

PHYSICAL ACTIVITY FOR HEALTH

What does learning outdoors contribute to physical activity and health

Dr Paul Kelly

PAHRC

Institute for Sport, Physical Education and Health Sciences

10th September 2015



Physical Activity for Health Research Centre (PAHRC)

Key Areas of Research

The promotion of walking

Reducing sedentary time

Physical activity in children and adolescent girls

Physical activity for people with medical conditions

The role of the environment in physical activity
promotion



Prof Nanette Mutrie MBE

Get in touch with Dr Chloe McAdam if you are interested in becoming a member (chloe.mcadam@ed.ac.uk)

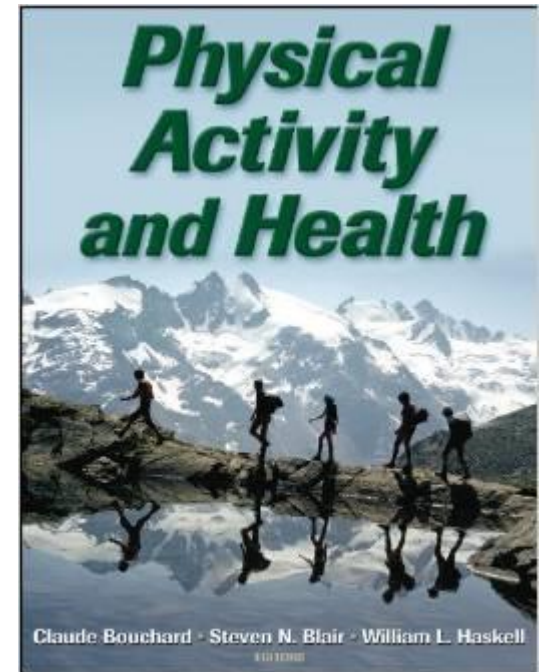


Describe the physical activity behaviours you did last week...



How would you describe:

1. Sport?
2. Exercise?
3. Physical Activity?



Exercise

Caspersen et al. ([1985](#)) defined exercise with reference to the following factors:

- body movement produced by skeletal muscles
- resulting energy expenditure varying from low to high (so far, these points are the same as for physical activity);
- "very positively correlated with physical fitness"
- "planned, structured and repetitive bodily movement"
- the objective is to maintain or improve physical fitness.

Physical activity

Caspersen, Powell and Christenson ([1985](#)) define physical activity in terms of the three following elements:

- movement of the body produced by the skeletal muscles
- resulting energy expenditure which varies from low to high
- a positive correlation with physical fitness.

This definition of physical activity has been cited many times now and is well accepted. For an alternative perspective see ([Winter & Fowler, 2009](#)).

Physical activity

Active Travel

Work and
occupation

Leisure time
and
recreation

Housework
and gardening

Active Living

Taking every opportunity to make an active choice

- Walk to train, stand on bus
- Cycle to shops
- Take stairs
- Wash car by hand
- Play outside with kids
- Standing/walking meetings at work
- Put movement into every day activity
- Sit less, walk more

Prof Nanette Mutrie (2014)



This material in context...

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12.15 LUNCH & NETWORKING

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Senior Lecturer in Physical Activity and Health

2.00 Workshop sessions on in-house training

Climbing Walls, Mountain Biking, Walking

3.15 AUCB:

Customer Resource Management platform – does anyone use one they can recommend that is cheap / free?!

Does anyone have a deal with the SYHA?

Date of Next Meeting: Tuesday 1 Dec, Kilmarnock

3.30 FINISH

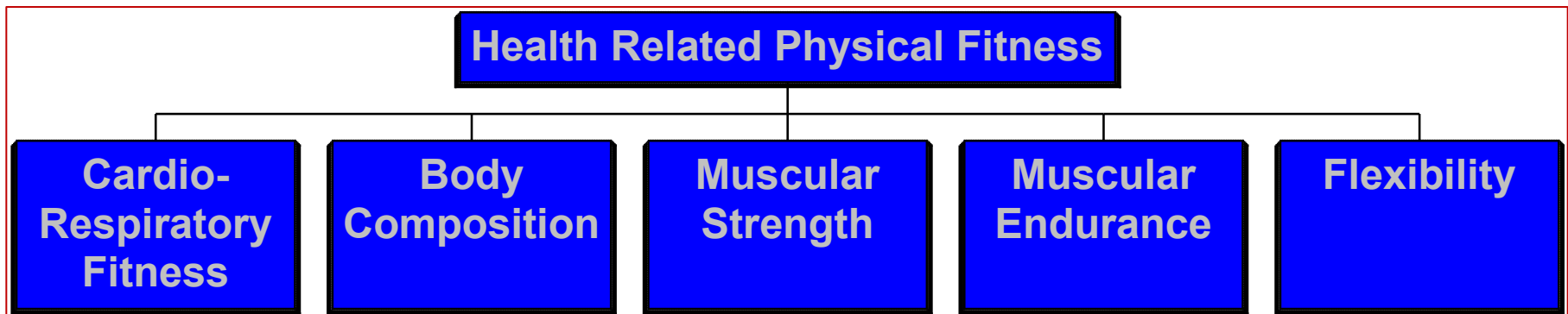
How would you describe “health”
to an alien?



Health-Related Physical Fitness

Fitness relating to the ability to undertake everyday activities

It should be viewed as the sum of its components:



American College of Sports Medicine (2010)



Health

“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity..”

World Health Organisation



How many health benefits can you think of from participation in physical activity, exercise and sport?

Evidence for health outcomes of physical activity

Premature mortality

Cardiovascular diseases

Obesity

Diabetes (Type II)

Cancer

Joint and bone health

Mental health

**Physical Activity
Guidelines Advisory
Committee Report,
2008**

To the Secretary of
Health and Human Services



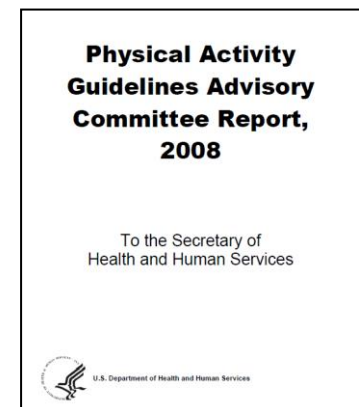
U.S. Department of Health and Human Services

<http://www.health.gov/paguidelines/report/pdf/committeereport.pdf>

What health outcomes do you think are associated with physical activity?

Reduction Strength of evidence

Premature mortality.....	30%	strong
CVD, CHD, Stroke.....	22-35%.....	strong
Diabetes (Type II).....	30-40%.....	strong
Weight maintenance or loss.....	unclear.....	weak to strong
Joint, muscle and bone health.....	1-83%.....	weak to strong
Cancer (colon and breast).....	20-30%.....	strong
Mental health.....	20-30%.....	strong

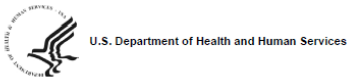


<http://www.health.gov/paguidelines/report/pdf/committeereport.pdf>

Health benefits in “5-18 years”?

**Physical Activity
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To the Secretary of
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- Cardio-respiratory fitness
- Muscular strength
- Body composition
- CV and metabolic health
- Bone health
- Mental health

Mental Health benefits in “5-18 years”?

**Physical Activity
Guidelines Advisory
Committee Report,
2008**

To the Secretary of
Health and Human Services



U.S. Department of Health and Human Services

- Depressive symptoms
- Anxiety
- Academic performance
- Self-esteem and self concept

<http://www.health.gov/paguidelines/report/pdf/committeereport.pdf>

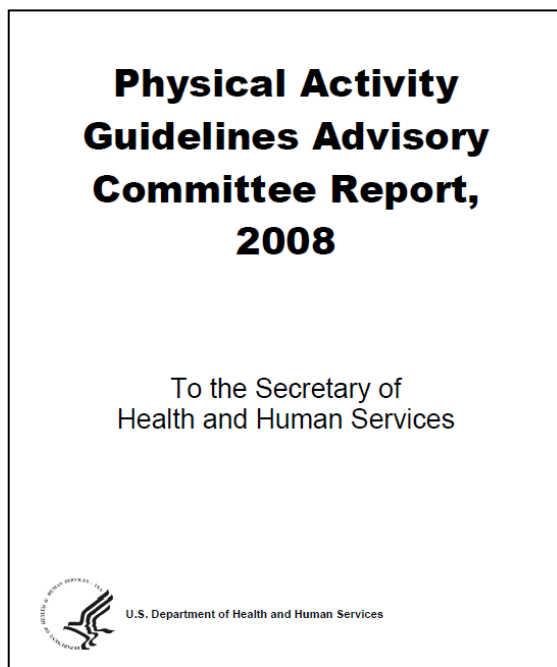
Health benefits in “5-18 years”?



