

EU PAS MOS

Manual of operations



[FINAL VERSION // NOVEMBER 2018]



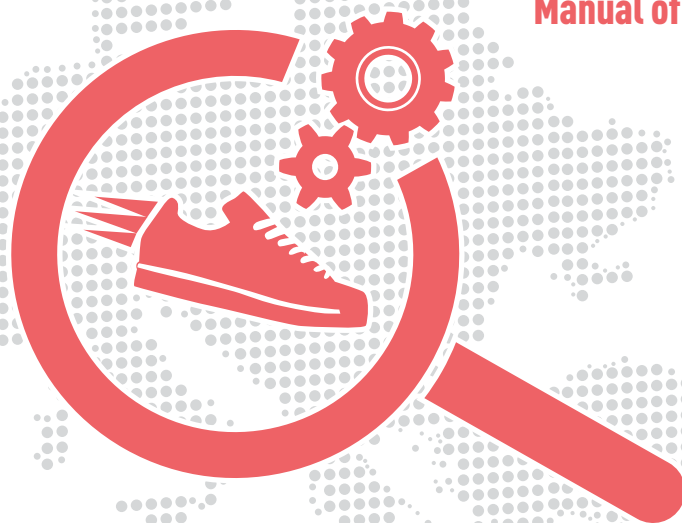
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EUROPEAN UNION
PHYSICAL ACTIVITY
AND SPORT
MONITORING SYSTEM

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THE PROJECT

Background

EU Member States usually report physical activity (PA) and sport prevalence as percentages of different population segments (children and adolescents, adults and seniors) that meet the WHO minimum PA recommendations. Nonetheless, PA and sport participation monitoring systems used by Member States (MS) differ significantly, ranging from indirect measurements - based mainly on PA questionnaires and surveys - to objectively measured data collected by equipment such as accelerometers (or other adjusted devices, such as pedometers). This is one of the key reasons that existing data on PA participation reveals large differences between countries depending on the methodologies and instruments used. MS, the European Commission and World Health Organization (WHO) have all expressed a critical need for efficient mechanisms to overcome these difficulties.

The EUPASMOS project acknowledges the extended special contribution of Luís Bettencourt Sardinha, in both methodological and scientific perspectives, in order to support the development of this document aiming to frame EUPASMOS background.

Aim

To implement an European Union (EU) Physical Activity and Sport Monitoring System - EUPASMOS -, through the development of an integrated and shared methodological process that will provide comparable, valid and reliable PA and sport participation data across EU MS. This will support the European Commission (EC), MS, WHO and other relevant organizations in the design, promotion, implementation and surveillance of effective and adjusted HEPA and sport policies, and actions across Europe at different governance levels.

Objectives

- I. Establish a monitoring framework to assess sedentary behavior patterns, PA and sport participation in EU MS.
- II. To compare commonly used questionnaires for PA surveillance (e.g. Global Physical Activity Questionnaire - GPAQ, International Physical Activity Questionnaire - IPAQ, European Health Interview Survey Physical Activity Questionnaire - EHIS-PAQ, Eurobarometer, and nationally specific PA and sport questionnaires) with each other and against objective accelerometer data in a validation study that will use samples from EU partner countries.
- III. To analyze sedentary behavior patterns and PA and sport participation prevalence rates across European MS.
- IV. To develop a toolkit to build and reinforce MS capacity to monitor, analyze, compare sedentary behavior patterns, PA and sport participation prevalence data. It will help MS to implement and develop the PA and sport monitoring framework in their countries.
- V. To support the development of the PA section of the WHO's European Health Information Gateway database, aligning it with the EU HEPA monitoring framework. Sedentary behavior patterns will also be included in this database.



Innovation

- I. For the first time in the HEPA and sport area, multiple MS public body organizations, reliable scientific partners, civil society and international representative sport and health organizations will work collaboratively in a transnational project to develop an EU-wide sedentary behavior, PA and sport monitoring system to address issues that concern all MS, EC, WHO and other multiple national and European organizations in the field of sport, health, education and several other sectors.
- II. While validation studies of PA measurement tools have been done in the past, this is the first time that multiple measurement tools will be validated at the same time against a reference method (accelerometry) to measure sedentary behavior, PA and sport across multiple countries using nationally appropriate samples.
- III. The project developed a specific custom-made software tool to analyze the data from objective measurements (accelerometry). This tool will be available to all MS in the future, improving their capacity to analyze data resulting from monitoring interventions.
- IV. The results of this project will enable to strengthen of the analysis of MS on sedentary behavior patterns, PA and sport participation prevalence data, improve data comparability and ultimately develop a reliable, accurate, and effective EU PA and sport monitoring system framework.
- V. It produced a customized toolkit that will help MS, sport and other sectoral public organizations, civil society, international and private organizations, to better understand the available data, identify and replicate methodologies used and contribute to data analysis, facilitating the adjustment and development of HEPA policies, strategies and actions.

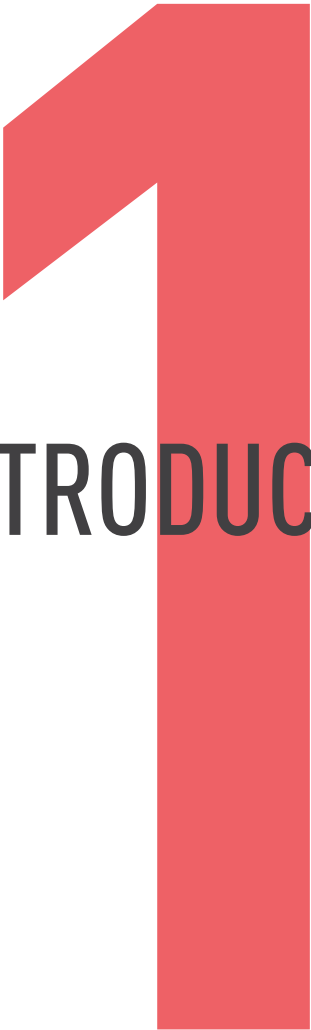
- VI.** Answering the call from the EU, the collected data will be used by WHO to be included in a new PA section of the former European database on Nutrition, Obesity and PA (NOPA), now designated the WHO's European Health Information Gateway database.
- VII.** In addition, it will be a significant contributor to the dissemination of information in this area among EU MS population, sport and health sector organizations and professionals, scientific community, and civil society institutions. Working in close cooperation with WHO, HEPA network organizations, and several other international relevant organizations from sport, health and education sectors, EUPASMOS will help to advocate for harmonized monitoring of PA and sport, encouraging the development of similar and comparable systems in other world regions.



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INTRODUCTION

The successful promotion of health-enhancing physical activity (HEPA) through sport requires authoritative information to enable the design, implementation and evaluation of effective and cost-effective policies. This includes reliable and valid data on the prevalence of physical activity (PA) and sports participation that can be compared across Member States (MS) populations regardless of the type of measurement instrument used. Effective monitoring and evaluation systems provide the essential data that can increase our understanding of the effectiveness of different approaches to increasing population physical activity levels and enable policy makers to design policies and interventions that are cost-effective.

In addition it evaluates the range of actions that increase physical activity and sports participation, and define clear mechanisms to ensure that results are shared and communicated between policy makers in European Union (EU) MS can contribute to the development of future policies in this area.

While MS have been reporting different baseline levels of PA prevalence and several determinants of both PA and sports participation, existing monitoring systems differ significantly between countries leading to the publication of a broad range of results that do not appear to reflect the actual situation, both at national and European level, difficulting comparisons between each other. This issue needs to be analyzed and closely addressed to ensure that HEPA and sport policies could be more effective, evidence-based supported and appropriately implemented.

EU Physical Activity and Sport Monitoring System (EUPASMOS) Operations Manual develops a new integrated monitoring framework that is more able to strengthen surveillance across the HEPA sectors, reduce the problems related with data validity and reliability and, therefore, contribute to the adjustment of European and national HEPA policies in order to promote PA and sport participation, equitable access and social inclusion.

With a similar approach to the one carried out by a consensus from an international expert panel on the harmonization of international physical activity data derived from accelerometer-based activity monitors², this operations manual will describe all the procedures related with the evaluations comprehended in this project, in order to standardize and harmonize methodology among the participating MS. According to this international expert panel², when harmonizing accelerometer-based data, there are some additional data that should be collected in addition to the accelerometry data.

There was strong agreement on the necessity of basic sociodemographic, anthropometric, and also some health status and occupational classification data². Thus, in addition to the accelerometer related harmonization, details related with anthropometric, socio-demographic, and questionnaires harmonization will also be described in this manual.

2

METHODS



2.1. Sample size and representativeness

The EUPASMOS project will include **adults aged from 18 to 64 years-old** and **older adults (>65 years-old)**. As agreed by project partners, people **with locomotor impairments** (but no cognitive impairment) should be also included in the sample. When possible, pregnant women should also be included (if possible in proportion to the country's distribution).

Each country should aim to collect data from approximately 1000 persons. The sample distribution according to gender must be 50%/50% (men and women) and each partner should evaluate an equal amount of people from the different age categories (i.e. 18-34, 35-49, 50-64, >65 years-old).

Also, the sample should, whenever possible, represent the national reality in terms of socio-economic status. The sampling process should also be based on a random selection stratified by the main geographical regions from each country. Age, sex, and socio-economic status are relevant determinants for physical activity levels and sport participation. Thus the number of participants should be proportional to the country distribution in the several main regions, according to sex, age group (i.e. 18-34, 35-49, 50-64, >65 years-old), and socio-economic status.

📄 PRACTICAL PROCEDURES

1) Each EUPASMOS partner should aim to:

- Collect data from approximately 1000 persons;
- Include 50%/50% (men and women);
- Age groups: 18-34, 35-49, 50-64, >65 years-old, fostering for equal distribution;
- Include adults, older adults, people with locomotor impairments (but no cognitive impairment) and pregnant women;
- Whenever possible, in each age group the sample should represent the national reality in terms of socio-economic status (vary the source of participants inside of each age group);

2.2. Participants' codification

The first step to develop in the evaluation process is to define a code that will identify each participant. Thus, in the first evaluation moment, each participant will be associated with one original code that must start with a number that identifies the Country of assessment (**see below the codification for the partners/MS**) followed by a second number that designates the sex (**0 for women and 1 for men**). A third number identifies the age group category (**0 for 18-34 years-old; 1 for 35-49 years-old; 2 for 50-64 years-old; and 3 for ≥65 years-old**) followed by the participant's number according with the order of assessment, using a 4-digit code (0001-).

- **Codification for the Partners:** Bulgaria (1); Cyprus (2); Denmark (3); England (4); Finland (5); France (6); Hungary (7); Italy (8); Latvia (9); Macedonia (10); Malta (11); Netherlands (12); Poland (13); Portugal (14); Romania (15); Slovenia (16); Spain (17) and Sweden (18); Lithuania (19) and Greece (20).

📄 PRACTICAL PROCEDURES

- 1) Example for a Bulgarian male aged 30 years-old: 1100001.
- 2) Other example: participant 5030001 - the first older women (> 60 years) assessed in Finland.

2.3. Anthropometric data

Each participant will be enrolled by one of the trained professionals and the EUPASMOS procedures will be explained to him/her in the first evaluation moment. Measures of weight, height, and waist circumference (WC) and hip circumference (HP) (optional) will be taken in a standardized manner as follows.

(1) Weight: Participants will be weighed with a digital scale to the nearest 0.01 kg while wearing minimal clothes and without shoes. The participants will be told to stand motionless for a few seconds while looking forward with arms alongside the body.

(2) Height: Participants will be measured to the nearest 0.10 cm using a wall-mounted stadiometer. Participants should stand in bare feet that are kept together by the calcaneus and performing a 30° angle between them. The head is leveled with a horizontal Frankfurt plane (below – an imaginary line from the lower border of the eye orbit to the auditory meatus). The evaluator must check the correct posture of the participant. The participant must be asked to breathe deeply and the measurement will be obtained at the end of a deep inspiration; two measurements must be performed. Both measurements should be registered.

(3) Body Mass Index: BMI will be calculated as body mass (kg) divided by height squared (m^2).

(4) Waist circumference: Participants will be measured according to NIH (National Institute of Health) procedures used in the third U.S. National Health and Nutrition Examination Survey (NHANES III 1988–1994) protocol with a flexible anthropometric tape at minimal respiration and reported to the nearest 0.10 cm by positioning a tape parallel to the floor and immediately above the iliac crest. The measurement will be replicated three times and the three values will be averaged to limit the intra-observer variability.

(5) Hip circumference: Tape should be placed parallel to the floor and around the point with the maximum circumference over the buttocks. Participant is asked to remove clothing,

except for light underwear. Tight clothing, including belts, should be loosened and the pockets emptied. The measurement will be replicated three times and the three values will be averaged to limit the intra-observer variability.

Note: All assessments will be collected at the same time of the day for each participant in the first evaluation moment.

Note: If there is no objective assessment of these characteristics, the participants should self-report their weight and height and these data must be identified as non-objective data in the dataset.

2.4. Health status data (optional)

In EUPASMOS, it was agreed that it was mandatory the collection of at least one question about general "health status". This question is directly derived from the EHIS questionnaire (wave 3), i.e. "How is your health in general? – the possible answers include several categories as described in the appendices table (4.6.1. *Mandatory demographics*)".

In addition (and optionally), for those partners that can collect additional data to this general question, the EUPASMOS will also include EHIS questions about specific diseases (e.g. diabetes, cardiovascular disease, cancer), and other conditions that also affect physical activity readiness. These questions and the concomitant variables descriptions can be found in the appendices tables (4.6.2. *Optional demographics - health status*). They can be also found in the file "EUPASMOS_codebook_health and demographics_optional.docx" that coordination send to all partners. As previously mentioned, the EHIS (wave 3) is being used by EUROSTAT as the method to collect information about health in Europe, including a small PA section in Europe. In this sense, all the questions included in this health status section and mentioned previously are already translated in all EU languages and be used accordingly by all MS (Note: The EUPASMOS coordination will make available the EHIS wave 3 translated files to all partners).

These health status questions can be applied to participants during the first evaluation moment, before receiving instructions about how to use the accelerometers.

▾ PRACTICAL PROCEDURES

- 1) Check the translated version of the EHIS questionnaire (wave 3) into the corresponding language of your country;
- 2) Download the version to be administered during the participant interview; this version should coincide with the EUPASMOS health status table of contents that is described in the appendices and also available in the following file (EUPASMOS_codebook_health and demographics_optional.docx); the English version is presented in the appendices to serve as the example model);
- 3) If not it is not translated, the responsible team for data collection have to find a specialist to translate the questionnaire to country's language and perform a reliability study;

Note: reliability study - after the translation of the questionnaire by a specialist, the data collection team must run a test-retest using 20 participants. After the test-retest, questionnaire is ready to be used in the EUPASMOS;

- 4) The coordination team suggests that, when possible, partners prepare the questionnaire in digital support (despite being administered by face-to-face interview); this digital support must comply with the GDPR rules. Those who prefer can develop the questionnaire in paper to administer accordingly (face to face is preferable);
- 5) Test the online form before starting collecting the data in order to correct any problems with the questionnaire;
- 6) Both in the online version of the questionnaire or in the paper version, the participant identification is mandatory as well as the date of evaluation.
- 7) Do not abbreviate the questions and please use all the text as stated in the original version (losing information will limit the understanding by the participant and it may alter its validation).



2.5. Socio-demographic data (mandatory)

In EUPASMOS, participant's mandatory socio-demographic data are collected by questions derived from the EHIS questionnaire (wave 3). Below you will find an overview of the mandatory socio-demographic data. The variables included in the EUPASMOS questionnaire are described in the appendices (*4.6.1. Mandatory demographics*) and also presented in the file "EUPASMOS Codebook demographics mandatory.doc".

The EHIS questionnaire (wave 3) is being used in Europe and is part of the EUROSTAT system to collect data about health and sport. In this sense, all these mandatory questions are translated to the European languages and can be used accordingly. (Note: The EUPASMOS coordination made available the EHIS wave 3 translated files).

Regarding practical procedures, the socio-demographic questions should be applied to participants during the first evaluation moment, before they receive instructions about how to use the accelerometers.

Mandatory issues – included in the EHIS questionnaire

- (1) **Age** (including birth date)
- (2) **Gender**
- (3) **Ethnicity**
- (4) **Nationality**
- (5) **Education**

Optional – not included in the EHIS questionnaire – these variables can be included in the socio-demographic section

- (6) **Occupational classification** (type of occupation)
- (7) **Family characteristics** (marital status and number of children)

(8) Annual income (optional)

(9) Residential address (optional - include the type of residence i.e. rural vs urban; flat vs house, and the postal code or any other number that identifies the exact address);

Note: Regarding this issue, EHIS also provides standard information: 1. 'Cities' (alternative name: densely-populated areas): at least 50 % of the population lives in an urban centre; 2. 'Towns and suburbs' (alternative name: intermediate density areas): 'LAU-level territorial units where at least 50% of the population live in urban clusters, but are not 'cities'; 3. 'Rural areas' (alternative name: thinly populated areas): more than 50 % of the population lives in rural grid cells. This classification is based on a combination of criteria of geographical contiguity and minimum population threshold applied to 1 km² population grid cells (123).

Practical note - If you will include this information in addition to the socio-demographic questions already included in the EHIS, we can ask for postal (zip) code and then categorize into the 3 degrees of urbanisation as defined above by the EHIS it self: *city (densely populated areas); *town/suburb (intermediate density areas); *rural area (thinly populated areas).

(10) Contacts (if possible, collect telephone and email).

Note: Informed consent signed by each participant will state that these data is confidential and will only be used for EUPASMOS study purposes.

