Sheffield Hallam University | Sport Industry Research Centre

OBSERVATORY FOR SPORT IN SCOTLAND

Sports for the future: decline, growth, opportunity and challenge

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OBSERVATORY FOR SPORT IN SCOTLAND: ACADEMIC REVIEW PAPER

Which sports are growing in Scotland and why?

What is the changing balance between 'organised' and 'informal' sport and the implications for national governing bodies of sport?

Is there any discernible link to role models and elite performance? (eg, is there an Andy Murray effect?)

How are governing bodies responding to opportunities and challenges?

Which sports are the best bets for public policy investment/support?

Do we 'go with the flow' or try to buck trends?

Which sports perform well on access and equality?

INTRODUCTION

The purpose of this review is to look in more detail at sport-specific data. By observing patterns in the data from the Scottish Household Survey (SHoS) during the decade 2007 to 2016 and the Scottish Health Survey (SHeS) from 2012 to 2016, it attempts to answer the questions listed below.

- **Which sports are growing and declining in Scotland, and why?**
- **How does participation in sport relate to being sufficiently physically active?**
- **Which sports perform well on access and equality issues?**
- **What are the implications from the data for national governing bodies of sport and how are they responding to the changing external environment?**
- **Are there any sports and other physical activities that are good bets for public policy investment?**

Throughout this review comment is made on the limitations of the data, the sometimes speculative nature of the interpretation, and the adequacy of the information available for policy making purposes. From the outset it is worth being clear about two points: first, the definition of 'sport' and, second, the nature of the surveys used to measure 'sport'.

A common definition of sport is that adopted by the Council of Europe[1] namely "all forms of physical activity which, through casual or organised participation, aim at expressing or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all levels." This is a highly inclusive definition of sport, but suffers from the criticism of being vague.

At a more pragmatic level, 'sport' to a body such as sportscotland (in common with the other sports councils in the UK) means those activities which are formally recognised as being sports. Similarly in surveys such as

[1] www.coe.int/t/dg4/sport/sportineurope/Default_en.asp

SHoS and SHeS, where sport is not the main focus of the survey, sport is in effect defined by the variables used to measure it. To this end the pragmatic definition of sport for this paper is 'activities that would generally be perceived as being sports, plus major related leisure/fitness activities that are also recognised by the national sports councils such as cycling and walking (for at least 30 minutes in a leisure/fitness context) and dancing'. For the rest of the review these activities are described variously by the umbrella term 'sport' or 'sports'.

The use of national surveys such as SHoS and SHeS to measure participation in sport is deliberate but not without its limitations. Neither survey has the primary purpose of measuring participation in sport. SHoS[2] looks at twelve different aspects of life in Scotland from household composition to housing and a single chapter on 'physical activity and sport'. Similarly the SHeS[3] looks at ten aspects of health such as alcohol consumption, smoking and diet, with one of the ten chapters devoted to 'physical activity'.

Both surveys are commissioned by the Scottish Government and are conducted to robust methodological standards that enable the final results to be described as 'national statistics'. A particular feature of sport is that it is seasonal and thus the timing of surveys can have an impact on the data. A key strength of both SHoS and SHeS is that the data are collected on a continuous basis over twelve months, which has the effect of ensuring that seasonal sports are properly represented.

All statistics concerned with participation in sport are crucially dependent on the reference period over which any participation is measured. In the case of golf[4] for example, in Scotland the four-weekly adult participation rate in golf is 7.0% which equates to 301,000 golfers who play at least once

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[2] Scottish Government (2017) Scottish Household Survey, Scotland's People Annual Report 2016, A National Statistics publication for Scotland, Edinburgh, UK.

[3] Scottish Government (2017) The Scottish Health Survey 2016 Edition Main Report, A National Statistics publication for Scotland, Edinburgh, UK.

[4] Sport Industry Research Centre, 2016 A Satellite Account for Golf in the UK, The Royal & Ancient Golf Club, St Andrews, Fife, UK.

every four weeks. By contrast, the 12-monthly rate is 17.5% which equates to 752,000 golfers who play at least once every year. In reality those who meet the four-weekly threshold are considered to be regular participants and tend to participate more frequently than just once every four weeks (typically two or three times every four weeks). When looking at participation rates (or the demand for sport), it is important to make the distinction between participants (the number of people who take part) and participation occasions (the number of participants multiplied by the frequency of participation).

When participation in activities such as walking and cycling is measured, often distinction is made between leisure-related participation and utility transport such as walking or cycling to work. In both the SHoS and the SHeS the figures reported are for the leisure-related components only and therefore understate participation in all walking and cycling.

photo: Chevanon / Freepik.com

We start by taking a look at participation rates by adults in the sports and other physical activities that have been reported routinely in the SHoS over the ten-year period 2007-2016 (Table 1).