- Reduced body fat
- Healthy weight
- Bone and cardio-metabolic health
- Psychological well-being

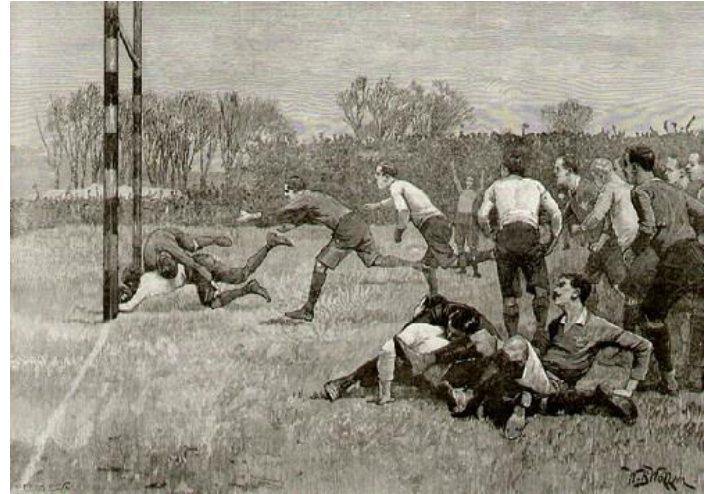
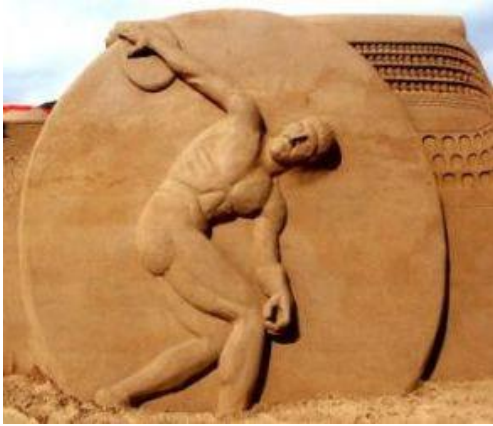
<https://www.gov.uk/government/publications/start-active-stay-active-a-report-on-physical-activity-from-the-four-home-countries-chief-medical-officers>

Do these benefits therefore also apply to outdoor learning?

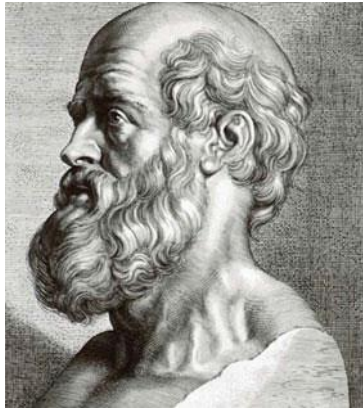


How long have we known?

When did we first find a link between PA and health?



“If we could give every individual the right amount of nourishment and exercise, not too little and not too much, we would have found the safest way to health”



Hippocrates (460-370 BC)



First clinical episodes* of CHD in male central London bus drivers and conductors aged 35-64, 1949-1950



	No. of cases	Age standardised Rate per 1000 p.a.
Drivers	80	2.7
Conductors	31	1.9

*Angina, MI, CHD mortality

Conductors climbed 600 stairs a day on these Route-master buses were at 30% lower risk of coronary heart disease

Morris et al, Lancet 1953

How much exercise do you think we
need to get these benefits?

(minutes per week)

Physical Activity Recommendations

“Students in the Institute must know the recommendations for physical activity for health”

Prof Nanette Mutrie (2014)

Chair in Physical Activity for Health

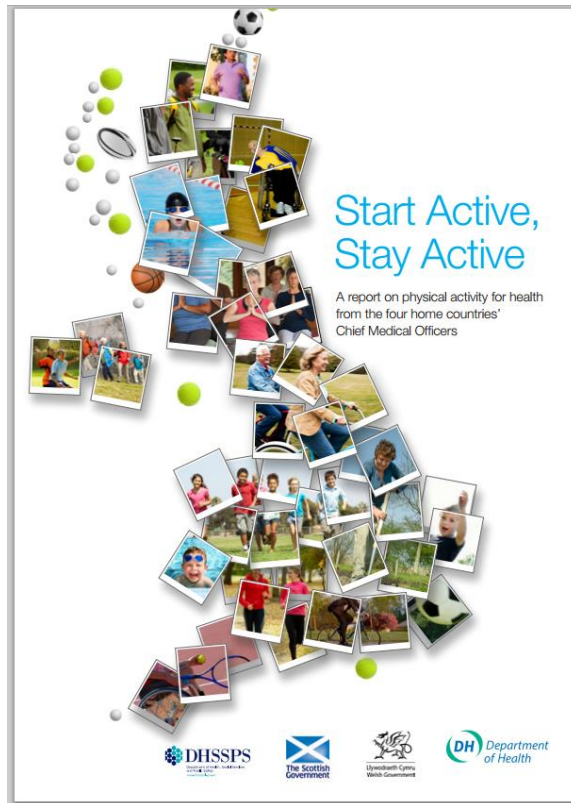
Director: Physical Activity for Health

Research Centre [PAHRC]



Current guidance

Do you know the
physical activity
recommendations for
adults?



**Start active, stay active: a report on physical activity
from the four home countries' Chief Medical Officers**

<https://www.gov.uk>



Guidelines for adults aged 19-64

**150 minutes a week of
moderate activity**

or

75 minutes of vigorous activity

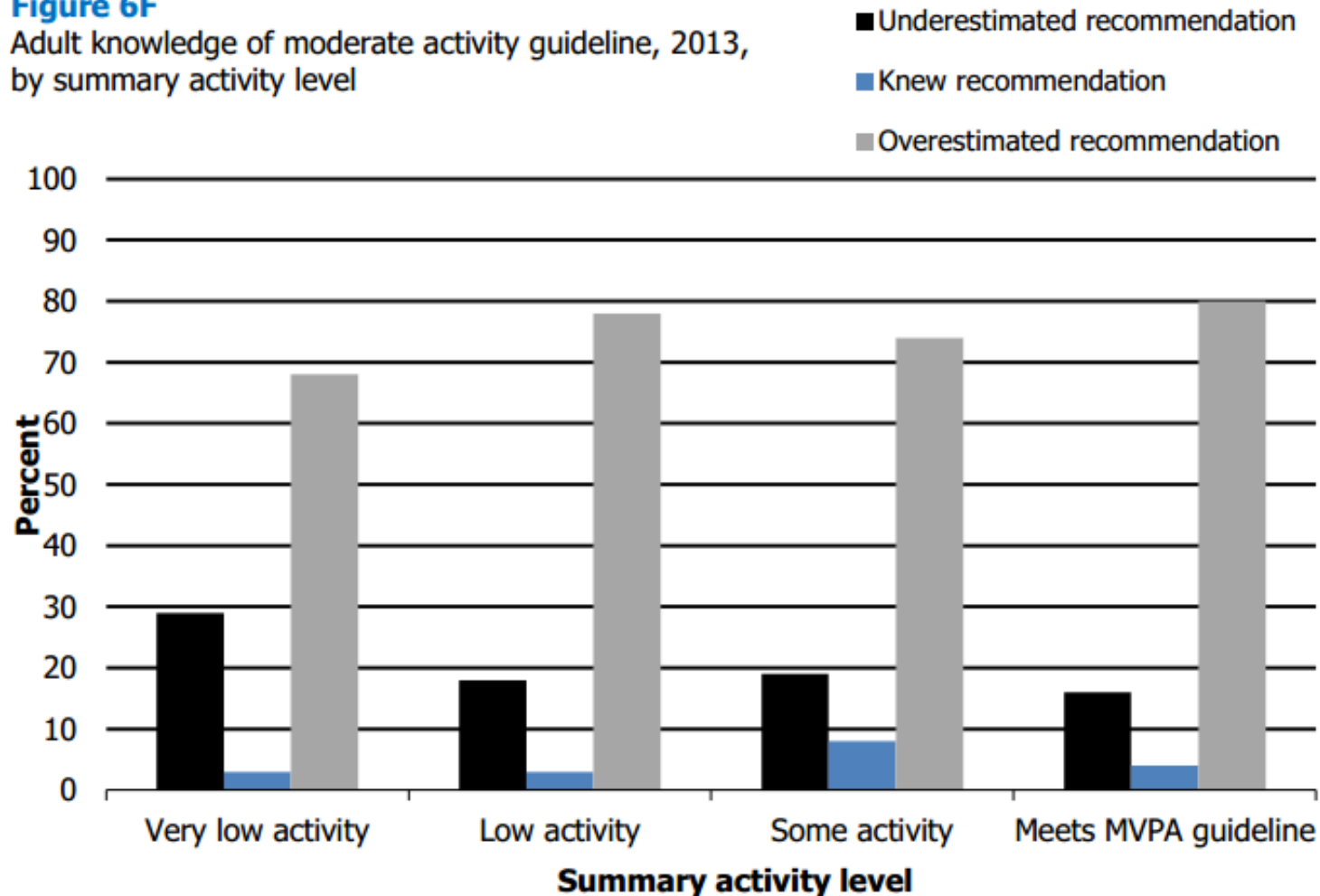
Activities that strengthen muscles should be carried out on at least two days a week