📄 PRACTICAL PROCEDURES

- 1) The variables to include in the EUPASMOS questionnaire are described in the appendices (4.6.1. *Mandatory demographics*) and in the file "EUPASMOS Codebook demographics mandatory.doc";
- 2) These questions are already translated in all European languages, making part of the EHIS questionnaire (available to all partners);
- 3) The socio-demographic questions should be applied to participants during the first evaluation moment, when they receive instructions about how to use the accelerometers.

2.6. Questionnaires data

The EUPASMOS project will be divided in two phases: *Phase 1* will handle the questionnaires validation process and *Phase 2* will substantiate the majority of the data collection. At the end of phase 2, each partner should have collected data from as many participants as possible, aiming for about 1000 persons.

For the validation of the questionnaires (phase 1), an initial teste-retest considering 20 persons will be performed to evaluate the validity of the translation process of the questionnaires which are not translated in partner's language. Afterwards, each country must run a validation study for all included questionnaires, using 80-100 participants (including the first 20 participants). This process is described in detail in the section 2.7. *Methodological Process for the 1st Phase - assessment of validity - and for the 2nd Phase.*

Both in phases 1 and 2, on the first day of evaluation, each participant will receive a personal demonstration of the placement and use of the accelerometer (see appendices related with accelerometry for more detailed information – [4.4. UKK RM42 Accelerometer Practical Guide](#)). The participants then will wear the device for 7 consecutive days including 2 weekend days. On day 8, the participants will return the accelerometers and meet the trained professionals again for a second evaluation moment. In the second evaluation moment the participants will complete the IPAQ-SF, GPAQ, EHIS-PAQ, and the Eurobarometer-questionnaire, using a face-to-face interview method, with an online or paper version of the questionnaires. The participants will be asked to recall their recent activity during the previous week.

Note: In the case of no valid accelerometer data after the 7 days period (due to excessive non-wear time or device's problems), the participant will be asked to wear the device for 7 more days, and questionnaires must only be performed after this second period of time.

2.6.1. International Physical Activity Questionnaire (IPAQ-SF)

The International Physical Activity Questionnaire (IPAQ) assesses total PA level by collecting information on the number of days and the duration of vigorous-intensity PA, moderate-intensity PA, and walking in periods of at least 10 continuous minutes. Also, the duration of sitting time on week and weekend days in the last seven days are asked³. This questionnaire is validated in many languages (such as Arabic Saudi-Arabia, Bahasa, Malaysian, Croatian, Danish, Dutch (Belgian), English, Estonian, French, German (Austrian), German, Greek, Hebrew, Icelandic, Italian, Korean, Lithuanian, Malaysian, Norwegian, Persian-Farsi, Polish, Portuguese, Spanish (Argentina), Spanish (Columbia), Spanish (USA), Swedish, Taiwanese, Turkish, Urdu, and Vietnamese). The **short version** of this questionnaire (IPAQ-SF) should be applied by interview method. A list of all the versions of the IPAQ that have been developed and made available to download at https://sites.google.com/site/theipaq/questionnaire_links. Procedures to follow when applying this questionnaire are also available.

The IPAQ has been widely tested and validated (*more detailed information is presented in the appendices*). The questions included in the questionnaire are also described in the appendices section [4.6.3. Mandatory sport, physical activity and sedentary behavior questions](#).

▾ PRACTICAL PROCEDURES

- 1) Check if there is a validated version of the questionnaire translated into the corresponding language.
- 2) If yes, download the short version to be administered by interview (preferable method).
- 3) If not, the data collection team will have to find a specialist to translate the questionnaire to their language and perform a validation study;

Note: After the translation of the questionnaire by a specialist, the data collection team must run a test-retest using 20 participants. After the test-retest data analysis, questionnaire is ready to be used in the EUPASMOS sample:

- 4) The coordination team suggests that, when possible, partners prepare the questionnaire in digital support (e.g. google questionnaires). Those who prefer can develop the questionnaire in paper to administer accordingly (presently is preferable);
- 5) Test if there is any problem when filling in the online form before starting collecting the data.
- 6) Both in the online and paper version of the questionnaire, the participant identification is mandatory as well as the date of evaluation.
- 7) Do not abbreviate the questions and please use all the text as stated in the original versions (losing information will limit the understanding by the participant and it may alter its validation).

2.6.2. Global Physical Activity Questionnaire (GPAQ)

The Global Physical Activity Questionnaire (GPAQ) was developed by WHO to support physical activity surveillance in the countries. It collects information on physical activity participation in three domains (i.e. work, transportation, and recreational) as well as overall sedentary behavior, comprising 16 questions (P1-P16). The GPAQ has undergone a research program, which shows that it is valid and reliable, but also adaptable to incorporate cultural and other differences. The GPAQ is available in several languages such as Arabic, Chinese, English, French, German, Italian, Portuguese, Russian, Spanish, and Turkish.

When using GPAQ, **version 2** must be chosen. All questions must be asked, except some of the questions when P1, P4, P7, P10, or P13, respectively, has been answered negatively (see instructions of the GPAQ questionnaire). The GPAQ has been developed for face-to-face interviews conducted by trained interviewers. It had been tested in large-scale population-based surveys with the general adult population. Details about the validity of this questionnaire can be found in the appendices. The questions included in the questionnaire are also described in the appendices section **4.6.3. Mandatory sport, physical activity and sedentary behavior questions**.

For the analyses these domains can be further broken down into six different “sub-domains”. These “sub-domains” are:

- Vigorous work (codes P1-P3);
- Moderate work (codes P4-P6);
- Travel (codes P7-P9);
- Vigorous recreation (codes P10-P12);
- Moderate recreation (codes P13-P15);
- Sitting (code P16).

▮ PRACTICAL PROCEDURES

- 1) Check if there is a translated version of the questionnaire translated into the corresponding language.
- 2) If yes, download it to be administered by interview (preferable).

- 3) If not translated, the research group will have to find a specialist to translate the questionnaire to their language and perform a reliability study;
Note: After the translation of the questionnaire by a specialist, the research team must run a test-retest using 20 participants. After the test-retest, questionnaire is ready to be used in the EUPASMOS sample;
- 4) The coordination team suggests that, when possible, partners prepare the questionnaire in digital support; this digital support must comply with the GDPR rules. Those who prefer can develop the questionnaire in paper to administer accordingly (face to face is preferable);
- 5) Test the questionnaires thoroughly online before starting collecting the data in order to correct any problems in the questionnaire. Make sure it works correctly regardless of any given answer.
- 6) Both in the online and paper version of the questionnaire, the participant identification is mandatory as well as the date of evaluation.
- 7) Do not abbreviate the questions and use all the text as stated in the original versions (losing information will limit the understanding by the participant and it may alter its validation).
- 8) Despite the support from the coordination team, for partners information, the guidelines on how to clean and analyse data derived from the GPAQ are accessible in English by clicking on the following link (these processes will be later supported by the coordination team during data analysis phase):

http://www.who.int/ncds/surveillance/steps/resources/GPAQ_Analysis_Guide.pdf?ua=1

Coordination team and partners responsible for data analysis (WP3) will help partners to analyse data.

2.6.3. European Health Interview Survey-Physical Activity Questionnaire (EHIS-PAQ)

Respondents have been reporting difficulties to distinguish between different PA intensity levels as well as to indicate the duration of activities in which they are less conscious (i.e. walking and sitting). Also, to combine multiple activities to answer a single question on overall PA when using IPAQ can be challenging³, thus the European Health Interview Survey-Physical Activity Questionnaire (EHIS-PAQ) was created to overcome these issues.

This is a short, domain-specific PA questionnaire that was developed to enable the estimation of three standalone indicators for 1) work-related PA, 2) transport-related (commuting) PA, and 3) leisure time PA³, and it seems to work well in epidemiological studies⁴ (*details about the validity of this questionnaire can be found in the appendices*). The questions included in the questionnaire are also described in the appendices section

4.6.3. Mandatory sport, physical activity and sedentary behavior questions.

The original version of the EHIS-PAQ can be found on the following link:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4667448/figure/Fig3/>

Note: The coordination team has sent to all partners the EHIS files that have been used at European level by EUROSTAT and to be used in EUPASMOS.

📄 PRACTICAL PROCEDURES

- 1) Check if there is a validated version of the questionnaire translated into the corresponding language.
- 2) If yes, download the short version to be administered by interview.
- 3) If not, the research group will have to find a specialist to translate the questionnaire to their language and perform a validation study;
Note: After the translation of the questionnaire by a specialist, the research team must run a test-retest using 20 participants. After the test-retest, questionnaire is ready to be used in the EUPASMOS sample;
- 4) The coordination team suggests that, when possible, partners prepare the questionnaire in digital support (e.g. microsoft questionnaires). Those who prefer can develop the questionnaire in paper to administer accordingly (presently is preferable);
- 5) Test if there is any problem when filling in the form online before starting collecting the data;
- 6) Both in the online and paper version of the questionnaire, the participant identification is mandatory as well as the date of evaluation;
- 7) Do not abbreviate the questions and please use all the text as stated in the original versions (losing information will limit the understanding by the participant and it may alter its validation);
- 8) Despite the support from the coordination team, for partners information, the guidelines on how to clean and analyse data derived from the EHIS-PAQ are accessible in English by clicking on the following link (theses processes will be later supported by the coordination team during data analysis phase):

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4667448/>

2.6.4. Eurobarometer - Sport and Physical Activity Questionnaire

The Eurobarometer was established in 1974 and the last version is from 2018. Each survey consists of approximately 1000 face-to-face interviews per country. Reports are published twice yearly. Reproduction is authorized, except for commercial purposes, provided the source is acknowledged.

The methodology used is that of Eurobarometer surveys as carried out by the Directorate-General for Communication ("Strategy, Corporate Communication Actions and Eurobarometer" Unit). This questionnaire includes 14 questions regarding the frequency and levels of engagement in organized exercise or sports activities, recreational or non-sport-related physical activities, vigorous physical activity, and moderate physical activity, walking, and sitting time.

Additionally, it also includes questions about where and why people perform exercise/physical activity, with questions about the context in which people perform exercise, the type of motivation, and the main barriers for not doing it. Finally, voluntary work that support sporting activities is also aimed in the final 3 questions (*details about the validity of this questionnaire can be found in the appendices*).

The original version of the Eurobarometer Sport and Physical Activity Questionnaire can be found on the following link:

<https://op.europa.eu/en/publication-detail/-/publication/9a69f642-fcf6-11e8-a96d-01aa75e-d71a1/language-en/format-PDF/source-82747397>

The questions included in the questionnaire are also described in the appendices section 4.6.3. *Mandatory sport, physical activity and sedentary behavior questions*. The coordination team has sent to all partners the Eurobarometer files that have been used at European level and to be used in EUPASMOS.



📄 PRACTICAL PROCEDURES

- 1) Check if there is a validated version of the questionnaire translated into the corresponding language.
- 2) If yes, download the short version to be administered by interview.
- 3) If not, the research group will have to find a specialist to translate the questionnaire to their language and perform a validation study;
Note: After the translation of the questionnaire by a specialist, the research team must run a test-retest using 20 participants. After the test-retest, questionnaire is ready to be used in the EUPASMOS sample:
- 4) The coordination team suggests that, when possible, partners prepare the questionnaire in digital support (e.g. microsoft questionnaires). Those who prefer can develop the questionnaire in paper to administer accordingly (presently is preferable);
- 5) Test if there is any problem when filling in the form online before starting collecting the data;
- 6) Both in the online and paper version of the questionnaire, the participant identification is mandatory as well as the date of evaluation;
- 7) Do not abbreviate the questions and please use all the text as stated in the original versions (losing information will limit the understanding by the participant and it may alter its validation).

2.7. Methodological Process for the 1st Phase - assessment of validity - and for the 2nd Phase

1) Purpose.

The aim of this first analysis phase is not to create or modify the existing questionnaires. This phase will be incorporated within the main data collection. The aim here is to evaluate the validity of the questionnaires that will be used within our national samples, so that when interpreting our data we will be able to indicate the strengths/weaknesses of the commonly internationally used questionnaires and the data collected in our national monitoring systems.

2) Methods.

Phase 1A. Translation

Some questionnaires are already translated within national languages; please consider only this phase 1A for the questionnaires not translated or if you as a partner are not confident with the proposed translation existing in your language.

Otherwise, this phase 1A consists in back and forth translation of the questionnaires between two specialists that can currently speak both English and the national language. This requires two exchanges of back and forth translation between these two people to conclude on a common acceptable version of the questionnaire.

Phase 1B. Test-retest

In 20 participants from the 80 participants that should be include in this phase, a test-retest of the translated questionnaires must be performed (see figure 1).

Phase 2. Data collection

As part of the main data collection process, we will have to ask the participants to indicate their age, gender and socio-economic status (questions already included in the demographics questionnaires presented in the previous sections) to wear the accelerometers for 7 consecutive days, and to fill in the 4 common questionnaires used in EUPASMOS (IPAQ-SF, G-PAQ, EHIS-PAQ, and Eurobarometer) and national questionnaire, if available.

By having these questionnaires filled in once, plus the 7-day accelerometers collected and plus the personal mandatory data (demographics described in the previous section) we will be able to assess the internal and external validity of the questionnaires.

The following figure describe more in detail the process that should be developed in both phases 1 and 2. As mandatory in the EUPASMOS methodology, the first 80 participants must fill out all the PA and sport questionnaires once, plus collect the accelerometers data from 7-day and the mandatory demographics data. This will allow assessing the internal and external validity of the questionnaires. For those partners that have capacity to do it, in this first 80 persons, it could be ask to fill these 4 questionnaires more one or two times (two-to-three times in total), both second and third time performed with at least 5 days apart (2 times is fine for a test-retest approach and 3 times is perfect for a reproducibility and concordance analysis).

These 80 participants will have to represent half men and half women; 25% from the 18-34 years old group; 25% from the 35-49 years old group; 25% from the 50-64 years old group, and 25% from the 65+ years old group (meaning 10 men and 10 women per age group) (see figure 2).

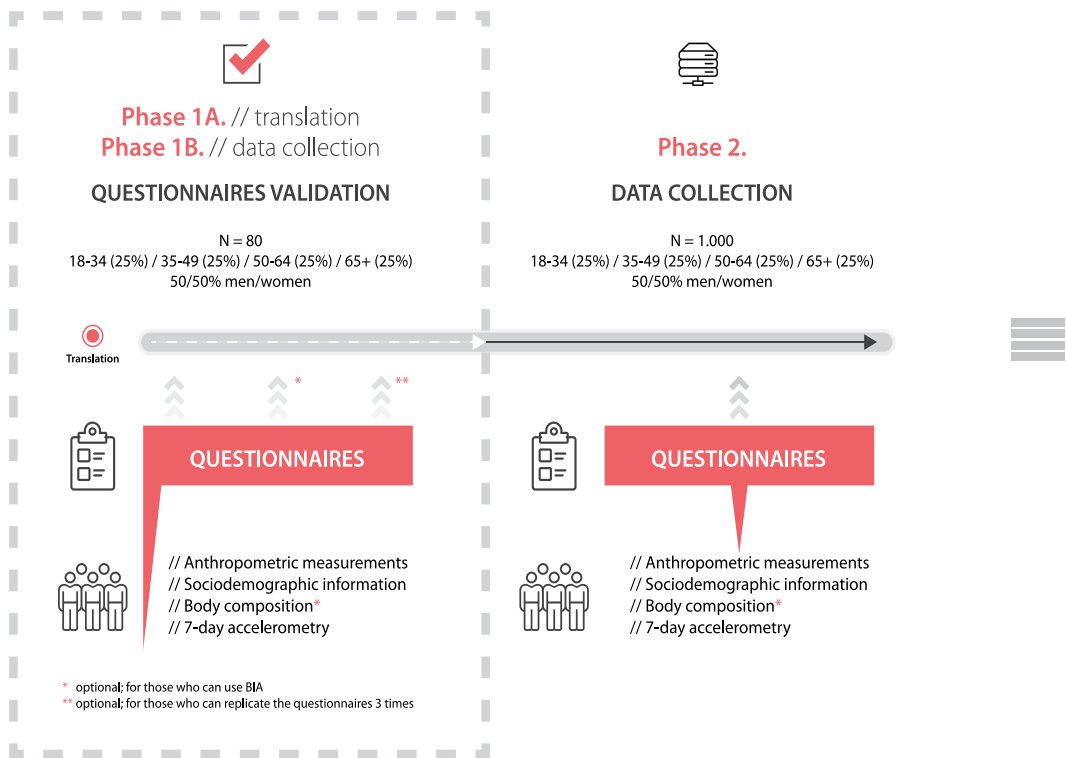


Figure 1. EUPASMOS design of the study – assessment of validity and data collection.

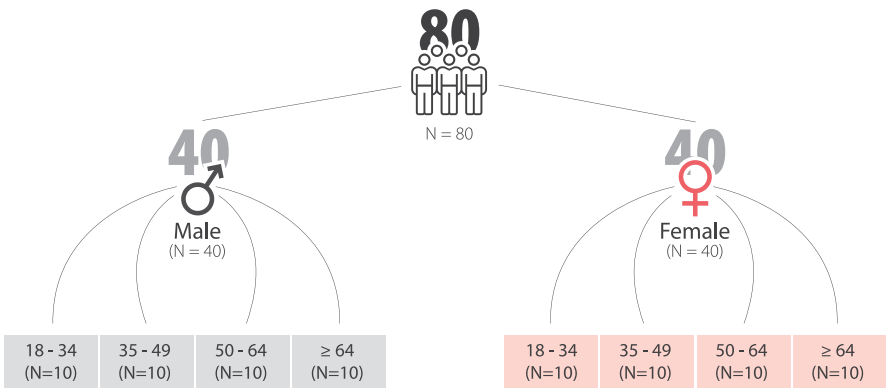


Figure 2. Sample distribution in phase 1.

