The overwhelming case for a greater focus on sport and physical activity in the UK

Report prepared by The Gregson Family Foundation
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1. Introduction

Like many other countries in the developed world, the UK is facing challenges in continuing to encourage physical activity, including sport. Austerity following the financial crash in 2008; demands for a greater share of funding for other social programmes; the pressure on the school curriculum for improved academic attainment; funding strains on the NHS, reducing or negating the ability to allocate health funds on prevention rather than cure; and the impact of social media on student focus and time allocation; have all contributed, amongst other elements, to a strain on participation levels across sport and physical activity levels more generally.

These trends are reflected in the UK by high inactivity levels; high overweight and obesity levels; and low life satisfaction amongst adolescents. International data show clearly that the UK is inactive, overweight and unhappy compared to other countries - both elsewhere in Europe and across the rest of the world.

This paper sets out the case - backed by research, evidence from other countries and current trends - for a sport and physical activity focussed, Government-wide approach to grassroots physical activity and sport at all age levels. Much excellent work has been done in recent years to improve the focus on inactivity levels across youth and adults. Sport England, in particular, has been tasked by the Government to focus resources on exactly this agenda and is now publishing clear analyses of its progress.

Nevertheless, this paper argues that sport and physical activity should be viewed more broadly in two further dimensions: as the fundamental preventative tool to reduce health issues across the population, and as a key tool for the improvement of the wellbeing in the youth of today. A more holistic approach, taking account of these two additional measures, would transform the thinking behind the role of sport and physical activity in the UK:

(i) The call for more integrated thinking between physical activity and the health agenda is not a new one. The evidence is compelling and yet little action is being taken. We need to ask ourselves why this is the case, overcome those barriers (whatever they are), and focus across central and local Government on improving physical inactivity levels.

(ii) The evidence linking physical activity and student wellbeing is compelling. As a country, inexcusably, we do not have enough data to know how to improve policy in this area. It is now high time to gather more evidence on the lifestyles, aspirations and challenges of young people in this country. A wellbeing questionnaire of every secondary school student in the country should be undertaken to provide the information to inform policy decisions for our nation's young people. They deserve nothing less.

2. Executive summary

(i) There are three clear warning signs for the UK: (i) The UK is very inactive compared with our international peers; (ii) UK adults and adolescents have high levels of obesity by international standards; and (iii) the UK has relatively low average life satisfaction (wellbeing) compared to peer countries among 15 year old students. (Section 3)

(ii) Evidence from around the world make clear the benefits of greater physical activity across, in particular, two other areas: Health and Wellbeing (Section 4)

(iii) The impact of physical activity on the educational attainment of students is less clear, although some research reports indicate there is a link (section 5)

(iv) In response to the cross departmental importance of physical activity, different countries have very different ways of organising the sports portfolio. The UK is not uncommon in linking sport with culture, but this is a minority combination. Other popular combinations are unsurprisingly education, youth and health (section 6)

(v) Despite the clear evidence of the benefits of physical activity, and for a variety of reasons, the UK spends approx. £11 per head on sport and activity funding. By way of context, this is less than a quarter of the spend on sexual health (section 7)

(vi) There are seemingly no reliable international comparisons on sports funding across countries. However it is apparent that the Netherlands, in particular, invests as much as four times per head into sport than the UK, largely as it is seen as a key preventative tool. These figures are being checked for consistency (section 8)

(vii) Evidence is mixed of a clear Return on Investment case for improved health and other outcomes arising from greater physical activity. Sport and physical activity appears to be an effective health preventative tool, but Return on Investment analyses are inconclusive (section 9).

3. UK physical activity levels, obesity prevalence and student wellbeing in an international context

3.1 The UK ranks poorly compared to other countries for both child and adult physical activity levels:

(i) The UK ranks 40th out of 54 countries for schoolchildren's vigorous physical activity levels, 3 days a week, in the most recent OECD survey of 2015 (Appendix 1.1)

(ii) The UK is in a bottom grouping of countries with relatively low percentages of children and young people meeting physical activity targets. However, the age ranges are so different across this WHO survey that it is hard to draw meaningful comparisons (Appendix 1.2)

(iii) An International comparison of physical inactivity in 2012 from WHO data published by Public Health England showed that – for people aged 15 and over - physical inactivity levels in the Netherlands were 18.2% and in the UK were over three times higher at 63.3%. The UK, according to this analysis, ranked 115th out of 122 countries for physical inactivity i.e. it has the eighth worst physical activity levels across these WHO countries. (Appendix 1.3)

3.2 The UK ranks poorly compared to other countries for both child/adolescent and adult overweight and obesity prevalence. According to the most recent World Health Organization research, the UK has:

- The fourth highest prevalence of Overweight amongst adults in Europe
- The third highest prevalence of Obesity amongst adults in Europe
- The thirteenth highest prevalence of Obesity amongst adolescents in Europe

Charts setting out these rankings are attached in Appendix 1.4.

3.3 The UK has relatively low average life satisfaction among 15 year old students. It ranked 37th out of 48 countries worldwide; and 24th of 27 Western European countries. (Appendix 1.5)

4. Research linking greater physical activity and improved health and wellbeing

Much research has been undertaken into the impact of physical activity on health, and wellbeing. A summary of the research into these two areas is set out below. The impact of physical activity on educational attainment is set out in section 5 below.

(i) Health. The importance of physical activity appears to lie in its status as the least expensive and most effective preventive treatment for combating the increasing worldwide problem of obesity. Much research is available on this link; three specific examples are set out in Appendix 2.1.

(ii) Wellbeing. As with health, there is increasing research and comment on the positive link between physical activity and wellbeing. Five recent examples are set in Appendix 2.2.

5. Research linking greater physical activity and improved educational attainment

Experts are divided on a direct causal link between greater physical activity and increased educational attainment. Evidence remains unclear as to whether greater physical activity leads to better academic results. However, research confirms that physical activity has little to no negative impact on educational attainment. A summary of seven recent reports is attached in Appendix 3.

6. International approach to the organisation of sport

Physical activity and sport have an impact on a number of ministries within countries. Different Governments deal with these multiple touch points in different ways - with the most common cross-cutting themes for sport being within education, youth, culture, and health. Details of how countries organise themselves in this field are set out in Appendix 4; a summary table is as follows:

Health (3)	Australia; Netherlands; Scotland; Sweden (until 2019)
Youth (2)	Turkey; India;
Education (7)	Czech Rep (inc youth); France (inc youth); Portugal; Slovenia (inc culture); Spain (inc culture); Croatia (inc. Science); Hungary
Science (1)	Canada
Culture (6)	Denmark; Northern Ireland; New Zealand (inc heritage); Norway; Sweden (from 2019); England and Wales (inc Digital, culture and media)
Interior (1)	Germany
Transport and Tourism (1)	Ireland
Defence and civil protection (1)	Switzerland
Sports (own department) (2)	South Africa; China
None (1)	USA
Cross-department working group (1)	Finland

Even within the UK however, there appears to be little consistency of allocation of spend. The Ministry for Housing, Communities and Local Government places sport into Recreation, Culture and Religion. As a result, it is difficult to analyse (and also perhaps direct) spending within and across the sports and physical activity sector.

7. UK sports funding trends

There are broadly five areas of Government and Lottery sports spend in England (with similar spends elsewhere in the UK). For state spending alone, excluding the PE and Sports Premium in primary schools, the allocation is of the order of £29 per head. This compares with approx. £40 per head on, for example, sexual health and an estimated €135 per head in The Netherlands (see section 8 below):

(i) Sport England funding grew from approx £255m in 2010/11 to £285m (approx. £5 per head) in 2017/18. The compound annual growth of 1.6%pa was lower than inflation over the same period of 2.5% pa during a period when its remit broadened to include children and adolescents (Appendix 5.1);

(ii) UK Sport funding (predominantly for elite sport) rose from £114.7m in 2010/11 to £139.9m (approx. £2 per head) in 2017/18. This is compound growth of 2.9% pa over 7 years, slightly above inflation (Appendix 5.2);

(iii) Spend on culture by Local Authorities (where sport sits) declined over 40% in real terms per head from 2010/11. Local authorities were estimated to spend just under £1bn (or approx. £20 per head) on sport and recreation provision in 2017/18 (Appendix 5.3);
(iv) Primary schools in England are provided with £320m pa for the PE and Sports Premium. This is equivalent to £68 per head per primary school pupil;
(v) Local Authorities are estimated to allocate less than 3% of their Public Health budget allocation of £61 per head on inactivity. This is therefore less than £2 per head. Within this overarching figure, there are significant regional variations (Appendices 5.3 and 5.4).

These sums are supplemented by sponsor and other commercial income in specific sports, funds raised by clubs and by sports focussed charitable spend. The above analysis identifies state funding alone.

8. International sports funding comparisons

(i) In 2002, Finland committed resource to a region of the country to significantly reduce the incidence of heart problems. No figures are available for the cost of this initiative but it led to a 2/3rds reduction in heart problems. All regions of the country are now required to promote physical activity, monitored by a national Advisory Board (Section 6 and Appendix 6.1)
(ii) The Netherlands is estimated to spend €135 per head on sports and outdoor recreation, four times higher than the estimated £29 per head in the UK above. The Dutch figure would need to be investigated further to ensure it was comparable (Appendix 6.2)
(iii) Germany has promoted safe walking and cycling for public health benefit, although no cost comparison is available (Appendix 6.3). Germany spends a similar amount per head to the UK on the funding of elite sport.

9. Return on Investment

The financial case for turning the tide of inactivity is apparent; inactive people spend 38 per cent more days in hospital than active people and visit the doctor almost six per cent more often (uk active). According to the National Institute for Health and Care Excellence (NICE), inactivity is costing the national economy in England £8.2 billion per year (Appendix 7.1)

To put relative spends into context, local authorities in England spend just under £100m of their public health budgets on reducing obesity and physical inactivity. The estimated cost of both nationally is £24bn (Appendix 7.1). There is no incentive for local authorities to use their budgets for preventative health care – the benefit of any such local authority preventative spending is generated elsewhere in the system (such as reduced healthcare costs experienced in the NHS).

Despite the intuitively appealing logic of sport as a powerful public health preventative initative, there is relatively little rigorous Cost Benefit Analysis that is undertaken worldwide on the health benefits of sport, or physical activity more generally. Five reports have been identified as seeking

to calculate an RoI on sport or physical activity spend, with varied conclusions. Some reports include broader wellbeing benefits in their calculations, and if they do these dwarf other returns:

(i) Birmingham's Be Active initiative used funding from the public health budget to provide subsidised free access to leisure facilities, parks and to some other providers. The King's Fund and Local Government Association (September 2014) compared the Birmingham BeActive programme with other health cost saving initiatives, and gave it the highest return of those listed at 23:1. This included quality of life improvements, but no methodology was provided. (Appendix 7.2)

(ii) The Social Return on Investment (SROI) for government spending on sport and physical activity was estimated in 2016 by Sheffield Hallam University and Sport Industry Research Centre. Assuming that government funding of sport is aimed at generating health, crime and education benefits, then £2.01 billion of government spending on sport in 2013/14 was associated with £6.53 billion worth of benefits for health, crime and education - a societal SROI of 3.15 . The report identified other benefits, notably inproved subjective wellbeing which dwarfed the hard benefits described (Appendix 7.3)

(iii) The FA published its report on The Social and Economic Value of Adult Grassroots Football in England (July 2019). The FA spends £52m pa on football participation initiatives. There is a £43m health benefit saving from reduced GP visits alone (a return of 0.9:1 on this measure alone); the report does not seek to quantify other health benefits. As with the SROI analysis above, these health benefits are dwarfed by wellbeing benefits (Appendix 7.4).

(iv) Mulier Instituut in The Netherlands (June 2019) adjusted the SROI methodology of Sheffield Hallam and assessed the SROI of sport and physical activity in The Netherlands at 2.51:1. The costs of physical activity are estimated at €4.4bn; the returns are estimated at €11.1bn in two categories: health and labour benefits. The report does not seek to quantify social (such as reduced crime, or wellbeing) benefits. A full methodology for the calculations is set out in the report. (Appendix 7.5)

(v) The OECD (September 2019) has completed a report entitled Heavy Burden of Obesity: The Economics of Prevention. It highlights the increasing cost of obesity to developed economies and calculates the return on investment of various preventative policies. Prescribing physical activity, and school based programmes, are calculated with returns at 0.9:1, without any stated methodology (Appendix 7.6)

In addition, The Active Citizens Worldwide Annual Report 2018 sought to assess the total annual value of physical activity and participation in sport across three cities: Auckland, London and Singapore. Benefits included healthcare savings; boosts in productivity; deaths prevented; and Disability-Adjusted Life Years (DALYs) saved. However there is no attempted assessment of the costs required to produce these benefits (Appendix 7.7)

10. Conclusion

The analyses above are not new. They have all been published and are widely available. We have attempted in this paper to draw together many different and disparate strands of research to create a coherent and all-encompassing narrative around the case for greater focus on, and funding for, physical activity:

- Clarity on the lamentable international standings of the UK on physical activity levels; obesity; and life satisfaction/wellbeing of students
- Summary of research on the links (causal or otherwise) between physical activity on the one hand and health, wellbeing and educational attainment on the other, in one place
- Comparison with other countries on how they organise the funding of sport
- Comparison (insofar as any is possible) with selected countries, notably the Netherlands, on the amounts spent on sport– whether directly or from the health prevention budget
- Assessment of the RoI from physical activity interventions

The conclusions are familiar and have been voiced before. Something has to change so that we can explain to our children why we have allowed physical activity to decline, obesity to rise and student wellbeing to decline. All evidence points to the benefits of physical activity, and so now is the time to take action to:

- Recognise physical activity as a key health improvement tool and give it greater priority when compared with other preventative measures, and
- Measure student wellbeing, including physical activity, in every secondary school in the country to inform policy for young people in schools moving forwards.

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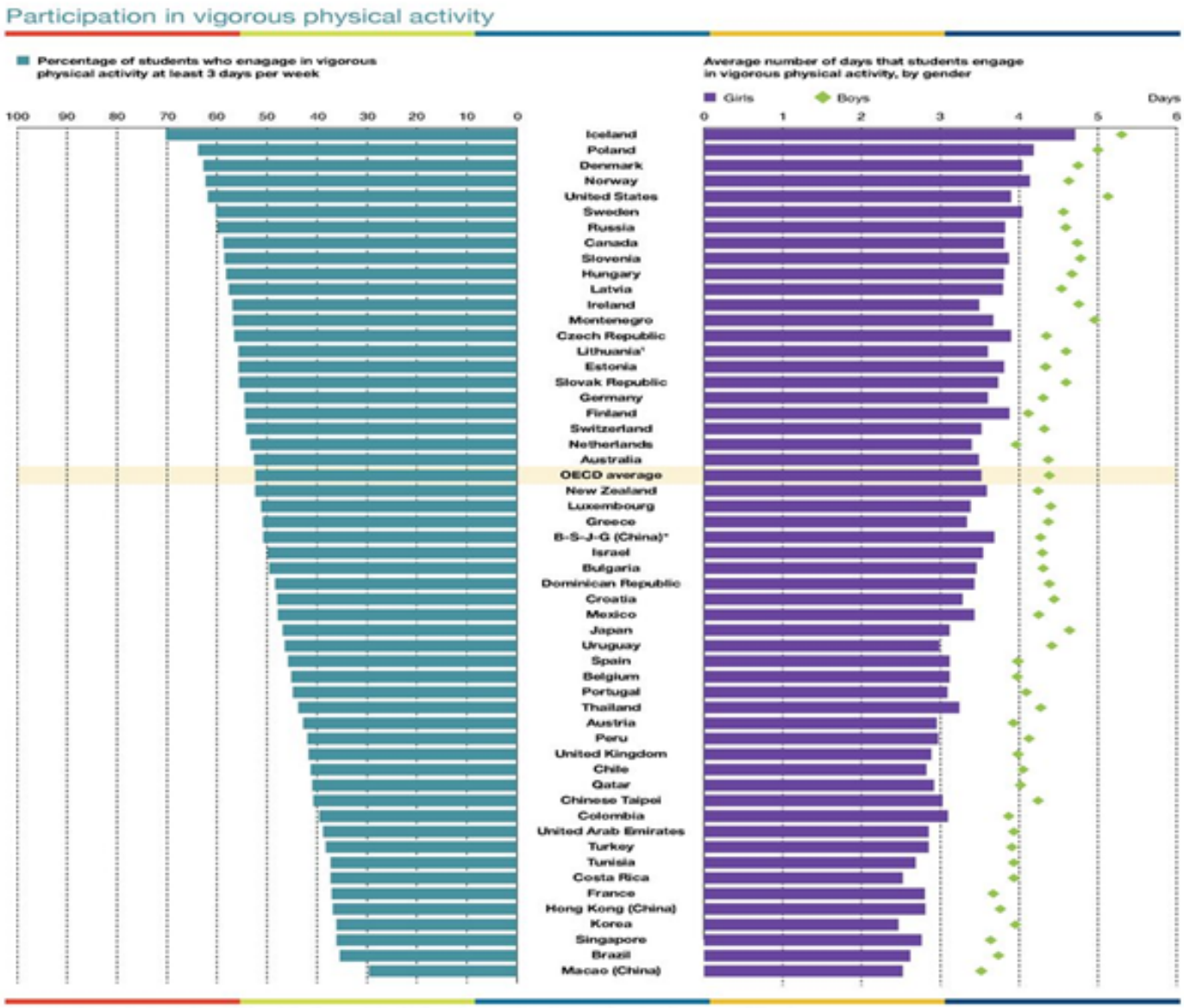
Appendix 1.1
UK schoolchildren vigorous physical activity levels in an international context
(Source: OECD PISA, 2015)



*B-S-J-G (China) refers to the four PISA-participating municipalities/provinces in China: Beijing, Shanghai, Jiangsu and Guangdong.

