.44:1. Yet males make up 56 per cent of the sixth year sample, yielding an equivalent ratio of 0.79:1. Further investigation of the data revealed sample imbalances across years with respect to social class also.<sup>5</sup>

Without correcting for these large sample imbalances, raw percentage figures reported from the CSPPA are likely to be biased and liable to be misleading. For example, the combination of the sample bias towards earlier school years and the imbalance between females and males among the first and second years is likely to produce an exaggerated participation rate for individual sports relative to team sports for second-level students as a whole.

Given the extent of this sample imbalance problem, we conclude that raw participation rates derived from the CSPPA, e.g., the percentage of the second-level sample that plays soccer or the variation in the percentage who participate in dance by school year, are not statistically sound. A method is required to reweight the data or to control for the sample imbalances. Reweighting the sample to match the true population profile is difficult, since the socio-economic indicators in the CSPPA do not match those available from the Census of Population, or an equivalent reliable estimate for the whole population. Our solution instead is to produce for each form of participation a statistical model that controls for school year, gender, social class and interactions of gender and class with school year (which initial investigations suggested were statistically significant). The data presented in the charts that follow correspond to predicted probabilities of different forms of participation for a representative individual of a given year, gender and class, as calculated from individual-level logistic regression models estimated for the whole sample. Put more simply, we have used statistical methods to control for the sample imbalances and thus to present best estimates of likely participation rates in different types of sport. Comparison of these predicted probabilities with the participation rates for extra-curricular sport as recorded by the SLS reveal a close correspondence (e.g., see Figure 4.1). Given this correspondence and the methods used, we are confident that the estimated patterns of participation across school years are reliable. It is important to note, however, that the individual point-estimates of the predicted probabilities of

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<sup>5</sup> Although the CSPPA is based on a nationally representative sample of schools, the sample imbalance across years appears to have resulted from the likelihood that particular schools did or did not supply information from students in particular years. Non-randomness in the decision of schools to administer the survey only within certain year-groups would produce variation in key sample statistics across years.

participation are less accurate than would be the case were they based on a simple proportion of a representative sample. The individual data points we report should not, therefore, be considered equivalent to percentage figures as they are usually reported from representative sample surveys. Furthermore, previously reported percentage rates from the CSPPA are, in our view, unreliable.

### 2.3 SCHOOL LEAVERS' SURVEY (SLS)

The School Leaver's Survey (SLS) is a long-running survey that has been carried out since its inception by the Economic and Social Research Institute (ESRI) for the Department of Education and Skills (DES). The first SLS was undertaken on students who left the second-level education system in the academic year 1978/1979. Since then 24 surveys have been conducted. The most recent, the data from which are employed in the present report, was administered in the Spring/Summer of 2007 to a nationally representative sample of young people who left second-level school in the academic year 2004/2005. The effective sample size for the 2007 SLS is 2,025 respondents. The data were collected through a multi-mode response method; specifically, students had the option to complete the survey online, via post or through face-to-face or phone interviews.

The SLS captures a rich array of information on student's personal characteristics (e.g., gender, age, ethnicity, health status, birth location and residential location) and their social background (parents' socio-economic status, employment status and educational attainment), along with comprehensive data on second-level attainment, examination results, school experiences (e.g., teacher interaction, class context, work experience and/or part-time work while at school), Transition Year participation, receipt of grinds (private tuition) in final academic year and truancy (i.e., 'mitching') in final school year. The SLS also contains information on young people's post-school pathways, including participation in PLC courses, apprenticeships or training, higher education and/or the labour market. In addition, the SLS contains school characteristic information; for example, school-type (comprehensive, vocational, etc.), disadvantage status (DEIS), school size and gender mix.

In the 2007 survey, a set of questions relating to participation in sport was included in the questionnaire. Students were asked "at second level, were you involved in any regular sporting activities, not counting PE lessons?". In answering this question, students were asked to include exercise activities such as dance or gym, in addition to traditional sports. For those who indicated that they participated at second level, subsequent questions captured information on the types of activities undertaken, the school years that they regularly played sport in

and whether the students were still involved in the specified activities at the time of the survey.

The SLS has a distinct advantage over the more recent CSPPA in that it contains information on the same individuals across school years, as well as whether they continued to participate in the activities one to two years after leaving school. That is, it records transitions into and out of sport directly at the individual level, whereas the CSPPA is a cross-sectional survey from which inferences about transitions must be made by comparing the activity of different individuals in adjacent school years. It is important to note, however, that the SLS asked for information about sport undertaken “at school”. In other words it gathered information on only extra-curricular sport and not extra-school sport (i.e., participation at sports clubs, leisure centres, etc.).

One further advantage of the SLS is that it provides information on school exam results, which allows us to look at the impact of sports participation on scholastic performance. The analysis is restricted to Leaving Certificate examination results. Exam performance is measured in terms of grade point average (GPAV), which is a system whereby ‘points’ are allocated to exam grades and the scores are then averaged over all exam subjects. The sample for this part of the analysis consists of 1,177 Leaving Certificate students.

## 2.4 IRISH SPORTS MONITOR (ISM)

The ISM is a more straightforward and traditional cross-sectional survey conducted by telephone with a representative sample of adults in Ireland aged 16 years and over. The data employed in this report relate to the three-year period from 2007-2009. Because the ISM is primarily designed to track levels of participation in sport and recreational exercise, both for the population as a whole and various subpopulations of interest, it employs large annual samples: 9,767 in 2007, 6,829 in 2008, and 9,781 in 2009, making a total of 26,377. The questionnaire is based on just a seven day reference period, i.e., respondents are asked about any sport and exercise undertaken during the previous seven days.

Although the ISM is a cross-sectional survey, the questionnaire during the 2007-2009 period contained a flexible module that could be used to investigate transitions into and out of active participation. Five modules of questions were fielded during the three year period, largely motivated by the desire to understand such transitions. Three of the modules asked individuals to describe events that led them either to take up or drop out from sport; the other two probed beliefs and perceptions relating to sport, physical activity and health.

Table 2.1 lists the topics covered by the five modules, together with dates and sample-sizes.

**TABLE 2.1 ISM Modules Fielded Between 2007 and 2009**

Topic	Dates Fielded	Sample
Attitudes and planned behaviour towards active participation	Q1 – Q2, 2007	3,264
Pathways into active participation	Q3 – Q4, 2007	7,652
Pathways out of active participation	Q1 – Q4, 2008	5,680
Understanding and perception of health benefits of active participation	Q1 – Q2, 2009	4,867
Impact of recession on take-up and drop-out	Q3 – Q4, 2009	4,914

Like any sample survey of households, the ISM is potentially subject to biases associated with non-response and variability in the likelihood of reaching different social groups by telephone. A full technical report on the methodology employed is available in Lunn *et al.* (2009). In short, a selection rule is used to determine which member of a contacted household is interviewed. The data are also reweighted, according to six socio-economic and socio-demographic variables, to match the contemporaneous population profile as supplied by the Central Statistics Office (CSO). The aim is to ensure that the results are genuinely reflective of groups defined by gender, age, region, marital and socio-economic status. Nevertheless, one social group that is likely to be consistently under-represented in any survey of this type is relatively recent immigrants. Indeed, non-Irish nationals account for 7 per cent of the ISM sample, a proportion which is low in comparison to the population as a whole. Given the telephone based methodology, it is also very likely that the sample of non-Irish people surveyed is biased towards those who have been in the country longer and those who have better English.

## 2.5 STATISTICAL METHODS

Active participation in sport and exercise in Ireland is strongly associated with socio-demographic and socio-economic background characteristics (Fahey *et al.*, 2005; Lunn, 2007b), which themselves are highly correlated. For instance, active participation is much more likely among people with higher levels of educational attainment, males and younger people. Yet age and gender are correlated with educational attainment. For the purposes of estimating the proportions of different groups that participate, these intertwined relationships are arguably immaterial, but for attempting to understand the factors that affect participation

decisions and the possible reasons for participation and non-participation, statistical methods are required that can disentangle such relationships.

Throughout this report our analysis is based on multivariate statistical models that employ different definitions of active participation (or in some cases perceptions and beliefs about active participation), as dependent variables, and various socio-demographic and socio-economic background characteristics as explanatory variables. Unless otherwise indicated in the text, where we report an association between such characteristics and, for instance, a specific type of transition into or out of sporting activity, it implies that the relationship concerned is statistically significant in such a multivariate statistical model. Some of the more influential models are provided in full in the Appendices, although for reasons of space these models represent only a subset of the specifications used to inform the main text. Note that where the models are applied to the CSPPA and SLS, the standard errors used in significance tests control for clustering at the school level. The full multivariate output relating to any of the findings we report is available from the authors upon request.

## 2.6 RESEARCH QUESTIONS

The report analyses a series of research questions chronologically over the life-course. Chapter 3 begins with schoolchildren in fifth and sixth class at primary school and the transition to first year at second level. This chapter focuses solely on the CSPPA data. We concentrate on participation in extra-curricular activities in school and extra-school activities in clubs, public pools, leisure centres, etc., rather than participation in PE lessons, because from a life-course perspective it is activities that individuals voluntarily choose to do rather than those they are forced to do that ultimately determine the extent of lifetime participation. We ask what types of sport primary schoolchildren take up and how the pattern of participation across locations and activities relates to their gender and social class. We consider whether participation in a range of non-sport activities, including computer use, video games, television and arts activities, is positively or negatively associated with participation in sport. We then ask how the transition to first year at second-level school affects participation and whether there is any change in the factors associated with participation.

Chapter 4 conducts a similar analysis for the transitions through the second-level years, employing both the CSPPA and the SLS data. We ask whether those who leave school early have a different pattern of participation. We analyse how the relationships between participation, gender, social class and non-sport activities change across the school years. In particular, we look for an influence of exam

years and Transition Year. Given the strong impact on participation of exam years, and some previous evidence that links participation in sport to exam performance and reduced stress levels among students in exam years (Bradley, Keane and Crawford, 2013; Smyth, Banks and Calvert, 2011), we use the information on Leaving Certificate results in the SLS to ask whether those who participate in sport and continue to participate in sport are likely to get better or worse results. Using the SLS we are also then able to ask what determines whether individuals continue in their chosen activity when they leave school, including how continued participation relates to the pattern of participation during the school years.

Chapter 5 turns to participation in sport and exercise among adults, employing the first and fourth flexible modules of the ISM. We first confirm in these latest data the established strong pattern in participation by gender, age and socio-economic status. Since it is often thought that these relationships may reflect different levels of education or understanding regarding the health benefits of active participation in sport and exercise, we look for an influence on the pattern of participation of perceptions and beliefs about the benefits of sport and exercise, the link between participation and health, the social norms that surround participation, and the extent to which people feel in control of their decisions to be more or less active. This includes an examination of whether it is helpful to apply the 'Theory of Planned Behaviour' (Ajzen, 1991) to participation in sport.

Chapter 6 focuses on how taking up sport as an adult differs from taking up sport as a child. We ask how important taking up activity as a child and as an adult is to overall activity across the lifespan, and whether certain activities that are taken up as children tend to have more lasting effects than others on later participation as an adult. We consider the types of activities that adults take up, where and how participation begins, who else is involved, and whether finding facilities is a problem. We assess who is most likely to take up an activity and the motivations involved.

Chapter 7 then conducts the equivalent analysis for dropping out from sport. We ask when drop-out is most likely to occur and which activities are most likely to be dropped when. We examine the reasons stated for giving up activities and how that varies across individuals and activities. The analysis pays special attention to some of the most popular sports, in particular how the pattern of drop-out from Gaelic games differs from that of soccer.

Finally, Chapter 8 summarises the findings and considers policy implications that might follow from them.





# Chapter 3

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## Primary to Second-Level School

### 3.1 INTRODUCTION

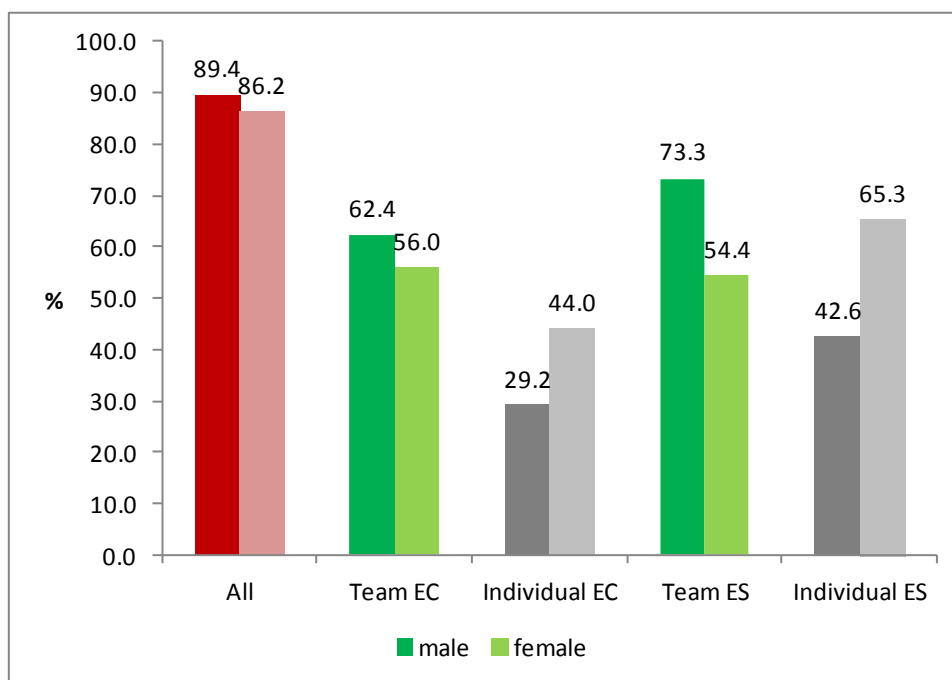
At least for modern children, the first sporting transition occurs at a young age. Reporting on the first large, nationally representative survey of schoolchildren's sport, conducted in 2004, Fahey, Delaney and Gannon (2005) found that a majority of primary schoolchildren in fifth and sixth class had already taken up some form of extra-curricular sport, and that a majority of children at this age had also taken up sport outside of school. An analysis of individual sporting histories (Lunn and Layte, 2008) suggests that this level of regular active participation at such a young age is a modern phenomenon: previous generations of children were not so active, at least with respect to regular, organised sporting activity. The latter study also noted that the likelihood of participation appeared to be affected by the transition from primary to second-level school. This chapter examines these issues in more detail using the 2009 CSPPA data. We find that the transition to second level does indeed change the pattern of participation. Unlike previous surveys the CSPPA also has the advantage that it provides an indicator of the socio-economic status of children's families, through a measure of occupational class (see Section 2.2 above). Lunn (2007b) found that children at designated disadvantaged primary schools were less likely to participate in sport and exercise, but rigorous statistical analysis of the impact of socio-economic status at the individual level has not been conducted in Ireland for children this young.

### 3.2 SPORT IN FIFTH AND SIXTH CLASS

As discussed in Section 2.6, we concentrate on participation outside of PE lessons. The main measure we employ is whether a student participated at least once a week during the preceding year in one of 24 listed activities (Footnote 4). Our multivariate analysis (Appendix A) suggests that different factors are related to having taken up different types of sport in different locations. Thus, much of our analysis contrasts team versus individual sport, and extra-curricular activity (EC, at lunchtime or after school with the help of a teacher) versus extra-school (ES, at a club, leisure centre, public pool, etc.) activity. Overall, as Figure 3.1 shows, the 2009 CSPPA records high levels of participation among primary students. Almost 90 per cent of children have taken up a weekly organised sport by 10-12 years. Furthermore, we find that the majority of the just over 10 per

cent who do not participate in organised sport are regularly playing sports with their friends, during lunchtime or after school.

**FIGURE 3.1** Participation of Fifth and Sixth Class Primary Students in Individual and Team Sports by Gender (Males = dark bars; Females = light bars)



The message of these simple numbers is straightforward but important: almost all primary school students make the transition into participation in organised sport outside of PE lessons by age 10. We have no relevant information that can tell us the extent to which students themselves are active decision-makers regarding the activities they become involved in, versus the extent to which parents and teachers determine which activities they take up. But, unlike PE, extra-curricular sport and extra-school sport are essentially voluntary activities, and the very high levels of participation chime with the finding of Fahey *et al.* (2005) that children at this age overwhelmingly like sport. From a policy perspective, therefore, there appears to be little problem first getting children to make the transition into active participation in sport and exercise – the good news is that they already make it. As we will see, it is what happens afterwards that raises the policy challenges.

Once we control for other available background characteristics (Appendix A), we find no overall effect of gender on whether a student participates in any kind of regular organised sporting activity, i.e., the small difference in ‘All’ participation by gender visible in Figure 3.1 is not statistically significant. Furthermore, we find

no gender difference with respect to the average number of activities per child (3.63 for males versus 3.56 for females).<sup>6</sup> However, there are significant differences in the type of participation by gender. Generally, the split between extra-curricular (EC) and extra-school (ES) activity is fairly even, with a marginal majority of participation among both genders taking place outside of school, particularly with respect to the playing of individual sports. However, while both males and females participate in a mix of team and individual sports, males participate more in the former and females in the latter, especially outside of school. This last finding is notable, because it is likely that there is a greater degree of choice in relation to extra-school activity. This difference may therefore represent an early indication of different preferences for types of activities among males and females. In other words, the narrower gender gap for team sport undertaken at school may primarily reflect the fact that primary schools offer a limited range of activities that consist mostly of team sports.

Although our individual-level measure of socio-economic status is approximate, since it is based only on primary school students' descriptions of their parents' occupations (see Footnote 2), we find significant effects on participation. We group parental occupations into four categories: Professional/Manager; Non-manual/Skilled manual; Semi-skilled/Unskilled; Other. The latter category contains students who did not provide an occupation, did not provide an occupation that could be categorised, or whose parents did not have an occupation, and is likely to contain students from families of low socio-economic status. It is the category with the highest proportion of students at designated disadvantaged schools.

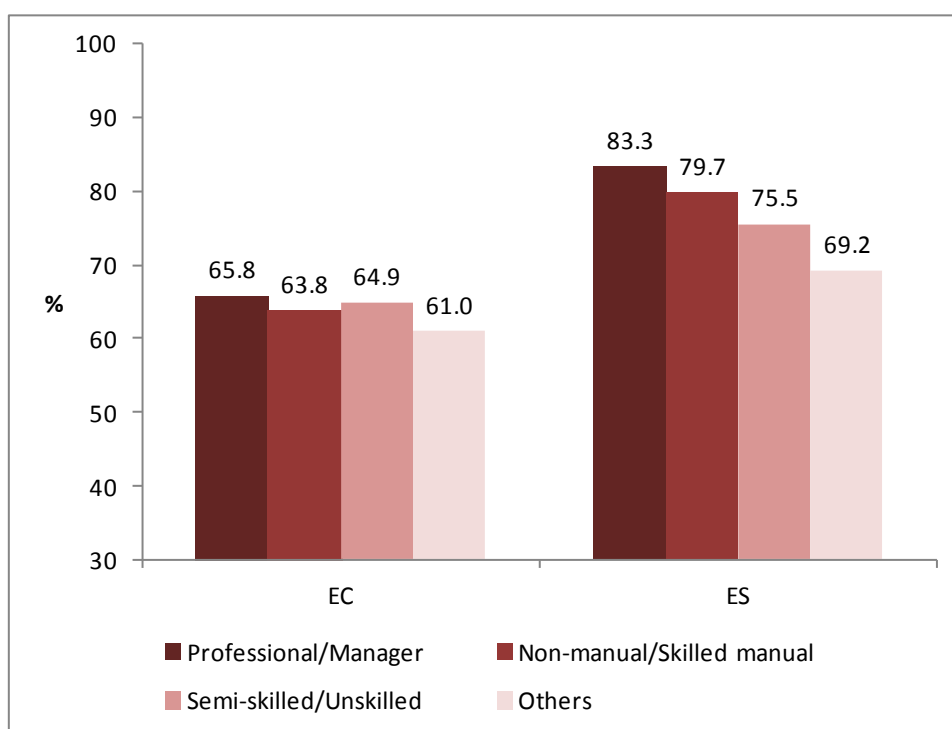
A clear gradient in the likelihood of participation emerges across the four categories, such that students with parents in higher occupations are more likely to be active participants. Examination of separate statistical models in Appendix A shows that this socio-economic difference is not specific to the type of activity, but applies to both team and individual sports. It is linked, however, to where the participation takes place. The socio-economic gradient in participation is driven by extra-school sport – the small differences for extra-curricular sport are not statistically significant. Figure 3.2 gives an idea of the scale of the effect. It is important to note that even among the students with parents in the lower occupational classes, the very large majority of children are involved in regular organised sport. But the likelihood of participation outside of school is significantly lower.

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<sup>6</sup> Our findings contrast somewhat with those of Fahey *et al.* (2005), who did report a gender difference for primary school students, especially for the amount of activity undertaken outside of school. See Section 3.4 for further discussion.

It is possible that this finding reflects the fact that, for the most part, organised extra-school activity is likely to involve greater cost to parents. We have no way to test this hypothesis. An alternative way to conceive of the finding, however, is that school sport acts as a leveller, giving opportunities for participation to children who would not otherwise get them. Further multivariate analysis (not shown) revealed that after controlling for individual-level social class, students attending a designated disadvantaged (DEIS) school were less likely to participate overall – an effect again limited to extra-school activity. In general, schools, including schools in disadvantaged areas, appear to raise participation in sport among less well-off children.

**FIGURE 3.2** Participation of Fifth and Sixth Class Primary Students in Extra-Curricular (EC) and Extra-School (ES) Sports by Parents' Social Class



In contrast to Fahey *et al.* (2005), we find no significant difference in the participation pattern of fifth and sixth year students once other background characteristics are controlled for. Nor do we find any further clear effects of type of school on the participation of students. Self-reported disability (the majority of which consisted of children who suffered from asthma) is also non-significant at this age. Once we examine background information on lifestyle habits, however, more differences emerge. Fahey *et al.* (2005) previously reported that the more television primary school children watched, the less sport they played. Here we test a wider range of potentially competing activities. We concentrate not so

much on the amount of sport played, but the impact of other activities on the likelihood of regular weekly participation in team and individual sport, at school and outside of school.<sup>7</sup>

The questionnaire asked children to list whether they had engaged in a range of non-sporting activities within the previous seven days: using a computer, playing video games, homework, reading (not for school), sitting during school breaks, sitting talking with friends or listening to music, talking on the phone, watching television or DVDs. We add variables based on the answers to these questions to the multivariate models provided in Appendix A, which control for year, gender, social class, and disability. The results are given in Tables 3.1 and 3.2. The figures are odds ratios, which equate to the odds that those students who did engage in the particular non-sporting activity also participated in the given type of sport, relative to students who did not engage in the non-sporting activity, who are assigned the value 1.00. Thus, numbers significantly greater than 1.00 imply a greater relative likelihood of participation, numbers significantly below 1.00 imply lower participation.

**TABLE 3.1** Odds Ratios for the Likelihood of Participation in Sport and Exercise Associated With Selected Sedentary Activities Undertaken Within the Previous Seven Days

	Team EC	Individual EC	Team ES	Individual ES
Computer/Internet	0.95	1.08	0.75**	1.00
Video games	0.87	0.80*	0.75**	0.77**
Homework	0.70	0.69	1.20	1.12
Non-school reading	1.29*	1.04	1.06	1.27*
Sitting during breaks	0.77	0.93	0.73**	0.94
Sitting chatting, music	0.93	1.11	0.86	0.83
Talking on the phone	1.32**	1.01	1.34**	1.11
Watching TV/DVDs	1.04	1.01	0.94	1.04

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Before considering these findings in detail, it is worth noting that while some of the odds ratios are significantly different from 1.00, the effects for the activities listed in Table 3.1 are not large. That is, participation in sport is not particularly strongly affected by these competing activities. To illustrate, the same statistical models tell us that the odds that a male plays extra school team sport are more than twice the odds that a female does (i.e., the odds ratio is greater than 2.00),

<sup>7</sup> As well as the availability of additional information on other activities, there is a technical reason for departing from the method of Fahey *et al.* (2005). Their statistical method placed equal weight on whether a student participated three or four times per week as on whether a student participated zero or once a week. Here we concentrate on whether a student participates at least once a week because, from a policy perspective, the difference between activity and no activity is arguably more important than the difference between regular activity and lots of regular activity.

while the odds that a male plays an extra-school individual sport are less than half the odds that a female does (i.e., odds ratio less than 0.50). The magnitudes of all the findings in Table 3.1 are smaller, perhaps reflecting the fact that primary school children have sufficient free time to engage in sporting activities and that non-sporting activities have not begun to compete for their time. Nevertheless, some of the differences are significant. Most notable are the findings for screen based activities. Playing video games at this age has a negative effect on the likelihood of participation in sport, while watching television does not.<sup>8</sup> One possibility here is that because video games, unlike television, are both interactive and competitive, they are more directly in competition with sporting activity. We have no way to test this possibility, however. It is also important to note that this does not mean that watching TV has no impact on the overall levels of physical activity of children at this age – it may well do. But watching television does not appear to have an impact on whether a child plays regular organised sport.

**TABLE 3.2** Odds Ratios for the Likelihood of Participation in Sport and Exercise Associated With Watching Sport on Television, Doing Art Classes (Music, Singing, Drama, Dance) and Active Travel to School

	Team EC	Individual EC	Team ES	Individual ES
Watch Sport on TV				
Occasionally	1.74***	1.24	2.74***	1.10
Frequently	2.04***	1.01	4.93***	0.93
Do Arts Classes				
0-2 hours pw	1.12	1.11	1.36	1.48***
3-4 hours pw	1.14	1.35	1.59**	2.29***
5+ hours pw	1.39	1.03	2.00***	2.71***
Walk/Cycle to school	0.84	1.60**	0.65***	0.86

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The findings for activities listed in Table 3.2 are considerably stronger. Watching sport on television is strongly linked to participation in team sports, which are the subject of the large majority of televised sport. It should be noted that this does not necessarily imply that watching sport on television inspires children to go out and play. The result is also consistent with children who take up a particular sport being more inclined then to watch it on television, or with children being more likely to engage with or to be encouraged to play a sport that parents watch on television. Nevertheless, for team sports there is a strong link. Interestingly, being

<sup>8</sup> We tried various other specifications of the statistical model to be sure that the lack of a significant effect for television watching was robust. Because almost all the children had watched television at some point within the previous week, we tried including a variable that captured how much television they watched (i.e., every day, over an hour a day, etc.). It was also non-significant. We also controlled for whether children watched sport on television, which did not change the result.

an active participant in the arts (music, drama, etc.) also substantially increases the likelihood of participation in sport, though the effect is concentrated on extra-school sport. Thus, it seems the extent to which children are either inclined towards (or supported in engaging with) participatory activities generally seems to outweigh any competition for their time, at least at this age. Lastly, Table 3.2 reveals contrasting but statistically significant effects of active travel to school, which are not straightforward to interpret.

### 3.3 TRANSITION TO FIRST YEAR AT SECOND LEVEL

By the time students leave primary school, almost all of them have already taken up at least one sporting activity and many are doing two, three or more. What happens after they arrive at second level? This section compares the participation pattern of fifth and sixth class primary students with the equivalent pattern for first year second-level students. Overall, our estimate is that roughly one-in-ten active participants at primary school have dropped out of sport at first year of second level. As the following analysis will show, this marks the beginning of a period of declining participation throughout second level, suggesting that the peak age of sporting activity may have moved to somewhat earlier in childhood than estimated by Lunn and Layte (2008), who based on recall data recorded a peak at around age 14.<sup>9</sup>

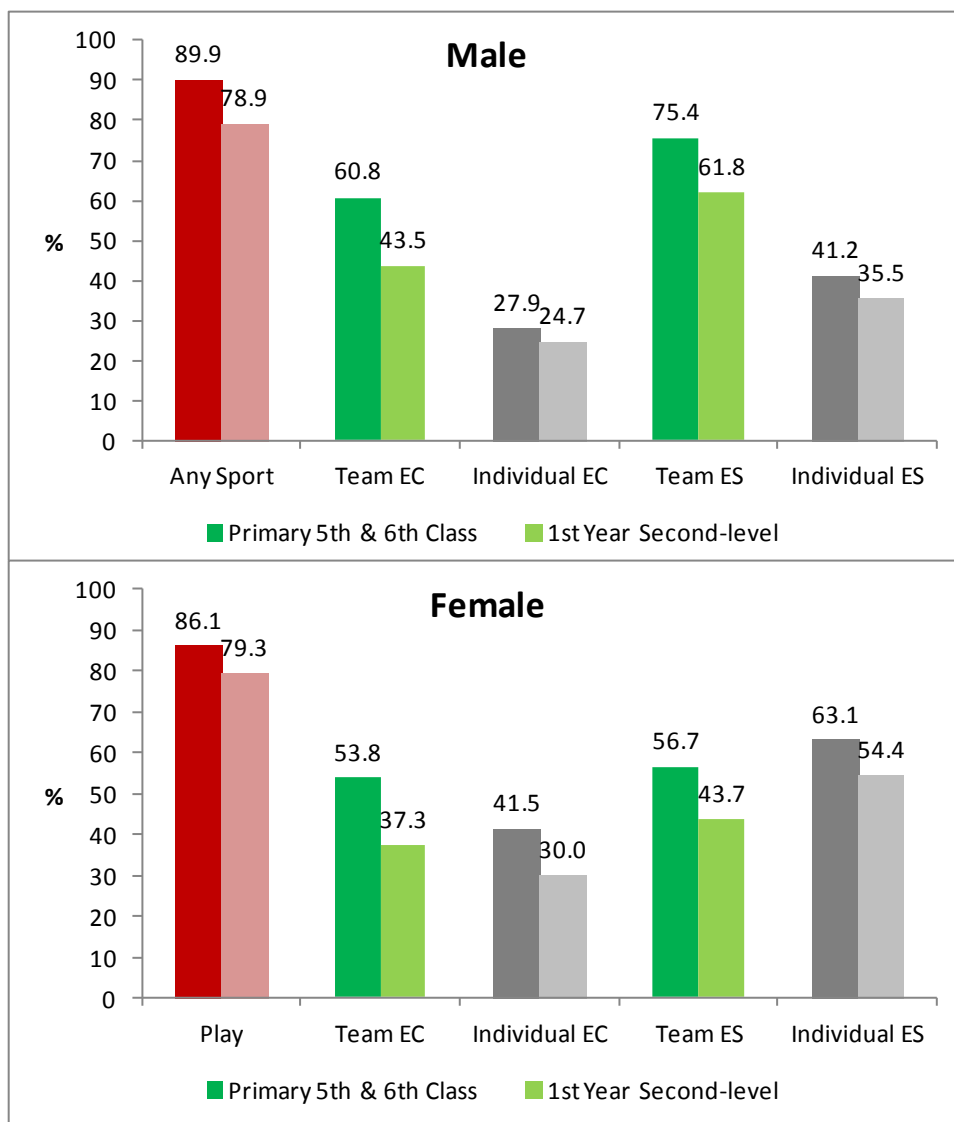
As described in Chapter 2, problems in the CSPPA study relating to the composition of the second-level samples by gender and class across years mean that a direct comparison of participation rates (similar to the percentage rates reported in the previous section) is not reliable. Instead, Figure 3.3 provides predicted probabilities of participation based on statistical models of the likelihood of participation in different types of extra-curricular and extra-school activity. For this part of the analysis, three categories of social class are used: Professional/Manager; Non-manual/Skilled manual; Semi-skilled/Unskilled/Other.<sup>10</sup> The figures relate to a male and a female student with a parental occupation in the non-manual/skilled manual category.

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<sup>9</sup> We do not go into detail on the possible reasons for this difference, because it is not possible to test them. It may be that participation among children of primary school age has greatly increased in recent decades, but it is also possible that recall data is somewhat biased towards activities that individuals participated in voluntarily, i.e., when asked what sports they used to play regularly, adults may discount those sports that teachers and/or parents made them play when very young.

<sup>10</sup> A smaller number of second-level students did not provide information on parents' occupations, requiring us to combine the bottom two categories for the second-level analysis in order to preserve sample size.

**FIGURE 3.3** Predicted Probabilities of Participation During the Final Years of Primary School (dark bars) and the First Year of Second-Level School (light bars) by Gender



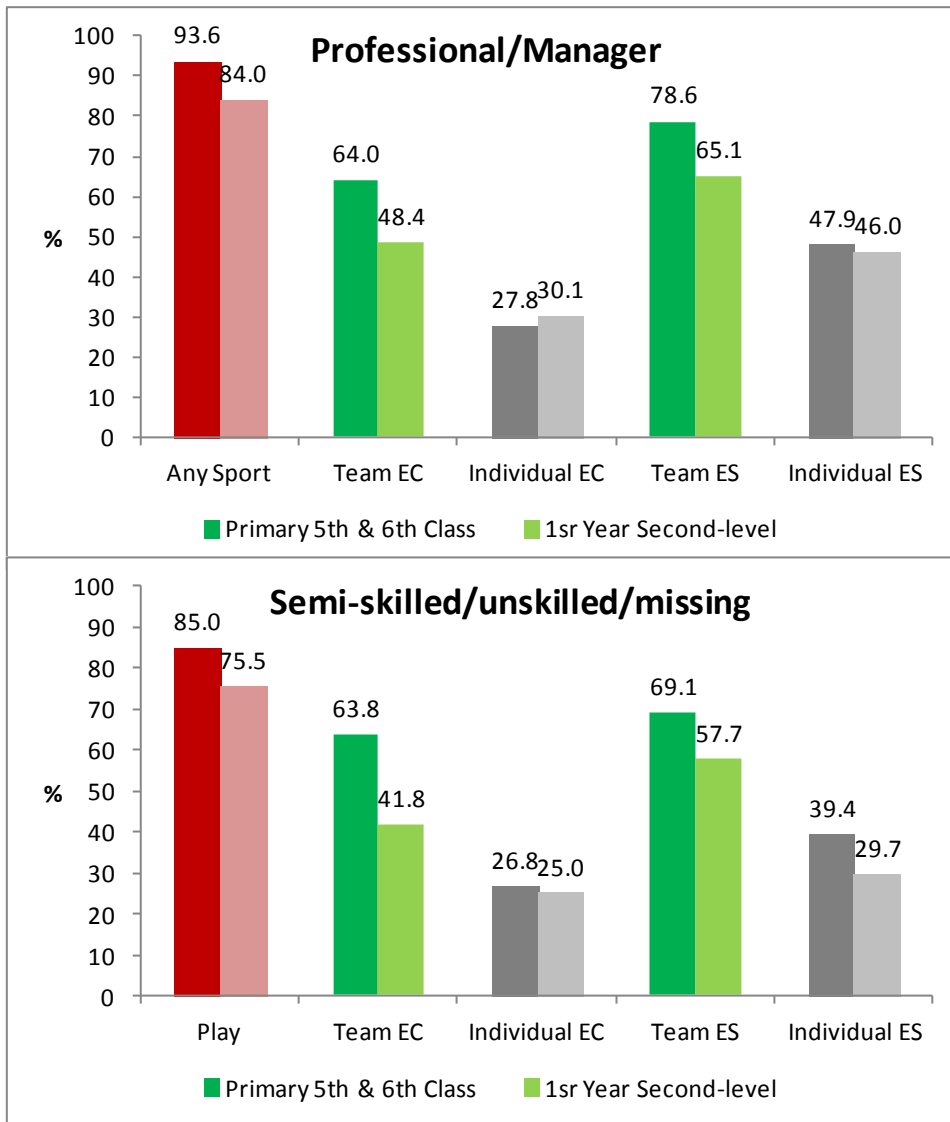
The extent of drop-out from active participation at the transition from primary to second level is similar for males and females. It is also of similar magnitude for both extra-curricular and extra-school sport. There is something of a difference in the extent of drop-out by type of sport, as the effect is somewhat larger for team sports, especially among males.