Extended periods of sedentary activities should be limited



Figure 6F

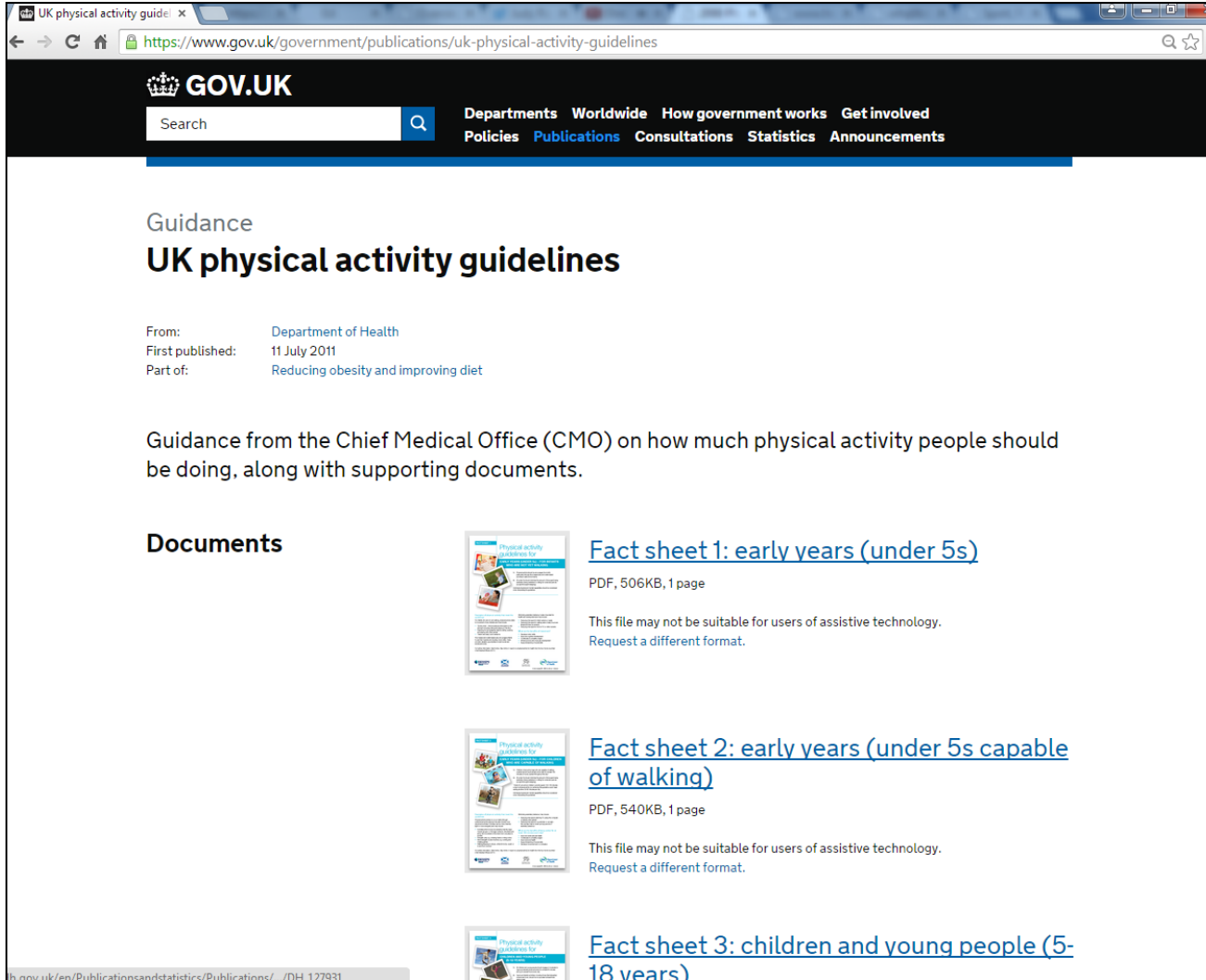
Adult knowledge of moderate activity guideline, 2013, by summary activity level



<http://www.scotland.gov.uk/Resource/0046/00464858.pdf>



Physical Activity Recommendations



The screenshot shows a web browser window with the URL <https://www.gov.uk/government/publications/uk-physical-activity-guidelines>. The page features the GOV.UK logo and a search bar. The main content is titled "Guidance UK physical activity guidelines". It lists the source as the Department of Health, published on 11 July 2011, and notes it is part of a series on "Reducing obesity and improving diet". A summary paragraph states: "Guidance from the Chief Medical Office (CMO) on how much physical activity people should be doing, along with supporting documents." Under the "Documents" section, three fact sheets are listed, each with a thumbnail image and a brief description.

UK physical activity guide | x

← → ↻ 🏠 <https://www.gov.uk/government/publications/uk-physical-activity-guidelines> 🔍 ☆

GOV.UK

Search 🔍

Departments Worldwide How government works Get involved
Policies Publications Consultations Statistics Announcements


Guidance


UK physical activity guidelines


From: Department of Health
First published: 11 July 2011
Part of: Reducing obesity and improving diet

Guidance from the Chief Medical Office (CMO) on how much physical activity people should be doing, along with supporting documents.

Documents

 [Fact sheet 1: early years \(under 5s\)](#)
PDF, 506KB, 1 page
This file may not be suitable for users of assistive technology.
Request a different format.

 [Fact sheet 2: early years \(under 5s capable of walking\)](#)
PDF, 540KB, 1 page
This file may not be suitable for users of assistive technology.
Request a different format.

 [Fact sheet 3: children and young people \(5-18 years\)](#)

https://www.gov.uk/en/Publicationsandstatistics/Publications/.../DH_127931

<https://www.gov.uk/government/publications/uk-physical-activity-guidelines>

Under 5s
Under 5s walking
5-18 years
19-64 years
65+ years

FACTSHEET 4

Physical activity guidelines for

ADULTS (19–64 YEARS)



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

Individual physical and mental capabilities should be considered when interpreting the guidelines.

Examples of physical activity that meet the guidelines

Moderate intensity physical activities will cause adults to get warmer and breathe harder and their hearts to beat faster, but they should still be able to carry on a conversation. Examples include:

- Brisk walking
- Cycling

Vigorous intensity physical activities will cause adults to get warmer and breathe much harder and their hearts to beat rapidly, making it more difficult to carry on a conversation. Examples include:

- Running
- Sports such as swimming or football

Physical activities that strengthen muscles involve using body weight or working against a resistance. This should involve using all the major muscle groups. Examples include:

- Exercising with weights
- Carrying or moving heavy loads such as groceries

Minimising sedentary behaviour may include:

- Reducing time spent watching TV, using the computer or playing video games
- Taking regular breaks at work
- Breaking up sedentary time such as swapping a long bus or car journey for walking part of the way

What are the benefits of being active daily?

