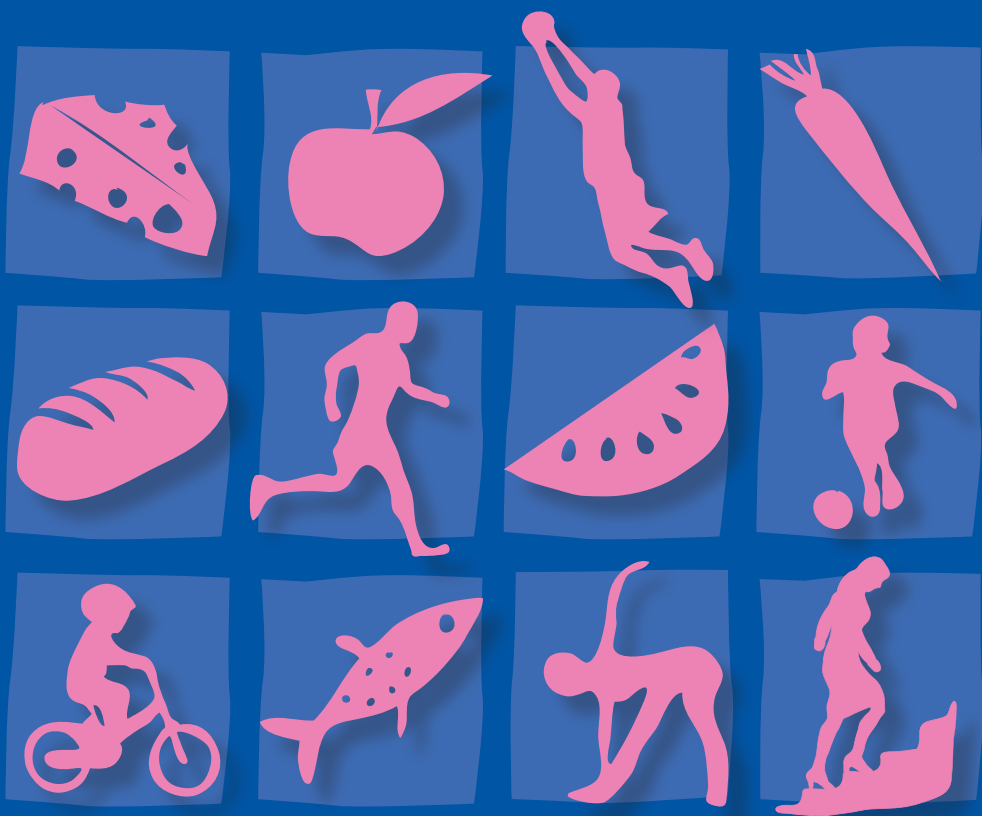


Review of physical activity surveillance data sources in European Union Member States



Abstract

The World Health Organization Regional Office for Europe and the Directorate-General for Health and Consumers of the European Commission have established a joint three-year project to monitor progress in improving nutrition and physical activity and preventing obesity in the European Union (EU). This report provides an overview of the available international and national surveys on physical (in)activity levels and patterns in the 27 EU Member States, the data collection methods applied and the items measured. Further, it discusses the challenges experienced in collecting and integrating physical activity data in the EU.

Keywords:

DATA COLLECTION

HEALTH SURVEYS

POPULATION SURVEILLANCE

EVALUATION STUDIES

PHYSICAL FITNESS

MOTOR ACTIVITY

OBESITY - prevention and control

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Table of Contents

List of abbreviations.....	4
Acknowledgements	4
Introduction.....	5
Methodology	5
Table 1. Overview of international surveys reporting on physical activity patterns and levels.....	7
Table 2. Overview of national surveys reporting on physical activity patterns and levels.....	15
Data presentation	40
Data availability.....	40
Measurement methods used.....	40
Physical activity levels across the EU	41
Adults.....	42
Young people	44
Discussion and challenges	45
References.....	49
ANNEX 1. Providers of country information for this review.....	59

List of abbreviations

The following abbreviations are used in this report.

DG SANCO	Directorate-General for Health and Consumers (EC)
EC	European Commission
EHIS	European Health Interview Survey
EU	European Union
EUPASS	European Physical Activity Surveillance System
EUROSTAT	European Commission Statistical Office
GPAQ	Global Physical Activity Questionnaire
HBSC	Health Behaviour in School-aged Children
IPAQ	International Physical Activity Questionnaire
MET	metabolic equivalent
MPA	moderate physical activity
MVPA	moderate to vigorous physical activity
NCD	noncommunicable diseases
SHARE	Survey of Health, Ageing and Retirement in Europe
STEPS	STEPwise approach to chronic disease risk factor Surveillance
VPA	vigorous physical activity
WHO	World Health Organization

Acknowledgements

This review is a deliverable of work package 1 of the three-year collaborative project between the World Health Organization (WHO) and the Directorate-General for Health and Consumers (DG SANCO) of the European Commission (EC), which began in January 2008 (2007WHO02) under the title “*Monitoring progress on improving nutrition and physical activity and preventing obesity in the European Union (EU)*”. A draft of this review was discussed at the workshop on integration of data on physical activity patterns, convened on 25–26 February 2009 in Zurich, Switzerland. WHO would like to express sincere appreciation to the participants of this workshop for their valuable contributions. WHO is most grateful to the National Information Focal Points that were nominated for the project, the WHO Nutrition Counterparts, and other country informants that completed the two country reporting templates and provided the relevant documents on physical (in)activity surveys (see Annex 1). Without their continual collaboration, the compilation of physical activity surveillance data sources would not have been possible. Special thanks are due to Regina Guthold, WHO headquarters, Geneva and Karim Abu-Omar, Institute for Sport Science and Sport, Erlangen for the peer review of this report. Grateful thanks are extended to Lideke Middelbeek, WHO Regional Office for Europe, Copenhagen and Sonja Kahlmeier, Institute for Social and Preventive Medicine, Zurich for writing the review; to Trudy Wijnhoven, WHO Regional Office for Europe, Copenhagen for her comments, technical input and overall coordination; to Philippe Roux, DG SANCO,

Luxembourg City for his feedback; to Sally Charnley and Susana Fernandez Tordrup, WHO Regional Office for Europe, Copenhagen for administrative support; to Lars Møller, Møller and Kompagni for the layout and typesetting; and to Frank Theakston for the text editing.

Introduction

A three-year joint WHO/EC DG SANCO project covering the period 2008–2010, entitled *“Monitoring progress on improving nutrition and physical activity and preventing obesity in the EU”*, was established to evaluate the status of country development and implementation of actions in the areas of nutrition, physical activity and obesity. One of the key deliverables of the project is a database in these areas, which will be composed of surveillance data, country policy documents, policy implementation tools and information on good practices.

Physical inactivity is recognized as a major independent modifiable risk factor for noncommunicable diseases (NCD) such as cardiovascular disease, ischaemic stroke, type 2 diabetes, colon cancer and breast cancer. Besides being an important factor in preventing NCD, physical activity has also been shown to be associated with other important health outcomes, including mental health, injuries, falls and obesity (1–3). Nevertheless, large numbers of the European population are not sufficiently active in their daily lives (4).

Surveillance of physical activity levels and patterns is important for the development of targeted action, as well as for the evaluation of strategies and policies. Internationally comparable physical activity data will allow benchmarking, which is currently difficult owing to the use of different data collection methods, definitions of physical activity or inactivity, sampling designs, survey years and age ranges. The assessment of physical activity levels in children presents additional challenges (5–8). One of the project’s tasks was to map the existing international and national data sources on physical activity levels and patterns in all population groups in the 27 EU Member States.

The main aim of this review is to give an overview of the available international and national surveys and sources on physical (in)activity levels and patterns in the EU countries, the data collection methods applied and the items measured. Furthermore, it discusses the challenges experienced regarding the collection and integration of physical activity data in the EU.

Methodology

Various sources were used to identify international and national data sources on physical activity levels and patterns in the EU countries, including:

- the WHO Global InfoBase (9);
- the European Health Interview and Health Examination Surveys Database (10);
- already available overview reports (11–13);

- targeted Internet searches on relevant web sites (the EC Statistical Office (EUROSTAT) and national institutions responsible for physical activity surveillance);
- the project's 27 National Information Focal Points nominated for the project and their relevant stakeholders; and
- expert input.

The results are presented in two tables. Table 1 gives an overview of the international surveys carried out in the EU, the countries included, the year when the survey was conducted, the age range of the sample, the data collection method and the items that were measured. Table 2 shows the same items for the most recent and representative published national surveys identified in the 27 EU Member States up to September 2010. A final draft of the tables was presented at the Meeting of WHO Nutrition Counterparts of the WHO European Region and the project's National Information Focal Points, which was convened in Geneva, Switzerland on 24–26 March 2010. The country delegates were asked to go through the overview of their countries' data, make alterations and provide information on surveys that had not yet been included.