Figure 3.4 performs the same analysis by social class, comparing the highest of the three categories with the lowest. (The predicted probabilities are for males, but the difference between classes is similar for both genders). With the exception of extra-school team sports, the extent of drop-out is greater for children in the lower socio-economic group. Thus, the socio-economic gap in active participation in sport and exercise, which was small but present among the



primary school children, begins to widen as students progress to second-level school.

**FIGURE 3.4** Predicted Probabilities of Participation for a Representative Male Student During the Final Years of Primary School and the First Year of Second-Level School by Social Class



The fact that extra-school team sport is the one category of activity for which the socio-economic gap does not widen may be instructive. The implication is that where children have established a connection to a GAA/soccer/rugby club, while some do drop out, the likelihood of maintaining that relationship when students change schools is not higher among children from better off families. On the other hand, the likelihood of taking up an equivalent amount of extra-curricular sport on arrival at second-level school (to that being done at primary school) does differ according to the socio-economic background of the children, as does the likelihood of continuing individual activity outside of school. It is not immediately obvious why this should be so.

One interesting aspect of the drop-out that occurs at this point in the life-course is that, as Figure 3.5 shows, it is entirely due to children dropping out from the most popular six sports at primary level. The predicted probabilities of participation shown relate to children in the middle social class (Non-manual/Skilled manual) for both genders. The likelihood of participation falls for all six of the most popular sports at primary school but holds up for all other activities. This group of children’s ‘minority sports’ involves a broad range of mostly individual sports (Footnote 4), but accounts for a lot of participation, with more than half of children at this age participating regularly in one such activity. This finding may indicate that where children play a sport that is not among the most common ones offered by schools and local clubs, they are more likely to have made an active decision to engage with that specific sport, resulting in greater loyalty to the sport and higher likelihood of continuing with it when another aspect of their lives changes.

**FIGURE 3.5** Predicted Probabilities of Participation in the Most Popular Activities During Final Years of Primary School and the First Year of Second-Level School by Gender

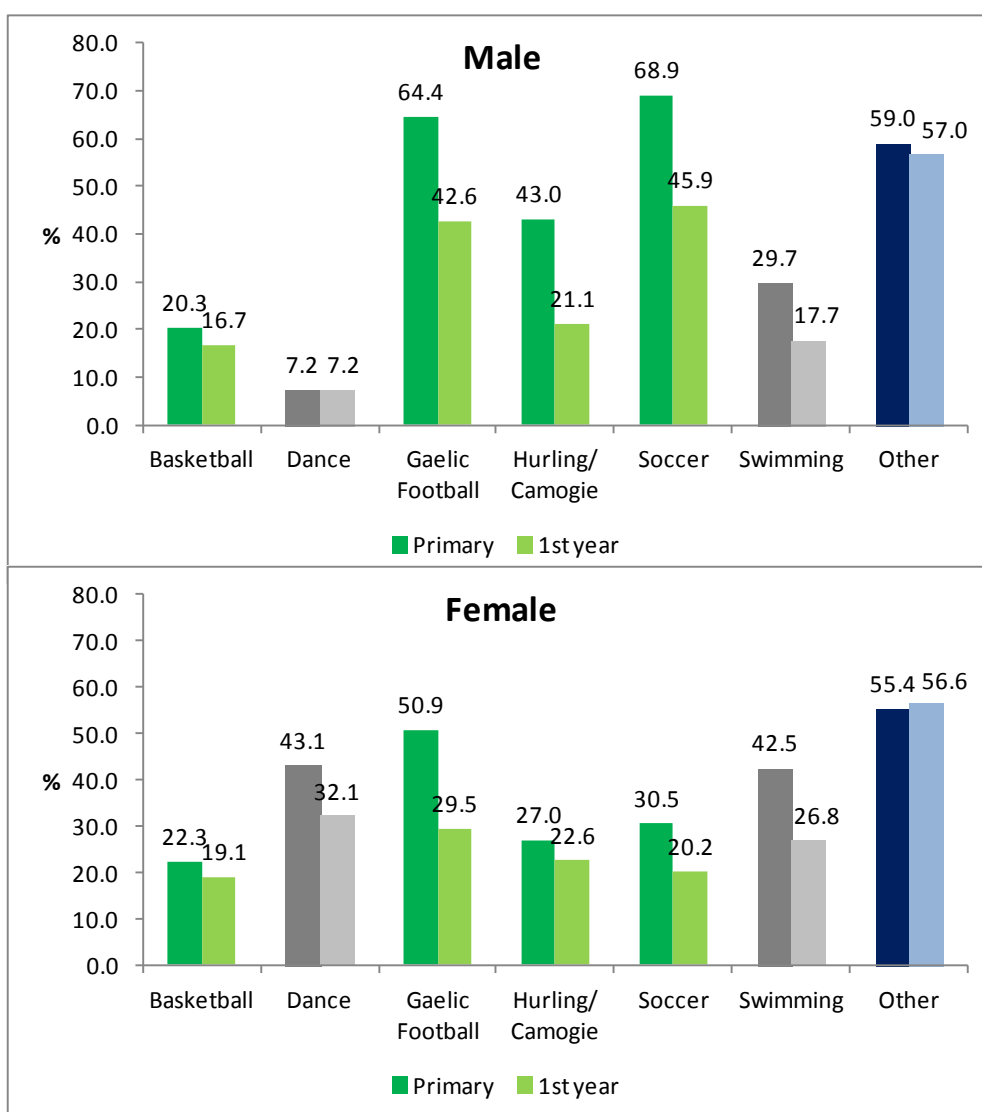
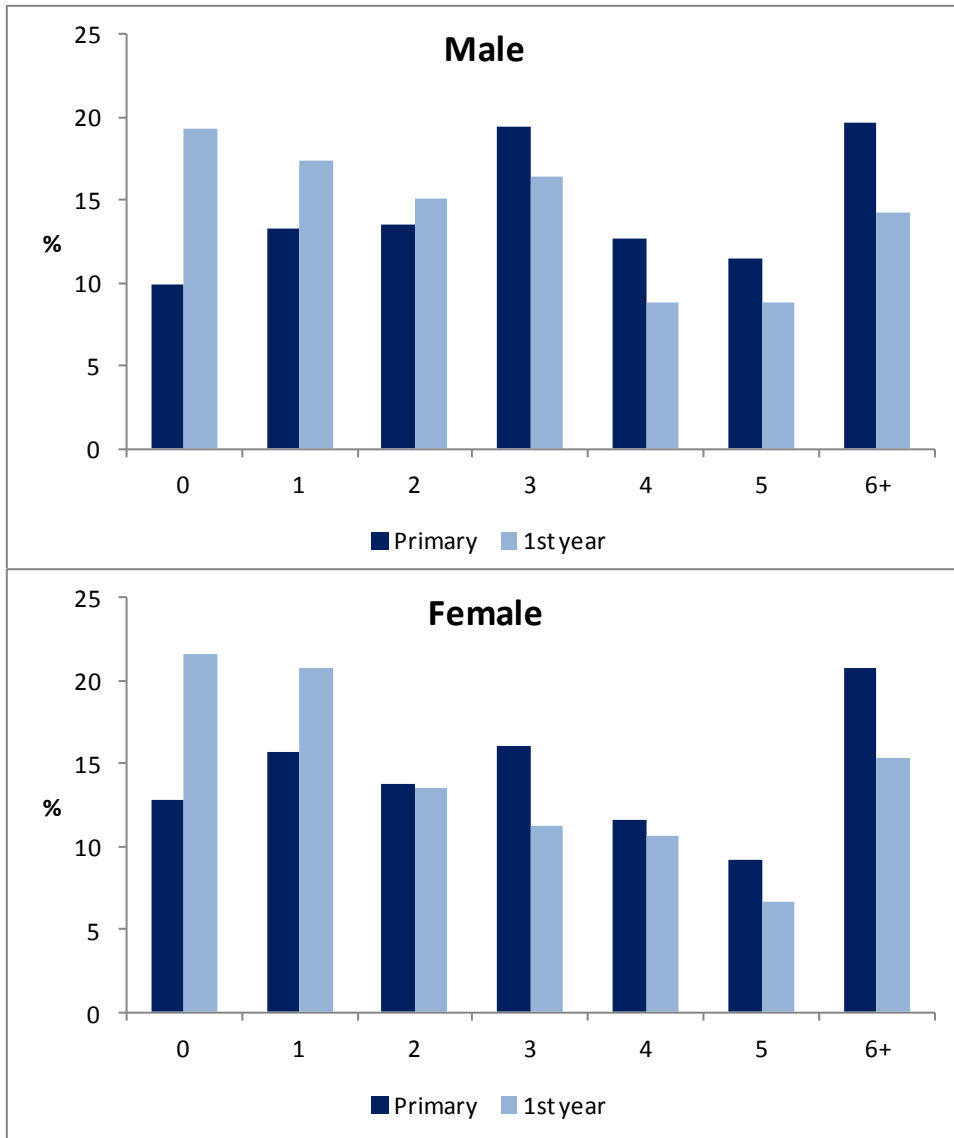


Figure 3.6 shows that the drop-out at this transition between schools also results in a reduction in the number of sports being played. The average number of sports played falls from 3.60 to 2.97. In addition to the roughly one-in-ten who drop out of sport altogether, many children at this age are doing multiple sports and drop one or more of the top six activities when they get to second level.

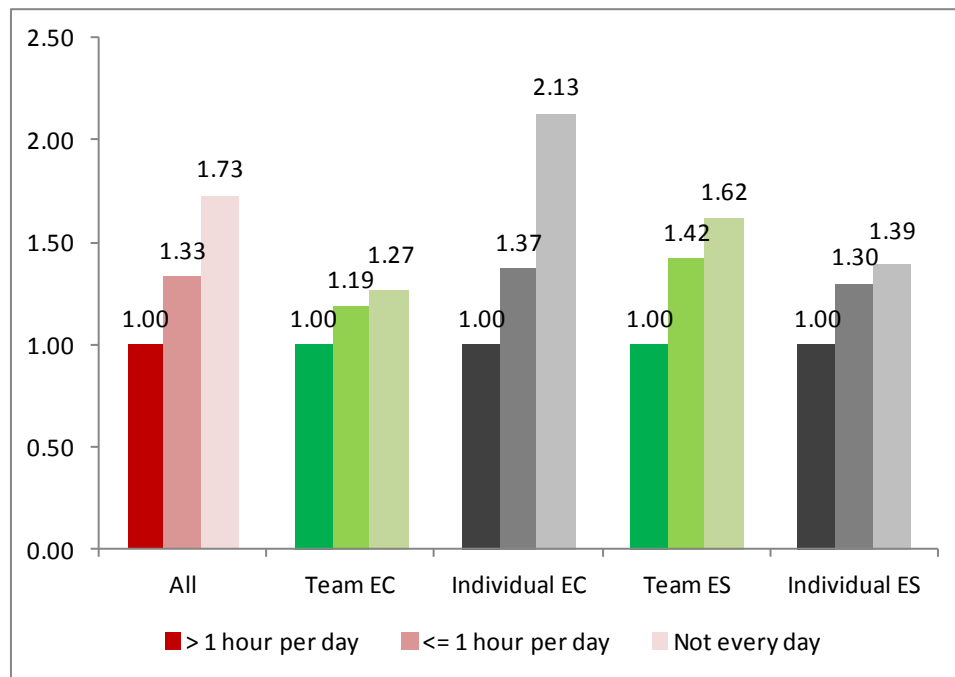
**FIGURE 3.6** Number of Regular Sporting Activities Undertaken in the Final Years of Primary School and the First Year of Second-Level School by Gender



The move from primary to second level is likely to involve something of a reduction in free time, due to the longer school day, the greater volume of homework, and on average a longer journey to school. One might hypothesise, consequently, that this transition would create greater competition between leisure activities for students' time. When we conduct the equivalent analysis of the relationship between participation and non-sporting activities for first years

as for primary students (as in Tables 3.1 and 3.2 above), the results generally show little change. Playing video games continues to have a negative relationship with participation; watching sport on TV remains positive for participation; and participation in arts activities remains positive too. However, Figure 3.7 reveals that while we found no effect of watching television on participation among primary school children, by second level this has changed. The numbers presented are again odds ratios, such that the figures given are the relative odds of participation relative to children who watch more than one hour a day of television (who are assigned the value 1.00). Across both individual and team sport, participation is more likely among those watching less than one hour per day and more likely again among those who do not watch every day.

**FIGURE 3.7** Odds Ratios for Participation in Sport by Extent of Television Watching for First Year Second-Level Students



### 3.4 SUMMARY AND DISCUSSION

Almost all children, both male and female, have by 10 years of age taken up regular participation in at least one and usually more sports, with a fairly even balance between extra-curricular or extra-school activity. The patterns vary by gender and social class, but not by whether a child is in fifth or sixth class. Although there is no overall gender difference, males are more likely to take up team sports and females are more likely to take up individual sports. The likelihood that children from families in lower socio-economic groups play extra-curricular sport is similar to the likelihood that those in higher socio-economic

groups do, but children from lower socio-economic groups are less likely to play sport outside of school.

The patterns we report by gender and year at primary school contrast somewhat with those reported in Fahey *et al.* (2005), who found higher participation among boys and in sixth class. It is possible that these differences relate to differences in samples and statistical methodology, but for two reasons we think this is unlikely. First, although the difference is not statistically significant, in the present study we actually find, if anything, slightly higher participation among fifth class students than sixth class students. Second, these differences between the results of 2004 and those of 2009 do not jar with the findings of Lunn and Layte (2008), who showed how participation among girls has been catching up with that of boys in recent generations. Furthermore, that study also found that the amount of sport being played by younger children had increased dramatically over recent decades. It may well be, therefore, that young children in 2009 were playing more sport than young children in 2004 did, especially the females.

When children move from primary school to second level, roughly one in ten of them drops out of playing regular sport. Others drop some of the sports they are playing. All of this effect is accounted for by children dropping out of the six most common sports at primary school: Gaelic football, soccer, swimming, hurling/camogie, dance and basketball. The drop-out is greater among children in lower socio-economic groups.

Other activities that might compete for time with playing sport have some impact. Children who play video games play less sport. Those who participate in the arts (music, drama, etc.) play more sport, as do those who watch sport on television. Perhaps surprisingly, we find no relationship between watching television and the likelihood of playing sport among primary school children. Once they reach second level, where school and schoolwork requires more of their time, those who watch television every day play significantly less sport than those who do not.



# Chapter 4

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## Second-Level Pathways

### 4.1 INTRODUCTION

Despite the fall in active participation in sport and exercise between the final years of primary school and the first year at second level, the large majority of children still play regular organised sport. As this chapter will show, however, many more drop out by the time they leave second-level school. These are formative years. Individuals arrive as children and leave as adults. In the process, they become more independent of parents and teachers, make a greater proportion of decisions for themselves, develop a broader variety of social relationships and encounter many new experiences, not least the challenges of puberty. They also undertake state examinations. During this period of intense transition, it would not be surprising to discover that sporting habits undergo transitions also.

This chapter looks at how the pattern of active participation changes across the second-level school years. We consider how pathways vary by gender and social class, and by type of sporting activity. We ask how they are influenced by other leisure activities that compete with sport for students' time and how this interacts with the pressures of exams. The data employed also permit an analysis of the relationship between scholastic performance and active participation in sport and exercise. Lastly, we look at what determines whether sporting activities are continued after students leave school. We concentrate here on sport played as an extra-curricular activity at school and outside of school in clubs and other organised settings. PE is not considered, for reasons given in Section 2.6 above.

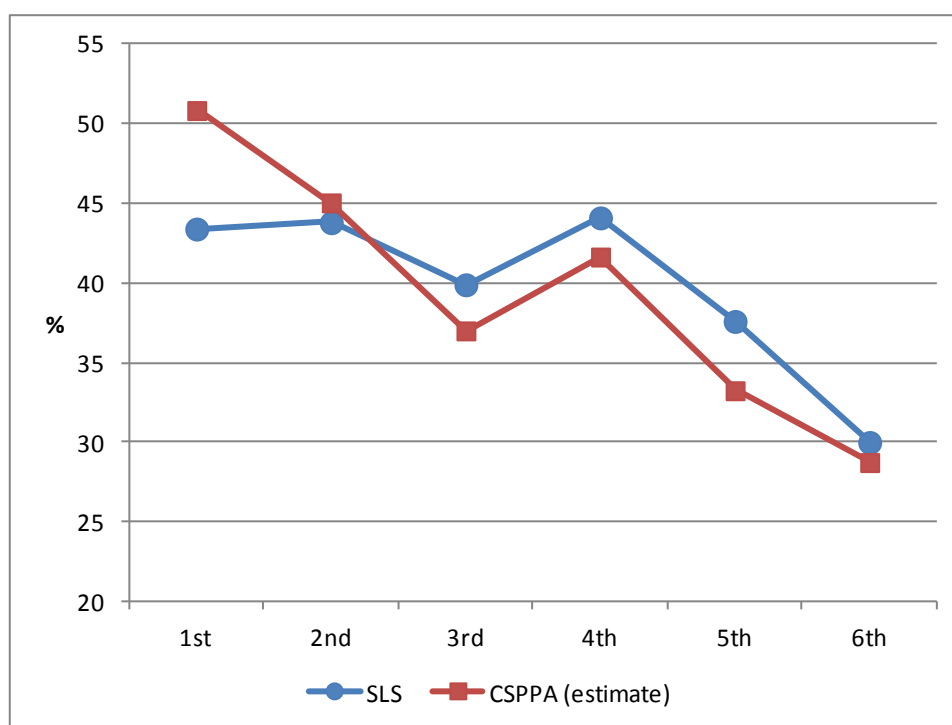
### 4.2 COMPARING DATA-SETS

We make use of both the CSPPA data and the SLS data. Collected in 2009, the former provides the most up-to-date estimates of participation during this period of the life-course, including participation in sport outside of school. The CSPPA is, however, cross-sectional. It also suffers from a sample imbalance (see Section 2.2) which, although possible to adjust for statistically, nevertheless limits the inferences that can be drawn from it. The SLS has a number of advantages over the CSPPA. By asking recent former students about their participation in sport while at school it effectively follows the same students through the second-level years, as well as asking whether they still participated in the sports after leaving

school. The SLS data-set also contains richer personal information, including with respect to family background, post-school pathways and examination results. However, the SLS has two drawbacks: respondents left school in 2004/5, so participation rates may have changed somewhat, and the information on participation in sport is limited to activities undertaken at school. Given these data issues, it is helpful where possible to compare results from the two data-sets, since we can be more sure of findings that are unambiguously present in both.

Figure 4.1 presents an initial comparison of how participation in extra-curricular sport varies across the school years. The SLS results are simply participation rates calculated as the proportion of students who stated that they were participating in the relevant school year. The CSPPA results are estimated by constructing a multivariate model that controls for gender, four social class categories and interactions of both gender and class with school year, to control for the sample imbalance. Examples of this type of model are provided, together with brief explanation, in Appendix B. The participation rates are then estimated as predicted probabilities of participation for a representative student in each year.

**FIGURE 4.1** Comparison of Participation in Extra-Curricular Sport by School Year from the School Leavers' Survey (SLS) and the Children's Sport Participation and Physical Activity (CSPPA) Study





As Figure 4.1 shows, the basic pattern is fairly consistent across the two data-sets. The largest discrepancy surrounds the results for first years, where the CSPPA data records higher participation. This difference is in keeping with the increase in participation among younger children in recent times referred to in the previous chapter, because the CSPPA data are from 2009 and the school leavers in the SLS, who were interviewed in 2007, would mostly have been first years between 1999 and 2002. There are other potential reasons for the slight differences. The SLS allowed an open response to the question of what sports respondents undertook and some activities that feature in the SLS data were not asked about in the CSPPA, which instead asked about a specific set of 24 activities. The two most notable are jogging and going to the gym, which are undertaken by a small number of older students and hence help to explain the somewhat higher participation rate measured by the SLS in the older years. Overall, however, the consistency between the two data-sets is encouraging.

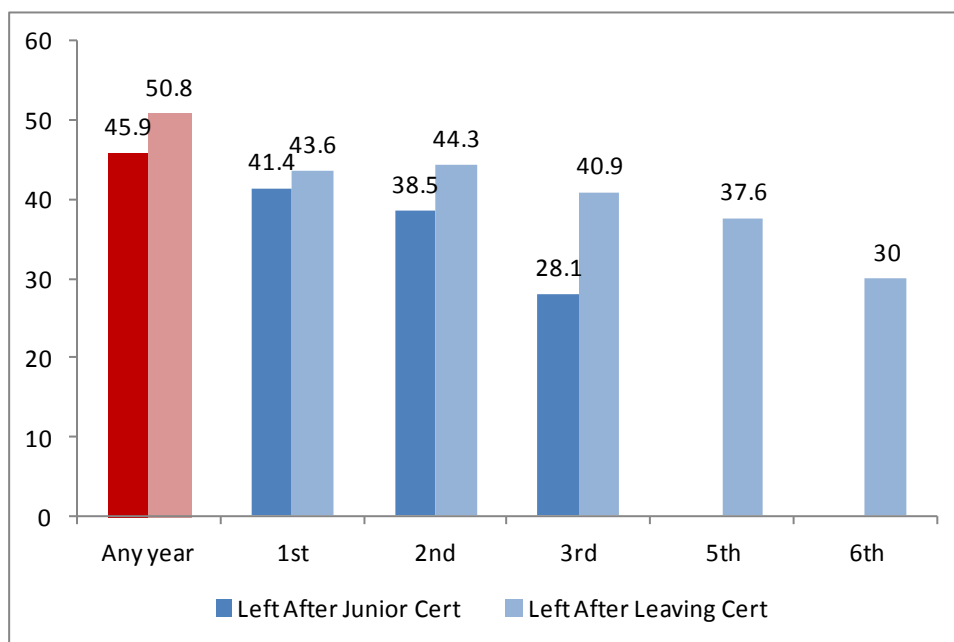
Two aspects of the pattern across years displayed in Figure 4.1 are worth emphasising. First, active participation falls across the second-level years. That is, drop-out dominates take-up. Second, the shape of the data strongly suggests that participation in sport and exercise is affected by state examinations, which are undertaken in third and sixth years. These two issues, falling participation and the impact of exams, are recurring themes of this chapter.

It is important at this stage to note that many students do not attend second-level school for six years. A declining but still substantial minority do not stay on for the Leaving Certificate. A more substantial number, meanwhile, do not participate in Transition Year (fourth year), and thus attend for five rather than six years. The remainder of this section briefly addresses the effects of early school leaving and Transition Year, as essential background for later analyses.

As a cross-sectional survey the CSPPA does not identify early school leavers, but the SLS does. Figure 4.2 shows the proportion of students who participated in regular extra-curricular sport by whether they left school after Junior Certificate or went on to complete senior cycle. The participation of early school leavers is lower in first year and becomes lower still by third year. Given the socio-economic profile of early school leavers, the lower participation rate is to be expected, but the extent of the fall in third year may indicate a degree of disaffection with school or some other form of breakdown in the relationship

between the student and the school.<sup>11</sup> This phenomenon is likely to contribute to the socio-economic gap in participation after leaving school because, as Section 4.6 will show, dropping out of extra-curricular sport while at school tends to decrease the chances of participation after students have left.

**FIGURE 4.2** Participation in Extra-Curricular Sport of Early School Leavers Compared with Students Who go on to Senior Cycle (SLS)



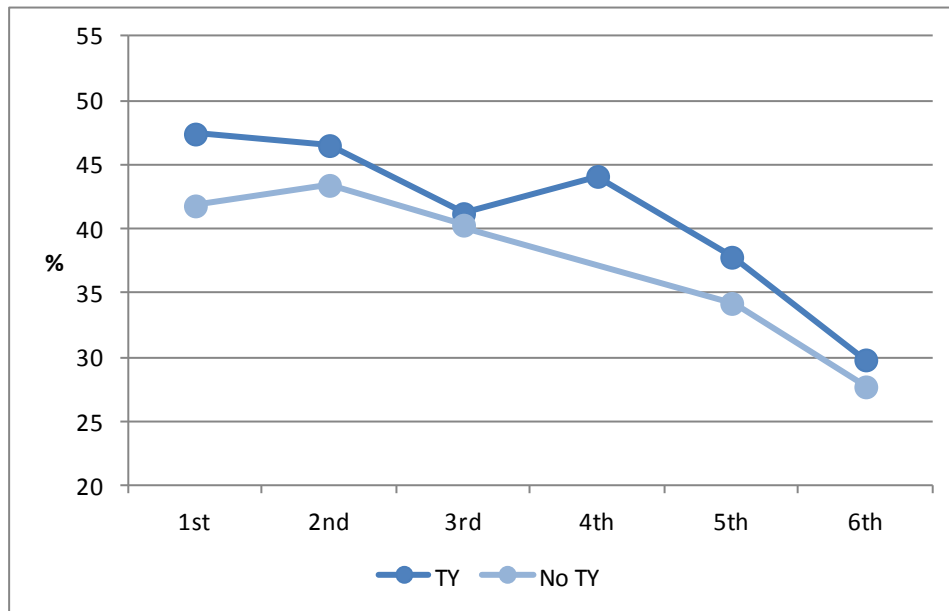
It should also be noted that early school leaving has implications for how patterns of participation across the school years are interpreted. The profile of students who complete senior cycle is not the same as the profile of those who undertake junior cycle. Given the link between participation and socio-economic status, early school leaving ought to result in an increase in the participation rates in fourth and fifth year relative to third year even if individual students do not change their behaviour – those who leave early are more likely to be non-participants.

One might also anticipate that participation rates differ between students who undertake Transition Year and those who do not, because of the profiles of the schools and students that offer and participate in Transition Year. Figure 4.3 confirms that this is indeed the case. Students who do Transition Year have higher rates of participation in extra-curricular sport in all school years. This is

<sup>11</sup> Byrne *et al.* (2009) found that young people who left school early had more negative views of the support they received from teachers compared to those who completed senior cycle.

important because failing to take account of it can lead to an overestimation of the effect on participation of Transition Year itself. Once the analysis separates the students in this way, it is clear that there is no “Transition Year bounce” for extra-curricular sport, just a steeper fall-off in participation as exams approach.<sup>12</sup>

**FIGURE 4.3** Participation in Extra-Curricular Sport by Whether Students Undertook Transition Year (SLS)



### 4.3 VARIATION BY GENDER, SOCIAL CLASS AND TYPE OF ACTIVITY

At primary school and when students arrive at second level, there is no gender gap for participation in sport but there is a socio-economic gap. By the time individuals reach adulthood, on the other hand, we know that both gender and socio-economic status have a strong impact on the likelihood of participation in sport and exercise. This section, therefore, looks at how the relationship between active participation and these two key variables changes over the second-level years. We employ social class, as estimated from students’ descriptions of their parents’ occupations as our measure of socio-economic status, which is the only measure available in the CSPPA data.

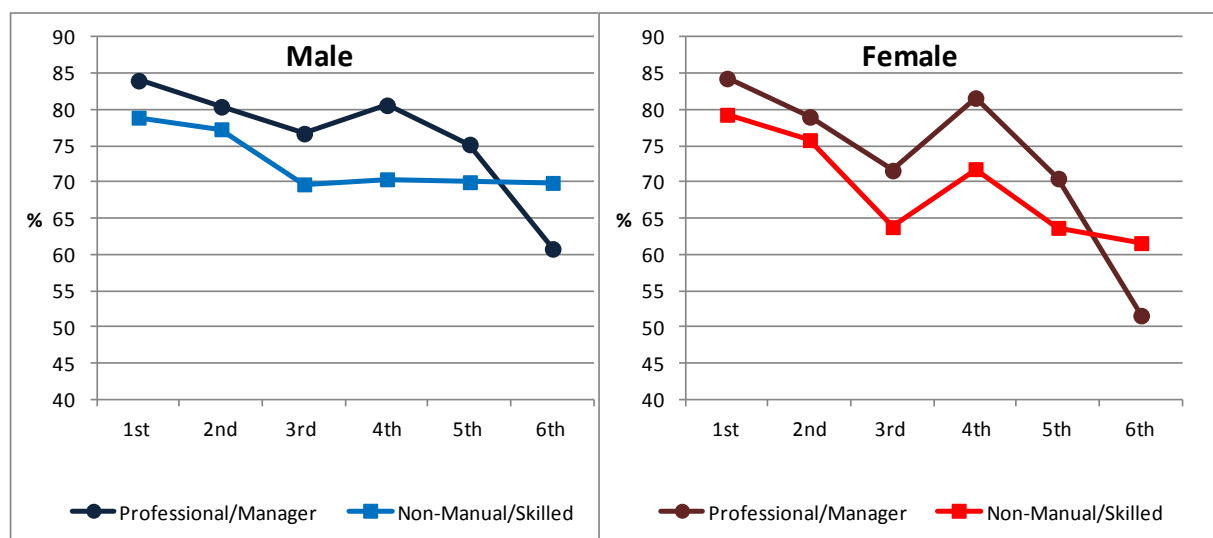
Figure 4.4 shows how overall participation in organised sport varies across the school years. Note that the findings presented in the previous section refer to extra-curricular sport, because the SLS does not have information about sport

<sup>12</sup> Fahey *et al.* (2005) report a “transition year bounce for PE”, but as the SLS data does not contain information on PE we cannot test for the effect here.

played outside of school, whereas the estimates in Figure 4.4. are calculated for all participation in organised sport. The results presented correspond to predicted probabilities of participation calculated from multivariate models for two social classes. (Some small cell-sizes prohibit analysis for the Low Skilled and Missing categories that feature in the models in Appendix B).

The fall in overall participation is evident for both genders and social classes, but there is interesting variation across the four curves. In general, the decline is steeper for females. The impact of the exam years is again evident, but it is noticeable that the effect is greater in third year among the lower of the two social classes and much greater in sixth year among the higher social class. It is also apparent that the variation in participation associated with the exam years is more pronounced for females. So large is this variation that for both genders the participation gap between the two social classes actually reverses in sixth year. Indeed, the variation associated with exam years is the dominant feature of the data, in that it appears to have a greater impact on participation than either gender or social class themselves.

**FIGURE 4.4** Predicted Probabilities of Participation Across Second-Level School Years by Gender and Social Class (CSPPA)

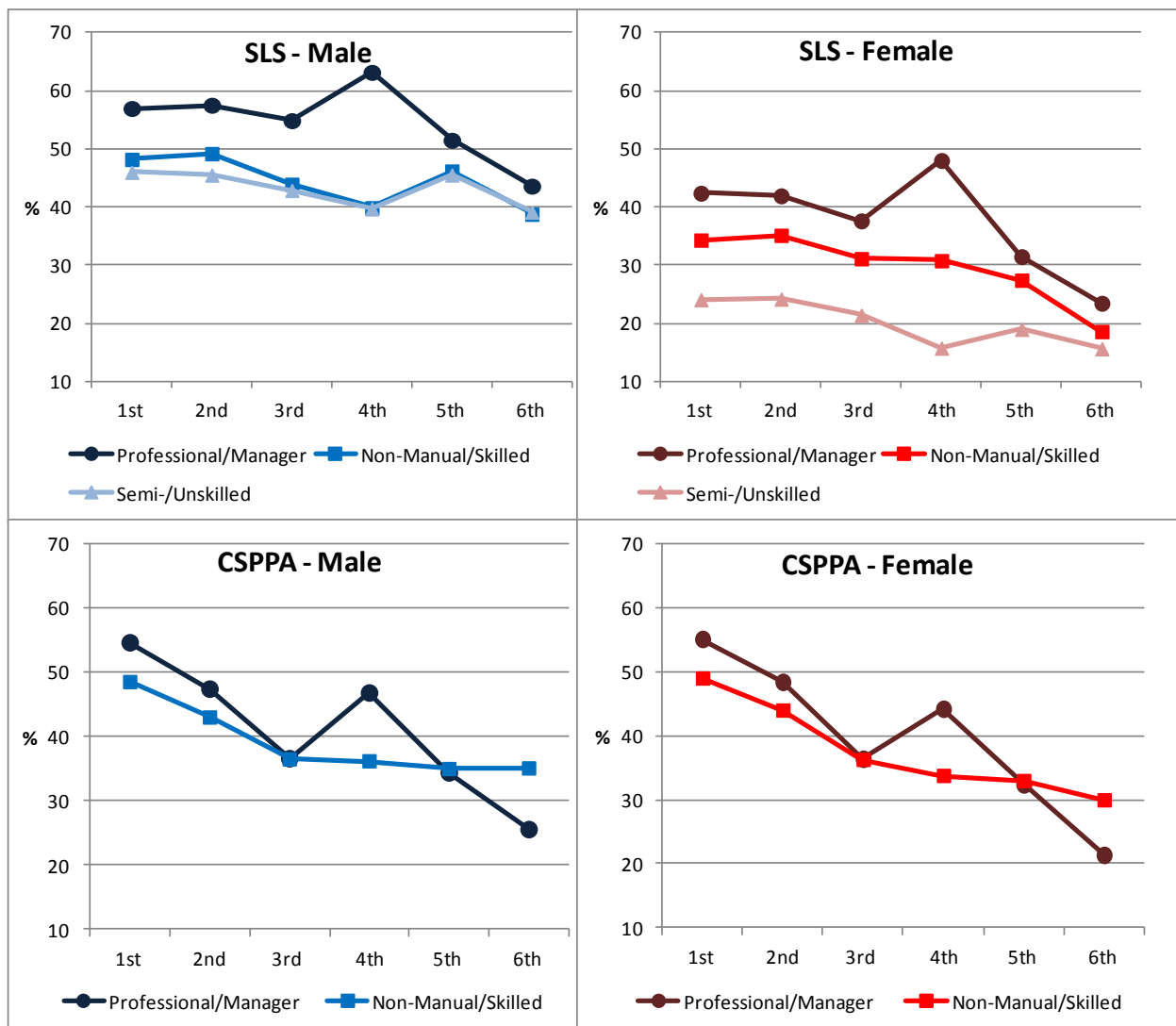


This finding needs to be treated with some caution, however. Figure 4.5 performs the same exercise for only participation in extra-curricular sport, allowing a comparison of results from the SLS and CSPPA. The social class measure in the SLS data is likely to be more accurate than that in the CSPPA, since it is based on descriptions of parents' occupations provided by school leavers rather than children. Although the results are in many ways similar, the SLS data suggest that the socio-economic divide may be somewhat wider than the CSPPA figures

suggest, which is to be expected if the measure of social class is more accurate. However, the SLS data also suggest a greater disparity between males and females than is evident from the CSPPA data, which since it cannot be due to measurement error more likely reflects recent increases in the participation of girls, as recorded by Lunn and Layte (2008).