- Reduces risk of a range of diseases, e.g. coronary heart disease, stroke, type 2 diabetes
- Helps maintain a healthy weight
- Helps maintain ability to perform everyday tasks with ease
- Improves self-esteem
- Reduces symptoms of depression and anxiety

For further information: *Start Active, Stay Active: A report on physical activity for health from the four home countries' Chief Medical Officers* (2011)

<https://www.gov.uk/government/publications/uk-physical-activity-guidelines>

Children 5-18

- All children and young people should engage in moderate to vigorous intensity physical activity for at least 60 minutes and up to several hours every day
- Vigorous intensity activities, including those that strengthen muscle and bone, should be incorporated at least three days a week
- All children and young people should minimise the amount of time spent being sedentary (sitting) for extended periods

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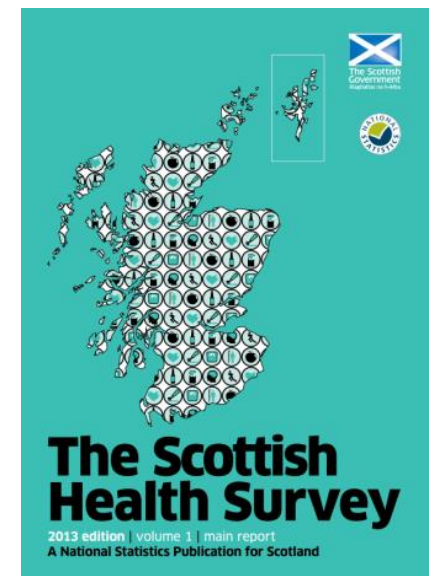
How many people in Scotland do you think are meeting these targets?

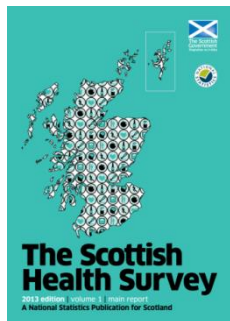
Table 6D Adherence to the MVPA^a guideline,

	Men	Women	All
	%	%	%
2012	67	58	62
2013	71	58	64

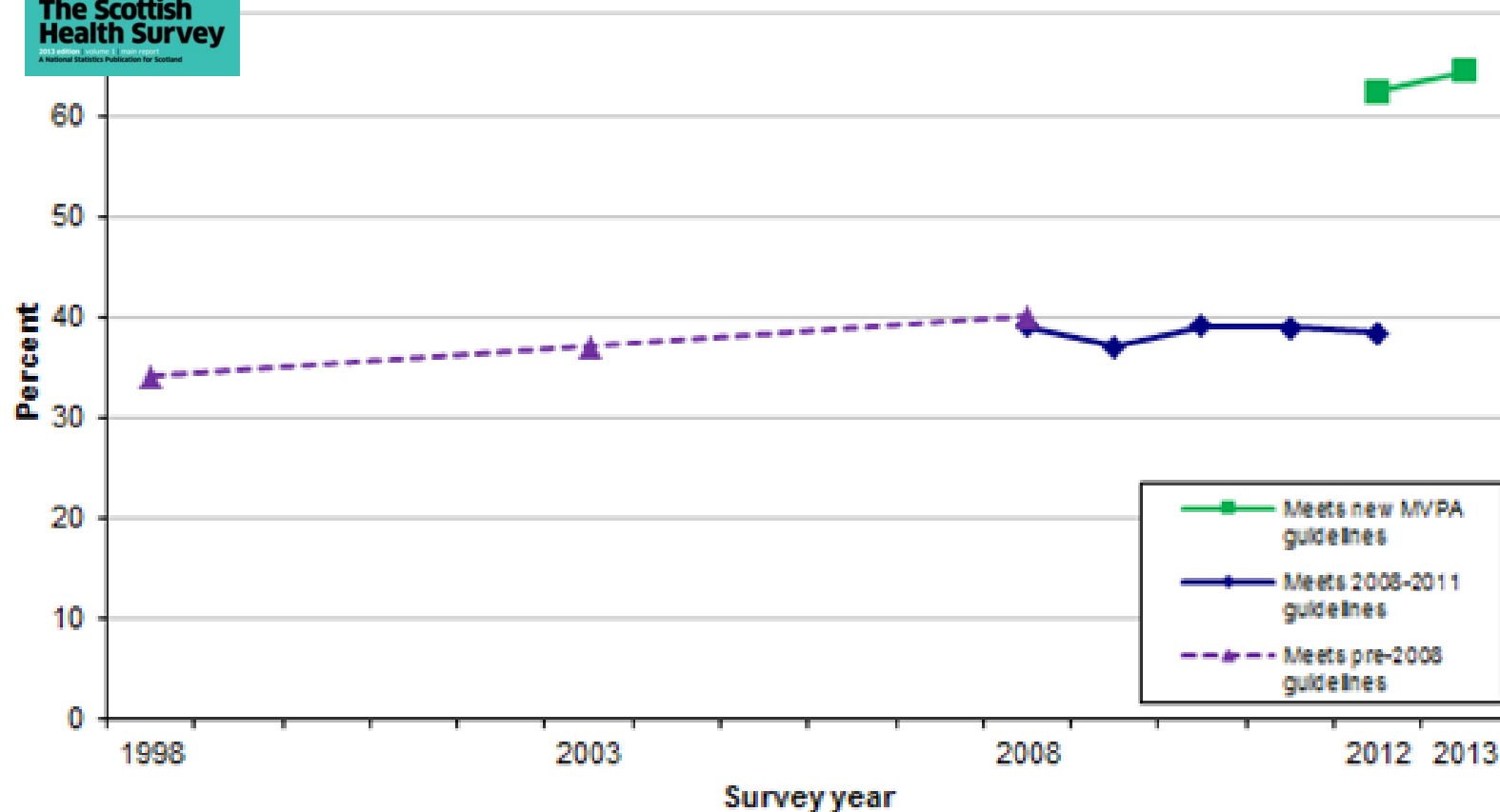
^a Meets moderate/vigorous physical activity guideline of 150 minutes of moderate, 75 minutes vigorous, or combination of both each week

<http://www.scotland.gov.uk/Resource/0046/00464858.pdf>





Proportion of adults meeting physical activity guidelines Scotland 1998, 2003, 2008-2013

