

# **Global Physical Activity Questionnaire (GPAQ)**

## **Analysis Guide**

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# Global Physical Activity Questionnaire (GPAQ) Analysis Guide

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# 1 Overview

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**Introduction** The Global Physical Activity Questionnaire was developed by WHO for physical activity surveillance in countries. It collects information on physical activity participation in three settings (or domains) as well as sedentary behaviour, comprising 16 questions (P1-P16). The domains are:

- Activity at work
- Travel to and from places
- Recreational activities

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**Using GPAQ** Prior to using GPAQ, you should review the question by question section. This section, which follows the actual questions, will guide the interviewer in asking the questions and recording responses.

When using GPAQ, all the questions must be asked. Skips of questions do ONLY apply to the corresponding day and time variables if P1, P4, P7, P10, or P13 have been answered negatively. Skipping any other questions or removing any of the domains will restrict the results that you will be able to calculate.

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**Administration of the GPAQ** 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.

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**Show cards** It is advised that show cards be used when the GPAQ is administered. Show cards should be developed for each of the activity types covered by the GPAQ: vigorous and moderate activity at work, transport activity, vigorous and moderate activity during leisure time, as well as sitting. Show cards will help the respondents to know what activities are meant by each question. They should be showing typical physical activities for the setting that the GPAQ is used in. Examples of generic show cards that will need to be adapted to the local context can be found on the GPAQ website: <http://www.who.int/chp/steps/GPAQ/en/index.html>

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**GPAQ version 1 and 2** This document provides information on version 2 of GPAQ. It is advised that you use version 2 of GPAQ. If you have already used GPAQ version 1 and need advice on analysing this information, please contact the STEPS team at [steps@who.int](mailto:steps@who.int).

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**Calculating and cleaning physical activity data** This document includes information on how to clean and analyse GPAQ data in general as well as specifically with the statistical package EpiInfo.

The coding column of GPAQ is used as a reference for all the calculations. If you insert this questionnaire into another questionnaire, you should not change the coding column.

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## 1 Overview, Continued

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### **Metabolic Equivalent (MET)**

METs (Metabolic Equivalents) are commonly used to express the intensity of physical activities, and are also used for the analysis of GPAQ data.

MET is the ratio of a person's working metabolic rate relative to the resting metabolic rate. One MET is defined as the energy cost of sitting quietly, and is equivalent to a caloric consumption of 1 kcal/kg/hour. For the analysis of GPAQ data, existing guidelines have been adopted: It is estimated that, compared to sitting quietly, a person's caloric consumption is four times as high when being moderately active, and eight times as high when being vigorously active.

Therefore, when calculating a person's overall energy expenditure using GPAQ data, 4 METs get assigned to the time spent in moderate activities, and 8 METs to the time spent in vigorous activities.

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## 2 The questionnaire

Physical Activity		
<p>Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person.</p> <p>Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. <i>[Insert other examples if needed]</i>. In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.</p>		
Question	Response	Code
<b>Work</b>		
Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like <i>[carrying or lifting heavy loads, digging or construction work]</i> for at least 10 minutes continuously? <i>[INSERT EXAMPLES] (USE SHOWCARD)</i>	Yes 1  No 2 <i>If No, go to P 4</i>	P1
In a typical week, on how many days do you do vigorous-intensity activities as part of your work?	Number of days <input type="text"/>	P2
How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours : minutes <input type="text"/> : <input type="text"/> hrs mins	P3 (a-b)
Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking <i>[or carrying light loads]</i> for at least 10 minutes continuously? <i>[INSERT EXAMPLES] (USE SHOWCARD)</i>	Yes 1  No 2 <i>If No, go to P 7</i>	P4
In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Number of days <input type="text"/>	P5
How much time do you spend doing moderate-intensity activities at work on a typical day?	Hours : minutes <input type="text"/> : <input type="text"/> hrs mins	P6 (a-b)
<b>Travel to and from places</b>		
<p>The next questions exclude the physical activities at work that you have already mentioned.</p> <p>Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship. <i>[Insert other examples if needed]</i></p>		
Do you walk or use a bicycle ( <i>pedal cycle</i> ) for at least 10 minutes continuously to get to and from places?	Yes 1  No 2 <i>If No, go to P 10</i>	P7
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 <input type="text"/>	P8
How much time do you spend walking or bicycling for travel on a typical day?	Hours : minutes <input type="text"/> : <input type="text"/> hrs mins	P9 (a-b)