Table 1. Overview of international surveys reporting on physical activity patterns and levels

Survey name	Participating EU countries	Survey year	Age range (years)	Data collection method	Measurement items	Comments
FINBALT Health Monitor (14)	Estonia, Finland, Latvia, Lithuania	Estonia every other year since 1990, Finland yearly since 1978, Latvia every other year since 1998, Lithuania every other year since 1994	16–64	Self-administered questionnaire	<ol style="list-style-type: none"> Minutes spent walking or riding a bicycle to and from work per day (less than 15 minutes a day/15–30 minutes a day/30–60 minutes a day/more than 60 minutes a day/I go to work by car or public transport/I am not working at all or I work at home) Days of physical exercise during leisure time for at least 30 minutes that makes you mildly short of breath or perspire (daily/4–6 times a week/2–3 times a week/once a week/2–3 times a month/a few times a year or less/not able to exercise because of injury or illness) Intensity of physical activity at work (very light, mainly sitting/light, mainly walking/medium, lifting, carrying light loads/heavy, climbing, carrying heavy loads) 	
Leisure-time physical exercise: prevalence, attitudinal correlates and behavioural correlates among young Europeans from 21 countries, based on the results of the European Health and Behaviour Survey (15)	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Portugal, Spain, Sweden, United Kingdom (England), United Kingdom (Scotland)	1992	18–30	Self-administered questionnaire (completion of questionnaire in classes/postal survey)	<ol style="list-style-type: none"> Frequency of any exercise over the past 2 weeks (e.g. sport, physical activity in leisure time) Frequency of exercise over the past 2 weeks Types of activity 	

Survey name	Participating EU countries	Survey year	Age range (years)	Data collection method	Measurement items	Comments
Health Behaviour in School-aged Children (HBSC) (16–19)	The last survey (2005–2006) included the following EU countries: Austria, Belgium (Flemish/French), Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom (England), United Kingdom (Scotland), United Kingdom (Wales)	1993–1994 1997–1998 2001–2002 2005–2006	11, 13, 15	Self-administered questionnaire (completion of questionnaire in classroom)	<ol style="list-style-type: none"> 1. Frequency of performing vigorous physical activity (VPA) outside school hours during free time (1993–1994, 1997–1998, 2001–2002 optional, 2005–2006) 2. Hours per week of VPA outside school hours during free time (1997–1998, 2001–2002 optional, 2005–2006) 3. Number of days being physically active (moderate to vigorous physical activity, MVPA) for one hour or more over the past 7 days (2005–2006) 4. Mean number of days being physically active (MVPA) for one hour or more (average of the previous week and a typical week) (2001–2002) 5. Meeting the MVPA guidelines on physical activity (2001–2002) 6. TV watching: <ul style="list-style-type: none"> – hours per day (1993–1994, 1997–1998) – hours on weekdays/at the weekend (2001–2002, 2005–2006) 7. Computer use: <ul style="list-style-type: none"> – hours on weekdays/at the weekend playing computer games (2001–2002) – hours on weekdays/at the weekend using the computer for chatting, e-mailing, Internet, homework (2001–2002) – hours per week (1993–1994, 1997–1998) 8. Hours per week watching videos (1993–1994) 	
Physical activity levels and body weight in a nationally representative sample in the EU (20)	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom	1997	15+	Face-to-face interview	<ol style="list-style-type: none"> 1. Involvement in specific activities: list of 17 common activities (no participation/<1.5 hours per week/1.5–3.5 hours per week/>3.5 hours per week) 2. Self-assessment of time distribution on a typical working day (sitting down/walking around or standing/more than any of the previous) 3. Self-assessment of time spent sitting 	

Survey name	Participating EU countries	Survey year	Age range (years)	Data collection method	Measurement items	Comments
Using different physical activity measurements in eight European countries. Results of the European Physical Activity Surveillance System (EUPASS) time series survey (21)	Belgium, Finland, France, Germany, Italy, Netherlands, Spain, United Kingdom	1999–2000	18–85	Interviewer-administered questionnaire	<p>Six items from the <i>International Physical Activity Questionnaire (IPAQ) short</i>:</p> <ol style="list-style-type: none"> Days on which VPA for at least 10 minutes at a time was reported in the last 7 days Duration of VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) Days on which moderate physical activity (MPA) for at least 10 minutes at a time was reported in the last 7 days Duration of MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) Frequency of walking for at least 10 minutes at a time (in the last 7 days) Average time spent walking on days when at least 10 minutes were reported <p><i>Additionally:</i></p> <ol style="list-style-type: none"> Pace of walking (vigorous/moderate/slow) Time spent sitting during a weekday in the last 7 days Time spent sitting during a weekend day in the last 7 days Frequency of physical activity at work in the last 7 days (a lot/some/little or none) Frequency of physical activity when moving from place to place in the last 7 days (a lot/some/little or none) Frequency of physical activity when working in and around the house in the last 7 days (a lot/some/little or none) Frequency of physical activity in recreation, sport and leisure-time activities in the last 7 days (a lot/some/little or none) 	The additional items are key items from national health surveys; these items differ by country

Survey name	Participating EU countries	Survey year	Age range (years)	Data collection method	Measurement items	Comments
World Health Survey (22)	Czech Republic, Estonia, Hungary, Slovakia, Slovenia, Spain	2003	18–69	Interviewer-administered questionnaire	<p><i>Six items from IPAQ short:</i></p> <ol style="list-style-type: none"> 1. Days on which VPA for at least 10 minutes at a time was reported in the last 7 days 2. Duration of VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) 3. Days on which MPA for at least 10 minutes at a time was reported in the last 7 days 4. Duration of MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) 5. Frequency of walking for at least 10 minutes at a time (in the last 7 days) 6. Average time spent walking on days when at least 10 minutes were reported 	

Survey name	Participating EU countries	Survey year	Age range (years)	Data collection method	Measurement items	Comments
Eurobarometer 58.2. Special Eurobarometer 183.c: physical activities (23)	Austria, Belgium, Denmark, Finland, Germany (east/west), Greece, France, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom (England), United Kingdom (Scotland), United Kingdom (Northern Ireland)	2003	15+	Face-to-face interview	<p><i>Six items from IPAQ short:</i></p> <ol style="list-style-type: none"> 1. Days on which VPA for at least 10 minutes at a time was reported in the last 7 days 2. Duration of VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) 3. Days on which MPA for at least 10 minutes at a time was reported in the last 7 days 4. Duration of MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) 5. Frequency of walking for at least 10 minutes at a time (in the last 7 days) 6. Duration of walking on days when at least 10 minutes of walking were reported (average in minutes) <p><i>Additionally:</i></p> <ol style="list-style-type: none"> 7. Average time spent sitting on a usual day 8. Frequency of physical activity at work in the last 7 days (a lot/some/little or none) 9. Frequency of physical activity when moving from place to place in the last 7 days (a lot/some/little or none) 10. Frequency of physical activity when working in and around the house in the last 7 days (a lot/some/little or none) 11. Frequency of physical activity in recreation, sport and leisure-time activities in the last 7 days (a lot/some/little or none) 	The seventh item is slightly different from the item included in IPAQ short, which asks for time spent sitting on a usual weekday during the last 7 days; items 8–11 are additional ones

Survey name	Participating EU countries	Survey year	Age range (years)	Data collection method	Measurement items	Comments
Eurobarometer 62. Special Eurobarometer 213: The citizens of the EU and sport (24)	Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom	2004	15+	Face-to-face interview	1. Engaging in sport at least once a week	
SHARE – Survey of Health, Ageing and Retirement in Europe (25)	Austria, Belgium, Czech Republic, Denmark, France, Germany, Greece, Ireland, Italy, Netherlands, Poland, Spain, Sweden	2004–2005 2006–2007 2008–2009 Fourth wave planned for 2010–2011 (including all EU countries)	50+	Face-to-face interview supplemented by a self-administered questionnaire	1. Frequency of VPA 2. Frequency of MPA	Based on the questions of the English Longitudinal Study of Aging (26)

Survey name	Participating EU countries	Survey year	Age range (years)	Data collection method	Measurement items	Comments
Eurobarometer 64.3. Special Eurobarometer 246: health and food (27)	All 27 EU Member States	2006	15+	Face-to-face interview	<p>Six items from IPAQ short:</p> <ol style="list-style-type: none"> Days on which VPA was reported in the last 7 days Duration of VPA on days when VPA was reported (average in minutes) Days on which MPA was reported in the last 7 days Duration of MPA on days when MPA was reported (average in minutes) Frequency of walking for at least 10 minutes at a time (in the last 7 days) Duration of walking on days when at least 10 minutes of walking were reported (average in minutes) <p>Additionally:</p> <ol style="list-style-type: none"> Average time spent sitting on a usual day Frequency of physical activity at work in the last 7 days (a lot/some/little or none) Frequency of physical activity when moving from place to place in the last 7 days (a lot/some/little or none) Frequency of physical activity when working in and around the house in the last 7 days (a lot/some/little or none) Frequency of physical activity in recreation, sport and leisure-time activities in the last 7 days (a lot/some/little or none) 	The seventh item is slightly different from the item included in IPAQ short, which asks for time spent sitting on a usual weekday during the last 7 days; items 8–11 are additional ones
Eurobarometer 67.3. Special Eurobarometer 283: health and long-term care in the EU (28)	All 27 EU Member States	2007	15+	Face-to-face interview	<ol style="list-style-type: none"> Frequency of performing exercises 	

Survey name	Participating EU countries	Survey year	Age range (years)	Data collection method	Measurement items	Comments
Eurobarometer 72.3 Special Eurobarometer 334: sport and physical activity (29)	All 27 EU Member States	2009	15+	Face-to-face interview	<ol style="list-style-type: none"> 1. Frequency of exercise/sport per week 2. Frequency of physical activity outside sport per week (cycling, walking, dancing, moving from one place to another) 3. Place where sport/physical activity is undertaken 4. Motivation for engaging in sport/physical activity 5. Motivation for not engaging in sport/physical activity 6. Member of sport or recreational physical activity club 	
EHIS – European Health Interview Survey (30)	All 27 EU Member States	2007–2009	15+	Interviewer-administered questionnaire	<p><i>Three items from IPAQ short:</i></p> <ol style="list-style-type: none"> 1. Days on which VPA was reported in the last 7 days 2. Days on which MPA was reported in the last 7 days 3. Frequency of walking for at least 10 minutes at a time (in the last 7 days) <p><i>Additional:</i></p> <ol style="list-style-type: none"> 4. Time spent doing VPA in the last 7 days 5. Time spent doing MPA in the last 7 days 6. Time spent walking in the last 7 days 	The three last items are slightly different than those included in IPAQ short, which asks for the duration of physical activity on days when physical activity is reported (average in minutes), while EHIS asks for total time spent doing physical activity in the last 7 days

Table 2. Overview of national surveys reporting on physical activity patterns and levels