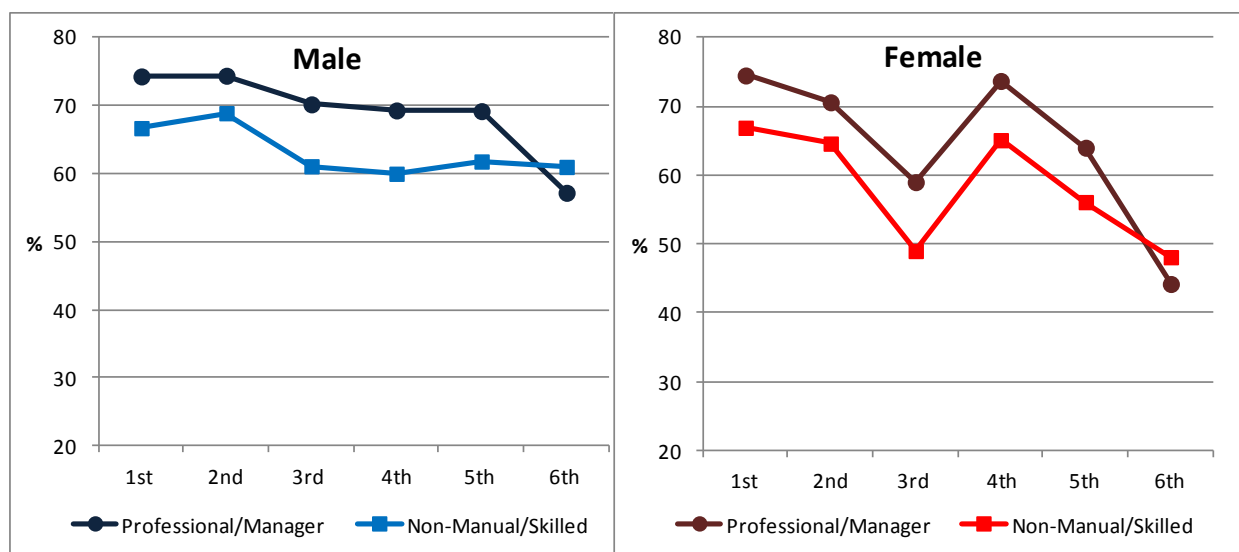
Nevertheless, while we cannot be sure of the reasons for the discrepancies between the two data-sets, we can be confident of what they have in common. First, participation declines more steeply during the second-level years for females than for males. Second, those in higher social classes have higher participation. Third, there is a strong influence of exams on the amount of sport and exercise undertaken by children, which is more pronounced for better off children approaching Leaving Certificate.

**FIGURE 4.5** Variation in Extra-Curricular Sport Across Second-Level School Years by Gender and Social class



The effect in third year is more subtle, however. Comparing the CSPPA results in Figure 4.5 with those in Figure 4.4 suggests that in the run up to Junior Certificate those in the top social class are less likely to drop out from all sport, even though they are more likely to drop out from extra-curricular sport. In other words, children in the top social class must maintain participation outside of school more than those in the lower social class. Figure 4.6 confirms that this is indeed the case. The dip in participation outside of school in third year is greater for children in the lower social class, while the opposite is again the case in sixth year. This chart also makes clear that, of all the combinations presented thus far, the variability in participation associated with exam years is most evident for sport played by females outside of school. Note also, by comparing the scale in Figure 4.6 with that of Figure 4.5, that the proportion of children who participate outside of school remains higher than the proportion who participate in extra-curricular activity throughout the six years.

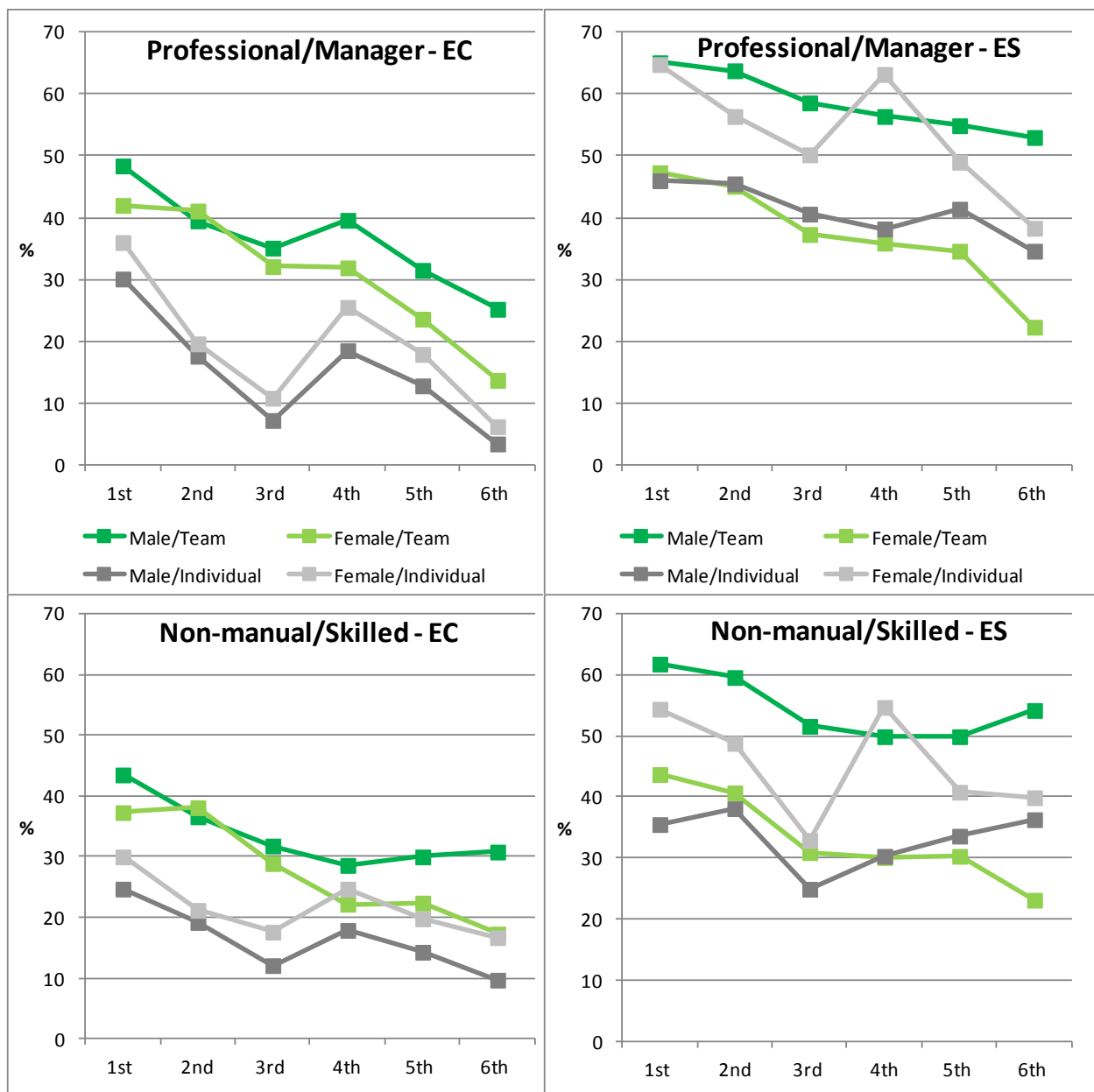
**FIGURE 4.6** Variation in Extra-School Participation Across Second-Level School Years by Gender and Social Class (CSPPA)



As with previous analyses, one might expect to find differences according to the type of activity undertaken. Figure 4.7 plots the equivalent results for team and individual sports, for males and females, for the same two social classes, and for extra-curricular (EC) sport and extra-school (ES) sport. This is a complicated picture that merits some discussion. We deal initially with two findings that are common to all four charts, i.e., to both social classes and both extra-curricular and extra-school sport. First, the steepest overall decline in participation by far is associated with females playing team sport – the participation rate falls consistently regardless of class or location. Although the fall is steepest in exam

years, it is striking that the figures for female team sport are the only ones not to rise for any class or location following completion of Junior Certificate. A strong underlying downward trend dominates. Second, across all four charts, male team sport is the least affected by exam years. The largest impact of exams on male team sport is for extra-curricular sport undertaken by the highest social class, but the variation is still muted by comparison to the neighbouring curves.

**FIGURE 4.7** Predicted Probabilities of Participation Across Second-Level School Years by Gender, Type of Activity and Location, with Social Class Held Constant (CSPPA)



Next we turn to interesting differences between the charts. This provides further indications that where females have greater choice, they are more likely to engage in individual rather than team sports. Thus, for extra-school sport the

curves for individual sport lie above those for team sport, while for extra-curricular sport the opposite is the case. Meanwhile, the sharpest increases in participation occur for female individual sport in Transition Year, when a more generous range of sporting activities is likely to be offered. That said, based on the assumption that Transition Year offers an opportunity to try a broader set of extra-curricular activities, it is striking that students of both genders increase their participation in individual sports in fourth year.

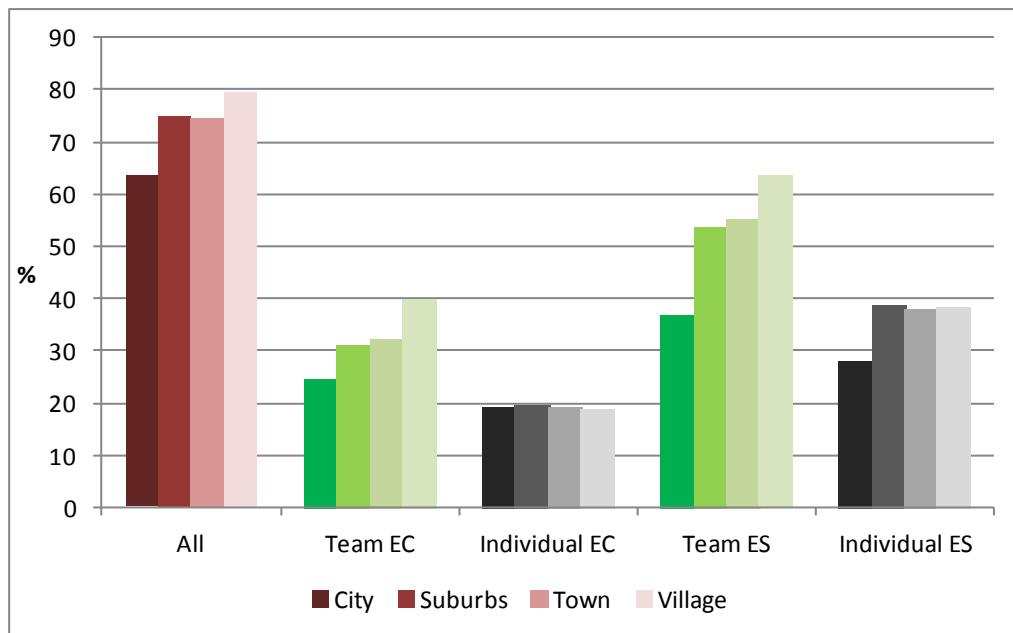
The comparison of extra-curricular and extra-school activity also invites comment. In all four categories for both social classes, the proportionate decline in participation across the six years is smaller for the latter: teenagers are more inclined to drop out of extra-curricular activity than extra-school activity. Obvious possible explanations are that extra-school activity is more appealing because it offers access to a social life outside of school or because the choice of specific activity reflects greater individual autonomy and less influence of teachers. Lastly with respect to Figure 4.7, the comparison of the social classes suggests little difference in preferences for team or individual sports by class, whether in the early years or later school years. At least at this stage of life, the socio-economic gap is not obviously related to the type of sport being played, but it is related to where it is played. The gap is wider for extra-school sport than extra-curricular sport, as at primary level.

The same cannot be said, however, of the one other significant variable that the statistical models in Appendix B draw attention to. The pattern of participation also varies by residential location. Figure 4.8 shows that children living in more urban environments, especially cities, are less likely to participate in sport. Furthermore, the effect is greatest for team sports and extra-school individual sport. We examine whether the extent of this difference changes across the school years and find that it does not. However, we do not find this effect at primary level – lower participation among more urban children appears to be a second-level phenomenon.

As mentioned in Section 1.4, researchers in other countries (e.g., Delorme *et al.*, 2011) appear to have located a ‘relative age’ effect, whereby students born later within the given school year are less likely to participate. When we test for this effect in Ireland using the CSPPA data, we find no significant difference in participation by age within the student’s school year.



**FIGURE 4.8** Predicted Probabilities of Participation for a Representative Male (Second Year, Non-Manual/Skilled Social Class) by Type of Activity and Residential Area (CSPPA)

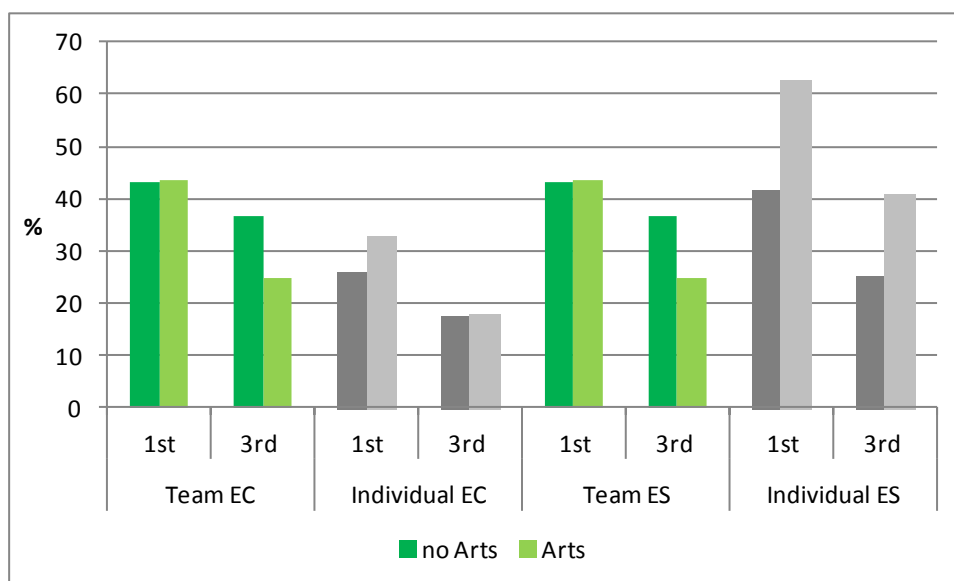


#### 4.4 THE INFLUENCE OF OTHER ACTIVITIES

As for primary school children in the previous chapter, the CSPPA questionnaire asked a range of questions regarding the relationship between participation in sport and other leisure time activities. Our investigation of this issue reveals a much more complicated pattern across the second-level school years than among the younger children. Arguably, this is to be expected. While other leisure activities compete with sport for students' free time, children's development of social lives may prove to be a countervailing force. Participation in sport is increasingly a social activity among older children and so there may be positive linkages between participation and other activities that can be undertaken with friends, including social networking, video games and even watching television or DVDs. Indeed, overall, we find weaker influences of other activities on participation in sport for second-level students than for primary students. Even the significant negative effect of watching more than an hour of television a day does not last long past first year and for most of the school years there is no significant effect at all, either on extra-curricular or extra-school sport. This finding may reflect the fact that as children become teenagers they begin to stay up later in the evening, providing free time that does not compete with sporting activity and is likely to involve television and other forms of home entertainment. The strong association between participation and watching sport on television remains, however (see Table 3.2).

Nevertheless, the effects that we do find display a striking feature in that they interact with the impact on participation of exam years. Figure 4.9 provides an example. The strongest impact associated with any of the activities we examined (using computers, playing video games, homework, reading, listening to music, talking on the telephone, watching television, participating in the arts) was associated with arts activities. Figure 4.9 is based on a representative female student of the Non-manual/Skilled social class, though the pattern in the findings applies to males and other classes also. In first year (and indeed second year, which is not shown) those who participate in arts activities such as music and drama are more likely to participate also in sport, both at school and outside of school, because they are as likely to play team sport and more likely to play individual sport – the latter especially outside school. But in third year the pattern changes, such that they are less likely to play extra-curricular sport and no more likely to play extra-school sport. Where initially arts activities are complements to sporting activity, once the time pressures of exams come along they become substitutes.

**FIGURE 4.9** Predicted Probabilities of Participation for First and Third Year Females by Whether They Also Participate in Arts Activities (e.g., Music, Drama, etc.)



We record a similar but weaker effect for video games, which have a clear significant impact only on extra-curricular team sport and only during exam years. More generally, our estimates suggest that most of the activities listed above have marginal impacts, both positive and negative on the four types of organised sport considered, but impacts are small, often (though not always) positive outside of exam years but more negative in exam years.

#### 4.5 SPORTS PARTICIPATION AND SCHOLASTIC PERFORMANCE

Given that exams appear to have such a striking effect on participation in sport, it is worth exploring the link between active participation and scholastic performance. Many students, or perhaps parents or teachers, clearly believe that regular participation in sport in the run up to exams is not a good idea. Are they right? In a recent study, Bradley, Keane and Crawford (2013) report a positive association between participation in sport and Leaving Certificate results, but their sample is drawn from a single boys' secondary school in Cork. The SLS data allow us to explore this issue more thoroughly, by looking for a relationship between participation in sport and exam performance in a nationally representative sample. In undertaking this analysis, we focus on student's Leaving Certificate examination results. Scholastic performance is measured in terms of grade point average (GPAV). As mentioned previously, the system assigns 'points' to exam grades and the scores are then averaged over all exam subjects.<sup>13</sup> The sample for this analysis consists of 1,177 Leaving Certificate students.<sup>14</sup> The findings we report are based on multivariate statistical models, an example of which is provided in Appendix C.

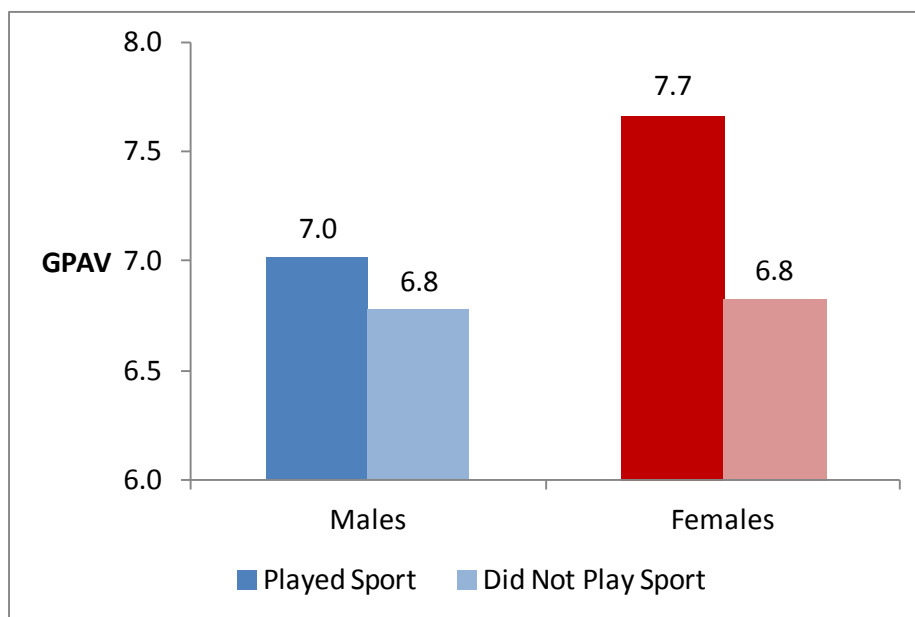
As can be seen from Figure 4.10, there is a positive association between playing sport and exam performance, with both males and females who played sport at second level obtaining a higher GPAV in their Leaving Certificate, although the effect is bigger among females. Interestingly, when we controlled for all other available factors that might influence examination performance (see list in Appendix C) participation in sport was still found to have a positive impact on a student's performance.

We must immediately stress that this does not necessarily (or even probably) imply that playing regular sport causes improved performance, since other interpretations are possible (see below).

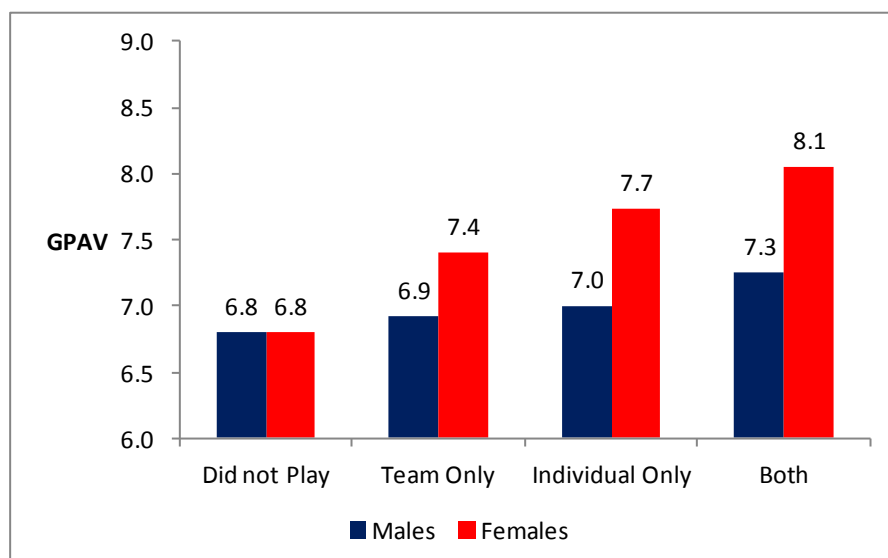
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<sup>13</sup> Students are awarded 10 points for a higher-level A grade, 9 for a B, 8 for a C and 7 for a D. Ordinary-level grades are scored 7-6-5-4 and foundation-level 4-3-2-1. Zero points are allocated to E, F or NG results, which are traditionally regarded as 'fail' grades. The points are averaged over the number of exam subjects taken, which means that the GPAV range is 0 to 10.

<sup>14</sup> 172 students were excluded from the analysis due to missing (170) or incomplete (2) GPAV data.

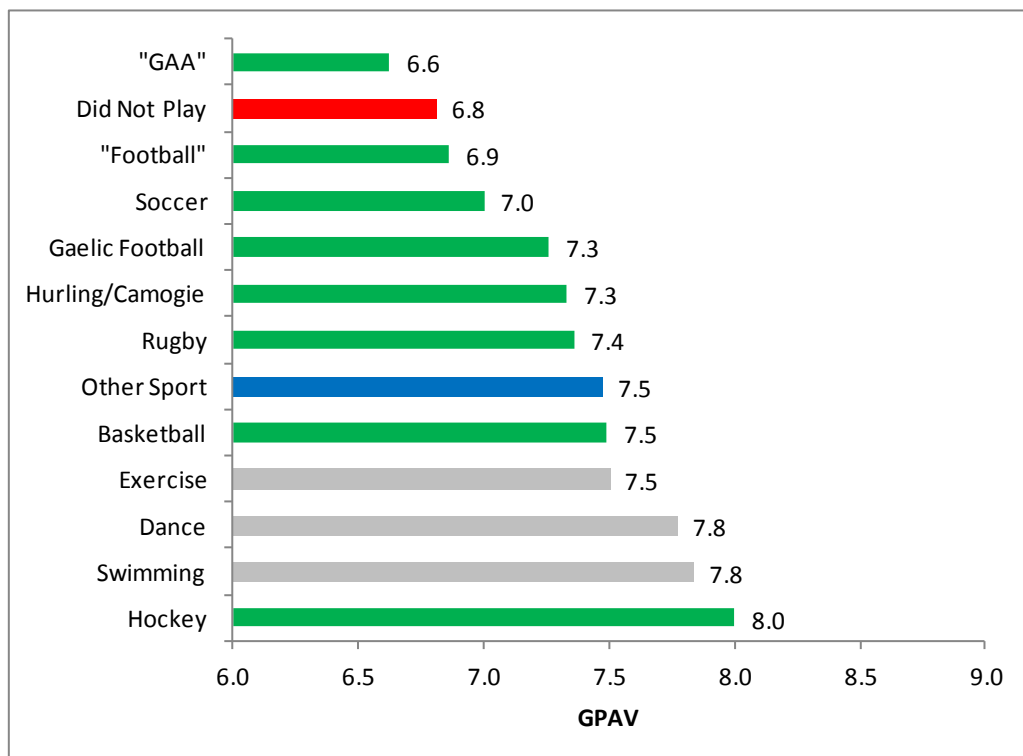
**FIGURE 4.10** Differences in Leaving Certificate GPAV by Participation in Sport

The size of the effect varies according to the type of sport played and the years in which the student participated. Figure 4.11 provides scholastic performance by the type of sport that a student played at second level; specifically, whether he/she played team sports, individual sports or both. GPAV is highest amongst those that played both team and individual sports, followed by individual-only and then team-only. Again, our multivariate statistical models, in which we control for the impact of all other available background characteristics that might influence scholastic performance, confirm this relationship between the type of sport played and examination performance.

**FIGURE 4.11** Differences in Leaving Certificate GPAV by Type of Sport Played

A more detailed breakdown of the relationship between scholastic performance and specific sporting activities is presented in Figure 4.12.<sup>15</sup> Unsurprisingly, sports that have higher proportions of female participants are associated with higher GPAVs, with those who played hockey, or undertook swimming or dance obtaining the highest scores. Nevertheless, it is striking that the level of performance associated with almost all specific activities lies above the performance of those who did not play sport. Furthermore, the categories 'GAA' and 'Football' derive from the open-ended question asked in the SLS survey, which required respondents to write down the sport that they played, such that we cannot determine the precise activity in these cases. There appears to be an association between the likelihood of describing the activity ambiguously and lower GPAV. Were these respondents correctly categorised together with the soccer and Gaelic football players, performance associated with all activities would probably be above the level of non-participants. When we include the individual sporting activity variables in our statistical model of examination performance, which also includes a range of other controls that can impact on Leaving Certificate scholastic performance (Appendix C, Table C2), we find that the difference in GPAV (compared to those who did not play any sport) is positive for all activities (with the exception of 'football' and 'GAA').

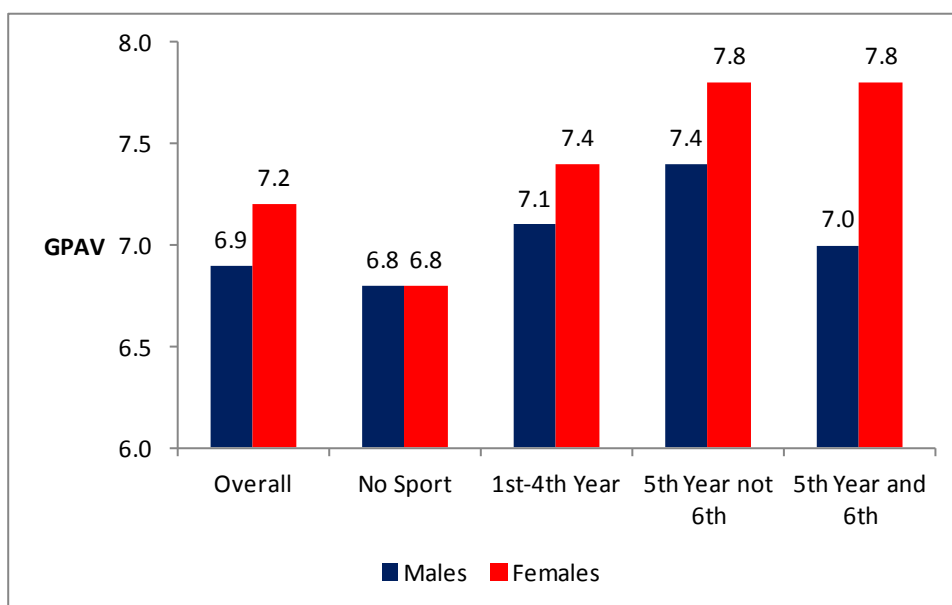
**FIGURE 4.12** Differences in Leaving Certificate GPAV by Individual Sporting Activity



<sup>15</sup> Sample sizes are too small to present the relationship between Leaving Cert GPAV and individual sporting activities for males and females separately.

Finally, we examined the relationship between the school years when students played sport and their examination performance. We can see from Figure 4.13 that, for females, scholastic performance increased with duration of sports participation. Those who participated but not in fifth or sixth year outperformed those who did not play sport, but females who continued to play sport in fifth year or in both fifth and sixth year did better still. For males, the same increase in performance with the duration of participation is evident, but there is a wrinkle. Those that played in both fifth and sixth year did not perform as well as those that played up to fifth year but not in their final year. These relationships between the school years in which students played sport and their examination performance are all confirmed in our multivariate analysis (Appendix C).

**FIGURE 4.13** Differences in Leaving Certificate GPAV by School Years of Active Participation in Sport



It is important to note that we make no claim here that playing sport *causes* better exam performance, though our data are consistent with such a view. The results we present are open to a number of different interpretations. It is possible that physical activity enhances well-being and has beneficial effects on scholastic performance, despite taking up time that might otherwise in principle be devoted to study. We note that Smyth *et al.* (2011) found that Irish second-level students who participated in sport suffered less from stress during exam years. However, it is also possible that how much a given student with a certain set of background characteristics participates in extra-curricular sport is somehow a signal of the organisational and motivational capacities of the school. Put simply, better schools (or better teachers) may be more able to enthuse students both to play sport and to study hard. A similar argument could easily be advanced in respect

of parents. Although our statistical models contain indicators of school type and school quality, and background information on the educational attainment of both parents, there may be unobserved characteristics of schools and parents that are important both to participation in sport and to scholastic performance.

Nevertheless, our findings are important in the context of the dramatic fluctuations in participation that occur across the school years and appear to be related to exams. Whatever mechanism is responsible for the positive association between participation in sport and scholastic performance, it is generally stronger than the negative effect of spending time on sport instead of studying. The only exception to this finding that we observe is that boys who play sport up to fifth year but stop for sixth year do better than those who play right through, although both outperform those who do not participate at all.

#### 4.6 POST-SCHOOL DROP-OUT

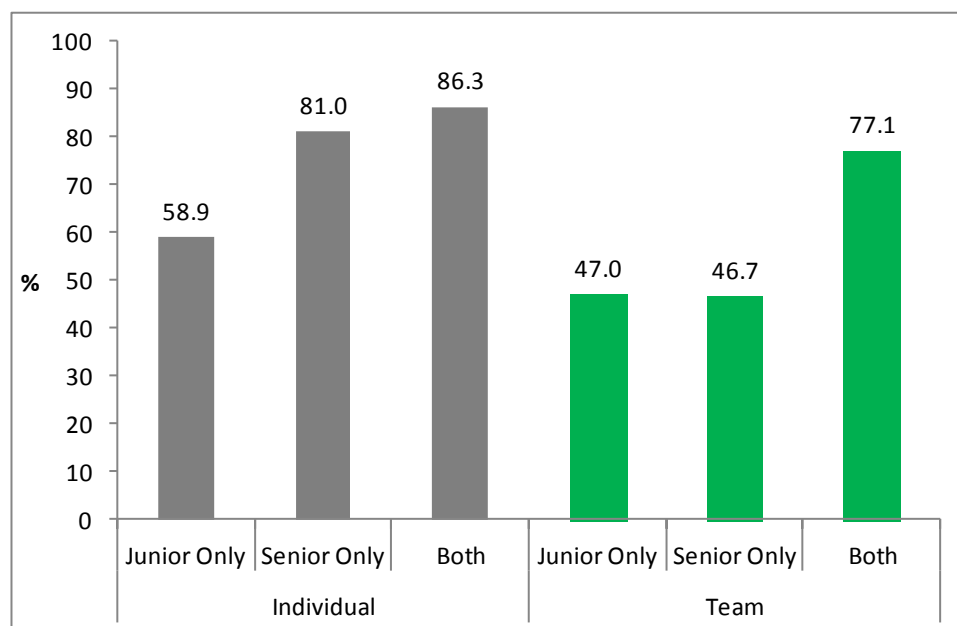
The richness of the SLS data-set also allows us to explore the determinants of whether sport played at school is continued after students leave. For each sport respondents played at school they were asked whether they still participated at the time of the survey, which was conducted between one and two years after they had left school. We constructed statistical models, an example of which is presented in Appendix D, of the likelihood of continuing to play at least one of the sports undertaken at school versus dropping all sports undertaken at school. The models controlled for a wide range of characteristics, including age, gender, disability, family socio-economic background, examination results, labour market activity before and after leaving school and 'mitching'. As well as relationships between any of these variables and the likelihood of dropping all sports undertaken at school, the key issue of interest is the relationship between the type of sport undertaken and the pattern of activity across the second-level years on outcomes after leaving school. As in previous sections, the descriptive statistics that follow exemplify the findings of the multivariate models. While these models are instructive, it is important to note that they do not amount to a full analysis of dropping out from sport, because they do not take account of sports undertaken outside of school, nor of sport taken up since leaving school.

Overall, we find that 68 per cent of individuals who play a sport at school continue to play one of those sports after they leave. Perhaps unsurprisingly, the earlier in a school career that a sport is dropped the less likely it is to be played after leaving school. We find that playing in fifth and/or sixth year decreases the chances of dropping out after leaving school. The proportion who continue to

play rises to 83 per cent for those who play sport during sixth year. This result does depend on the type of sport, however.

Figure 4.14 shows the extent of variation in the likelihood of continuing to play a sport played at school by the type of sport and the pattern of participation across school years. Individual sports are significantly more likely to be continued after leaving school, including those that were taken up only during senior cycle. This result holds even once we take into account the total number of years and total number of sports played – individual sports are simply less likely to be dropped.