TABLE 1 Participation in sport in the last four weeks
(percentages 2007 to 2016, from SHoS)

Adults (16 and over)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Change	Change %[5]
Any sporting participation (inc. walking)	73	73	72	72	75	74	78	78	80	79	6	8.2%
Any sporting participation (exc. walking)	53	52	51	51	54	51	52	51	52	51	-2	-3.8%
Walking (at least 30 minutes)	56	55	54	54	57	59	65	64	69	67	11	19.6%
Swimming	19	19	17	17	18	17	17	18	17	16	-3	-15.8%
Keep Fit / Aerobics	12	12	12	13	14	14	13	13	14	14	2	16.7%
Multigym / Weight Training	11	11	11	11	12	12	12	12	13	14	3	27.3%
Running / Jogging	10	9	10	10	11	11	12	12	12	13	3	30.0%
Cycling (at least 30 minutes)	9	9	9	9	10	10	11	11	12	11	2	22.2%
Dancing	14	12	11	10	10	8	7	7	7	7	-7	-50.0%
Football	9	8	9	9	8	7	8	7	8	8	-1	-11.1%
Golf	9	8	8	7	8	6	7	6	6	6	-3	-33.3%
Snooker / Billiards / Pool	9	9	8	7	7	5	6	5	5	6	-3	-33.3%
Bowls	4	4	3	3	3	3	3	3	2	2	-2	-50.0%
Other	9	10	6	8	10	10	10	9	9	9	0	0.0%
None of these	27	27	28	28	25	26	22	22	20	21	-6	-22.2%
Sample number:	*10,300*	*9,230*	*9,130*	*9,620*	*9,680*	*9,890*	*9,920*	*9,800*	*9,410*	*9,640*		

[5] The Change % figures should be interpreted with a degree of caution. The SHoS reports the sport participation data as whole numbers and the exclusion of decimal places can make a material impact on change calculations. In the case of football the reported change is 1 percentage point which equates to a decline of 11.1%. However, if the base was 8.5% (rounded up to 9%) and the end point was 8.4% (rounded down to 8%), then the actual change would be more modest at 0.1 percentage point, or 1.1%.

CHANGES IN PARTICIPATION RATES

The headline data for sports participation amongst adults (aged 16 and over) shows that over an arbitrary ten-year period for which data are available, the various sports listed seem to have experienced fluctuating fortunes. Overall a considerable majority of adults in Scotland, 79%, took part in sport including walking at least once in the last four weeks in 2016 (and 81% in 2017, the latest year for which data are available[6]). However, this headline figure of growth is nuanced by essentially static scores for sport participation excluding walking, and a near 20% increase in walking for 30 minutes or more, which is better classed as physical activity rather than sport. The basic pattern is one of increases in solo activities such as keep fit, weight training, cycling, running and walking; and decreases in traditional sports such as swimming, football, golf, cue sports and bowls. With a participation rate of 8%, football is the only team sport included in Table 1. Sports with a participation rate lower than bowls (4%) are included within 'Other' and respondents are asked to specify what this 'Other' activity is as part of the SHoS interview process.

It would be simplistic to interpret the data by saying that participation in sport in Scotland is necessarily in decline. Whilst clearly there have been reductions in the reported four-weekly participation rate in some sports, it is plausible that what has happened is that frequency of participation has decreased. Thus someone who previously played golf once every four weeks, who now played once every five weeks, would be excluded from the figures but would be picked up by questions looking at a longer reference period, such as in the last 12 months.

What the final column (Change %) in Table 1 shows is the proportionate change in participation rates from 2007 to 2016. It is however more difficult to appreciate how this evolution has taken place year to year. Table 2 addresses this issue by expressing the base year, 2007, as an index of 100 for all of the sports listed. All subsequent years are shown relative to this index with red

[6] Scottish Government (2018) Scottish Household Survey, Scotland's People Annual Report 2017, A National Statistics publication for Scotland, Edinburgh, UK.

cells indicating decline relative to 2007, green cells indicating growth, and amber cells indicating no change. The analysis is subject to two major caveats:

- The data in SHoS is cross-sectional (different respondents every year) rather than longitudinal (the same respondents every year), which makes interpretation as to the cause of any changes difficult. The first explanation for variation between scores over time is sampling error. With a sample of 9,640 in 2016 the maximum sampling error, assuming the sampling was truly representative of the population is +/- 1. Thus in 2016 the 1 percentage point decrease in 'any sporting participation (inc. walking)' relative to 2015 (80% to 79%) is probably more explainable by sampling error than by some genuine change in people's behaviour. By contrast, the 6 percentage point change in the same indicator over the period 2007-2016 is considerably more than the sampling error (+/- 1) and is likely to be a true change in behaviour rather than a statistical anomaly.
- The second explanation for the variances in scores is the arbitrary nature of the baseline from 2007. There is no specific reason why 2007 is chosen as the baseline other than it is the first year for which there is comparable data. It would be perfectly reasonable to say that for policy purposes a different year was a more appropriate baseline. If this was the case the index scores and interpretation could well be different from those based on the 2007 data.