Additionally, a 7-day activity diary has to be completed by the participants during the 7-day accelerometer record. The coordination team will send the diary to all partners, which must be translated accordingly.

Note: *All the countries that are able and willing to also proceed with the validation process for their main national questionnaires are encouraged to do so; coordination will also provide support for the analysis and will try to include these analyses within the EUPASMOS validation report and related publications.*

3) Statistical analysis – assessment of validation – Phase 1

Sample size has been determined according to COSMIN recommendations (<http://www.cosmin.nl>) and is consistent with the recruiting potential and with sample sizes recommended for validation of psychometric tools⁵. In addition to descriptive statistics, the following psychometric properties of IPAQ-SF, G-PAQ, EHIS-PAQ, Eurobarometer scales will be explored.

Note: The countries that do not have the statistical resources to perform the data analysis related with this assessment of validity, will have to fill in an excel sheet (which will be provided) and send it to coordination team to prepare the analysis.

- (i) Acceptability: The data quality will be considered satisfactory if more than 95% of IPAQ-SF, G-PAQ, EHIS-PAQ, and Eurobarometer scales data are fully computable. Score range, closeness of mean to median, floor and ceiling effects (accepted maximum for both: 15%), and skewness of score distributions (limits: -1 to +1), will also be analyzed.
- (ii) Exploratory factorial analyses (principal components method PCA with varimax rotation) will be carried out to determine the structure of IPAQ-SF, G-PAQ, EHIS-PAQ, and Eurobarometer scales. The number of factors will be chosen according to usual recommendations: Kaiser criteria, plot of eigenvalues and part of variance expressed by principal components. The Kaiser-Meyer-Olkin test for sample adequacy will be also applied.
- (iii) Internal consistency will be determined through the Cronbach's alpha coefficient (minimum accepted value: 0.70); the item homogeneity coefficient (criterion value: ≥ 0.30); and the item-total correlation corrected for overlap (criterion value: ≥ 0.30). Internal validity will be determined studying correlations between domains (dimensions) composing the scales (standard, $r = 0.30-0.70$).
- (iv) Reproducibility: The weighted kappa coefficient (quadratic weights) for items and the intra-class correlation coefficient (ICC, 2-way random effects model) for sub-scales and total scores will be used to determine the test-retest reliability of IPAQ-SF, G-PAQ, EHIS-PAQ, Eurobarometer scales. Values of kappa ≥ 0.60 (substantial agreement) will be deemed satisfactory.

The Lin concordance correlation coefficient (CCC) will be also calculated, in addition to Bland & Altman 95% limits of agreement. ICC and CCC values ≥ 0.70 will be considered satisfactory. For each item of each scale, the standard error of measurement will be estimated [$SEM = S - D \cdot \sqrt{1 - ICC_{TEST-RETEST}}$], with a criterion value of $SEM \leq$ half a standard deviation (equivalent to a reliability coefficient ≥ 0.75).

- (v) Hypotheses testing: Regarding convergent validity, a high association (Spearman rank correlation coefficient, $r > 0.50$) will be hypothesized between scales (IPAQ-SF, G-PAQ, EHIS-PAQ, and Eurobarometer) and/or other quantitative measures as age. The comparisons between independent groups (for example gender, BMI categorized according to the literature) concerning scales as quantitative variables will be realized by ANOVA or non-parametric Kruskal-Wallis test when assumptions of ANOVA are not met. If sub-scales or total scores are categorized according to usual thresholds, the study of relationships will be explored using Chi-squared or Fisher's exact tests.

2.8. Accelerometry data

In EUPASMOS, the UKK RM42 triaxial accelerometer (see more information about this accelerometer in the appendices – *4.2. Accelerometer harmonization*) will be used along with a new method to process the raw data, the mean amplitude deviation (MAD), which is a method that can be applied to different accelerometer brands and seems to present high validity for estimating all physical activity intensities including sedentary behaviours^{1, 6-8}. Further, the angle for postural estimation (APE) analysis will be additionally performed for differentiating stationary sitting, standing and ambulatory activities with more accuracy¹, (see more about MAD and APE analysis in the appendices).

UKK RM42 is a light-weight triaxial accelerometer that must be attached to an elastic belt on the right side of the hip at the level of the iliac crest during waking hours (excluding the time spent in the sauna, bath, shower, or in other water activities) and on the wristband during the sleep time. The detailed information regarding the operational procedures while using these accelerometers is described in the appendices.

For harmonization reasons the accelerometer data processing will be performed by automatic algorithms that are already included in the EUPASMOS cloud provided by UKK. In this sense, accelerometer data from each country will be uploaded to the EUPASMOS cloud, so that the algorithms can process and analyse the data. After this automatic process, all the raw data must also be locally recorded and stored safely by the partner and a copy of raw data files must be sent to the coordination centre in Lisbon.



2.8.1. Usability

When working with accelerometry, there are a number of settings that must be defined in order to standardize the procedures. Regarding the accelerometers' usability, different procedures can impact the quality of the assessment, thus these are the mandatory choices that must be performed:

(1) Delivery of the accelerometer to the participant - PERSONALLY

The delivery and fitting of the accelerometers should be made personally⁹ by the partner team (note: practical procedures are described in detail the appendices section). Alternatively, if no other option is available, the devices can be sent by mail; in both cases, ensure that proper indications regarding EUPASMOS methodology are explained and attached.

➤ PRACTICAL PROCEDURES

- Explain to the participant the information regarding the accelerometer utilization:
 - “You have received an accelerometer (UKK RM 42) for one week (7 consecutive days) measurement time. The accelerometer measures physical activity, sedentary behavior and sleep. During waking hours the accelerometer is worn on an elastic belt on your right hip. When measuring during sleep, the accelerometer is worn on a wristband”;
- Check that the green light is blinking. Blinking light indicates properly functioning device. To save battery the light blinks at low incidence;
- If the device does not move for a while (for example, it is left on the table), it will go to standby mode and the light goes off. When the device is moved again, it is set to measuring mode and the light turns on;
- When the battery is close to finish, the blinking light is red. When the battery is empty, there is no light (neither red nor green);
- Put the device into the belt-pocket and close the flap;
- Write the device number (5 digits) to the list together with participant's name and ID (participant code);

PARTICIPANT ID	DEVICE NUMBER	DELIVERED	STARTING TIME	ATTENTION	RETURNED

Figure 3. Example of a proposed table to control participant's accelerometers.

- Register if different approach than personal delivering was performed in order to allow future adjustments;
- Remind them to return the device and the belts after 7 consecutive days;
- Mark the time of device delivery to the list.

(2) Returning the accelerometer to the participant - PERSONALLY

- Preferably, prefer receiving the accelerometers directly from the participants;
- After receiving the equipment, remove the device from the pocket, check that the belts are ok and forward them to wash;
- Check that the 5 digits of the device match with the ones on your list;
- Mark the device as returned.

(3) Location to wear the device - ON THE RIGHT HIP, NEAR THE ILIAC CREST

UKK RM42 accelerometer will be used on the right hip, near the iliac crest and under the clothes (can be in direct contact with the skin) during the waking hours. In addition, UKK RM42 should be used on the wristband during the sleep time. These indications must be accompanied by a direct and live exemplification to each participant, or for a small group of participants by the team. The specific indications are described in detailed in the appendices.



➤ PRACTICAL PROCEDURES

1. Waking hours

- Adjust the belt to the participants, remind that the flap of the belt-pocket must be upwards and instruct participants for the device use according to instruction form:
 - “Open the belt as a circle and step into it. Lift the belt around your hip (right side);
 - Check that the mouth of the belt-pocket is upwards and the pocket-flap is closed. The flap should be against your body;
 - Adjust the belt for your size and secure the loop to the hook;
 - Set the device on the right side of your hip;
 - Good place is for example under the waistband of your trousers when the device is out of sight, stays in one place and does not bother you during the day.

2. Sleeping Time

- Instruction to give to participant to wear the equipment during the sleeping time:
 - When you go to sleep, take the device out of the belt-pocket and push it to the bottom of the wristband pocket;
 - Attach the wristband to your non-dominant wrist so that the device becomes on the knuckles side;
 - Adjust the band so that it will not circle around while sleeping. When you wake up, remember to remove the device back to the belt-pocket.

Note: In the case of the participant performing contact or any other sport activity that can damaged the device (i.e. kick box, rugby), participant must be told to wear the device on the same plane but at the lower back, when doing these activities.

(4) Time-frame to use the device – 24 HOURS, EXCEPT FOR WATER BASED ACTIVITIES

UKK RM42 accelerometer will be used during 24 hours and participants will be request to remove it only during water-based activities such as showering and swimming¹⁰. When explaining to the participant, real examples of their daily routines must be used so that they can better understand how to effectively introduce the device in their routines.

(5) Days to wear the device - 7 CONSECUTIVE DAYS, INCLUDING 2 WEEKEND DAYS

UKK RM42 accelerometer will be used during 7 consecutive days, including 2 weekend days. It must be reinforced that it is of great importance to wear the device on both weekend and week days, explaining that those two types of days are usually different concerning the PA/ sedentary behaviour patterns. On day 8, the participant must return both the accelerometer and the diary form to the partner team.

Note: It is important to anticipate any unusual situation that may restrain the participant to wear the accelerometer (e.g. wedding or any other special occasion, medical check-up, and water activities), in order to understand if the evaluation period must be postponed.

Note: The participants must be told that even if they forget to wear the device for one day, they must use on the upcoming days. There are real examples of participants that for any reason did not use the accelerometer for one day, and then decided not to wear the device anymore, because they understood that the whole evaluation process was compromised.

Note: In EUPASMOS, 7 days are being recorded; therefore, for operational reasons, ~2 weeks are needed to circle one device from one participant to another. Take that in account to plan your assessment schedule.

(6) Responsibilities for the participant - RECORD TIME AND REASONS FOR DEVICE'S REMOVAL

All participants will be asked to record timing and reasons for every occasion the device is removed in the registration (diary) form (delivered to the participants in addition to the accelerometer). The exact time in which they start using the device, as well as the time in which they remove the device must be recorded in this form for each corresponding day. This form must also contain the participant's code, accelerometer's code, and purposed evaluation days (day of the week and month's day).

➤ PRACTICAL PROCEDURES

- Give a standardized registration form to the participant which should include: the exact time in which they started to use the device, the time in which they remove it, reasons for removal, participant's code, accelerometer's code, and purposed evaluation days.

(7) Not swap devices with a family member – CHOOSE A PLACE TO KEEP YOUR DEVICE

If two participants live on the same house (i.e. couples or relatives), and in the case of being assessed at the same time, instruct to the participants that they should develop a standard rule regarding the place to left each accelerometer when not wearing it, to avoid swapping their devices during the evaluation period (the partner team must anticipate this situation and alert the participants).

2.8.2. Initialization

In accelerometry, the initialization process defines the quality of the assessment and has relevant repercussions in terms of output possibilities. Here are a number of settings that must be defined as follows, in order to harmonize procedures:

(1) Sampling frequency - 100 HZ FREQUENCY

Data will be recorded with 100 Hz sampling frequency.

(2) Epoch to use – 1 MINUTE EPOCH

Considering the analysis that will be performed, the epoch length agreed was 1 minute. This will not only allow to perform the analysis, as to reintegrate in larger epochs if necessary. Shorter epochs are also possible, but will have implications in the battery and storage capacity.

(3) Time to start recording – IMMEDIATELY AFTER BEING ACTIVATED

The first option is start the measurements when accelerometer is activated and given to the participant, after the instructions given by the partner team.

(4) Time lapse between initializing the monitor and participant wearing it - REDUCE TO A MINIMUM

The time lapse between device's initialization and deliver to the participants must be avoided or reduced to a minimum, as this increases the risk of battery depletion and usually represents a source of entropy when managing these procedures in large scale studies. Therefore, initialize the accelerometer presently and, after instructing the participant, data collection must start immediately.

(5) Matching codification of the accelerometer with participants' code - REGISTER CODES

Each accelerometer must be initialized for a specific participant. Therefore, for each accelerometer's code (from factory) must be designated the participant's code, and this must be recorded in the participants control table by the partner team in order to keep tracking of the devices that are in use or that have been delivered to the participants.

▾ PRACTICAL PROCEDURES

- Write the device number (5 digits) to the list together with participant's name and ID (participant code);
- Activate the accelerometer and, after instructions, measurement period will start.

2.8.3. Download/Upload data and data processing

Besides initialization and usability settings, accelerometry data processing can be performed based on different assumptions and criteria, with a variety of settings that must be defined in order to standardize the procedures. When each partner downloads the accelerometers data, the raw files are directly uploaded to the EUPASMOS cloud provided by UKK, so that the automatic algorithms can process all the data. In addition and in order to create a data backup, the partner team should save safely the raw files in their own storage system and send a copy of these files to the coordination centre at Lisbon using a pen-drive, preferably in every two months.

For each participant, the cloud will also generate an individual report sheet that should be also delivered and explained to the participant. This report should also be stored in the partners storage system and a copy should be sent also to the coordination centre at Lisbon.

Note: The content of the participant output report specific for each partner/country should be adjusted in their national language by the partner following the model provided by UKK in English. The translated version must be sent to UKK to be included in the EUPASMOS cloud.

▾ PRACTICAL PROCEDURES

- The download instructions to PC and uploading directly to the EUPASMOS cloud are described in detail in the appendices section.

The EUPASMOS partners agreed to develop a MAD-APE approach in this domain, because calculation is more simple, gives consistent results using waist-worn triaxial accelerometers raw data, is insensitive to accelerometer technical specs, accelerometer orientation and it is also valid in terms of energy consumption (MET).

Regarding the data processing/analysis after download, there are some choices that are going to be performed.

(1) Processing the data – MICROSOFT EXCEL

The analysis will be performed with Microsoft Excel 2016 (Microsoft Corporation, Santa Rosa, CA, USA).

(2) A valid day and number of days – > 600 MINUTES; > 4 days including 1 weekend day

A valid day will be defined as having 600 or more min of monitor wear. All recorded days in which total wear time is below this cut point should be discarded from analysis. For being considered a valid week, it is mandatory that the participant has at least 4 valid days, including one weekend day.

Note: When receiving the accelerometer the data can be automatically uploaded in EUPASMOS cloud and download in the PC. Although the cloud will process the data, it is also important that partners can identify if there is data in all 7 days and if there is enough data in each day. This procedure must not replace a carefully and detailed examination of the data to assess its validity, but is a simple manner of assessing the validation of the data and if there is a necessity for the participant to continue using the device for 7 more days.

(3) Non-wear period of time – 60-CONSECUTIVE MINUTES OF ZERO

It is proposed for EUPASMOS methodology that periods of at least 60-consecutive minutes of zero will be considered as non-wear-time. This information is for data analysis only, and must never be passed to the participants.

(4) Outliers or invalid records

Considering the UKK RM42 accelerometer, the UKK will help to identify in the data downloaded the outliers or invalid parameter values. This is important, because considering outliers in the dataset can alter the results and create bias without the researcher awareness.

(5) Cut points for PA – SB < 22.5 MG < LIPA < 91 MG < MPA < 414 MG < VPA

Physical activity will be defined when MAD value is above 22.5 mg (representing the cut point between sedentary behaviour (SB) and low intensity physical activity (LIPA). The optimal MAD cut-point for 3.0 METs (separating moderate from LIPA) is 91 mg (milligravity), and 414 mg for 6.0 METs (separating vigorous from moderate intensity physical activity).

(6) Missing and imputing data – NO IMPUTATION

To avoid error, the best practice would be to impute data based on the data records of each participant and to replace a non-wear period by its specific activity and corresponding intensity. However, when dealing with large datasets and considering that a lot of participants may not deliver precisely those records, to disregard the non-wear times and only consider the wear time periods in the analysis seems to be the best operational choice.

(7) Data extraction – CONSIDER THE DAILY INFORMATION

After defining and applying all the previous validation criteria, for each participant there will be an Excel file in which the accelerometer data are separated by evaluation day and presenting the amount of time spent in the several activity domains (sleeping, sedentary, LIPA, MPA, and VPA). For each main outcome, the valid days must be averaged and a final mean value will characterize the participant for that specific behaviour. This must be done for all the main outcomes. Database will be provided accordingly.

(8) Data storage – SAVE THE RAW AND PROCESSED DATA

After cleaning and processing the data, these files must be saved in a safe hardware; online cloud provided by UKK will automatically save data. Also, the raw data files must be saved for posterior analysis if necessary. It is very important to save these files (i.e. raw and analysed) in more than one place and the files' name must identify the participants' code. All data should also be sent to the coordination centre to store all information.

Note: There will be a computer, not connected to internet, that will store all the information at the coordination center.

2.9. Quality Control And Harmonization Process

Historically two different approaches were broadly proposed for collected data². In EUPASMOS, data analysis will be performed in a mixed two-step manner. First the data will be uploaded to the EUPASMOS cloud and analysis will be made accordingly. A personal report will also be generated based on data analysis. Meanwhile, decentralized processing by the partners team on their own data should be developed with uniform methodology for a first or preliminary validation of the data. Then, a centralized reprocessing of the highest resolution of data with the same uniform methodology will be developed, this process will be coordinated by the coordination team and UKK.