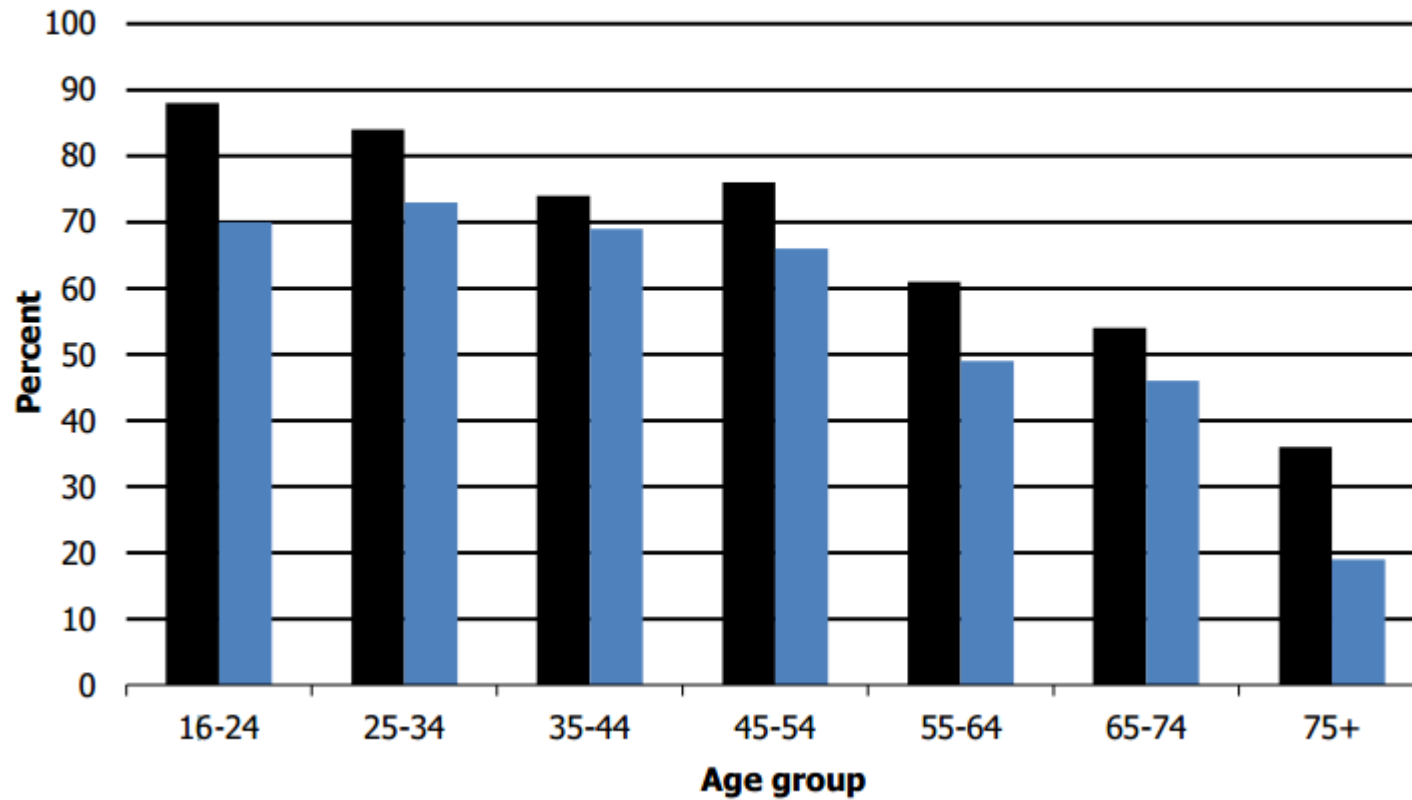


<http://www.scotland.gov.uk/Topics/Statistics/Browse/Health/TrendPhysicalActivity>

Figure 6E

Adult summary activity levels, 2013, by age

■ Men ■ Women

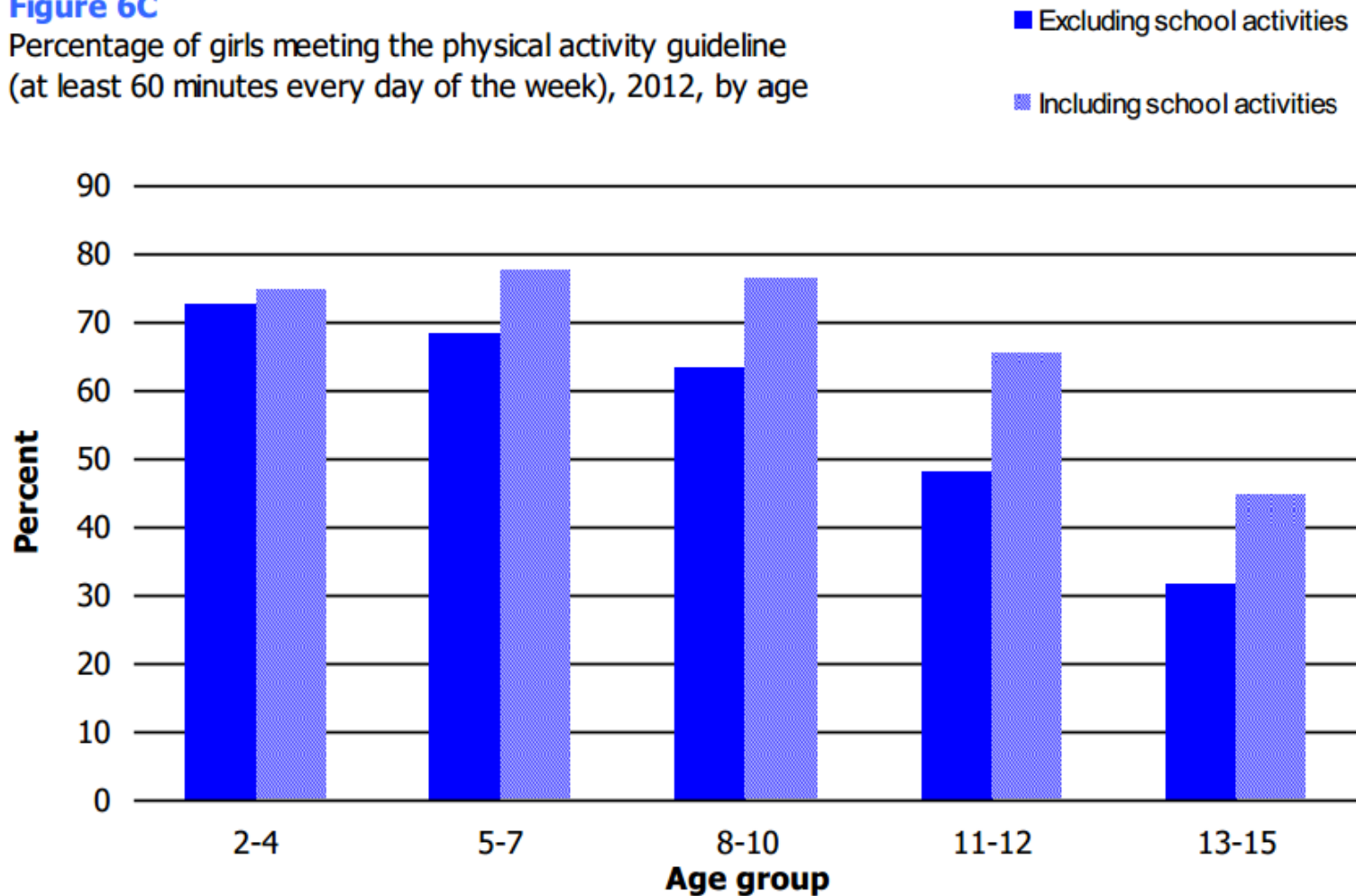


<http://www.scotland.gov.uk/Resource/0046/00464858.pdf>



Figure 6C

Percentage of girls meeting the physical activity guideline (at least 60 minutes every day of the week), 2012, by age