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
Austria	Health Interview Survey (31)	2006	15+	Face-to-face interview	<p>Seven items from IPAQ-short:</p> <ol style="list-style-type: none"> 1. Days on which VPA for at least 10 minutes at a time was reported in the last 7 days 2. Duration of VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) 3. Days on which MPA for at least 10 minutes at a time was reported in the last 7 days 4. Duration of MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) 5. Frequency of walking for at least 10 minutes at a time (in the last 7 days) 6. Duration of walking on days when at least 10 minutes of walking were reported (average in minutes) 7. Time spent sitting on an average weekday (in the last 7 days) <p>Additionally:</p> <ol style="list-style-type: none"> 8. Total time spent on VPA in the last 7 days 9. Total time spent on MPA in the last 7 days 10. Total time spent walking in the last 7 days 11. Description of leisure-time activities (hard training and competitive sport more than once a week/jogging and other recreational sports or heavy gardening at least 4 hours a week/jogging and other recreational sports or heavy gardening less than 4 hours a week/walking, cycling or other light activities at least 4 hours a week/walking, cycling or other light activities less than 4 hours a week/reading, watching TV or other sedentary activities) 12. Days per week engaged in any regular activity (jogging, cycling) long enough to work up sweat

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
Belgium	Health Interview Survey (32–35)	1997 2001 2004 2008	15+	Interviewer-administered/self-administered questionnaire	<p>1997</p> <ol style="list-style-type: none"> 1. Description of leisure time during the last year 2. Participation in leisure-time activities that work up sweat at least once a week <p>2001/2004/2008</p> <p>Seven items from IPAQ short:</p> <ol style="list-style-type: none"> 1. Days on which VPA for at least 10 minutes at a time was reported in the last 7 days 2. Duration of VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) 3. Days on which MPA for at least 10 minutes at a time was reported in the last 7 days 4. Duration of MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) 5. Frequency of walking for at least 10 minutes at a time (in the last 7 days) 6. Duration of walking on days when at least 10 minutes of walking were reported (average in minutes) 7. Time spent sitting on an average weekday (in the last 7 days) <p>Additionally:</p> <ol style="list-style-type: none"> 8. Pace of walking (vigorous/moderate/slow) 9. Description of leisure time during the last year 10. Participation in leisure-time activities that work up sweat at least once a week
Bulgaria	National Survey on Nutrition and Nutritional Status of Schoolchildren in Bulgaria (36)	1998	7–19	Face-to-face interview	<ol style="list-style-type: none"> 1. Leisure-time MVPA in schoolchildren 2. Time spent in MVPA during leisure time in schoolchildren (hours/week)

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
	National Survey on Dietary Intake and Nutritional Status of Bulgarian Population (37)	2004	7+	Face-to-face interview	<ol style="list-style-type: none"> 1. Average time in hours spent sitting on a usual day 2. Frequency of walking for at least 30 minutes at a time (in the last 7 days) 3. Usual duration of walking at a time reported (average in hours) 4. Frequency and usual duration of excursions at weekends for a month 5. Frequency of physical activities at school (in the last 7 days) 6. Frequency and usual duration of MVPA in the last 7 days
	National Survey on Nutrition of Infants and Children Under 5 Years and Family and Child Rearing Practices in Bulgaria (38)	2007	1–4	Face-to-face interview	<ol style="list-style-type: none"> 1. Time spent doing physical activity per week (hours per day at home/kindergarten, hours per day outside) 2. Time spent watching TV per week (frequency of TV watching per week, duration in hours per day)
	National survey on behavioural risk factors among population aged 25–64 (39)	2007	25–64	Face-to-face interview	<ol style="list-style-type: none"> 1. Leisure-time physical activity 2. Workplace physical activity 3. Times per week spent on MVPA

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
Cyprus	Childhood obesity in Cyprus (40)	1999–2000	6–17	Postal questionnaire (completed by either the parent(s) alone in the case of younger children or with the aid of the subjects in the case of children attending secondary school)	<ol style="list-style-type: none"> 1. Participation in specific sports activities 2. Time spent doing specific sports activity per week 3. Time spent doing other activities than sports per week 4. Frequency of strenuous exercise sessions, i.e. number of sessions per week of moderate or intense exercise for at least 20 minutes (15 minutes for children younger than 10 years) that caused the child to sweat 5. Time spent playing computer or videogames per week 6. Time spent watching television per weekday
	CYKIDS Study (41)	2005	9–13	School-based self-administered questionnaire	<ol style="list-style-type: none"> 1. Frequency and duration of everyday physical and sedentary activities on weekdays, weekends and on the day prior to the completion of the questionnaire, using an eight-level scale ranging from 0 to more than 8 hours per day or week 2. Time spent on individual physical activities assessed based on a four-level scale ranging from 0 to more than 6 times per week
Czech Republic	Sample Survey of the Health Status of the Czech Population (42–45)	1993 1996 1999 2002	15+	Face-to-face interview	<ol style="list-style-type: none"> 1. Days on which one engaged in hard training or competitive sports for more than 10 minutes in the last 7 days 2. Total time spent doing hard training or competitive sports for more than 10 minutes in the last 7 days 3. Days on which one engaged in jogging, other recreational sports, heavy gardening or housework for more than 10 minutes in the last 7 days 4. Total time spent jogging, doing other recreational sports, heavy gardening or housework for more than 10 minutes in the last 7 days 5. Days on which one engaged in walking, cycling or other light activities for more than 10 minutes in the last 7 days 6. Total time spent walking, cycling or doing other light activities for more than 10 minutes in the last 7 days 7. Days on which one engaged in reading, watching TV or doing other sedentary activities for more than 10 minutes in the last 7 days 8. Total time spent reading, watching TV or doing other sedentary activities for more than 10 minutes in the last 7 days 9. Intensity of physical activity at work (1. hard, physically difficult work; 2. easy, physically less difficult work; 3. sedentary, physically not difficult work; 4. unemployed)

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
Denmark	The Danish Health and Morbidity Survey (46–48)	1987 1994 2000	16+	Interviewer-administered/self-administered questionnaire	1. Minutes spent during work or free time on physical activities that make you at least a little out of breath on each day of the previous week
	Danish Health Interview Survey (49–53)	1987 1994 2000 2005	16+	Face-to-face interview	1. Description of leisure-time physical activity during the last year (heavy exercise and competitive sports regularly and several times a week/exercise or heavy gardening at least 4 hours a week/ walking, cycling or other light exercise at least 4 hours a week/reading, watching TV or other sedentary activity) 2. Description of physical demand of main occupation (mainly sedentary/largely performed standing or walking/standing or walking plus much lifting or carrying/heavy or rapid work that is strenuous) 3. Time spent walking or cycling as daily transport time to and from work or school (winter/summer)
	Exercise habits of the Danes (54)	2007	7–15	Postal or Internet questionnaire	1. Hours per week engaged in sport or exercise 2. Times per week engaged in sport or exercise 3. Participation in specific sports activities
	Monitoring of young people's lifestyle and daily life (55–61)	2000 2001 2002 2003 2004 2006 2008	16–20	Self-administered questionnaire	1. Active transport 2. Sedentary behaviour 3. Physical activity during leisure time
	The Danish National Survey of Dietary Habits and Physical Activity 2003–2006 (62)	2003–2006	15–75	Self-administered questionnaire	Time spent on: 1. Sleeping 2. Working 3. Transportation 4. Household chores and outdoor housework/garden activities 5. Recreational/exercise activities 6. Time spent sitting during leisure time

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
Estonia	Health Behaviour among Estonian Adults (63–72)	Every two years since 1990	16–64	Postal questionnaire	<ol style="list-style-type: none"> Minutes spent walking or riding a bicycle to and from work, per day (less than 15 minutes a day/15–30 minutes a day/30–60 minutes a day/more than 60 minutes a day/I go to work by car or public transport/I am not working at all or I work at home) Days of physical exercise during leisure time for at least 30 minutes that makes you mildly short of breath or perspire (daily/4–6 times a week/2–3 times a week/once a week/2–3 times a month/a few times a year or less/not able to exercise because of injury or illness) Intensity of physical activity at work (very light, mainly sitting/light, mainly walking/medium, lifting, carrying light loads/heavy, climbing, carrying heavy loads)
	Estonian Health Interview survey (73,74)	1996 2006	15+	Postal questionnaire	<ol style="list-style-type: none"> Participation in competitive and recreational sports
Finland	Health Behaviour and Health among the Finnish Adult Population (75,76)	Yearly since 1978	16–64	Postal questionnaire	<ol style="list-style-type: none"> Minutes spent walking or riding a bicycle to and from work per day (less than 15 minutes a day/15–30 minutes a day/30–60 minutes a day/more than 60 minutes a day/I go to work by car or public transport/I am not working at all or I work at home) Days of physical exercise during leisure time for at least 30 minutes that makes you mildly short of breath or perspire (daily/4–6 times a week/2–3 times a week/once a week/2–3 times a month/a few times a year or less/not able to exercise because of injury or illness) Intensity of physical activity at work (very light, mainly sitting/light, mainly walking/medium, lifting, carrying light loads/heavy, climbing, carrying heavy loads)

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
	Health Examination Survey 2000 (77)	2000	18+	Interviewer-administered questionnaire	<p>Seven items from IPAQ short:</p> <ol style="list-style-type: none"> Days on which VPA for at least 10 minutes at a time was reported in the last 7 days Duration of VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) Days on which MPA for at least 10 minutes at a time was reported in the last 7 days Duration of MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) Frequency of walking for at least 10 minutes at a time (in the last 7 days) Duration of walking on days when at least 10 minutes of walking was reported (average in minutes) Time spent sitting on an average weekday (in the last 7 days) <p>Additionally:</p> <ol style="list-style-type: none"> Time spent sitting on an average weekend day Leisure time activity (frequency, duration, type) Minutes spent on walking/cycling to and from work on a weekday
	The National FINRISK Study (78)	Every fifth year since 1972	25–74	Self-administered questionnaire	<ol style="list-style-type: none"> Intensity of work-related physical activity Duration, intensity and type of leisure-time physical activity Minutes spent on walking/cycling to and from work on a weekday