TABLE 2 Changes in participation 2007-2016 as measured by index scores

Adults (16 and over)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Any sporting participation (inc. walking)	100	100	99	99	103	101	107	107	110	108
Any sporting participation (exc. walking)	100	98	96	96	102	96	98	96	98	96
Walking (at least 30 minutes)	100	98	96	96	102	105	116	114	123	120
Swimming	100	100	89	89	95	89	89	95	89	84
Keep Fit / Aerobics	100	100	100	108	117	117	108	108	117	117
Multigym / Weight Training	100	100	100	100	109	109	109	109	118	127
Running / Jogging	100	90	100	100	110	110	120	120	120	120
Cycling (at least 30 minutes)	100	100	100	100	111	111	122	122	133	122
Dancing	100	86	79	71	71	57	50	50	50	50
Football	100	89	100	100	89	78	89	78	89	89
Golf	100	89	89	78	89	67	78	67	67	67
Snooker / Billiards / Pool	100	100	89	78	78	56	67	56	56	67
Bowls	100	100	75	75	75	75	75	75	50	50
Other	100	111	89	89	211	111	111	100	100	100
None of these	100	100	104	104	93	96	81	81	74	78

A previously hidden finding revealed by Table 2 is what seems like a temporal dimension to participation behaviour. The four year-period 2007 to 2010 inclusive is largely one of stasis and decline across the board. By contrast the six-year period 2011 to 2016 is a picture of consistent growth or decline in all but one (Other) of the 15 sports listed. 'Any sporting activity including walking' recovered to scores above the baseline, whereas 'any sporting activity excluding walking' fell below the baseline from 2012 onwards. Logically, this means that walking must have driven the increase

in the 'any participation including walking' score. The pattern of growth and decline in certain sports began for most of them in 2011 and may represent a structural shift in the way that adults in Scotland engage in sport and other physical activity.

WHY?

Despite the constraints relating to the data and the baseline, some tentative explanations as to why the observed participation rate changes may have occurred are discussed below. Analysis of cross-sectional data on a time series basis helps to identify changes and associations. It does not permit conclusions to be made about causation; therefore what follows is largely the author's personal interpretation of how the observed changes might be explained beyond sampling error and the arbitrary baseline.

GLOBAL CREDIT CRUNCH AND RECESSION

There was a global credit crunch in 2007/8 which had an adverse effect on business and consumer confidence. The UK economy went into decline in the second quarter of 2008[7], which was confirmed as a recession in the next quarter. The economy's subsequent recovery was fragile and was compounded by Government belt-tightening policies known as austerity from 2010[8]. Unemployment rose to 8% in 2009[9] and, to preserve jobs, some of those in employment have been willing to work longer for less. Furthermore, people have seen the values of their houses fall and many have prioritised the use of discretionary income to reduce debts. Within this macro-economic context it is perhaps not surprising that with less time and less money, people have changed how they use their leisure time and discretionary income. It may be that sport participation was a casualty of this climate of uncertainty.

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[7] www.ons.gov.uk/economy/grossdomesticproductgdp/timeseries/abmi/pgdp

[8] Ramchandani, G., Shibli, S. and Kung, SP. (2018) The performance of local authority sports facilities in England during a period of recession and austerity. International Journal of Sport Policy and Politics, 10 (1), 95-111.

[9] www.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/unemployment/timeseries/mgsx/lms

PROPULSION SPORTS AND ACTIVITIES (WALKING, SWIMMING, RUNNING AND CYCLING)

Walking, running and cycling have all grown since 2011 whereas swimming has been in decline. The three propulsion activities that have grown are characterised as being largely solo activities that can be done from your front door, that require relatively low skills levels to take part, and which have no cost attached to them after the initial outlay of clothing and equipment. By contrast, swimming requires access to a facility and the additional costs of travel and entrance fees; as well as the ability to swim which is arguably a more complex skill than walking or cycling. The growth in walking and cycling may also be linked to increases in utility transport as a lifestyle choice; a method of reducing costs during a period of financial constraint; or a way of taking advantage of tax breaks such as the Cycle2Work scheme. Running is enjoying an increase in participation across the UK. Given that running participation has increased and overall sports participation is essentially static, it is possible that people are switching to running from other sports, notably traditional team sports. It may also be plausible that running is increasing via initiatives such as parkrun, which is characterised by being: local, short duration, aimed at all ages and abilities, zero cost, and underpinned by digital motivational techniques such as emails containing finishing times and wider contextualisation of performance. In early 2019 Scotland had 47 parkruns and this number is expected to increase in the short term.

LIFESTYLE ACTIVITIES (KEEP FIT / AEROBICS; MULTIGYM / WEIGHT TRAINING)

There has been growth in participation in keep fit / aerobics (+17%) and multigym / weight training (+27%) during the period 2007 to 2016. Whilst these for the most part are solo sports, they are more comparable to swimming in the sense that they require access to facilities and regular payment. Lifestyle sports have enjoyed growth because of both positive demand and supply side factors. Amongst certain people there is desire to get fit, lose weight or to 'stay in shape'. Serving this demand has seen growth

in commercial gym and fitness providers. These include high-end operators such as Nuffield who include wellbeing checks as part of their offer; as well as budget operators such as PureGym who provide 24-hour access to their facilities at low cost and with limited human input to the customer experience.