➤ PRACTICAL PROCEDURES

In order to clarify all these practical details, the following timeline is proposed:

- 1) After sending the EUPASMOS manual, it will be developed a specific web meeting in which a detailed and extended description of the Operations Manual will be discussed to all partners;
- 2) Following this web meeting, there will be a 1 to 2-week period of time, so that each partner from the participating countries can have the possibility to practice and mature all the procedures according to the Operations Manual;
- 3) Tutorial videos will also be available with specific and detailed instructions presented in the Operations Manual; Video from Ljubljana practical seminar regarding accelerometry is also available to all partners;

- 4) At the end of this period, there is a possibility of developing one-day visit by a specialist of the coordination center to test if all the procedures are being carried out according to the instructions in the Operations Manual. Small dedicated workshops could also be organized with a group of partners to work on the procedures;
- 5) During this eventual visit or dedicated workshops, correction of potential errors and a fine-tuning will be performed in all assessment procedures so that at the harmonization procedures between all MS can be achieved;
- 6) In this visit and to better train the procedures, it is suggested that each partner could simulated the evaluation procedures, which will be discussed with a member of the coordination center.
- 7) One researcher from each partner team will perform the evaluations, while the member of the coordination center will identify deviations from the reference method, without interfering with the evaluations. Both replications will be followed by a meeting with all the staff from, in which the member of the coordination center will systematically discuss the procedures developed during the simulations, and eventually clarify the reference procedures to be applied by all the staff.

A proposed schedule for procedures testing are described below:

Morning (Simulating the first evaluation moment)

- Participant Codification;
- Explanation of the assessment protocol to the participant and informed consent signature;
- Participants data registration in the Participants Control Table;
- Initialization of the accelerometer ;
- Mandatory – collection of socio-demographic variables (mandatory) and health status (optional); Optional – collection of determinants of physical activity (questionnaires SF-36 and NEWS-CFA);
- Anthropometric measurements as described in the Operations Manual– mandatory for the first 80-100 participants that will be used to the assessment of validity of the mandatory questionnaires;
- Delivery of the accelerometer to the participant;
- Exemplification of the application of the mandatory questionnaires – IPAQ-SF, GPAQ, EHIS, Eurobarometer and national questionnaires if used in the partner country;
- Collecting the accelerometer from the participant;
- Uploading the accelerometer data to EUPASMOS cloud and downloading to local PC; quick check of data validity/quality;
- Physical activity questionnaires (IPAQ-SF, GPAQ, EHIS-PAQ, Eurobarometer, and national questionnaire if available);
- Data storage locally (after the participant departure);
- Send the complete data (raw data file, participant's report and including the processed accelerometer data) to the coordination center in Lisbon.

Each of these steps in the evaluation process will be discussed and compared to the reference method (*Operations Manual*). Any deviations to the reference will be adjusted and in this way, harmonization of procedures will be attained.

The partners team must internally disseminate the correct procedures to all the staff involved in the assessments and ensure that all the procedures will be held according to the reference from that moment forward (see figure 4).

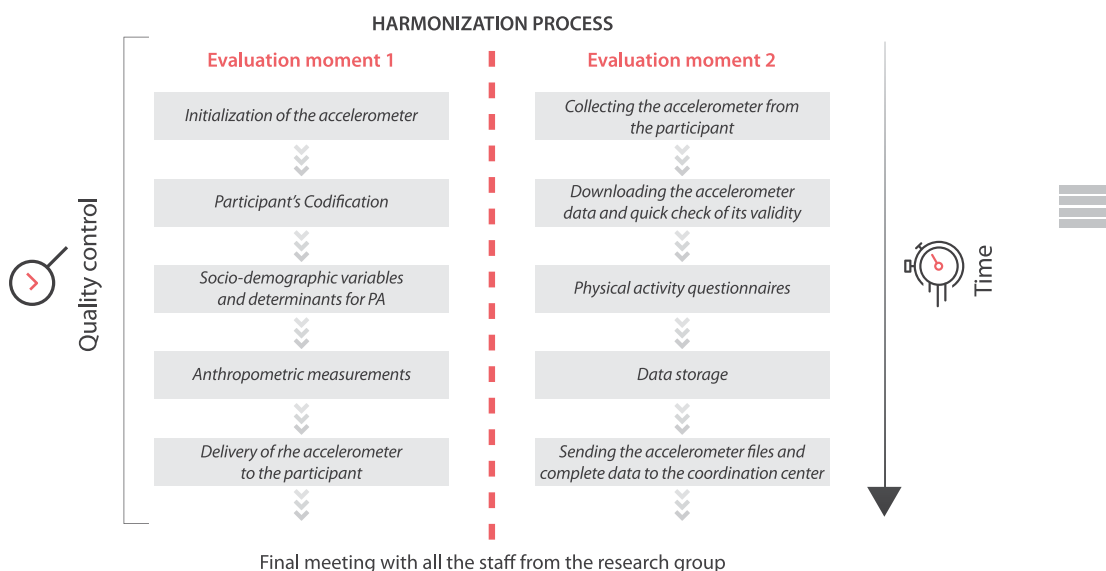


Figure 4. Harmonization process and quality control within each research center.

Besides the manual of operations, the web meeting, tutorial videos and the eventual technical visits to partner teams there are some general recommendations¹¹ to facilitate the process of pooling and harmonising epidemiological data when working in multi-center studies, that each research centre must be aware:

- Ensure that participants are informed of, and consent to, the possibility of their data being used beyond the original study but always included in EUPASMOS project;
- High resolution data (e.g. raw accelerometer data) is better suited to retrospective harmonisation than low resolution data (e.g. traditional accelerometer data);
- Be transparent and consistent regarding the data management processes (EUPASMOS Covenant Agreement frame the data management and publication between partners);
- Include data management expertise in the project team for the entire duration of the project;
- Ensure that the protocols of recruitment and measurement procedures are followed.

2.10. Correlates and Determinants of Physical Activity in the EUPASMOS

To implement an EU Physical Activity and Sport Monitoring System through the development of a harmonized framework is essential to understand the sedentary behavior, PA and sport participation across EU MS.

However, to be confined to the question “*who is more active and do sports?*” when aiming to implement a Physical Activity and Sport Monitoring System at the European level is a reductive perspective! In this sense, EUPASMOS partners must additionally consider the question: “*why are people physically active and do sports?*”. Evidence on correlates (factors associated with activity) or determinants (those with a causal relationship) has burgeoned in the past couple of decades, but has mostly focused on individual-level factors in high-income countries¹².

It has been shown that age, sex, health status, self-efficacy, and motivation are associated with physical activity, but ecological models take a broad view of health behaviour causation, with the social and physical environment included as contributors¹². Thus, in EUPASMOS, this domain will be considered following a classification based on a review of reviews by Bauman and colleagues published in Lancet¹².

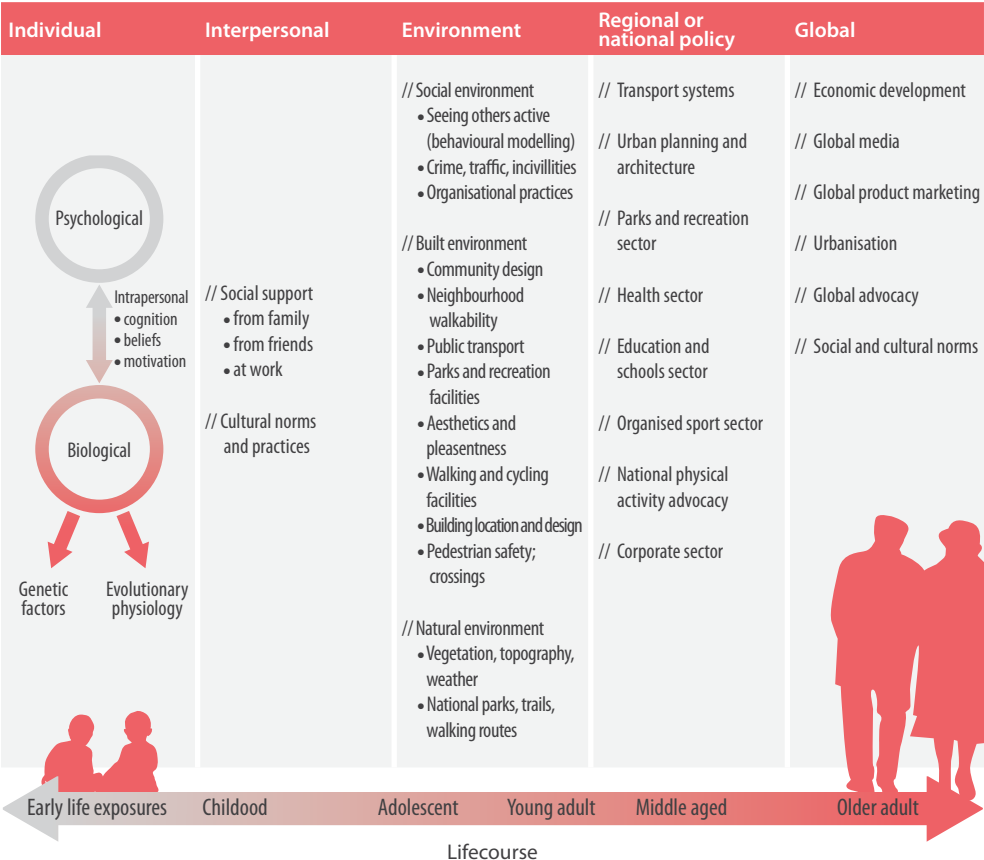


Figure 5. Adapted ecological model of the determinants of physical activity¹².

Based on the literature, from a longer list of correlates (see appendices – *4.5. Correlates and determinants that affect adults PA and sedentary behaviour*), there are a few ones that were highlighted and that must be included in a surveillance system:

- Reported health (already included in the health status questionnaire - optional);
- Intention to exercise (already included in the Eurobarometer Questionnaire);
- Sex (already in the socio-demographic questions - mandatory);
- Recreation facilities locations (already included in the Eurobarometer Questionnaire);
- Self-efficacy;
- Previous physical activity at all ages;
- Transportation environments;
- Aesthetics.

Thus, in addition to the socio-demographic and health variables that are included in the mandatory and optional questionnaires, there are relevant correlates and determinants that should be interrogated to the participants – which could be collected *using optional questionnaires*: **The Short Form (36) Health Survey (SF-36)** for the psychological and self-efficacy assessment and the **Neighbourhood Environment Walkability Scale Confirmatory Factor Analysis (NEWS-CFA)** for the evaluation of environmental correlates will allow to fulfil these needs.

- These 2 questionnaires have been widely tested and validated (more detailed information in the appendices); its usage is optional but highly recommended;
- If not available in the partner's language, a similar process of translation and validation should also be developed.

2.10.1. The Short Form (36) Health Survey (SF-36)

The SF-36 is a 36-item, participant-reported survey of patient health. It consists of 8 scaled scores; vitality, physical functioning, bodily pain, general health perceptions, physical role functioning, emotional role functioning, social role functioning, and mental health. Despite **being optional**, it suggested that EUPASMOS partners **use only the questions 23-31 and 33-36 of the SF-36 questionnaire**.

- The link to download the questionnaire and procedures to follow when applying the SF-36 can be found at:
https://www.rand.org/health/surveys_tools/mos/36-item-short-form/survey-instrument.html

📄 PRACTICAL PROCEDURES

- 1) Check if there is a validated version of the questionnaire translated into the corresponding language.
- 2) If yes, download the short version to be administered by interview. If the country methodology is not face to face interview, use the same method and identify it in data collection for treatment purposes;
- 3) If not, the research group will have to translate the questionnaire to their language and perform a validation study. Procedures described in the assessment of validity session (using 20 participants);
- 4) Prepare the questionnaire in digital support (e.g. google questionnaires). If not using the digital support, create a paper form to apply to participants during the first assessment moment (during the first visit to receive the accelerometer);
- 5) Test if there is any problem when filling in the form online before starting collecting the data;
- 6) In the online version of the questionnaire, the participant identification is mandatory as well as the date of evaluation and other demographic information; in paper version, ask for participants fill out the required questions;
- 7) Do not abbreviate the questions and please use all the text as stated in the original versions (losing information will limit the understanding by the participant and it may alter its validation).

2.10.2. *Neighbourhood Environment Walkability Scale Confirmatory Factor Analysis (NEWS-CFA)*

Developed in 2002, NEWS assesses residents' perception of neighbourhood design features related to physical activity, including residential density, land use mix (including both indices of proximity and accessibility), street connectivity, and infrastructure for walking/cycling, neighbourhood aesthetics, traffic and crime safety, and neighbourhood satisfaction. NEWS has been validated in several countries. Multiple versions have been developed. Despite **being optional**, it suggested that EUPASMOS partners use the **NEWS-CFA** version.

- The link to download the questionnaire and procedures to follow when applying the NEWS-CFA can be found at:
https://drjimsallis.org/Documents/Measures_documents/NEWS_CFA.pdf

📄 PRACTICAL PROCEDURES

- 1) Check if there is a validated version of the questionnaire translated into the corresponding language;
- 2) If yes, download the short version to be administered by interview. If the country methodology is not face to face interview, use the same method and identify it in data collection for treatment purposes;

- 3) If not, the research group will have to translate the questionnaire to their language and perform a validation study. Procedures described in the assessment of validity session (using 20 participants);
- 4) Prepare the questionnaire in digital support (e.g. google questionnaires). If not using the digital support, create a paper form to apply to participants during the first assessment moment (during the first visit to receive the accelerometer);
- 5) Test if there is any problem when filling in the form online before starting collecting the data;
- 6) In the online version of the questionnaire, the participant identification is mandatory as well as the date of evaluation and other demographic information; in paper version, ask for participants fill out the required questions;
- 7) Do not abbreviate the questions and please use all the text as stated in the original versions (losing information will limit the understanding by the participant and it may alter its validation).

2.11. Sending the Data to the Coordination Center

The EUPASMOS data (i.e. socio-demographic variables, anthropometric, data from all mandatory questionnaires, optional data, when collected, and accelerometry data) collected by each partner must be saved safely by the team. In addition and as previewed by the EUPASMOS covenant agreement the data should be sent to the coordination center every 2 months (eupasmoss@fmh.ulisboa.pt) in an Excel file to be compiled.

In this Excel file, the data must be organized according to the order in which the variables were presented in the Manual of Operations, to facilitate integration by the coordination centre. In this Excel file, only the processed accelerometry output must be integrated, and the raw files must be sent in separate.

Coordination centre, UKK and the partners participating in data analysis as previewed by the EUPASMOS application will support in this domain. Coordination team will provide more guidance on this Excel file structure.

2.12. Regarding the Accelerometry Data

The download of the accelerometer data and the data upload to EUPASMOS cloud must be performed by each partner team independently according to instructions provided by UKK (and included in the Operations Manual). Both raw files (without any treatment) and processed files must be also saved in safe hardware and online clouds. to be sent to the EUPASMOS cloud and after processing to the coordination center every 2 months. The files' name must identify the participants' code and they must be compiled in a larger file identifying the research center, country, and date.

- 1) **Only valid data** must be sent to the coordination center, for that purpose each partner team must previously consider as a valid record for each participant, when at least 4 valid days exist, from which at least 1 day has to be a weekend day;
- 2) Compile all **processed data** from valid records in the Excel file to be sent to eupasmos@fmh.ulisboa.pt and paulo.rocha@ipdj.pt so that it is possible for the coordinating center to know how was the validation analysis performed in each research center and quickly confirm the validity of the received accelerometer data.
- 3) Compile all raw data files from the valid records and send to eupasmos@fmh.ulisboa.pt and paulo.rocha@ipdj.pt (this will allow to process all the data in the coordination research center).
- 4) In the email to be sent every **two months**, the **EUPASMOS partner** and corresponding **country** must be identified. Also, the **amount** of data that is being sent must be stated in the text (number of valid records that are being sent).
- 5) Both the processed and raw data must be in English.



2.13. EUPASMOS TIMELINE

EUPASMOS

Update Project Timeline

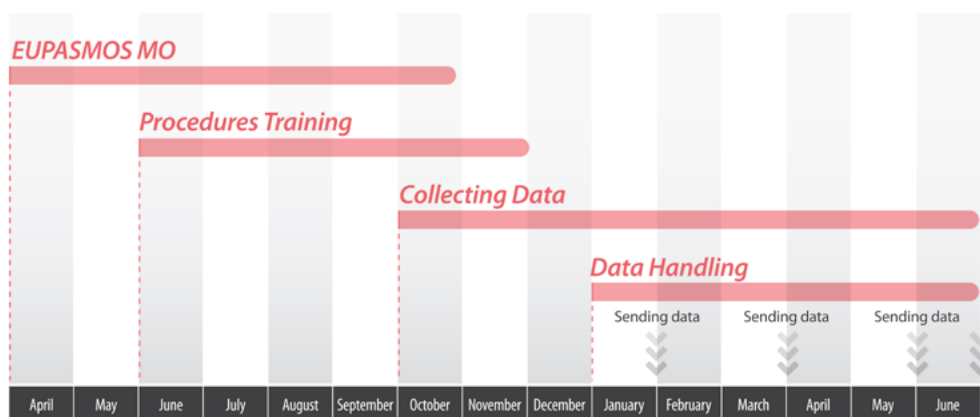


Figure 6. Original EUPASMOS timeline.

- 1) From April until the end of October the Operations Manual (OM) will be discussed and a final version will be determined;
- 2) Until end of November each MS will be training the evaluation procedures according to the OM;
- 3) Until the end of November the eventual visits from an expert to research centers (harmonization process) should be completed;

- 4) In November partners will start the collection, which should be completed until the end of June 2019. This will allow the evaluation period to cover the existing variability between different seasons and weather conditions;
- 5) Every two months all research centers will send the data to the coordination research center;
- 6) Data handling will start in January 2019; main data analysis should be concluded until the end of the project;
- 7) Briefly, several Milestones are defined: the first will correspond to the OM finalization; the second will determine the beginning of data collection; the third milestone indicates the beginning of data handling; the fourth identify the beginning of data analysis and development of the EUPASMOS outputs (publications, reports and toolkit); the final milestone is the final conference.