*Lithuania acceded to the OECD on 5 July 2018. The OECD average does not include Lithuania.

Countries and economies are ranked in descending order of the percentage of students who enagage in vigorous physical activity at least three days per week.
Source: OECD, PISA 2015 Database, Tables III.11.9 and III.11.13.

Appendix 1.2
UK child physical activity levels in an international context (Source: WHO 2018)

Country	***Age Range Measured***	***Estimated Prevalence of Sufficient Physical Activity Levels***	***Boys***	***Girls***
Austria	11-17 years	17%	23%	12%
Belgium (French/German) (Flemish)	6 – 9 years 10-12 years 10-12 years	6% 23% 17%		
Bulgaria	10-14 years 15-19 years	33% 39%	42% 53%	24% 27%
Croatia	8 years 15 years	88% 19%	89% 25%	87% 12%
Cyprus No data for children under 15 years				
Czechia	6-17 years	20%	30%	15%
Denmark	11 years 13 years 15 years	16% 14% 11%		
Estonia	11-15 years	16%	20%	12%
Finland	10-11 years 14-15 years 16-17 years	45% 19% 13%		
France	3-6 years 3-10 years 11-17 years	19% 22% 32%		
Germany	3-6 years 7-10 years 11-13 years	46% 27% 19%		
Greece	4-12 years 13 years 15 years	59% 14% 11%	62% 19% 15%	65% 8% 7%
Hungary	Children and adolescents	42%	50%	34%
Ireland	10-12 years 12-18 years	19% 12%	27% 15%	13% 9%
Italy	8-9 years 11-15 years	82% 11%	83% 15%	81% 8%
Latvia	11-15 years	19%	22%	15%

Lithuania	10-17 years	10%	14%	6%
Luxembourg	11 years 14 years	28% 31%	34% 27%	21% 34%
Malta	10-11 years	25%	39%	10%
Netherlands	4-11 years 12-17 years	56% 31%	57% 34%	54% 28%
Poland	11-15 years	24%	30%	19%
Portugal	10-11 years 14-15 years	38% 12%	53% 19%	23% 5%
Romania	11,13 and 15 years	23%	29%	17%
Slovakia	15-17 years	10%	13%	7%
Slovenia	11 years 14 years	88% 69%	94% 88%	81% 49%
Spain	11-18 years	24%	32%	17%
Sweden	11 years 15 years	19% 11%	23% 13%	14% 9%
United Kingdom England Northern Ireland Scotland Wales	 5-15 years 11-16 years 2-15 years 3-7 years 13-17 years	 22% 13% 76% 62% 39%		
Uzbekistan	No data			

Numbers in red are those for predominantly secondary school aged children

Appendix 1.3
Worldwide Physical Inactivity among individuals aged 15 years or more in both sexes
SPLIT BY REGION

AFRICAN REGION/COUNTRY	%
Mozambique	7.1
Comoros	8.3
Benin	9.1
Malawi	10.2
Guinea	12.1
Burkina Faso	15.5
Kenya	16.5
Zambia	17.2
Ghana	17.6
Sao Tome and Principe	19.0
Ethiopia	19.3
Sierra Leone	19.9
Cape Verde	20.7
Mali	20.9
Seychelles	22.4
Madagascar	23.3
Zimbabwe	23.8
Chad	24.5
Gambia	24.5
Niger	29.3
Cote d'Ivoire	32.8
Botswana	35.2
Gabon	36.6
Mauritius	38.6
Eritrea	40.4
Algeria	40.5
Cameroon	40.7
Mauritania	43.8
Dem. Rep. of Congo	45.2
Congo	48.6
Bhutan	52.3
South Africa	52.4
Namibia	58.5
Malaysia	61.4
Swaziland	69.0

EUROPEAN REGION/COUNTRY	%
Greece	15.6
Estonia	17.2
Netherlands	18.2
Ukraine	18.4
Russian Federation	20.8
Slovakia	22.2
Georgia	22.3
Lithuania	22.6
Croatia	23.6
Czech Republic	25.0
Hungary	26.0
Bulgaria	26.8
Poland	27.6
Germany	28.0
Slovenia	30.0
Kazakhstan	31.5
Latvia	32.0
France	32.5
Bosnia and Herzegovina	33.6
Austria	34.8
Denmark	35.1
Finland	37.8
Romania	38.7
Belgium	42.7
Norway	44.2
Sweden	44.2
Luxembourg	47.7
Spain	50.2
Portugal	51.0
Ireland	53.2
Italy	54.7
Cyprus	55.4
Turkey	56.0
United Kingdom	**63.3**
Serbia	68.3
Malta	71.9

EASTERN MEDITERRANEAN REGION/COUNTRY	%
Tunisia	35.9
Iran	37.0
Pakistan	40.4
Libyan Arab Jamahiriya	45.8
Lebanon	46.8
Iraq	58.4
United Arab Emirates	62.5
Kuwait	64.5
Saudi Arabia	68.8

THE AMERICAS	%
Guatemala	16.2
Dominica	24.4
Canada	33.9
Uruguay	34.1
Mexico	37.7
St Kitts and Nevis	38.3
United States of America	40.5
Paraguay	41.3
Ecuador	42.6
Colombia	43.9
Barbados	46.9
Brazil	49.2
Dominican Republic	60.0
Argentina	68.3

SOUTH EAST ASIA REGION/COUNTRY	%
Bangladesh	4.7
Myanmar	12.7
Nepal	15.5
India	15.6
Thailand	19.2
Sri Lanka	25.9
Indonesia	29.8
Maldives	39.0

WESTERN PACIFIC REGION/COUNTRY	%
Mongolia	9.4
Cambodia	11.2
Vietnam	15.3
Lao People's Dem. Rep.	18.8
Papua New Guinea	19.3
Philippines	23.7
China	31.0
Australia	37.9
Tonga	41.8
Solomon Islands	43.7
Nauru	46.5
Kiribati	46.7
New Zealand	47.7
Marshall Islands	49.6
Samoa	51.1
Japan	60.2
Micronesia	66.3

WORLDWIDE INACTIVITY

COUNTRY	%
Bangladesh	4.7
Mozambique	7.1
Comoros	8.3
Benin	9.1
Mongolia	9.4
Malawi	10.2
Cambodia	11.2
Guinea	12.1
Myanmar	12.7
Vietnam	15.3
Burkina Faso	15.5
Nepal	15.5
Greece	15.6
India	15.6
Guatemala	16.2
Kenya	16.5
Estonia	17.2
Zambia	17.2
Ghana	17.6
Netherlands	18.2
Ukraine	18.4
Lao People's Dem. Rep.	18.8
Sao Tome and Principe	19.0
Thailand	19.2
Ethiopia	19.3
Papua New Guinea	19.3
Sierra Leone	19.9
Cape Verde	20.7
Russian Federation	20.8
Mali	20.9
Slovakia	22.2
Georgia	22.3
Seychelles	22.4
Lithuania	22.6
Madagascar	23.3
Croatia	23.6
Philippines	23.7
Zimbabwe	23.8
Dominica	24.4
Chad	24.5
Gambia	24.5
Czech Republic	25.0
Sri Lanka	25.9
Hungary	26.0

Bulgaria	26.8
Poland	27.6
Germany	28.0
Niger	29.3
Indonesia	29.8
Slovenia	30.0
China	31.0
Kazakhstan	31.5
Latvia	32.0
France	32.5
Cote d'Ivoire	32.8
Bosnia and Herzegovina	33.6
Canada	33.9
Uruguay	34.1
Austria	34.8
Denmark	35.1
Botswana	35.2
Tunisia	35.9
Gabon	36.6
Iran	37.0
Mexico	37.7
Finland	37.8
Australia	37.9
St Kitts and Nevis	38.3
Mauritius	38.6
Romania	38.7
Maldives	39.0
Eritrea	40.4
Pakistan	40.4
Algeria	40.5
United States of America	40.5
Cameroon	40.7
Paraguay	41.3
Tonga	41.8
Ecuador	42.6
Belgium	42.7
Solomon Islands	43.7
Mauritania	43.8
Colombia	43.9
Norway	44.2
Sweden	44.2
Dem. Rep. of Congo	45.2
Libyan Arab Jamahiriya	45.8
Nauru	46.5
Kiribati	46.7
Lebanon	46.8

Barbados	46.9
Luxembourg	47.7
New Zealand	47.7
Congo	48.6
Brazil	49.2
Marshall Islands	49.6
Spain	50.2
Portugal	51.0
Samoa	51.1
Bhutan	52.3
South Africa	52.4
Ireland	53.2
Italy	54.7
Cyprus	55.4
Turkey	56.0
Iraq	58.4
Namibia	58.5
Dominican Republic	60.0
Japan	60.2
Malaysia	61.4
United Arab Emirates	62.5
United Kingdom	**63.3**
Kuwait	64.5
Micronesia	66.3
Argentina	68.3
Serbia	68.3
Saudi Arabia	68.8
Swaziland	69.0
Malta	71.9

Source:
This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors. Supplement to: Hallal PC, Andersen LB, Bull FC, Guthold R, Haskell W, Ekelund U, for the Lancet Physical Activity Series Working Group. Global physical activity levels: surveillance progress, pitfalls, and prospects. Lancet 2012; published online July 18. http://dx.doi.org/10.1016/S0140-6736(12)60646-1.

The table and data is referred to as Web Appendix 1. The authors describe the method for pulling the data together as follows:

Inclusion criteria required sex- and age-specific sample sizes of at least 50 individuals from national or subnational general population surveys. Surveys were only considered if physical activity was assessed with a questionnaire capturing activity across all domains of life (work, household, transport, and leisure time), such as the Global Physical Activity Questionnaire (GPAQ), the International Physical Activity Questionnaire (IPAQ), or a similar instrument. In total, 155 surveys from 122 WHO Member States,

covering all WHO Regions, met the inclusion criteria. In order to derive comparable country prevalence estimates for the ages 15 years and older, data were adjusted for various factors, including over-reporting of activity of the IPAQ, coverage of urban populations only, and different age coverage of surveys. Previous studies have described over-reporting of activity of the IPAQ, however no adjustment factor has been determined (Ainsworth BE, et al. 2006; Ekelund U, et al. 2006; Rzewnicki R, et al. 2003; Lee PH, et al. 2011). To derive an adjustment factor for IPAQ surveys, data from countries where two surveys were undertaken was used. Data were included in these calculations if one of these surveys was conducted using IPAQ, and the other using a similar instrument such as GPAQ, capturing all activity domains. The coverage of the two surveys had to be similar (for example, both national or both urban), and sex- and age-specific estimates had to be reported for the exact same groups in both surveys. The following regression model was applied to adjust the prevalence of physical inactivity from IPAQ surveys:

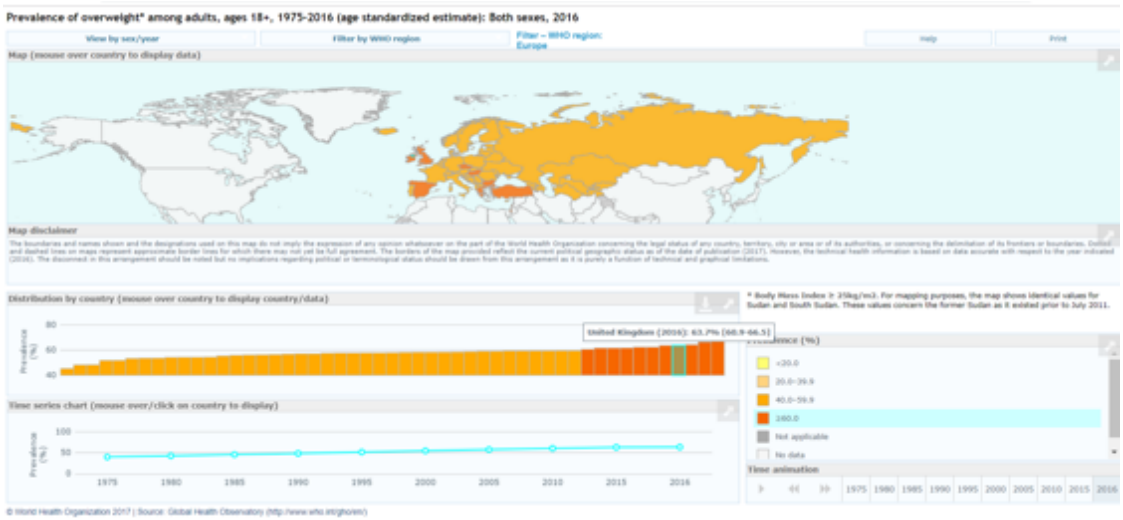
Y (Logit of the prevalence of inactivity, GPAQ) = α + β1*(Logit of the prevalence of inactivity, IPAQ) + β2*(mid_age) + β3*(setting_code) + β4*(low_income) + ε

Appendix 1.4

World Health Organisation tables on prevalence of obesity and overweight in adults and adolescents

(i) Prevalence of Overweight amongst adults:

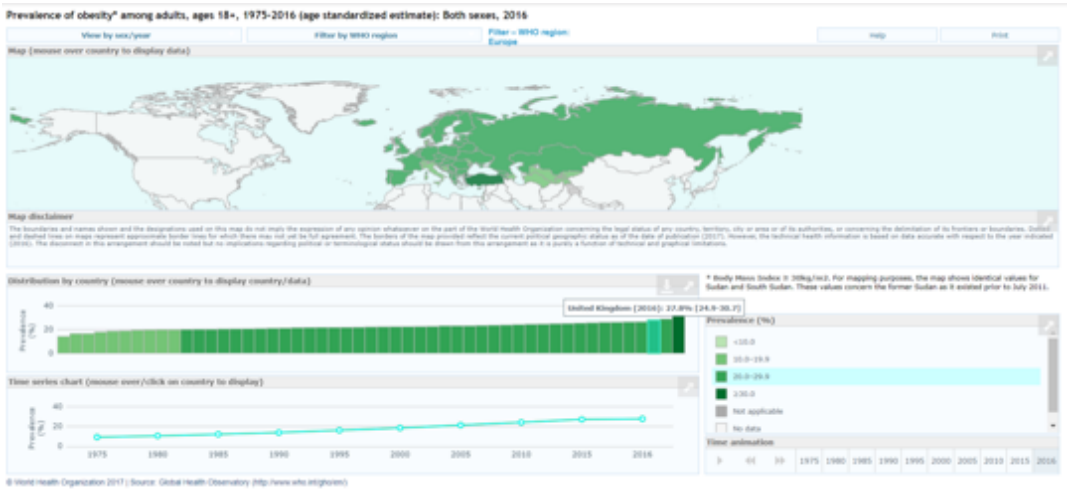
UK was the fourth worst in Europe in 2016:



https://www.who.int/gho/ncd/risk_factors/overweight/en/

(ii) Prevalence of obesity amongst adults

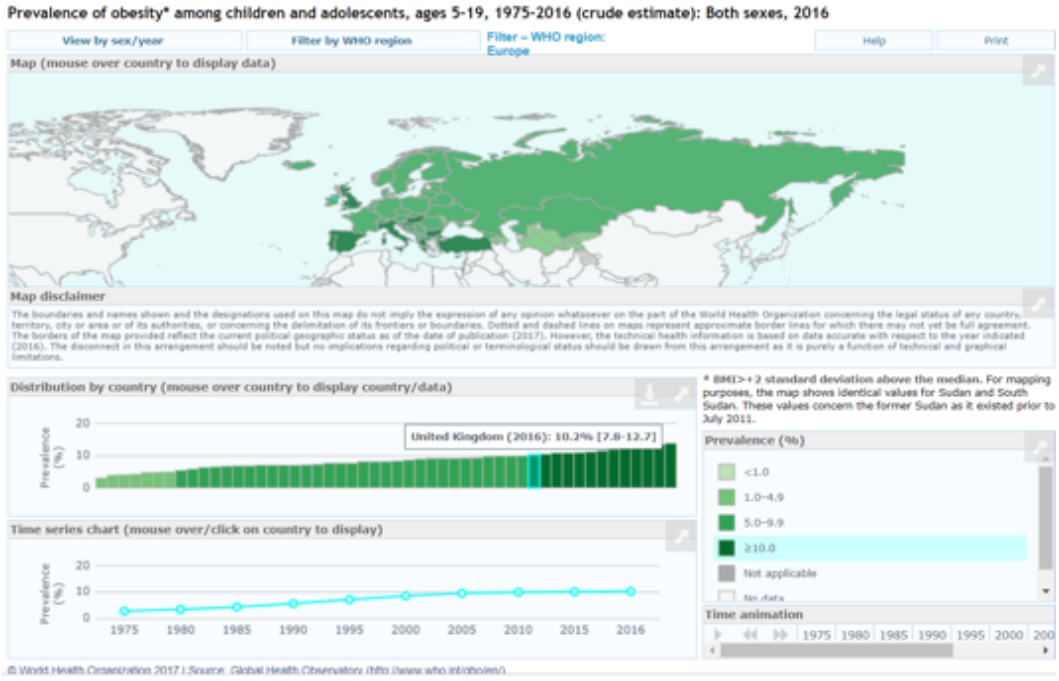
UK was the third worst in Europe in 2016:



https://www.who.int/gho/ncd/risk_factors/overweight_obesity/obesity_adults/en/

(iii) Prevalence of obesity in children and adolescents

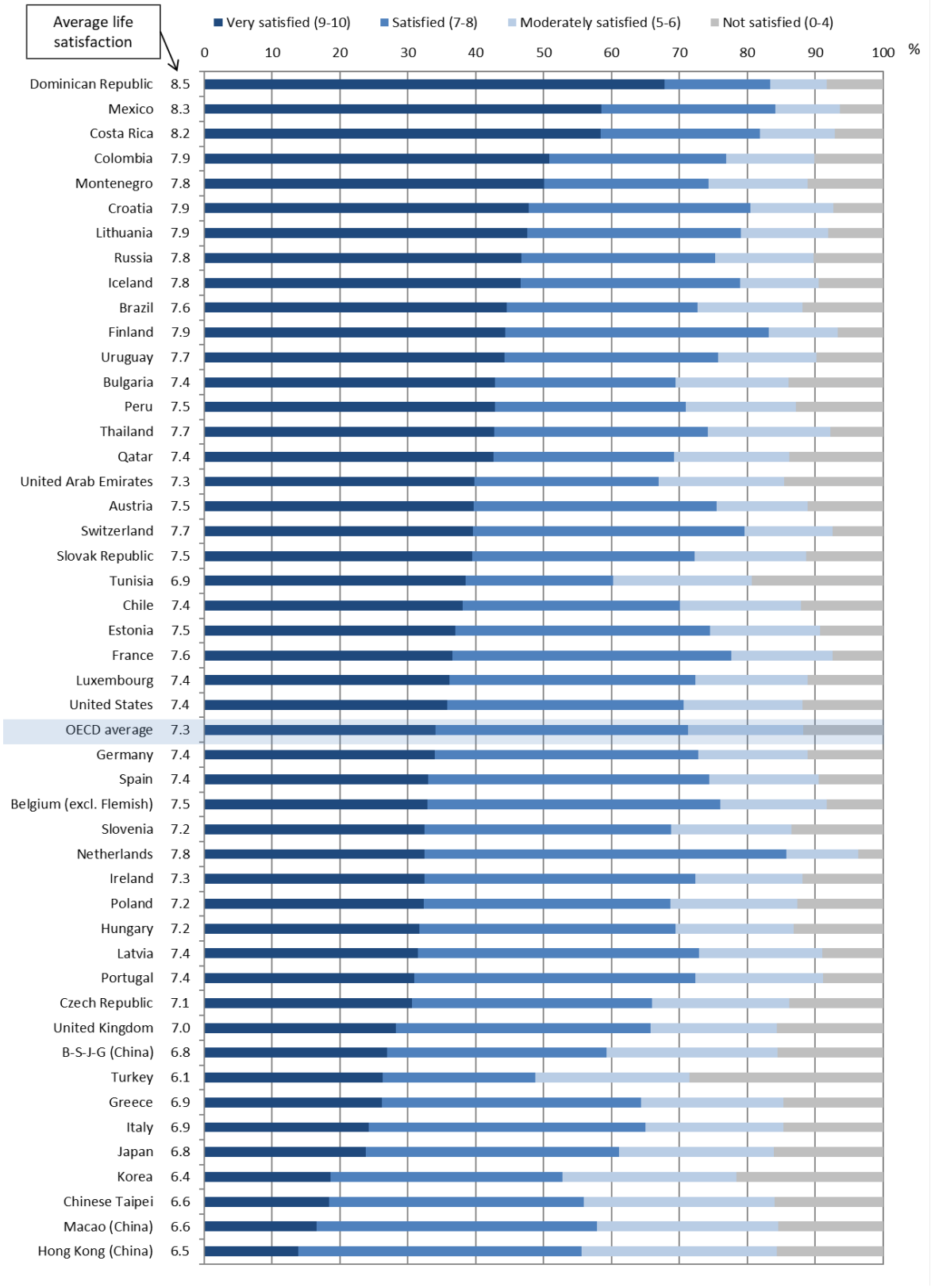
UK was thirteenth worst in Europe in 2016:



https://www.who.int/gho/ncd/risk_factors/overweight_obesity/obesity_adolescents/en/

Appendix 1.5 Wellbeing

Life Satisfaction among 15 year old students: Percentage of students, by level of life satisfaction



Source: OECD PISA 2015

Appendix 2
The link between physical activity and health, and wellbeing

2.1 Health

The importance of physical activity appears to lie in its status as the least expensive and most effective preventive treatment for combating the increasing worldwide problem of obesity. Much research is available on this link; three specific examples are set out below:

(i) The relationship between sedentary behaviours and prevalence of obesity has been well documented. (R Bailey 2013, Appendix 2.1.1);
(ii) Inactive people spend 38 per cent more days in hospital than active people and visit the doctor almost six per cent more often. (UK Active – Turning the Tide of Inactivity, 2014, Appendix 2.1.2)
(iii) "Worldwide, we estimate that physical inactivity causes 6% (ranging from 3·2% in southeast Asia to 7·8% in the eastern Mediterranean region) of the burden of disease from coronary heart disease, 7% (3·9–9·6) of type 2 diabetes, 10% (5·6–14·1) of breast cancer, and 10% (5·7–13·8) of colon cancer. Inactivity causes 9% (range 5·1–12·5) of premature mortality, or more than 5·3 million of the 57 million deaths that occurred worldwide in 2008. If inactivity were not eliminated, but decreased instead by 10% or 25%, more than 533 000 and more than 1·3 million deaths, respectively, could be averted every year. We estimated that elimination of physical inactivity would increase the life expectancy of the world's population by 0·68 (range 0·41–0·95) years." (Effect of Physical Inactivity on major non-communicable diseases worldwide: Dr I-Min Lee et all, The Lancet, July 2012)

2.1.1 R Bailey - Liverpool Moores University 2013 "The Human Capital Model" ("HCM")

The importance of physical activity, for most policymakers and politicians, lies in its status as the least expensive and most effective preventive treatment for combating the increasing worldwide problem of obesity, and, with its associated physical fitness, may represent the most effective strategy to prevent chronic disease. The relationship between sedentary behaviours and prevalence of obesity has been well documented. Although it is only one factor in a number of influences, the amount of physical activity people engage in is linked to their status of being overweight or obese.

The HCM represents the views that physical activity is a fundamental part of human nature, and that it is essential for healthy human development. The HCM further conceptualizes development in terms of different forms of 'capital,' which are resources that can be built on and drawn upon throughout life. The model suggests not only that physical activity is a key driver of different types of capital formation, but that the capitals in turn influence both physical activity and each other; forming a synergistic feedback network whose whole is greater than the sum of its parts.
The HCM conceptualizes development in terms of different forms of 'capital,' as follows:

1. Physical Capital: The direct benefits to physical health and positive influences on healthy behaviours

2. Emotional Capital: The psychological and mental health benefits associated with physical activity
3. Individual Capital: The elements of a person's character (eg, life skills, interpersonal skills, values) that accrue through participation in physically active play, sports, and other forms of physical activity
4. Social Capital: The outcomes that arise when networks between people, groups, organizations, and civil society are strengthened because of participation in group-based physical activity, play, or competitive sports
5. Intellectual Capital: The cognitive and educational gains that are increasingly linked to participation in physical activity
6. Financial Capital: Gains in terms of earning power, job performance, productivity, and job attainment, alongside reduced costs of health care and absenteeism/presenteeism (ie, lower productivity among those who are "present") linked to physical activity.

It is clear that physical activity is a key component of energy balance, and keeping active is an essential part of preventing people from becoming overweight and accumulating body fat. Active children and adolescents tend to have less body fat, and physical activities have been shown to be effective in programs for overweight and obese young people.

The beneficial effects of physical activity on obesity in young people are lost when interventions stop, which suggests a need for lifestyle change. Sports are increasingly cited as a potentially important context of physical activity. Children and adolescents involved in sports exhibit higher levels of moderate-to-vigorous physical activity, estimated daily energy expenditure, and energy expenditure in physical activity.

However, a great deal depends on the context in which sports takes place: some sports are quite sedentary, and some coaches/teachers are less successful than others at sustaining activity during session light of these variables, it is not surprising that some of the most encouraging findings come from school sports and other relatively formal, organized settings.

Appendix 2.1.2
UK Active Report (2014) - Turning the tide of inactivity

- In 2013, local authorities inherited the responsibility for improving public health from Primary Care Trusts (PCTs). Their first year has been one of transition and adaptation to the new system.
- The financial case for turning the tide of inactivity is also apparent; inactive people spend 38 per cent more days in hospital than active people and visit the doctor almost six per cent more often. According to the National Institute for Health and Care Excellence (NICE), inactivity is costing the national economy in England £8.2 billion per year.
- Turning the tide of inactivity finds that inactivity levels are ten per cent higher in the most deprived areas in England compared to the least deprived. It reveals a general correlation between inactivity and premature mortality; areas with the highest levels of inactivity also have the highest levels of premature mortality.

- Local authority responses to our FOI requests show that they spent an average of less than three per cent of their annual public health budgets on physical inactivity interventions last year. Five per cent of the local authorities who responded failed to apportion any of their public health budgets to physical inactivity in 2013/14.
- Physical inactivity represents ten per cent of total societal costs when compared against other top-tier public health concerns including sexual health, smoking, obesity and drug and alcohol misuse.
- On average, it is costing the economy in each local authority in England £18 million per 100,000 people every year.
- To turn the tide of inactivity it is critical for there to be a clearly-articulated national and local ambition. This report has found that reducing physical inactivity by just one per cent a year over a five-year period would save the UK economy just under £1.2bn.
- If every local authority was able to reduce inactivity levels by one per cent year on year over this five-year period they would save local taxpayers £44 per household. More importantly, they would improve the health and wellbeing of their local communities.
- There is a disproportionately low spend on programmes to tackle physical inactivity by local authorities compared to other top tier public health concerns - We found that local authorities spent an average of 2.4 per cent of their public health budgets on programmes to tackle inactivity in 2013/14.

Appendix 2.2 Wellbeing

As with health, there is increasing research and comment on the positive link between physical activity and wellbeing. Five recent examples include:

(i)

- There is a positive association between physical activity and several components of mental health, including self-esteem, emotive well-being, spirituality and future expectations all of which may impact on academic achievement
- Physical activity has a positive impact on anxiety, depression, mood, and wellbeing, all of which may impact on academic achievement
- Young individuals who participate in organised sport demonstrate lower rates of anti-social behaviour which may result in less disaffection from school (The Impact of Physical Education and Sport on Education Outcomes: a review of literature by Institute of Youth Sport at Loughborough University: Stead and Nevill, September 2012) (Appendix 2.2.1)

(ii) There is widespread evidence that engagement with Greenhouse Sports raises attendance [and academic performance], and achieves positive behavioural change (Scoping study to inform future research by Greenhouse Sports and Loughborough University, Autumn 2017) (Appendix 2.2.2)

(iii) Participation in sports is not necessarily related to higher marks in academic subjects, but it is strongly associated with the well-being of teenagers and the adults they will become. The PISA in Focus no 86 (July 2018) (Appendix 2.2.3)

(iv) Physically literate children and young people are happier, more resilient and more trusting of other children and young people. The more elements of physical literacy present, the higher

the levels of happiness, resilience and social trust. (Active Lives Children and Young People Survey. Sport England, March 2019) (Appendix 2.2.4)

(v) It does appear that an involvement in sport whilst at school is advantageous. Sports involvement does not appear to have any negative implications. An involvement in sport is linked to greater character development AND psychological wellbeing. (Peter Clough of The University of Huddersfield, November 2018) (Appendix 2.2.5)

Appendix 2.2.1

Impact of physical education and sport on educational outcomes: A Review of Literature – Institute of Youth Sport, School of Sport, Exercise and Health Sciences Loughborough University: Stead and Nevill, September 2010

Summary

Well-controlled longitudinal studies generally support cross-sectional research, suggesting that academic achievement is maintained or enhanced by increased physical education, physical activity or sport

When a substantial proportion of curricular time (up to an extra hour per day) is allocated to physical education, physical activity or sport, learning seems to proceed more rapidly per unit of classroom time

A positive relationship exists between physical activity and cognition with primary and middle-school age children gaining the most benefit in terms of enhanced cognitive function

Perceptual skills, attention and concentration are all improved by a bout of physical activity, but perceptual skills seem to benefit the most from prior exercise

There are no differences between the acute and chronic effects of physical activity on cognition so it is unclear if there are any additional benefits of a longitudinal programme or whether children simply benefit from each bout of exercise undertaken

Prior exercise may be beneficial for cognitive function in both the morning and the afternoon as studies have shown an improvement in adolescents‟ performance on visual search and attention tests in the morning and on children‟s performance in mathematics after an afternoon walk

Further research is needed to establish the optimal intensity and duration for cognitive stimulation in young people

As little as 10 minutes of additional organised physical activity in or outside the classroom implemented into the school day improves classroom behaviour, and consequently may enhance academic performance

The addition of break times when physical activity is undertaken improves classroom behaviour and consequently may enhance academic performance

There is a positive association between physical activity and several components of mental health, including self-esteem, emotive well-being, spirituality and future expectations all of which may impact on academic achievement

Physical activity has a positive impact on anxiety, depression, mood, and wellbeing, all of which may impact on academic achievement

Young individuals who participate in organised sport demonstrate lower rates of anti-social behaviour which may result in less disaffection from school

Large cross-sectional studies have shown a positive relationship between participation in sports programmes and school attendance and between physical fitness and school attendance

In the UK the nationwide School Sports Partnership programme has shown a positive impact on attendance

To impact on whole school attendance, physical education and school sport programmes should be innovative, engage the whole school in daily or weekly activity programmes and, importantly, be fully integrated within a multi-dimensional school aim of improving attendance, increasing attainment, and changing attitudes to learning

physical education, physical activity and sport have been shown to impact positively on the extent to which young people feel connected to their school; the aspirations of young people; the extent to which positive social behaviours exist within school; and the development of leadership and citizenship skills

Appendix 2.2.2

Examining the Impact of Greenhouse Sports programmes in Schools – Loughborough University, Autumn 2017

In 2016-17, Greenhouse Sports worked with Loughborough University researchers to scope the impact of our programmes and hopefully identify the full breadth of what a Greenhouse Sports intervention can do. We asked ourselves some challenging questions to get to the heart of our programmes.