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## 2 The questionnaire, Continued

Physical Activity, Continued		
Question	Response	Code
<b>Recreational activities</b>		
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 activities (leisure), <i>[Insert relevant terms]</i> .		
Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like <i>[running or football]</i> for at least 10 minutes continuously? <i>[INSERT EXAMPLES] (USE SHOWCARD)</i>	Yes 1  No 2 <i>If No, go to P 13</i>	P10
In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities?	Number of days <input type="text"/>	P11
How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours : minutes <input type="text"/> : <input type="text"/> hrs mins	P12 (a-b)
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, <i>[cycling, swimming, volleyball]</i> for at least 10 minutes continuously? <i>[INSERT EXAMPLES] (USE SHOWCARD)</i>	Yes 1  No 2 <i>If No, go to P16</i>	P13
In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (leisure) activities?	Number of days <input type="text"/>	P14
How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?	Hours : minutes <input type="text"/> : <input type="text"/> hrs mins	P15 (a-b)
<b>Sedentary behaviour</b>		
The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent sitting at a desk, sitting with friends, traveling in car, bus, train, reading, playing cards or watching television, but do not include time spent sleeping. <i>[INSERT EXAMPLES] (USE SHOWCARD)</i>		
How much time do you usually spend sitting or reclining on a typical day?	Hours : minutes <input type="text"/> : <input type="text"/> hrs mins	P16 (a-b)

### 3 GPAQ Question by Question Guide

Physical Activity		
Question	Response	Code
<p>Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person.</p> <p>Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. <i>[Insert other examples if needed]</i>. In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.</p> <p><i>Read this opening statement out loud. It should not be omitted. The respondent will have to think first about the time he/she spends doing work (paid or unpaid work, household chores, harvesting food, fishing or hunting for food, seeking employment [Insert other examples if needed]), then about the time he/she travels from place to place, and finally about the time spent in vigorous as well as moderate physical activity during leisure time.</i></p> <p><i>Remind the respondent when he/she answers the following questions that 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate. Don't forget to use the showcard which will help the respondent when answering to the questions.</i></p>		
<b>Work</b>		
<p>Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like <i>[carrying or lifting heavy loads, digging or construction work]</i> for at least 10 minutes continuously?</p> <p><i>[INSERT EXAMPLES] (USE SHOWCARD)</i></p> <p><i>Ask the participant to think about vigorous-intensity activities at work only. Activities are regarded as vigorous intensity if they cause large increases in breathing and/or heart rate.</i></p>	<p>Yes 1</p> <p>No 2 <i>If No, go to P 4</i></p>	P1
<p>In a typical week, on how many days do you do vigorous-intensity activities as part of your work?</p> <p><i>"Typical week" means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.</i></p>	<p>Number of days</p> <p style="text-align: center;">┌</p>	P2
<p>How much time do you spend doing vigorous-intensity activities at work on a typical day?</p> <p><i>Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in vigorous-intensity activities at work. The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.</i></p>	<p>Hours : minutes</p> <p style="text-align: center;">┌ ┌ : ┌ ┌</p> <p style="text-align: center;">hrs                  mins</p>	P3 (a-b)
<p>Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking <i>[or carrying light loads]</i> for at least 10 minutes continuously?</p> <p><i>[INSERT EXAMPLES] (USE SHOWCARD)</i></p> <p><i>Ask the participant to think about moderate-intensity activities at work only. Activities are regarded as moderate intensity if they cause small increases in breathing and/or heart rate.</i></p>	<p>Yes 1</p> <p>No 2 <i>If No, go to P 7</i></p>	P4
<p>In a typical week, on how many days do you do moderate-intensity activities as part of your work?</p> <p><i>"Typical week" means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.</i></p>	<p>Number of days</p> <p style="text-align: center;">┌</p>	P5
<p>How much time do you spend doing moderate-intensity activities at work on a typical day?</p> <p><i>Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in moderate-intensity activities at work. The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.</i></p>	<p>Hours : minutes</p> <p style="text-align: center;">┌ ┌ : ┌ ┌</p> <p style="text-align: center;">hrs                  mins</p>	P6 (a-b)