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
France	Baromètre Santé (79,80)	2005 2008	15–74	Interviewer-administered questionnaire (telephone)	<p>2005</p> <p>Seven items from IPAQ short:</p> <ol style="list-style-type: none"> 1. Days on which VPA for at least 10 minutes at a time was reported in the last 7 days 2. Duration of VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) 3. Days on which MPA for at least 10 minutes at a time was reported in the last 7 days 4. Duration of MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) 5. Frequency of walking for at least 10 minutes at a time (in the last 7 days) 6. Duration of walking on days when at least 10 minutes of walking was reported (average in minutes) 7. Time spent sitting on an average weekday (in the last 7 days) <p>2008</p> <ol style="list-style-type: none"> 1. Days on which work-related VPA for at least 10 minutes at a time was reported in a typical week 2. Duration of work-related VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) 3. Days on which work-related MPA for at least 10 minutes at a time was reported in a typical week 4. Duration of work-related MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) 5. Days on which cycling/walking to and from places for at least 10 minutes at a time was reported in a typical week 6. Duration of cycling/walking to and from places on days when cycling/walking for at least 10 minutes at a time was reported (average in minutes) 7. Days on which leisure-time VPA for at least 10 minutes at a time was reported in a typical week 8. Duration of leisure-time VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) 9. Days on which leisure-time MPA for at least 10 minutes at a time was reported in a typical week 10. Duration of leisure-time MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) 11. Time spent sitting on a typical day (minutes per day)

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
	National survey on nutrition and health (81)	2006-2007	15-74	Face-to-face interview	<p>Seven items from IPAQ short:</p> <ol style="list-style-type: none"> 1. Number of days on which VPA for at least 10 minutes at a time was reported in the last 7 days 2. Duration of VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) 3. Number of days on which MPA for at least 10 minutes at a time was reported in the last 7 days 4. Duration of MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) 5. Frequency of walking for at least 10 minutes at a time (in the last 7 days) 6. Average time spent walking on days when at least 10 minutes were reported 7. Time spent sitting during a weekday in the last 7 days

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
	National Survey of Individual Food Consumption (82)	2006–2007	18–79, 15–17, 11–14, 3–10	Face-to-face interview	<p>18–79 years</p> <p><i>Seven items from IPAQ short:</i></p> <ol style="list-style-type: none"> 1. Number of days on which VPA for at least 10 minutes at a time was reported in the last 7 days 2. Duration of VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) 3. Number of days on which MPA for at least 10 minutes at a time was reported in the last 7 days 4. Duration of MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) 5. Frequency of walking for at least 10 minutes at a time (in the last 7 days) 6. Average time spent walking on days when at least 10 minutes of walking was reported (average in minutes) 7. Time spent sitting during a weekday in the last 7 days <p><i>Additionally:</i></p> <ol style="list-style-type: none"> 8. Time spent watching TV (or DVDs) in the last 7 days: average on both working days and non-working days 9. Time spent using a computer (leisure time) or playing video games in the last 7 days: average on both working days and non-working days <p>15–17 years</p> <p><i>Seven items from IPAQ short:</i></p> <ol style="list-style-type: none"> 1. Number of days on which VPA for at least 10 minutes at a time was reported in the last 7 days 2. Duration of VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) 3. Number of days on which MPA for at least 10 minutes at a time was reported in the last 7 days 4. Duration of MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) 5. Frequency of walking for at least 10 minutes at a time (in the last 7 days) 6. Average time spent walking on days when at least 10 minutes were reported 7. Time spent sitting during a weekday in the last 7 days <p><i>Additionally:</i></p> <ol style="list-style-type: none"> 8. Time spent watching TV (or DVDs) in the last 7 days: average on both working (or studying) days and non-working days 9. Time spent using a computer (leisure time) or playing video games in the last 7 days: average on both working (or studying) days and non-working days

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
					<p>11–14 years</p> <ol style="list-style-type: none"> Number of days on which VPA for at least 20 minutes at a time was reported in the last 7 days Number of days on which MPA for at least 30 minutes at a time was reported in the last 7 days Number of days of enrolment in sports at school in the last 7 days and duration (average in minutes) Mode of transport generally used for commuting to school Time spent watching TV (or DVDs) in the last 7 days: average on both school and non-school days Time spent using a computer (leisure time) or playing video games in the last 7 days: average on both school and non-school days <p>3–10 years</p> <ol style="list-style-type: none"> Number of days on which the child has played outside after school (playgrounds) in the last 7 days, taking into account only schooldays Number of days of sports or hard training outside school in the last 7 days Number of days of enrolment in sports competitions outside school in the last 7 days Mode of transport generally used for commuting to school Enrolment in sports at school in the last 7 days : yes/no Time spent watching TV (or DVDs) in the last 7 days: average on both school and non-school days Time spent using a computer (leisure time) or playing video games in the last 7 days: average on both school and non-school days
Germany	Federal Health Survey (83)	1998	18+	Interviewer-administered questionnaire	<ol style="list-style-type: none"> Participation in sports in hours per week (no participation/<1 hour/1–2 hours/2–4 hours/>4 hours) Participation in sports, other strenuous activities that make you sweat (daily/3–6 times a week/1–2 times a week/seldom (about once a month)/never Time spent on sports, other strenuous activities that make you sweat (<10 min/10–20 min/20–30 min/>30 min) Time spent during weekdays/weekend days (24 hours) on sleeping/resting, sitting, light activities, moderate activities, strenuous activities
	Telephone Health Survey (84)	2003	18+	Interviewer-administered questionnaire	<ol style="list-style-type: none"> Participation in sports in the last three months

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
	Health in Germany (85)	2008–2009	18+	Interviewer-administered questionnaire	<ol style="list-style-type: none"> 1. Days per week of physical activity (that works up sweat or gets you out of breath) 2. Time spent on physical activity on active days (<10 minutes/10 minutes to <30 minutes/30 minutes to <60 minutes/>60 minutes) 3. Participation in sports in the last three months 4. Time spent on sports (<1 hour per week/up to 1, 2 or 4 hours per week/>4 hours per week)
	German Health Interview and Examination Survey for Adults (86)	2008–2011	18–79	Self-administered questionnaire	<ol style="list-style-type: none"> 1. Days per week of physical activity (that works up sweat or gets you out of breath) 2. Time spent on physical activity on active days (<10 minutes/10 minutes to <30 minutes/30 minutes to <60 minutes/>60 minutes) 3. Participation in sports in the last three months 4. Time spent on sports (<1 hour per week/up to 1, 2 or 4 hours per week/>4 hours per week)
	German Health Interview and Examination Survey for Children and Adolescents (87)	2003–2006	0–17	Self-administered questionnaire (for children younger than 10 years, a questionnaire is completed by the parent/caregiver; for children over 10 years, both the parent/caregiver and the child receive a questionnaire for completion)	<ol style="list-style-type: none"> 1. Physical activity (start sweating or get out of breath) in leisure time (e.g. sports, cycling); never/ every day/3–5 times a week/1–2 times a week/1–2 times a month) 2. Total hours of physical activity per week

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
Greece	European Prospective Investigation into Cancer and Nutrition Greek cohort (88)	1994–1999	25+	Face-to-face interview	<ol style="list-style-type: none"> Hours per week walking Hours per week cycling Hours per week gardening Hours per week doing housework Hours per week doing other physical exercise (keep fit, aerobics, swimming, jogging) Hours per week VPA Description of physical demand of current occupation (sedentary/standing/manual work/heavy manual) Number of years engaged in current occupation Hours per day engaged in current occupation
Hungary	National Health Interview Survey (89,90)	2000 2003	18+	Interviewer-administered questionnaire	<p>2000</p> <ol style="list-style-type: none"> Physical activity for at least 10 minutes that quickens the heartbeat and cause sweating (yes/no) Frequency of such physical activity in the past 12 months <p>2003</p> <p>Six items from IPAQ short:</p> <ol style="list-style-type: none"> Days on which VPA for at least 10 minutes at a time was reported in the last 7 days Duration of VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) Days on which MPA for at least 10 minutes at a time was reported in the last 7 days Duration of MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) Frequency of walking for at least 10 minutes at a time (in the last 7 days) Duration of walking on days when at least 10 minutes of walking was reported (average in minutes)

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
Ireland	National Survey of Lifestyle, Attitudes and Nutrition (91–93)	1998 2002 2007	18+	Interviewer-administered questionnaire	1998/2002/2007 1. Engaging in some form of regular physical exercise (mild exercise most days of the week/ moderate exercise three or more days a week/strenuous exercise three or more days a week) 2. Engaging in mild/moderate/strenuous physical exercise for at least 20 minutes most days of the week 3. Frequency of walking for 30 minutes or more per week 2007 <i>Also includes seven items from IPAQ short:</i> 1. Days on which VPA for at least 10 minutes at a time was reported in the last 7 days 2. Duration of VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) 3. Days on which MPA for at least 10 minutes at a time was reported in the last 7 days 4. Duration of MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) 5. Frequency of walking for at least 10 minutes at a time (in the last 7 days) 6. Duration of walking on days when at least 10 minutes of walking was reported (average in minutes) 7. Time spent sitting on an average weekday (in the last 7 days)
	National Adult Nutrition Survey (94)	2007 2012	18+	Self-administered questionnaire Objective measurement of physical activity levels using an actigraph	1. Usual mode of transport and distance (apart from going to work) 2. Time spent watching TV or videos on an average weekday/weekend day/holiday in the last year 3. Times per day climbing the stairs (approx. 10 steps) over the last 12 months 4. Average hours per week spent on specific activities in and around the house 5. Average hours per week spent on work-related activities (sitting, standing, carrying heavy items) 6. Times per day climbing the stairs at work (approx. 10 steps) over the last 12 months 7. Kneeling and squatting at work for more than one hour per day 8. Usual mode of transport and distance to work 9. Times and average hours per week spent on specific leisure time activities