3

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APPENDICES



4.1. Questionnaires' validity

There are two common ways of measuring free-living physical activity and sedentary behaviors; by using subjective methods (e.g. questionnaires) or objective methods that do not rely on individuals' memory or beliefs (e.g. accelerometers). Contrary to objective tools such as accelerometers, questionnaires are prone to recall bias, but they allow identifying the type of behavior, the context, and sometimes the motivation or correlates for those behaviors, which is impossible to address with accelerometers¹³. Recently, it has been proposed that combining questionnaires and more objective tools must be considered to gain the most complete physical activity information¹⁴, thus this project is in line with this trend.

4.1.1. IPAQ

More than 90 papers have been published on the validity or reliability of physical activity questionnaires¹⁵. In recent studies, the IPAQ seems to be used most often and it is by far the most widely validated questionnaire at present¹⁵. It has been used in representative population samples as a recent investigation including 49,493 adults from 20 countries¹⁶, and also considered as a criterion measure for validating other questionnaires¹⁷. IPAQ questionnaire is available in a short form for surveillance and in a longer form when more detailed physical activity information is collected. Both forms are available in a number of languages. IPAQ has been rigorously tested for reliability and validity and this has been replicated in a number of countries¹⁸. However, the validity of the IPAQ depends on the version that is being applied and also other methodological options such as the method of response (interview or self-response)¹⁸.

Even though the short version of the IPAQ is more simply and quick to apply in large scale studies, the correlation between the IPAQ-SF and objective measures of activity in the majority of studies was lower than the acceptable standard^{3,19}, with the IPAQ-SF typically overestimating physical activity as measured by objective criterion by an average of 84 percent¹⁹. In opposition, a systematic review found that IPAQ short ($r=0.76$) and long version IPAQ ($r=0.81$) both presented acceptable to good reliability¹⁸. A recent study found that relative agreement (relationships of IPAQ-LF with accelerometry-based PA and sedentary behavior variables) was small to moderate ($r = 0.05-0.37$) and was moderated by socio-demographic (age, sex, weight status, and education) and behavioral (PA-type) factors²⁰. The absolute disagreement was large, with participants' self-reporting higher PA intensity and total time in moderate-to-vigorous-intensity PA compared to accelerometry. Also, self-reported sitting time was lower than accelerometry-based sedentary behavior²⁰. Thus, the findings from this investigation suggest systematic cultural and/or linguistic and socio-demographic differences in absolute agreement between the IPAQ-LF and the accelerometry-based PA and sedentary behavior variables²⁰.

4.1.2. GPAQ

The studies aiming to validate the GPAQ are limited, but it has been used in more than 100 countries globally, mainly through the WHO STEPwise approach to NCD risk factor surveillance (STEPS). GPAQ covers several components of physical activity, such as intensity, duration, and frequency, and it assesses three domains in which physical activity is performed (occupational physical activity, transport-related physical activity, and physical activity during discretionary or leisure time) and has been found to be a suitable and acceptable instrument for monitoring physical activity in population health surveillance systems¹⁷. More specifically, GPAQ was tested in diverse sample of nine global countries and overall GPAQ provides reproducible data and showed a moderate-strong positive correlation with IPAQ¹⁷. An investigation²¹ found a moderate agreement between GPAQ and accelerometer for MVPA ($r = 0.48$) and poor agreement for sedentary behavior ($r = 0.19$). The absolute mean difference (self-report minus accelerometer) for MVPA was -0.8 mins/day and 348.7 mins/day for sedentary behavior; and negative bias was found to exist. The people who were more physically active over-reported their level of MVPA, while those who were more sedentary were less likely to under-report their level of sedentary behavior²¹.

4.1.3. EHIS-PAQ

The European Health Interview Survey-Physical Activity Questionnaire (EHIS-PAQ) is a novel questionnaire for the surveillance of physical activity during work, transportation, leisure time, sports, health-enhancing and muscle-strengthening activities over a typical week and it was validated against accelerometry and other reference methods³. A study examined the reliability and validity of the EHIS-PAQ in a population-based sample of adults and found it to show acceptable reliability, with a median intraclass correlation coefficient across PA domains of 0.55 (range 0.43-0.73). Compared to the accelerometer GT3X+, the EHIS-PAQ underestimated MVPA (median difference -11.7). Spearman correlation coefficients (ρ) for validity were moderate-to-strong ($\rho's > 0.41$) for work-related PA against IPAQ=0.64 and accelerometry (GT3X+=0.43), transportation-related PA (IPAQ=0.62, GT3X+=0.43), walking (IPAQ=0.58), and health-enhancing PA (IPAQ=0.58, GT3X+=0.44), and fair-to-poor ($\rho's < 0.41$) for moderate-to-vigorous aerobic recreational and muscle-strengthening PA⁴.

4.1.4. Eurobarometer - Sport and Physical Activity Questionnaire

The Sport and Physical Activity Questionnaire includes 14 questions regarding the frequency and levels of engagement in organized exercise or sports activities, recreational or non-sport-related physical activities, vigorous physical activity, and moderate physical activity, walking, and sitting time. This is an incorporation of the IPAQ, therefore the validity of this domain is already established in the 4.1.1 subsection. Additionally, it also includes questions about where and why people perform exercise/physical activity, with questions about the context in which people per-

form exercise, the type of motivation, and the main barriers for not doing it. Finally, voluntary work that supports sport activities is also aimed in the final 3 questions. Regarding these last two domains there is a lack of studies examining their validity in its current form. However, Eurobarometer Sport and Physical Activity Questionnaire has been used at the European level for more than 40 years and in a variety of countries to assess peoples' physical activity and exercise habits²²⁻²⁴ as well as being considered the reference when validating other questionnaires²⁵.

4.1.5. Contribution of the EUPASMOS to the validity of questionnaires

When evaluating the validity and accuracy of widely used PA questionnaires, there were some observed differences between sex, education, BMI and urban/rural and between countries¹⁷. According to the Special Eurobarometer 334 - Sport and Physical Activity, the more physically active countries are overall clustered in the Northern part of the EU, while the less active are mainly the Southern countries, suggesting that these variations may reflect the facilities and infrastructure availability and other cultural issues related with PA and sport participation. In addition, the cultural differences among countries may influence how the responders understood the terminology used within the questionnaires and this may have affected the results²⁶⁻²⁹. Thus, adapting the questionnaire to different languages and according to the cultural settings of each country is of great importance²⁶⁻²⁹.

Since there are cultural and linguistic differences among the EU MS, evaluation of cross-cultural and construct validity of the questionnaires will also be a priority of this project. Adaptation of PA self-report questionnaires is sometimes required to reflect the activity behaviors of diverse populations⁷, although the processes used to modify self-report questionnaires are typically underreported. A meta-analysis³⁰ indicated that IPAQ is a reasonably valid measurement tool for measuring habitual PA. However, the variations in convergent validity across different PA categories and moderator variables (short vs long version; typical week vs last week; English or translated to other language) imply that different research conditions should be taken into account prior to deciding on use of the appropriate type of IPAQ. Adaptation of the questionnaires to different languages and according to the cultural settings of each country has been done previously²⁶⁻²⁹ and seems to represent an advantage.

4.2. Accelerometry harmonization

Accelerometers, small lightweight devices that are usually worn on an elastic belt positioned on the hip or lower back, become an increasingly popular tool to measure the frequency and amplitude of acceleration of the body segment to which they are attached and often integrate this information in the form of movement 'counts'³¹. In addition, as the collected information is stamped with real time, specific segments of the day or week can be extracted, such as after school or time at work. Key issues in the use of accelerometry relate to device initialization, post-processing, signal feature extraction and inference of specific outcome variables.

Accelerometry is increasingly being used in physical activity research, but diversity in sensor design, attachment and signal processing challenges the comparability of research results³². Therefore, efforts are needed to harmonize the methodology³³. We proposed a minimum checklist for operational procedures when working with accelerometers so that parameters such as the choice of epochs, intensity cut-offs, number of continuous zeros to define non-wear time, minimal data collection to consider a valid day, and sampling frequency can be standardized among MS. There is evidence showing that small differences in accelerometer data processing such as the chosen epochs (e.g. 15 seconds or 60 seconds)³⁴, or adopting different cut-offs to define activity intensity according to different authors can drastically alter physical activity and sedentary behaviour estimates³⁵. Thus it is essential to harmonize these parameters between MS and within each MS, so that large scale comparability of data can be performed, otherwise observed differences between populations may simply be explained by differences in measurement methodology. Recently, investigators have developed new algorithms that use raw information from accelerometers, reducing the variability within the traditional count-based accelerometry analysis that encompasses a number of methodological decisions prior to the data obtainment⁷.

4.2.1. General Information Regarding the Analysis Method

For informative purposes, the EUPASMOS Manual of Operations describe in this section general information regarding the analysis method.

The acceleration data is collected in raw mode and needs to be transformed into g-units. From the different traits tested, the MAD⁶ was the one that consistently provided better performance for the analysis in different accelerometer brands. MAD describes the typical distance of data points about the mean value, i.e., the variation in the acceleration magnitude irrespective of its direction¹.

The acceleration magnitude is defined as the resultant acceleration (r_i) presented in the following equation, considering all the acceleration axes.

$$r_i = \sqrt{x_i^2 + y_i^2 + z_i^2}$$

For each epoch size block analysed (e.g., 5 second epoch duration), a mean resultant value is calculated (R_M) and the MAD value for the epoch is defined as:

$$MAD = \frac{1}{n} \sum_{i=j}^{j+n-1} |r_i - R_M|$$

A MAD value can also be calculated for each individual axis when comparing variations in the axis-specific acceleration to the variation in the resultant acceleration⁷.

4.2.2. APE description

The angle for postural estimation (APE) of the hip-worn accelerometer in terms of the gravity vector is calculated for each epoch, and it denotes the angle (θ) between the measured epoch vector (M) and reference vector (R). The APE is calculated using the scalar product function, which defines the angle between 2 vectors as follows:

$$\theta = \cos^{-1} \frac{M \cdot R}{\|M\| \|R\|} = \cos^{-1} \frac{x_M x_R + y_M y_R + z_M z_R}{\sqrt{x_M^2 + y_M^2 + z_M^2} \sqrt{x_R^2 + y_R^2 + z_R^2}}$$

M represents the vector with the mean values for each axis for the epoch being measured and R represent the axis values of the reference vector.

For categorize each epoch as sedentary behaviour (i.e., sitting or lying) or as non-sedentary behaviour (i.e., other activities), the data will be analysed using the method³⁸, where data is processed in two moments. In the first moment, the data is divided into 2-second epochs and analysed per second. In a second moment, data is filtered using a median filter of 29-second window size.

In the first moment, the angle of inclination and the SD (standard deviation) of the x-axis will be considered. The angle of inclination is calculated, for each epoch, with the mean acceleration per axis vector (A) and the mean acceleration value for the x-axis (A_x) as follows:

$$Inc = \cos^{-1} \frac{A_x}{\|A\|}$$

When the SDx is less than 100 mg and inclination is greater than 45° it is considered as sedentary behaviour, otherwise would be non-sedentary behaviour¹.

After the second moment, when analysing the data in the 6-second epochs, the following diagram follows to categorize the epoch activity.



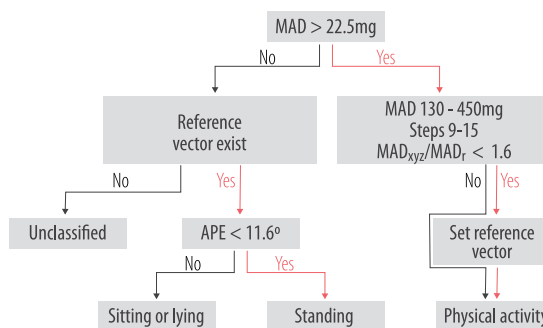


Figure 7 Processing raw data from triaxial accelerometer. The hip-worn accelerometer orientation during walking is used as a reference value¹. The MAD describes the variation in the acceleration magnitude irrespective of its direction, and this will be the chosen method for accelerometry processing. The acceleration magnitude is defined as the resultant acceleration (r_i) calculated from measured data samples from all 3 orthogonal measurement axes x_i , y_i , and z_i for each (i th) time point. If SDx is smaller than 100 mg and inclination is greater than 45° , the epoch is classified as sedentary behaviour (i.e., sitting or lying). Otherwise, it will be classified as non-sedentary behaviour (non-sedentary behaviour). The data from the hip-worn accelerometer will be analysed with the MAD- angle for posture estimation (APE) method in 6-second epochs. Sitting will be defined when MAD value is below 22.5 mg and APE is greater than 11.6° (sensitivity 94.2%; specificity 94.5%). Standing will be defined by a MAD value below 22.5 mg and APE below 11.6° . An APE greater than 64.9° (sensitivity 100% and specificity 100%) will define lying. The 22.5 mg limit for inactivity is derived from the pooled data of previous studies^{7,37}.

4.3. Considerations for Researchers When Using Accelerometers³⁹

(1) Number of axis in accelerometry

Always ensure that a three-dimensional accelerometry is being used. This will allow applying the most recent algorithms to estimate postures and other new approaches such as pattern recognition or machine learning data analytic approaches to identify specific activities carried out.

(2) The importance of the chosen epoch

A significant effect of epoch length on accelerometer-determined PA/sedentary time has been reported³⁴, but findings are inconsistent, and the most appropriate sampling frequency has yet to be established⁴⁰. In general, it is beneficial for researchers to collect data in as short epoch as possible, as this provides information on exposure at the highest possible resolution. One study analysed the effect that epoch length (1, 2, 3, 5, 10, 15, 30 and 60 seconds) could have on different PA intensities in physical education lessons of 1912 students³⁴. This study found that longer epochs were associated with significantly higher levels of LIPA, MVPA and lower levels of sedentary time. For example, the percentage of time spent in sedentary behaviour during physical education lessons decreased from 53% (1-second epoch) to 15% when using 60-second epochs³⁴. Moreover, data collected under shorter epochs can always be reintegrated into longer epochs, facilitating the process of directly comparing findings across studies. Importantly, data collected using longer epochs cannot be partitioned into shorter time frames. In the absence of a consensus regarding optimal epoch length, data collection using the shortest possible epoch provides an opportunity for data to be reintegrated and compared between studies that would not otherwise be possible.

(3) Primary outcome; total activity, type of activity, time spent at different intensity levels, or estimates of PAEE

The type of activity and the time spent in different intensity levels must be the goal of any epidemiological research project using accelerometry, because the total activity or concurrent PAEE do not fully take advantage of these objective methods of evaluation. Also, when aiming to separate distinct activities, there is a need for choosing cut points to use, and this choice will have the power to modify the outcomes.

(4) Decision about the minimal wearing time to constitute a valid day

Consider the widely used and previously validated criteria of 600 minutes (10 hours) to consider a valid day. In adults, a minimum of 10 hours of wear time has usually been required^{41,42}. Other criteria such as 500 minutes have also been used to define a valid day.

(5) Length of assessment period based on the population

The type of population that is being studied is of great importance when choosing the least amount of days necessary to characterize someone's profile. For example if studying children the minimal amount of days necessary to characterize their normal routine will be a full week (7 days), with some evidence that more days are necessary. When studying adults, this number can be reduced to 3 days (with at least one weekend day). However, given that there is always some risk of having non-valid days, the best practice will be to use the device for at least 5 days (2 weekend days). The monitoring period for accelerometer-based assessments of sedentary time has typically been of 7 days^{41,43}, with participants included in subsequent analyses if they provided sufficient data for at least 3–5 days. In older adults, it has been suggested that 5 days are sufficient to accurately predict average daily sedentary time by accelerometry⁴⁴. Further work is required to examine between-day variability and possible seasonal variation, both of which will have implications for the monitoring period required.

(6) Sufficient instruction on placement and wearing

This is probably the most crucial point in all process. The investigators must keep in mind that some participants never contacted with these devices, and usually they have their own ideas and believes (often wrong), that can affect the correct placement and wearing details. It is of great importance to lose some time explaining all the recommendations, and if possible to give real examples on their routines. Example: We can say "please use the device while you are awake and only remove for water based activities such as swimming and showering", and apparently this is correct. However, some participants may take a shower late in the afternoon and then forget to wear the device afterwards or simply think that because they are at home it is not necessary. Thus, a more real approximation can be more effective "please use the device while you are awake and only remove for water based activities such as swimming and showering, but please note that if you take a shower, even if it is late in the afternoon, once you finish you should wear the device as soon as possible. Even if you are just lying on the sofa and looking at TV, it is very important that you wear the device." This slight different approach may be the difference between a valid day or not.

(7) Mode of contacting the participants (i.e. phone, SMS or email)

This is sensitive, once what we consider encouragement may be perceived by the participant as lack of trust, therefore this must be avoided. Because we are studying humans, it will always depends on the person that we are dealing with, but by contacting the participants during the assessment, one can also be influencing them to be more active and that must be avoided.

(8) Activity logs or detail wearing and non-wearing times

Participants must be required to record all occasions in which they remove the device and to identify the reason. Additionally, identification of non-wear time is typically conducted by selecting a period of consecutive zero counts above which it is deemed that the device must have been removed. These segments of zero counts are then removed from further analysis. In studies concerned with estimating sedentary time, non-wear criteria have varied from 10 to 60 min of consecutive zero counts^{45, 46}.