These types of facility, along with those provided by the trusts and councils that run sports facilities in Scotland's 32 local authority areas, provide an outlet for around 1 in 8 adults in Scotland to access physical activity on their own or as part of a group exercise class. Keep fit, with an overall participation rate of 14%, masks considerable variation in participation by gender with the rates for women and men being 18% and 9% respectively. Keep fit is proving to be an effective way of engaging nearly 1 in 5 adult women in Scotland in sport.

PARTNER AND / OR TEAM SPORTS

Whilst propulsion and lifestyle sports and activities have for the most part enjoyed growth, the partner sports in the sample such as golf, cue sports and bowls all declined in the period 2007 to 2010 and have been in further decline since. The only team sport in the sample, football, remained static during the peak of the financial crisis but has been in decline ever since. Partner and team sports are characterised by requiring other people to play with and/or an opposition to play against; access to specialist facilities; the input of match officials in the case of team sports; volunteer input to help organise and 'produce' sporting opportunities; relatively high levels of skill (compared with propulsion and lifestyle activities); specialist equipment; significant financial commitment for regular play (for example golf club membership or green fees); and considerable amounts of time, notably for golf, football and bowls. With these requirements offset against reduced time and income and a push towards the convenience and time flexibility of solo and lifestyle sports, it is perhaps not surprising that the requirements of these sports are increasingly becoming barriers to participation and hence why they are in relative decline.

SPORT OR PHYSICAL ACTIVITY?

Whilst the Scottish Household Survey focuses on the participation behaviours in sport and other related physical activities, the Scottish Health Survey is concerned with whether or not adults do sufficient physical activity to derive a physical health benefit as defined by the Chief Medical Officer's guidelines[10]. For adults aged 19-64 these are reproduced below.

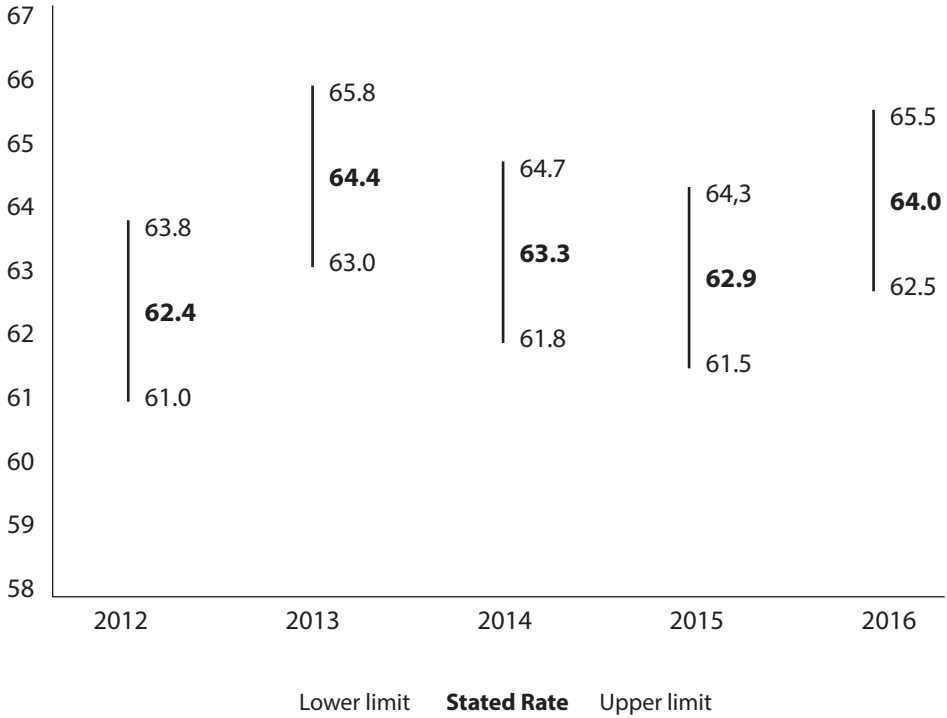
1. Adults should aim to be active daily. Over a week, activity should add up to at least 150 minutes (2½ hours) of moderate intensity activity in bouts of 10 minutes or more – one way to approach this is to do 30 minutes on at least 5 days a week.
2. Alternatively, comparable benefits can be achieved through 75 minutes of vigorous intensity activity spread across the week or combinations of moderate and vigorous intensity activity.
3. Adults should also undertake physical activity to improve muscle strength on at least two days a week.
4. All adults should minimise the amount of time spent being sedentary (sitting) for extended periods.

Physical activity can be derived from work, utility transport, household activities, and sport. The proportion of adults and meeting the guidelines along with the upper and lower limits of the estimates after allowing for sampling error is shown in Figure 2.

There is one point of note from Figure 2. As the bars for each year overlap with each other at some point across their ranges, we can conclude that there has been no statistically significant change in the proportion of the adult population meeting the CMO's guidelines. With a low score of 62.4% in 2012 and a high score of 64.0% in 2016 coupled with sampling error of +/- 1.4, the prudent conclusion is that this indicator, like that for participation in sport on the SHoS, has been static.