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
	National Children's Food Survey (95)	2005	5–12	Self-administered questionnaire Objective measurement of physical activity levels using an accelerometer	<i>The children's questionnaire:</i> <ol style="list-style-type: none"> 1. Travel from and to school in the morning and afternoon 2. Activities during lunch time or other school breaks 3. Time spent watching TV or videos on an average weekday/weekend day/holiday in the last year 4. Time spent playing computer games on an average weekday/weekend day/holiday in the last year 5. Times and average hours per week spent on specific leisure time activities <i>The parents' questionnaire:</i> <ol style="list-style-type: none"> 1. Usual mode of transport to work and other than work 2. Time spent watching TV or videos on an average weekday/weekend day/holiday in the last year 3. Average hours per week spent on work-related activities (sitting, standing, carrying heavy items) 4. Times and average hours per week spent on specific leisure time activities
	National Teen's Food Survey (96)	2008	13–17	Self-administered questionnaire Objective measurement of physical activity levels using an accelerometer	<i>The teens' questionnaire:</i> <ol style="list-style-type: none"> 1. Travel from and to school in the morning and afternoon 2. Activities during lunch time 3. Number of times per week spent in organized school sport activities 4. Time spent watching TV or videos on an average weekday/weekend day/holiday in the last year 5. Time spent playing computer games on an average weekday/weekend day/holiday in the last year 6. Average hours per week spent on specific activities in and around the house 7. Average hours per week spent on work-related activities (sitting, standing, carrying heavy items) 8. Times and average hours per week spent on specific leisure time activities <i>The parents' questionnaire:</i> <ol style="list-style-type: none"> 1. Usual mode of transport to work and other than work 2. Time spent watching TV or videos on an average weekday/weekend day/holiday in the last year 3. Average hours per week spent on specific activities in and around the house 4. Average hours per week spent on work-related activities (sitting, standing, carrying heavy items) 5. Times and average hours per week spent on specific leisure time activities

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
	Growing up in Ireland (97)	2009	9	Interviewer-administered questionnaire	<p><i>Reported by child:</i></p> <ol style="list-style-type: none"> 1. Days on which MVPA for at least 60 minutes a day is reported in the last 7 days <p><i>Reported by caregiver:</i></p> <ol style="list-style-type: none"> 1. Days on which VPA for at least 20 minutes a day is performed in the last 14 days 2. Days on which MPA for at least 20 minutes a day is performed in the last 14 days
Italy	Italian Behaviour Risk Factor Surveillance System (98)	2005 2006 2007 2008	18–65	Interviewer-administered questionnaire	<ol style="list-style-type: none"> 1. Intensity of physical activity at work (vigorous, moderate, mostly standing/sitting) 2. Number of days with VPA 3. Time in minutes spent in VPA on days when it is reported 4. Number of days with MPA 5. Time in minutes spent in MPA on days when it is reported 6. Perception of physical activity over the last 30 days (more than enough/enough/not enough/hardly any) 7. Advice on physical activity received over the last 12 months (from doctor or nurse)
	Okkio alla salute (promotion of healthy lifestyle and growth in primary school children) (99)	2008 2010	8	Self-administered questionnaire (and additional self-administered questionnaires to teachers and parents)	<ol style="list-style-type: none"> 1. Mode of transport used to come to school today (bus/on foot/bicycle/car/other) 2. Playing outside in the afternoon before the survey (yes/no) 3. Organized sports activities in the afternoon before the survey (yes/no) 4. Playing video or computer games: in the afternoon before the survey (yes/no); in the evening before the survey (yes/no) 5. TV watching: in the afternoon before the survey (yes/no); in the evening before the survey (yes/no); on the morning of the survey (yes/no) <p><i>Reported through parents' questionnaire:</i></p> <ol style="list-style-type: none"> 1. Number of days doing physical activity in average week 2. Impression of time dedicated to physical activity by child (little/average/a lot) 3. Average time spent per day doing homework 4. Average time spent per day playing video or computer games 5. Average time spent per day watching TV 6. TV set in the child's room (yes/no)

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
Latvia	Health Behaviour among Latvian Adults (100–104)	Every two years since 1998	16–64	Postal questionnaire	<ol style="list-style-type: none"> Minutes spent walking or cycling to and from work per day (<15 minutes a day/15–30 minutes a day/30–60 minutes a day/>60 minutes a day/go to work by car or public transport/not working at all or work at home) Days of physical exercise during leisure time for at least 30 minutes that makes you mildly short of breath or perspire (daily/4–6 times a week/2–3 times a week/once a week/2–3 times a month/a few times a year or less/not able to exercise because of injury or illness) Intensity of physical activity at work (very light, mainly sitting/light, mainly walking/medium, lifting, carrying light loads/heavy, climbing, carrying heavy loads)
Lithuania	Health Behaviour among Lithuanian Adults (105–109)	Every two years since 1994	16–64	Postal questionnaire	<ol style="list-style-type: none"> Minutes spent walking or cycling to and from work per day (<15 minutes a day/15–30 minutes a day/30–60 minutes a day/>60 minutes a day/go to work by car or public transport/am not working at all or work at home) Days of physical exercise during leisure time for at least 30 minutes that makes you mildly short of breath or perspire (daily/4–6 times a week/2–3 times a week/once a week/2–3 times a month/a few times a year or less/not able to exercise because of injury or illness) Intensity of physical activity at work (very light, mainly sitting/light, mainly walking/medium, lifting, carrying light loads/heavy, climbing, carrying heavy loads)
Luxembourg	The well-being of young people in Luxembourg: 5th and 6th grades (110,111)	1999 2002	11, 12	Self-administered questionnaire	<ol style="list-style-type: none"> Hours per week participating in sports Times engaging in sports outside physical education Hours per week spent on sports outside physical education Hours per day watching TV Hours per week playing computer games
	Health, motor skills, physical activity and sport for children and young people in Luxembourg (112)	2004 2008	9, 14, 18	Self-administered questionnaire	<ol style="list-style-type: none"> Hours per week participating in sports Times engaging in sports outside physical education Hours per week spent on sports outside physical education Hours per day watching TV Hours per week playing computer games

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
Malta	The first National Health Interview Survey (113)	2002	16+	Interviewer-administered questionnaire	<p>Seven items from IPAQ short:</p> <ol style="list-style-type: none"> 1. Days on which VPA for at least 10 minutes at a time was reported in the last 7 days 2. Duration of VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) 3. Days on which MPA for at least 10 minutes at a time was reported in the last 7 days 4. Duration of MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) 5. Frequency of walking for at least 10 minutes at a time (in the last 7 days) 6. Duration of walking on days when at least 10 minutes of walking was reported (average in minutes) 7. Time spent sitting on an average weekday (in the last 7 days) <p>Additionally:</p> <ol style="list-style-type: none"> 8. Engaging at least once a week in any regular activity such as jogging or cycling for long enough to work up a sweat 9. Number of days engaged in this activity 10. Type of activity
	Healthy Students Healthy Lives: the health of Maltese university students (114)	2008	University students (>20, 20–25, <25)	Self-administered questionnaire	<ol style="list-style-type: none"> 1. Frequency of participation in vigorous exercise for at least 20 minutes or moderate exercise for at least 30 minutes (every day/2–4 times per week/once a week/rarely or never)
Netherlands	Permanent Quality of Life Survey (115)	Yearly since 1997	12+	Interviewer-administered questionnaire	<p>Frequency, duration and intensity of the following activities:</p> <ol style="list-style-type: none"> 1. Transport-related activities to and from work/school (times per week, minutes per day) 2. Activities at work/school (hours per week) 3. Household-related activities (times per week, minutes per day) 4. Leisure-time activities (walking/cycling/gardening/household chores: times per week, minutes per day, intensity) 5. Sports activities (times per week, minutes per day, intensity)

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
	Obin Survey: Injuries and Physical Activities Netherlands (116)	Continuously since 2000 as a continuation of previous surveys in 1986–1987, 1992–1993 and 1997–1998	4+	Interviewer-administered questionnaire (telephone-reported by parents/caregiver when selected person was between 4 and 11 years old)	<ol style="list-style-type: none"> 1. Frequency of physical activity of at least 30 minutes per day during a random week in the summer/winter 2. Frequency of physical activity of at least 60 minutes per day during a random week in the summer/winter 3. Frequency of leisure-time activities during a random week in the summer/winter that are vigorous enough to make one sweat 4. Intensity and duration of specific activities (walking/cycling to work, physical activities at work, walking in leisure time, cycling in leisure time, gardening/household chores/sports) on the previous day 5. Hours spent sitting at work/school on an average weekday (including transport to and from work/school) 6. Hours spent sitting outside work and school hours, excluding sleeping 7. Hours spent sitting during a free day, excluding sleeping 8. Hours spent in bed during an average night
	Local and National Health Monitor for Children's Health (117)	Continuous study with quarterly reports since 2000	2–4	Interviewer-administered questionnaire (telephone)	<p>Reported over the last 7 days:</p> <ol style="list-style-type: none"> 1. Number of days watching TV/videos/DVDs 2. Average time per day watching TV/videos/DVDs 3. Number of days playing computer games 4. Average time per day playing computer games 5. Number of days playing outside 6. Average time per day playing outside 7. Frequency per week of participating in activities such as swimming, toddler gym and dancing
			4–12	Postal or internet questionnaire (reported by parents/caregiver)	<p>Reported over the last 7 days:</p> <ol style="list-style-type: none"> 1. Number of days cycling/walking to school 2. Average time per day spent cycling/walking to school 3. Frequency per week of participation in sports at school 4. Member of sports club 5. Frequency of participation in sports activities at a club outside school in the last week 6. Average time per day participating in sport 7. Number of days watching TV/videos/DVDs 8. Average time per day watching TV/videos/DVDs in the last week 9. Number of days spending time on the computer/Internet 10. Average time per day spending time on the computer/Internet 11. Number of days playing outside (excluding time spent at school) 12. Average time per day playing outside (excluding time spent at school)

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
			12–19	Postal or Internet questionnaire	<p>Activities at work/school and in and around the house in the last 7 days:</p> <ol style="list-style-type: none"> 1. Number of days spent doing light/moderate/strenuous activities at work/school 2. Average time spent doing light/moderate/strenuous activities at work/school 3. Number of days spent doing light/moderate/strenuous activities in and around the house 4. Average time spent doing light/moderate/strenuous activities in and around the house <p>Leisure time in the last 7 days:</p> <ol style="list-style-type: none"> 5. Number of days cycling/walking 6. Average time spent cycling/walking 7. Pace of cycling/walking 8. Number of days spent gardening or performing household jobs 9. Average time spent gardening or performing household jobs 10. Pace of gardening or performing household jobs 11. Number of days watching TV/spending time at the computer/reading a book/sitting 12. Average time spent watching TV/spending time at the computer/reading a book/sitting <p>Other:</p> <ol style="list-style-type: none"> 13. General participation in sports (specify type) 14. Number of days participating in specific sports activities 15. Average time spent doing specific sports activity 16. Pace of sports activity 17. Number of days spent cycling/walking/cleaning/doing sports for at least 1 hour in the last week
	Youth Monitor StatLine (118)	2000–2007	0–25	Telephone or Internet questionnaire	<ol style="list-style-type: none"> 1. Reaching recommended levels of physical activity
Poland	Health Population Status in Poland (119,120)	1996 2004	0–14 15+	Interviewer-administered questionnaire	<ol style="list-style-type: none"> 1. Leisure time (children and adults) 2. Physical activity (schoolchildren)