Do we support the emotional development of the young people we work with? Do we contribute to their educational attainment? What do our schools really think of us? The research was conducted over six months in 2017 and robustly reviewed by Pro-Bono Economics and we thank them along with the NHS for helping make this possible.

The key central message to take from the analysis is that there is widespread evidence that engagement with Greenhouse Sports raises attendance and academic performance, and achieves positive behavioural change.

Appendix 2.2.3

PISA in Focus July 2018/86

Across OECD countries, 52% of students reported that they engage in vigorous physical activities (activities that make them sweat and breathe hard and fast) at least three days a week; and boys engage in such activities one day more per week than girls, on average.

- The amount of vigorous physical activity a student engages in is positively related to the student's well-being.
- Students who engage in moderate physical activity at least one day per week tend to perform better in PISA than students who do not do any physical activity. However, students who engage in vigorous physical activity every single day score lower in science than students who exercise between one and six days per week.

Participation in sports is not necessarily related to higher marks in academic subjects, but it is strongly associated with the well-being of teenagers and the adults they will become. Educators and schools can therefore bolster students' well-being with high-quality physical education and by helping them stay physically active, in and out of school.

There is a clear positive association between physical activity and students' well-being outcomes. According to PISA, students who participate in moderate physical activity (activity that raises students' heart rate and causes them to sweat for at least 60 minutes per day, such as walking, climbing stairs, riding a bike to school) tend to have better psychosocial well-being outcomes than students who do not participate in sports at all.

For example, students who engage in moderate physical activity more often during a week are more likely to value teamwork and cooperation. And in most countries, students who exercise at least three days per week reported greater satisfaction with life than students who do not exercise outside of school.

Students who do not engage in any moderate physical activity rated their satisfaction with life as 6.9 on a scale from 0 (the worst possible life) to 10 (the best possible life) while students who exercise once or twice a week rated their life satisfaction as 7.2, and students who exercise vigorously at least 3 days per week reported a life satisfaction level of 7.5 on the scale.

However, this relationship should be interpreted with caution because students who did not report any physical activity may suffer from physical disabilities that prevent them from engaging in such activities. Students who do not engage in any kind of physical activity outside of school – neither vigorous physical

activity, such as running, nor moderate physical activity, such as walking or dancing – tend to fare poorly in several psychological and social outcomes, and are more likely to engage in risky behaviours.

On average across OECD countries, students who reported doing some moderate or vigorous physical activity are three percentage points less likely to feel anxious about schoolwork, seven percentage points less likely to feel like an outsider at school, three percentage points less likely to skip school, and two percentage points less likely to be frequently bullied than students who do not engage in any form of physical activity outside of school.

Appendix 2.2.4

Active Lives Children and Young People Survey
Attitudes towards sport and physical activity (academic year 2017/18)
Published March 2019

HOW THE SURVEY WORKS

Schoolchildren across England are asked to take part in the Active Lives Children and Young People survey, which sits at the heart of our vision.

We want everyone in England, regardless of their age, background and level of ability, to feel able to take part in sport and activity. Our aim is for children and young people to feel more motivated, confident and able to get active – which will also increase the likelihood of being active later in life.

Compiled on behalf of the Department for Education, the Department for Health and the Department for Digital, Culture, Media and Sport, the survey runs on an annual basis.

Each term, a number of schools are randomly selected to take part in the survey, with the aim of getting 100,000 children and young people in Years 1 to 11 to complete it each academic year.

MEASURING ACTIVITY

The survey covers measures of children's activity levels, physical literacy, swimming proficiency, wellbeing, self-efficacy and levels of social trust.

With a sample of this size, we can produce some estimates down to local authority level. This means the results will shape and influence local decision-making as well as inform government policy on the Primary PE and Sports Premium, Childhood Obesity PlanOpen in a new window and other cross-departmental programmes.
The survey went through two rounds of cognitive testing and a pilot study. It went live in September 2017, with the first set of data published in December 2018.

The report has five key findings:

Physically literate children and young people are more likely to be active

Physical literacy has five elements – enjoyment, confidence, competence, understanding and knowledge. The more elements present, the more active a child or young person is likely to be.

Enjoyment is the biggest driver of activity

While all of the reported attitudes make a difference, enjoying sport and physical activity makes the biggest difference to activity levels.

Physically literate children and young people are happier, more resilient and more trusting of other children and young people

The more elements of physical literacy present, the higher the levels of happiness, resilience and social trust.

Physical literacy declines with age

As children and young people grow older, they report lower levels of enjoyment, confidence, competence and understanding.

There are important inequalities that must be tackled

Girls and those from less affluent families are less likely to enjoy being active.

Notes: The achieved sample
Attitudinal responses: 130,194 (pupils in Years 1-11)
Behavioural responses: 109,503 (parents of pupils in Years 1-2 and pupils in Years 3-11).

data have been weighted to Department for Education pupil population estimates from the January 2016 school census for geography and key demographics.

Appendix 2.2.5

The potential benefits and costs of participation in school sport: an extended cross sectional study

Professor Peter Clough
Department of Psychology
University of Huddersfield, November 2018

This research shows the importance and usefulness of a balanced non-academic portfolio and the particular importance of sport for student wellbeing and character development.

Physical activity and academic performance:
One of the key areas for this study was exploring any links between physical activity and academic performance. Previous research has been equivocal, with little solid evidence of a specific link between physical activity and academic performance (e.g. Singh et al, 2012; Biddle & Azare, 2011; Booth et al, 2014).

In the current study aggregated GCSE data and MidYIS scores were used. Negligible correlation coefficients were observed between sporting and non-sporting activities in relation to either of these. **No relationships approached significance, showing there was no simple discernible link between activity and academic performance**. Separate analyses were carried by gender. Again no simple relationships could be detected.

A final analysis was undertaken, examining the link between MidYIS and GCSE performance. It was possible to examine discrepancies between potential performance (MidYIS) and actual performance (GCSE's). Again no link was found with physical activity.

Physical activity and wellbeing:
Few studies have examined this area within a school setting. The psychological wellbeing of students has become a key issue both in educational establishments and in governmental policy. It is often reported that 1 in 10 of children and young adults have significant mental health issues. The data from the current study, reported in Tables 3a to 3e are suggestive of a similar percentage in the schools taking part in this study (*however, it should be noted that that the wellbeing measures utilised here are not validated for clinical populations*).

There is some previous research in this area. Steptoe and Butler (1996) reported data from a cohort of 5,061 adolescents. They noted that 'greater participation in vigorous sports and activities was associated with lower risk of emotional distress'. Allison et al (2005) analysed data from 2,104 Canadian adolescents and showed a significant negative relationship between sports involvement and problems with social functioning.

In the current study positive associations were found between sports activities and wellbeing

Sports involvement in school vs Wellbeing ***r=0.21 p<0.001***
Sports involvement outside school vs wellbeing ***r=0.19 p<0.001***

It is possible to state that ***6%*** of wellbeing is predicted by an involvement in sport.

Physical activity and mental toughness

As previously reported there is no simple and linear relationship between mental toughness and performance, however it is important to recognise that mental toughness development in its own right might be a sought after outcome in the educational system.

There has been a recent increase in interest about character development in young people. Character is however, poorly defined. Mental toughness has been linked closely associated with character. Clough et al. (2002) conceptualised mental toughness as a global construct that can manifest in any area of life, including personal relationships, vocational endeavours and sport. Mental toughness is a positive psychological variable, relating to success and has properties that are beneficial for it goes beyond accepting and dealing with anxiety. Rather it is actually seeking out, and thriving, in anxiety eliciting situations. Mental toughness enables individuals to cope with stress effectively but it also allows them to *proactively* seek out opportunities for self-development rather than just *react* to stressful circumstances. Self-belief is the primary and most important attribute of mental toughness. It manifests itself, and is the product of, physiological, cognitive and behavioural differences.

It has been suggested that sporting involvement can be a vehicle for the development of mental toughness (e.g. Crust and Clough, 2011). More recently, Clough et al (2016) have suggested outdoor adventure activities as a route to mental tough ness development.

<u>The findings</u>
Firstly, it is worth noting that there were no links were found between an involvement in extracurricular activities and mental toughness.

Significant relationships were found between sports' involvement and mental toughness. Greater level of sports involvement was associated with higher toughness scores

Sports involvement in school vs MT *r=0.19 p<0.001*
Sports involvement outside school vs MT *r=0.21 p<0.001*

It is possible to say that around 7% of students' mental toughness scores is explained by their involvement in sports, suggesting that sport can be a significant factor in the building of character building.

Summary of the findings

- It does appear that an involvement in sport whilst at school is advantageous.
- Sports involvement does not appear to have any negative implications.
- An involvement in sport is linked to greater character development AND psychological wellbeing.
- Many pupils, but not all, felt that sports participation was related to improvements in school work. This may be an overly positive view of what is actually happening, as there is only limited evidence that involvement in sport has a positive impact in academic performance.
- There was a clear link between mental toughness and wellbeing. This suggests, in conjunction with the extant literature, that toughness may be a moderator of the relationship between sport and wellbeing.
- There are groups that are perhaps are particularly vulnerable: The 'Squeezed Middle', Female Students and Poor Performers. An involvement in sport may offer a mechanism to allow these students to reach their full potential

Appendix 3

Research linking greater physical activity and educational attainment

Experts are divided on a direct causal link between greater physical activity and increased educational attainment. In general, research confirms that physical activity has little to no negative impact on educational attainment. However evidence remains unclear on causal links. A summary of six recent reports is set out below.

(i) Well-controlled longitudinal studies generally support cross-sectional research, suggesting that academic achievement is maintained or enhanced by increased physical education, physical activity or sport" (Stead and Nevill (2010); Appendix 2.2.1)
(ii) A positive association exists between academic attainment and physical activity levels of pupils. (Public Health England Briefing, November 2014) (Appendix 3.1)
(iii) Participation in physical activity is positively related to academic performance in children. Because we found only 2 high-quality studies, future high-quality studies are needed to confirm our findings. (Physical Activity and Performance at School, Jan 2012: Amika Singh et al) (Appendix 3.2)
(iv) There is widespread evidence that engagement with Greenhouse Sports raises [attendance] and academic performance (Scoping Study to Inform Future Research by Greenhouse Sports and Loughborough University, Autumn 2017), (Appendix 2.2.2)
(v) Students who engage in moderate physical activity at least one day per week tend to perform better in PISA than students who do not do any physical activity. However, students who engage in vigorous physical activity every single day score lower in science than students who exercise between one and six days per week. (OECD PISA in Focus 2018/86) (Appendix 2.2.3)
(vi) There was no simple discernible link between activity and academic performance. Separate analyses were carried by gender. Again no simple relationships could be detected. (Peter Clough, University of Huddersfield, November 2018) (Appendix 2.2.5)
(vii) There is currently inconclusive evidence for the beneficial effects of physical activity (PA) interventions on cognitive and overall academic performance in children. We conclude that there is strong evidence for beneficial effects of PA on maths performance. The expert panel confirmed that more 'high-quality' research is warranted. (Appendix 3.3)

Appendix 3.1
Link between Pupil Health and Wellbeing and Attainment: A Briefing for Head Teachers, Governors and Staff in an Education Setting: Public Health England 2014

Key points from the Evidence

1. Pupils with better health and wellbeing are likely to achieve better academically.
2. Effective social and emotional competencies are associated with greater health and wellbeing, and better achievement.
3. The culture, ethos and environment of a school influences the health and wellbeing of pupils and their readiness to learn.
4. A positive association exists between academic attainment and physical activity levels of pupils.

Key evidence

- a UK study identified that the amount of moderate to vigorous physical activity pupils engaged with at age 11 had an effect on academic performance across English, maths and science at age 11, 13 and final GCSE exam results: *Booth J, Leary S, Joinson C, Ness A, Tomporowski P, Boyle J & Reilly J (2014).*
- Associations between objectively measured physical activity and academic attainment in adolescents from a UK cohort: *British Journal of Sports Medicine, 48, 265-270.*
- the percentage of time girls spent in moderate to vigorous physical activity at age 11 predicted increased science scores at 11 and 16 years: *Booth J, Leary S, Joinson C, Ness A, Tomporowski P, Boyle J & Reilly J (2014) as above*
- pupils engaging in self-development activities (including sport, physical activity) achieved 10-20% higher GCSEs: *Lindner K (2002).*
- The physical activity participation – academic performance relationship revisited: *Pediatric Exercise Science, 14, 155-169*

Appendix 3.2

Physical Activity and Performance at School A Systematic Review of the Literature Including a Methodological Quality Assessment Jan 2012

Amika Singh, PhD; Léonie Uijtdewilligen, MSc; Jos W. R. Twisk, PhD; et alWillem van Mechelen, PhD, MD; Mai J. M. Chinapaw, PhD

Participation in physical activity is positively related to academic performance in children. Because we found only 2 high-quality studies, future high-quality studies are needed to confirm our findings. These studies should thoroughly examine the dose-response relationship between physical activity and academic performance as well as explanatory mechanisms for this relationship.

Two previous reviews have studied the influence of physical activity on academic performance:

(i) Trudeau and Shephard present an overview of the literature on the relationship between physical activity in the school setting and several outcome measures, including academic performance. Based on quasi-experimental data, they report that physical education programs demand a substantial reduction in time allocated for academic tuition. Because the children's academic performance did not change, they conclude that learning efficiency had improved. Furthermore, Trudeau and Shephard report that cross-sectional studies generally indicate a positive association between physical activity and academic achievement.

(Trudeau F, Shephard RJ. Physical education, school physical activity, school sports and academic performance. *Int J Behav Nutr Phys Act*. 2008;5:1018298849)

(ii) The review by Taras argues that there may be some acute beneficial effects of physical activity, but the long-term improvement of academic achievement is not well established. Taras concludes that the acute cognitive benefits of physical activity may adequately compensate for time spent away from academic areas.

(Taras H. Physical activity and student performance at school. *J Sch Health*. 2005;75(6):214-21816014127)

Appendix 3.3

Effects of physical activity interventions on cognitive and academic performance in children and adolescents: a novel combination of a systematic review and recommendations from an expert panel: Amika S Singh, Emi Saliasi, Vera van den Berg et al, June 2018

Objective To summarise the current evidence on the effects of physical activity (PA) interventions on cognitive and academic performance in children, and formulate research priorities and recommendations. Design Systematic review (following PRISMA guidelines) with a methodological quality assessment and an international expert panel. We based the evaluation of the consistency of the scientific evidence on the findings reported in studies rated as of high methodological quality.

Data sources PubMed, PsycINFO, Cochrane Central, Web of Science, ERIC, and SPORTDiscus.

Results Eleven (19%) of 58 included intervention studies received a high-quality rating for methodological quality: four assessed effects of PA interventions on cognitive performance, six assessed effects on academic performance, and one on both. All high-quality studies contrasted the effects of additional/adapted PA activities with regular curriculum activities. For cognitive performance 10 of 21 (48%) constructs analysed showed statistically significant beneficial intervention effects of PA, while for academic performance, 15 of 25 (60%) analyses found a significant beneficial effect of PA. Across all five studies assessing PA effects on mathematics, beneficial effects were reported in six out of seven (86% outcomes. Experts put forward 46 research questions. The most pressing research priority cluster concerned the causality of the relationship between PA and cognitive/academic performance. The remaining clusters pertained to PA characteristics, moderators and mechanisms governing the 'PA–performance' relationship and miscellaneous topics.

Conclusion There is currently inconclusive evidence for the beneficial effects of PA interventions on cognitive and overall academic performance in children. We conclude that there is strong evidence for beneficial effects of PA on maths performance. The expert panel confirmed that more 'high-quality' research is warranted. By prioritising the most important research questions and formulating recommendations we aim to guide researchers in generating high-quality evidence. Our recommendations focus on adequate control groups and

sample size, the use of valid and reliable measurement instruments for physical activity and cognitive performance, measurement of compliance and data analysis.