**FIGURE 4.14** Proportion Who Continue to Participate in a Sport Played at School, After Leaving School, by Type of Sport and When Participation Took Place

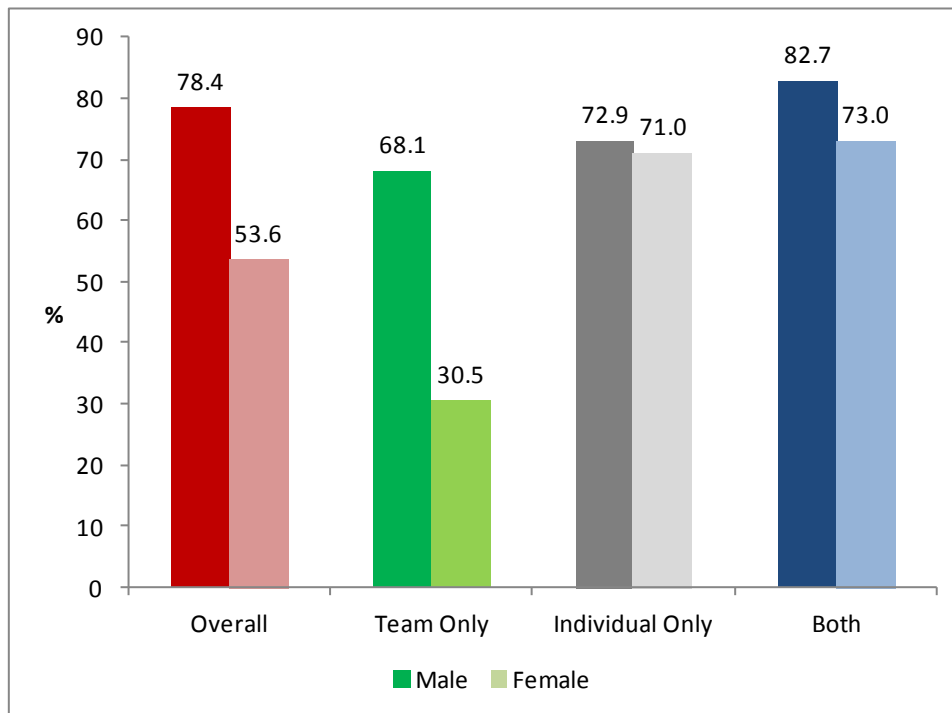


The difference in the likelihood of continuing a sport by the type of sport is much greater for females. Figure 4.15 gives an indication of the scale of this effect, especially where team sport is the only sport undertaken at school. Less than one-third of females who play only one or more team sports at school continue to play one of the sports after they leave. The large majority drop out. There is no significant gender difference in relation to continuing with individual sports. Yet because team sport makes up such a large proportion of school sport, the fact that females are less likely to continue with it after leaving has a major impact. Almost half of females, overall, drop out of the sports they played at school when they leave, compared with less than one-quarter of males. This fact, combined with the much greater likelihood that females drop out from team sports during their time at school, means that while the second-level years begin with no



gender gap in the overall likelihood of participation in sport and exercise, by the time individuals have left school females are much less likely to be active participants.

**FIGURE 4.15** Proportion who Continue to Participate in a Sport Played at School, After Leaving School, by Type of Sport(s) Played

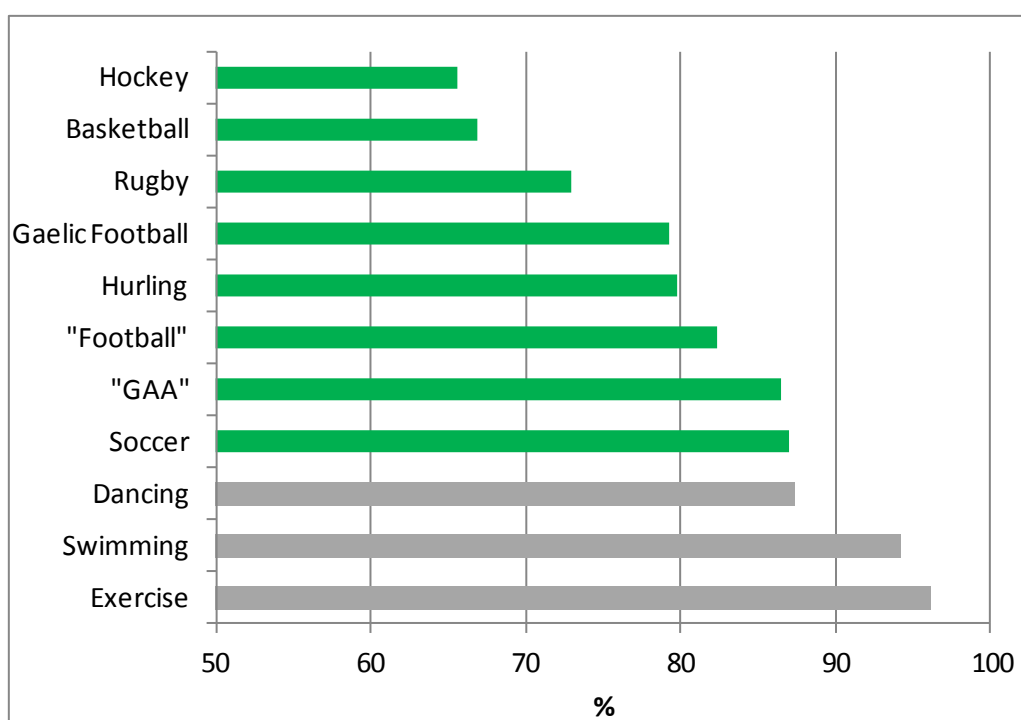


Across a range of statistical models similar to that presented in Appendix D, we find certain variables to be robustly and significantly related to the likelihood of continuing participation or dropping out of all sports played at school. Interestingly, drop-out is less likely for those that had a job outside of term time while they were at school. This is a curious finding, since having a job might be thought to compete for time with participation. On the other hand, having a job is one way to forge social relationships with people other than at school, which may be helpful in terms of continuing participation afterwards. We also find that those who 'mitched' from school are less likely to continue their sporting activity. Various indicators of socio-economic status are used in the statistical models, including both parents' educational attainment and occupation, as well as the former student's employment status since leaving school. We find that once exam results are included in the models, family socio-economic background is non-significant. Those who become unemployed after leaving school are less likely to continue their sporting activity than those who get a job or become students. Once we take into account the specific sporting activities that people played at school, we also find that those who go on to be students at university

or an institute of technology are less likely to drop out than those who enter the labour force.

The model presented in Appendix D also includes the specific sporting activities undertaken at school. From this model it is possible to derive the predicted probability that a student still undertakes any of the sports played at school given that they played a specific sport, while simultaneously controlling for gender, age, social background characteristics, exam results and post school pathways. Note that this does not just correspond to the predicted probability that they continue to play the specific sport but also that they continue to play another sport they played at school; it captures the potential for a specific activity to make it less likely that other activities will be dropped. For instance, players of certain team sports may also be more likely to undertake other activities, such as exercise or running, that they then continue after leaving school. The output is somewhat complicated by the failure of some respondents to distinguish between codes of football in their responses or between different Gaelic games. Nevertheless, as Figure 4.16 shows, a clear pattern emerges. The results shown are for a representative male student of middling socio-economic background with average exam results. The rate of drop-out from all sports played at school for those participating in exercise and swimming falls well below 10 per cent. Among team sports, soccer has the largest impact on continued activity, followed by Gaelic games, then rugby.

**FIGURE 4.16** Predicted Probabilities for a Representative Male Student of Continuing to Participate in a Sport Played at School, After Leaving School, by Specific Sporting Activity



#### 4.7 SUMMARY AND DISCUSSION

Two phenomena stand out in the pattern of participation in sport during second-level school: declining participation as students go through the years and variability associated with the exam cycles. Females are more affected by both phenomena. As a consequence, while the second-level years begin with no gender gap in active participation, by the time students leave sixth year there is a large and widening gender gap. This disparity is overwhelmingly due to a gender difference with respect to team sport. Females drop out of team sport consistently across the school years and at a much more rapid rate than males. Male team sport is also less affected by the exam cycle than female team sport or individual sport.

There is a clear socio-economic divide for both team and individual sport, which as with primary school students is greater for participation in extra-school sport than in extra-curricular sport. The gap is somewhat narrowed by the greater tendency of those in higher social classes to drop out during exam years. Second-level students in urban locations have lower levels of active participation.

We looked in some detail at how participation in sport relates to other, potentially competing, activities, including video games, television, using computers, reading, homework, listening to music, talking on the phone, and participating in arts activities (music, drama, etc.). The results are complex and do not confirm some of the simple negative relationships that some might fear, such as the idea that playing video games is a substitute for playing sport. Most of the relationships are quite weak in comparison to the other effects studied here, such as those surrounding gender or social class. Furthermore, the relationships interact with the exam cycle, such that those who participate in the arts are more likely also to participate in sport outside of exam years but less likely to do so during exam years. We find that the negative impact of television on participation in sport is largely confined to first years, while the only negative association of video games is with extra-curricular team sport during exam years.

The strength of the impact of state examinations on participation in sport led us to investigate whether there is a link between participation in sport and scholastic performance. We find that indeed there is: the more extra-curricular sport students play, the better their Leaving Certificate results. Although we control for all available background characteristics in our data, including parental educational attainment, type of school and indicators of the quality of the relationship between student and school, our results should not be taken to imply that playing sport will improve exam results. Other explanations of this

relationship are possible, but our findings do suggest that those who play sport are unlikely to suffer academically as a result. The only suggestion of a detrimental effect we can find is that for males, those who play up to fifth year but drop out of sport in sixth year do better than those who play in sixth year as well, though both outperform students who do not participate at all.

Lastly, we find that some students are more likely to continue to play the sports they played at school than others. Almost one-third of students who play at least one extra-curricular sport do not continue with any of the sports they play at school after they leave. Females, those who played less consistently across the years, students who 'mitched' from school and those who become unemployed after leaving school are more likely to be among those who drop their sports when they leave. The most consistent effect, however, surrounds the type of sport played. Students who play only team sport at school are more likely to drop out, while those doing individual activities are more likely to continue playing.

# Chapter 5

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## Beliefs, Perceptions and Adult Participation

### 5.1 INTRODUCTION

The previous chapters reveal how patterns of participation change during the school years. Although the modern generation of children plays more organised sport than previous generations, by the time individuals reach adulthood, many have dropped out from sport and exercise activity altogether, especially females and those in lower socio-economic groups. This pattern provides the backdrop for the present chapter, which begins the process of examining adults' transitions into and out of sporting activity, using the ISM data collected on adults aged 16 and over. We start with a brief examination of the cross-sectional pattern of activity, which is consistent with previous findings and the observations in the previous chapters regarding participation after leaving school.

Once people have matured into adults, there is a tendency to believe they are responsible for their own decisions and that they make such decisions in their own best interest. Thus, before turning to examine the processes of take-up and drop-out among adults, we consider how the rates of participation among different sections of the adult population relate to people's beliefs and perceptions about active participation in sport, including whether the 'Theory of Planned Behaviour' helps to explain who participates and who does not (Section 5.4).

### 5.2 THE ADULT CROSS-SECTION

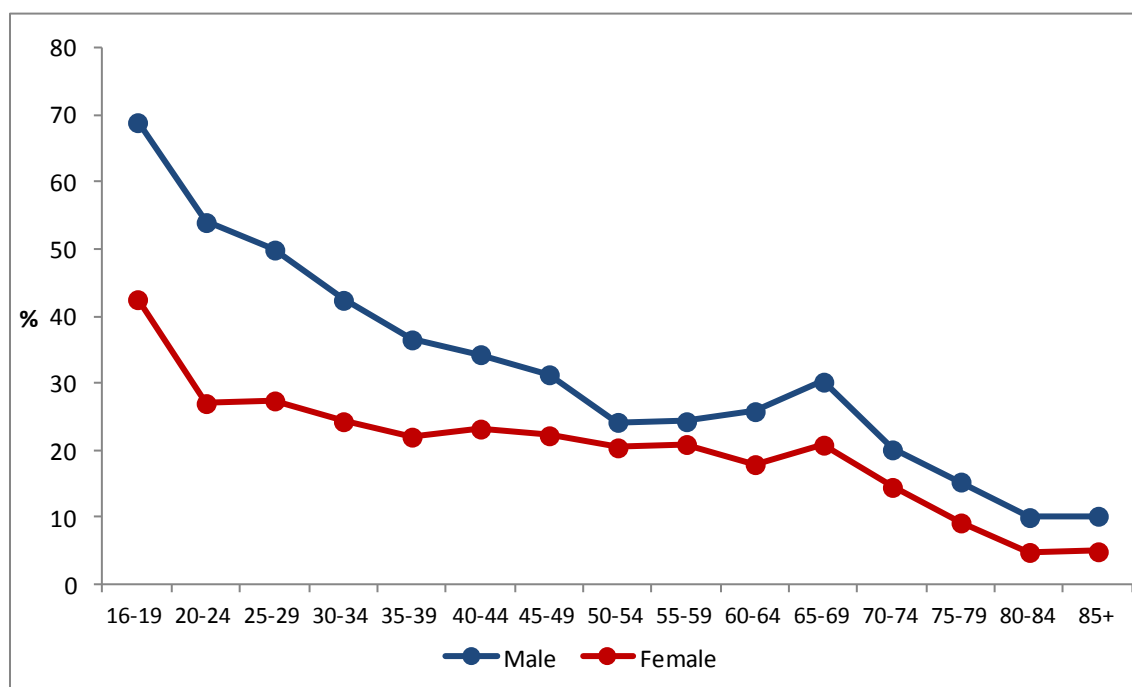
Previous work undertaken by Fahey *et al.* (2004) and Lunn (2007b) provides a thorough cross-sectional analysis of regular participation in sport and exercise among adults. Those studies were based on the 2003 SSPE data, which consists of a representative sample of 3,080 people in Ireland aged 18 and over. With a sample-size of 26,377, the ISM may give a somewhat finer-grained picture, as well as allowing us to confirm that the key findings from the earlier study also hold for the later, larger data-set.

A full multivariate statistical model is presented in Appendix E, which estimates the relationship between having actively participated in sport within the previous seven days and a broad range of background characteristics: gender, age,

educational attainment, employment status, occupational class, marital status, parenthood, residential location, disability, nationality, income and whether an individual's parents played sport during the period they were at school. All of these variables have a statistically significant effect on the likelihood of participation, as detailed in Appendix E. However, as found in the previous studies, the background characteristics with the strongest relationship with participation are gender, age and socio-economic status. Although this is a cross-sectional analysis, the finer-grained model based on a large sample size does offer some useful pointers regarding potential transitions.

Figure 5.1 presents predicted probabilities that a representative individual participates by gender and age, after controlling for all of the other background characteristics listed above. In other words, it shows the impact of age and gender on participation in sport for individuals of the same educational attainment, employment status, occupational class, marital status, parenthood, residential location, disability, nationality and income.<sup>16</sup> It is important to note that the decline in participation with age does not correspond directly with the variation in the likelihood of participation across the life-course, because the

**FIGURE 5.1** Predicted Probabilities of Participation of a Representative Male and Female Across the Adult Life-Course



<sup>16</sup> Specifically, the figures are calculated for an individual with upper second-level qualifications, employed in a skilled manual occupation, single, with no children, with no long-term health problem, living in a town, of Irish nationality, earning €750-899 per week. While any changes in these characteristics would move the predicted probabilities up or down, the overall pattern by age and gender would not be altered.

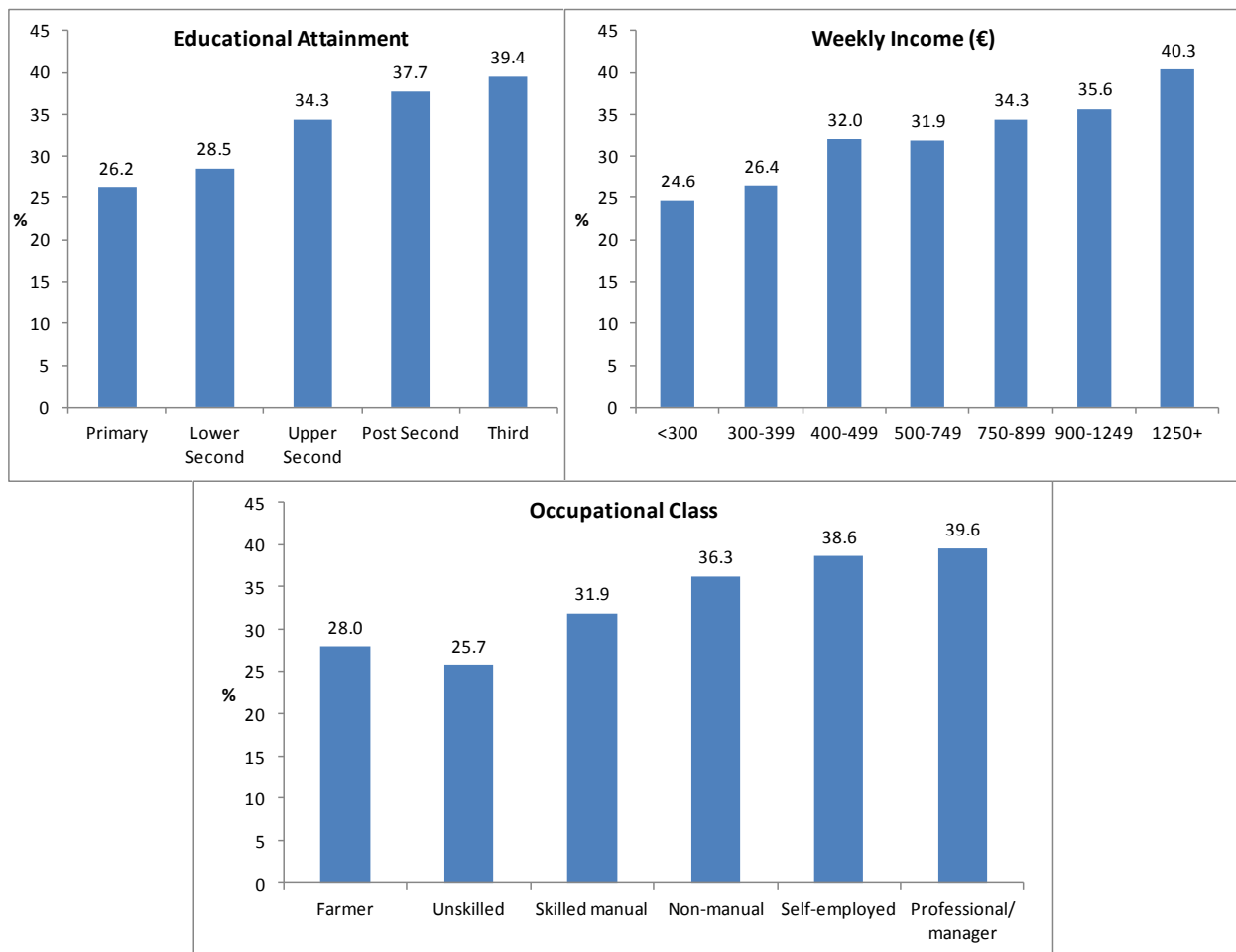
cross-sectional nature of the analysis confounds age and cohort. Put less technically, we know from other work (Lunn and Layte, 2008) that younger adults participate more than older adults used to at the same age – members of the younger cohort play more sport. Thus, we would expect them to continue to do so as they age, meaning that the decline in participation with age depicted in Figure 5.1 is not the path we can expect the present group of young adults to follow. We anticipate instead that they will have a higher likelihood of participation in middle age than the current cohort of middle-aged people.

Nevertheless, the change in the estimated probability of participation by age group is strongly suggestive. Where the next oldest age-group has a markedly lower probability, it suggests a period of the life-course where drop-out dominates take-up. For instance, this is clearly the case during early adulthood. This steep decline from the earliest 16-19 age-group is consistent with the previous analysis suggesting high rates of drop-out when people leave school, particularly among females, although as we will see in Chapter 7 there are also other factors behind the high drop-out rate at this age. Overall, the interaction between age and gender is strong. For women, there is a flatter profile for much of adulthood, suggesting that among adult women there is more of a balance between drop-out and take-up. For men, having started adulthood with a much higher probability of participation, drop-out then dominates for much of the life-course. The only exception is around 60 years of age. This finding occurs despite the fact that the positive impact of being retired is separately controlled for in the model. Consequently, it is more a reflection of very low participation among middle-aged men, caused by continued drop-out and very little take-up.

Figure 5.2 confirms the strength of the relationship between participation in sport and socio-economic status. The predicted probabilities of participation are calculated for a representative individual male (although the results are similar for females) who varies only in educational attainment, income or occupation, with all other characteristics held constant.<sup>17</sup> The strong socio-economic gradients that are evident in Figure 5.2 are substantial and separate effects. Because educational attainment, income and occupational class are correlated, the overall impact on the likelihood of active participation in sport of being in a lower socio-economic group is very strong indeed. Although the change in the probability of participation varies across the socio-economic spectrum, there is some suggestion in the pattern that being in the bottom one or two categories for any of these indicators has a particularly pronounced impact.

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<sup>17</sup> Specifically, the individual is a male of average age, with otherwise the same characteristics listed in Footnote 16.

**FIGURE 5.2** Predicted Probabilities of Participation of a Representative Male by Socio-Economic Background Characteristics

The multivariate model reveals some other interesting associations. Those who are unemployed or out of the labour market for health reasons are less likely to be active participants in sport and exercise. Students have a higher probability of participation (note that the model controls for age and educational attainment). Retired people participate more. While there is no difference between single and married people, separated or divorced individuals are more likely to participate. Having children appears to have little impact relative to childless people, but people who have adult children participate more. Those who live in isolated locations (i.e., not in a city, town or village) are less likely to participate. Disabled people also participate less. Non-Irish nationals from non-English speaking countries outside the EU are much less likely to participate. This large and highly statistically significant effect may even underestimate the negative association, since those non-Irish nationals whose English is weakest are least likely to be represented in the sample of a telephone survey (see Section 2.4). Lastly, the model in Appendix E shows a lasting effect of having had parents who played



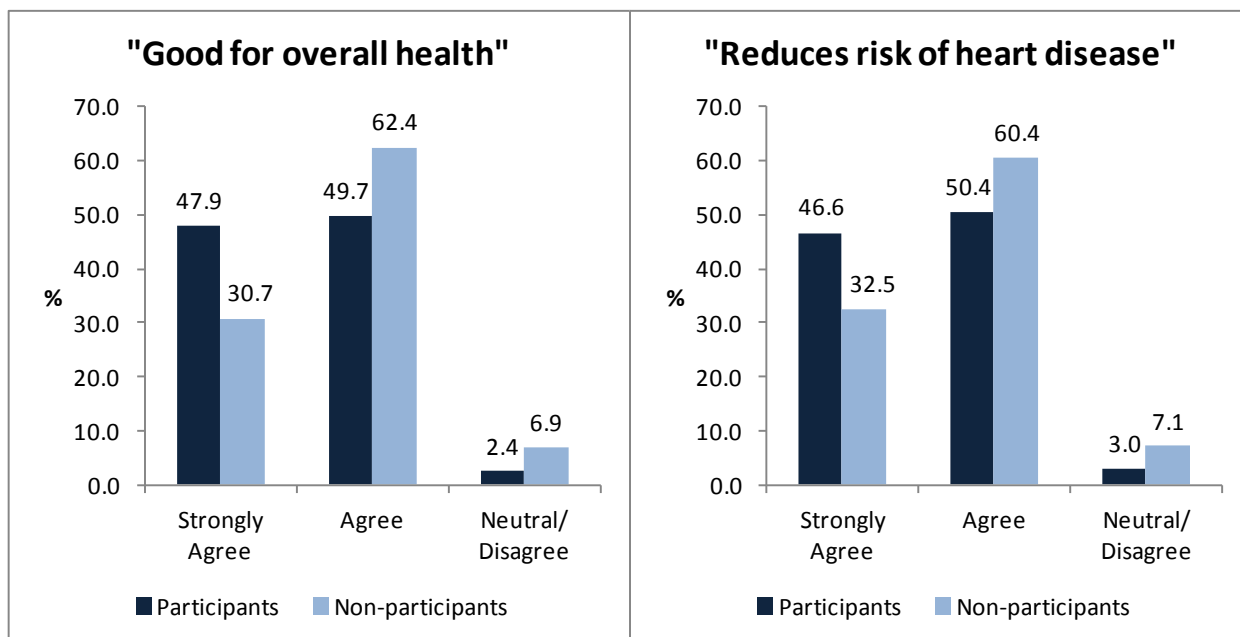
sport. Interestingly, this effect is strongest where the mother was an active participant.

### 5.3 BELIEFS ABOUT PARTICIPATION AND HEALTH

Before moving on to examine information about take-up and drop-out events in Chapters 6 and 7 respectively, the remainder of this chapter considers the role of beliefs and perceptions. Intuitively, incentives to take up or drop out from sport and exercise might be linked to people's beliefs about the benefits of participation. Those who believe that active participation has greater health benefits may be those who are most likely to take up activity and least likely to drop out. This theory is in keeping with a straightforward notion that the greater the perceived benefit of an action the more likely that action is to be taken. It is also potentially informative from a policy perspective. If variability in beliefs about the benefit of sport are linked to participation then educating people about the benefits, through information and publicity campaigns etc., is more likely to be beneficial than if beliefs held are unrelated to the likelihood of participation.

Two special modules of the ISM collected information about beliefs and perceptions about participation in sport in general, and specifically with respect to the respondent (see Section 2.4). In the event, it turns out that the very large majority of people in Ireland believe that participation in sport and exercise is good for health. Figure 5.3 presents responses of participants and non-participants to a question that asked whether exercise was good for health, and a second question that probed more specific knowledge by asking whether exercise reduces the risk of heart disease. Even among people who are not active participants in sport and exercise, 93 per cent believe that exercise is good for health and that exercise reduces the risk of developing heart disease. Figure 5.3 does reveal that there is a difference in the strength of the belief between participants and non-participants, with the former somewhat more likely to agree or, in particular, to strongly agree with the statements. However, overall, these figures suggest that the message regarding the health benefits of sport is actually rather well understood.

FIGURE 5.3 Opinions of Participants and Non-Participants Regarding the Health Benefits of Exercise



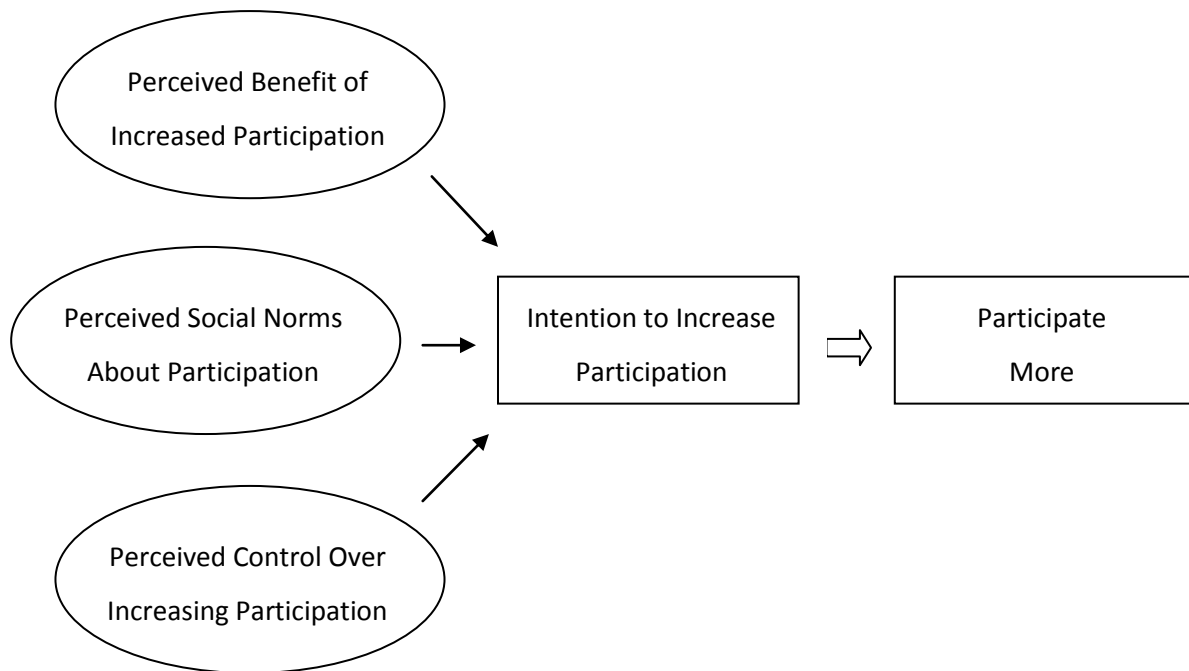
There are some other relevant associations between participation and beliefs. Regular participants are more likely to report that they are in good health, to state that they are about the right weight, and to agree with the statement that “there is nothing more important than good health”. They are less inclined to believe that a person can be very healthy and not take exercise. Nevertheless, across the range of questions asked, while a difference can be determined between participants and non-participants, it is striking how positive perceptions of the benefits of sport and exercise are among those who do not partake in any. For example, while participants are marginally more likely to agree that “regular exercise makes you feel good”, it is still the case that 92 per cent of non-participants believe this too.

#### 5.4 THE THEORY OF PLANNED BEHAVIOUR

Perception and beliefs about the benefits of sport may potentially be only a small part of the story. Psychological studies of how people make decisions and change their behaviour generally reveal many influences in addition to beliefs about the benefits of outcomes. The Theory of Planned Behaviour (TPB) adopts a more sophisticated approach to how people make such decisions. The theory, developed by Ajzen (1991), posits that behaviour follows from intention and that three factors determine the formation of intentions. First, there is the perceived benefit of the behaviour – “is this a good thing to do?” Second, there is the perceived social norms about the behaviour – “do other people think this is a good thing to do?”. Lastly, there is perceived control over the behaviour

concerned – “is this something I could do?” Figure 5.4 provides a schematic account of the TPB.

**FIGURE 5.4** The Theory of Planned Behaviour Applied to Participation in Sport



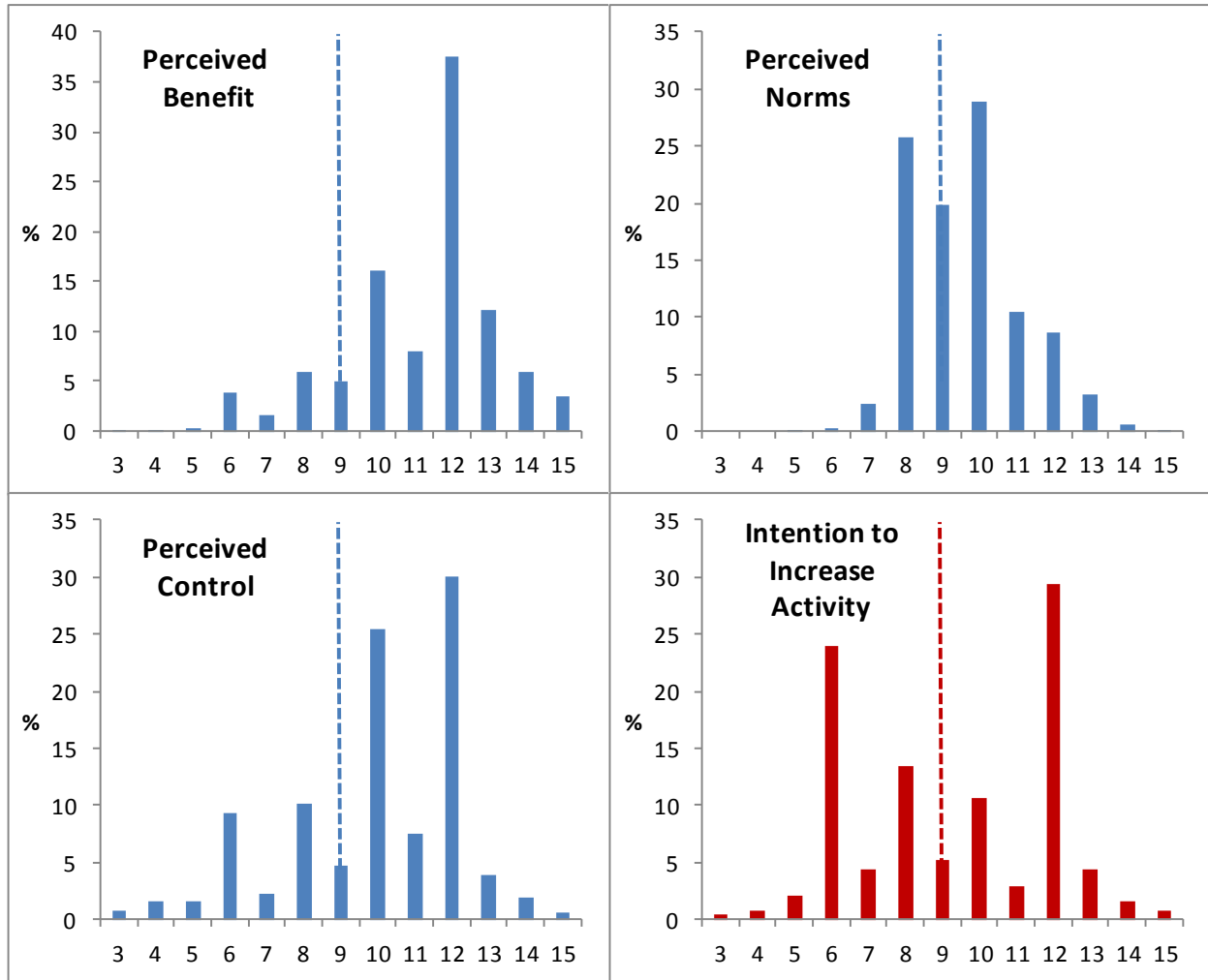
The TPB has been tested on many occasions and receives moderate empirical support. Frequently it is found that the three factors that the TPB identifies as determinants are indeed strongly related to the formation of intentions. Where the theory receives less support is in the link between intentions and behaviour itself. There is a substantial body of research in psychology that shows generally only modest correlations between intentions and behaviour or between attitudes and behaviour. Nevertheless, even if the relationship is modest in scale, intentions to act and actions do bear some relation.