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### 3 GPAQ Question by Question Guide, Continued

Physical Activity, Continued		
Question	Response	Code
<b>Travel to and from places</b>		
<p>The next questions exclude the physical activities at work that you have already mentioned. Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship. <i>[Insert other examples if needed]</i></p> <p><i>The introductory statement to the following questions on transport-related physical activity is very important. It asks and helps the participant to now think about how they travel around getting from place-to-place. This statement should not be omitted.</i></p>		
<p>Do you walk or use a bicycle (<i>pedal cycle</i>) for at least 10 minutes continuously to get to and from places?</p> <p><i>Select the appropriate response.</i></p>	<p>Yes 1</p> <p>No 2 <i>If No, go to P 10</i></p>	P7
<p>How much time do you spend walking or bicycling for travel on a typical day?</p> <p><i>Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in transport-related activities. The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.</i></p>	<p>Hours : minutes</p> <p style="text-align: center;"> <input type="text"/> : <input type="text"/>              hrs                      mins           </p>	P9 (a-b)
<b>Recreational activities</b>		
<p>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 activities (<i>leisure</i>) <i>[Insert relevant terms]</i>.</p> <p><i>This introductory statement directs the participant to think about recreational activities. This can also be called discretionary or leisure time. It includes sports and exercise but is not limited to participation in competitions. Activities reported should be done regularly and not just occasionally. It is important to focus on only recreational activities and not to include any activities already mentioned. This statement should not be omitted.</i></p>		
<p>Do you do any vigorous-intensity sports, fitness or recreational (<i>leisure</i>) activities that cause large increases in breathing or heart rate like <i>[running or football]</i> for at least 10 minutes continuously?</p> <p><i>[INSERT EXAMPLES] (USE SHOWCARD)</i></p> <p><i>Ask the participant to think about recreational vigorous-intensity activities only. Activities are regarded as vigorous intensity if they cause large increases in breathing and/or heart rate.</i></p>	<p>Yes 1</p> <p>No 2 <i>If No, go to P 13</i></p>	P10
<p>In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (<i>leisure</i>) activities?</p> <p><i>"Typical week" means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.</i></p>	<p>Number of days</p> <p style="text-align: center;"><input type="text"/></p>	P11
<p>How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?</p> <p><i>Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in recreational vigorous-intensity activities. The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.</i></p>	<p>Hours : minutes</p> <p style="text-align: center;"> <input type="text"/> : <input type="text"/>              hrs                      mins           </p>	P12 (a-b)
<p>Do you do any moderate-intensity sports, fitness or recreational (<i>leisure</i>) activities that cause a small increase in breathing or heart rate such as brisk walking, <i>[cycling, swimming, volleyball]</i> for at least 10 minutes continuously?</p> <p><i>[INSERT EXAMPLES] (USE SHOWCARD)</i></p> <p><i>Ask the participant to think about recreational moderate-intensity activities only. Activities are regarded as moderate intensity if they cause small increases in breathing and/or heart rate.</i></p>	<p>Yes 1</p> <p>No 2 <i>If No, go to P16</i></p>	P13
<p>In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (<i>leisure</i>) activities?</p> <p><i>"Typical week" means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.</i></p>	<p>Number of days</p> <p style="text-align: center;"><input type="text"/></p>	P14

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### 3 GPAQ Question by Question Guide, Continued