Appendix 4

Where Sports sits, by Ministry

Australia	In the Government of Australia, the minister administers the portfolio through the **Department of Health**. The current Sports Minister has responsibility Regional Services, Sport, Local Government and Decentralisation	The Australian Federal Government makes a significant financial contribution to Australian sport, with AUD$357m being invested to support sport and recreation activities and facilities in 2016-17.
Brazil		Brazilian law states that it is the duty of the State to promote sport as a right of each citizen, noting the allocation of public funds for the priority promotion of educational sports and – in specific cases – of elite sports.
Canada	Ministry of Science and Sport	The Canadian government provides financial support through three programs: • Through the **Athlete Assistance Program**, every year **$33m** in funding goes directly to approximately **1900 athletes**, giving them financial assistance to pursue world-class results while achieving their academic and career goals. • The **Sport Support Program** provides about **$150.4m** to Canadian sport organizations to strengthen our national sport system and benefit our athletes and coaches. • The **Hosting Program** provides about **$19.9m** annually to assist Canadian communities in hosting world-class international sport events and the Canada Games. In addition, funding is provided to support travel costs related to the participation of athletes in the Canada Games. Each year, about **$64m** of the Sport Support Program's total amount is

		provided as enhanced excellence funding for targeted sports and athletes with medal potential at the Olympic and Paralympic Games, based on recommendations made by Own the Podium. Total of the above **$267.3m** but doesn't necessary include regular sport participation although forms part of Sport Canada's mission.
China	General Administration of Sport responsible for: 1. Creating a national sports framework 2. Providing development in the sports industry and promoting sports development in rural regions. **3. Promote physical activity and exercise participation in Schools, regional and local communities.** 4. Organizing athletic and national sports events 5. Enforcement of drug use and anti-competitive measures 6. Liaising and cooperating sports with Hong Kong, Macau and Taiwan 7. Organizing international sport events in China 8. Support and fund research into the development of sports 9. Implementing regulation governing the sports industry, market and best practice	China's nationwide sports industry, worth 1.5 trillion yuan (US$222.68 billion) last year, is on track to reach 5 trillion yuan by 2025. China's sports industry could be about to come of age, as growing public enthusiasm for participatory athletic events coupled with the government's efforts to promote sport awareness are seen as powerful catalysts for a sector still at an early stage of development by global standards. In a national strategy spearheaded by the General Administration of Sport, China plans to build 100 towns dedicated as centres of sporting excellence for various disciplines in coming years. The campaign is part of China's effort to grow its domestic sports industry and provide more facilities for people to exercise. According to the 13th Five-year Plan unveiled by the authority last year, China aims at increasing the sports area per capita from 1.4 sq metre to 1.8 sq m by 2020 and 2 sq m by 2025.
Croatia	Ministry of Science and Education Now has Minister for Sport as of 2017.	In Jan.2018 The government increased its budget allocation for sports by 15.5% in 2018, thus enabling the Central State Office for Sport (SDUS) to meet the demands by umbrella sports association, and creating conditions for further

		development and excellent results by Croatian athletes. SDUS State-Secretary Janica Kostelić adopted a decision on financing sports programmes for five umbrella organisations - Croatian Olympic Committee, Croatian Paralympic Committee, Croatian Sports Federation for the Deaf, Croatian Academic Sports Federation, Croatian School Sports Federation - granting a total of 180 million kuna, which is an increase of 24 million kuna or 15.5% compared to 2017,
Czech Republic	Ministry of Education, Youth and Sports	
Denmark	The Ministry of Culture Denmark has responsibility for culture, sport and media.	Danish Gaming's (Danske Spil) profits (funds from the state football polls and the National Lottery) are put to many uses every year; this includes sports and culture. The funds are allocated according to a fixed distribution key in the legislation regulating football polls and the National Lottery. As a rule the Ministry of Culture does not grant direct subsidies to local sports clubs. In terms of the law, the bulk of the funds go to sports purposes, namely to a number of large organisations and institutions in the area of sports. For instance, the Danish Sports Confederation and Olympic Committee (DIF) received DKK 261 million in 2006, Danish Gymnastics and Sports Associations (DGI) DKK 238 million, the Danish Federation of Company Sports (DFIF) DKK 35 million, Team Denmark DKK 79 million, the Danish Foundation for Culture and Sports Facilities DKK 74 million, and the Fund to Finance Horse Racing DKK 85 million.
Finland	Ministry of Education and Culture has responsibility but not working with Ministry of Social Affairs and Health to set up a sport steering group for promoting health and	In the 2017 national Budget, approximately EUR 149.6 million in proceeds from lottery and betting proceeds were allocated to physical activity and performance sports. Budget

	wellbeing. In line with the steering group's policies, the objective is to encourage Finns to exercise more and sit less.	appropriations are also used to help expand the Schools on the Move programme as a key project and to renovate the Olympic Stadium in Helsinki, and central government transfers are allocated to sports training centres.
France	Ministry of National Education and Youth. Ministry of Sports has changed position/title a number of times and has been eliminated or grouped with Ministry of Education in the past.	**The Sport program in 2017 amounted to € 521m (of which CNDS €260m).**
Germany	Ministry of the Interior	In 2015 the MoI funded German top-level sport to the tune of 153 million euros ($173.9 million). Back in 2013, government funding for German sports totalled €46.3m. Sport organizations, associations and facilities are in principle required to finance their own activities. According to budget law, they must first exhaust all other funding possibilities before claiming federal funds. The Federal Government only provides supplementary funding, in accordance with the principle of subsidiarity.
Hungary	Ministry of Education and Sports	
India	Ministry of Youth Affairs and Sports	
Ireland	Department of Transport, Tourism and Sport	€60m
Ireland Northern	Sport Northern Ireland works in partnership with the Department of Culture, Arts and Leisure (DCAL) to deliver on Sport Matters	Sports NI 2018-19 business plan is based on a total investment of £17.2m. This includes a projection of £8.1m in Exchequer resources and £9.1m in National Lottery resources.
Italy	No current Minister of Sport since 2018. Previously has been included in Equal Opportunities, Sport and Youth Policies and Tourism, Sport and Regional Affairs	
Netherlands	Ministry of Health, Welfare and Sport	€3.4bn in 2016
New Zealand	The **Ministry for Culture and Heritage** provides purchase advice and monitoring of Vote	Sport New Zealand (Sport NZ) invests $70 million (NZ dollars) every year promoting

	funding for this portfolio (Sport and Recreation New Zealand provides policy advice and ministerial servicing).	sport in the young people (from 0-18) Population 4 million.
Norway	State policy for sport is administered by the Department of Sport Policy in the Ministry of Cultural Affairs.	Norway is generally held to be one of few countries in the world that has been able to achieve such a balance despite having a small population (4.5 million) and having limited financial resources (1.5 Billion Norwegian Krone (kr)) (Semotiuk, 2009).
Portugal	Ministry for Education	
Scotland	Minstry for Health and Sport	Scottish Government funds the national agency for sport, providing £34,900,000 from 2018 to 2019.
Slovenia	Ministry of Education, Science, Culture and Sport	
South Africa	Department: Sport and Recreation South Africa – has its own minister	In 2017-18 the Department was allocated R1 066.6 billion (R1 066 564 000), of which R1 060.4 bn (R1 060 371 000) was utilised. This amounted to spending of 99.4% and under-spending of R6 187m.
Spain	Spanish Ministry of Education, Culture and Sport	State funding for Spain's sports federations will be slashed by more than a third in 2013 to €31 million. Federations will receive €16 million less than this year, a drop of 34 percent, Cardenal said, meaning the level of funding will have plummeted from €82 million in 2009.
Sweden	Minister of Sport comes under Ministry of Culture (from 2014 – 2019 was under Ministry for Health)	9.4million population of which almost half 3.4m are members of sports clubs The municipalities of Sweden are responsible for the greater share of public support for the sports movement. A study by the Swedish Sports Confederation shows that subsidies amounted to €250m, grants to clubs to €109m and investments in sports facilities to €360m in 2011. Government funding amounts to about €183.4 annually. This grant is administered by the Swedish Sports Confederation.
Switzerland	The **Federal Office of Sport** (FOSPO) is the Swiss federal government's centre for expertise in sports and a part of	

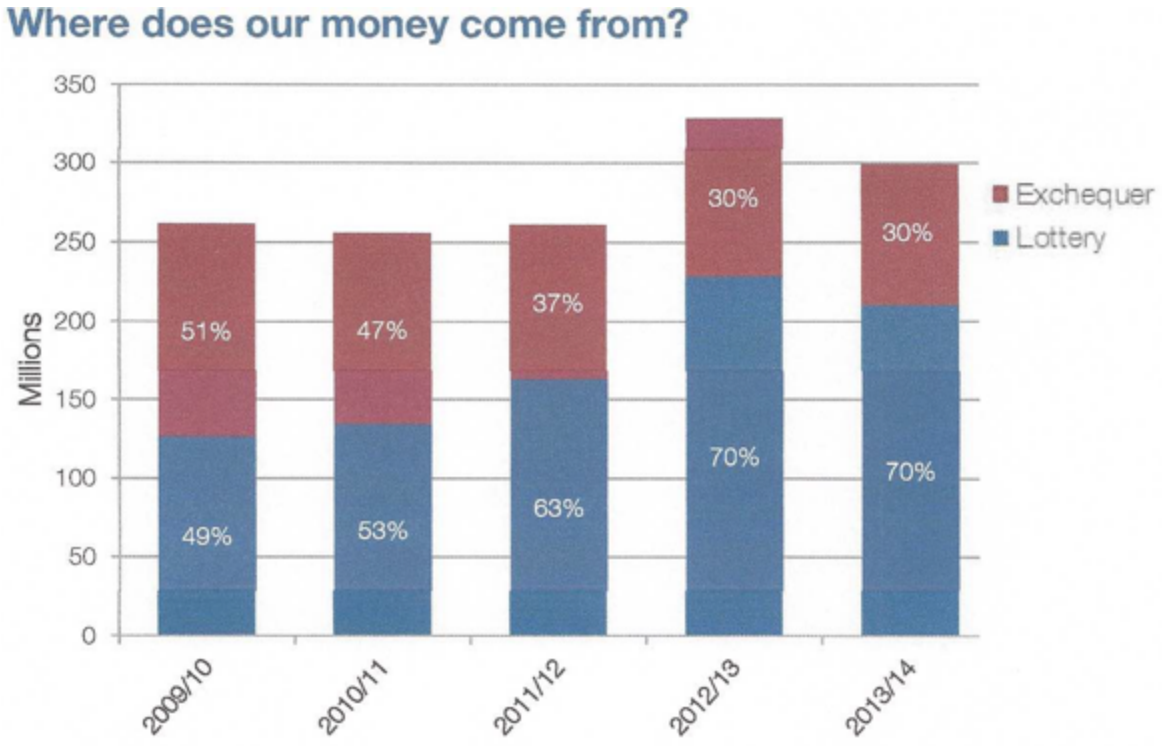
	the Swiss Federal Department of Defence, Civil Protection and Sports.	
Turkey	Ministry of Youth and Sports	
United States of America		No American federal government agency is charged with overseeing general sports policy. The *Amateur Sports Act* requires the US Olympic Committee ("USOC") to promote participation, and amateur sports are dealt with through its community development program. Funding to this program is minimal, however, with only USD$9.4 million allocated in the period 1998 to 2010. In effect, sport for the masses is the prerogative of schools, local governments and non-profit organisations. The President's Council on Fitness, Sports and Nutrition (the Council on Fitness/the Council) advises the American President about physical activity, fitness and sports, and recommends programs which promote regular physical activity that may improve the health of Americans. The Council on Fitness is a voluntary body and its programs receive the President's endorsement. The Council's recommendations are implemented with the support of private companies. The Presidential Youth Fitness Program, for example, is a Council initiative which is supported by a number of private partners. It is a voluntary, school-based program that provides resources for teachers to support physical education and materials for parents and students to help them become physically active. The USA is one of a small number of countries which does not provide direct government aid in some form or another to support to **elite** athletes. An Act of the American Congress established the United States Olympic Committee (USOC) 'for the purpose of establishing national goals for amateur athletic activities and to aid in and encourage the attainment of

		those goals'.[216] However, the USOC receives no continuous funding from the federal government, but relies on corporate and individual contributions and on the proceeds of its direct marketing program to deliver its services.
Wales	Ministry for Culture, Sport and Tourism	The average amount spent by Welsh councils per person fell from £39.95 in 2009-10 to just £30 in 2014-15. And it fell even further to just £26.33 in 2016. Total funding on sports and leisure facilities by councils in Wales is now lower than it has been for 11 years at £135,000. The Welsh Government will provide Sport Wales with Grant in Aid funding of £22,422 for the 2018-19 financial year and an indicative budget of £22,421 for 2019-20.

Appendix 5
UK sports funding trends

Appendix 5.1 Sport England

Sport England funding from 2009/10 to 2013/14 was set out in the 2013/14 Annual Report:



The 2017/18 Sport England Annual Report stated: During the year, we had £284.7 million (2016-17: £308.4 million) of income. This comprises £81.3 million (2016-17: £105.6 million) Exchequer Grant-in-Aid funding and £203.3 million (2016-17: £202.8 million) National Lottery Funding.

Total funding in 2010/11 from the chart above was approx. £255m; in 2017/18 £285m. This is compound growth rate of 1.6% pa, compared with a compound annual Inflation rate over the same period of 2.48%pa.

With a population in England of approx. 55.6 million, this equates to just over £5 per head.

Appendix 5.2 UK Sport funding

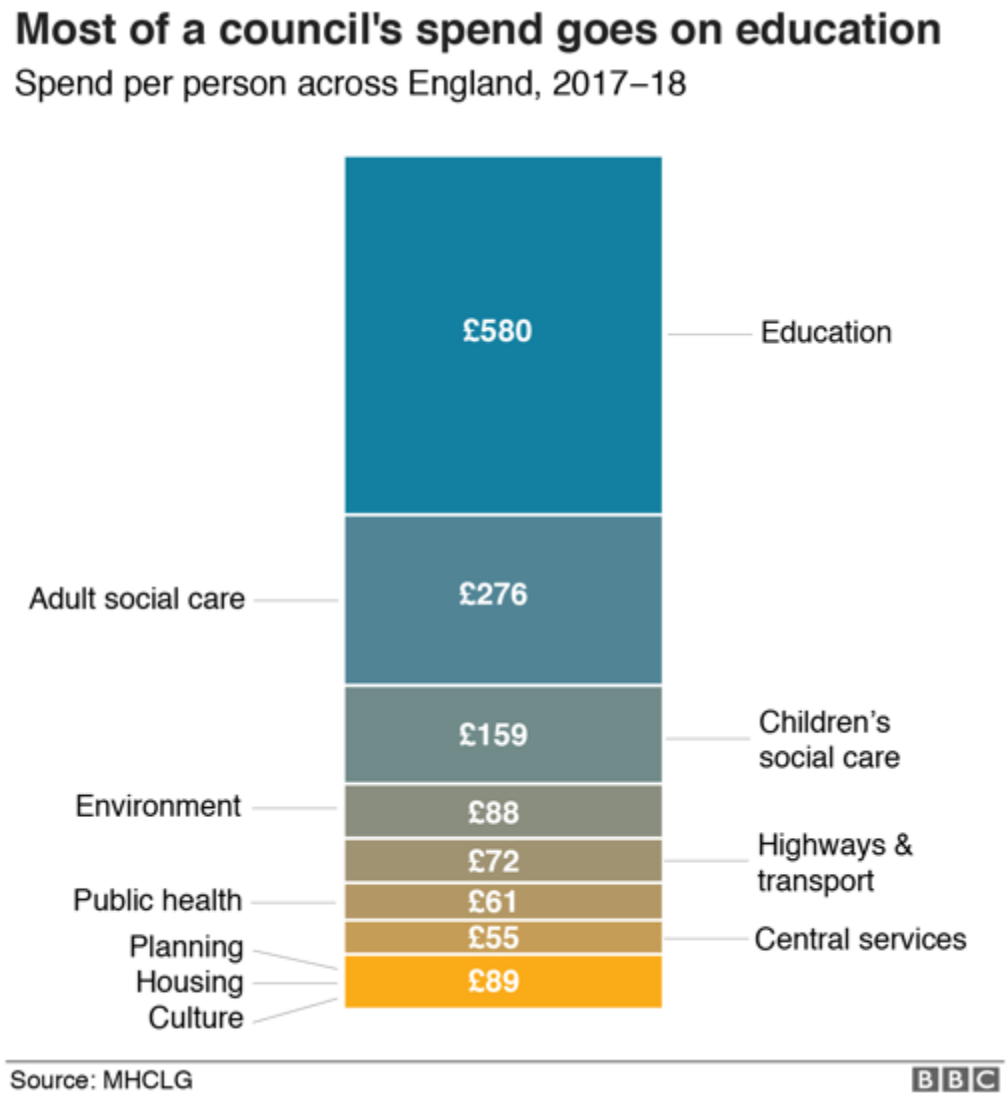
In 2010/11, UK Sport received £55.36m of Exchequer funds. National Lottery receipts for the same period were £59.33m.