One flexible module of the ISM set out to test the TPB with respect to participation in sport. The design of the module followed recommended practice for estimating the TPB as given by Francis *et al.* (2004). The module consisted of twelve statements to which the respondent could answer on a five-point scale ('strongly agree', 'agree', 'no opinion', 'disagree', 'strongly disagree'), with an even balance between positive and negative statements. Three examined the perceived health and social benefits of participation in sport and exercise. In

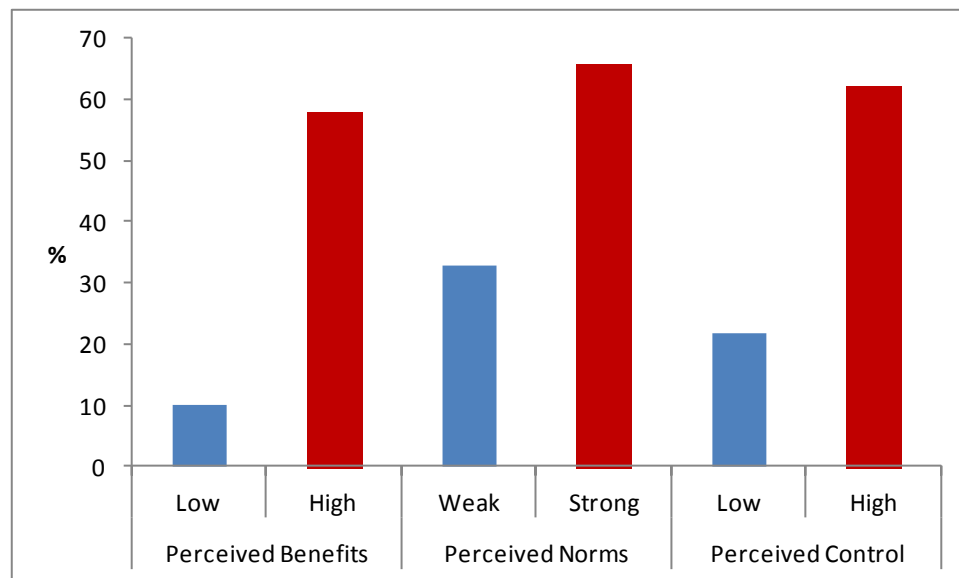
contrast to the general statements about the benefits that underpin the results of Figure 5.3 above, the statements related to the benefits to the specific individual, e.g., “Doing more sport and physical exercise would be good for me”. Three other statements related to perceived social norms, e.g., “There is no social pressure to do more sport and exercise”. Three more probed whether the respondent felt able to do more sport and exercise, e.g., “Whether I can do more sport and exercise involves factors beyond my control”. Lastly, three statements referred to the intention to increase participation, e.g., “I intend to do more sport and exercise”. The three answers for each statement type were combined into an overall score for perceived benefits, perceived norms, perceived control and intention.

The distributions of the scores for all four measures are provided in Figure 5.5. Note that a score of nine represents the neutral point of having no opinion either way and that scores above nine indicate that an individual perceives a benefit to increasing their participation in sport and exercise, perceives that others would see such a benefit, perceives that they are in control of whether they increase their participation, and lastly intends to do so. It is notable that clear majorities perceive personal benefits to increasing participation, that others perceive benefits of participation and that they could increase participation if they wanted to. The data on intentions, however, has an entirely different shape. The distribution is ‘bimodal’ rather than ‘unimodal’. That is, people generally split into a group who do intend to increase their participation (46 per cent) and a groups that does not (50 per cent), with the remainder neutral. Interestingly, of these variables only perceived control differs significantly between those who presently participate and those who do not. This finding suggests that people perceive greater barriers between doing no sport and exercise activity and doing some activity than they do between doing some activity and more activity.

**FIGURE 5.5** Distributions of Scores for the Four Components of the Theory of Planned Behaviour as it Relates to Increasing Participation in Sport



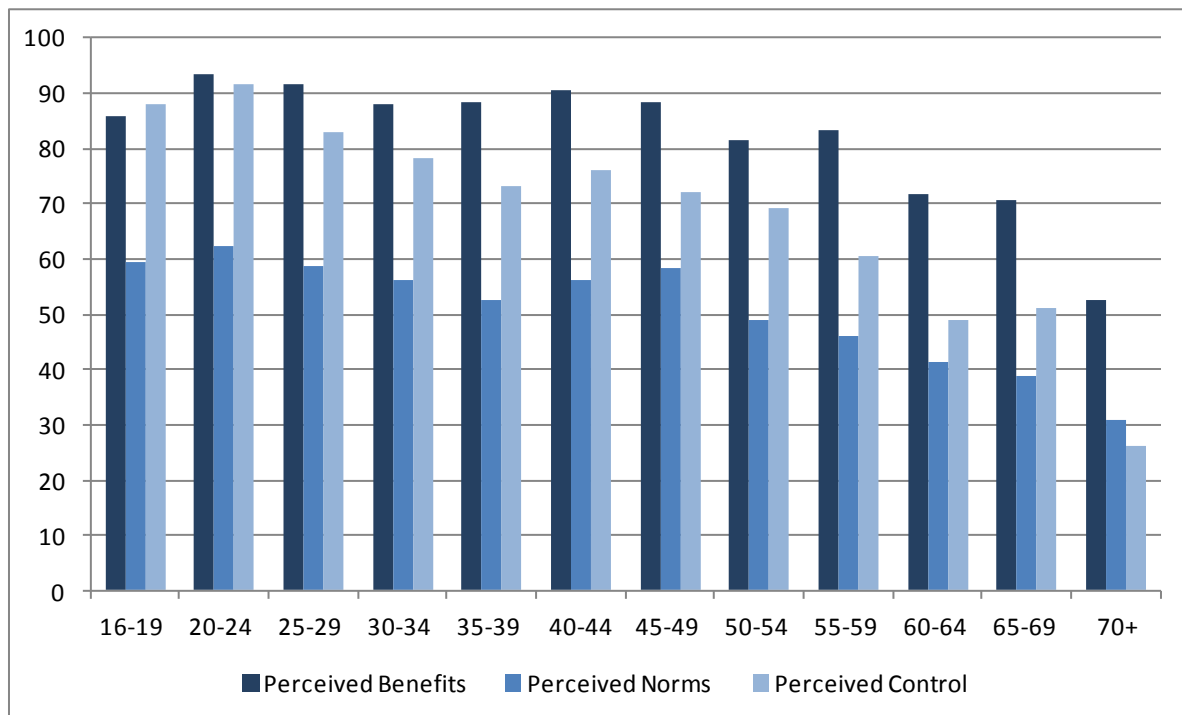
In line with previous work on the TPB, we investigated the relationship between the four scores, asking whether those who perceived higher benefits, stronger social norms and greater control are also more likely to intend to increase participation. This indeed turns out to be the case. People who perceive higher personal benefits, perceive stronger social norms and perceive greater control over the behaviour are all more likely to intend to increase participation. The strength of the relationships is shown in Figure 5.6, which gives the probability of intending to increase participation according to whether an individual is above or below the neutral point for the three different perceptions. This result holds in a multivariate model that controls for available background characteristics and current participation. Interestingly, once estimated in such a multivariate model, of the three perception variables perceived control has the strongest relationship with the intention to increase participation.

**FIGURE 5.6** Intention to Do More Sport and Exercise by Perceived Benefits, Norms and Control

It is of course important to bear in mind that the dependent variable here relates only to intention, not to actual behaviour. As figures for take-up presented in the next chapter will demonstrate, only a small proportion of those who state an intention to increase participation actually manage to do so.

As shown in Section 5.2, age, gender and socio-economic status are powerful determinants of the likelihood of participation. Given this, we consider the extent to which these psychological measures might help us to understand the relationships between participation and background characteristics. None of the perceptions is associated with gender, but there is a significant association with age, as shown in Figure 5.7. People under 50 years of age are very likely to perceive that doing more sport and exercise would be beneficial for them. Although not shown in Figure 5.7, the proportion who perceive that they would get health benefits, i.e., excluding social benefits from the analysis, is even higher at above 90 per cent across all adults up to age 50. There is a slight decline in the perception that this is a social norm with age up to this age also. But from 50 years onwards, the likelihood of perceiving both benefits and an associated social norm falls away.

FIGURE 5.7 Perceived Benefits, Norms and Control by Age

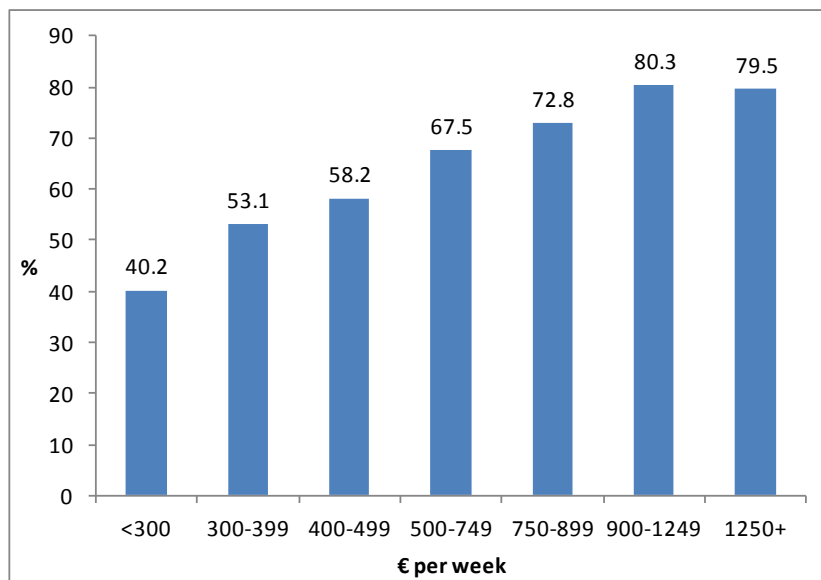


Though we have no way to test the hypothesis, intuitively this finding is much more likely to be a cohort effect than an age effect. It seems very unlikely that people develop more sceptical beliefs about the benefits of sport as they age; rather, the younger generation of adults has probably developed a different view of sport and exercise from the generation that preceded it. This kind of cohort effect is more consistent with the fact that the present generation of younger adults participates more than the previous generation did at the same age, especially in personal exercise activities (Lunn and Layte, 2008).

Interestingly, despite the very strong relationship between various socio-economic indicators and participation, the relationship between these indicators and perceived benefits and social norms is not strong. This finding also echoes previous work that found very little difference between socio-economic groups with respect to interest in active participation (Lunn, 2007b). However, there is a strong association between socio-economic status and perceived control especially when the former is measured by income. Figure 5.8 shows the likelihood of expressing a positive view of control over increasing participation by weekly income. The gradient apparent across the categories is very strong. Clearly, those in lower income categories are much more likely to perceive barriers to increasing participation that are beyond their individual control. There is also a slightly less strong relationship between perceived control and occupational class. The same result does not hold however for educational

attainment. This is an interesting finding, as it suggests that the perceived lack of control may relate to means and to current social connections.

**FIGURE 5.8** Perceived Personal Control Over Increasing Participation by Income



## 5.5 SUMMARY AND DISCUSSION

This chapter first confirmed that the strong associations between active participation in sport and exercise and age, gender and socio-economic status hold for the ISM data from 2007-2009, in line with previous findings. It hypothesised that these associations might result from the incentives to take up or drop out from sport associated with the perceived benefits. Although it is the case that those who participate have a stronger belief in the benefits of sport, the overwhelming majority of people believe that participation is linked to better health. This suggests perhaps that there may be limits to the efficacy of policies that promote the message that playing sport is associated with better health since this appears to be a message that most adults have already absorbed. The notable exception here is older people, among whom there are more people who do not perceive such benefits, at least regarding benefits that would accrue to them personally were they to increase participation.

In general, those who perceive benefits to increasing participation, who perceive associated social norms, and who feel that they can control whether they increase participation are most likely to state that they intend to do so, although it is clear that only a small proportion of the 46 per cent who state this intention actually carry it through. Perceived control over participation, i.e., the extent to which people feel they are able to increase participation if that is what they so



desire, emerges as having a strong relationship with intentions. Those in lower socio-economic groups are much more likely to state that they do not have such control.



# Chapter 6

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## Transitions into Activity: Take-Up

### 6.1 INTRODUCTION

This chapter makes use of a specially designed module of the ISM which asked some additional questions to only those respondents who stated that they were active participants during the previous week. The module was fielded in late 2007 and early 2008. The questions related to how the respondent had come to take up the sport they played, or in the case of those who had played more than one sport, the activity they had undertaken most during that week. The questions sought information about when the activity was taken up, where, how much self-motivation was involved, the ease or difficulty of finding facilities, who else was involved, how rewarding the initial experience was, and what motivates continued participation.

The overall level of take-up recorded by this module provides useful background material for the remainder of the chapter. We estimate that in any 18-month period the number of adults taking up sport (i.e., those who started a new activity and were not already participating in another activity) amounts to approximately 2.1 per cent of the number of adult non-participants.<sup>18</sup> Initially, this percentage figure may appear very low, but a bit of simple arithmetic suggests otherwise. If this estimate is taken as the probability of a non-participant taking up a sport in each 18-month period, then the probability that they take up an activity over a 30-year period amounts to 35 per cent. Furthermore, it is not clear whether the higher rate of take-up among younger adults is the result of an age effect (older people are less likely to take up activities) or a cohort effect (the current generation of young adults has a higher take-up rate than the older generation). If the latter effect is substantial, then an average take-up rate calculated for the adult population as a whole will not reflect the chances of take-up among younger adults or the rate of take-up in coming years, which will both be higher.

Either way, there is a yawning gap between the 46 per cent of adults who state an intention to increase active participation, as recorded in the previous chapter, and the much lower rate at which regular (weekly) activity is taken up. Most

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<sup>18</sup> The period of 18-months is used because the questionnaire asked respondents for the age at which they took up the sport. The rate quoted is for those who gave their present age or their present age minus one, which could fall anywhere between 1-2 years previously, but on average covers the previous 18 months.

intentions do not result in changed behaviour. Note that this does not imply that the analysis of intentions in the previous chapter is irrelevant. Even if only 2.1 per cent of non-participants take up a sport over 18 months, the individuals concerned may well be drawn disproportionately from the 46 per cent who intended to do so. In other words, while intentions to increase participation may not be sufficient to change behaviour, they may substantially increase the likelihood of changing behaviour.

## 6.2 WHEN DO ADULTS TAKE UP ACTIVITIES?

Older participants are obviously more likely to have taken up whatever sport they play at a later age, but the scale of this effect is worth emphasising. Figure 6.1 shows the proportion of active participants who had taken up their chosen activity as an adult (i.e., from 18 years onwards) as opposed to as a child. As stated, it is unsurprising that the proportion increases with age (although around retirement some individuals go back to activities they originally took up as children – mostly swimming). Yet the steepness of the increase is quite striking. By 25-29 years of age it is already the case that more than one-third of activities were taken up as adults. By 40 years this climbs to more than one-half and by 50 years more than two-thirds. Note that this means that for the majority of a typical adults' lifespan, the sporting activity they undertake is more likely to have been taken up as an adult than as a child.

**FIGURE 6.1** Proportion of Activity Taken Up After Age 18 by Age

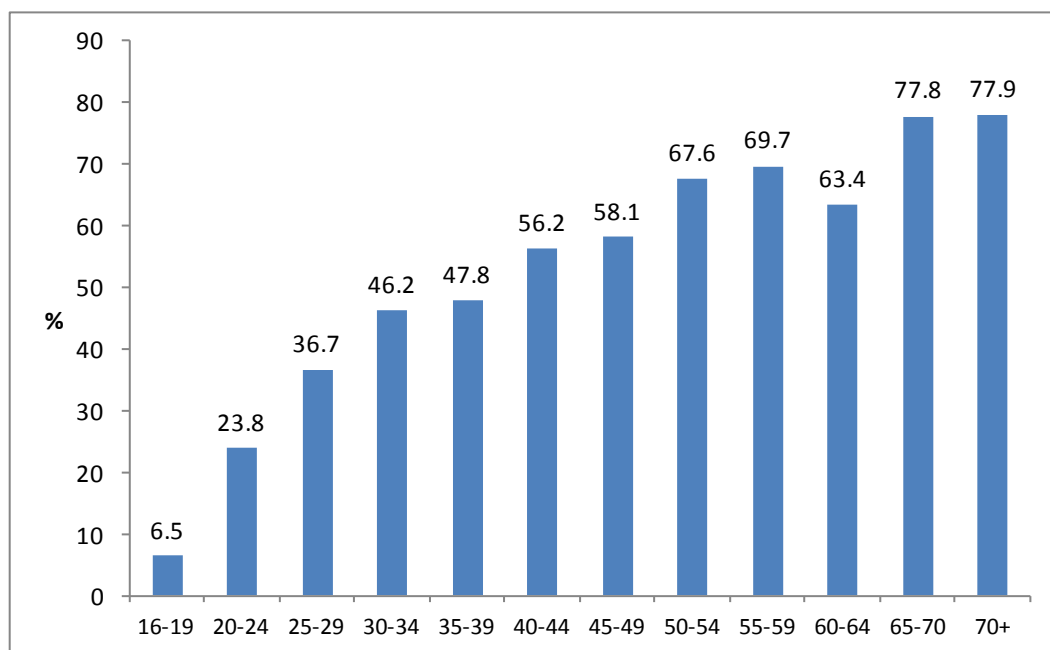
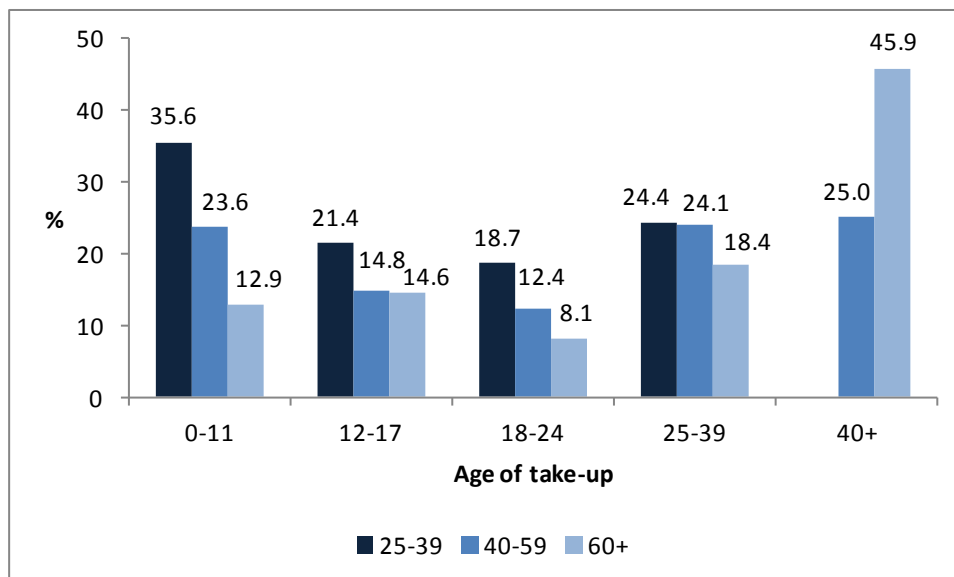


Figure 6.2 offers a further analysis by presenting the distribution of the age at which activities were taken up across five categories for three age groups. This shows that for people over 60 years, 46 per cent of present activities were first taken up after 40 years of age. Nevertheless, a residual amount of sport taken up as a child continues to be undertaken in later life – the activities that count for the modest correlation between children’s and adults’ activity in the tracking studies (see Section 1.3). The composition of this activity is interesting. Activities taken up when individuals were of primary school age have a greater likelihood of being played later in adulthood than those undertaken at second level. This effect is driven by when certain specific activities were likely to be taken up, particularly swimming. Swimming accounts for more than 40 per cent of all the activity taken up under 12 years that is still participated in after 40 years of age. Cycling also stands out, albeit to a lesser extent, as an activity that if taken up young persists well into later life. Notwithstanding the persistence of swimming and cycling from an early age, it is important to note that the dominant message of Figures 6.1 and 6.2 is that take-up of sporting activity from age 18 onwards contributes very significantly to participation over the life-course. Thus, the factors associated with adult take-up will determine the likelihood of continued participation, as well as who continues to participate and who does not.

**FIGURE 6.2** Age of Take-Up by Age Group of Current Participants

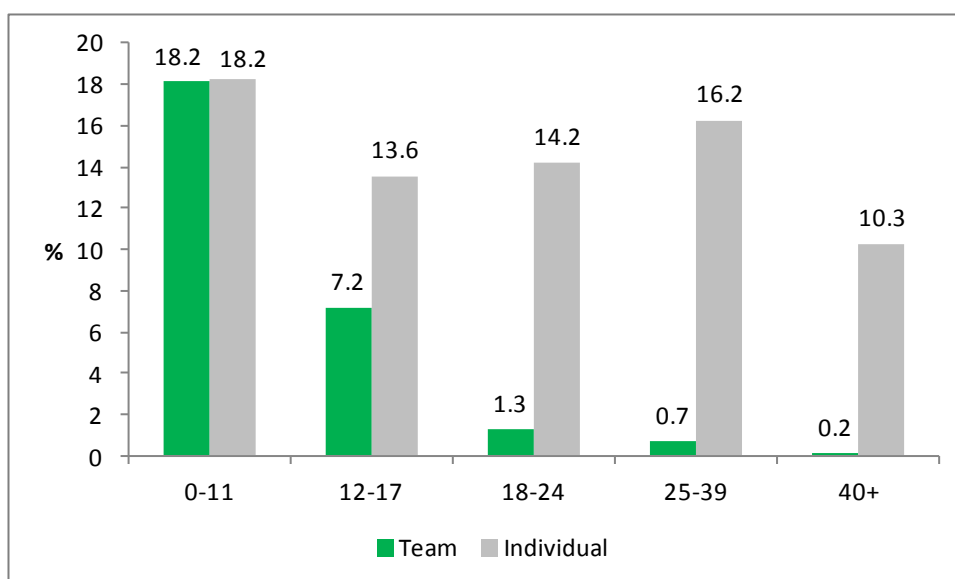


### 6.3 WHAT ACTIVITIES ARE TAKEN UP?

Figure 6.3 provides the age at which adults took up their chosen activity separately for team and individual activities. The figures in this chart are proportions of all take-up events for sport still played by adults, i.e., the figures

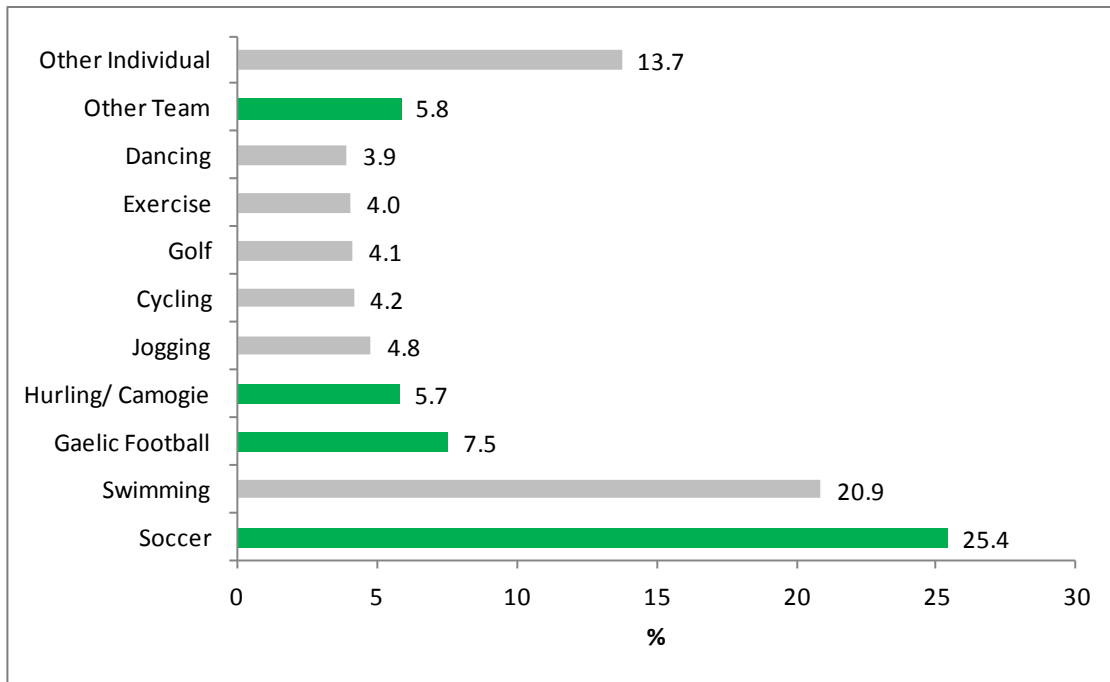
for the ten bars sum to 100 per cent. Consistent with previous findings (Lunn and Layte, 2008), approximately three-quarters of adult sport consists of individual sport, most of which is taken up from age 18 onwards, while just 2 per cent of adult activity consists of team sport taken up as an adult. In fact, from a life-course perspective, the dominance of individual sport in adult sport and the role of take-up as an adult are likely to be somewhat underestimated by this analysis, for two reasons. First, Ireland's unusual demographic profile means that a high proportion of adults at the time the survey was conducted were in their mid-twenties. Second, the younger cohort of adults plays more sport than its predecessors did at the same age. Both of these facts are likely to increase the proportion of adult sport accounted for by team sports, which are more likely to be played by younger adults. As the present large and more active cohort of young adults ages, assuming that it continues to follow present trends, we can expect a further increase in the take-up of individual sporting activities and the proportion of adult sport they account for.

**FIGURE 6.3** Proportion of Adult Sporting Activity by Age of Take-Up and Type of Activity

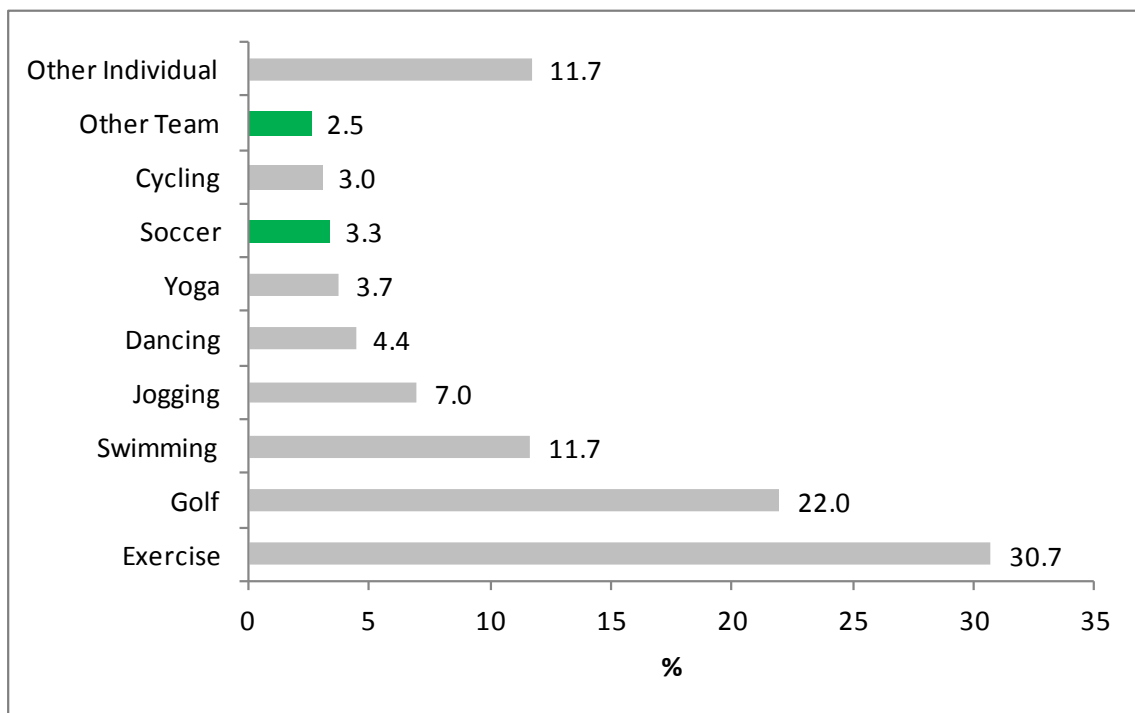


Figures 6.4 and 6.5 show the degree to which take-up as a child and as an adult differ, by providing the distribution of each across specific activities. Soccer and swimming dominate the activities undertaken by adults that were taken up as children, although the contribution of the large array of 'other individual' activities is also worth noting. The specific activities most likely to be taken up in adulthood are golf, swimming and personal exercise, which between them account for more than 60 per cent of adult take-ups. Soccer is the only team sport that registers a significant level of adult take-up.

**FIGURE 6.4** Activities Taken Up as Children and Still Participated in as an Adult



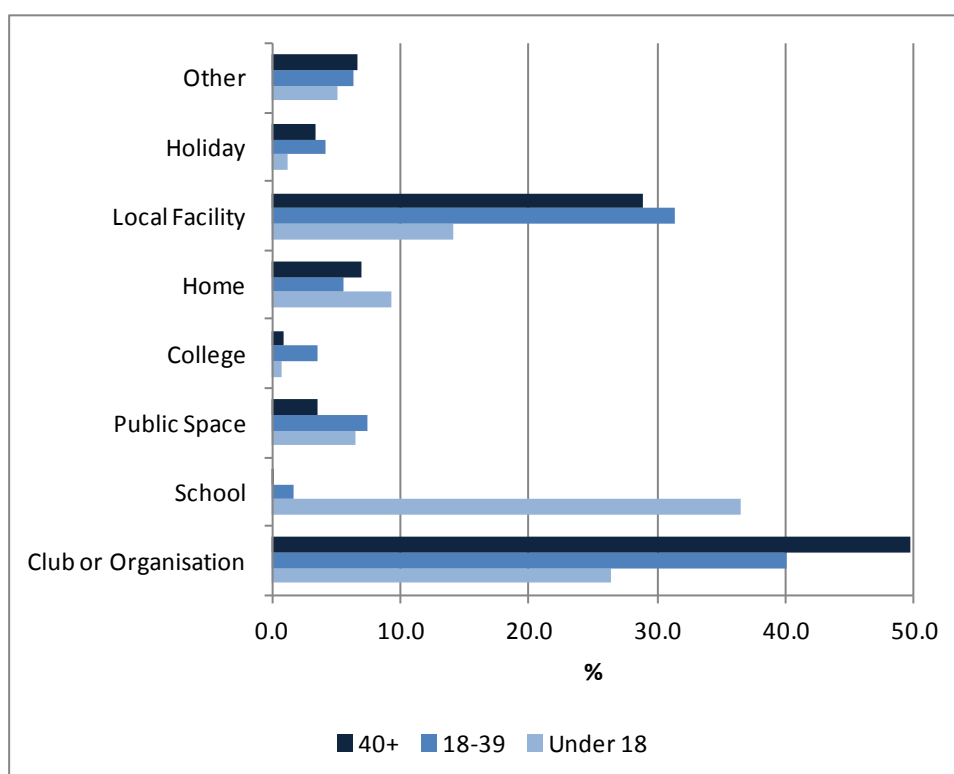
**FIGURE 6.5** Activities Taken Up from Age 18 Years and Upwards



## 6.4 INITIAL INVOLVEMENT

Figure 6.6 details the location at which activities were taken up by the age of take-up. Note that while the take-up of activities at school makes a clear contribution to sport still undertaken as an adult, it accounts for only a minority of sports taken up as a child and still participated in as an adult. More than 60 per cent of such sports were taken up in a range of locations outside of school, the most common of which were clubs and local facilities. These latter two categories account for the large majority of adult take-ups. This underlines the importance of sports clubs and organisations in providing opportunities and encouraging people to take up sport. It is important to note, however, that adding together the figures for ‘public space’, ‘home’, ‘holiday’ and ‘other’, reveals that more than one-in-five take-up events for all age categories occurs outside of what one might consider to be a formally organised setting. The category ‘college’ may be a little misleading, as it refers to taking up activities “at college” (i.e., on college facilities) not “when at college”. Later analyses (see Section 6.5) show that students are more likely to take up a new sport, suggesting that being at college may assist take-up even if college facilities are not the initial location for participation.

**FIGURE 6.6** Location of Take-Up by Age of Take-Up

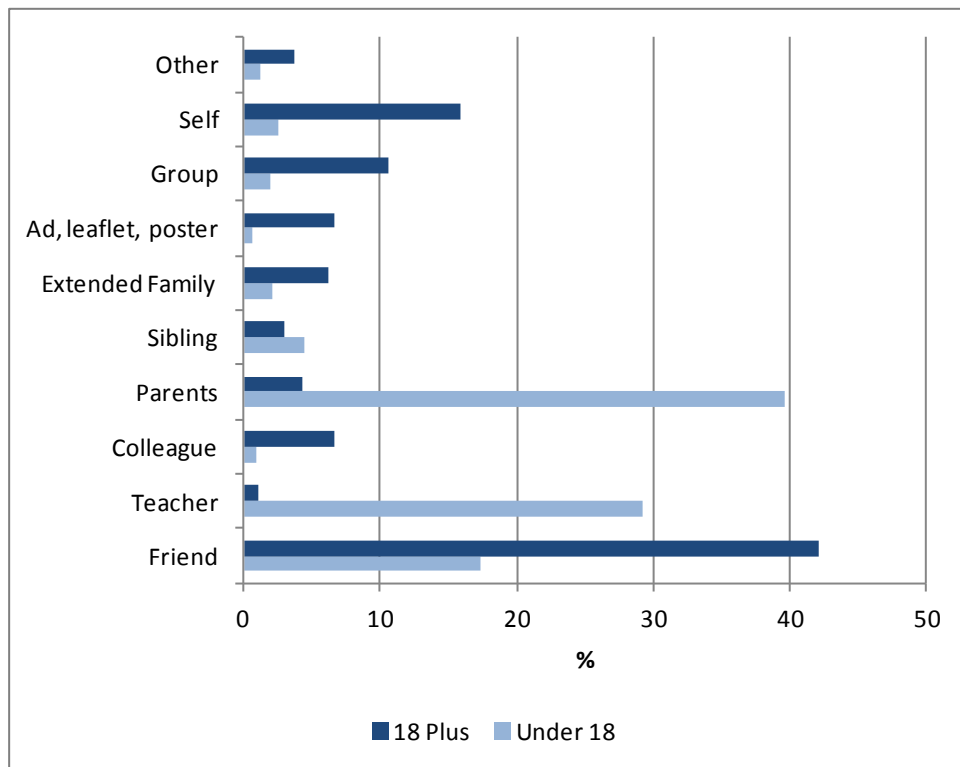


Since sports clubs and local facilities are involved in most initial take-ups of sporting activity, it might be thought that sports are taken up where the most



motivated individuals decide to make themselves more active and so seek out a place to participate. In fact, however, initial participation in a sporting activity turns out not to be like this. For those who took up a sport as an adult, as Figure 6.7 reveals, just 16 per cent did so by themselves. A further 7 per cent did so as a response to an advertisement, leaflet, poster, etc., but this leaves more than three-quarters who were introduced to the sport by someone else. Other people are even more important for take-up as a child, where the person who introduces individuals to the sport is overwhelmingly likely to be a teacher or parent, as one might expect. But for adults, the range of other people who introduce individuals to sporting activity is very broad. As well as friends, who constitute by far the largest category, colleagues, family members and social groups all help to introduce people to sport.