Physical Activity, Continued		
Question	Response	Code
<p>How much time do you spend doing moderate-intensity sports, fitness or recreational (<i>leisure</i>) activities on a typical day?</p> <p><i>Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in recreational moderate-intensity activities. The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.</i></p>	<p>Hours : minutes    <input type="text"/> : <input type="text"/></p> <p>                                 hrs                    mins</p>	P15 (a-b)
<b>Sedentary behaviour</b>		
<p>The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent sitting at a desk, sitting with friends, traveling in car, bus, train, reading, playing cards or watching television, but do not include time spent sleeping.  <i>[INSERT EXAMPLES] (USE SHOWCARD)</i></p>		
<p>How much time do you usually spend sitting or reclining on a typical day?</p> <p><i>Ask the participant to consider total time spent sitting at work, in an office, reading, watching television, using a computer, doing hand craft like knitting, resting etc. The participant should not include time spent sleeping.</i></p>	<p>Hours : minutes    <input type="text"/> : <input type="text"/></p> <p>                                 hrs                    mins</p>	P16 (a-b)

## 4 Cleaning GPAQ data

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**Introduction** It is important to standardize the way in which the data collected are cleaned and analysed. Please use the guidelines below when cleaning and analysing your data.  
The cleaning and analysis guidelines use the coding column in the questionnaire as an identifier.

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**Cleaning** You should clean all domains as a combined set. While some of the calculations of results use all the domains and others use only one of the domains, it is necessary that each respondent has an overall "clean" response to all physical activity questions. To be included in the analyses, each participant must have a valid response for at least one domain and have no invalid responses for any domains.

Check for the following for all the domains.

<b>If...</b>	<b>Then...</b>
Values in the hours column are 15, 30, 45, or 60	move them into the corresponding minutes variable, if the corresponding minutes variable is empty or zero (most likely a data recording error).
Maximum values: If for at least one "sub-domain" (vigorous work, moderate work, transport, vigorous recreation, or moderate recreation activity) the value of hours+minutes >16 hours	remove the case from all analyses.
If a respondent reports implausible values (eg., >7 days in any days column)	remove the case from all analyses.
If a respondent has inconsistent answers (eg., 0 days, but values >0 in the corresponding time variables)	remove the case from all analyses.
If one whole "sub-domain" (vigorous work, moderate work, transport, vigorous recreation, or moderate recreation activity) has missing values, but the other "sub-domains" are valid	include the case in the analysis, assuming no activity (0 days, 0 time) for this "sub-domain". That means that, as long as at least one "sub-domain" has valid answers, and all others are missing, this person will be included in analyses.

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**Notes** Overall, this cleaning method should result in the same denominator across all domains and all analyses.

For information on how to create P3, P6, P9, P12, and P15 see the Cleaning GPAQ with EpiInfo section at the end of this document (p. 12).

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## 4 Cleaning GPAQ data, Continued

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**Detailed  
cleaning  
instructions**

There are detailed cleaning instructions on how to clean each variable in the Cleaning GPAQ with EpiInfo section of this document (p. 11). This section includes details on how to clean the variables and the associated EpiInfo code.

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## 5 Cleaning GPAQ data with EpiInfo

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**Introduction** GPAQ collects information on three domains. These domains are:

- Activity at work
- Travel to and from places
- Recreational activities.

For analysis purposes 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)
- 

**Grouping the GPAQ sections** The GPAQ data are cleaned as a whole. Thus if a participant gave an invalid answer to any domain, then their entire response is not included in any analyses. However, a participant needs only to give a valid response to a minimum of one domain, leaving the remaining domains blank, to be included in the analyses.

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**Cleaning Programs** A "CleanRecode" program exists for each subset of physical activity questions. These are: **CleanRecode P1-P3**, **CleanRecode P4-P6**, **CleanRecode P7-P9**, **CleanRecode P10-P12**, **CleanRecode P13-P15**, and **CleanRecode P16**. The first 5 of these programs are identical with the only exception being that the question codes are changed.

All programs can be downloaded from <http://www.who.int/chp/steps/resources/database/en/index.html> by clicking on "EpiInfo Analysis Programs".

CleanRecode P1-P3 is described in the following table. This same description applies to CleanRecode P4-P6, CleanRecode P7-P9, CleanRecode P10-P12, and CleanRecode P13-P15. Since the program CleanRecode P16 differs from the other 5 CleanRecode programs, its description is provided in the second table below.