In 2017/18, UK Sport received total income of £139.9 million during the year. This comprised DCMS Grant-in-Aid £62.0 million, National Lottery Fund £74.9 million, Lottery re-charges £2.2 million and commercial and other income £0.8 million.

As a result, UK Sport funding increased from £114.69m in 2010/11 to £139.9m in 2017/18. This is compound growth of 2.88% pa over 7 years, slightly above inflation of 2.48% over the same period.

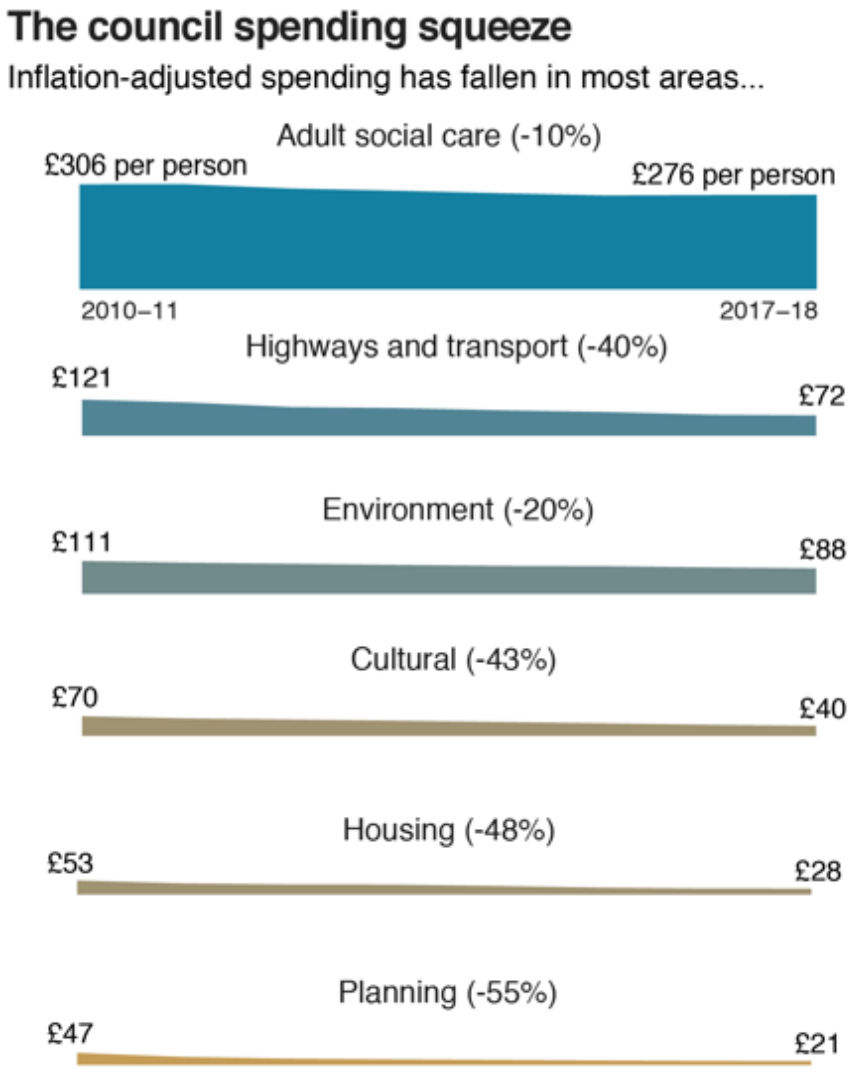
Appendix 5.3 Local Government Funding of Community Sport

5.3.1 Local Authority funding split



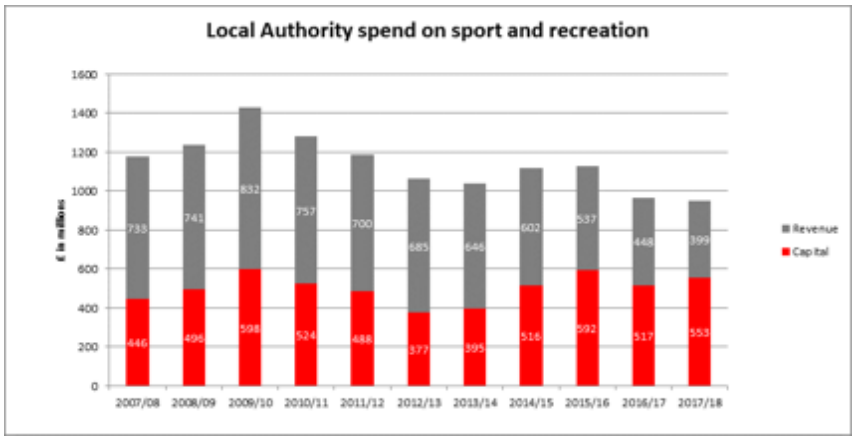
5.3.2 Sports funding

Sport is funded from the culture budget (including religion and recreation) which has seen a 40% decline in real terms per head in the seven years to 2017/18:



5.3.3 Local Authority spending trends on sport and recreation, 2007/8 to 2017/18

Revenue spending on sport and recreation has more than halved in the eight years since 2009/10 (Source: MHCLG):



5.3.4 A description of Local Authority funding of sport and recreation from the Sport Think Tank is as follows:

Local authorities have a central role to play in the provision of community sport and recreation facilities. From the local parks to leisure centres, local councils enable a huge range of leisure activities and sport to happen. They also have an important leadership role to play, bringing schools, voluntary sport clubs, National Governing Bodies of sport, health and the private sector together to forge partnerships, unblock barriers to participation and improve the local sport delivery system.

In recent years, the current Government has been committed to decentralisation and empowering local communities and local authorities to make the best and most suitable decisions to react to local need. The Government's sports strategy argues this approach is appropriate for sport and leisure too: that markets vary locally and therefore different places require their own unique strategies. For this reason, central government has devolved many areas of decision making to the local level.

As a result, local authorities have also taken responsibility for the health outcomes (*Public Health Outcomes Framework 2016 to 2019*). Research shows that exercise is one of the key determinants of health along with the strength of our personal social network – recent research suggests that it is more important to health outcomes than levels of smoking or obesity. Community sport contributes to both. Local authorities are also responsible for the broader welfare of their communities. Volunteering, community resilience and economic development – to a greater or lesser extent community sport also contributes this.

Since the devolution of public health from the National Health Service to local authorities in 2013, many councils have taken the opportunity to integrate physical activity into public health policy as part of a fundamental shift from a system that treats ill- health to one that promotes wellbeing. In many areas, local Health and Wellbeing Strategies have highlighted physical inactivity as an issue that needs to be tackled and agreed approaches to tackling it.

Local authorities also have responsibility for wider policy areas, which can have a significant impact on the physical activity of the local population, including management of rights of way, parks and other green spaces. High quality multi-use local green spaces can play a key role as sporting venues

and as alternative settings for sport and healthy activity especially for those less likely to use traditional sports centres. The opportunities to realise the multiple benefits that can be achieved for communities by investing in green spaces and other local locations as venues for sport and healthy activity are being actively encouraged to be considered whenever they arise.

As a result, Local authorities have, and will continue to have, an absolutely crucial role to play in delivering local community sport and physical activity opportunities. Yet despite local authorities duty to promote healthy lifestyles, and the government's renewed commitment, in its cross-government strategy to tackle flat lining levels of sport participation and high levels of inactivity, to use sporting activity to achieve five key outcomes - physical wellbeing, mental wellbeing, individual development, social and community development and economic development -, there is no statutory provision for sport: there is no legal requirement for local authorities to provide facilities or sporting activity.

Local authorities have also, to date, been the biggest public sector investor in sport and leisure, traditionally investing over £1bn per year. The funding structure is often complex with different departments funding local authorities for different outcomes and local budgets funding different activity health and wellbeing budgets, youth provision and other funding streams all contributing to providing sporting activity and facilities.

Furthermore, central government does consider how national government works with local authorities and where the two can work in partnership to maximise the impact of collective spending. The primary area this happens is in investment in capital facilities. Sport England continues to work for example, with a number of local authorities to co-fund new infrastructure projects, including many that have sought to house a number of different services within the same facility.

However, over recent years, local authority community sport and leisure have been operating in a challenging environment. In many areas, funding and support for sport and recreation are being drastically reduced as a result of local government spending cuts as the central government delivers its spending plans to help it achieve one of it key policy priorities, to reduce the national debt. Unfortunately, local authorities, with no statutory duty to provide sports or leisure activities or facilities (like they do with rubbish collection or libraries), have more incentive to sell or close facilities, which are used by clubs and stop funding for local community sporting activities often deliver through their youth departments.

While the government has advocated and encouraged both new models of funding, through social impact bonds and social commissioning; and new models of ownership with leisure facilities being run by Trusts and passing community assets into local ownership, there are serious questions about whether this approach will succeed or, sporting and leisure provision at a local level will just cease to exist in any meaningful way.

Evidence is emerging that these cuts are starting to have significant impact on local sport and physical activity provision and delivery.

Sports Think Tank, 2017

Appendix 5.4 Local Authority Public Health Allocation

UK Active Report 2014: Turning the tide of inactivity

- Local authority responses to our FOI requests show that they spent an average of less than three per cent of their annual public health budgets on physical inactivity interventions last year. Five per cent of the local authorities who responded failed to apportion any of their public health budgets to physical inactivity in 2013/14.
- On average, it is costing the economy in each local authority in England £18 million per 100,000 people every year.
- To turn the tide of inactivity it is critical for there to be a clearly-articulated national and local ambition. This report has found that reducing physical inactivity by just one per cent a year over a five-year period would save the UK economy just under £1.2bn.
- If every local authority was able to reduce inactivity levels by one per cent year on year over this five-year period they would save local taxpayers £44 per household. More importantly, they would improve the health and wellbeing of their local communities.
- There is a disproportionately low spend on programmes to tackle physical inactivity by local authorities compared to other top tier public health concerns - We found that local authorities spent an average of 2.4 per cent of their public health budgets on programmes to tackle inactivity in 2013/14.
- Central government estimates that local authority spending on inactivity is even lower than this; less than two per cent of public health budgets in 2013/14.This is compared to 38 per cent spending on sexual health services, 12 per cent on alcohol misuse services and four per cent on adult obesity
- Review Inactivity is costing Sunderland City Council £24 million per 100,000 adults every year. They attribute 0.3 per cent of their overall public health spend on programmes to tackle inactivity. Data shows that 37 per cent of its population is classed as inactive. By comparison, its neighbour Newcastle City Council, which is also a “more deprived” local authority, spends five per cent of its public health budget on programmes to tackle inactivity. It has an adult inactivity level of 25 per cent. The cost of inactivity is £8 million lower per 100,000 people in Newcastle compared to Sunderland.
- Some local authorities have not yet allocated a distinct budget for programmes to tackle inactivity at all. Derby City Council, Cornwall Council, Oldham Council and others include inactivity within their obesity programmes. Grouping inactivity with obesity was a common theme in interviews with directors of public health.

Appendix 6
International comparisons

Appendix 6.1 Finland

(i) In the 1970s, Finland had the highest rate of heart disease in the world. Since then, the numbers dying from heart disease and lung cancer have dropped by around two-thirds, and life expectancy has risen by 6-7 years. From the 1970's Finland experimented in North Karelia with a variety of innovative methods to increase levels of physical activity. Mass campaigns, competitions between towns to cut cholesterol, and changes in legislation were tested in this region with success. The learning from this pilot was incorporated into the introduction in 1980 of the 'Sports Act' which placed heavy emphasis on 'sports for all for fitness and health'. This Act has since been revised and further policies launched which promote a wide range of activity opportunities and funding for the construction and maintenance of an urban and rural environment which encourages active travel and leisure. A 2002 Government resolution also required a commitment from all ministries to promote physical activity and align all aspects of physical activity policy. The plan is steered and monitored by an advisory committee. (Extract from Tackling Physical Inactivity 2014 - All Party Report)

(ii) Physical activity policy and program development: the experience in Finland. Ilkka Vuori, Becky Lankenau, and Michael Pratt; Public Health Rep. 2004 May-Jun

This article describes the development of sports and physical activity policies and programs in Finland during the past 30 years. The past two decades have been marked by a shift in emphasis from competitive and elite sports to health-enhancing physical activity for all, as seen most clearly in two successive sports acts and a government resolution. The new, increasingly multisectoral policies have led to substantial changes in the public funding of sports organizations, services, and construction of sports sites. Furthermore, three successive five-year national physical activity promotion programs have been launched. As a result, increased and new types of opportunities to participate in physical activity have become available, and the infrastructure and networks for provision of services have been strengthened. Until the mid 1990s, leisure time physical activity increased in Finland, but during the last seven to eight years, both leisure time and commuting physical activity have been stable. This finding may be an indication of the difficulty to increase physical activity in an industrialized country with already relatively high levels of physical activity even when systematic, long-term policies and measures are applied.

Appendix 6.2
The Netherlands

The Mulier Instituut in the Netherlands estimates in its 2018 report that local authorities spent €59 per inhabitant (including babies and children, not just adults) on sports and a further (estimated) €70 per head on public green and outdoor spaces. This does not include central government spending.

It is estimated in the Netherlands that local authority spending is 90% of the whole sports spend – this suggests central Government spends €6 per head. This takes the total sports spend to €65 per head and the total for sports and outdoor recreation to €135.

The Dutch split the €65 per head down as follows:

€20	Accommodation investment/depreciation
€20.5	Exploitation of facilities, both internal and external
€4	Operating grants for sports associations
€14	Sport policy and activation item, half of which intended as subsidies to individuals and sports clubs
€6	Central government spend

An extract from the report is as follows:

"In this fourth report from the Municipal Expenditure on Sports Expenditure, an overview is given of the municipal expenditure on sports. In addition, attention was paid to the relationship between sports and population characteristics of a municipality and sports spending. In contrast to the previous reports, we cannot compare the expenditure with previous years due to an adjusted registration system.
In 2017, the municipalities spent (net) over 1 billion euros on sports (1,056 million). This concerns 1.6 percent of all spending by the municipalities. The (net) expenditure on the item Accommodations represents 71 percent of the sports expenses (753 million). For the item Sport policy and activation, municipalities spend 303 million euros (29%). In 2017, municipalities spend an average of 59 euros on sports per inhabitant.

If we compare sport with other municipal spending for leisure, we see that Public green and (outdoor) recreation make up 1.9 percent of the spending. The expenses for this are therefore somewhat higher than for sports. The public green is relevant for sport in view of the strong growth of sport in public spaces.

Of the 14 euros that the municipalities spend on average per inhabitant for the Sport policy and activation item, half is intended for subsidies to individuals and sports clubs. Of the 45 euros per inhabitant for the accommodation item, almost half was spent on investments / depreciation (20 euros). In addition, € 20.5 was spent on the exploitation of facilities, both internal and external. The remaining 4 euros has been spent on operating grants for sports associations.

Of the 59 euros per inhabitant that municipalities spend on sports, most of the expenditure goes to existing athletes and the sports infrastructure. This also concerns part of the costs of the Sport policy and activation item.

According to the size of the municipalities, we mainly see a difference in the item Sport policy and activation. Municipalities that have more than 50,000 inhabitants spend about 7 euros more on it than smaller municipalities. With regard to the item Accommodations, it is striking that the expenditure per inhabitant for municipalities of 50,000 to 100,000 inhabitants is 3 euros lower than for the other municipalities. On balance, by combining the two items, we see that the largest cities per capita spend the most on sports. We noted this in our earlier reports.

If we compare the sports expenses with the participation in sports in the municipalities, we see that in municipalities where the expenses are somewhat lower, the weekly participation in sports is somewhat higher. The municipalities may be aware of the lower participation in sports and therefore spend more on sports. We see a similar relationship for membership in sports clubs, although the differences are smaller: in municipalities with the lowest spending, a (marginally) higher percentage is a member of a sports club.