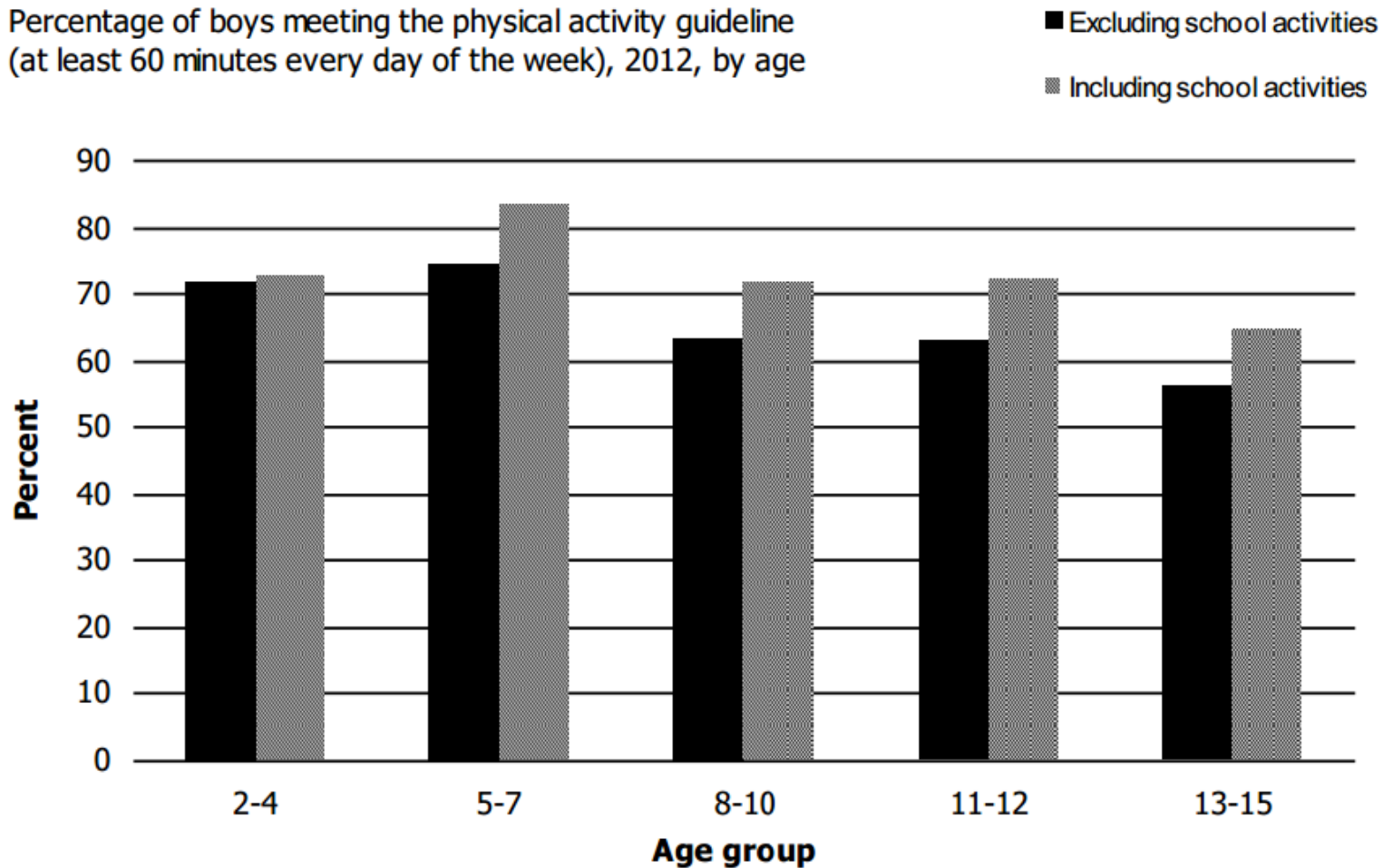


<http://www.gov.scot/Resource/0043/00434590.pdf>



Figure 6B

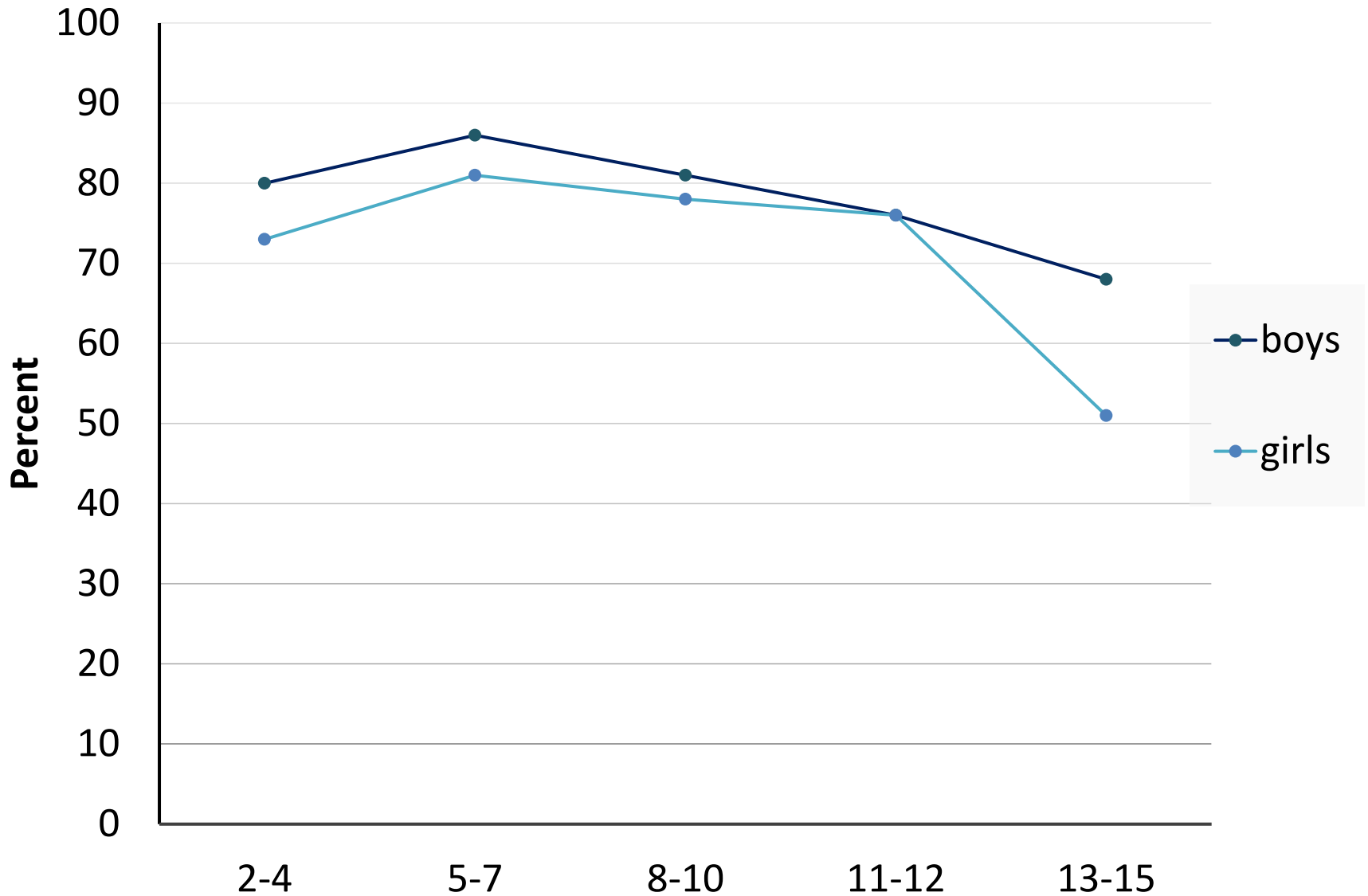
Percentage of boys meeting the physical activity guideline (at least 60 minutes every day of the week), 2012, by age