**FIGURE 6.7** Person Who First Introduced Participants to Sporting Activity

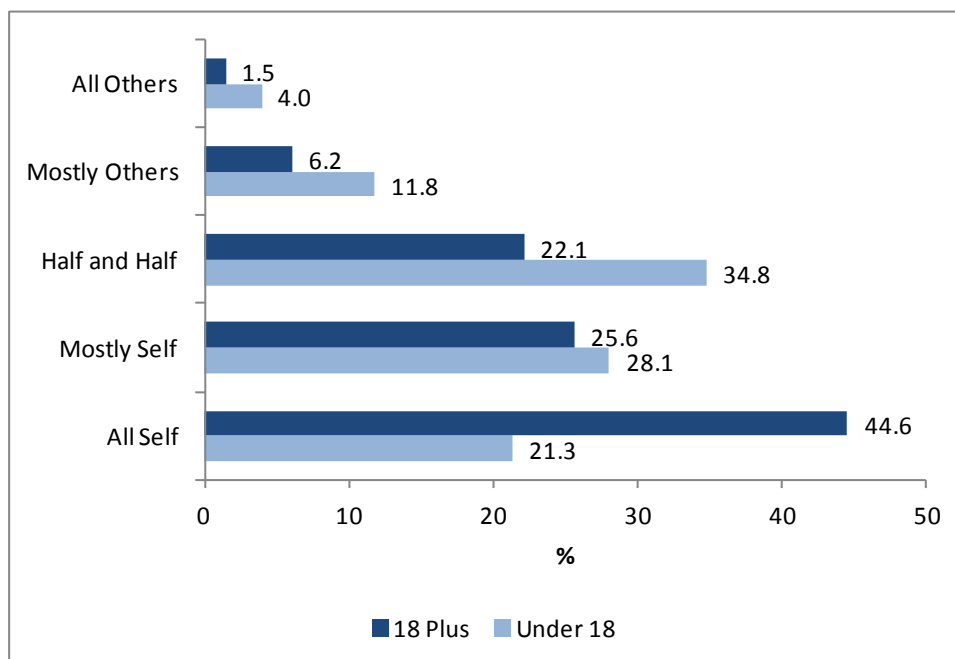


The strong suggestion here is that participation in a new sporting activity depends on social connections and networks. This finding may help to make sense of the gap between intentions and behaviour noted at the beginning of the chapter. Individuals who intend to increase participation, perhaps particularly those who do not presently participate, may well be unlikely to seek out and take participation opportunities on their own, but may take such opportunities if offered one alongside someone else. It is doubtless easier to take up a sport if

assisted by someone who already has the necessary information, contacts and enthusiasm.

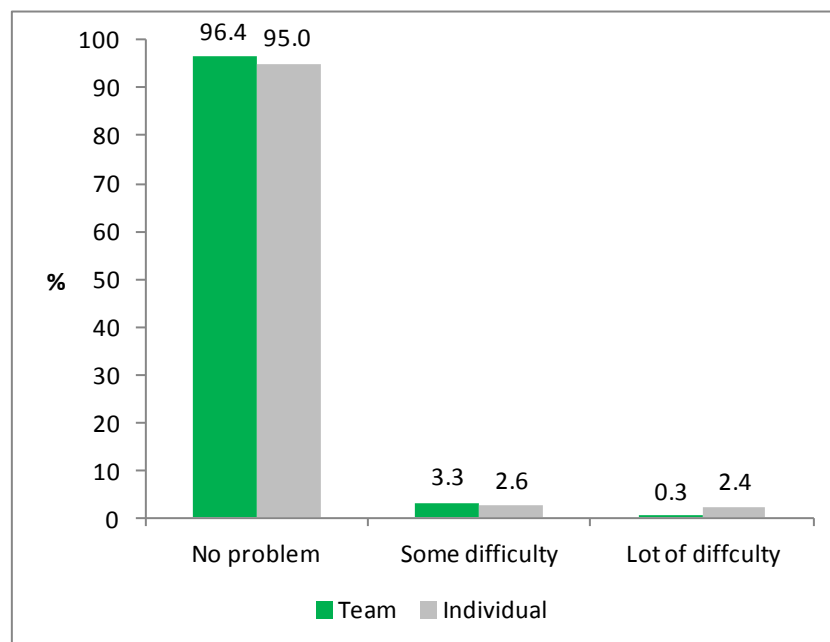
The next survey question asked those who had taken up a sport to describe the extent to which their initial involvement was down to self-motivation and the extent to which it reflected encouragement by other people. Estimating this balance is a subjective judgement rather than a factual response and the answers should therefore be treated with some caution. Various established psychological findings (such as attribution experiments, e.g., Miller and Ross, 1975) would lead us to predict that people will be inclined to overestimate their own role in good outcomes and to underestimate the role of the context in which they acted. Given this, the extent to which individuals attribute their involvement to self-motivation should perhaps be considered an upper bound and the extent to which they acknowledge the role of others a lower one. The results, which are given in Figure 6.8, are hence interesting. More than half of adults taking up a sporting activity acknowledge that other people played a role in initiating their involvement, while 30 per cent fall into one of the top three categories for whom own self-motivation was no more than half the story. Taken together, the findings of Figure 6.7 and 6.8 suggest that taking up a sport, at least as regards initial involvement, is frequently a social rather than an individual phenomenon.

**FIGURE 6.8** Perceived Balance Between Self-Motivation and Encouragement by Others



Previous surveys (Fahey *et al.*, 2004; CSO, 2007) have reported that very few non-participants state that the main reason they do not play sport is lack of facilities. The ISM module asked a question about how easy it was to find facilities when people initially got involved in their sport. The responses are summarised in Figure 6.9. Fewer than one-in-twenty new participants experienced any problem finding facilities. It could of course be the case that, in part, this finding represents a selection effect: if those who experienced difficulty finding facilities did not end up taking up the sport, then they will not feature in the sample for the ISM survey module. However, if such a selection effect explains the result, then there should be many non-participants who do not participate because of lack of facilities, which we know is not the case. In other words, if non-participants do not complain of lack of facilities and new participants do not state that finding facilities proved difficult, it should surely be concluded that provision of more and better facilities, at least in Ireland at the present time, is unlikely to increase the numbers participating in sport, though it may improve the experience of those who already participate.

**FIGURE 6.9** Difficulty Finding Facilities



Because the numbers of survey respondents who stated that they did have a problem finding facilities is so low, it is not possible to provide figures for the specific sports or types of facilities concerned. Nevertheless, a disproportionate amount of the small number of such responses came from swimmers, which matches the findings of previous attempts to examine what types of facilities

might increase participation (CSO, 2007). The only team sport to register any meaningful number of responses was soccer.

One last finding regarding initial involvement in activities is worth considering, although we do not present data. Participants were asked about how rewarding they found their initial experience of playing their chosen sport. A majority stated that their initial experience turned out to be more rewarding than they expected. This finding must be treated with caution, because to some degree it undoubtedly reflects a selection effect: those who discovered that they liked the activity would be more likely to continue it and so to feature in the sample of participants at the time of the survey. Nevertheless, since the finding applies to the clear majority of present participants, with a greater number saying that they found participation to be more rewarding than expected rather than as rewarding as they expected, the finding may indicate that the perceptions of non-participants regarding how much they will enjoy playing a sport are frequently inaccurate. This may be important, because it could suggest that participation programmes that encourage people simply to come along and try new activities, or perhaps have a go at several new activities, may effectively generate converts who are surprised by how much they enjoy the activity.

## 6.5 DETERMINANTS OF TAKE-UP

In Appendix F we report a statistical model of the likelihood of having taken up a sporting activity within the past five years. The model concentrates on non-participants and those who would have been non-participants had it not been for the activity they have recently taken up, i.e., it excludes those who participated in another activity continuously for the preceding five-year period but includes those who dropped out of activities during that period.<sup>19</sup> The model reveals significant relationships between background characteristics and the likelihood of taking up a sport.

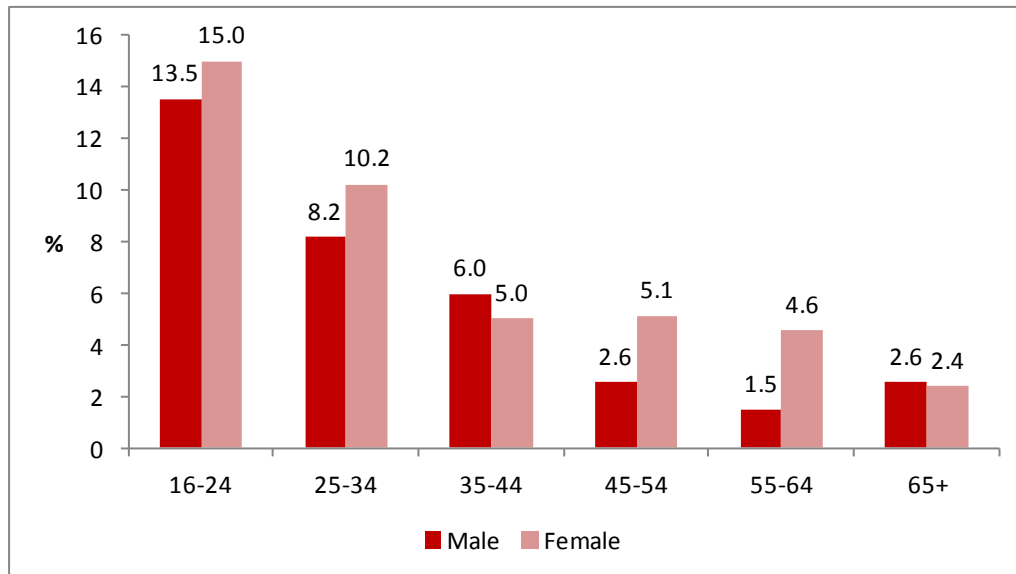
There is no overall effect of gender on the likelihood of taking up a sport, but there is an interesting interaction with age. Figure 6.10 shows the likelihood of having taken up a sport within the preceding five years by age and gender. Young adults are more likely to take up activities than older adults, although as explained above we do not know whether this is an age effect or a cohort effect. Once educational attainment and other socio-economic background characteristics are controlled for, to take account of the superior educational performance of females among the current generation of young adults, the

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<sup>19</sup> Further details are given in Appendix F, including how selection effects are controlled for in the model.

gender differences between the first three age groups (i.e., from 16 to 44 years) are not statistically significant. However, between 45 and 64 years, women are significantly more likely to take up an activity than men. Indeed, once other background characteristics are controlled for, including employment status, middle-aged men are the least likely of all age categories to take up a sport.

**FIGURE 6.10** Proportion Who Took Up an Activity Within the Last Five-Years by Age and Gender

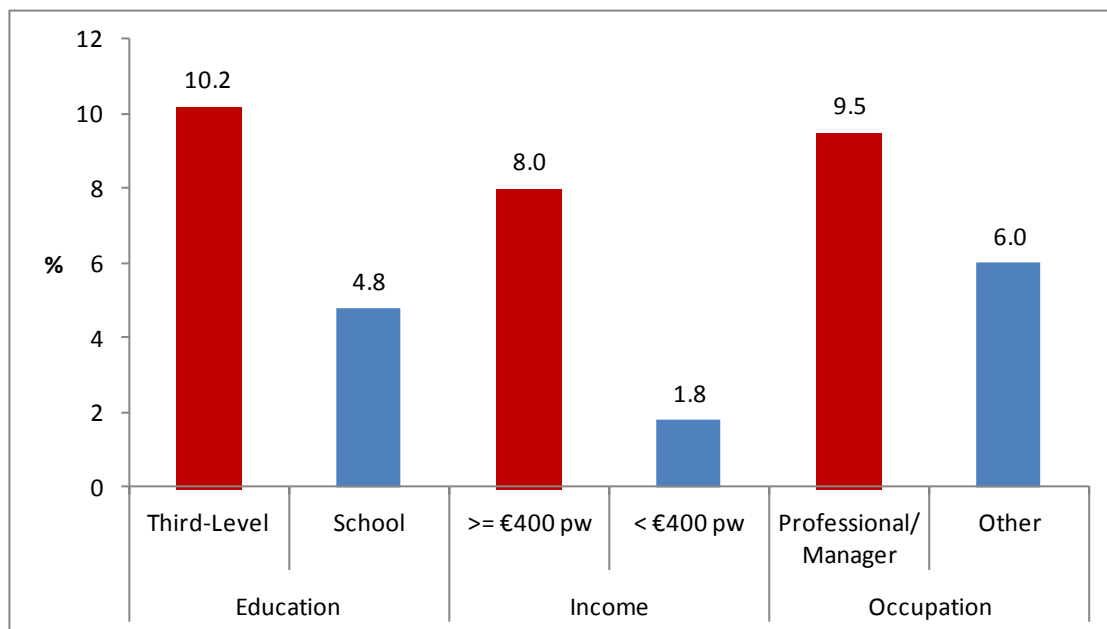


Our statistical model also shows that socio-economic status is strongly and significantly linked to the likelihood of taking up sport. Figure 6.11 indicates the strength of the effects involved. Individuals with higher educational attainment, income and occupational class are much more likely to take up an activity. We estimate that the influence of low income is probably the strongest effect: low income individuals are particularly unlikely to take up a sport.

It is worth recalling that almost all take-up events involving adults relate to individual sporting activities, which would involve expense. The majority are accounted for by golf and personal exercise, which mostly consists of using a gym, attending exercise classes or using fitness equipment, usually at some cost. Yet the much greater likelihood of those in higher socio-economic groups taking up an activity might also be related to the findings of the earlier analysis regarding how people become initially involved in a sport. By the time individuals leave full-time education, it is already the case that those in higher socio-economic groups are significantly more likely to play sport. Since the large majority of take-up events consist of individuals being introduced to a sport by friends, colleagues or family members, belonging to a social group that has a

higher participation rate confers an immediate advantage. It is simply more likely that members of such groups will be introduced to new activities, because they are more likely to be surrounded by others who already participate. The findings of this chapter therefore point to a straightforward conclusion. The socio-economic gap in sporting participation is partly self-perpetuating, because once a gap exists it results in a greater likelihood of take-up among those in higher socio-economic groups. Note that this explanation does not require that attitudes or beliefs in relation to participation sport are in any way different between social groups, only that the higher participation rate in one compared to the other becomes self-reinforcing if social contact with participants increases the likelihood of take-up.

**FIGURE 6.11** Proportion Who Took Up An Activity Within the Last Five-Years by Measures of Socio-Economic Status



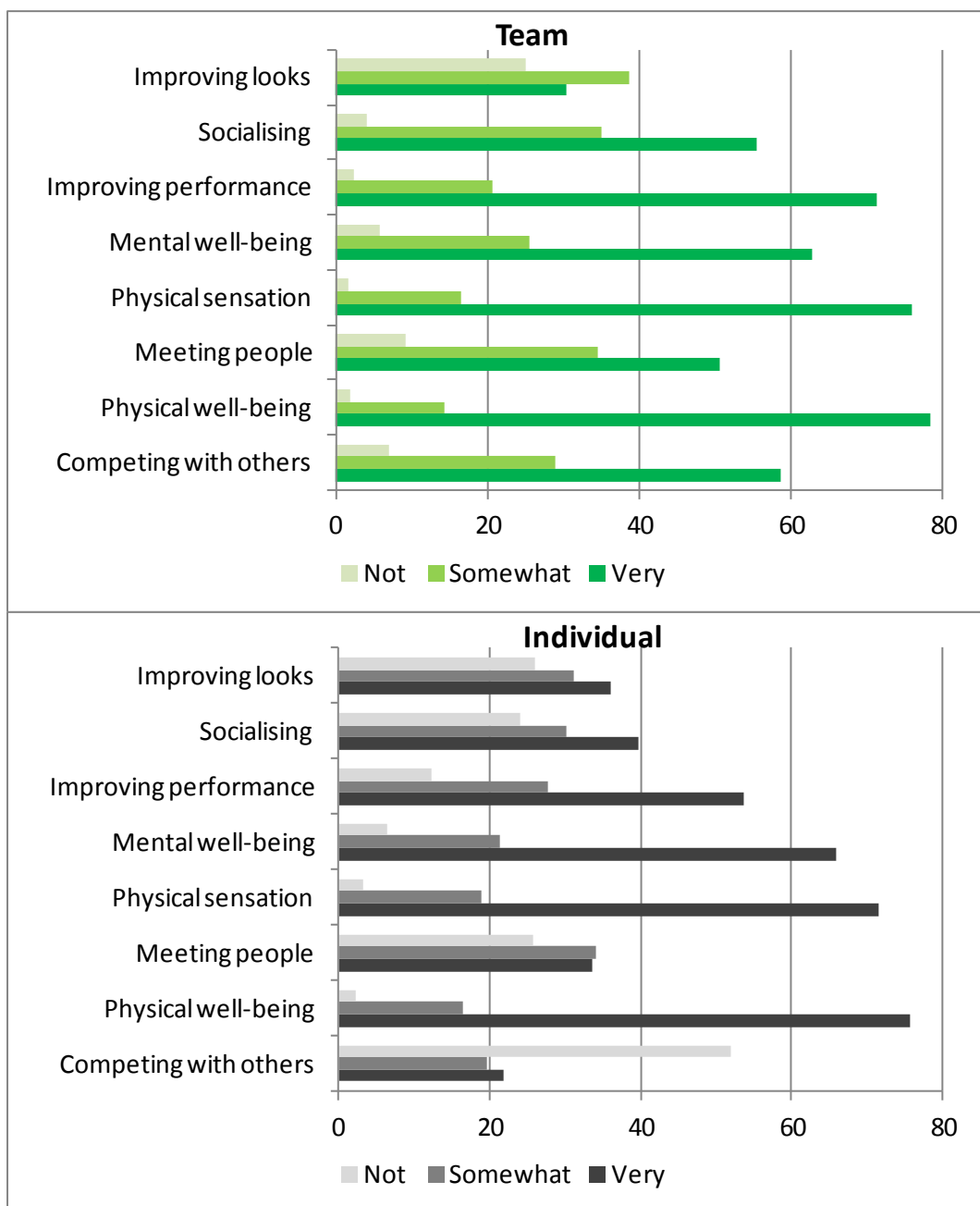
The statistical model also reveals that disabled people are far less likely to take up an activity, even once age is controlled for.<sup>20</sup> Retired people and current students are significantly more likely to do so. These findings suggest that free time, or flexibility in scheduling time, may be important factors in whether people take up a sport. There is no impact of marital status, having children or residential location.

<sup>20</sup> Lunn and Layte (2009) consider the lower participation rate of disabled people in greater detail.

### 6.6 CONTINUING INVOLVEMENT

A final question in the survey module on take-up asked about motivations for continued involvement in the main activity undertaken by active participants. The question was designed to elicit more detail than similar questions fielded in previous surveys. For each of eight motivations, respondents were asked whether it was very important, somewhat important or not at all important to their involvement. The results are given separately for individual and team sports in Figure 6.12.

FIGURE 6.12 Motivations of Present Participants



Physical well-being is the dominant motivation for both types of activity, being rated as very important by more than three-quarters of participants. The physical sensation of active participation also rates very highly. Even among team sports, these two individual, physical motivations score more highly than performance, competition or the social benefits of playing sport. It is interesting also that mental well-being has such a high rating among both types of sport. These findings are therefore in keeping with those in the previous chapter regarding the perceived benefits of sport: health benefits are the dominant factors. The competitive and social sides of sport remain important additional motivating factors, but there is an interesting comparison to be made between the results for 'improving performance' and 'competing with others', with the former being considered more important even among players of team sports. While sport is often primarily thought of as a competitive activity, not least because of the focus on the outcomes of competitive matches, this is not the defining issue for individual active participants, who are more likely to view their participation in sport primarily as a way to enhance their individual well-being.

## 6.7 SUMMARY AND DISCUSSION

When the amount of participation in sport and exercise is considered across the whole life-course, the importance of taking up new activities as an adult becomes apparent. Given modern life expectancy, our results suggest that for more than half of an individual's life they are more likely to play a sport taken up as an adult than a sport taken up as a child. The outstanding exception to this general pattern is swimming, which many people take up when very young and some continue into late adulthood and old age. The sports most likely to be taken up by adults are overwhelmingly individual sports, especially personal exercise activities, golf and swimming.

The way people initially become involved in a sporting activity has a strong social aspect. It is perhaps unsurprising that children are introduced to sports by teachers and parents, but adults too are unlikely to take up a sport simply because they decide to do so and then seek out an opportunity. More commonly, adults are introduced to a new sport by friends, colleagues or family members, and most who take up a sport recognise the importance of encouragement by others. Introductions to and encouragement in new activities is more likely to occur among social groups with higher rates of participation already, such as higher socio-economic groups. These social influences on activity appear to be more crucial than the availability of facilities, since more than 95 per cent of new participants had no problem finding facilities. The importance of social connections to people who already participate is likely to be one reason why



those with lower educational attainment, income and occupational class are far less likely to take up an activity.

Interestingly, given the large overall gender gap for active participation, adult women are as likely to take up a sport as adult men, indeed more so during middle age. In other words, the gender gap is not the result of women being less interested in sporting activities (see also Lunn and Layte, 2008, Chapter 4). Instead, they begin adulthood with a lower active participation rate, having been more likely to drop out of activity during adolescence and then never catch up, despite narrowing the gap in mid-life.

For those who do participate, the primary motivation is the effect on their physical well-being and the physical sensation involved, though mental well-being is also important for a majority of participants. Social benefits, improving performance and competing with others are also important motivations, although they remain second to health benefits for players of team as well as individual sports. Thus, even for participants in sports that are by nature competitive, competition is not the fundamental reason why they choose to take part.



# Chapter 7

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## Transitions Out of Activity: Drop-Out

### 7.1 INTRODUCTION

During 2008 a module was inserted into the ISM questionnaire to study how and why people drop out from sporting activity. The questions were designed to identify sports that each respondent used to play, then to examine in detail the circumstances that led them to give up the most recent sport that they had dropped out from. The questions ascertained when they stopped playing the sport and where they used to play it, before probing various reasons why they gave it up.

A simple calculation similar to that described at the beginning of the previous chapter reveals that adults who participate in sport are more likely to drop out than adults who do not participate in sport are to take up a sport. We estimate that over an 18-month period some 8.7 per cent of adult active participants in sport drop out altogether, i.e., they cease doing any sporting activity. It is worth considering this in the context of the 2.1 per cent take-up rate for non-participants that we estimated in Chapter 6. Because there are just over twice as many non-participants as participants, these estimates suggest that the flow of adults into activity amounts to approximately half the flow of adults out of activity. This is only an approximation, since the two modules used to calculate these figures were fielded at slightly different times and the rates of take-up and drop-out may have been affected by the timing of the onset of the recession.

The difference between the two figures gives an indication of the likelihood of dropping out as people progress through the life-course. Because transitions out of participation are more likely than transitions into participation, the participation rate falls with age (although, as argued above, it is possible that the current generation of young adults will have different take-up and drop-out rates than the generation that preceded them). One might initially think that these estimates imply that over an 18-month period the participation rate for the adult population as a whole ought to fall, perhaps by as much as 4 per cent (or a little over 1 percentage point, based on an overall participation rate of around 30 per cent). The reason this does not happen is that, during the same 18-month period, a not insignificant proportion of the adult population dies while a new group of teenagers enters adulthood (though migration may play a part too). Because the former group are the least likely adults to play sport and the latter group of new

adults are the most likely to play sport, this demographic change results in a positive boost to participation that counterbalances the faster flow out of sport than into it among most adults.

For present purposes, the key point is that the drop-out rate from sporting activity is high and therefore reducing it would be a worthwhile policy goal. Gaining a better understanding of dropping out from sport, meanwhile, is the goal of this chapter. In Appendix G we present a statistical model for the likelihood of dropping out entirely from active participation. The model is estimated for recent drop-out over periods covering the most recent 18-54 months and tested by a two-stage method that controls for selection into participation in the first place (since it is not possible to drop out without first being a participant). The findings that follow are largely based on these models and further statistical details are given in Appendix G. The most consistent and powerful determinants of dropping out are age and the type of sport played. Young adults and those playing only team sport are very much more likely to drop out, controlling for other background characteristics.

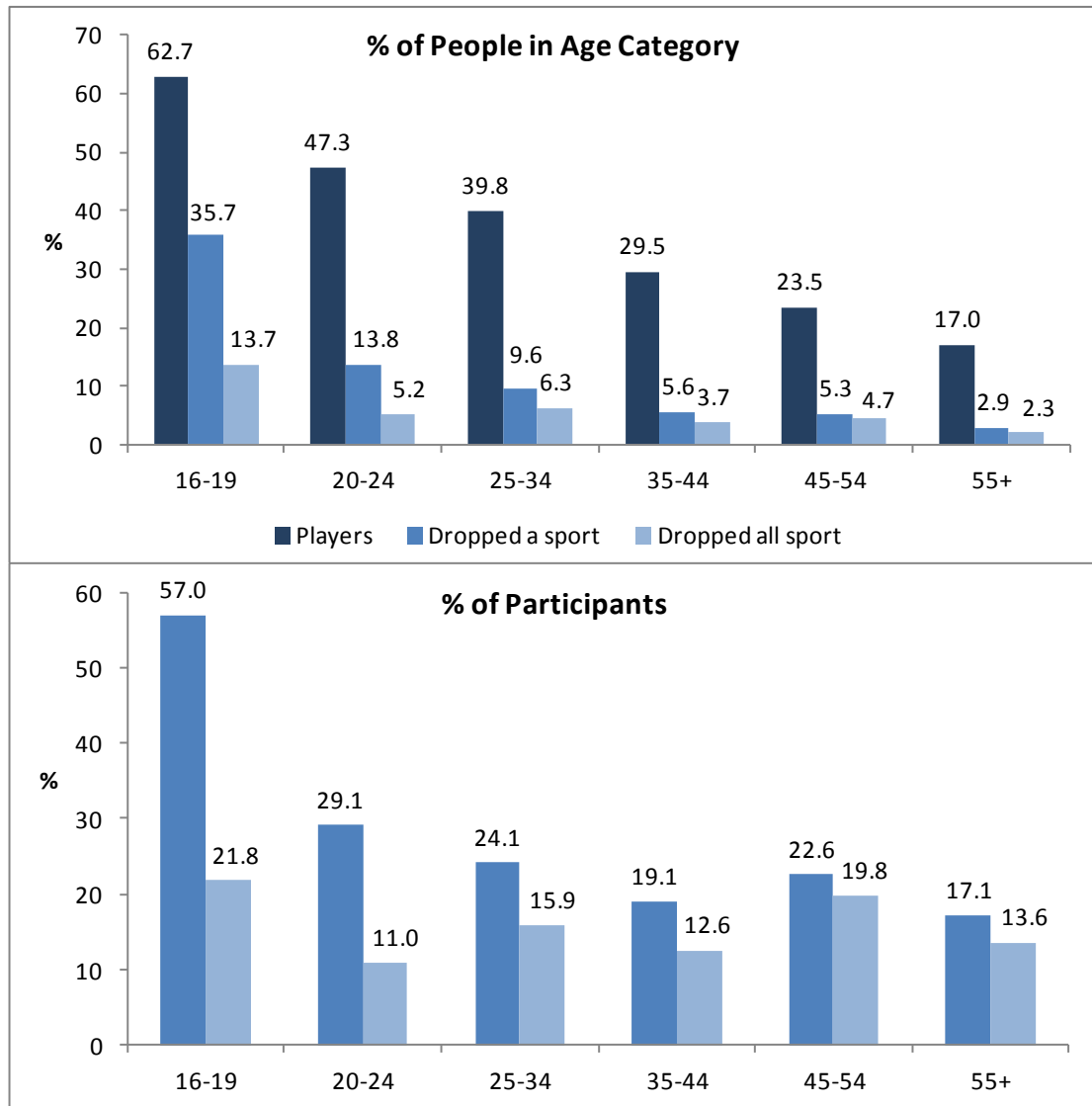
## 7.2 DROPPING OUT BY AGE

The effect of age is demonstrated in Figure 7.1, which presents the likelihood of playing sport, dropping out of a sport and dropping out of all sport by age (top chart), then the numbers who drop out in each age group as a proportion of the number of participants (bottom chart). These charts and those that follow are based on drop-outs that occurred between former participants' age at the time of the survey and their age minus three, which approximately corresponds to a 3-4 year period from 2005-2008. Younger adults are more likely to be active participants, but they are also more likely to drop out of a sport, especially in their late teens. Those in the 16-19 age group are significantly more likely to drop out of sport altogether. Differences in the drop-out rate between age groups are not statistically significant above 20 years. These findings of high drop-out rates associated with adolescence and the period around leaving school are consistent with those described in Chapter 4.

Recall from the analysis of take-up in Section 6.2 that young adults are also very likely to take up a new activity – more than one-third of participants by age 25-29 play a sport they took up after turning 18 years of age. The picture that emerges is therefore one of turbulence in the participation of young adults: they are more likely to play sport, more likely to take up a new sport, more likely to drop a sport, and more likely to drop out of sport altogether. Young adulthood is hence a critical period in the sporting life-course. Assuming that Ireland is not atypical,

internationally speaking, this turbulent period is likely to explain the low correlations found in the physical activity tracking studies described in Chapter 1 (see Section 1.3). The people who end up playing regular sport as adults are, perhaps to a surprising extent, not the same people who played sport as children and adolescents.

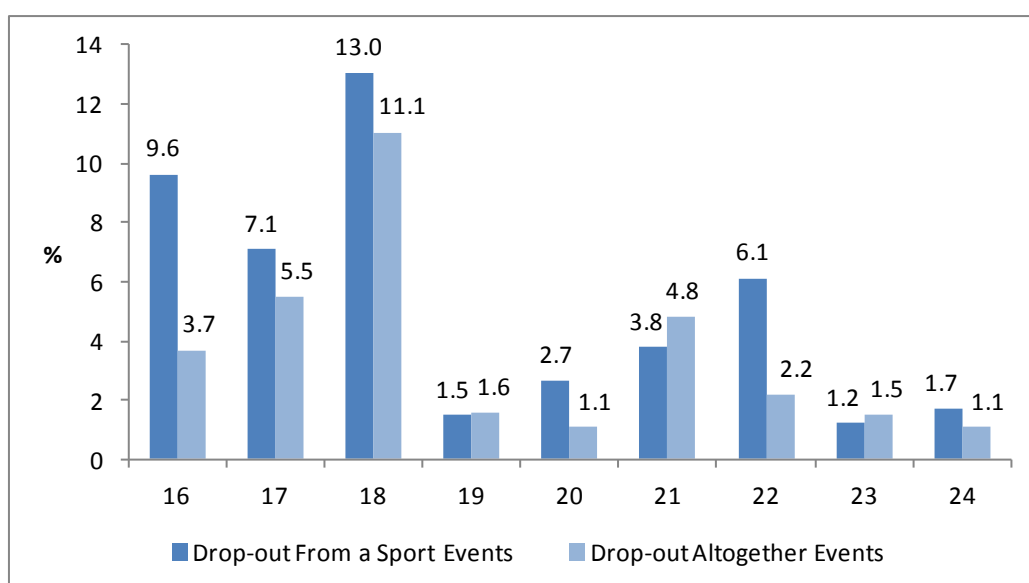
**FIGURE 7.1** Proportions Dropping Out from a Sporting Activity and All Sport by Age



The relatively large sample size of the ISM allows a still more fine-grained analysis of the age at which young adults drop out from sporting activities. Figure 7.2 gives the proportion of adult drop-out events accounted for by each individual year of age in the range 16-24 years. Note that by summing these figures we can calculate that this age groups accounts for almost half of all drop-out events from a sporting activity and nearly one-third of all events where sporting activity is dropped altogether. The peak at 18 years reveals that 18 year-olds are

responsible for more than 10 per cent of drop-out events of both sorts. But there is a second peak in drop-outs, which occurs in the early twenties. The precision of this analysis allows an important inference to be made. If the pattern of drop-out were primarily due to young people losing interest or deciding to spend their time differently, as they become more autonomous and make more of their own decisions, this kind of sharp variation by individual year of age would not be expected. This is not to say that growth in autonomy and developing personal tastes are not important to young people's decisions surrounding sport, but it does suggest that other life changes play a large role.