4.4. UKK RM42 Accelerometer Practical Guide

Before delivering the accelerometer to the participant

- 1) Make sure the green light is blinking (properly functioning);
- 2) If the device does not move for a while it will go to standby mode. When the device is moved again, it is set to measuring mode and the light turns on;
- 3) When the battery is close to finish, the blinking light is red;
- 4) No light (green or red) means that the device is without battery.

Delivering the accelerometer

- 5) Put the device into the belt pocket and close the flap;
- 6) Write the device number (5 digits) to the list together with the participant's ID;
- 7) Adjust the belt to the participants, remind that the flap of the belt-pocket must be upwards;
- 8) Open the belt in a circle and step into it. Lift the belt around your hip (right side);



- 9) Check that the mouth of the belt -pocket is upwards and the pocket-flap is closed. The flap should be against your body;
- 10) Adjust the belt for your size and secure the loop to the hook;
- 11) When you go to sleep, take the device out of the belt-pocket and push it into the bottom of the wristband pocket, on the non-dominant wrist;
- 12) When you wake up remember to remove the device back to the belt-pocket.

When you go to sleep, take the device out of the belt-pocket and push it into the bottom of the wristband pocket.

Attach the wristband to your non-dominant wrist so that the device becomes on knuckles side.

Adjust the band so that it will not circle around while sleeping.

When you wake up, remember to remove the device back to the belt-pocket.

After one week (7 consecutive days) has expired, return the device, belt and wristband to...

[Add your local information]

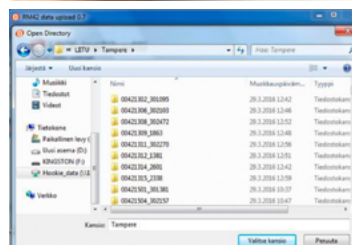


Device returned

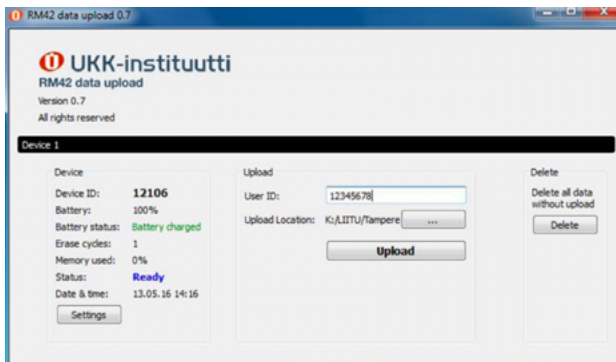
- 13) Remove the device from the pocket;
- 14) Check that the 5 digits of the device coincide with the ones on your list.

Downloading/Uploading the data to EUPASMOS Cloud

- 15) Open RM42 program on your computer;
- 16) Connect the device to the mini USB of the data cable;
- 17) Connect the cable to the USB-port on your computer.



18) When the device is properly connected;

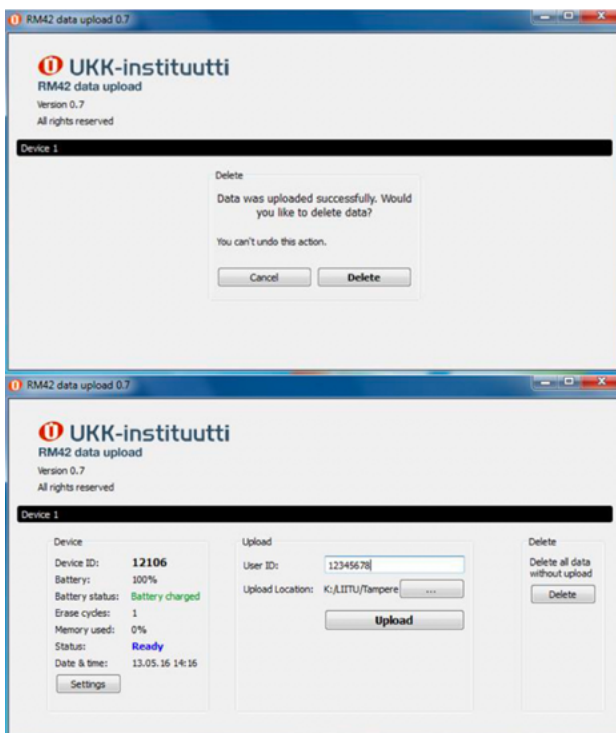


19) Write the user's ID-code to 'User ID'. The program creates a participant specific upload folder automatically

20) Select upload folder ("Upload Location:"), for example "K:\Liitu\Tampere" and press 'Select folder'. The selected folder will remain as a default folder

21) You can also upload the data directly to the EUPASMOS cloud with your personal password

22) Start the uploading by pressing upload

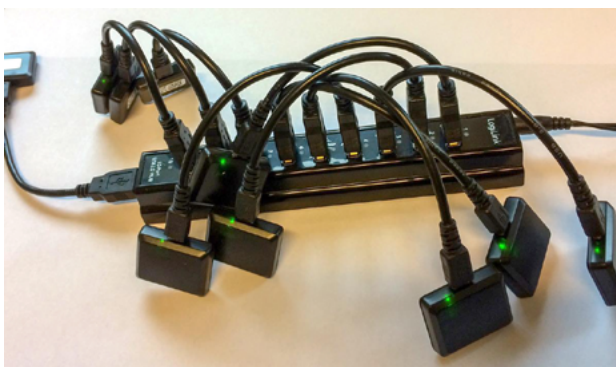


23) After successful upload press delete;

Note: If uploading failed, select cancel and try again;

24) After successful uploading, you can remove the device from the cable and insert it into charging-Hub;

Note: If your PC crashes after removing the device, use the 'Safely remove hardware' -option of your Windows. In this case, you can download only one device at the time.



25) It will take about 0.5–2.5 hours to recharge 10 devices;

26) Check the recharged devices one by one with the RM42 Program. If the 'Battery' does not show 100 % (or close that) after the recharge, disconnect the device and connect it again. If the 'Battery' still shows 0 %, return the device to the UKK Institute.

ATTENTION!

- It will take up to 2.5 hours to recharge 10 devices in one charging-Hub.
- Do not leave the devices on the charging-Hub longer than needed.
- Do not leave the devices in the hot or cold places.
- Avoid unnecessary movement of the recharged devices before the delivery.

4.5. Correlates and determinants that affect adults PA and sedentary behaviour¹²

In this section we present additional information about correlates and determinants that affect PA and sedentary behaviour.

Environmental module

- 1) Neighbourhood safety
- 2) Access to destinations
- 3) Infrastructures, social environment, and aesthetics

- 4) Connectivity of the street network
- 5) Infrastructure for walking and cycling
- 6) Residential density
- 7) Transit stop
- 8) Road and sidewalk infrastructure
- 9) Ease to cycle
- 10) Presence of bike lanes
- 11) Limited public transport
- 12) Concerns for crime
- 13) Unsuitable weather
- 14) Season
- 15) Population density
- 16) Urban vs. Rural (already in the socio-demographic)

Home/Work settings

- 1) Type of accommodation (already in the socio-demographic)
- 2) Number of PCs at home
- 3) Size of the largest TV set
- 4) Number of TVs at home
- 5) Shower facilities at work
- 6) Safe bike storage at work

Personal

- 1) Age (already in the socio-demographic)
- 2) Sex (already in the socio-demographic)
- 3) BMI (already in the socio-demographic)
- 4) Education level (already in the socio-demographic)
- 5) Personal income (already in the socio-demographic)
- 6) Smoking
- 7) Alcohol consumption
- 8) Marital status (already in the socio-demographic)
- 9) Number of children per person (already in the socio-demographic)
- 10) Employment and retirement status (already in the socio-demographic)
- 11) Poor sleeping habits
- 12) Cell phone use
- 13) Hours worked per week
- 14) Household motor vehicles



Psychologic

- 1) Perceived stress
- 2) Self-efficacy

Social

- 1) Social environment
- 2) Friends' support
- 3) Family's support
- 4) Presence of neighbourhood exercisers
- 5) Occupational status: Blue collar; White collar (already in the socio-demographic)

Pre-Natal

- 1) Heritability
- 2) Birth weight
- 3) Maternal age
- 4) Maternal physical activity/sedentary behaviour
- 5) Maternal pre-pregnancy BMI



4.5.1. The validity of the SF-36

The SF-36 is a 36-item, participant-reported survey of patient health. It consists of eight scaled scores; vitality, physical functioning, bodily pain, general health perceptions, physical role functioning, emotional role functioning, social role functioning, and mental health. The SF-36 is the most widely used Health-related quality of life (HRQOL) instrument in physical activity research. This questionnaire has been widely used and validated. For example, one study found discriminant validity of the general mental health and physical functioning scales of the SF-36⁴⁷. They also found moderate construct and criterion validity for the social functioning scale of the SF-36 and considerable overlap between the general mental health and social functioning scales⁴⁷. Evidence confirms the robustness of SF-36 questionnaire in older adults⁴⁸, obese people⁴⁹, and the construct validity of this questionnaire has also been proven to be good for specific health conditions and in different countries^{50,51}.

A recent study performed separate meta-analysis for each HRQOL domain (physical and mental). A total of 87 effect sizes were analysed, 44 for the physical health domain and 43 for the mental health domain. The effect sizes were strong and significantly different from zero for both physical health (ES = .90 [95% CI: .88, .92], $p < .001$) and mental health (ES = .90 [95% CI: .89, .91], $p < .001$) domains. These findings show that both HRQOL scales of the SF-36 assessment are reliable across a wide variety of physical activity studies⁵². Interestingly, this meta-analysis also concluded that the short versions were more valid and reliable than the long versions⁵².

4.5.2. The validity of the NEWS-CFA

Developed in 2002, NEWS assesses residents' perception of neighbourhood design features related to physical activity, including residential density, land use mix (including both indices of proximity and accessibility), street connectivity, and infrastructure for walking/cycling, neighbourhood aesthetics, traffic and crime safety, and neighbourhood satisfaction. NEWS has been validated in several countries. In EUPASMOS, the NEWS-CFA version will be used. NEWS and NEWS-short version (NEWS-A) possess adequate levels of factorial and criterion validity⁵³. A study that aimed to cross-validate the individual and block group-level measurement models of the NEWS and NEWS-A in a geographical location and population different from those used in the original validation study⁵⁴ found that both long and short versions were appropriate but alerted that prior to using these instruments in international and multi-cultural studies, further validation across non-English speaking countries was needed⁵⁴. To overcome these issues a multi-country study (12 countries) proposed country-specific modifications to the original scoring protocol of the NEWS/NEWS-A that enhance inter-country comparability⁵⁵. These modifications have yielded sufficiently equivalent measurement models of the NEWS/NEWS-A. However, it is important to acknowledge that some inter-country discrepancies remain⁵⁵. More recently, other validation efforts have been made in order to test-retest reliability of the NEWS in, for example, the sub-Saharan African countries^{56, 57}.



4.6. Explanation Codebook

In this section, it is presented the overview of all questions included in the EUPASMOS regarding the demographic variables (including anthropometric measures and health) and physical activity in order to harmonize the data collection.

Three codebooks have been made:

1. Mandatory socio-demographics
2. Optional socio-demographics (health status)
3. Mandatory sport, physical activity and sedentary behavior questions

In each codebook, an overview of the questions asked, the accompanying closed answers if applicable, and the variable names are provided (Table 1). Also, where a question only has to be asked if e.g. the previous question is answered with yes, this will be indicated in the last column 'dependencies'.

In the following pages, it is presented an overview of the variable names and their accompanying variable labels, formats, values and value labels given for the database (Table 2).

4.6.1. Mandatory demographics

Note: 'intmethod' (Data collection method used), ID (ID of the participant), BMI_assess (method used to assess BMI) do not involve questions for the participant, but need to be registered in the database (see Table 2).

Table 1. Questions, (closed) answers and variable names

Nº	VARIABLE NAME	QUESTION	ANSWER(S)
1	intmethod	N/A	N/A
2	ID	N/A	N/A
3	Refdate	What is the date you answered the questionnaires?	dd.mm.yyyy
4	Sex	What is your sex?	- Male - Female
5	Birthdate	What is your date of birth?	dd.mm.yyyy
6	Countrybirth	In which country were you born?	See separate Excel-file 'List of countries'*
7	Countryfather	In which country was your father born?	See separate Excel-file 'List of countries'*
8	Countrymother	In which country was your mother born?	See separate Excel-file 'List of countries'*
9	Education_fol	What is the highest level of education you have followed?	- No formal education or below primary education - Primary education - Lower secondary education - Upper secondary education - Post-secondary but non-tertiary education - Short-cycle tertiary education; - Bachelor's or equivalent level; - Master's or equivalent level; - Doctoral or equivalent level - Not stated**
10	Education_com	What is the highest level of education you successfully completed?	- No formal education or below primary education - Primary education - Lower secondary education - Upper secondary education - Post-secondary but non-tertiary education - Short-cycle tertiary education; - Bachelor's or equivalent level; - Master's or equivalent level; - Doctoral or equivalent level - Not stated**
11	Height	If not measured ask: <i>How tall are you without shoes?</i>	[...] cm
12	Weight	If not measured ask: <i>How much do you weigh without clothes and shoes?</i> NB Ask pregnant women to report their weight before pregnancy	[...] kg
13	BMI_assess	N/A	N/A
14	gen_health	You might want to use the following intro: ' <i>I would now like to talk to you about your health.</i> ' <i>How is your health in general?</i> <i>Is it ...</i>	- Very good - Good - Fair - Bad - Very bad

N/A: Not applicable

*Please use the list from the separate Excel-file 'List of countries_EUPASMOS'. You can translate the countries into your own language. Please use the values and labels from the Excel-file and do not change them when you order the countries alphabetically in your language.

**For an explanation of the educational levels see

<https://circabc.europa.eu/sd/a/84d88f97-9cc7-45be-963f-ed088440b04b/ISCED%202011%20Operational%20Manual.pdf>

Table 2. The variable names, variable labels, the variable formats and accompanying values and value labels for the database

VARIABLE NAME	VARIABLE LABEL	FORMAT	ANSWER(S)
intmethod	Data collection method used	Numeric	10 = Self-administered, postal non-electronic version 11 = Self-administered, postal electronic version (e-mail) 12 = Self-administered, web questionnaire 20 = Face-to-face interview, non-electronic version 21 = Face-to-face interview, electronic version 30 = Telephone interview, non-electronic version 31 = Telephone interview, electronic version 40 = Web personal interview
ID	ID of the participant	String (width =6)	CC is country number, XXXX is participant number, eg 010001.
Refdate	Reference date of the interview	Date (dd.mm.yyyy)	N/A
Sex	Sex of the participant	Numeric	0 = Male 1 = Female
Birthdate	Date of birth of the participant	Date (dd.mm.yyyy)	N/A
Countrybirth	Country of birth of the participant	Numeric	See separate Excel-file 'List of countries'* e.g. 1 = Afghanistan
Countryfather	Country of birth of the father of the participant	Numeric	See separate Excel-file 'List of countries'* e.g. 50 = Costa Rica
Countrymother	Country of birth of the mother of the participant	Numeric	See separate Excel-file 'List of countries'* e.g. 100 = Japan
Education_fol	Highest level of education followed	Numeric	0 = No formal education or below ISCED 1 1 = ISCED 1 Primary education 2 = ISCED 2 Lower secondary education 3 = ISCED 3 Upper secondary education 4 = ISCED 4 Post-secondary but non-tertiary education 5 = ISCED 5 Short-cycle tertiary education; 6 = ISCED 6 Bachelor's or equivalent level; 7 = ISCED 7 Master's or equivalent level; 8 = ISCED 8 Doctoral or equivalent level 9999 = Not stated
Education_com	Highest level of education attained	Numeric	0 = No formal education or below ISCED 1 1 = ISCED 1 Primary education 2 = ISCED 2 Lower secondary education 3 = ISCED 3 Upper secondary education 4 = ISCED 4 Post-secondary but non-tertiary education 5 = ISCED 5 Short-cycle tertiary education; 6 = ISCED 6 Bachelor's or equivalent level; 7 = ISCED 7 Master's or equivalent level; 8 = ISCED 8 Doctoral or equivalent level 9999 = Not stated
Height	Height of the participant	Numeric	Range: 0-250
Weight	Weight of the participant	Numeric	Range: 0-500

BMI_assess	Assessment of BMI	Numeric	0 = Measured 1 = Self-reported
gen_health	General health of the participant	Numeric	1 = Very good 2 = Good 3 = Fair 4 = Bad 5 = Very bad

N/A: Not applicable

*Please use the list from the separate Excel-file 'List of countries_EUPASMOS'. You can translate the countries into your own language. Please use the values and labels from the Excel-file and do not change them when you order the countries alphabetically in your language.