<http://www.gov.scot/Resource/0043/00434590.pdf>

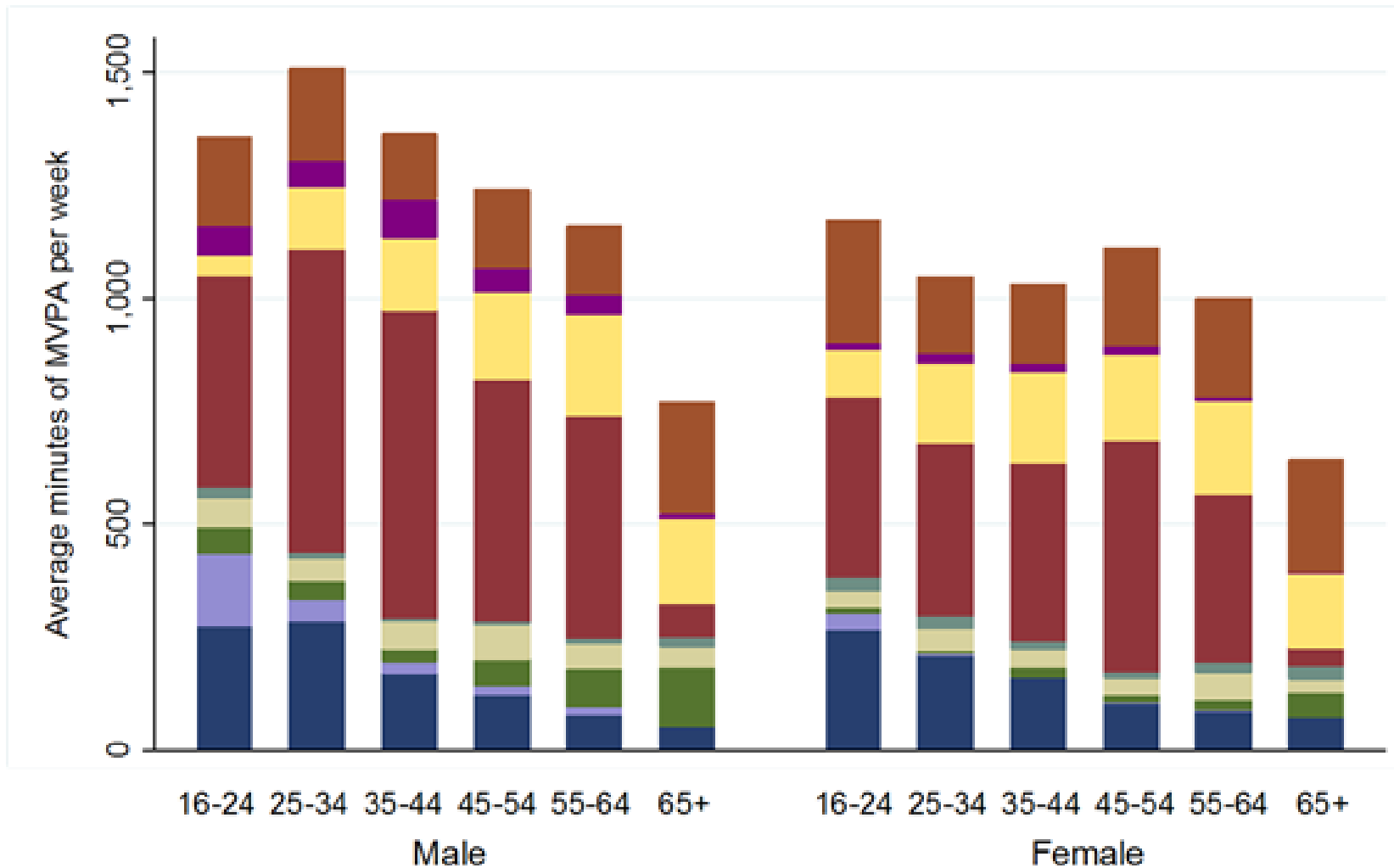


Children's activity levels, 2013, by age



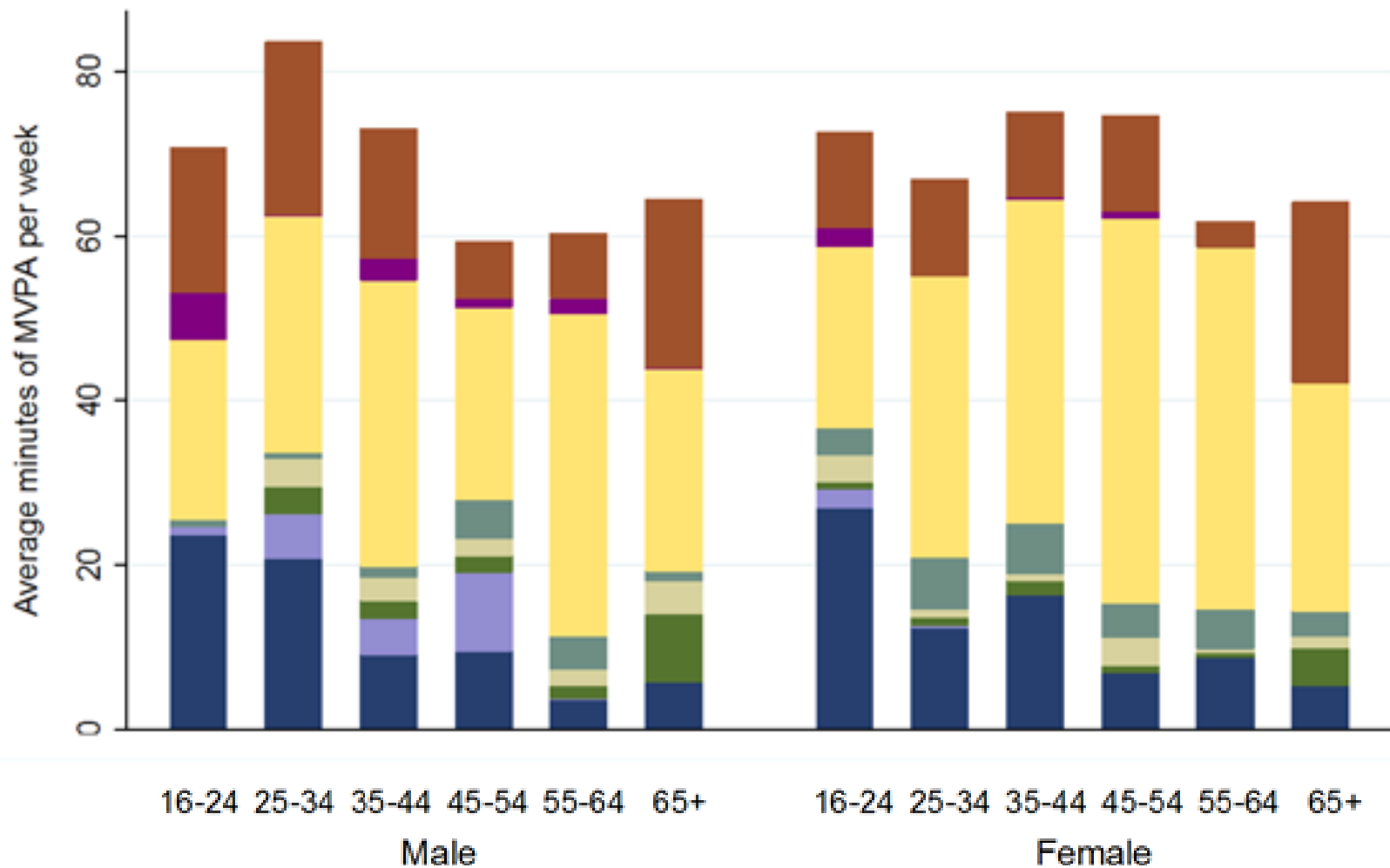
So how do we get our PA...?



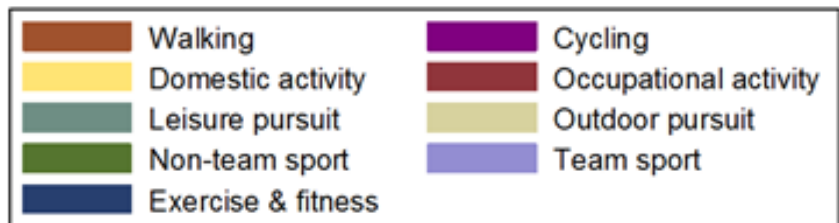


Age- and sex-related differences in the domain-specific mean weekly minutes of MVPA and their relative contributions to total MVPA of adults who met the aerobic physical activity guidelines in Scotland (n=3016)

Walking	Cycling
Domestic activity	Occupational activity
Leisure pursuit	Outdoor pursuit
Non-team sport	Team sport
Exercise & fitness	



Age- and sex-related differences in the domain-specific mean weekly minutes of MVPA and their relative contributions to total MVPA of adults who **do not meet** the aerobic physical activity guidelines in Scotland (n=3016)



So where are the research gaps?



Physical Activity for Health Research Centre (PAHRC)

Key Areas of Research

The promotion of walking

Reducing sedentary time

Physical activity in children and adolescent girls

Physical activity for people with medical conditions

The role of the environment in physical activity
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YOUNG AND PHYSICALLY ACTIVE:

a blueprint for making physical activity appealing to youth



By: Paul Kelly, Anne Matthews and Charlie Foster,
Department of Public Health, University of Oxford,
United Kingdom

<http://www.euro.who.int/en/publications/abstracts/young-and-physically-active-a-blueprint-for-making-physical-activity-appealing-to-youth>



their target groups in order to design improved interventions and approaches.

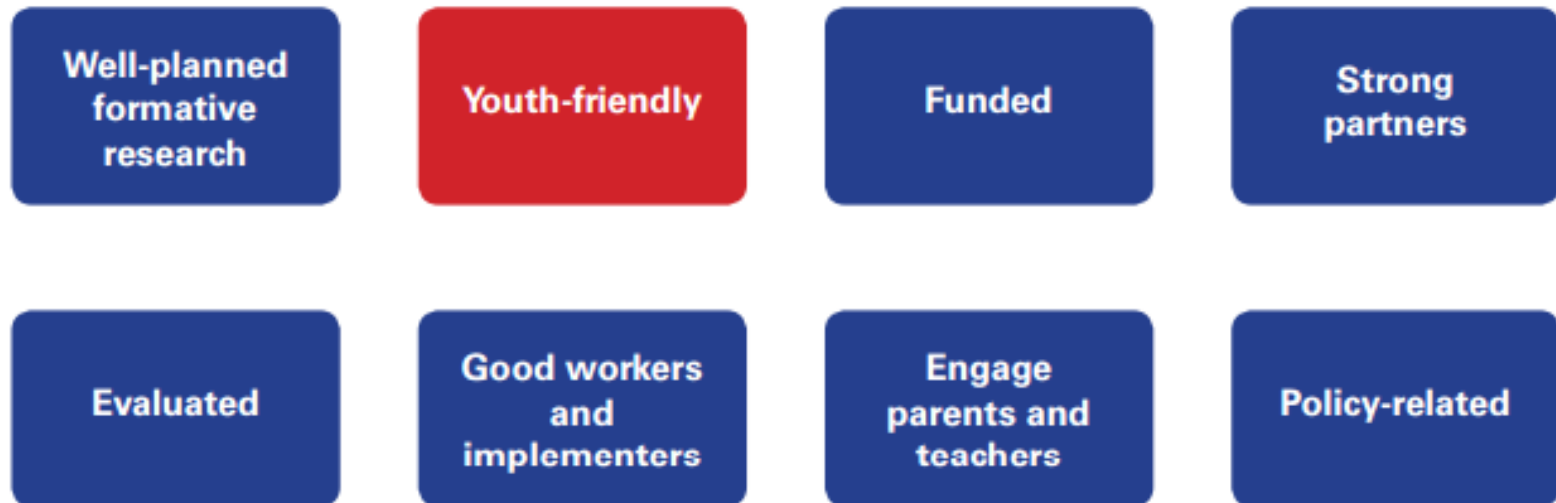


Fig. 1. Key components of the promotion of physical activity (1).