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## 5 Cleaning GPAQ data with EpiInfo, Continued

CleanRecode P1-P3				
<b>Questions Used</b>	P1, P2, P3a, P3b			
<b>General Information</b>	Before checking for valid responses to P1 through P3a&b, P3a and P3b are checked for possible data entry errors (i.e. minutes entered where hours are expected). To have a "clean" response, respondents must have answered all 3 questions correctly and consistently (P1t3CLN=1).			
<b>Modified Variables</b>	Before any new variables are created, P3a and P3b are modified using the following logical tests. To summarize, these tests try to correct obvious data entry errors where minute values of 15, 30, 45, or 60 were entered as hour values in P3a. These changes are only saved to the temporary dataset used for analysis, the actual dataset is left unchanged.			
	<b>Condition</b>	<b>New P3a Value</b>	<b>New P3b Value</b>	
	P3a=15 AND (P3b=(.) OR P3b=0 OR P3b=15 OR P3b=77 OR P3b=88 OR P3b=99)	0	15	
	P3a=30 AND (P3b=(.) OR P3b=0 OR P3b=30 OR P3b=77 OR P3b=88 OR P3b=99)	0	30	
	P3a=45 AND (P3b=(.) OR P3b=0 OR P3b=45 OR P3b=77 OR P3b=88 OR P3b=99)	0	45	
	P3a=60 AND (P3b=(.) OR P3b=0 OR P3b=60 OR P3b=77 OR P3b=88 OR P3b=99)	1	0	
	(P3a=7 AND P3b=77) OR (P3a=8 AND P3b=88) OR (P3a=9 AND P3b=99)	0	0	
	P3a=77 OR P3a=88 OR P3a=99	0	(leave as is)	
	P3b=77 OR P3b=88 OR P3b=99	(leave as is)	0	
<b>Created Variables</b>	<b>Name</b>	<b>Purpose</b>	<b>Value</b>	<b>Condition</b>
	P3amin	Computes min value for P3a.	0	P3a=(.)
			P3a*60	ELSE
	P3bmin	Set equal to P3b, with 0's replacing missing values.	0	P3b=(.)
			P3b	ELSE
	P3	Total time in mins.	P3amin+P3bmin	
	P2CLN	Checks for a valid response to P2	1	P1=1 AND P2>0 AND P2<8 <b>OR</b> P1=2 AND (P2=0 OR P2=(.) OR P2=99)
			2	ELSE
	P3CLN	Checks for a valid response to P3: P2 must have a valid response with nr. of days = 1 through 7, and P3 must be at least 10 mins. and at most 960 mins. (max. of 16 hrs. per day)	1	P2CLN=1 AND P2>0 AND P2<8 AND P3>9 AND P3<961 <b>OR</b> P2CLN=1 AND (P2=0 OR P2=(.) OR P2=99) AND P3=0
			2	ELSE
	P1t3CLN	Checks for valid response to P1 through P3a&b. Allows for respondents to skip entire section but a check in the physical activity programs that use these cleaning programs ensures that <u>at least one section</u> of all physical activity sections has a response.	1	P3CLN=1 AND Valid=1 <b>OR</b> P1=(.) AND (P2=0 OR P2=(.) OR P2=99) AND P3=0 AND Valid=1
			2	ELSE

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## 5 Cleaning GPAQ data with EpiInfo, Continued