[10] assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/213740/dh_128145.pdf

FIGURE 2 **Percentage of adults achieving CMO's guidelines 2012-2016** (SHeS)



The SHoS provides participation data broken down by gender, age, and quintiles of deprivation, which enables more detailed analysis to assess the extent to which participation varies by key demographic variables. Table 3 reanalyses the headline data for 2016 from the SHoS and makes use of conditional formatting to highlight the key differences within and between groups. The 'All' column represents the base case and has a neutral colour and the cells for each demographic variable are shaded in red when the score is below the base and green for when the score is above the base. Thus for 'keep fit / aerobics' the case is 14% (neutral), whereas for men the participation rate is 9% (red) and for women the rate is 14% (green). For people aged 75+ the majority of cells are red denoting consistently lower participation rates than the base case.

The big picture in Table 3 is that generally men have higher participation rates than women; participation tends to decline with age; and that the least deprived areas of Scotland have higher participation rates than the most deprived areas (similarly, on an individual basis, for social class). These findings are hardly new and confirm what has been known about sports participation in the UK since surveys of this type were first conducted, for example the Scottish Sports Council's participation survey (ASH Partnership, 1991)[11]. The big picture however masks some interesting subtleties.

[11] ASH Partnership (1991) Sports participation in Scotland (1987-1989). A research study for the Scottish Sports Council. (SSC research report no. 16) Scottish Sports Council, Edinburgh, UK.

TABLE 3 Participation rates by gender, age, and level of deprivation
(from SHoS 2017)

Adults	All	Male	Female	16-24	25-34	35-44	45-59	60-74	75+	Most deprived 20%	2nd	3rd	4th	Least deprived 20%
Walking (at least 30 mins)	67	66	69	68	73	74	71	64	42	57	63	68	72	77
Swimming	16	15	17	17	24	23	16	11	3	14	15	17	16	19
Keep Fit / Aerobics	14	9	18	21	18	15	14	9	8	10	12	14	15	17
Multigym / Weight Training	14	17	11	27	24	16	11	7	2	11	12	15	15	18
Running / Jogging	13	16	10	29	22	18	9	3	0	8	12	13	15	17
Cycling (at least 30 minutes)	11	15	8	13	14	14	13	6	2	6	9	12	11	17
Dancing	7	4	10	11	8	7	8	5	3	6	6	7	8	9
Football	8	14	1	22	13	9	4	0	0	8	8	8	6	7
Golf	6	10	2	5	5	6	6	7	4	3	5	4	8	9
Snooker / Billiards / Pool	6	10	2	15	8	6	5	2	1	6	7	6	6	5
Bowls	2	3	2	3	2	0	2	3	4	2	3	3	2	2
Other	9	10	8	14	11	10	8	6	2	4	6	11	12	11
None of these	21	19	23	11	13	14	19	28	50	31	25	21	17	13
Any Sporting participation (inc. walking)	79	81	77	89	87	86	81	72	50	69	75	79	83	87
Any Sporting participation (exc. walking)	51	56	46	70	63	59	49	37	20	40	47	51	55	60
Base:	*9640*	*4400*	*5240*	*730*	*1270*	*1480*	*2380*	*2450*	*1330*	*1880*	*1990*	*2070*	*1970*	*1730*

GENDER

Whilst men have higher participation rates than women in general, women have slightly higher participation rates in walking and swimming, and substantially higher rates in keep fit / aerobics and dancing. These are all solo activities in the sense that they do not have to be undertaken competitively or within the context of a club. By contrast men have higher participation rates in multigym / weight training, running, cycling, football, golf, cue sports, and bowls. Noticeable differences between these sports and those more favoured by women include:

- football, golf and bowls tend to be played within the context of a team (football) and/or club (golf and bowls);
- the propulsion sports of running and cycling tend to be more vigorous than walking and swimming for which women have higher participation rates; and
- the time commitment, facility requirement and volunteer input for football, golf and bowls tend to be higher than in the sports more favoured by women.

AGE

Within the general pattern of declining participation with age are some clear trends and some interesting anomalies. Keep fit / aerobics, multigym / weight training, running / jogging, football, and cue sports all demonstrate a perfect pattern of reducing participation with increasing age. With the exception of cue sports, these are all sports that are participated in at moderate to vigorous levels of physical activity and it may be the case as people get older they are less able or willing to sustain such activity levels. It is therefore interesting to note that the sports and related activities in which participation increases with age tend to require lower-level intensity physical effort. Recreational walking for example is above average from 16-24 to 45-59 and peaks in the 35-44 age group (74%) before going into relative decline

at age 60+, although even at 75+ the participation rate is 42% and therefore by far the most significant source of leisure time physical activity for this age group.