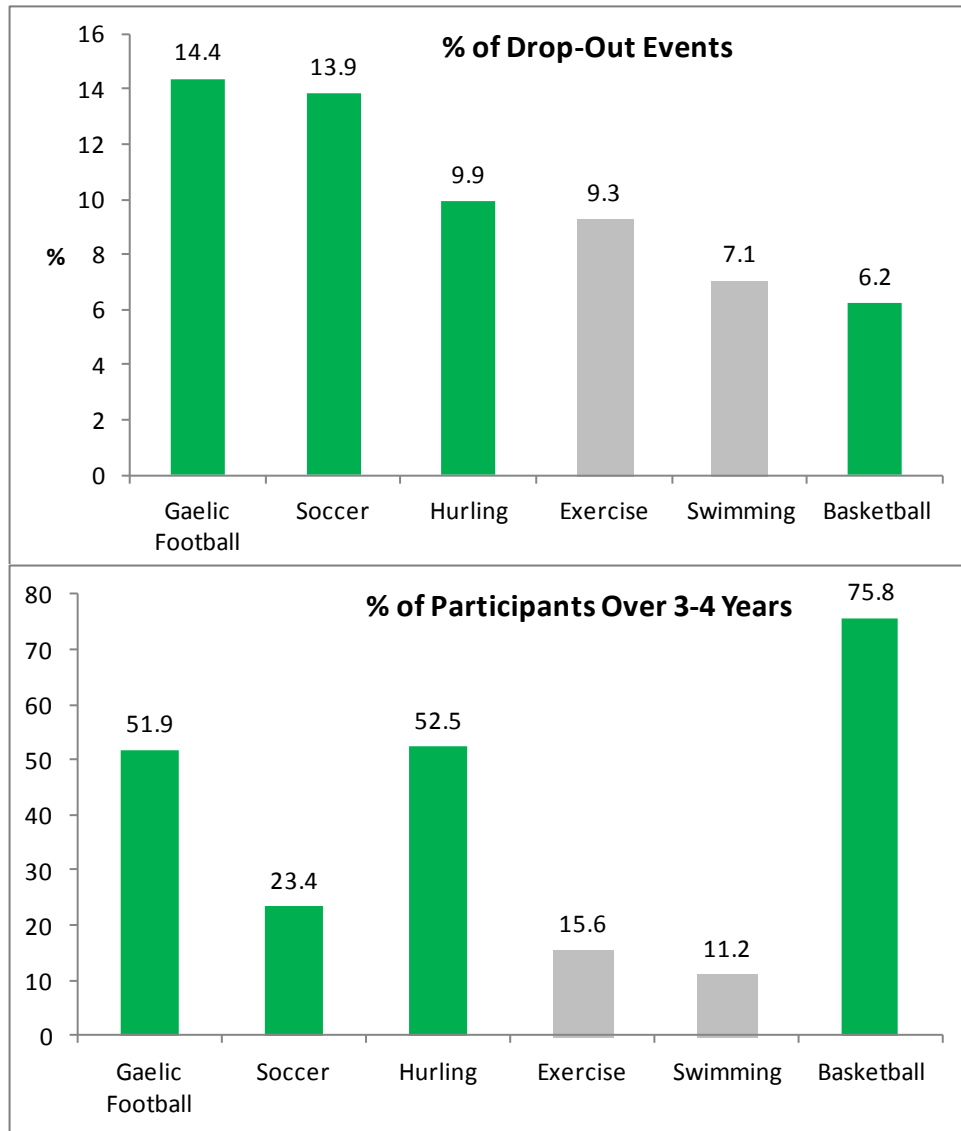
**FIGURE 7.2** Proportion of Drop-Out Events Among Young Adults by Individual Year of Age



### 7.3 WHICH ACTIVITIES ARE DROPPED?

Further light can be shed on the factors that underpin drop-out by examining the activities that are dropped. Figure 7.3 shows the six most likely activities to be dropped, which between them account for 60 per cent of all drop-out events among those aged 16 years and upwards. The top chart shows that Gaelic games contribute approximately one-quarter of all drop-out events. It is important to understand, however, that sports with higher participation rates will also contribute to a greater proportion of drop-out events.

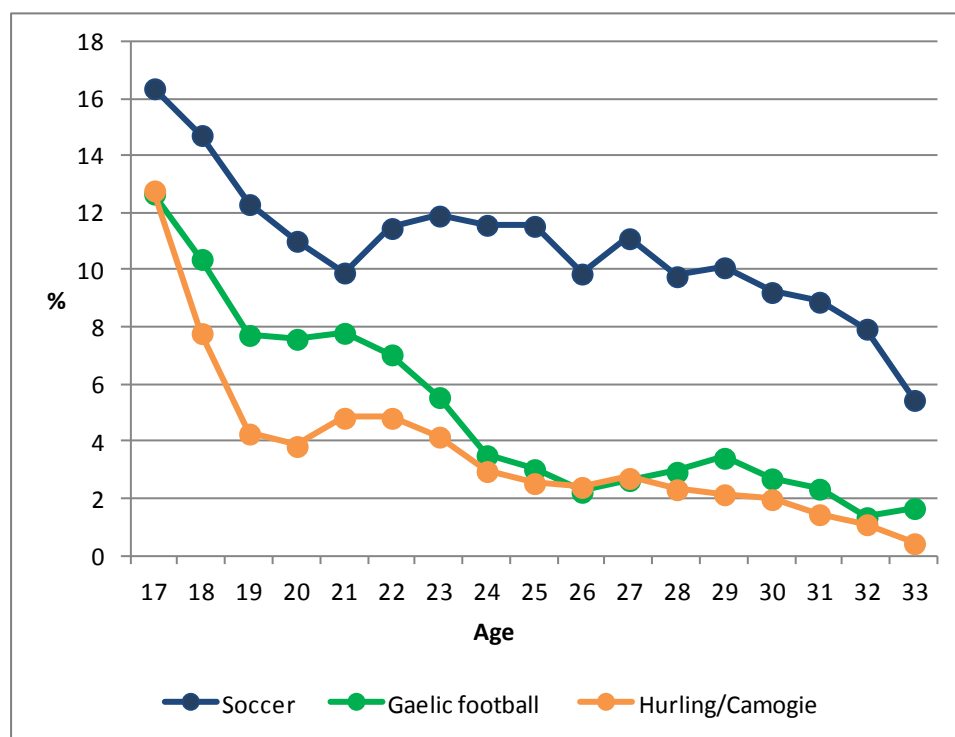
**FIGURE 7.3** Drop-out by Type of Sport, Expressed as a Proportion of All Drop-Out Events (top) and as the Proportion of Participants Dropping Out Over a 3-4 Year Period (bottom)



The bottom chart recalculates the figures as a percentage of the number of participants. Thus, these figures represent estimates of the percentage of players who drop out from each sport over a 3-4 year period, i.e., a drop-out rate. When considered this way, basketball has by far the highest rate of adult drop-out of all sports for which the sample is large enough to measure a drop-out and participation rate. We estimate that more than three-quarters of adult players will no longer be playing the sport 3-4 years later. Gaelic football and Hurling also have drop-out rates above 50 per cent over 3-4 years. The comparison with soccer, personal exercise and swimming is very striking: Gaelic games have more than twice the drop-out rate of soccer and three-to-five times the drop-out rate of the two most popular individual sporting activities.

The contrast between Gaelic games and soccer is particularly interesting, because it is not immediately obvious why the drop-out rate should be so much lower for a sport that is also a traditional team sport involving ball-skills, physical contact and direct competition; the comparison invites further investigation. The concentration of drop-out from these sports among young adults and the generous sample-size of the ISM mean that it is possible to produce a fine-grained analysis of participation rates in these three sports by young adults. The data by individual year of age are unsurprisingly subject to quite a bit of noise, so Figure 7.4 smoothes the data by employing three-year moving averages.<sup>21</sup> All three sports endure sharp drop-out among 17-19 year-olds, but the fall-off is more severe for Gaelic games, especially hurling/camogie. But the bigger difference between the curves is generated by the second decline in the early twenties, which occurs among players of Gaelic games but not soccer players. At the end of this period, having enjoyed participation rates among teenagers that were not far behind soccer, Gaelic football and hurling/camogie have participation rates that are less than one-quarter those of soccer. Again, the unevenness of the pattern suggests that this is not merely a matter of young people developing preferences as they age. The shape of the data suggests that participation in sport is linked to other life events differentially according to the activity involved.

**FIGURE 7.4** Participation by Age in Soccer, Gaelic Football and Hurling/Camogie (Three-Year Moving Averages)



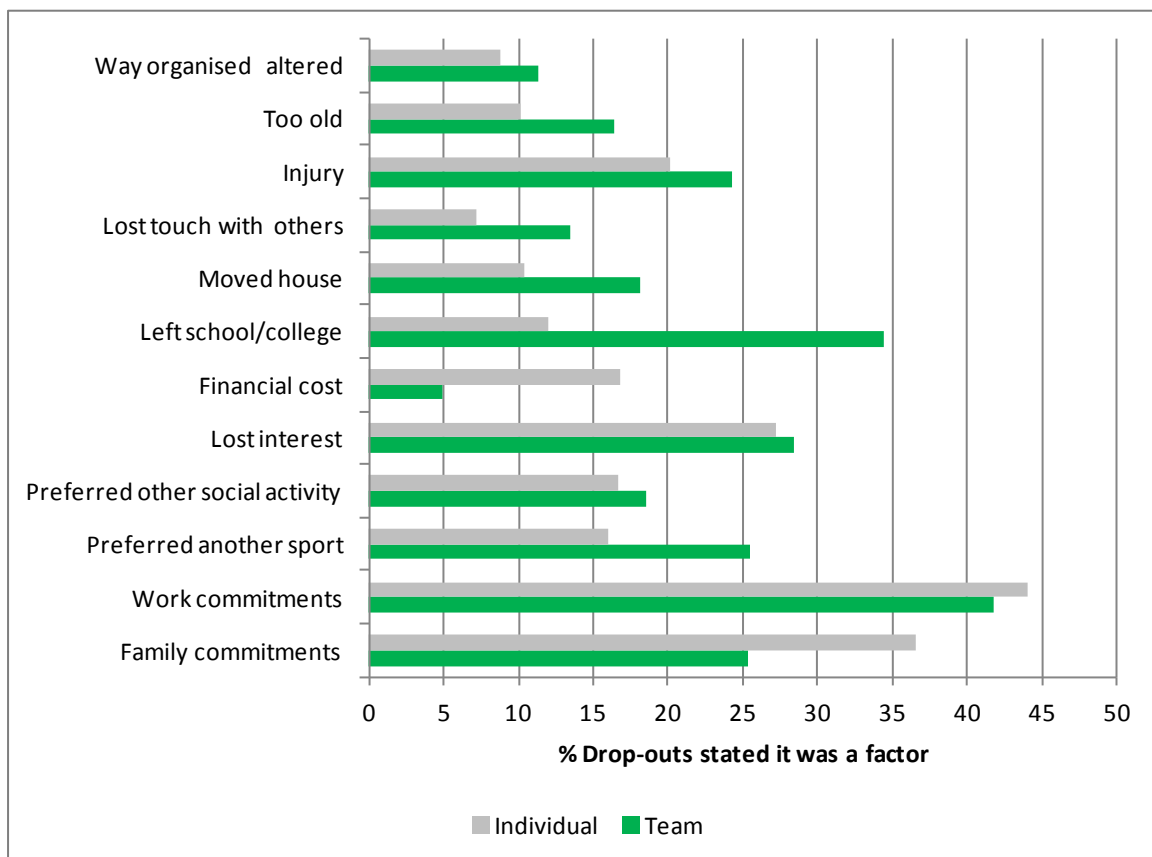
<sup>21</sup> The data points relate to the mean participation rate for the nearest three years of age. This calculation does not change the results significantly. Rather, by reducing the noise due to the small sample-size by individual year of age, it makes it easier to see the effects visually.



### 7.4 WHY DO PEOPLE DROP OUT?

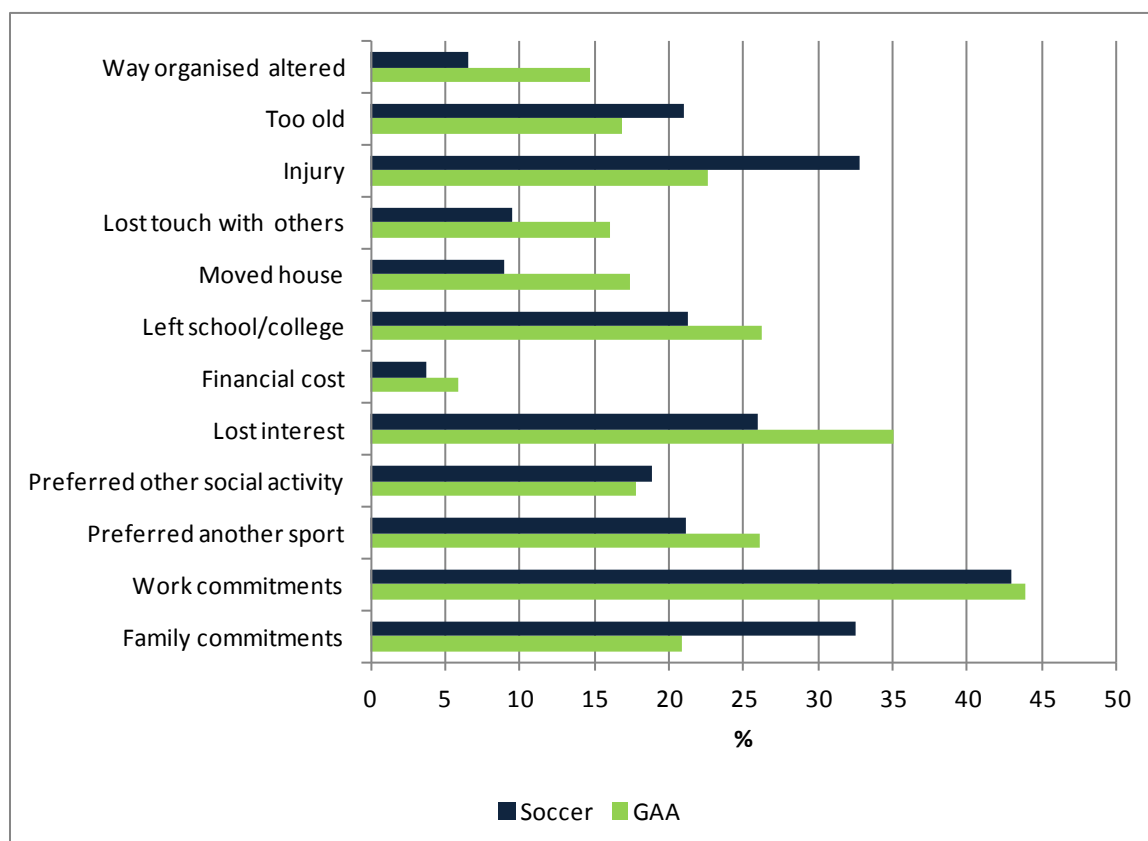
The survey module asked those who had dropped out of a sport to respond to a list of reasons for why people sometimes drop out and to state whether this reason was a factor in their case. The responses are displayed separately for team and individual sports in Figure 7.5. As with previous studies that have examined reasons for non-participation (e.g., Fahey *et al.*, 2004), time pressures feature strongly. For both types of sport, work and family commitments are cited as factors. Changing preferences also feature as important, with a significant minority of drop-outs stating that they lost interest or that other social activities mattered more. However, also apparent in this analysis is the importance of other life changes, especially with respect to dropping out of team sports. More than one-third of drop-outs from team sports are related to leaving school or college. Losing touch with others, organisational changes and moving house also feature and once all these reasons are taken into account, changing relationships and/or locations in one form or another seems to be involved in more than half of all drop-outs from team sports. Financial cost is rarely a factor, though it features more prominently for individual activities.

**FIGURE 7.5** Reasons for Dropping Out from an Activity by Type of Activity



The same analysis can be conducted specifically for Gaelic games and soccer, to see whether greater insight can be gained into the patterns apparent in Figures 7.3 and 7.4. Figure 7.6 provides the breakdown (with Gaelic football and hurling/camogie combined to improve the sample size). Again, preferences are involved: a greater number of drop-outs from Gaelic games cite losing interest or preferring another sport as factors. But the greater difference between the sports is down to life changes. Gaelic games are more likely to be given up because of organisational changes and relocations. The suggestion here is that compared with soccer these activities are less portable. It may be more difficult to continue the activity with a new organisation or in a new area or with a new club than is the case with soccer.

**FIGURE 7.6** Reasons for Dropping Out from Soccer and Gaelic Games



### 7.5 OTHER DETERMINANTS OF DROP-OUT

There is a significant effect of gender on the likelihood of dropping out, with women more likely to drop out than men. The finding of a gender effect contrasts somewhat with the findings of Lunn and Layte (2008), whose statistical analysis recorded that while young adult women were more likely to drop out than young adult men, the finding reversed as adults progressed towards middle age, with men becoming more likely to drop out than women. Overall, there was no strong

gender effect. In fact, this interaction between age and gender may help explain the difference in results between the two studies. Lunn and Layte (2008) used a methodology that effectively accorded equal weight to the likelihood of dropping out at age 20 and at age 40. Because the present analysis is based on a cross-sectional survey, a high proportion of the drop-outs recorded are due to young adults giving up sport, so a significant effect of gender shows up in the statistical model, since women are more likely to drop out as young adults. We cannot, however, be sure that this is the explanation. The interaction between age and gender using the methodology described in Appendix G is marginally significant. A large sample of drop-outs might be able to substantiate it, but we cannot be sure. Other factors may also explain the difference. The drop-out events modelled in the present report occurred between 2005 and 2008, while the previous report combined data across decades. Over recent decades, females have become significantly more likely to be active participants as children, especially in team sports. Thus, modern women have a higher participation rate as they enter young adulthood and it is therefore possible that this cohort will generally have an increased likelihood of dropping out relative to men, *not only as young adults but also as they enter middle age*. We cannot find a way to test this with the available data.

Similarly, the present analysis records a smaller impact of socio-economic status on drop-out than was found by Lunn and Layte (2008), although in this case the difference between the two sets of results may be more straightforwardly explained. Lunn and Layte (2008) found that socio-economic status was more strongly linked to take-up than drop-out, but nevertheless recorded a smaller but significant impact of present educational attainment and income on past drop-out. The present study records no significant impact of income and educational attainment on drop-out once contemporaneous employment status is included in the model. In particular, there is a strong and significant reduction in the likelihood of dropping out for individuals who are still students. The likelihood is that in the Lunn and Layte (2008) research, high educational attainment and income, recorded later in life, were effectively acting as proxies for having stayed longer in full-time education, which reduces the likelihood of dropping out. More generally, the two studies point in the same direction: low socio-economic status makes an individual very much less likely to take up a new sport as an adult, while it has a smaller impact on dropping out from sport that is mainly driven by the sporting advantage associated with staying on longer in full-time education.

It is fairly uncontentious to state that students tend to have more free time than employed people, or at least they have greater flexibility in how they spend their time. As shown in the previous section, work and family commitments, which are

obviously likely to constrain free time, are primary reasons for dropping out from sport. Other statistically significant findings in the models of Appendix G further suggest that time is an important factor. Those with children aged under 10 years are more likely to drop out from sport. Retired people are less likely to drop out, although the significance of this effect is somewhat more marginal. Note that both of these effects arise in a model that controls for age and gender.

Again, we find a strong impact of disability. Those who state that they have a long-term health problem that limits their daily activities are considerably more likely to drop out of active participation in sport and exercise, just as they are less likely to take it up (see Section 6.5). Ideally, we would subject these findings to a more detailed analysis. A key research question is the extent to which take-up and drop-out are associated with the onset of disability, on the one hand, and the extent to which people with ongoing disability find it hard to avail of opportunities, on the other. How participation varies by the type of disability is also of interest. Unfortunately, however, the ISM does not have information on the year of onset of disability or detail on the nature of the health problem.

## 7.6 SUMMARY AND DISCUSSION

Adults in Ireland drop out from sport and exercise activities more frequently than they take new ones up, resulting in a decline in the likelihood of participation with age. Young adulthood is a crucial time. The previous chapter revealed that it is the part of the life-course when people are most likely to take up a new activity, but it is also the period when they are most likely to drop out of sport altogether, especially at 18 years of age and again at ages 21-22 years. Gaelic games account for almost one-quarter of all drop-out events; the likelihood that an adult participant drops out of Gaelic football or hurling/camogie over a 3-4 year period is greater than one-half. Basketball has an even higher drop-out rate, but the equivalent for soccer is less than one-quarter. Drop-out rates for individual activities such as personal exercise and swimming are substantially lower still.

Work and family commitment feature strongly in reasons that drop-outs cite for having given up all types of activities. For team sports, many participants also give up the sport when they leave school or college. Other life changes matter too, such as relocations, losing touch with people, or coping with organisational changes in sporting opportunities. Interestingly, all of these reasons for dropping out apply more to Gaelic games than to soccer, suggesting that the former are less easy to continue with when young adults encounter change in other areas of their lives. The strong local loyalty that GAA clubs build up, while in many ways

beneficial, may make it harder to continue playing the sport following such a change.

Young women are more likely than young men to drop out, but drop-out may be higher among men in middle age. Students are less likely to drop out and this finding underpins somewhat greater drop-out among lower socio-economic groups, but the socio-economic sporting gap among adults is more about who takes up new activities than who drops out from current ones. Free time is clearly important. As well as being cited as a reason for dropping out, it is notable that adults with young children are more likely to drop out and retired people less so.

In amongst all these findings, it may be easy to lose sight of central messages emerging from the research. A theme running through this chapter is that, while people's preferences and enthusiasm for sport undoubtedly play a role, it is perhaps not changes in these psychological associations with sport that lead people to cease activity. Most drop-out events probably surround a life change, such as leaving education, changing employment status, forming a family, relocating and so on. Thus, one challenge for policymakers is to help individuals to continue active participation either side of life transitions that may be unrelated to sport.



# Chapter 8

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## Conclusions and Policy Implications

### 8.1 INTRODUCTION

The objective of this report is to improve our understanding of transitions in people's active involvement in sport right across the life-course, from the engagement of young children in sporting activity through to the participation of adults in sport and exercise, with a view to assisting policy on physical activity. The analysis employs data from the 2009 Children's Sport Participation and Physical Activity Study (CSPPA), the 2007 School Leavers' Survey (SLS) and the 2007-2009 Irish Sports Monitor (ISM). In this final chapter, we summarise our findings and then consider what they imply for policy.

Before summarising findings by chapter, however, there is one central lesson for policy that emerges from this work. Transitions throughout the life-course matter. Within each cohort the people who are active when young are not the same people who are active when older. The extent of change, in line with the international research reviewed in Section 1.3 of the opening chapter, is surprisingly great. Whether an adult is active across their life-course depends on much more than whether they were active as a child, or even as an adolescent. Young adulthood is a critical period. Yet for the majority of adults, who are non-participants, the ongoing likelihood of taking up a new activity is critical to the amount of activity they are likely to undertake in later life.

### 8.2 FROM PRIMARY TO SECOND-LEVEL SCHOOL

Chapter 3 shows that towards the end of primary school, 88 per cent of children are playing regular, organised sport, either as extra-curricular school activity or outside of school at clubs, leisure centres, public pools and so on. There is no significant gender difference in overall participation at this stage of the life-course, although there is one in relation to the types of activities undertaken: girls are more inclined to partake in individual activities and boys in team sports. Social class differences also feature. While primary school children from lower socio-economic backgrounds are similarly likely to undertake extra-curricular activities, they are less likely to participate in sport outside of the school setting compared to those from middle-class families. Regardless of socio-economic background, students who use computers or play video games are less likely to play sport outside of school, although we find no impact of watching television on

participation, at least among primary school students. Meanwhile, those who participate in arts activities, such as music and drama, are more likely also to play sport.

A significant number of children stop playing regular sport when they go from primary to second-level school. We estimate that approximately one-in-ten regular participants drops out of sport while, on average, those that continue to play reduce the number of activities they participate in. The fall in participation takes place only for the six most popular sports at primary school: Gaelic football, soccer, swimming, hurling/camogie, dance and basketball. The negative impact on participation of video games continues into first year of second level, where television also begins to have an impact. Students who watch less than one hour of television a day are more likely to play sport, while participation is higher again amongst those that do not watch television every day.

### 8.3 SECOND-LEVEL PATHWAYS

In Chapter 4, two phenomena characterise the pattern of participation at second-level school. First, participation declines as students go through the years, especially among females, such that by the end of the second-level years a large gender gap in participation has emerged. The disparity is overwhelmingly caused by girls dropping out from team sport. Second, there is strong variability associated with the exam cycles: participation dips in third and sixth years (to some extent in fifth year too). Again, the effect is stronger among females, although the declines in exam years are also stronger among those in higher social classes, who have significantly higher rates of participation in other years, especially in extra-school sport.

Perhaps surprisingly, the negative impact of television and video games seems largely confined to the beginning of the second-level years. We find that television ceases to be a factor beyond first year, while the only negative association of video games is with extra-curricular team sport during exam years. This pattern applied to other activities that might compete for time and attention with sport. Participants in arts-related activities are also more inclined to play sport in most years, but less so in exam years.

The findings led us to look for a link between participation in sport and exam performance. We find a positive association, whereby students who play more sport get better Leaving Certificate results, controlling for available background characteristics. While our results should not be taken to imply that playing sport will improve exam results, as other explanations are possible, our findings do



suggest that students who play sport do not suffer academically. The only exception we can find is that boys who drop out from sport only in their final year do marginally better than those who play sport in all years, although both groups outperform non-participants.

Almost one-third of students who play extra-curricular sport do not keep playing the sport after they leave school. This drop-out effect is again larger among females, further widening the gender gap. Students who play only team sport at school are more likely to drop out, while those doing individual activities are more likely to continue playing.

#### **8.4 BELIEFS, PERCEPTIONS AND ADULT PARTICIPATION**

Across the adult population as a whole, women, older people and those in lower socio-economic groups are considerably less likely to be active participants in sport and exercise. Chapter 5 looks at how this pattern relates to people's perceptions and beliefs. Although people who actively participate in sport have a somewhat stronger belief in the benefits of sport, even those who are not active participants overwhelmingly believe that participation is linked to better health. Only among some older people are the health benefits of sport not recognised. This suggests that the public health message is broadly understood, even if it is not broadly acted upon.

We find that 46 per cent of non-participants intend to increase their participation in sport – far more than actually do, according to the data. Intending to increase active involvement is more likely if someone perceives benefits to increasing participation, perceive associated social norms and, especially, if they feel that they have control over increasing the amount of sport and exercise they do. Here we find a strong socio-economic difference. Those in lower income groups display similar understanding of the benefits of sport but state that they have less control over the issue than those in higher income groups.

#### **8.5 TRANSITIONS INTO ACTIVITY: TAKE-UP**

Chapter 6 estimates that in any 18-month period, the proportion of adults who take up a sport (and were not previously playing another sport) is approximately 2.1 per cent of the number of adult non-participants. Although this appears to be a low rate, patterns of take-up have large accumulative effects. For more than half of a typical person's life, they are more likely to participate in a sporting activity they took up as an adult than one they took up as a child. Cycling and, especially, swimming are rare in the extent to which they are taken up by

children yet still undertaken by adults, including older adults. More generally, individual sports, particularly personal exercise activities, golf and swimming, account for almost all the new activities people take up in adulthood.

Adult women are as likely to take up a sport as adult men, indeed more so during middle age. Taking up sport as an adult is mainly driven by social factors rather than individual decisions to get involved, or by the availability of facilities, which is a problem for very few new participants. Adults tend to become involved in a new activity because they are introduced to it by friends, family members or work colleagues, usually at a sports club or organisation. Consequently, introductions to new sporting activities are more likely to occur among social groups with higher participation rates already, such as groups with higher socio-economic status. Thus, individuals from lower socio-economic backgrounds are less likely to take up sports because they are less likely to be socially connected to people who already participate.

For adults who continue to play sport, whether it is an individual or team activity, the primary reason for participating is the effect on physical well-being, though mental health is an important factor as well. The social benefits and competitive element associated with playing sport matter too, but health benefits are the dominant motivation.

## **8.6 TRANSITIONS OUT OF ACTIVITY: DROP-OUT**

Chapter 7 finds that the drop-out rate from adult sport is quite high. Over an 18-month period, we estimate that 8.7 per cent of adult active participants drop out from sport altogether. Young adults are particularly likely to drop out from sport, especially at 18 years of age and again at 21-22 years; young adulthood is the critical period for ongoing physical activity. Yet the rate of drop-out varies greatly across activities. Those that play team sports are most likely to cease playing, but even among team sports there is much variation: basketball has the highest drop-out rate, followed by hurling/camogie and Gaelic football, which both have more than twice the drop-out rate of soccer. Young women are more likely to drop out of sport compared to young males, but middle-aged men are more likely to cease playing compared to their female counterparts. Adults from lower socio-economic backgrounds are also more likely to drop out from sport, but this effect is less strong than the impact of socio-economic status on taking up new activities, which consequently makes a greater contribution to the socio-economic sporting divide.

Time constraints are important causes of drop-out. Those with young children are more likely to drop out, while students and retired people are less likely to do so. Work and family commitments are two of the main reasons given for dropping out of sport, whether it be a team or individual activity. Leaving school or college is also a strong driver for ceasing team sports. In general, most drop-out events tend to surround a life transition, such as leaving education, changing employment status, family formation, relocation, etc. These transitions have greater effects on keeping up team sports, especially Gaelic games.

## 8.7 POLICY IMPLICATIONS

There is a tendency in many policy areas to assume that effective interventions that promote certain attitudes and behaviours among children are likely to have continuing benefits that last a lifetime. This assumption may be sound in many areas of education and socialisation, but perhaps not with respect to participation in sport and exercise. By 10-12 years of age almost all children are involved in regular activity. Although many children do not meet the national guideline levels of physical activity (more than 60 minutes moderate to vigorous activity every day), it appears that this is not due to lack of participation in organised sport and exercise. The greater policy challenge is that, given present trends, around half will drop out over the next 10-20 years. The initial involvement of children in sport and exercise is only part of the policy challenge and, given the pattern of participation revealed here, probably a less urgent one than the need to maintain the involvement of teenagers and young adults.

The findings show that some sporting activities are more likely to have lasting benefits than others. In particular, children who learn to cycle and, especially, to swim, are more likely to participate in these activities later in life and right into old age. In effect, the return to any investment made by policymakers, teachers and parents in teaching these skills at a young age, in terms of future health benefits across the life-course, is likely to be higher than the return to teaching most other skills. Given this, swimming (especially) and cycling could receive greater attention from policymakers, both in the design of programmes to promote activity and in raising awareness of the lasting benefits among parents and teachers, who are the most likely people to introduce children to activities.

The evidence we uncover reveals that, on the one hand, there is a very high rate of drop-out from sport and exercise among students in exam years and, on the other hand, that participation is unlikely to affect exam performance negatively and may well, in fact, tend to have a positive impact. Some parents and teachers may be surprised by this finding. It seems, moreover, that dropping out from

sport in the final year at school can have a lasting impact. The present data do not tell us whether drop-out in exam years reflects the choices of students, advice (or perhaps pressure) from parents and teachers to concentrate on schoolwork, or students being given fewer opportunities and less encouragement to play sport in exam years. Arguably, however, the finding adds weight to the argument for making P.E. an examinable subject that can contribute meaningfully to qualifications, since at least for some students such a move would reduce the perceived conflict between participation in sport and exercise and obtaining good exam results.

While drop-out in exam years contributes to declining participation across students' time at school, it is not the only factor – participation also declines in non-exam years and when students leave school. The rate of drop-out during adolescence is particularly high among females. Contrastingly, however, girls are as likely as boys to get involved in sport prior to adolescence and women are no less likely to take up sports as adults. Furthermore, it is notable that for those students who undertake Transition Year, there is a marked increase in extra-curricular activities, especially individual sports. The implication of these findings may be that the spectrum of sports offered in most second-level school years is straightforwardly less appealing to girls than to boys. This is perhaps unsurprising, given that the range of activities offered is likely still to be influenced by those activities that were offered in a previous era when sport was primarily designed to appeal to males. If so, then efforts need to be made by schools and education policymakers to broaden the range of activities offered.

A significant amount of drop-out from sport and exercise occurs at the point when individuals leave full-time education – disproportionate numbers of drop-outs occur at age 18 and again at 21-22 years. These transitions have lasting impacts on later participation and contribute to a lower overall rate of adult participation. Drop-out on leaving school has a bigger impact on members of lower socio-economic groups who participate less in sports clubs outside of school. There is, therefore, a good argument for participation programmes that explicitly target young adults and school leavers. The new National Sports Facilities Strategy is likely to make a priority of improving links between schools and sports clubs with a view to more efficient use of facilities. Better links are needed also to ensure that students leaving school have the necessary social contacts, encouragement and opportunity to continue participation outside of school. Local Sports Partnerships (the national network of county-level organisations for promoting sport) can potentially foster such links.

The problem of drop-out appears to be particularly acute for Gaelic games. Young people who participate regularly in Gaelic football and hurling/camogie and who then leave school or college, or relocate to a new area, often drop out from the sport during the transition. This problem is far less severe among soccer players. It may stem from greater local loyalty among GAA players, or perhaps some other aspect of how the sports are organised. The GAA itself might do well to investigate this issue further: why do participants in Gaelic games not connect with other clubs when they move to new life stages or new areas? Can something be done within the GAA to promote such ongoing contact and reduce the high rate of drop-out?

The evidence uncovered here, as with other previous research projects based on large representative national surveys of participation, once again highlights the (perhaps to some surprising) fact that, in modern Ireland, lack of facilities is not an important factor in whether people participate in sport (with the possible exceptions of swimming pools and access to indoor facilities for schoolchildren). Additionally, it is notable that there is no apparent relationship between the relatively large sums (in the context of sports policy) that were invested in facilities over recent decades and levels of participation in those sports that received most funding. Policies that rest on the idea that more and better facilities will result in higher participation rates are, straightforwardly, not informed by evidence but by other considerations. In the context of Ireland's fiscal crisis, cuts to the sport budget have been applied more to funding for facilities than to other areas of sports policy. Given the primary goals of policy, this is in line with evidence. What limited funding is available ought to be directed at programmes more likely to increase participation.

What might such programmes look like? Most obviously, because the majority of adults who take up a new sport do so at a local club or facility, policymakers need to involve these organisations in participation programmes and to spread awareness about how and why most new participants get involved. It is clear from the contribution of work and family commitments to the rate of drop-out, from the higher drop-out rate of those with young children, and from higher take-up among students and retired people, that time constraints matter. Therefore, participation programmes need to fit opportunities to participate around busy lives. But the findings on take-up reveal that in the majority of cases new participants are introduced to a sport by friends, colleagues or family members. This is an important reason for the wide socio-economic gap in sport: people who went on to third-level education or who work in professions are more likely to have friends and colleagues who are participants, leading to more opportunities to take up new activities on an ongoing basis as they progress

through adulthood. Very few people take up a new activity entirely on their own initiative or simply in response to information or advertisements. Thus, as well as targeting participation programmes at those in lower socio-economic groups, the findings suggest the importance of establishing social contact with non-participants. It may be important to account for the role of social networks, perhaps by aiming to engage groups rather than individuals or by exploiting existing social networks to entice people to try something new. Local Sports Partnerships remain the obvious vehicles for designing, piloting and evaluating such interventions.

While it makes sense for policymakers to continue to promote the benefits of participation in sport to the general public, it is apparent that the central message of such promotion has now largely been absorbed. The findings show that very few people in modern Ireland do not believe that participation in sport and exercise is linked to better health and reduced risk of disease. A very large majority of non-participants as well as participants hold this belief and a majority also perceive it to have become received wisdom; most see belief in the benefits of sport as a social norm. These views are somewhat weaker among older adults, however, who might be considered the best target for public health messages associated with participation. Overall, that these widespread positive beliefs about the benefits of active participation do not translate into higher participation rates suggests that non-participants must overcome other barriers to participation. Many non-participants in lower socio-economic groups do not feel able to get involved, though the reason for this perception is not obvious. Policies aimed at re-engaging them need to develop a better understanding of why people who believe in the benefits of sport and exercise feel unable to participate in it. To this end, it may be useful at this stage to consider the potential contribution of behavioural science. Sports policy might benefit from a systematic study of the growing number of interventions undertaken in other countries with the aim of achieving behavioural change, both in physical activity and in other policy domains.