The document was developed on the basis of the perspectives and views of youth delegates from the Children's Environment and Health Action Plan for Europe

<http://www.euro.who.int/en/publications/abstracts/young-and-physically-active-a-blueprint-for-making-physical-activity-appealing-to-youth>

The blueprint – checklist

Use this blueprint checklist to ensure that your physical activity project engages young people. Aspects are listed in order of importance for each section, as prioritized by the CEHAPE youth delegates.

The physical environment

- 1. Location – ensure ease of access
- 2. Costs – keep these low
- 3. Outdoor activities – include if possible
- 4. Air pollution – avoid polluted locations
- 5. Walking and cycling – include if possible

Happiness?

Richards *et al.* *BMC Public Health* (2015) 15:53
DOI 10.1186/s12889-015-1391-4



RESEARCH ARTICLE

Open Access

Don't worry, be happy: cross-sectional associations between physical activity and happiness in 15 European countries

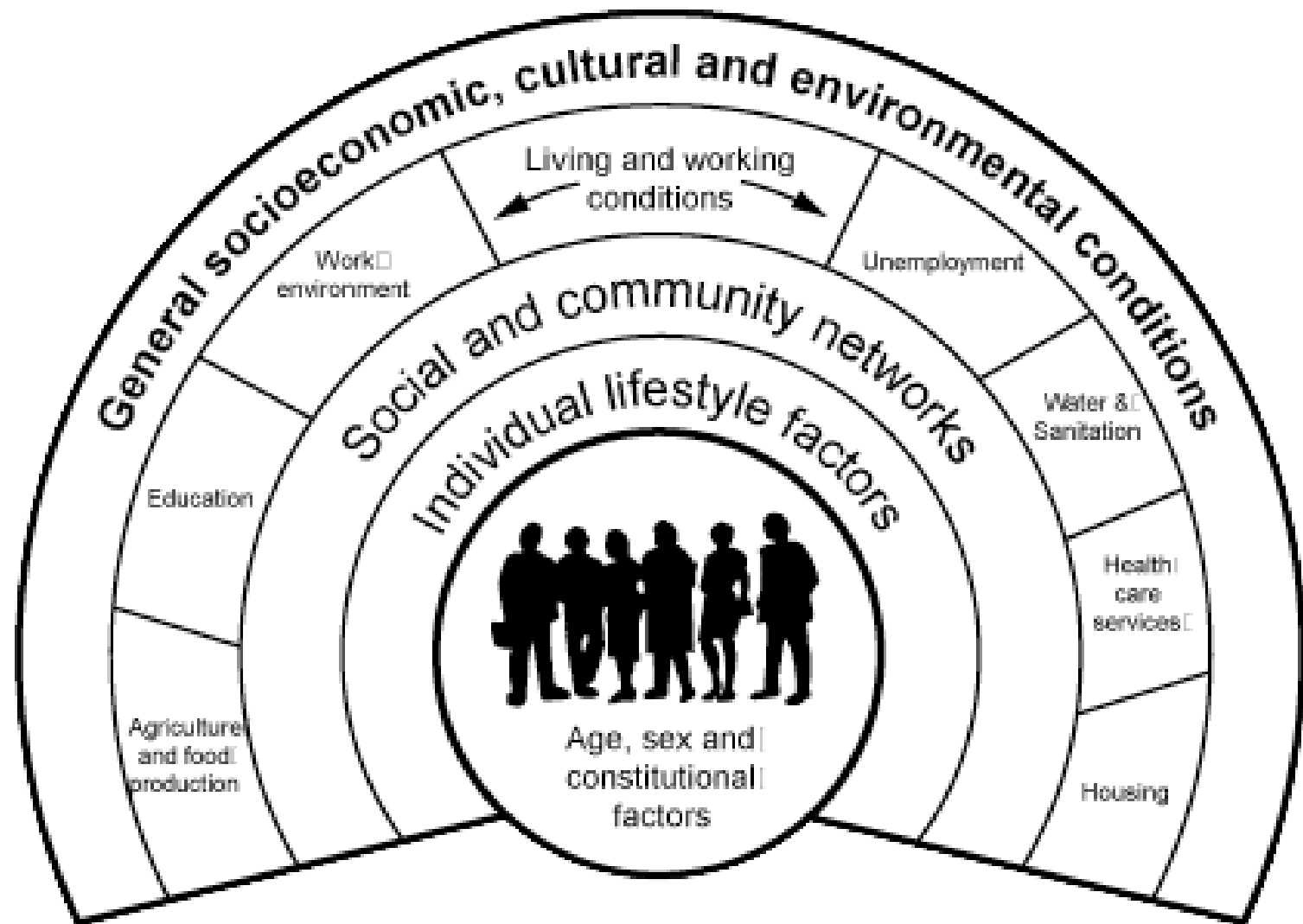
Justin Richards^{1*}, Xiaoxiao Jiang², Paul Kelly³, Josephine Chau¹, Adrian Bauman¹ and Ding Ding¹

“Determinants of health”

“...factors that combine together to affect the health of individuals and communities”



Determinants of health



Source: Dahlgren and Whitehead M (1991) *Policies and strategies to promote social equity in health*

NEW INTERNATIONAL EDITION

'Hot stuff'
SUNDAY TIMES

'Hugely influential'
GUARDIAN

nudge

Improving decisions
about health,
wealth and happiness

THALER & SUNSTEIN



How could outdoor learning help us
address these gaps?

International Review of Sport and Exercise Psychology

Volume 4, Issue 1, 2011



Correlates of physical activity in youth: a review of quantitative systematic reviews

DOI: 10.1080/1750984X.2010.548528

Stuart J.H. Biddle^{a*}, Andrew J. Atkin^a, Nick Cavill^b & Charlie Foster^c
pages 25-49



View full text



Download full text

Full access

“The present review aims to identify factors associated with children's and adolescents' physical activity by reviewing systematic quantitative reviews of non-intervention research relating to participation in physical activity by young people”

http://www.tandfonline.com/doi/full/10.1080/1750984X.2010.548528#.VPRHU_msVBk



http://www.tandfonline.com/doi/full/10.1080/1750984X.2010.548528#.VPRHU_msVBk

Demographic and biological factors	Age, gender, ethnicity, SES, BMI,
Psychological correlates	Intentions, preferences, perceived competence, mastery, achievement motivation, body image and appearance, Self-efficacy, enjoyment, self-esteem Perceived lack of time, other activities e.g. homework, lack of interest/motivation, effort required
Behavioural correlates	Healthy diet, previous PA, community sports participation, PE, competitive sport Smoking, sedentary time
Social and cultural correlates	Social support (parent, peer, sibling). Material, emotional, practical. Parental PA
Environmental correlates	Access and opportunities, transport, time outdoors, Season, urban/rural, equipment, sports media, perceived safety Crime and deprivation

How could outdoor learning and
physical activity research work
together???

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PHYSICAL ACTIVITY FOR HEALTH

Any questions?

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Sept 2015



Paul Kelly

@narrowboat_paul

Lecturer in physical activity and health
#physicalactivity