On a smaller scale, cycling has a steady participation rate of between 13% and 14% between the ages of 16-59 before more than halving to 6% at 60-74. That cycling participation holds up with age and running/jogging decline considerably, is perhaps an indication that cycling involves much less impact on joints and is a more sustainable activity. Amongst people aged 16-24 running/jogging has more than twice the participation rate of cycling (29% vs 13%); however, in the 45-59 age bracket cycling has a higher participation rate than running/jogging (13% vs 9%). Although the cross-sectional nature of the data limits the ability to offer underlying explanations, it is worth hypothesising that for some people walking and cycling are activities into which they transition as age prevents them from continuing in more vigorous activities. Should this be the case, the wider implication must be that sports participation is a lifestyle choice and that those who choose to engage will navigate their way around the capabilities of their body to find suitable activities that meet their needs and which are sustainable. Swimming shows an unusual pattern of participation by age with a considerable spike in the 25-34 and 35-44 age brackets (24% and 23% respectively compared with an overall average of 16%) followed by a return to average at 45-59 and decline from 60+. There are two points of note emerging from the swimming data. First, the spike between 25-44 occurs during the years in which families are most likely to have children who at some part during their early years may well have swimming lessons. Swimming for at least a few years is an activity that families can take part in together without the need to make childcare arrangements whilst simultaneously providing children with a life skill. Second, similar to cycling, swimming is a relatively low impact propulsion activity that lends itself to being a sport that people can do for longer than more vigorous sports such as running, and it is also a sport to which people can transition as they get older.

Golf and bowls are two sports in which the peak age bracket for participation is over 60, 60-74 in the case of golf (7%) and 75+ in the case of bowls (4%). Both sports are time intensive and typically take place within a club environment. A typical game of golf over 18 holes will take around 3-4 hours and a bowls match played over 12-14 ends will last around two hours. The low to moderate physical activity of these sports make them suitable for continued participation into old age, or sports into which people can transition as other sports become too physically demanding.

DEPRIVATION

Participation in sport is clearly associated with levels of deprivation as defined by the Scottish Index of Multiple Deprivation (SIMD)[12]. The general pattern is one of increased levels of participation evident with decreasing levels of deprivation and vice versa. At a headline level, any participation including recreational walking increases progressively from 69% in the 20% most deprived areas of Scotland to 87% in the 20% least deprived areas of the country. When recreational walking is excluded this relationship becomes more pronounced (40% to 60%). The case of recreational walking is interesting to support the argument that being physical active is a lifestyle choice. Walking does not require skill or specialist equipment; there is no cost to participating; it does not require a partner, opposition or specialist facilities; it is a solo activity; and can be done from your front door at a time and duration to suit the individual.

Despite the seemingly low barriers to entry for taking part in recreational walking, people in the 20% most deprived areas have a 35% lower participation rate (57%) in walking than those in the 20% least deprived areas (77%). The most equitable sports in terms of deprivation appear to be football and bowls. In the case of football, participation in the 60% most deprived areas is higher than in the 40% least deprived areas; in bowls the participation rate is consistently 2%-3% across the deprivation quintiles.

[12] www.gov.scot/Topics/Statistics/SIMD

The sports with the greatest disparity between the most and the least deprived areas are golf (3% vs 9%, a variance of 200%) and cycling (6% vs 17%, a variance of 183%). The case of golf might be explained by the financial costs of equipment, green fees and club membership; the opportunity cost of time; the need for a partner; and the skill levels required to play. The case of cycling may also be financially based on the cost (and perceived cost) of bicycles.

These interpretations suggest that stimulating the demand for sport is considerably more sophisticated than simple measures such as removing or reducing the perceived barrier of price, as argued by Coalter 2006[13]. The real challenge appears to be bringing about sustained behaviour change by altering people's tastes and preferences.

[13] Coalter, F. (2006) Free Swimming: A need for a more strategic approach, University of Stirling, Stirling, UK

With what appears to be a shift in participation away from traditional sports such as swimming, football, golf and bowls, to solo and propulsion sports and related activities, there are considerable implications for national governing bodies of sport (NGBs), both in terms of the influence they have over participation and the security of their future funding streams. Table 4 examines six sports from the SHoS data for which membership levels of the relevant national governing bodies are published on their websites or in their annual reports.

TABLE 4 Participation rates and participants by sport

Sport	Participation Rate	Adult Participants	Members	NGB Reach
Swimming	16%	717,120	19,000	2.6%
Running	13%	582,660	12,531	2.2%
Cycling	11%	493,020	11,708	2.4%
Football	8%	358,560	140,000	39.0%
Golf	6%	268,920	169,600	63.1%
Bowls	2%	89,640	61,000	68.0%

The adult population of Scotland is assumed to be 4,482,000, which is the basis for the number of adult participants, based on the four-weekly participation rates found in SHoS 2017.

Whilst swimming is the most popular sport identified in the SHoS with a participation rate of 16% and 717,120 adults taking part at least once every four weeks, the sport's NGB, Scottish Swimming, has around 19,000 members (including children), which equates to a maximum direct reach by the NGB of 2.6%. Similar scores are apparent for running and cycling which reveals that the majority of the participation in these sports occurs outwith the auspices of the respective NGBs. The seemingly positive value for football (39%) is likely to be skewed by high levels of NGB affiliation by

children, notably through schools. Only golf and bowls, with their relatively low participation rates, appear to reach the majority of regular participants via club membership. These are therefore potentially worrying times for NGBs as they seek to make a link between their core activities and increases in demand for their sport.