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# Appendices

## Appendix A

### *Statistical Models of Participation for Fifth and Sixth Class Primary Students (Chapter 3)*

The models for participation among primary students are based on CSPPA data. The dependent variables are whether the student had participated on a weekly basis during the school year in any of 24 listed sporting activities. In the five example models given in Table A1, the dependent variable changes according to the type of sport and location of participation (extra-curricular, EC; extra-school, ES). We use logistic regression. Odds ratios given in Tables 3.1 and 3.2 of the main text were calculated by adding the variables relating to non-sport activities to the basic specifications in Table A1. The data are clustered at the school level and the reported standard errors control for this clustering. School-level variables (e.g., type of school, size of school) do not produce robust and significant results and are not included in the specifications below. Similar findings were also obtained with multi-level models with school-level random effects.

**TABLE A1** Logistic Regression Models for Participation In Sport and Exercise by Fifth and Sixth Class Primary Students

	(1)	(2)	(3)	(4)	(5)
	Any sport	Team EC	Individual EC	Team ES	Individual ES
<i>Ref: 5<sup>th</sup> Class</i>					
6 <sup>th</sup> Class	-0.0660 (0.252)	0.187 (0.193)	-0.231 (0.213)	-0.0444 (0.147)	-0.238 (0.157)
Female	-0.343 (0.225)	-0.276 (0.195)	0.638*** (0.190)	-0.849*** (0.168)	0.904*** (0.135)
<i>Ref: Prof/Man</i>					
Non-Man/Skilled	-0.461* (0.245)	-0.132 (0.155)	-0.00425 (0.151)	-0.165 (0.151)	-0.277* (0.152)
Semi-/Unskilled	-0.719** (0.335)	0.0349 (0.239)	-0.146 (0.229)	-0.456** (0.178)	-0.266 (0.253)
Other	-1.089*** (0.259)	-0.0887 (0.188)	-0.0567 (0.255)	-0.496** (0.206)	-0.473** (0.186)
<i>Ref: No disability</i>					
Physical disability	-0.0471 (0.360)	-0.355 (0.372)	-0.274 (0.304)	0.0588 (0.239)	0.0375 (0.233)
Learning disability	0.197 (0.742)	-0.0580 (0.470)	0.658 (0.551)	-0.434 (0.521)	0.163 (0.460)
Constant	2.657*** (0.267)	0.495** (0.234)	-0.732*** (0.216)	1.237*** (0.183)	0.0386 (0.161)
Observations	1,267	1,267	1,267	1,267	1,267

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix B

### *Statistical Models of Participation for Second-Level Students (Chapter 4)*

The models for participation at second level presented in Table B1, also estimated using CSPPA data, are closely similar to those presented for primary students in Appendix A, including with respect to school-level clustering and alternative specifications.

**TABLE B1** Logistic Regression Models for Participation in Sport and Exercise by Second-Level Students

	(1)	(2)	(3)	(4)
	Team EC	Individual EC	Team ES	Individual ES
<i>Ref: 1<sup>st</sup> Year</i>				
2 <sup>nd</sup> Year	-0.365** (0.170)	-0.698*** (0.192)	-0.0638 (0.170)	-0.0233 (0.167)
3 <sup>rd</sup> Year	-0.561** (0.237)	-1.712*** (0.382)	-0.280 (0.229)	-0.220 (0.225)
4 <sup>th</sup> Year	-0.355* (0.200)	-0.617*** (0.225)	-0.375* (0.196)	-0.310 (0.198)
5 <sup>th</sup> Year	-0.717*** (0.193)	-1.078*** (0.234)	-0.439** (0.184)	-0.185 (0.182)
6 <sup>th</sup> Year	-1.025*** (0.310)	-2.497*** (0.545)	-0.509* (0.278)	-0.479* (0.279)
Female	-0.265** (0.125)	0.271** (0.134)	-0.750*** (0.125)	0.769*** (0.125)
Female * 2 <sup>nd</sup> Year	0.330* (0.177)	-0.144 (0.199)	-0.0197 (0.175)	-0.330* (0.174)
Female * 3 <sup>rd</sup> Year	0.143 (0.290)	0.179 (0.366)	-0.131 (0.281)	-0.385 (0.274)
Female * 4 <sup>th</sup> Year	-0.0926 (0.247)	0.0958 (0.259)	-0.0857 (0.235)	0.227 (0.230)
Female * 5 <sup>th</sup> Year	-0.131 (0.208)	0.127 (0.243)	-0.0785 (0.199)	-0.466** (0.195)
Female * 6 <sup>th</sup> Year	-0.495 (0.384)	0.354 (0.480)	-0.626* (0.334)	-0.606* (0.312)
<i>Ref: Professional/Manager</i>				
Non-Manual/Skilled	-0.198 (0.141)	-0.271* (0.148)	-0.142 (0.140)	-0.436*** (0.140)
Low Skilled	-0.0353 (0.225)	-0.483* (0.251)	0.140 (0.230)	-0.421* (0.227)
Class Missing	-0.396** (0.184)	-0.147 (0.187)	-0.562*** (0.184)	-0.855*** (0.180)
Non-Manual * 2 <sup>nd</sup> Year	0.0728 (0.199)	0.373* (0.226)	-0.0360 (0.197)	0.134 (0.196)
Non-Manual * 3 <sup>rd</sup> Year	0.0486 (0.332)	0.838* (0.448)	-0.143 (0.317)	-0.285 (0.328)
Non-Manual * 4 <sup>th</sup> Year	-0.293 (0.269)	0.234 (0.291)	-0.117 (0.253)	0.0881 (0.253)
Non-Manual * 5 <sup>th</sup> Year	0.130 (0.237)	0.400 (0.265)	-0.0550 (0.222)	0.103 (0.218)

**TABLE B1** Logistic Regression Models of Participation in Sport and Exercise by Second-Level Students  
(continued)

Non-Manual * 6 <sup>th</sup> Year	0.476 (0.433)	1.381** (0.636)	0.191 (0.366)	0.508 (0.354)
Low Skill * 2 <sup>nd</sup> Year	-0.103 (0.328)	0.949*** (0.362)	-0.116 (0.323)	-0.335 (0.329)
Low Skill * 3 <sup>rd</sup> Year	-1.133 (0.805)	1.695** (0.667)	-0.456 (0.644)	0.122 (0.579)
Low Skill * 4 <sup>th</sup> Year	-0.207 (0.447)	1.489*** (0.444)	-0.819* (0.464)	0.487 (0.428)
Low Skill * 5 <sup>th</sup> Year	0.177 (0.354)	0.226 (0.448)	-0.563 (0.347)	-0.0592 (0.348)
Low Skill * 6 <sup>th</sup> Year	0.351 (0.571)	1.651** (0.782)	-0.260 (0.511)	-0.157 (0.532)
Class Miss * 2 <sup>nd</sup> Year	-0.0131 (0.270)	0.416 (0.287)	0.117 (0.262)	0.308 (0.258)
Non-Manual * 3 <sup>rd</sup> Year	0.454 (0.425)	1.570*** (0.485)	-0.168 (0.421)	0.153 (0.423)
Non-Manual * 4 <sup>th</sup> Year	-0.312 (0.451)	0.486 (0.433)	-0.0871 (0.401)	0.451 (0.416)
Non-Manual * 5 <sup>th</sup> Year	0.438 (0.336)	0.0688 (0.394)	0.257 (0.331)	0.172 (0.321)
Non-Manual * 6 <sup>th</sup> Year	0.648 (0.521)	1.390* (0.723)	0.304 (0.479)	0.460 (0.467)
<i>Ref: No disability</i>				
Physical Disability	-0.103 (0.190)	0.00106 (0.205)	-0.426** (0.192)	-0.213 (0.183)
Learning Disability	-0.258 (0.261)	0.132 (0.264)	-0.780*** (0.263)	0.338 (0.235)
Urban	-0.309*** (0.0733)	0.0251 (0.0822)	-0.351*** (0.0697)	-0.0366 (0.0686)
Constant	-0.0625 (0.121)	-0.844*** (0.129)	0.627*** (0.125)	-0.163 (0.122)
Observations	4,101	4,101	4,101	4,101

Robust standard errors in parentheses.

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

## Appendix C

### *Statistical Models of Scholastic Performance (Chapter 4)*

Our models of scholastic performance, based on the SLS data, are Ordinary Least Squares (OLS) models that use Grade Point Average (GPA) as the dependent variable. Standard errors are again adjusted to account for school-level clustering. Table C1 includes variables for the years in which students participated in sport. Column (1) provides a basic specification with no interaction between the years of participation in sport and gender. Column (2) introduces this interaction.

**TABLE C1** OLS Models of Grade Point Average (GPA) at Leaving Certificate, Examining Effects of When Participation in Sport Took Place

	(1)	(2)
Age	-0.019*** (0.004)	-0.018*** (0.004)
<i>Ref: Professional</i>		
Farmer/Agricultural	-0.266** (0.120)	-0.258** (0.121)
Employer/Manager	-0.334*** (0.121)	-0.328*** (0.121)
Intermediate/Other Non-manual	-0.535*** (0.091)	-0.535*** (0.091)
Skilled/Semi/Unskilled Manual	-0.518*** (0.135)	-0.511*** (0.134)
Unemployed	-0.908*** (0.300)	-0.903*** (0.300)
Other/Unknown	-0.420* (0.250)	-0.410 (0.250)
<i>Mother's Education (Ref: &lt;=Primary)</i>		
Junior Certificate	0.027 (0.163)	0.032 (0.163)
Leaving Certificate	0.210 (0.177)	0.214 (0.176)
Post-Secondary Non-Tertiary	0.424* (0.225)	0.421* (0.224)
Non-Degree (Cert/Diploma)	0.259 (0.185)	0.249 (0.186)
Degree or Higher	0.406** (0.173)	0.402** (0.172)
Education unknown	-0.101 (0.210)	-0.099 (0.211)
Individual motivation	0.411** (0.160)	0.417*** (0.159)
No individual motivation information <sup>1</sup>	-	-
Teacher support	0.832*** (0.285)	0.822*** (0.283)

**TABLE C1** OLS Models of Grade Point Average (GPA) at Leaving Certificate, Examining Effects of When Participation in Sport Took Place (continued)

No teacher support information	-0.027 (0.274)	-0.026 (0.271)
Classroom context	0.129 (0.138)	0.126 (0.139)
No classroom context information	-0.518 (0.336)	-0.513 (0.339)
Transition Year participation	0.493*** (0.073)	0.492*** (0.073)
<i>Mitching (Ref: Never)</i>		
Lesson here and there	-0.347*** (0.078)	-0.340*** (0.078)
Day here and there	-0.452*** (0.117)	-0.444*** (0.118)
Several days/weeks at a time	-0.379 (0.258)	-0.366 (0.252)
No mitching information available	-1.330 (0.888)	-1.322 (0.877)
<i>Grinds in Final Year</i>		
	0.078 (0.073)	0.076 (0.073)
<i>Ref: Community/Comprehensive</i>		
Girls' secondary	0.204* (0.116)	0.195* (0.115)
Boys' secondary	-0.002 (0.147)	0.001 (0.147)
Co-educational secondary	0.083 (0.143)	0.084 (0.144)
Vocational	-0.274** (0.114)	-0.286** (0.115)
Deis Status (Disadvantage)	-0.627*** (0.102)	-0.621*** (0.101)
<i>Female</i>		
	0.264*** (0.085)	
<i>Ref: No Sport</i>		
Years 1-4	0.197* (0.105)	
Fifth Year only	0.478*** (0.116)	
Fifth and Sixth Year	0.260*** (0.082)	
Male * Years 1-4		0.183 (0.180)
Male * Fifth Year only		0.453** (0.184)
Male * Fifth and Sixth Year		0.093 (0.122)
Females No Sport		0.152 (0.112)



**TABLE C1** OLS Models of Grade Point Average (GPA) at Leaving Certificate, Examining Effects of When Participation in Sport Took Place (continued)

Female * Years 1-4		0.359**
		(0.155)
Female * Fifth Year only		0.639***
		(0.185)
Female * Fifth and Sixth Year		0.617***
		(0.136)
Constant	10.332***	10.318***
	(0.845)	(0.842)
Observations	1,177	1,177
R-squared	0.330	0.333

Note: Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

<sup>1</sup> Not reported due to estimation based on small sample.

Table C2 introduces variables for participation in specific sporting activities. Column (1) provides a basic specification without controls for school experience, Column (2) introduces these controls. The reductions in some of the coefficients associated with specific activities are significant when these controls are introduced, suggesting an association between participation in certain sports and other school characteristics. These results lead us to be cautious in what we infer regarding the mechanism underlying the positive association between participation in sport and exam results.

**TABLE C2** OLS Models of Grade Point Average (GPA) at Leaving Certificate, Examining Effects of Specific Sporting Activities

	(1)	(2)
Female	0.290***	0.203**
	(0.085)	(0.089)
Age	-0.020***	-0.018***
	(0.003)	(0.004)
<i>Ref: Professional</i>		
Farmer/Agricultural	-0.418***	-0.265**
	(0.145)	(0.119)
Employer/Manager	-0.372***	-0.307**
	(0.131)	(0.124)
Intermediate/Other Non-manual	-0.650***	-0.516***
	(0.099)	(0.092)
Skilled/Semi/Unskilled Manual	-0.749***	-0.507***
	(0.140)	(0.138)
Unemployed	-1.105***	-0.908***
	(0.290)	(0.303)
Other/Unknown	-0.755***	-0.444*
	(0.264)	(0.245)

**TABLE C2** OLS Models of Grade Point Average (GPA) at Leaving Certificate, Examining Effects of Specific Sporting Activities (continued)

<b>Mother's Education (Ref: &lt;=Primary)</b>		
Junior Certificate	-0.001	-0.001
	(0.161)	(0.161)
Leaving Certificate	0.316*	0.185
	(0.172)	(0.176)
Post-Secondary Non-Tertiary	0.537**	0.397*
	(0.220)	(0.225)
Non-Degree (Cert/Diploma)	0.344**	0.217
	(0.174)	(0.182)
Degree or Higher	0.592***	0.391**
	(0.178)	(0.175)
Education unknown	-0.031	-0.126
	(0.222)	(0.213)
<b>Individual motivation</b>		
		0.409**
		(0.158)
No individual motivation information <sup>1</sup>		-
		-
<b>Teacher support</b>		
		0.848***
		(0.286)
No teacher support information		-0.010
		(0.273)
<b>Classroom context</b>		
		0.125
		(0.138)
No classroom context information		-0.536
		(0.345)
<b>Transition Year participation</b>		
		0.468***
		(0.074)
<b>Mitching (Ref: Never)</b>		
Lesson here and there		-0.338***
		(0.079)
Day here and there		-0.423***
		(0.117)
Several days/weeks at a time		-0.394
		(0.262)
No mitching information available		-1.337
		(0.879)
<b>Grinds in Final Year</b>		
		0.080
		(0.075)
<b>Ref: No Sport</b>		
Basketball	0.290***	0.239**
	(0.107)	(0.102)
Gaelic Football	0.078	0.062
	(0.163)	(0.153)
Hurling	0.363***	0.225**
	(0.107)	(0.106)
Rugby	0.334***	0.138
	(0.122)	(0.136)

**TABLE C2** OLS Models of Grade Point Average (GPA) at Leaving Certificate, Examining Effects of Specific Sporting Activities (continued)

Soccer	0.035	0.050
	(0.134)	(0.129)
'Football'	-0.324**	-0.125
	(0.140)	(0.125)
Dance	0.271	0.203
	(0.176)	(0.144)
Hockey	0.463***	0.259**
	(0.127)	(0.112)
Swimming	0.499**	0.268
	(0.195)	(0.198)
GAA	-0.187	-0.152
	(0.237)	(0.239)
Exercise	0.135	0.026
	(0.156)	(0.142)
Other Type of Sport Activity	0.346	0.283
	(0.247)	(0.195)
<i>Ref: Community/Comprehensive</i>		
Girls' secondary		0.181
		(0.117)
Boys' secondary		-0.009
		(0.152)
Co-educational secondary		0.064
		(0.141)
Vocational		-0.300***
		(0.114)
Deis Status (Disadvantage)		-0.597***
		(0.101)
Constant	11.903***	10.360***
	(0.762)	(0.829)
Observations	1,177	1,177
R-squared	0.210	0.332

Note: Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

<sup>1</sup> Not reported due to estimation based on small sample.

## Appendix D

### *Statistical Models of Drop-Out After Leaving School (Chapter 4)*

Our models of drop-out after leaving school are estimated for SLS data. The dependent variable is whether a student continues to play a sport after leaving school that he or she played as an extra-curricular sport while at school. Table D1 provides an example of a probit model in which variables for participation in specific sporting activities are included as independent variables. The standard errors are adjusted for school-level clustering. The findings are broadly unchanged by a robustness check for selection bias due to the possible connection between the decision to drop out and the initial decision to participate in the first place. The results are robust to estimation via a Heckman probit model in which a selection equation is simultaneously specified for participation in extra-curricular sport at school.

**TABLE D1** Probit Model for Dropping Out of Sport Played at School, After Leaving School

	(1)
Female	0.247***
	(0.045)
Age	0.001
	(0.001)
Disability	0.225*
	(0.116)
<b>Father's Education (Ref: Degree)</b>	
Primary or less	0.071
	(0.068)
Junior Certificate	0.050
	(0.060)
Leaving Certificate	0.021
	(0.062)
Post-Secondary Non-Tertiary	-0.075
	(0.119)
Non-Degree (Cert/Diploma)	-0.045
	(0.067)
Education unknown	0.109
	(0.091)
<b>Mother's Education (Ref: Degree)</b>	
Primary or Less	-0.023
	(0.075)
Junior Certificate	-0.009
	(0.064)
Leaving Certificate	-0.065
	(0.053)
Post-Secondary Non-Tertiary	-0.013
	(0.098)

**TABLE D1** Probit Model for Dropping Out of Sport Played at School, After Leaving School (continued)

Non-Degree (Cert/Diploma)	-0.093 (0.062)
Education unknown	-0.056 (0.083)
<i>Student's Academic Performance (Ref: Leaving Cert 4+ honours)</i>	
No qualification	0.154* (0.092)
Junior Certificate, less 5 passes	0.126 (0.140)
Junior Certificate, 5 plus passes	0.182** (0.084)
Junior Certificate, 1 plus honours	0.229*** (0.077)
Junior Certificate, no exam data	0.131 (0.094)
Leaving Certificate, less 5 passes	0.190 (0.144)
Leaving Certificate, 5 plus passes	0.119 (0.079)
Leaving Certificate, 1-3 honours	-0.087* (0.052)
Leaving Certificate, No exam data	-0.014 (0.082)
<i>Ref: Part-time Job Outside Term</i>	
No job	0.091** (0.040)
Full-time job	0.015 (0.043)
No Job outside of term-time information	0.159 (0.114)
<i>Mitching (Ref: Never)</i>	
Lesson here and there	-0.008 (0.038)
Day here and there	0.106* (0.056)
Several days at a time	-0.013 (0.072)
Weeks at a time	0.228 (0.145)
No mitching information available	0.008 (0.232)
<i>Ref: Student Currently Attending University</i>	
Currently unemployed	0.217** (0.097)
Currently employed, no post-school education/training	0.152** (0.075)
Currently student and working	0.126** (0.060)
Currently training	0.151* (0.077)

**TABLE D1** Probit Model for Dropping Out from Sport Played at School, after Leaving School (continued)

Other economic status <sup>1</sup>	0.039 (0.086)
Student, currently attending other third-level college <sup>2</sup>	0.216* (0.119)
Student, currently attending other post-secondary education/training institution <sup>3</sup>	0.100 (0.163)
Student, currently attending Institute of Technology	-0.034 (0.082)
Currently employed, attended a university	-0.056 (0.104)
Currently employed, attended other third-level college	0.274*** (0.103)
Student, currently attending other post-secondary education/training institution <sup>3</sup>	-0.067 (0.111)
Currently employed, attended Institute of Technology	0.263** (0.109)
<i>Ref: All Other Team/Individual Sports Played</i>	
Basketball	0.017 (0.041)
Gaelic Football	-0.109** (0.055)
Hurling	-0.118*** (0.039)
Rugby	-0.044 (0.059)
Soccer	-0.209*** (0.036)
“Football”	-0.150*** (0.035)
Dance	-0.195*** (0.051)
Hockey	0.031 (0.073)
Swimming	-0.274*** (0.048)
GAA	-0.189*** (0.040)
Exercise	-0.303*** (0.030)
Observations	1,006

Note: Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>1</sup> Other economic status includes: i) unknowns, ii) inactive and iii) emigrated.

<sup>2</sup> Other type of third-level college includes: i) art colleges, ii) teacher training colleges, iii) agricultural/horticultural/ home economic colleges, and iv) other third-level institutions.

<sup>3</sup> Other type of post-secondary education/training institution includes: i) second-level schools (e.g., PLC courses), ii) FÁS centres, iii) other training colleges, iv) private colleges and v) studying at home.

## Appendix E

### *Statistical Models of Participation for Adults (Chapter 5)*

Adult cross-sectional models of participation are estimated for the ISM data. The dependent variable is whether the respondent had participated in any sport or exercise in a session lasting at least 20 minutes within the previous seven days. Logistic regression is employed and the results are given in Table E1. Column (1) provides a basic specification with a range of socio-economic and socio-demographic background variables as covariates, including an age\*gender interaction. Column (2) adds information on whether when the respondent was at school, his or her parents played sport. The inclusion of this variable marginally reduces some of the gradients apparent across the categories of the socio-economic variables in Column (1).

**TABLE E1** Logistic Regression Models for Participation in Sport and Exercise by Adults Aged 16 Years and Over

	(1)		(2)	
	$\beta$	(s.e.)	$\beta$	(s.e.)
Male	0.546***	(0.087)	0.548***	(0.087)
<i>Ref: Age 40-44</i>				
Age 16-19	0.893***	(0.159)	0.887***	(0.160)
Age 20-24	0.204*	(0.117)	0.168	(0.118)
Age 25-29	0.222**	(0.097)	0.200**	(0.098)
Age 30-34	0.057	(0.095)	0.038	(0.096)
Age 35-39	-0.070	(0.082)	-0.088	(0.083)
Age 45-49	-0.056	(0.078)	-0.043	(0.079)
Age 50-54	-0.167*	(0.089)	-0.142	(0.089)
Age 55-59	-0.138	(0.098)	-0.135	(0.099)
Age 60-64	-0.329***	(0.103)	-0.316***	(0.104)
Age 65-69	-0.341***	(0.115)	-0.321***	(0.115)
Age 70-74	-0.776***	(0.138)	-0.753***	(0.138)
Age 75-79	-1.289***	(0.199)	-1.282***	(0.200)
Age 80-84	-2.000***	(0.336)	-1.953***	(0.336)
Age 85+	-1.966***	(0.521)	-1.957***	(0.522)
Male*Age 16-19	0.554***	(0.186)	0.560***	(0.187)
Male*Age 20-24	0.607***	(0.154)	0.608***	(0.155)
Male*Age 25-29	0.423***	(0.138)	0.426***	(0.139)
Male*Age 30-34	0.288**	(0.140)	0.281**	(0.141)
Male*Age 35-39	0.166	(0.120)	0.168	(0.120)
Male*Age 45-49	-0.083	(0.115)	-0.081	(0.116)
Male*Age 50-54	-0.326***	(0.126)	-0.333***	(0.126)
Male*Age 55-59	-0.348**	(0.135)	-0.335**	(0.136)
Male*Age 60-64	-0.079	(0.133)	-0.073	(0.134)
Male*Age 65-69	-0.048	(0.143)	-0.041	(0.143)
Male*Age 70-74	-0.112	(0.171)	-0.104	(0.171)
Male*Age 75-79	0.028	(0.244)	0.047	(0.245)
Male*Age 80-84	0.258	(0.426)	0.238	(0.427)
Male*Age 85+	0.241	(0.656)	0.283	(0.657)

**TABLE E1** Logistic Regression Models for Participation in Sport and Exercise by Adults Aged 16 Years and Over (continued)

<i>Ref: Lower Second</i>				
Primary	-0.117*	(0.069)	-0.113	(0.069)
Upper Second	0.268***	(0.048)	0.254***	(0.048)
Post Second	0.415***	(0.062)	0.388***	(0.063)
Third	0.489***	(0.050)	0.452***	(0.050)
<i>Ref: Employed</i>				
Self-employed	-0.028	(0.054)	-0.034	(0.054)
Retired	0.199***	(0.067)	0.202***	(0.067)
Unemployed	-0.162**	(0.077)	-0.153**	(0.077)
Sick/disabled	-0.267*	(0.147)	-0.281*	(0.148)
Student	0.307***	(0.094)	0.266***	(0.095)
Home Duties	-0.039	(0.051)	-0.043	(0.051)
Missing	-0.167	(0.263)	-0.112	(0.264)
<i>Ref: Prof./Manager</i>				
Non-Manual	-0.139***	(0.045)	-0.136***	(0.045)
Self-employed occ.	-0.044	(0.054)	-0.048	(0.054)
Skilled Manual	-0.335***	(0.047)	-0.329***	(0.048)
Unskilled	-0.642***	(0.077)	-0.621***	(0.078)
Farmer	-0.521***	(0.076)	-0.513***	(0.076)
No Occ.	-0.280***	(0.085)	-0.270***	(0.086)
Missing	-0.107	(0.083)	-0.084	(0.083)
<i>Ref: Married</i>				
Cohabits	0.039	(0.075)	0.035	(0.076)
Separated/Divorced	0.234***	(0.056)	0.228***	(0.057)
Single	0.033	(0.059)	0.025	(0.059)
<i>Ref: No Children</i>				
Children >18	0.121**	(0.059)	0.128**	(0.059)
Children 10-18	0.054	(0.062)	0.055	(0.062)
Children <10	0.041	(0.056)	0.044	(0.057)
<i>Ref: City</i>				
Town	-0.065*	(0.040)	-0.040	(0.040)
Village	-0.059	(0.048)	-0.037	(0.049)
Isolated	-0.190***	(0.040)	-0.155***	(0.041)
Missing	0.012	(0.138)	0.035	(0.138)
Disability	-0.551***	(0.051)	-0.539***	(0.051)
<i>Ref: Irish</i>				
British	0.001	(0.085)	-0.025	(0.086)
Other EU	-0.029	(0.125)	-0.063	(0.126)
Other English-Speaking	0.352**	(0.157)	0.285*	(0.158)
Rest of World	-0.892***	(0.129)	-0.861***	(0.130)
<i>Ref: &lt;€300 pw</i>				
€300-399	0.096	(0.093)	0.089	(0.094)
€400-499	0.364***	(0.089)	0.358***	(0.089)
€500-749	0.362***	(0.085)	0.362***	(0.085)
€750-899	0.470***	(0.089)	0.470***	(0.089)
€900-1249	0.527***	(0.090)	0.518***	(0.090)
€1250+	0.726***	(0.090)	0.699***	(0.091)
Missing	0.366***	(0.086)	0.357***	(0.087)



**TABLE E1** Logistic Regression Models for Participation in Sport and Exercise by Adults Aged 16 Years and Over (continued)

<i>Ref: Neither Played</i>				
Father Played Sport			0.128***	(0.039)
Mother Played			0.632***	(0.102)
Both Played			0.543***	(0.048)
Missing			-0.275***	(0.076)
Constant	-1.464***	(0.137)	-1.540***	(0.138)
Observations	26,377		26,377	

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## Appendix F

### *Statistical Models for Likelihood of Taking-Up a Sport as an Adult (Chapter 6)*

The models of take-up are estimated using ISM data. The dependent variable is whether the respondent took up a new sporting activity within the last five years. The results we present are broadly unchanged by adjusting this time span. Those already participating are excluded from the probit models in Columns (1) and (2) of Table F1. The possibility of selection bias is examined using Heckman probit estimation in Column (3), where an initial selection equation is specified for whether the respondent was a non-participant. The effects are largely robust to this test.

**TABLE F1** Probit Models for Taking Up Sport in the Last Five Years

	(1)	(2)	(3)
Male	-0.043 (0.062)	0.076 (0.128)	0.006 (0.122)
<i>Ref: Age 40-44</i>			
Age 16-24	0.438*** (0.139)	0.318* (0.176)	0.303* (0.166)
Age 25-34	0.331*** (0.093)	0.250** (0.121)	0.247** (0.115)
Age 45-54	-0.046 (0.081)	0.075 (0.100)	0.070 (0.096)
Age 55- 64	-0.251** (0.101)	-0.086 (0.120)	-0.081 (0.116)
Age 65+	-0.379*** (0.134)	-0.321** (0.153)	-0.296** (0.148)
Male*Age 16-24		0.229 (0.227)	0.007 (0.231)
Male*Age 25-34		0.187 (0.189)	0.091 (0.180)
Male*Age 45-54		-0.356** (0.170)	-0.324** (0.162)
Male*Age 55- 64		-0.513** (0.211)	-0.453** (0.203)
Male*Age 65+		-0.176 (0.200)	-0.118 (0.193)
Third-Level Education	0.149** (0.062)	0.161** (0.063)	0.121** (0.060)
<i>Ref: Employed</i>			
Self-employed	0.099 (0.091)	0.113 (0.092)	0.115 (0.087)
Retired	0.205* (0.123)	0.226* (0.126)	0.209* (0.121)
Unemployed	-0.128 (0.183)	-0.130 (0.184)	-0.102 (0.177)

TABLE F1 Probit Models for Taking Up Sport in the Last Five Years (continued)

Sick/disabled	0.009 (0.255)	0.045 (0.256)	0.046 (0.250)
Student	0.348** (0.153)	0.358** (0.154)	0.253* (0.151)
Home Duties/Missing	0.069 (0.084)	0.041 (0.085)	0.053 (0.082)
Professional/Manager	0.132** (0.066)	0.135** (0.066)	0.080 (0.063)
Disability	-0.239** (0.097)	-0.253*** (0.097)	-0.218** (0.095)
<i>Ref: Irish</i>			
British	-0.189 (0.195)	-0.194 (0.198)	-0.221 (0.187)
Non-Irish/British	-0.215 (0.163)	-0.228 (0.164)	-0.188 (0.156)
Income < €400 pw	-0.282*** (0.095)	-0.281*** (0.095)	-0.234*** (0.093)
Constant	-1.630*** (0.081)	-1.676*** (0.092)	-1.757*** (0.089)
Selection Control	No	No	Yes
Observations	6,020	6,020	7,652

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## Appendix G

### *Statistical Models for Likelihood of Dropping Out From Sport as an Adult (Chapter 7)*

The drop-out models were estimated on ISM data. The dependent variable is whether the respondent had dropped out from participation in sport altogether during a previous period of three possible durations (18 month, 30 months and 54 months, in Columns (1), (2) and (3) of Table G1 respectively). Estimation is by probit analysis. Column (4) tests for possible selection bias using the Heckman probit procedure. An initial selection equation is specified for initially being a participant. The main findings are robust to this test.

**TABLE G1** Probit Models for Dropping Out From Sport

	18 months (1)	30 months (2)	54 months (3)	30 months (4)
Male	-0.671*** (0.114)	-0.615*** (0.0975)	-0.582*** (0.0887)	-0.508*** (0.114)
<i>Ref: Age 40-44</i>				
Age 16-19	0.928*** (0.334)	0.553* (0.285)		0.778*** (0.285)
Age 20-24	0.217 (0.237)	0.325 (0.199)	0.412** (0.176)	0.401** (0.191)
Age 25-34	0.222 (0.153)	0.116 (0.137)	0.178 (0.121)	0.156 (0.130)
Age 45-54	0.0981 (0.158)	0.114 (0.137)	0.127 (0.124)	0.0631 (0.132)
Age 55- 64	0.0219 (0.225)	0.0102 (0.196)	0.162 (0.170)	-0.0693 (0.188)
Age 65+	0.328 (0.264)	0.274 (0.240)	0.388* (0.212)	0.108 (0.239)
Third-Level Education	0.0227 (0.108)	0.0224 (0.0945)	0.0376 (0.0841)	0.114 (0.0980)
<i>Ref: Employed</i>				
Self-employed	-0.0219 (0.153)	-0.177 (0.140)	-0.216* (0.124)	-0.148 (0.133)
Retired	-0.272 (0.230)	-0.335 (0.208)	-0.429** (0.185)	-0.282 (0.197)
Unemployed	-0.896* (0.492)	-0.551* (0.319)	-0.184 (0.224)	-0.531* (0.301)
Sick/disabled	-0.426 (0.608)	-0.166 (0.498)	-0.357 (0.510)	-0.303 (0.470)
Student	-0.757** (0.297)	-0.405* (0.230)	-0.0319 (0.206)	-0.372* (0.222)
Home Duties/Missing	-0.0319 (0.146)	-0.148 (0.133)	-0.168 (0.121)	-0.146 (0.125)

TABLE G1 Probit Models for Dropping Out From Sport (continued)

Professional/Manager	0.143	0.127	0.0398	0.180**
	(0.103)	(0.0902)	(0.0831)	(0.0878)
<i>Ref: No Children</i>				
Children < 10	0.156	0.268**	0.289**	0.241*
	(0.145)	(0.129)	(0.114)	(0.124)
Children 10-18	0.157	0.194	0.174	0.187
	(0.177)	(0.159)	(0.142)	(0.150)
Children > 18	-0.00204	0.113	0.106	0.125
	(0.174)	(0.154)	(0.138)	(0.145)
Disability	0.664***	0.662***	0.736***	0.542***
	(0.150)	(0.137)	(0.119)	(0.151)
<i>Ref: Irish</i>				
British	0.466*	0.369	0.334	0.375
	(0.269)	(0.247)	(0.233)	(0.233)
Non-Irish/British	-0.305	-0.284	-0.0304	-0.282
	(0.274)	(0.229)	(0.181)	(0.216)
Income < €400 pw	0.125	0.0856	0.00239	-0.0252
	(0.186)	(0.167)	(0.148)	(0.164)
Team Sport Only	0.643***	0.739***	0.783***	0.711***
	(0.137)	(0.118)	(0.107)	(0.116)
Constant	-1.547***	-1.378***	-1.221***	-1.836***
	(0.182)	(0.159)	(0.142)	(0.226)
Selection Control	No	No	No	Yes
Observations	1,732	1,799	1,794	5,680
Uncensored Obs.				1,799
Drop-outs	138	205	289	205

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1.





The Economic & Social Research Institute  
Whitaker Square  
Sir John Rogerson's Quay  
Dublin 2, Ireland  
+ 353 1 863 2000 [www.esri.ie](http://www.esri.ie)  
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