**For an explanation of the educational levels see

<https://circabc.europa.eu/sd/a/84d88f97-9cc7-45be-963f-ed088440b04b/ISCED%202011%20Operational%20Manual.pdf>

4.6.2. Optional demographics - health status

Table 1. Questions, (closed) answers and variable names

SUBJECT	N°	VARIABLE NAME	QUESTION	ANSWER(S)	DEPENDENCIES
Chronic diseases	1	chron_disease	Do you have any longstanding illness or (longstanding) health problem? <i>Add the following explanation: By longstanding we mean illnesses or health problems which have lasted, or are expected to last, for 6 months or more.</i> During the past 12 months, have you had any of the following diseases or conditions? Tick ""Yes"" or ""No"" for each chronic disease.	- No - Yes	
	2	Asthma	A. Asthma (allergic asthma included)	- No - Yes	
	3	Copd	B. Chronic bronchitis, chronic obstructive pulmonary disease, emphysema	- No - Yes	
	4	myocard_infarct	C. A myocardial infarction (heart attack) or chronic consequences of myocardial infarction	- No - Yes	
	5	cor_heart	D. A coronary heart disease or angina pectoris	- No - Yes	
	6	high_bp	E. High blood pressure	- No - Yes	
	7	Stroke	F. A stroke (cerebral haemorrhage, cerebral thrombosis) or chronic consequences of stroke	- No - Yes	
	8	Arthrosis	G. Arthrosis (arthritis excluded)	- No - Yes	
	9	back_dis	H. A low back disorder or other chronic back defect	- No - Yes	
	10	neck_dis	I. A neck disorder or other chronic neck defect	- No - Yes	

SUBJECT	Nº	VARIABLE NAME	QUESTION	ANSWER(S)	DEPENDENCIES
	11	Diabetes	J. Diabetes	- No - Yes	
	12	Allergy	K. An allergy, such as rhinitis, hay fever, eye inflammation, dermatitis, food allergy or other allergy (allergic asthma excluded)	- No - Yes	
	13	Cirrhosis	L. Cirrhosis of the liver	- No - Yes	
	14	incontinence	M. Urinary incontinence, problems in controlling the bladder	- No - Yes	
	15	kidney_probl	N. Kidney problems	- No - Yes	
	16	depression	O. Depression	- No - Yes	
	17	high_bl	P. High blood lipids	- No - Yes	
Physical limitations			Introduction: Now I am going to ask you some further questions about your general physical and sensory health. These questions deal with your ability to do different basic activities. Please ignore any temporary problems.		
Vision	18	vis_aid	Do you wear glasses or contact lenses?	- No - Yes - I am blind or cannot see at all	
	19	limvis_aid	Do you have difficulty seeing even when wearing your glasses or contact lenses? Would you say ...	- No difficulty - Some difficulty - A lot of difficulty - Cannot do at all/Unable to do	Only show IF question 18 IS 'Yes'
	20	limvis_noaids	Do you have difficulty seeing? Would you say...	- No difficulty - Some difficulty - A lot of difficulty - Cannot do at all/Unable to do	Only show IF question 18 IS 'No'
Hearing	21	hear_aid	Do you use a hearing aid?	- Yes - No - I am profoundly deaf	

SUBJECT	Nº	VARIABLE NAME	QUESTION	ANSWER(S)	DEPENDENCIES
	22	limhear_aid_A	Do you have difficulty hearing what is said in a conversation with one other person in a quiet room, even when using your hearing aid? Would you say ...	- No difficulty - Some difficulty - A lot of difficulty - Cannot do at all/Unable to do	Only show IF question 21 IS 'Yes'
	23	limhear_noaids_A	Do you have difficulty hearing what is said in a conversation with one other person in a quiet room? Would you say ...	- No difficulty - Some difficulty - A lot of difficulty - Cannot do at all/Unable to do	Only show IF question 21 IS 'No'
	24	limhear_aid_B	Do you have difficulty hearing what is said in a conversation with one other person in a noisier room, even when using your hearing aid? Would you say ...	- No difficulty - Some difficulty - A lot of difficulty - Cannot do at all/Unable to do	Only show IF question 21 IS 'Yes'
	25	limhear_noaids_B	Do you have difficulty hearing what is said in a conversation with one other person in a noisier room? Would you say ...	- No difficulty - Some difficulty - A lot of difficulty - Cannot do at all/Unable to do	Only show IF question 21 IS 'No'
Mobility	26	limphys_A	Do you have difficulty walking 500 metres on level ground that would be without the use of any aid? Would you say ...	- No difficulty - Some difficulty - A lot of difficulty - Cannot do at all/Unable to do	
	27	limphys_B	Do you have difficulty walking up or down 12 steps? Would you say ...	- No difficulty - Some difficulty - A lot of difficulty - Cannot do at all/Unable to do	

SUBJECT	N°	VARIABLE NAME	QUESTION	ANSWER(S)	DEPENDENCIES
Labour status	28	Mainstat	How would you define your current labour status?	- Employed - Unemployed - Retired - Unable to work due to longstanding health problems - Student, pupil - Fulfilling domestic tasks - Compulsory military or civilian - Other - Not stated	
	29	Jobisco	What is the occupation in your main job?	See separate Excel-file 'Occupations_EUPASMOS'* (also in the appendices after the table 2)	Only show IF question 28 IS 'Employed'
Marital status	30	marstalegal	What is your legal marital status?	- Never married and never been in a registered partnership - Married or in a registered partnership - Widowed or with registered partnership that ended with death of partner (not remarried or in new registered partnership) - Divorced or with registered partnership that was legally dissolved (not remarried or in new registered partnership) - Not stated	

SUBJECT	Nº	VARIABLE NAME	QUESTION	ANSWER(S)	DEPENDENCIES
Household	31	Hhmem	Including yourself, how many people – including children – live in your household regularly as members of your household?	[]	
	32	Hhchild	How many children are living in your household?	[]	
	33	Hhtype	What is the composition of your household?	- One-person household - Lone parent with at least one child aged less than 25 - Lone parent with all children aged 25 or more - Couple without any children - Couple with at least one child aged less than 25 - Couple with all children aged 25 or more - Other type of household - Not stated	
Household income	34	Hhincome	Would you please indicate which group represents your household's total monthly income after deductions for income tax, National Insurance etc. Is it ...	- 1st income quintile group - 2nd income quintile group - 3rd income quintile group - 4th income quintile group - 5th income quintile group - Not stated**	

N/A: Not applicable

* Please use the list from the separate Excel-file 'Occupations_EUPASMOS'. You can translate the occupations into your own language. Please use the occupational codes from the Excel-file and do not change them when you order the occupations alphabetically in your language.

** You should use 5 income range categories, each corresponding broadly to QUINTILES OF THE ACTUAL HOUSEHOLD INCOME RANGE in your country. Calculation is as follows: net monthly equivalised income of the household = Total net monthly income of the household/equivalent household size. Where equalised household size is a sum of weights attributed to each member of the household according to the modified OECD equivalence scale: 1.0 to the first adult; 0.5 to the second and each subsequent person aged 14 and over; 0.3 to each child aged under 14.

Table 2. The variable names, variable labels, the variable formats and accompanying values and value labels for the database

VARIABLE NAME	VARIABLE LABEL	FORMAT	Value(s)+Label(s)
chron_disease	Participants has longstanding health problems	Numeric	0 = No 1 = Yes
asthma	Asthma (allergic asthma included)	Numeric	0 = No 1 = Yes
Copd	Chronic bronchitis, chronic obstructive pulmonary disease, emphysema	Numeric	0 = No 1 = Yes
myocard_infarct	A myocardial infarction (heart attack) or chronic consequences of myocardial infarction	Numeric	0 = No 1 = Yes
cor_heart	A coronary heart disease or angina pectoris	Numeric	0 = No 1 = Yes
high_bp	High blood pressure	Numeric	0 = No 1 = Yes
stroke	A stroke (cerebral haemorrhage, cerebral thrombosis) or chronic consequences of stroke	Numeric	0 = No 1 = Yes
arthrosis	Arthrosis (arthritis excluded)	Numeric	0 = No 1 = Yes
back_dis	A low back disorder or other chronic back defect	Numeric	0 = No 1 = Yes
neck_dis	A neck disorder or other chronic neck defect	Numeric	0 = No 1 = Yes
diabetes	Diabetes	Numeric	0 = No 1 = Yes
allergy	An allergy, such as rhinitis, hay fever, eye inflammation, dermatitis, food allergy or other allergy (allergic asthma excluded)	Numeric	0 = No 1 = Yes
cirrhosis	Cirrhosis of the liver	Numeric	0 = No 1 = Yes
incontinence	Urinary incontinence, problems in controlling the bladder	Numeric	0 = No 1 = Yes
kidney_probl	Kidney problems	Numeric	0 = No 1 = Yes
depression	Depression	Numeric	0 = No 1 = Yes
high_bl	High blood lipids	Numeric	0 = No 1 = Yes
vis_aid	Participant wears glasses or lenses	Numeric	1 = Yes 2 = No 3 = I am blind or cannot see at all

VARIABLE NAME	VARIABLE LABEL	Numeric	Value(s)+Label(s)
limvis_aid	Participant experience visual limitations even wearing glasses or lenses	Numeric	1 = No difficulty 2 = Some difficulty 3 = A lot of difficulty 4 = Cannot do at all/ Unable to do
limvis_noaids	Participant experience visual limitations NOT wearing glasses or lenses	Numeric	1 = No difficulty 2 = Some difficulty 3 = A lot of difficulty 4 = Cannot do at all/ Unable to do
hear_aid	Participant uses hearing aid	Numeric	1 = Yes 2 = No 3 = I am profoundly deaf
limhear_aid_A	Participant experience hearing limitations using hearing aid in quiet room	Numeric	1 = No difficulty 2 = Some difficulty 3 = A lot of difficulty 4 = Cannot do at all/ Unable to do
limhear_noaids_A	Participant experience hearing limitations using NO hearing aid in quiet room	Numeric	1 = No difficulty 2 = Some difficulty 3 = A lot of difficulty 4 = Cannot do at all/ Unable to do
limhear_aid_B	Participant experience hearing limitations using hearing aid in noisier room	Numeric	1 = No difficulty 2 = Some difficulty 3 = A lot of difficulty 4 = Cannot do at all/ Unable to do
limhear_noaids_B	Participant experience hearing limitations using NO hearing aid in noisier room	Numeric	1 = No difficulty 2 = Some difficulty 3 = A lot of difficulty 4 = Cannot do at all/ Unable to do
limphys_A	Participant experience physical limitations during 500 m walk	Numeric	1 = No difficulty 2 = Some difficulty 3 = A lot of difficulty 4 = Cannot do at all/ Unable to do
limphys_B	Participant experience physical limitations during walking stairs	Numeric	1 = No difficulty 2 = Some difficulty 3 = A lot of difficulty 4 = Cannot do at all/ Unable to do

VARIABLE NAME	VARIABLE LABEL	Numeric	Value(s)+Label(s)
mainstat	Main activity status (self-declared)	Numeric	1 = Employed 2 = Unemployed 3 = Retired 4 = Unable to work due to longstanding health problems 5 = Student, pupil 6 = Fulfilling domestic tasks 7 = Compulsory military or civilian 8 = Other 9999 = Not stated
jobisco	Occupation in employment of the participant	Numeric	See separate Excel-file 'Occupations'*
marstalegal	Legal marital status	Numeric	1 = Never married and never been in a registered partnership 2 = Married or in a registered partnership 3 = Widowed or with registered partnership that ended with death of partner (not remarried or in new registered partnership) 4 = Divorced or with registered partnership that was legally dissolved (not remarried or in new registered partnership) 9999 = Not stated
hhmem	Number of household members	Numeric	Range: 0-99
hhchild	Number of children in household	Numeric	Range: 0-99
hhtype	Type of household	Numeric	10 = One-person household 21 = Lone parent with at least one child aged less than 25 22 = Lone parent with all children aged 25 or more 31 = Couple without any children 32 = Couple with at least one child aged less than 25 33 = Couple with all children aged 25 or more 40 = Other type of household 9999 = Not stated

VARIABLE NAME	VARIABLE LABEL	Numeric	Value(s)+Label(s)
hhincome	Net monthly equalised income of the household		1 = 1st income quintile group 2 = 2nd income quintile group 3 = 3rd income quintile group 4 = 4th income quintile group 5 = 5th income quintile group 9999 = Not stated**

N/A: Not applicable

* Please use the list from the separate Excel-file 'Occupations_EUPASMOS'. You can translate the occupations into your own language. Please use the occupational values from the Excel-file and do not change them when you order the occupations alphabetically in your language.

** You should use 5 income range categories, each corresponding broadly to QUINTILES OF THE ACTUAL HOUSEHOLD INCOME RANGE in your country. Calculation is as follows: net monthly equalised income of the household = Total net monthly income of the household/equivalent household size.

Where equalised household size is a sum of weights attributed to each member of the household according to the modified OECD equivalence scale: 1.0 to the first adult; 0.5 to the second and each subsequent person aged 14 and over; 0.3 to each child aged under 14.

Regarding the variable 'jobisco' identified in the previous table, please use this list for the variable codification.

Note: You can translate the occupations into your own language. Please use the occupational codes from this list (also included in an Excel-file attached) and do not change them when you order the occupations alphabetically in your language.

VALUE (code)	LABEL
11	Chief executives, senior officials and legislators
12	Administrative and commercial managers
13	Production and specialised services managers
14	Hospitality, retail and other services managers
21	Science and engineering professionals
22	Health professionals
23	Teaching professionals
24	Business and administration professionals
25	Information and communications technology professionals
26	Legal, social and cultural professionals
31	Science and engineering associate professionals
32	Health associate professionals
33	Business and administration associate professionals
34	Legal, social, cultural and related associate professionals

35	Information and communications technicians
41	General and keyboard clerks
42	Customer services clerks
43	Numerical and material recording clerks
44	Other clerical support workers
51	Personal service workers
52	Sales workers
53	Personal care workers
54	Protective services workers
61	Market-oriented skilled agricultural workers
62	Market-oriented skilled forestry, fishery and hunting workers
63	Subsistence farmers, fishers, hunters and gatherers
71	Building and related trades workers, excluding electricians
72	Metal, machinery and related trades workers
73	Handicraft and printing workers
74	Electrical and electronic trades workers
75	Food processing, wood working, garment and other craft and related trades workers
81	Stationary plant and machine operators
82	Assemblers
83	Drivers and mobile plant operators
91	Cleaners and helpers
92	Agricultural, forestry and fishery labourers
93	Labourers in mining, construction, manufacturing and transport
94	Food preparation assistants
95	Street and related sales and service workers
96	Refuse workers and other elementary workers
0	Armed forces occupations

4.6.3. Mandatory sport, physical activity and sedentary behavior questions

Note: In Table 1 an overview is given of all the questions in the physical activity questionnaires Eurobarometer, EHIS, GPAQ and IPAQ. The general introductions given at the beginning of the questionnaires are not displayed in Table 1.

Please refer to the questionnaires themselves to include the proper introductions. In Table 1, questions about the time spend on PA are answered with a time indication expressed in hours and minutes. Therefore, these questions include two variables, i.e. one variable for hours and one variable for minutes.

Table 1. Questions, (closed) answers and variable names

QUESTIONNAIRE	Nº	VARIABLE NAME	QUESTION	ANSWER(S)	DEPENDENCIES
Eurobarometer	1	EB_SportsTimes	How often do you exercise or play sport?	- 5 times a week or more - 3 to 4 times a week - 1 to 2 times a week - 1 to 3 times a month - Less often - Never - Don't know	
	2	EB_OtherPATimes	And how often do you engage in other physical activity such as cycling from one place to another, dancing, gardening, etc.?	- 5 times a week or more - 3 to 4 times a week - 1 to 2 times a week - 1 to 3 times a month - Less often - Never - Don't know	
	3	EB_VigDays	In the last 7 days, on how many days did you do vigorous physical activity like lifting heavy things, digging, aerobics or fast cycling?	- 1 day - 2 days - 3 days - 4 days - 5 days - 6 days - 7 days - None - Don't know	Only show IF question 1 IS '5 times a week or more - less often' OR IF question 2 IS '5 times a week or more - less often' (if participants report some form of physical activity)
	4	EB_VigTime	In general, on days when you do a vigorous physical activity, how much time do you spend at it?	- 30 minutes or less - 31 to 60 minutes - 61 to 90 minutes - 91 to 120 minutes - More than 120 minutes - Never do any vigorous physical activity - Don't know	Only show IF question 1 IS '5 times a week or more - less often' OR IF question 2 IS '5 times a week or more - less often' (if participants report some form of physical activity)
	5	EB_ModDays	In the last 7 days, on how many days did you do moderate physical activity like carrying light loads, cycling at normal pace or doubles tennis? Please do not include walking.	- 1 day - 2 days - 3 days - 4 days - 5 days - 6 days - 7 days - None - Don't know	Only show IF question 1 IS '5 times a week or more - less often' OR IF question 2 is '5 times a week or more - less often' (if participants report some form of physical activity)
	6	EB_ModTime	In general, on days when you do a moderate physical activity, how much time do you spend at it?	- 30 minutes or less - 31 to 60 minutes - 61 to 90 minutes - 91 to 120 minutes - More than 120 minutes - Never do any moderate physical activity - Don't know	Only show IF question 1 IS '5 times a week or more - less often' OR IF question 2 IS '5 times a week or more - less often' (if participants report some form of physical activity)

QUESTIONNAIRE	N°	VARIABLE NAME	QUESTION	ANSWER(S)	DEPENDENCIES
	7	EB_WalkDays	In the last 7 days, on how many days did you walk for at least 10 minutes at a time?	- 1 day - 2 days - 3 days - 4 days - 5 days - 6 days - 7 days - None - Don't know	
	8	EB_WalkTime	In general, on days when you walk for at least 10 minutes at a time, how much time do you spend walking?	- 30 minutes or less - 31 to 60 minutes - 61 to 90 minutes - 91 to 120 minutes - More than 120 minutes - Never walk for 10 minutes at a time - Don't know	
	9	EB_SitTime	How much time do you spend sitting on a usual day? This may include time spent at a desk, visiting friends, studying or watching television.	- 1 hour or less - 1 hour to 1 hour and 30 minutes - 1 hour 31 minutes to 2 hours 30 minutes - 2 hours 31 minutes to 3 hours 30 minutes - 3 hours 31 minutes to 4 hours 30 minutes - 4 hours 31 minutes to 5 hours 30 minutes - 5 hours 31 minutes to 6 hours 30 minutes - 6 hours 31 minutes to 7 hours 30 minutes - 7 hours 31 minutes to 8 hours 30 minutes - More than 8 hours and 30 minutes - Don't know	
	1	EH_ActWork	- Firstly think about the TIME you spend DOING WORK. Think of work as the things that you have to do such as paid and unpaid work, work around your home, taking care of family, studying or training. - When you are WORKING, which of the following best describes what you do? Would you say... - Please refer your answer to the 'main work' you do. If you do multiple tasks, include all tasks. Select only one answer.	- Mostly sitting or standing - Mostly walking or tasks of moderate physical effort - Mostly heavy labour or physically demanding work - Not performing any working tasks	