<b>CleanRecode P16</b>				
<b>Questions Used</b>	P16a, P16b			
<b>General Information</b>	Responses are first checked for possible data entry errors (i.e. minutes entered where hours are expected). To have a "clean" response, respondents must have given a valid response to P16 (P16CLN=1).			
<b>Modified Variables</b>	Before any new variables are created, P16a and P16b are modified using the following logical tests. To summarize, these tests try to correct obvious data entry errors where minute values of 15, 30, 45, or 60 were entered as hour values in P16a. These changes are only saved to the temporary dataset used for analysis, the actual dataset is left unchanged.			
	<b>Condition</b>	<b>New P16a Value</b>	<b>New P16b Value</b>	
	P16a=15 AND (P16b=(.) OR P16b=0 OR P16b=15 OR P16b=77 OR P16b=88 OR P16b=99)	0	15	
	P16a=30 AND (P16b=(.) OR P16b=0 OR P16b=30 OR P16b=77 OR P16b=88 OR P16b=99)	0	30	
	P16a=45 AND (P16b=(.) OR P16b=0 OR P16b=45 OR P16b=77 OR P16b=88 OR P16b=99)	0	45	
	P16a=60 AND (P16b=(.) OR P16b=0 OR P16b=60 OR P16b=77 OR P16b=88 OR P16b=99)	1	0	
	(P16a=7 AND P16b=77) OR (P16a=8 AND P16b=88) OR (P16a=9 AND P16b=99)	0	0	
	P16a=77 OR P16a=88 OR P16a=99	0	(leave as is)	
	P16b=77 OR P16b=88 OR P16b=99	(leave as is)	0	
	<b>Created Variables</b>	<b>Name</b>	<b>Purpose</b>	<b>Value</b>
P16amin		Computes min value for P16a	0	P16a=(.)
			P16a*60	ELSE
P16bmin		Set equal to P16b, with 0's replacing missing values	0	P16b=(.)
			P16b	ELSE
P16		Total time in mins	P16amin+P16bmin	
P16CLN	Checks for a valid response to P16 (can be from 0 mins. to 1440 mins. (24 hrs.))	1	P16<1441 AND Valid=1	
		2	ELSE	

## 6 Analysis Guidelines and Calculations

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**Introduction** A population's physical activity (or inactivity) can be described in different ways. The two most common ways are

- (1) to estimate a population's mean or median physical activity using a continuous indicator such as MET-minutes per week or time spent in physical activity, and
- (2) to classify a certain percentage of a population as 'inactive' or 'insufficiently active' by setting up a cut-point for a specific amount of physical activity.

The following guidelines describe both how to derive at continuous as well as categorical indicators when analysing GPAQ data.

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**Continuous indicator** As described in the overview (p. 3), MET values are applied to the time variables according to the intensity (moderate or vigorous) of the activity. Applying MET values to activity levels allows us to calculate total physical activity.

For the calculation of a person's overall energy expenditure using GPAQ data, the following MET values are used:

Domain	MET value
Work	<ul style="list-style-type: none"><li>• Moderate MET value = 4.0</li><li>• Vigorous MET value = 8.0</li></ul>
Transport	Cycling and walking MET value = 4.0
Recreation	<ul style="list-style-type: none"><li>• Moderate MET value = 4.0</li><li>• Vigorous MET value = 8.0</li></ul>

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**WHO recommendations on physical activity for health**

For the calculation of a categorical indicator, the total time spent in physical activity during a typical week and the intensity of the physical activity are taken into account.

Throughout a week, including activity for work, during transport and leisure time, adults should do at least

- 150 minutes of moderate-intensity physical activity OR
  - 75 minutes of vigorous-intensity physical activity OR
  - An equivalent combination of moderate- and vigorous-intensity physical activity achieving at least 600 MET-minutes.
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## 6 Analysis Guidelines and Calculations, Continued

### Not meeting WHO recommendations on physical activity for health

Description: Percentage of respondents not meeting WHO recommendations on physical activity for health (respondents doing less than 150 minutes of moderate-intensity physical activity per week, or equivalent).

Instrument questions:

- **P1-P6a&b:** activity at work
- **P7-P9a&b:** travel to and from places
- **P10-P15a&b:** recreational activities

Not meeting WHO recommendations on physical activity for health									
Age Group (years)	Men			Women			Both Sexes		
	n	% not meeting recs	95% CI	n	% not meeting recs	95% CI	n	% not meeting recs	95% CI