In the report on the previous year (Van den Dool & Hoekman, 2018), we discussed the relationship between sports participation and sports spending by municipalities in more detail. In that report we found that, with a different data file, this is difficult to prove, all the more because it is a weak relationship."

Appendix 6.3 Germany

(i) Tackling physical inactivity is critical to delivering many priorities (eg, dementia, obesity and giving every child the best start in life).

We know from other high-income countries like Finland, the Netherlands and Germany, that this situation can be changed. The solution is clear: everybody needs to become more active, every day.

Source: Everybody Active Every Day, PH England Oct 2014

(ii) In 2015 the Ministry of the Interior (via the DOSB, the country's Olympic Sports Confederation) funded German top-level sport to the tune of €153 million (section 6)

Appendix 7

Appendix 7.1
Turning the Tide of Inactivity, ukactive: 2014

A summary of some of the key findings is as follows:

- The financial case for turning the tide of inactivity is apparent; inactive people spend 38 per cent more days in hospital than active people and visit the doctor almost six per cent more often. According to the National Institute for Health and Care Excellence (NICE), inactivity is costing the national economy in England £8.2 billion per year.
- There is a disproportionately low spend on programmes to tackle physical inactivity by local authorities compared to other top tier public health concerns. We found that local authorities spent an average of 2.4 per cent of their public health budgets on programmes to tackle inactivity in 2013/14**.** This is compared to 38 per cent spending on sexual health services, 12 per cent on alcohol misuse services and four per cent on adult obesity – see Figure 3 and Table 3 below.

Figure 3

The total societal cost of individual top tier public health concerns versus local authority spends in 2013/14

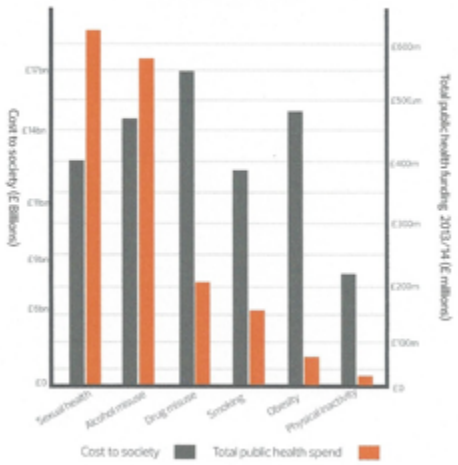


Table 3

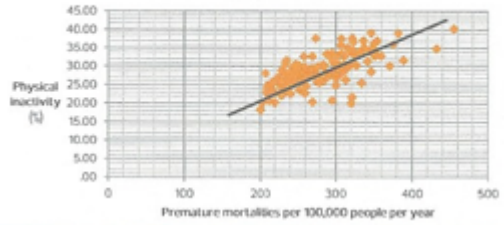
Total annual cost and spend on top tier public health concerns by local authorities

Area of public health concern	Cost to society (£ billions)	Total public health spend 2013/14 (£ millions)
Sexual health	12.05	637
Alcohol misuse	15.4	569
Drug misuse	17	204
Smoking	13.7	158
Obesity	15.8	68
Physical inactvity	8.2	31

* See annexes A and B for methodology and references

- Our analysis shows a relationship between high levels of inactivity and high numbers of premature adult death in local authorities – see Figure 2 below. This is in line with a separate study published in the health journal, The Lancet, which cited inactivity as the cause of 17 per cent of premature deaths in the UK.

Figure 2 Physical inactivity and premature mortalities



Appendix 7.2
Birmingham BeActive Return on Investment

7.2.1 Background to the programme

Birmingham's Be Active initiative used funding from the public health budget to provide subsidised free access to leisure facilities, parks and to some other providers. Although every individual in the city was able to have some free access time the most deprived communities were offered the most time, a form of proportionate universalism.

The scheme administered through membership cards currently has 400,000 members. The subsidy costs are justified not only in terms of increases in participation levels and general health benefits but also the long term financial benefits where independent research has shown that every pound invested through the subsidy generates at £21 long term saving in the city mainly for the acute health sector.

There is also mounting evidence in the Birmingham project and other similar projects that some individuals once encouraged into physical activity through free use change their behaviour and participated outside the subsidised scheme so becoming regular fee paying customers creating further income growth for providers.

Future of Sports and Leisure, Martyn Allison

Appendix 7.2.2 Making the Case for Public Health Interventions
Kings Fund and LGA, September 2014

The Kings Fund and LGA compared the returns on various health preventative initiatives, including BeActive. Unfortunately no methodology or detail was provided to support the report's analysis. A summary of the comparisons in the report of various health preventative initiatives is as follows:

- Teenage pregnancy Every £1 spent preventing teenage pregnancy saves £11 in health care costs.

- School-based public health interventions can be good investments. For example, smoking prevention programmes in schools can return as much as £15 for every £1 spent.

- Parenting programmes to prevent conduct disorder pay back £8 over six years for every £1 invested.

- Birmingham's Be Active programme of free use of leisure centres and other initiatives returned an estimated £23 in quality of life, reduced NHS use and other gains for every £1 spent.

- Housing interventions to keep people warm, safe and free from cold and damp are an efficient use of resources. Every £1 spent on improving homes saves the NHS £70 over 10 years.

- Worklessness costs the economy more than £100 billion every year. Business in the Community estimates that its programmes getting disadvantaged groups back into work return £3 in reduced costs of homelessness, crime, benefits and NHS care for every £1 spent.

- Social support plays an important role in increasing resilience to illness, helping recovery and improving wellbeing. Befriending services have been estimated to pay back around £3.75 in reduced mental health service spending and improvements in health for every £1 spent.

- Every £1 spent on motivational interviewing and developing supportive networks for people with alcohol or drug addiction returns £5 to the public sector in reduced health care, social care and criminal justice costs.

- Every £1 spent on drugs treatment saves society £2.50 in reduced NHS and social care costs and reduced crime.

- The costs to society of transport-induced poor air quality, ill-health and road accidents exceed £40 billion per year. Getting one more child to walk or cycle to school could pay back as much as £768 or £539 respectively in health benefits, NHS costs, productivity gains and reductions in air pollution and congestion

Appendix 7.3

Social Return on Investment in Sport: *A participation wide model for England*
SUMMARY REPORT
APRIL 2016

Sheffield Hallam University | Sport Industry Research Centre

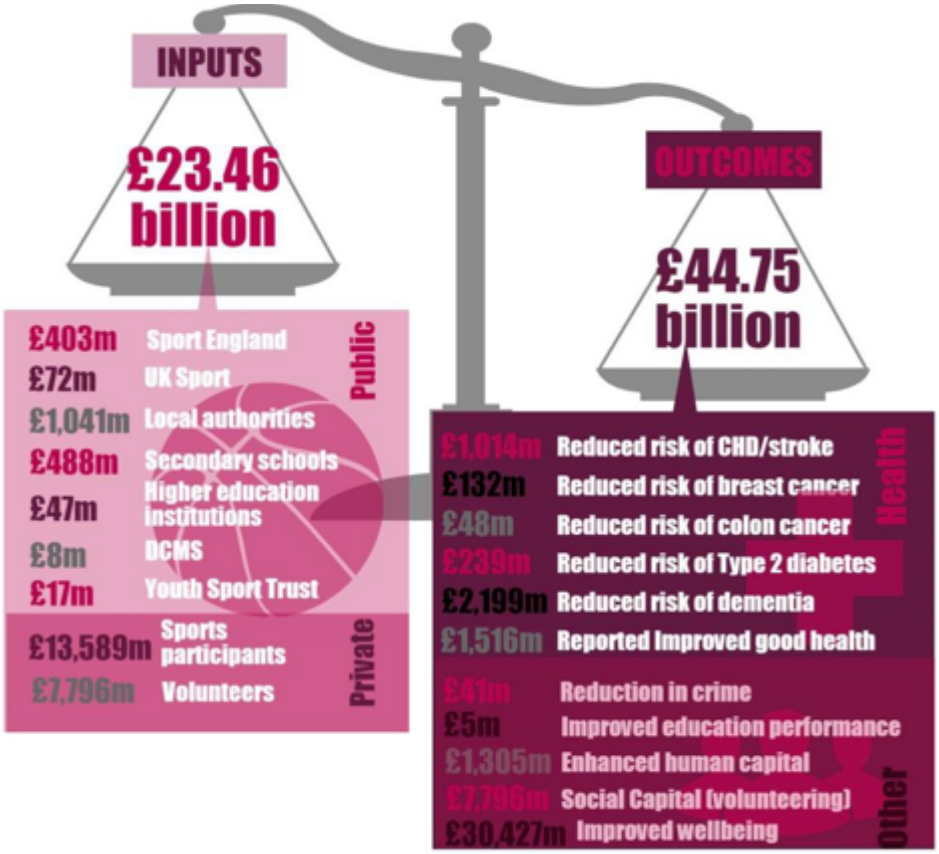
Key Findings

Inputs are those things that stakeholders contribute in order to make activities possible. The inputs to the sports industry are primarily money (financial) and time (non-financial).
Total inputs to sport in 2013/14 are calculated to be £23.46 billion.

Outputs are a quantitative summary of an activity. In this study, the primary output is participation in sport by the general population. The other main output is participation in sports volunteering.
Outcomes are identified through a systematic review of literature and consulting academic experts in the field of health, crime, education and social capital. Six health outcomes, two education outcomes and three other social outcomes were identified as having a strong relationship with sports participation as follows:

- Participation in sport and exercise at moderate intensity in adults reduces risk of CHD and Stroke in active men and women by an average of **30%** (range 11%-52%);
- Participation in sport and exercise at moderate intensity in adults reduces risk of breast cancer in active women by **20%** (range 10%-30%);
- Participation in sport and exercise at moderate intensity in adults reduces risk of developing colon cancer by **24%**;
- Participation in sport and exercise at moderate intensity in adults reduces risk of Type 2 diabetes by **10%;**
- Participation in sport and exercise at moderate intensity in adults reduces risk of developing dementia by **30%** (range 21%-52%);
- Sports participants are **14.1%** more likely to (self) report good health than non-participants;
- Sports participation leads to a **1% increase** in educational attainments (aged 11-18);
- Graduates who participate in sport at university earn an average of **18%** more per year than their non-sporting counterparts;
- Sports participation leads to a **1% reduction** in criminal incidents for males aged 10-24 years;
- Sports participation is found to be associated with higher subjective wellbeing;
- Volunteering is found to be associated with improved individual subjective wellbeing and greater life satisfaction;
- Volunteers create social capital to the organisations they give their time to. Volunteer time is worth at least the equivalent value of average hourly earnings.

The outcomes were valued through literature, secondary data and financial proxies, sometimes with the help of assumptions.



Calculating the SROI value

The SROI value is calculated by dividing the value of outcomes (£44.75 billion) by the value of inputs (£23.46 billion). This gives a SROI of 1.91.

For indicative purposes, the SROI estimates can be broken down into societal and individual elements. Assuming that government funding of sport is aimed at generating health, crime and education benefits, then £2.01 billion of government spending on sport in 2013/14 is associated with £6.53 billion worth of benefits for health, crime and education - a societal SROI of 3.15.

The individual SROI, which is calculated by dividing the benefits participants receive individually though subjective wellbeing and social capital (volunteering) by the expenditure of participants (sport participants and volunteers), is 1.79. Subjective wellbeing is by far the largest component of social impact, generating £30.43 billion, or 68% of overall social impact from sport.

From a public sector perspective, although presenting the SROI value as societal and individual is a useful way of viewing the SROI analysis as it has a sharper focus on the things that matter most to

government policy makers and is the focus of public policy, care should be taken in interpreting the SROI values in this way. It is based on the implicit assumption that the impacts generated from societal and individual investment operate independently. However, this assumption is untested and not based on evidence or research undertaken as part of this project. It is highly likely that without the inputs and actions of individuals, societal impacts would not be realised (i.e. individual and societal impacts are interdependent).

Appendix 7.4 Football Association
THE SOCIAL AND ECONOMIC VALUE OF ADULT GRASSROOTS FOOTBALL IN ENGLAND
An Analysis of the contribution of grassroots football to the nation's economy and wellbeing
July 2019

The Football Association [The FA] is the not-for-profit governing body of football in England. It is responsible for promoting and developing every level of the game, from grassroots through to the professional game, and generates revenue to support the investment of well over £180m into English football each year.

The FA oversees 28 England international teams, across men's, women's, youth and disability football, as well as running FA Competitions, including the Emirates FA Cup and SSE Women's FA Cup. It also operates the world-class facilities of Wembley Stadium and St. George's Park, all aiming to 'Unite the Game and Inspire the Nation'.

The FA invests approximately £1 million per week into grassroots football. For the first time in its history, The FA has sought to understand the social and economic value of adult grassroots football. In grassroots football, no-one is paid to play and no-one pays to watch. There are over 12 million people who play football in England – with over eight million adults (18+) playing the game.1

This report shows the contribution of adult grassroots football to the nation's economy and to the wellbeing of society. The FA's survey of approximately 9,000 respondents provides a nationally representative sample that allows for robust statistical analysis. This is the largest study of this type to date for a National Governing Body in the United Kingdom. This provides The FA's first estimate of the value of football in monetary terms, which offers compelling evidence of the economic impact and value of adult grassroots football in England.

Key findings

All the key findings below are true for both male and female adult participants, unless specifically stated:

Economic impacts:

1. The value of regular grassroots football in England is £10.769 billion each year, which comprises:
    - Direct economic value of £2.050 billion per year
    - Social wellbeing value of £8.712 billion per year
2. The average annual personal spend of regular grassroots footballers on football is £326 per person per year
    - The tax contribution to the Exchequer is £410 million per year
3. The health benefits of playing regular grassroots football produce cost savings to the NHS of £43.5 million per year through reduced GP visits only

Other social outcomes:

4. Grassroots football players report significantly higher levels of happiness, general health, confidence and trust compared with those who play no sport
5. Grassroots football players report significantly higher levels of general health, confidence, and trust compared with those who play other sports
6. Grassroots football players report a stronger belief that playing football has improved their confidence, concentration, motivation, and social mixing, compared with individual and other team sports
7. Female grassroots football players report the highest levels of self-confidence as a result of playing football
8. Lower income groups experience some greater quality of life benefits from football compared with higher income groups, specifically in their health and confidence levels
9. 11-a-side footballers report higher levels of health and happiness compared to other types of football

In summary, playing grassroots football is associated with positive quality of life benefits to all layers of society, and in some cases these benefits are higher for those from socially-disadvantaged groups.

Notes:

1Annual figures from FA Tracker survey based on those playing football in any format, and for any frequency of time. **2**These figures are based on the value of regular football (playing in the past month), against reference group of rest of population, including those who play other sports and those who play no sports, and include both the male and female game. The stated value includes estimated impact of football on a person's wellbeing in equivalent monetary terms, through market prices paid and wellbeing benefits. This value does not include wider multiplier effects on the economy or transfers back to the Exchequer in the form of taxes or Exchequer savings. Note, figure rounded to 3 decimal places from total figure of £10,769,270,352.**3**For all regular grassroots footballers in England this is measured through the average annual personal spend of regular grassroots footballers (£326 per person per year). **4**This is estimated using the Wellbeing Valuation method, measured as the equivalent amount of income a person would need to make up for the wellbeing they gain from playing regular football. **5**This includes equipment, football club membership fees, training courses, football pitch rentals and socialising. **6**Given that VAT (20%) is paid on the expenditures in (3), the tax contributions to the Exchequer amount to £409,926,222 per year. **7**The predicted savings to the NHS are made through reduction in costs based on reduced visits to GP. Note this is a partial value which does not include savings to other areas of the Exchequer such as hospitals and social care. **8**Both team sports and individual. **9**Reporting a stronger positive association between playing football and health, confidence and trust compared to higher income groups. Income groups based on household income level (lower income group classed as having household income below the sample median).