ROLE MODELS

It is an often used piece of rhetoric that success in elite sport is a catalyst for increasing participation at grassroots' level. If this theory is to hold water for Scotland, it would be reasonable to expect a 'Sir Andy Murray effect' in tennis and a 'Sir Chris Hoy effect' in cycling. At a population level there is insufficient evidence to conclude that there has been any link between Sir Andy Murray's success in tennis and increased participation. The only data in the public domain in the Scottish Health Survey aggregates tennis and badminton together and reports a combined participation rate of 3% in 2016 which is the same as it was in 2010 prior to Sir Andy Murray winning gold at London 2012, the US Open in 2012, Wimbledon in 2013 and 2016; and the Davis Cup in 2015 with his brother Jamie being part of the team. In Germany, Weimar et al (2015)[14] found that sporting 'stars' (as defined by top three places in the German equivalent of Sports Personality of the Year) were positively associated with a one-year lagged increase in club membership of the sports concerned amongst juniors (under 18s). The level of data required to replicate this analysis for Scotland is not available currently.

By contrast there has been an increase in cycling from 9% of the adult population in 2007 to 11% in 2016. However, attributing this increase to the success and personality of Sir Chris Hoy would be rather ambitious. It would be appropriate to argue that Sir Chris' exploits may have been a contributory factor but there are numerous others, notably: hosting the Tour de France in the UK in 2007 and 2014; the relaunch of the Tour of Britain in

[14] Weimar, Daniel & Wicker, Pamela & Prinz, Joachim. (2015). Membership in Nonprofit Sport Clubs: A Dynamic Panel Analysis of External Organizational Factors. Nonprofit and Voluntary Sector Quarterly. 44. 10.1177/0899764014548425.

2004 including stages in Scotland; infrastructure improvements; concerns for the environment; and cheaper access to bicycles via tax reductions such as the Cycle2Work scheme, amongst many other potential influences. When sampling error of around +/- 1 percentage point is also allowed for, it would be a difficult argument to make that Sir Chris Hoy's success led to an increase in cycling amongst adults in Scotland of two percentage points.

In policy terms, the most pragmatic conclusion that can be made about sporting role models is that they are probably inherently good, but demonstrating a causal link between them and increased participation, whilst intuitively sound, is empirically unproven. This conclusion is consistent with earlier research undertaken in 2009 by Professor John Lyle for **sports**cotland[15].

THE RESPONSE OF NGBS TO OPPORTUNITIES AND CHALLENGES

A compelling example of how NGBs are responding to the changing operating environment is Scottish Golf's Future of Golf in Scotland conference held in December 2017. In one presentation, The impact of doing nothing, the issues facing golf were clearly articulated. There is an ageing demographic within golf and older players are not being replaced by younger players. As membership numbers fall, the costs of running a club have to be shared amongst fewer members and therefore the price of membership is rising. To get value for money, members need to play more often, but those who are paying the most are the time poor 'squeezed middle' who find it difficult to play frequently. In the meantime, as club membership falls there is spare capacity on courses which is being sold relatively cheaply to non-members on a pay and play basis. Consequently, the benefit of being a club member is being undermined by the opportunity to access high-quality golf facilities on a casual basis as clubs compete on price for their share of a declining market. Scottish Golf accepts that 'doing nothing' will lead to the accelerated decline of the sport and proposes five areas in which positive gains can be made.

[15] **sports**cotland (2009) Sporting Success, role models and Participation: A Policy Related Review (Research Report no. 101), sportscotland, Edinburgh, UK

- To appeal to families more broadly such that golf is inclusive and not a 'guilty pleasure' away from the family.
- To encourage more women to play golf. In Table 3 it can be seen that although the overall adult participation rate for golf is 6%, this masks the fact that men's participation is five times the rate of women's (10% vs 2%). Whilst this ratio is common throughout Great Britain, KPMG's 2016[16] analysis of the golf market in Europe indicates that on average women constitute 30% of the adult market for golf. Although Great Britain has the highest golf participation rates in Europe, England, Scotland and Wales are all in the bottom six nations (out of 45) for the proportion of women who play golf.
- To make golf such an inviting sport that it encourages more young people into the game and gets them 'hooked' at a time when there has never been more competing interests for their time and money.
- To promote golf in terms of its physical and mental wellbeing benefits for older people.
- To use digital technologies to connect golfers with clubs and to integrate golf into the social media platforms that players currently use. The impact that an App like Strava has had on propulsion sports is seen as having transferable benefits to golf.

Golf of course is not the only sport to respond to a challenging external environment. The Scottish FA for example has promoted different formats of football notably Futsal and Walking Football. These can be said to be product developments designed to appeal to both existing and new participants. As a response to the increased desire for informal rather than formal sporting opportunities, the Scottish FA has also worked with commercial sponsors Mars to provide Mars Just Play! facilities at which players can book onto structured kickabouts without the commitment of being a club member. This initiative is particularly innovative as it deals with removing barriers to participation and levers the benefits of digital technology.