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
Portugal	National Health Interview Survey (121)	1987 1995-1996 1998-1999 2003 2005	15+	Face-to-face interview	2005 <i>Seven items from IPAQ short:</i> 1. Days on which VPA for at least 10 minutes at a time was reported in the last 7 days 2. Duration of VPA on days when VPA for at least 10 minutes at a time was reported (average in minutes) 3. Days on which MPA for at least 10 minutes at a time was reported in the last 7 days 4. Duration of MPA on days when MPA for at least 10 minutes at a time was reported (average in minutes) 5. Frequency of walking for at least 10 minutes at a time (in the last 7 days) 6. Duration of walking on days when at least 10 minutes of walking was reported (average in minutes) 7. Time spent sitting on an average weekday (in the last 7 days) <i>Additionally:</i> 8. Total time spent on VPA in the last 7 days 9. Total time spent on MPA in the last 7 days 10. Total time spent walking in the last 7 days 11. Time spent sitting last Wednesday No information identified for the other survey years
Romania	No national survey was identified				
Slovakia	No national survey was identified				

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
Slovenia	Slovenian Public Opinion (122)	2010	18+	Face-to-face interview	<ol style="list-style-type: none"> 1. Participation in sport and sports activities in leisure time (not participating in sport/1 to several times a year/1–3 times a month/once a week/2–3 times a week/4–6 times a week/every day) 2. Time spent on sport and sports activities in leisure time during the week (1–2 hours a week/3–5 hours a week/>5 hours a week) 3. Modes of sport activities (organized competitive/organized recreational (regular/irregular)/not organized recreational (regular/irregular)) 4. Types of sports activity (type of activity/participation in specific sports activity in last 12 months/organized or not organized participation)
Spain	National Health Survey (123)	1987 1993 1995 1997 2001 2003 2006	16+	Face-to-face interview	<p>2006</p> <ol style="list-style-type: none"> 1. Description of main activities at workplace, education centre, home (seated most of the day/standing up without moving around a lot/walking or carrying around a bit/moving around frequently/doing tasks requiring a great deal of physical effort) 2. Any participation in physical activity during free time 3. Participation in regular physical activity like walking, doing sports, going to the gym during free time 4. Times in the last two weeks one has done light physical activities for over 20 minutes 5. Times in the last two weeks one has done moderate physical activities for over 20 minutes 6. Times in the last two weeks one has done intense physical activities for over 20 minutes <p>No information identified for the other survey years</p>
			0–15	Reported by parents	<ol style="list-style-type: none"> 1. Frequency of performing any kind of physical activity in free time (almost completely sedentary/some kind of physical activity or sport/physical activity several times a week/sports or training several times a week) 2. Watching TV every day or almost every day 3. Time spent per day watching TV on weekends/during weekdays 4. Playing videogames or using the computer/Internet every day or almost every day 5. Time spent per day playing with videogames or using the computer/Internet

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
	Sports habits (124)	2005	15–74	Face-to-face interview	<ol style="list-style-type: none"> 1. General participation in sports (specify type) 2. Number of days participating in specific sports activities 3. Average time spent doing specific sports activity 4. Pace of sports activity 5. Any participation in outdoor physical activity or sport 6. Time spent on walking or fitness 7. Average time spent doing physical activities at work
Sweden	Swedish survey of living conditions (125–129)	Yearly since 1975	15–75	Interviewer-administered questionnaire	<ol style="list-style-type: none"> 1. Frequency of practising any sports or outdoor or exercise activities (several times a week/once a week/1–3 times a month/less often/never)
	National Survey of Public Health (Health on Equal Terms) (130)	Yearly since 2004	16–84	Postal questionnaire	<ol style="list-style-type: none"> 1. Intensity of physical activity during free time (sedentary/moderate exercise/moderate regular exercise/regular exercise and training) 2. Hours a week of moderate strenuous activities (>5 hours/3–5 hours/1–3 hours/<1 hour/none)
	Physical activity and inactivity in an adult population assessed by accelerometer (131)	2007	18–69	Accelerometer	

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
United Kingdom, England	Health Survey for England (132)	Yearly since 1995	2–15	Interviewer-administered questionnaire	<p><i>Reported by caregiver for 2–12-year-olds:</i></p> <ol style="list-style-type: none"> 1. Frequency of walking continuously for at least 5 minutes in the last week 2. Minutes spent walking each time one walked for at least 5 minutes 3. Description of walking pace 4. Days in the last week one participated in gardening or housework that involved pulling and pushing (like vacuum cleaning, mowing grass, sweeping leaves) for at least 15 minutes at a time (children over 8 years) 5. Minutes spent on gardening or housework each time one is involved in an activity of this kind for at least 15 minutes (children over 8 years) 6. Participation in sports or exercise activities apart from activities that are part of school lessons 7. Frequency of sports activities on weekdays/weekend days in the last week (including activities at a playgroup/nursery, excluding school activities) 8. Average minutes spent on sport activities on weekdays/weekend days in the last week (including activities at a playgroup/nursery, excluding school activities) 9. Frequency of specific activities on weekdays/weekend days in the last week 10. Average minutes spent on specific activities on weekdays/weekend days in the last week 11. Total days on which one undertook any of the above-mentioned activities 12. Minutes spent sitting down doing specific things on weekdays/weekend days
		Yearly since 1991	16+	Interviewer-administered questionnaire	<ol style="list-style-type: none"> 1. Level of activity at work (very active/fairly active/not very active/not at all active) 2. Days in the last 4 weeks on which one participated in heavy housework for at least 30 minutes at a time 3. Minutes spent on heavy housework each time one is involved in an activity of this kind for at least 30 minutes 4. Days in the last 4 weeks on which one participated in heavy gardening, do-it-yourself activities or building for at least 30 minutes at a time 5. Minutes spent on heavy gardening, do-it-yourself activities or building each time one is involved in an activity of this kind for at least 30 minutes 6. Frequency of walking continuously for at least 5 minutes in the last 4 weeks 7. Days on which one walked for at least 30 minutes in the last 4 weeks 8. Days on which one walked for at least 15 minutes in the last 4 weeks 9. Minutes spent walking each time one walked for at least 15 minutes 10. Description of walking pace 11. Participation in specific activities in the last 4 weeks 12. Frequency of doing specific activity for at least 15 minutes at a time (on separate days over the last 4 weeks) 13. Time spent doing specific activity on each day

Country	Survey name	Survey year	Age range (years)	Data collection method	Physical activity measurement items
United Kingdom, Scotland	Scottish Health Survey (133)	1998 2003 2008 2009	2–15	Reported by caregiver for 2–12-year-olds	Based on Health Survey for England children's physical activity module (132)
		1998 2003 2008 2009	16+	Interviewer-administered questionnaire	Based on Health Survey for England adults' physical activity module (132)
United Kingdom, Wales	Welsh Health Survey (134)	2007 2008 2009	4–12	Reported by parents	1. Total time spent exercising/doing physical activities on each day in the last week (none/about half an hour/about an hour/more than an hour)
		2007 2008 2009	13–15	Self-administered questionnaire	1. Total time spent exercising/doing physical activities on each day in the last week (none/about half an hour/about an hour/more than an hour)
		2003–2004 2004–2005 2005–2006 2007 2008 2009	16+	Self-administered questionnaire	<ol style="list-style-type: none"> Days on which light exercise or physical activity done for at least 30 minutes during the last 7 days (e.g. household chores, walking at an average pace, light gardening) Days on which moderate exercise or physical activity done for at least 30 minutes during the last 7 days (e.g. heavy household chores, fast walking, dancing) Days on which vigorous exercise or physical activity done for at least 30 minutes during the last 7 days (e.g. running, jogging, squash)

Data presentation

Data availability

In the EU, data on physical activity and exercise have been collected in different international surveys since 1992, including HBSC, the European Health and Behaviour Survey, EUPASS, the World Health Survey, the SHARE project and different Eurobarometer surveys. In parallel to this, EHIS has begun collecting data on physical activity.

The overview presented in Tables 1 and 2 shows that physical activity data in adults are available for all 27 EU Member States. For Cyprus, Romania and Slovakia, however, no information could be found on national surveys targeting adults. Thus for these three countries, physical activity data were available only through international surveys.

As for children, a national survey was identified for the following EU countries: Bulgaria, Cyprus, Denmark, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Poland, Spain and the United Kingdom (England, Scotland and Wales), while 26 countries participated in the HBSC survey on young people.

Measurement methods used

Surveillance of physical activity can be done either through objective measurements (pedometer, accelerometer) or subjective assessments through self-administered questionnaires or questionnaires that can be administered either by personal or by telephone interview. Almost all international and national surveys identified in this review used subjective assessments.

Of the 25 EU countries for which information about a national survey has been obtained, 7 countries (Austria, Belgium, Finland, France, Ireland, Malta and Portugal) included the 7 items from IPAQ short (assessing frequency and duration of vigorous and moderate physical activity, walking, and frequency of sitting); for international surveys (mostly Eurobarometer surveys), this was the case in all 27 EU countries. As opposed to other world regions, the Global Physical Activity Questionnaire (GPAQ) is not applied by most EU countries; according to currently available information, within the EU it was used only by France.

IPAQ and GPAQ

The two most widely used standardized questionnaire instruments are the IPAQ (135), developed in 1997 as a result of various research projects and the GPAQ (136), developed in 2001 as part of the WHO STEPwise approach to chronic disease risk factor Surveillance (STEPS) programme (137). The two questionnaires are comparable in terms of reliability and validity.