Appendix 7.5
Mulier Instituut assessment of the SROI of sport and physical activity in the Netherlands

Mulier Instituut in The Netherlands adjusted the SROI methodology of Sheffield Hallam and assessed the SROI of sport and physical activity in The Netherlands at 2.51:1. The costs of physical activity are estimated at €4.4bn; the returns are estimated at €11.1bn in two categories:

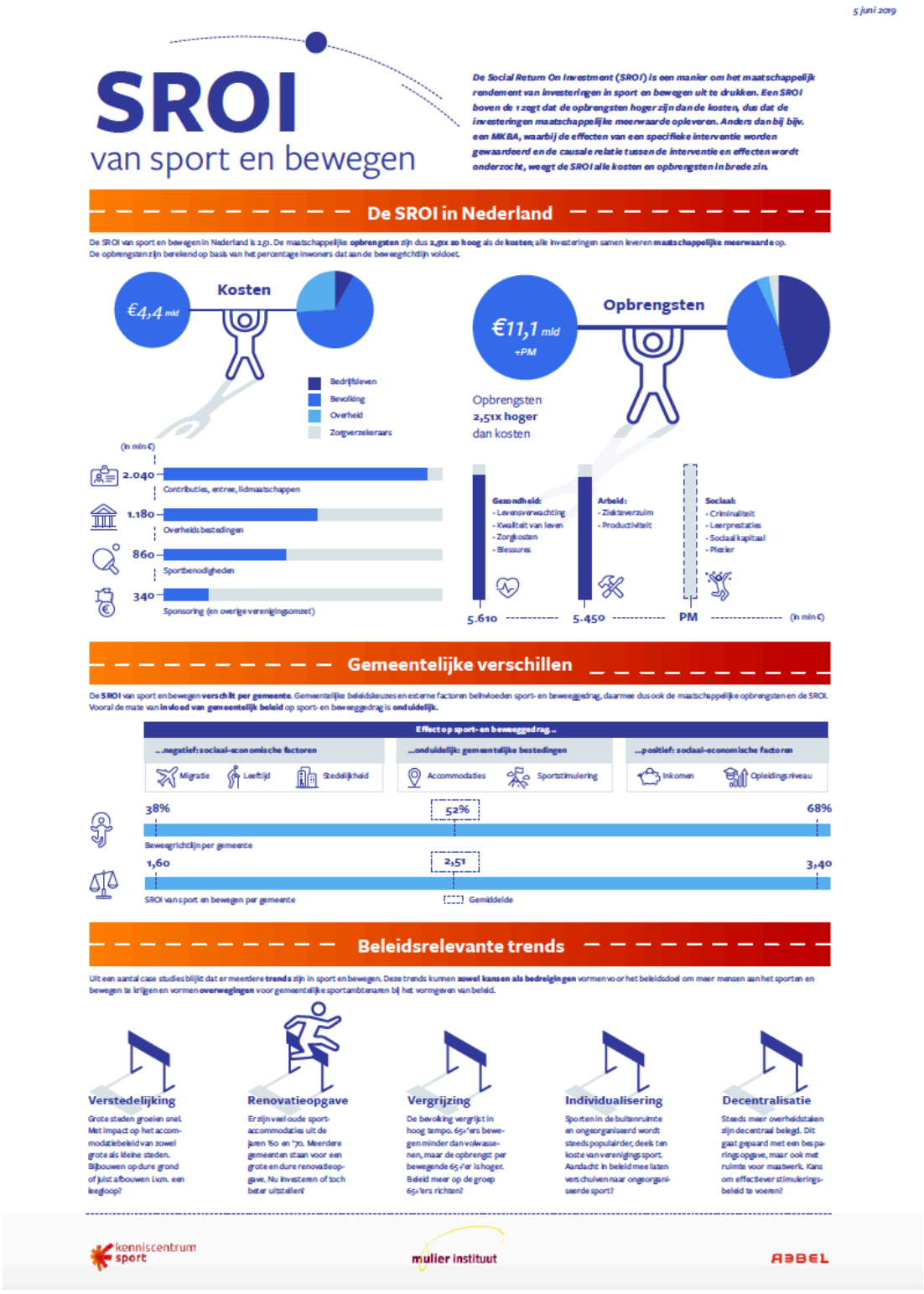
Health benefits: €5.61bn
- Life expectancy
- Quality of life
- Healthcare benefits less additional injuries

Labour benefits: €5.45bn
- Reduced sickness absence
- Greater productivity

The report has not sought to quantify "social" benefits which would, if included, be additive to the return:

- Reduced crime
- Better learning outcomes
- Social capital
- Fun

The infographic (in Dutch) summarising the analysis is shown below:


5 juni 2019
SROI
van sport en bewegen
De Social Return On Investment (SROI) is een manier om het maatschappelijk rendement van investeringen in sport en bewegen uit te drukken. Een SROI boven de 1 zegt dat de opbrengsten hoger zijn dan de kosten, dus dat de investeringen maatschappelijke meerwaarde opleveren. Anders dan bij bijv. een MKBA, waarbij de effecten van een specifieke interventie worden gewaardeerd en de causale relatie tussen de interventie en effecten wordt onderzocht, weegt de SROI alle kosten en opbrengsten in brede zin.
De SROI in Nederland
De SROI van sport en bewegen in Nederland is 2,51. De maatschappelijke opbrengsten zijn dus 2,51x zo hoog als de kosten; alle investeringen samen leveren maatschappelijke meerwaarde op.
De opbrengsten zijn berekend op basis van het percentage inwoners dat aan de beweegrichtlijn voldoet.
Kosten
€4,4 mld
Bedrijfsleven
Bevolking
Overheid
Zorgverzekeraars
Opbrengsten
€11,1 mld
+PM
Opbrengsten
2,51x hoger
dan kosten
(in mln €)
2.040
Contributies, entree, lidmaatschappen
1.180
Overheidsbestedingen
860
Sportbenodigheden
340
Sponsoring (en overige verenigingsomzet)
Gezondheid:
- Levensverwachting
- Kwaliteit van leven
- Zorgkosten
- Blessures
Arbeid:
- Ziekteverzuim
- Productiviteit
Sociaal:
- Criminaliteit
- Leerprestaties
- Sociaal kapitaal
- Plezier
5.610
5.450
PM
(in mln €)
Gemeentelijke verschillen
De SROI van sport en bewegen verschilt per gemeente. Gemeentelijke beleidskeuzes en externe factoren beïnvloeden sport- en beweeggedrag, daarmee dus ook de maatschappelijke opbrengsten en de SROI.
Vooral de mate van invloed van gemeentelijk beleid op sport- en beweeggedrag is onduidelijk.
Effect op sport- en beweeggedrag...
...negatief: sociaal-economische factoren
Migratie
Leeftijd
Stedelijkheid
...onduidelijk: gemeentelijke bestedingen
Accommodaties
Sportstimulering
...positief: sociaal-economische factoren
Inkomen
Opleidingsniveau
38%
52%
68%
Beweegrichtlijn per gemeente
1,60
2,51
3,40
SROI van sport en bewegen per gemeente
Gemiddelde
Beleidsrelevante trends
Uit een aantal case studies blijkt dat er meerdere trends zijn in sport en bewegen. Deze trends kunnen zowel kansen als bedreigingen vormen voor het beleidsdoel om meer mensen aan het sporten en bewegen te krijgen en vormen overwegingen voor gemeentelijke sportambtenaren bij het vormgeven van beleid.
Verstedelijking
Grote steden groeien snel. Met impact op het accommodatiebeleid van zowel grote als kleine steden. Bijbouwen op dure grond of juist afbouwen i.v.m. een leegloop?
Renovatieopgave
Er zijn veel oude sportaccommodaties uit de jaren '60 en '70. Meerdere gemeenten staan voor een grote en dure renovatieopgave. Nu investeren of toch beter uitstellen?
Vergrijzing
De bevolking vergrijst in hoog tempo. 65+'ers bewegen minder dan volwassenen, maar de opbrengst per bewegende 65+'er is hoger. Beleid meer op de groep 65+'ers richten?
Individualisering
Sporten in de buitenruimte en ongeorganiseerd wordt steeds populairder, deels ten koste van verenigingssport. Aandacht in beleid meelaten verschuiven naar ongeorganiseerde sport?
Decentralisatie
Steeds meer overheidstaken zijn decentraal belegd. Dit gaat gepaard met een bezuinigingsopgave, maar ook met ruimte voor maatwerk. Kans om effectiever stimuleringsbeleid te voeren?
kenniscentrum sport
mulier instituut
ABBEL

Appendix 7.6
OECD: Heavy Burden of Obesity: The Economics of Prevention

Executive summary:

1. Overweight and its associated chronic diseases have a negative impact on societies and the economy:

- Overweight and its associated chronic diseases such as diabetes, cardiovascular diseases, and cancer reduce life expectancy in OECD countries by 2.7 years on average.

- 8.4% of the health budget of OECD countries will be spent to treat the consequences of overweight over the next thirty years.

- Overweight also negatively impacts educational outcomes, as children with a healthy weight are 13% more likely to report good performance in schools.

- Overweight reduces employment and workers' productivity. The impact can be quantified as equivalent to a reduction in the workforce of 54 million people per year across the 52 countries analysed, which include OECD, EU28, G20, OECD accession and selected partner countries.

- These effects combined, overweight reduces GDP by 3.3% on average in both OECD countries and EU28 member states.

2. Public health actions to promote healthier lifestyles have a positive impact on population health and are an excellent investment for countries.

- Up to 76 000 cases of chronic diseases per year can be avoided across 36 OECD countries by implementing different public health interventions to provide information, increase the availability of healthy options, modify the price of health-related choices, and to regulate or restrict unhealthy choices.

- For each 1 USD dollar invested in tackling overweight, up to 5.6 USD will be returned in economic benefits.

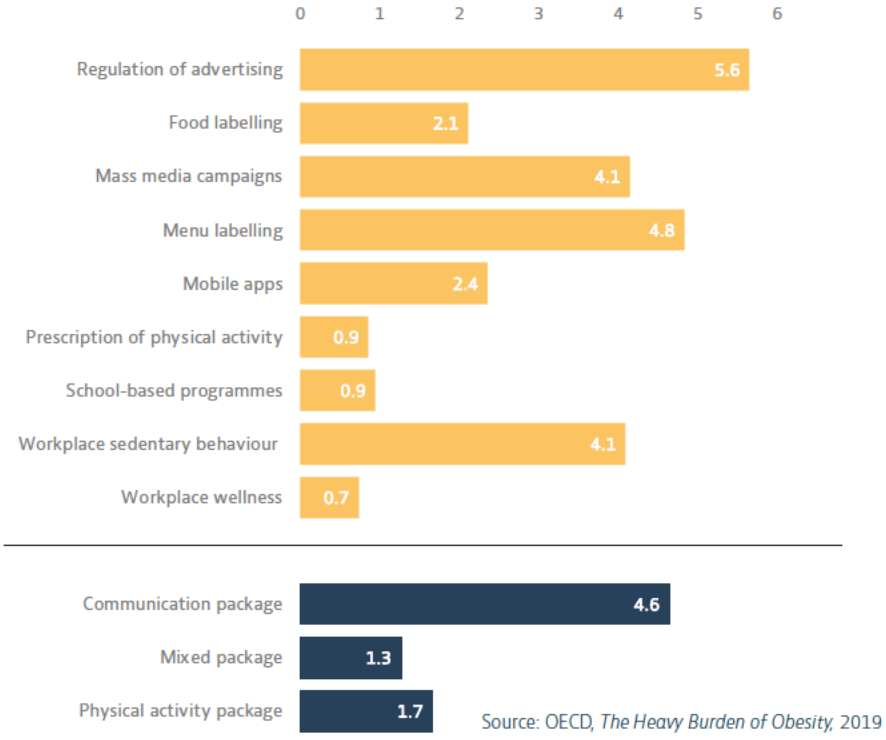
- Health budgets for all the 36 countries included in the study could save up to 26 USD billion, adjusted for differences in purchasing power across countries, by 2050.

- Thanks to increases in employment and productivity, the total labour force can increase by an equivalent of about 134 000 full-time workers per year

The report identifies a number of unhealthy lifestyle preventative measures. Prescribing physical activity, and school based programmes, each have a return of 0.9:1, but without any methodology provided:

Return on investment of policy actions and packages of policies to tackle overweight and related unhealthy lifestyles

US Dollar returned in GDP benefits for every US Dollar invested in the policy, USD PPP



Source: OECD, *The Heavy Burden of Obesity*, 2019

For 1 USD invested in prevention of obesity, up to 5.6 USD will be returned in economic benefits

The cost of implementing food advertising restrictions, mass media campaigns, menu labelling and workplace sedentarity programmes is about 20% or less of the predicted benefit to the economy. The cost of implementing food labelling or mobile apps is about 40% of the benefit in terms of GDP. The cost of the most costly interventions such as workplace wellness, prescribing physical activity and school physical activity programmes roughly correspond to their GDP benefit. In other words, for each dollar invested in the prevention of obesity, up to 5.6 USD will be returned in total economic benefits (i.e. GDP) each year.

Appendix 7.7 Active Citizens Worldwide Annual Report 2018

HARNESSING SPORT AND PHYSICAL ACTIVITY'S TRUE POTENTIAL

Many of today's cities are feeling the strain of rapid and profound change. Unprecedented challenges - driven by the complex interaction of factors such as growing populations, land scarcity, social inequalities and lifestyle illnesses - are placing a heavy burden on the social infrastructure of the modern city.
ACW is the bold, ambitious response to these challenges, providing policymakers across the world with better knowledge and insights to harness the true potential of sport and physical activity in their cities.
Detailed statistical analysis informs what drives participation in sport and physical activity, generating a unique understanding of the relative importance of different factors determining a given individual's propensity to be active. In-depth modelling of the outcomes of physical activity, building on a meta-analysis of existing academic literature and primary research, provides policymakers with a full picture of the value generated by physical activity in terms of health, the economy, and social value. Benchmarking metrics across the cities provide insights around comparative models, best practice cases, trends and anomalies.

A NEW VOCABULARY IS NEEDED

While physical activity is an intuitively obvious concept, its boundaries and definitions are far from clear. Currently the most commonly accepted international standard for physical activity is the World Health Organisation (WHO) recommended guideline of 150 minutes of Moderate Intensity Equivalent (MIE) minutes per week. ACW cities have highlighted the inadequacy of a binary definition (active or inactive based on a threshold). We believe there is an opportunity to design and introduce an improved way of measuring sport and physical activity participation that is non-binary, globally consistent, and incorporates measures across the three key dimensions of type of activity, duration, and intensity.

THE UNEVEN PLAYING FIELD OF SPORT AND PHYSICAL ACTIVITY

For policymakers attempting to understand what drives sport and physical activity behaviour, the first dimension to consider is the complex socio-demographics of physical activity - such as status, income, education and employment status compared to other factors.
In ACW cities, people with lower socio-economic statuses are as much as 30% less active than people from the higher statuses. The skewed distribution of physical activity towards already well-off and more educated populations points to the danger that without carefully targeted intervention, physical activity could end up reinforcing inequalities in society.
As expected, older people tend to be less active than their younger counterparts across our cities. In Singapore, there is a significant difference (circa 30%) between the 13-15 and 25-

34 age groups which may reflect local working lifestyles and family commitments. In London, the dramatic fall comes at retirement. The implication is that it is not necessarily age per se that entirely drives propensity for physical activity, but age-specific factors – such as the role of schools and education programmes for young people or the work/life decisions for adults.

Given the complex interaction between socio-demographics, interventions and levels of physical activity, ACW has started to calculate the most influential factors on an individual's propensity to be active. This data can then be grouped by any sociodemographic segment, showing which interventions are likely to have the greatest impact on physical activity levels of a target population. For example, in London, the analysis showed that the availability of public facilities becomes increasingly important in communities as deprivation increases. From a policy perspective, this further reinforces the point of affordability and the right infrastructure being needed to bridge the intention gap in the most disadvantaged groups.

THE TRUE VALUE OF SPORT AND PHYSICAL ACTIVITY

In order to truly understand the social return on investment into sport and physical activity, we require a comprehensive picture of the value of physical activity to a city, and the marginal value every newly active person can generate. For the three cities, we have modelled 10 financial and non-financial indicators across the economic, health and social spheres directly associated with the beneficial impact of sport and physical activity. Across the three cities combined, the total annual value of physical activity and participation in sport is estimated at US$16.4bn. Health-related benefits include US$513m annually in healthcare savings; US$622m boost in productivity; over 2,000 deaths prevented; and 68,000 Disability-Adjusted Life Years (DALYs) saved. The direct and indirect economic contribution of physical activity for the three Founding Cities is ~US$15.2bn through participation consumption (US$9.6bn) and workforce contribution (US$5.6bn). This represents up to 2% of GDP of the cities studied. In terms of positive societal benefits, crime prevention accounts for US$3.5m savings per year; improved educational attainment resulting in GDP gains of US$60m per year; over 1bn hours of positive social interaction; and a 4% increase on self-rated happiness.