[16] KPMG (2016) Golf Participation Report for Golf Europe 2016, KPMG Advisory Ltd, Hungary

For running/jogging Scottish Athletics has responded to the growth in grassroots participation by developing jogscotland which is a network of nearly 500 recreational running/jogging groups. Working to the mantra that "nobody is 'too slow' to join jogscotland", the scheme provides an outlet for regular runners as well as helping novice runners build up from no activity to running/jogging five kilometres over a 20-week development programme.

In tennis, the success of Sir Andy Murray has provided the impetus for a £15m 'Transforming Scottish Indoor Tennis' investment in new indoor courts designed to double Scotland's stock of these facilities to 225 by 2027. The investment by Tennis Scotland, sportscotland and the Lawn Tennis Association is a good example of increasing supply as a means by which to stimulate demand.

Certainly some of Scotland's NGBs appear to be fully aware of the challenges they face to hold and to grow their share of the market for sport. Whether the changes they are implementing are effective will become apparent in future editions of the SHoS and in the membership data reported in annual reports.

WHICH TYPES OF SPORTS ARE THE BEST BETS FOR PUBLIC POLICY INVESTMENT?

Public policy investment is a complex area for sport and starts with the question: what it is that policy makers are trying to achieve? The SHoS 2016 concludes that although levels of participation in sport are 'relatively steady' there are indications that people who are already active are becoming even more active. The evidence for this assertion is that the proportion of participants reporting frequent participation (on more than 14 days in the past four weeks) has risen from 36% in 2007 to 48% in 2016. In business strategy terms this is known as 'market penetration' whereby existing customers make more intensive use of existing products. The more challenging outcome for the sport delivery system is to deliver a 'market development' effect whereby new customers are attracted to existing products. Evidence of successful market development would be seen in increased participation rates at national level as captured in the SHoS.

As this effect has not been observed in SHoS data, it is reasonable to conclude that the key policy success over the period 2007 to 2016 has been a market penetration effect over a market development effect. Over the five-year period 2012-2016 the SHeS reveals that the proportion of people who report low or very low physical activity has been stubbornly static at around 25%. It is persuading these inactive people to become more active that presents the greatest challenge and the greatest potential benefit for the policy system. This point is well made by Nigam and Juneau (2011)[17] who demonstrate via a physical activity 'dose-response curve' how the greatest health benefits accrue to those who are sedentary and take up some physical activity, compared with those who are already active and simply do more physical activity. Given that the sport delivery system has wittingly or unwittingly focused on market penetration rather than market development, it follows that there is a particular challenge in identifying the needs and wants of inactive people.

There is evidence that there are shifts in the ways in which people consume sport, but knowing how to respond positively to avert decline or to stimulate growth is more demanding than measuring participation rates. The economic argument is that in order to increase the demand for sport, it is necessary to alter consumers' tastes and preferences such that they value sport more than they do the relatively sedentary activities in which they currently participate. Such an approach requires new levels of insight and the implementation of new methodologies such as behaviour change techniques to be effective. The magnitude of the challenge is considerable and despite the £543m cost of staging the XX Commonwealth Games in Glasgow, the 2018 final evaluation report[18] concludes that the event "has not resulted in a step change in population levels of physical activity in Scotland". The report also confirms the key findings of this chapter by stating that "overall participation rates have remained relatively stable in Scotland and there is evidence that those already active are more active". Based on the evidence presented throughout this chapter some indicative thoughts on the positive and negatives that we are witnessing from SHoS and SHeS are outlined in Table 5.

[17] Nigam, A. and Juneau, M. (2011) Survival benefit associated with low-level physical activity. Lancet. 2011; 378: 1202–1203

[18] Scottish Government Social Research (2018) Glasgow 2014 Commonwealth Games Legacy: Final Evaluation Report April 2018, Scottish Government, Edinburgh, UK.

TABLE 5 **Positives and negatives for increasing participation in sport**

Positives	Negatives
Solo activities	Partner and team activities
Time flexible	Time rigid
Short or flexible duration	Long or inflexible duration
Can do from your front door	Requires travel to specialist facility
Low skill	High skill
Low to moderate physical activity intensity	Moderate to vigorous physical activity
Low requirement for volunteers in the production process	Volunteer intensive
Low cost of equipment and clothing to participate	High cost of equipment and clothing to participate
Low or zero marginal[19] costs of participation	High marginal costs of participation
Casual	Formal
Lifestyle	Competitive

What the available data do not reveal is that encouraging people to take up sport needs to convey the sense of enjoyment and fun that people can derive from participation. In the economics of sport and leisure 'fun' is an alternative word for 'utility' (or satisfaction) and is the principal challenge policy makers face in trying to alter people's tastes and preferences. Whilst 'fun' might be an uncomfortable word for those in policy making positions, it might just be the word that helps to unlock the benefits of sport for those who currently do not take part.

[19] Marginal costs of participation refer to the additional cost incurred by participants each time they take part in sport. Once you have a swimsuit, goggles and a towel the marginal cost of swimming participation is the admission fee (c £4.50 for adults). By contrast, in golf once a participant has invested in clubs and clothing the marginal cost of a single round on a municipal course is currently £24.50 with Edinburgh Leisure and rises to over £200 for iconic courses such as Gleneagles.

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