IPAQ exists in a short version, which is recommended for surveillance, and in a long version for research purposes. The most often used short version measures 7 items on the frequency (days per week), duration (minutes) and level of intensity (vigorous, moderate, walking) of physical activity during the last 7 days and also includes an item on frequency and duration of walking. IPAQ long comprises 27 items and covers 5 activity domains: work, transport, home, leisure and sitting. GPAQ comprises 16 items and assesses the frequency, duration and intensity of work- and leisure-time-related physical activity and frequency and duration of transport-related physical activity. Both questionnaires also assess time spent sitting on a typical day.

GPAQ is recommended by WHO as a risk factor data collection tool for physical activity and sedentary behaviour within the concept of STEPS. The Action Plan for the Global Strategy for the Prevention and Control of Noncommunicable Diseases 2008–2013 (6), which was endorsed at the Sixty-first World Health Assembly in May 2008, also underlines the need to provide reliable and standardized data on key NCD risk factors and behavioural patterns, including physical activity, based on the STEPS programme. Currently, 58 countries worldwide have finalized data collection, including one EU Member State (France), and it is envisaged that it will be applied in about 50 more countries.

Physical activity levels across the EU

From this mapping exercise of physical activity sources and methods used, it has become clear that it is currently not possible to compare nationally generated physical activity data across countries, since each individual country used different measures and instruments. Data that allow comparison of physical activity levels across the EU have so far been produced only by international surveys using a standardized way of collecting data.

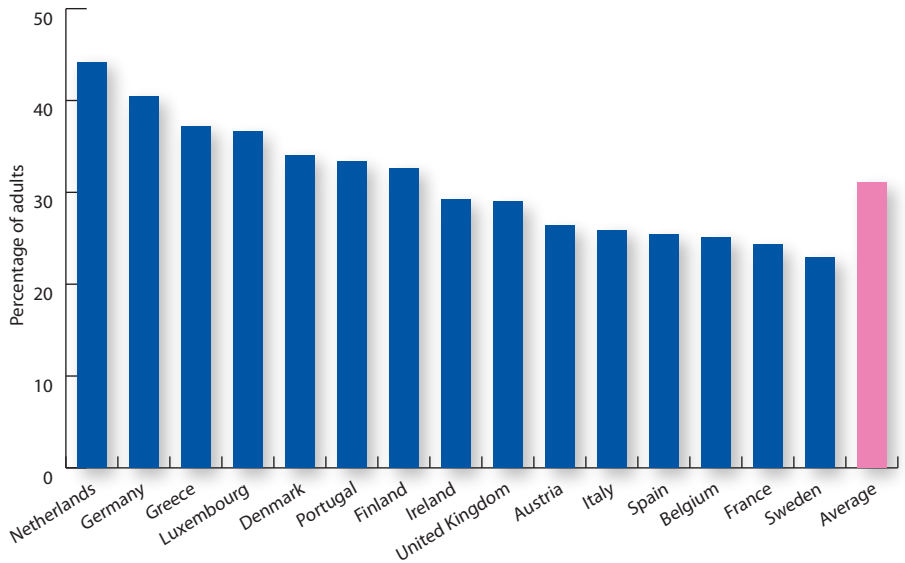
Thus, the data presented below build only on outcomes of the following three European surveys:

- Eurobarometer 58.2 on Physical Activities (2002) (23);
- Eurobarometer 64.3 on Health and Food (2005) for adults (27); and
- HBSC survey (2005/2006) for young people (16).

Adults

In the special Eurobarometer 58.2 on Physical Activities (2002), patterns of physical activity were measured with the IPAQ short questionnaire through personal interviewing in 15 EU countries (23). Sjöström et al. re-analysed the data, defining “sufficient physical activity” as energy expenditure equivalent to 5 times 30 minutes of moderate-intensity activity or 3 times 20 minutes of vigorous activity over 7 days (138). The results of this study showed that two thirds of the study population did not reach recommended levels of physical activity (Fig. 1).

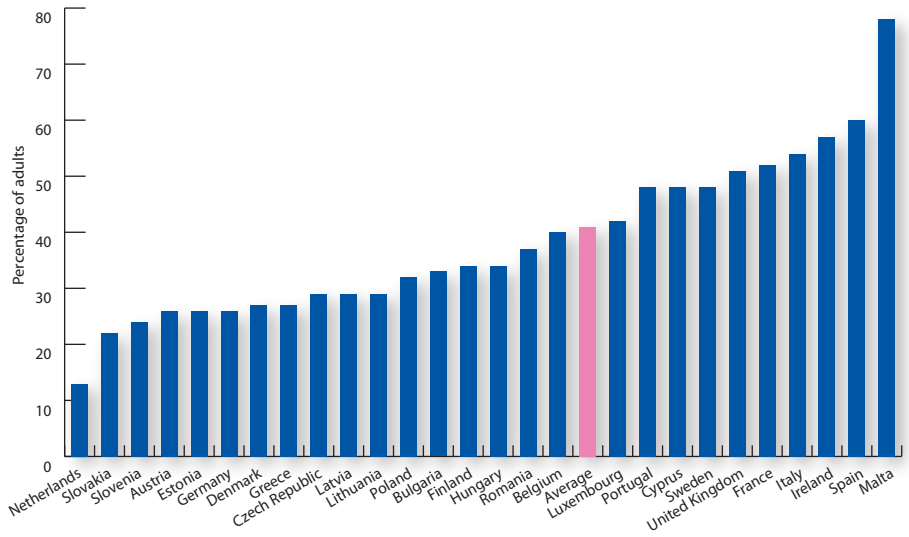
Fig. 1. Proportion of adults (aged ≥15 years) in 15 EU countries classified as sufficiently active, 2002



Source: Sjöström et al. (138).

In the special Eurobarometer 64.3 on Health and Food (2005), the IPAQ short questionnaire was used to map the levels of physical activity addressing all 27 EU countries (27). The survey showed that, across the EU countries, an average of 41% of adults aged 15 and above did not engage in any moderate physical activity in a typical week. This prevalence ranged from 78% in Malta to 13% in the Netherlands (Fig. 2).

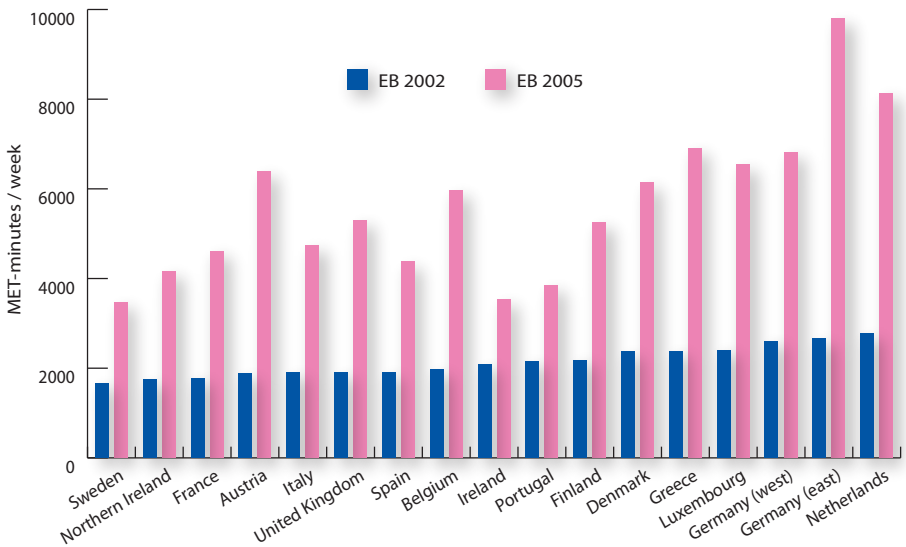
Fig. 2. Proportion of adults (aged ≥15 years) in EU countries not engaging in any moderate-intensity physical activity in the previous week



Source: Eurobarometer (27).

Abu-Omar & Rütten (unpublished data, 2009) re-analysed the results of Eurobarometer 58.2 and Eurobarometer 64.3 using mean total MET (metabolic equivalent)-minutes as a measure (135). The results show an average of 6211 MET-minutes per week for the 27 EU countries included in the Eurobarometer 2005 survey, with a large intercountry variation from 1635 MET-minutes per week in Malta to 9863 MET-minutes per week in the territory of the former German Democratic Republic. When comparing the MET-minutes per week for the 15 EU countries that were included in both the 2002 and 2005 Eurobarometer surveys, substantial differences were found (Fig. 3). In view of the short time between the two surveys, it is unlikely that these differences reflect real changes in population behaviour and they need to be further analysed.

Fig. 3. Mean total MET-minutes per week for 15 EU countries: comparison between Eurobarometer 2002 and Eurobarometer 2005



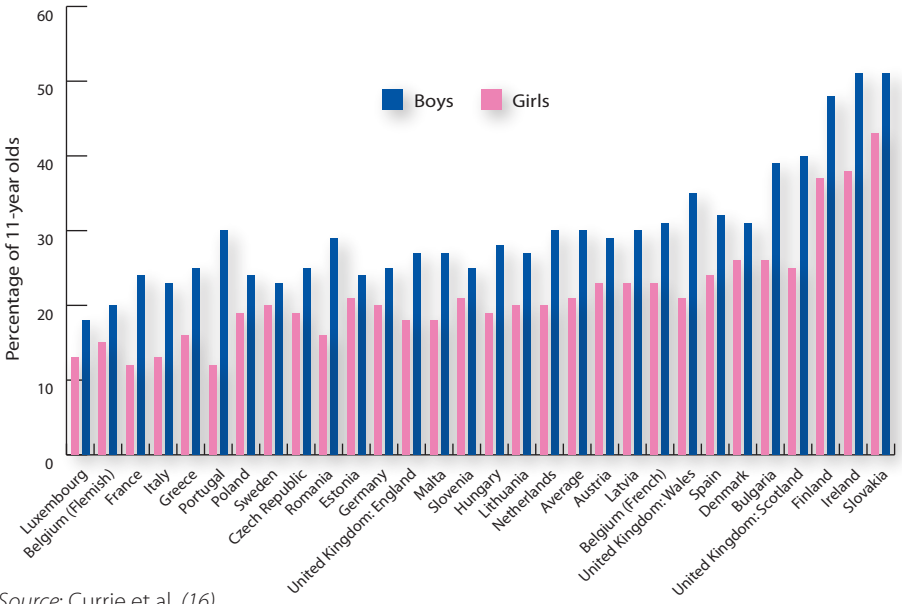
Source: Eurobarometer (23,27) as re-analysed by Abu-Omar & Rütten (unpublished data, 2009).