<b>Questions Used</b>	P1-P15a&b					
<b>Program</b>	<b>Pnotmeetingrecs</b> (unweighted), <b>PnotmeetingrecsWT</b> (weighted)					
<b>Equations</b>	<p>Total physical activity MET-minutes/week (= the sum of the total MET minutes of activity computed for each setting)</p> <p>Equation: Total Physical Activity MET-minutes/week = [(P2 * P3 * 8) + (P5 * P6 * 4) + (P8 * P9 * 4) + (P11 * P12 * 8) + (P14 * P15 * 4)]</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: center;">WHO recommendations</th> <th style="text-align: center;">Physical activity cutoff value</th> </tr> </thead> <tbody> <tr> <td>Not meeting recommendations</td> <td> <ul style="list-style-type: none"> <li>• IF: Total Physical Activity MET minutes per week is &lt; 600</li> </ul> </td> </tr> </tbody> </table>		WHO recommendations	Physical activity cutoff value	Not meeting recommendations	<ul style="list-style-type: none"> <li>• IF: Total Physical Activity MET minutes per week is &lt; 600</li> </ul>
WHO recommendations	Physical activity cutoff value					
Not meeting recommendations	<ul style="list-style-type: none"> <li>• IF: Total Physical Activity MET minutes per week is &lt; 600</li> </ul>					
<b>Program Information</b>	<p>Reports percentage of respondents who do not meet WHO recommendations on physical activity for health. Before any of the below variables are created ALL CleanRecode programs are called. To be included in the output, the respondent must have either left blank or given a valid response to each subset of the physical activity questions AND have given a valid response to <u>at least one subset</u> of the physical activity questions (CLN=1).</p>					



<b>Created Variables</b>	<b>Name</b>	<b>Purpose</b>	<b>Values</b>	<b>Condition</b>
	P1t3	MET value of vigorous work activity per week	P2*P3*8	P1t3CLN=1
			(.)	ELSE
	P4t6	MET value of moderate work activity per week	P5*P6*4	P4t6CLN=1
			(.)	ELSE
	P7t9	MET value of transport activity per week	P8*P9*4	P7t9CLN=1
			(.)	ELSE
	P10t12	MET value of vigorous recreational activity per week	P11*P12*8	P10t12CLN=1
			(.)	ELSE
	P13t15	MET value of moderate recreational activity per week	P14*P15*4	P13t15CLN=1
			(.)	ELSE
	Ptotal	Sum of all activity per week	p1t3+p4t6+p7t9+p10t12+p13t15	
	CLN	Checks to see if all physical activity responses, as a combined set, are valid: all subsets of responses must be clean and at least one subset of responses must have a response (not missing)	1	Valid=1 AND P1t3CLN=1 AND P4t6CLN=1 AND P7t9CLN=1 AND P10t12CLN=1 AND P13t15CLN=1 <b>AND</b> P1≠(.) OR P4≠(.) OR P7≠(.) OR P10≠(.) OR P13≠(.)
			2	ELSE
	C	Output table values	"Does not meet recommendations"	Ptotal<600
"Meets recommendations"			Ptotal≥600	

**Total physical activity** Description: Mean / median time of total physical activity on average per day.  
Instrument questions  

- **P1-P6a&b:** activity at work
- **P7-P9&b:** travel to and from places
- **P10-P15a&b:** recreational activities

Mean/Median minutes of total physical activity on average per day										
Age Group (years)	Men			Women			Both Sexes			
	n	# minutes	95% CI	n	# minutes	95% CI	n	# minutes	95% CI	