QUESTIONNAIRE	Nº	VARIABLE NAME	QUESTION	ANSWER(S)	DEPENDENCIES
	2	EH_WalkDays	- The next questions EXCLUDE the WORK-RELATED PHYSICAL ACTIVITIES that you have already mentioned. Now I would like to ask you about the way you usually GET TO AND FROM PLACES. For example to work, to school, for shopping, or to market. - In a typical week, on how many days do you WALK for at least 10 minutes continuously in order to get to and from places?	- Number of days: [...] - Less than one day per week or never	
	3	EH_WalkTime	How much time do you spend walking in order to get to and from places on a typical day?	- 10-29 minutes per day - 30-59 minutes per day - 1 hour to less than 2 hours per day - 2 hours to less than 3 hours per day - 3 hours or more per day	Don't show IF question 2 IS 'Less than one day per week or never'
	4	EH_CycleDays	In a typical week, on how many days do you BICYCLE for at least 10 minutes continuously to get to and from places?	- Number of days: [...] - Less than one day per week or never	
	5	EH_CycleTime	How much time do you spend bicycling in order to get to and from places on a typical day?	- 10-29 minutes per day - 30-59 minutes per day - 1 hour to less than 2 hours per day - 2 hours to less than 3 hours per day - 3 hours or more per day	Don't show IF question 4 IS 'Less than one day per week or never'
	6	EH_SportsDays	- The next questions EXCLUDE the WORK and TRANSPORT ACTIVITIES that you have already mentioned. Now I would like to ask you about SPORTS, FITNESS and RECREATIONAL (LEISURE) PHYSICAL ACTIVITIES that cause AT LEAST a small increase in breathing or heart rate. For example brisk walking, ball games, jogging, cycling or swimming. - In a typical week, on how many days do you carry out sports, fitness or recreational (leisure) activities for at least 10 minutes continuously?	- Number of days: [...] - Less than one day per week or never	

QUESTIONNAIRE	N°	VARIABLE NAME	QUESTION	ANSWER(S)	DEPENDENCIES
	7	EH_SportsHrsWk EH_SportsMinWk	How much time in total do you spend on sports, fitness or recreational (leisure) physical activities in a typical week?	[hours] : [minutes] per week	Don't show IF question 6 IS 'Less than one day per week or never'
	8	EH_MuscleDays	In a typical week, on how many days do you carry out activities specially designed to STRENGTHEN your muscles such as doing resistance training or strength exercises? Include all such activities even if you have mentioned them before.	- Number of days: [...] - Less than one day per week or never	
	9	EH_SitTime	The last question in this module is about sitting at work, at home, getting to and from places, or with friends including time spent sitting at a desk, sitting with friends, travelling in car, bus, train, reading, playing cards or watching television on a typical day; but time spent sleeping should not be included here. How much time do you spend sitting and reclining on a typical day?	- Less than 4 hours - 4 hours to less than 6 hours - 6 hours to less than 8 hours - 8 hours to less than 10 hours - 10 hours to less than 12 hours - 12 hours or more	
GPAQ	1	GP_WorkVig	Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like [carrying or lifting heavy loads, digging or construction work] for at least 10 minutes continuously?	- Yes - No	
	2	GP_WorkVigDays	In a typical week, on how many days do you do vigorous intensity activities as part of your work?	- Number of days [...]	Only show IF question 1 IS 'Yes'
	3	GPWorkVigHrsDay GP_WorkVigMinDay	How much time do you spend doing vigorous-intensity activities at work on a typical day?	- Hours : minutes [...] : [...]	Only show IF question 1 IS 'Yes'

QUESTIONNAIRE	Nº	VARIABLE NAME	QUESTION	ANSWER(S)	DEPENDENCIES
	4	GP_WorkMod	Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking [or carrying light loads] for at least 10 minutes continuously?	- Yes - No	
	5	GP_WorkMod Days	In a typical week, on how many days do you do moderate intensity activities as part of your work?	Number of days [...]	Only show IF question 4 IS 'Yes'
	7	GP_Travel	Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places?	- Yes - No	
	8	GP_TravelDays	In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?	Number of days [...]	Only show IF question 7 IS 'Yes'
	9	GP_TravelHrsDay GP_TravelMinDay	How much time do you spend walking or bicycling for travel on a typical day?	Hours: minutes [...] : [...]	Only show IF question 7 IS 'Yes'
	10	GP_SportsVig	Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like [running or football] for at least 10 minutes continuously?	- Yes - No	
	11	GP_SportsVig Days	In a typical week, on how many days do you do vigorous intensity sports, fitness or recreational (leisure) activities?	Number of days [...]	Only show IF question 10 IS 'Yes'
	12	GP_SportsVigHrsDay GP_SportsVigMinDay	How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours: minutes [...] : [...]	Only show IF question 10 IS 'Yes'
	13	GP_SportsMod	Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that cause a small increase in breathing or heart rate such as brisk walking, [cycling, swimming, volleyball] for at least 10 minutes continuously?	- Yes - No	

QUESTIONNAIRE	Nº	VARIABLE NAME	QUESTION	ANSWER(S)	DEPENDENCIES
	14	GP_Sports ModDays	In a typical week, on how many days do you do moderate intensity sports, fitness or recreational (leisure) activities?	Number of days [...]	Only show IF question 13 IS 'Yes'
	15	GP_Sports ModHrsDay GP_Sports ModMinDay	How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?	Hours : minutes [...] : [...]	Only show IF question 13 IS 'Yes'
	16	GP_SitHrsDay GP_SitMinDay	How much time do you usually spend sitting or reclining on a typical day?	Hours : minutes [...] : [...]	
IPAQ	1	IP_VigDays	During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling?	- [...] days per week - No vigorous physical activities	
	2	IP_VigHrsDay IP_VigMinDay	How much time did you usually spend doing vigorous physical activities on one of those days?	[...] hours per day [...] minutes per day	Don't show IF question 1 IS 'No vigorous physical activities'
	3	IP_ModDays	During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.	- [...] days per week - No moderate physical activities	
	4	IP_ModHrsDay IP_ModMinDay	How much time did you usually spend doing moderate physical activities on one of those days?	[...] hours per day [...] minutes per day	Don't show IF question 3 IS 'No moderate physical activities'
	5	IP_WalkDays	During the last 7 days, on how many days did you walk for at least 10 minutes at a time?	- [...] days per week - No walking	
	6	IP_WalkHrsDay IP_WalkMinDay	How much time did you usually spend walking on one of those days?	- [...] hours per day - [...] minutes per day	Don't show IF question 5 IS 'No walking'
	7	IP_SitHrsDay IP_SitMinDay	During the last 7 days, how much time did you spend sitting on a week day?	- [...] hours per day - [...] minutes per day	

Table 2. The variable names, variable labels, the variable formats and accompanying values and value labels for the database

VARIABLE NAME	VARIABLE LABEL	FORMAT	VALUE(S) + LABEL(S)
EB_SportsTimes	EUROBAROMETER: Number of times performing sports per week	Numeric	1 = 5 times a week or more 2 = 3 to 4 times a week 3 = 1 to 2 times a week 4 = 1 to 3 times a month 5 = Less often 6 = Never 7 = Don't know
EB_OtherPATimes	EUROBAROMETER: Number of times performing other physical activity per week	Numeric	1 = 5 times a week or more 2 = 3 to 4 times a week 3 = 1 to 2 times a week 4 = 1 to 3 times a month 5 = Less often 6 = Never 7 = Don't know
EB_VigDays	EUROBAROMETER: Number of days performing vigorous intensity physical activity in the last seven days	Numeric	1 = 1 day 2 = 2 days 3 = 3 days 4 = 4 days 5 = 5 days 6 = 6 days 7 = 7 days 8 = None 9 = Don't know
EB_VigTime	EUROBAROMETER: Time spend on vigorous intensity physical activity on those days	Numeric	1 = 30 minutes or less 2 = 31 to 60 minutes 3 = 61 to 90 minutes 4 = 91 to 120 minutes 5 = More than 120 minutes 6 = Never do any vigorous physical activity 7 = Don't know
EB_ModDays	EUROBAROMETER: Number of days performing moderate intensity physical activity in the last seven days	Numeric	1 = 1 day 2 = 2 days 3 = 3 days 4 = 4 days 5 = 5 days 6 = 6 days 7 = 7 days 8 = None 9 = Don't know
EB_ModTime	EUROBAROMETER: Time spend on moderate intensity physical activity on those days	Numeric	1 = 30 minutes or less 2 = 31 to 60 minutes 3 = 61 to 90 minutes 4 = 91 to 120 minutes 5 = More than 120 minutes 6 = Never do any moderate physical activity 7 = Don't know

VARIABLE NAME	VARIABLE LABEL	FORMAT	VALUE(S) + LABEL(S)
EB_WalkDays	EUROBAROMETER: Number of days walking in the last seven days	Numeric	1 = 1 day 2 = 2 days 3 = 3 days 4 = 4 days 5 = 5 days 6 = 6 days 7 = 7 days 8 = None 9 = Don't know
EB_WalkTime	EUROBAROMETER: Time spend on walking on those days	Numeric	1 = 30 minutes or less 2 = 31 to 60 minutes 3 = 61 to 90 minutes 4 = 91 to 120 minutes 5 = More than 120 minutes 6 = Never walk for 10 minutes at a time 7 = Don't know
EB_SitTime	EUROBAROMETER: Time spend sitting on a usual day	Numeric	1 = 1 hour or less 2 = 1 hour to 1 hour and 30 minutes 3 = 1 hour 31 minutes to 2 hours 30 minutes 4 = 2 hours 31 minutes to 3 hours 30 minutes 5 = 3 hours 31 minutes to 4 hours 30 minutes 6 = 4 hours 31 minutes to 5 hours 30 minutes 7 = 5 hours 31 minutes to 6 hours 30 minutes 8 = 6 hours 31 minutes to 7 hours 30 minutes 9 = 7 hours 31 minutes to 8 hours 30 minutes 10 = More than 8 hours and 30 minutes 11 = Don't know
EH_ActWork	EHIS: Intensity of work	Numeric	1 = Mostly sitting or standing 2 = Mostly walking or tasks of moderate physical effort 3 = Mostly heavy labour or physically demanding work 4 = Not performing any working tasks
EH_WalkDays	EHIS: Number of days walking for transport in a typical week	Numeric	1-7 = number of days 0 = Less than one day per week or never
EH_WalkTime	EHIS: Time spend on walking for transport on a typical day	Numeric	1 = 10-29 minutes per day 2 = 30-59 minutes per day 3 = 1 hour to less than 2 hours per day 4 = 2 hours to less than 3 hours per day 5 = 3 hours or more per day

VARIABLE NAME	VARIABLE LABEL	FORMAT	VALUE(S) + LABEL(S)
EH_CycleDays	EHIS: Number of days cycling for transport in a typical week	Numeric	1-7 = number of days 0 = Less than one day per week or never
EH_CycleTime	EHIS: Time spend on cycling for transport on a typical day	Numeric	1 = 10-29 minutes per day 2 = 30-59 minutes per day 3 = 1 hour to less than 2 hours per day 4 = 2 hours to less than 3 hours per day 5 = 3 hours or more per day
EH_SportsDays	EHIS: Number of days carrying out sports, fitness or recreational activities in a typical week	Numeric	1-7 = number of days 0 = Less than one day per week or never
EH_SportsHrsWk	EHIS: Hours spend on sports, fitness or recreational activities in a typical week	Numeric	Range: 00-24 (hours)
EH_SportsMinWk	EHIS: Minutes spend on sports, fitness or recreational activities in a typical week	Numeric	Range: 00-59 (minutes)
EH_MuscleDays	EHIS: Number of days carrying out muscle strengthening activities in a typical week	Numeric	1-7 = number of days 0 = Less than one day per week or never
EH_SitTime	EHIS: Time spend sitting on a typical day	Numeric	1 = Less than 4 hours 2 = 4 hours to less than 6 hours 3 = 6 hours to less than 8 hours 4 = 8 hours to less than 10 hours 5 = 10 hours to less than 12 hours 6 = 12 hours or more
GP_WorkVig	GPAQ: Work involves vigorous intensity physical activity	Numeric	0 = No 1 = Yes
GP_WorkVigDays	GPAQ: Number of days vigorous intensity physical activity at work in a typical week	Numeric	Range: 1-7
GP_WorkVigHrsDay	GPAQ: Hours spend on vigorous intensity physical activity at work on a typical day	Numeric	Range: 00-24 (hours)
GP_WorkVigMinDay	GPAQ: Minutes spend on vigorous intensity physical activity at work on a typical day	Numeric	Range: 00-59 (minutes)
GP_WorkMod	GPAQ: Work involves moderate intensity physical activity	Numeric	0 = No 1 = Yes

VARIABLE NAME	VARIABLE LABEL	FORMAT	VALUE(S) + LABEL(S)
GP_WorkMod	GPAQ: Work involves moderate intensity physical activity	Numeric	0 = No 1 = Yes
GP_WorkModDays	GPAQ: Number of days moderate intensity physical activity at work in a typical week	Numeric	Range: 1-7
GP_WorkModHrsDay	GPAQ: Hours spend on moderate intensity physical activity at work on a typical day	Numeric	Range: 00-24 (hours)
GP_WorkModMinDay	GPAQ: Minutes spend on moderate intensity physical activity at work on a typical day	Numeric	Range: 00-59 (minutes)
GP_Travel	GPAQ: Walk or cycle for transport	Numeric	0 = No 1 = Yes
GP_TravelDays	GPAQ: Number of days walking or cycling for transport in a typical week	Numeric	Range: 1-7
GP_TravelHrsDay	GPAQ: Hours spend on walking and cycling for transport on a typical day	Numeric	Range: 00-24 (hours)
GP_TravelMinDay	GPAQ: Minutes spend on walking and cycling for transport on a typical day	Numeric	Range: 00-59 (minutes)
GP_SportsVig	GPAQ: Participates in vigorous intensity sports, fitness or recreational activities	Numeric	0 = No 1 = Yes
GP_SportsVigDays	GPAQ: Number of days vigorous intensity sports, fitness or recreational activities in a typical week	Numeric	Range: 1-7
GP_SportsVigHrsDay	GPAQ: Hours spend on vigorous intensity sports, fitness or recreational activities on a typical day	Numeric	Range: 00-24 (hours)
GP_SportsVigMinDay	GPAQ: Minutes spend on vigorous intensity sports, fitness or recreational activities on a typical day	Numeric	Range: 00-59 (minutes)
GP_SportsMod	GPAQ: Participates in moderate intensity sports, fitness or recreational activities	Numeric	0 = No 1 = Yes
GP_SportsModDays	GPAQ: Number of days moderate intensity sports, fitness or recreational activities in a typical week	Numeric	Range: 1-7
GP_SportsModHrsDay	GPAQ: Hours spend on moderate intensity sports, fitness or recreational activities on a typical day	Numeric	Range: 00-24 (hours)
GP_SportsModMinDay	GPAQ: Minutes spend on moderate intensity sports, fitness or recreational activities on a typical day	Numeric	Range: 00-59 (minutes)

VARIABLE NAME	VARIABLE LABEL	FORMAT	VALUE(S) + LABEL(S)
GP_SitHrsDay	GPAQ: Hours spend sitting on a typical day	Numeric	Range: 00-24 (hours)
GP_SitMinDay	GPAQ: Minutes spend sitting on a typical day	Numeric	Range: 00-59 (minutes)
IP_VigDays	IPAQ: Number of days vigorous intensity physical activities during the last seven days	Numeric	1-7 = number of days 0 = Less than one day per week or never
IP_VigHrsDay IP_VigMinDay	IPAQ: Hours spend on vigorous intensity physical activities on those days	Numeric	Range: 00-24 (hours)
IP_VigHrsDay IP_VigMinDay	IPAQ: Minutes spend on vigorous intensity physical activities on those days	Numeric	Range: 00-59 (minutes)
IP_ModDays	IPAQ: Number of days moderate intensity physical activities during the last seven days	Numeric	1-7 = number of days 0 = Less than one day per week or never
IP_ModHrsDay	IPAQ: Hours spend on moderate intensity physical activities on those days	Numeric	Range: 00-24 (hours)
IP_ModMinDay	IPAQ: Minutes spend on moderate intensity physical activities on those days	Numeric	Range: 00-59 (minutes)
IP_WalkDays	IPAQ: Number of days walking during the last seven days	Numeric	1-7 = number of days 0 = Less than one day per week or never
IP_WalkHrsDay	IPAQ: Hours spend on walking on those days	Numeric	Range: 00-24 (hours)
IP_WalkMinDay	IPAQ: Minutes spend on walking on those days	Numeric	Range: 00-59 (minutes)
IP_SitHrsDay	IPAQ: Hours spend sitting on a week day during the last seven days	Numeric	Range: 00-24 (hours)
IP_SitMinDay	IPAQ: Minutes spend sitting on a week day during the last seven days	Numeric	Range: 00-59 (minutes)

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