Young people

For young people, the most recent HBSC survey (2005/2006) is used to give an indication of physical activity levels (16). This international survey uses a written questionnaire to monitor the percentage of children engaging in at least 60 minutes of moderate to vigorous physical activity daily and includes 35 European countries, of which 25 are EU countries.

Fig. 4 shows the percentage of 11-year-old boys and girls per EU country reporting at least one hour of moderate to vigorous activity daily. There are large intercountry differences in reported levels, the prevalence ranging from 43% in Slovakia to 12% in France and Portugal for girls and from 51% in Slovakia and Ireland to 18% in Luxembourg for boys. The survey also assessed the physical activity levels of 13- and 15-year-old girls and boys. In almost all countries, boys and younger children reported themselves to be more active than girls and older children. An indication of a positive development in physical activity levels can be observed when results of the latest HBSC survey (2005/2006) are compared with the 2001/2002 survey.

Fig. 4. Proportion of 11-year-olds in EU countries reporting at least one hour of moderate to vigorous activity daily



Source: Currie et al. (16).

Discussion and challenges

The overall picture on monitoring and surveillance of physical activity in EU countries is patchy. Different physical activity assessment instruments, including different measurement items, were used. Where national surveys are in place, different instruments and measurement items of physical activity and/or inactivity were used. Furthermore, not all the instruments/countries measure physical activity in the same domain(s), such as work, transport and leisure time.

The situation since previous reviews, such as those undertaken for the *The world health report 2002* (4) or by the EUROHIS (139) and EUPASS projects (11), has not changed much: also, this overview revealed that the measurement items used in the national sources/surveys were very diverse and often non-standardized instruments were used, leading to a lack of intercountry comparability.

Similar challenges were also identified in the EUPASS project (1999/2000). This project was designed to contribute to a European health monitoring system and its methodological foundations. One of the project's main purposes was to develop an inventory of national

physical activity surveillance systems to contribute to the establishment of a list of core indicators and optional indicators for health-enhancing physical activity and its determinants.

Despite the variety of measured items used by Member States to assess the physical activity levels and patterns in their population, the items had in common that they could be grouped into four key dimensions that are considered to be fundamental for physical activity measurement: type, frequency, duration and intensity. However, none of the national surveys identified in the EUPASS project covered all four dimensions. Moreover, the national surveys used various definitions of recommendations for physical activity, which was directly related to the use of different measurement items to measure physical activity patterns. Furthermore, the national surveys used different reference periods for the report on the frequency of physical activity (e.g. last 7 days, usual week, last 14 days, last month) and several types of measurement scale were applied in these surveys (nominal, ordinal, interval scales).

Global recommendations on physical activity for health

WHO released in 2010 the Global recommendations on physical activity for health (140) for different age groups, with the overall aim of providing national- and regional-level policy-makers with guidance on the dose–response relationship between the frequency, duration, intensity, type and total amount of physical activity needed for the prevention of NCD.

Age group: 5–17 years

For children and young people, physical activity includes play, games, sports, transportation, chores, recreation, physical education and planned exercise, in the context of family, school and community activities. To improve cardiorespiratory and muscular fitness, bone health, and cardiovascular and metabolic health biomarkers, young people aged 5–17 years should take the following measures.

- At least 60 minutes of moderate to vigorous physical activity should be accumulated daily.
- Amounts of physical activity greater than 60 minutes provide additional health benefits.
- Most of the daily physical activity should be aerobic. Vigorous-intensity activities should be incorporated, including those that strengthen muscle and bone, at least 3 times per week.

Age group: 18–64 years

In adults aged 18–64, physical activity includes leisure time physical activity, transportation (e.g. walking or cycling), occupational (i.e. work), household chores, play, games, sports or planned exercise, in the context of daily, family, and community activities.

To improve cardiorespiratory and muscular fitness and bone health and reduce the risk of NCD and depression, adults (18–64 years) should take the following measures.

- At least 150 minutes of moderate to vigorous physical activity or at least 75 minutes of vigorous aerobic physical activity should be undertaken throughout the week or an equivalent combination of moderate- and vigorous-intensity activity.
- Aerobic activity should be performed in bouts of at least 10 minutes' duration.
- For additional health benefits, adults should increase their moderate-intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous-intensity aerobic physical activity per week or an equivalent combination of moderate- and vigorous-intensity activity.
- Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.

Age group: 65 years and above

In older adults aged 65 years and above, physical activity includes leisure-time physical activity, transportation (e.g. walking or cycling), work (if the individual still works), household chores, play, games, sports or planned exercise, in the context of daily, family and community activities. To improve cardiorespiratory and muscular fitness and bone and functional health and reduce the risk of NCD, depression and cognitive decline, older adults should take the following measures.

- At least 150 minutes of moderate to vigorous physical activity should be undertaken throughout the week or at least 75 minutes of vigorous aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous-intensity activity.
- Aerobic activity should be performed in bouts of at least 10 minutes' duration.
- For additional health benefits, older adults should increase their moderate-intensity aerobic physical activity to 300 minutes per week or engage in 150 minutes of vigorous aerobic physical activity per week or an equivalent combination of moderate- and vigorous-intensity activity.
- Older adults with poor mobility should perform physical activity to enhance balance and prevent falls on 3 or more days per week.
- Muscle-strengthening activities, involving the major muscle groups, should be done on 2 or more days a week.
- When older adults cannot do the recommended amounts of physical activity owing to poor health, they should be as physically active as their abilities and condition allow.

The use of IPAQ in different surveys (EUPASS, Eurobarometer 58.2 and Eurobarometer 64.3) has been reviewed by several institutes, showing that the use of a standardized instrument does not always lead to comparable results. There are a number of possible explanations:

- *Modifications in the wording of IPAQ questions*
While the EUPASS project and Eurobarometer 58.2 have applied the IPAQ short as intended, some modifications were made in the Eurobarometer 64.3 survey. In this latter survey, the two questions on frequency of MPA and VPA did not include the duration of at least ten minutes at a time. As a result, the prevalence of VPA and MPA might have been overestimated by Eurobarometer 64.3. The EHIS questionnaire that currently collects physical activity data in the EU Member States is also based on IPAQ. However, a slight difference in the formulation of the questions regarding duration of activity is observed: whereas the IPAQ question asks about the time spent during a “usual” day when the activity was performed, the EHIS questionnaire asks on time spent being physically active during the last 7 days. The change from duration of activity per day to a global measure per week will not allow one to assess the frequency of physical activity and will preclude comparison of results with previous surveys, which is one of the main advantages of repeated cross-sectional surveys.
- *Differences in interview administration and data cleaning*
While the EUPASS project and the Eurobarometer 64.3 survey produced fairly similar results with regard to missing data and extreme values, the Eurobarometer 58.2 data showed a distinctly different pattern. In this Eurobarometer, there were almost no extreme values for duration of vigorous, moderate and walking activities. Such extreme values might have been probed by interviewers in doing the survey, or might have been treated in the early phases of the data analysis. As a result, prevalence of physical activity might have been underestimated in the Eurobarometer 58.2 survey.
- *Differences in survey administration*
No systematic information on the administration of surveys (e.g. sampling, training of interviewers, data handling) is available. It is known from survey research that such factors might influence the results, and therefore comparability across the available European data might have been affected.

Nevertheless, the currently available standardized instruments are based on more than 10 years of research, testing and application. While the instruments may have their limitations, it is unlikely that a different instrument would resolve the challenges of measuring such a complex type of behaviour as physical activity.

In conclusion, the main challenges regarding physical activity surveillance in the EU countries are related to:

- the use of non-standardized instruments in national surveys, leading to a lack of comparability of physical activity/inactivity measurements across countries (they have, however, often been used over a longer period, meaning that time series are available);
- the switch in national surveys to standardized instruments (IPAQ or GPAQ), leading to intercountry comparable results but resulting in loss of time series;
- the use of different definitions of physical activity as well as recommendations for sufficient physical activity for health, leading to a lack of comparability of physical activity/inactivity measurements within and across countries;
- a lack of consistent application of standardized instruments, leading to difficulties of comparability in time series of existing European surveys;
- considerations regarding comparability with other world regions (IPAQ versus GPAQ); and
- a lack of testing for reliability and validity.

To ensure a consistent assessment of physical activity levels, the further development of accurate measurement instruments should be promoted.

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Joint WHO/EC DG SANCO project: Monitoring progress on improving nutrition and physical activity and preventing obesity in the European Union (EU), 2008-2010

Report series

No. Title

- 1 Report of the 1st Meeting of National Information Focal Points, Brussels, Belgium, 23–24 September 2008
- 2 Report of the 2nd Meeting of National Information Focal Points, Copenhagen, Denmark, 23–24 June 2009
- 3 Report of the Meeting on community initiatives to improve nutrition and physical activity, Berlin, Germany, 21–22 February 2008
- 4 Report of the Workshop on integration of data on physical activity patterns, Zurich, Switzerland, 25–26 February 2009
- 5 Report of the Workshop on integration of data on household food availability and individual dietary intakes, Copenhagen, Denmark, 28–29 April 2009
- 6 Review of physical activity surveillance data sources in European Union Member States
- 7 Review of dietary intake surveillance data sources in European Union Member States
- 8 Review of obesity surveillance data sources in European Union Member States
- 9 Review of food and nutrition policy development and legislation in European Union Member States
- 10 Review of physical activity promotion policy development and legislation in European Union Member States
- 11 Overview of public-private partnerships aiming to prevent obesity in European Union Member States
- 12 Overview of implementation of statutory and self-regulatory codes in the area of marketing foods and beverages to children in European Union Member States

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