<b>Questions Used</b>	P1-P15a&b			
<b>Program</b>	<b>Ptotal</b> (unweighted mean & median values), <b>PtotalWT</b> (weighted mean values), <b>PtotalmedianWT</b> (weighted median values)			
<b>Program Information</b>	Reports the mean or median amount of physical activity per day in minutes. Before any of the below variables are created ALL CleanRecode programs are called. To be included in the output, the respondent must have either left blank or given a valid response to each subset of the physical activity questions AND have given a valid response to <u>at least one subset</u> of the physical activity questions (CLN=1).			
<b>Created Variables</b>	<b>Name</b>	<b>Purpose</b>	<b>Values</b>	<b>Condition</b>
	P1t3	Vigorous work activity in minutes per week	P2*P3 (.)	P1t3CLN=1 ELSE
	P4t6	Moderate work activity in minutes per week	P5*P6 (.)	P4t6CLN=1 ELSE
	P7t9	Transport activity in minutes per week	P8*P9 (.)	P7t9CLN=1 ELSE
	P10t12	Vigorous recreational activity in minutes per week	P11*P12 (.)	P10t12CLN=1 ELSE
	P13t15	Moderate recreational activity in minutes per week	P14*P15 (.)	P13t15CLN=1 ELSE
	Ptotalday	Sum of all activity per week divided by 7 to get avg. per day	(p1t3+p4t6+p7t9+p10t12+p13t15)/7	
	CLN	Checks to see if all physical activity responses, as a combined set, are valid: all subsets of responses must be clean and at least one subset of responses must have a response (not missing)	1	Valid=1 AND P1t3CLN=1 AND P4t6CLN=1 AND P7t9CLN=1 AND P10t12CLN=1 AND P13t15CLN=1 <b>AND</b> P1≠(.) OR P4≠(.) OR P7≠(.) OR P10≠(.) OR P13≠(.)
	2		ELSE	

**Setting-specific physical activity-mean / median**

Description: Mean / median number of minutes spent on average per day, in work-, transport- and recreation-related physical activity.

Instrument questions

- **P1-P6a&b:** activity at work
- **P7-P9&b:** travel to and from places
- **P10-P15a&b:** recreational activities

Mean/Median minutes of [insert domain]-related physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	# minutes	95% CI	n	# minutes	95% CI	n	# minutes	95% CI

<b>Questions Used</b>	P1-P15a&b			
<b>Program</b>	<b>Psetspecific</b> (unweighted mean & median values), <b>PsetspecificWT</b> (weighted mean values), <b>PsetspecificmedianWT</b> (weighted median values)			
<b>Program Information</b>	Reports the mean or median amount of physical activity in minutes. Before any of the below variables are created ALL CleanRecode programs are called. To be included in the output, the respondent must have either left blank or given a valid response to each subset of the physical activity questions AND have given a valid response to <u>at least one subset</u> of the physical activity questions (CLN=1).			
<b>Created Variables</b>	<b>Name</b>	<b>Purpose</b>	<b>Values</b>	<b>Condition</b>
	P1t3	Vigorous work activity in minutes per week	P2*P3 (.)	P1t3CLN=1 ELSE
	P4t6	Moderate work activity in minutes per week	P5*P6 (.)	P4t6CLN=1 ELSE
	P7t9	Transport activity in minutes per week	P8*P9 (.)	P7t9CLN=1 ELSE
	P10t12	Vigorous recreational activity in minutes per week	P11*P12 (.)	P10t12CLN=1 ELSE
	P13t15	Moderate recreational activity in minutes per week	P14*P15 (.)	P13t15CLN=1 ELSE
	Pwork-day	Average work-related activity per day	(p1t3+p4t6)/7	
	Ptravel-day	Average transport-related activity per day	p7t9/7	
	Precday	Average recreation-related activity per day	(p10t12+p13t15)/7	
	CLN	Checks to see if all physical activity responses, as a combined set, are valid: all subsets of responses must be clean and at least one subset of responses must have a response (not missing)	1	Valid=1 AND P1t3CLN=1 AND P4t6CLN=1 AND P7t9CLN=1 AND P10t12CLN=1 AND P13t15CLN=1 <b>AND</b> P1≠(.) OR P4≠(.) OR P7≠(.) OR P10≠(.) OR P13≠(.)
	2		ELSE	

**No physical activity by setting** Description: Percentage of respondents classified as doing no work-, transport-, or recreation-related physical activity.

Instrument questions

- **P1-P6a&b:** activity at work
- **P7-P9&b:** travel to and from places
- **P10-P15a&b:** recreational activities

No [insert domain]-related physical activity									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI

<b>Questions Used</b>	P1-P15a&b			
<b>Program</b>	<b>Pnoactivitybyset</b> (unweighted), <b>PnoactivitybysetWT</b> (weighted)			
<b>Program Information</b>	Reports the percentage of respondents who reported no work-, transport-, or recreation-related physical activity. Before any of the below variables are created ALL CleanRecode programs are called. To be included in the output, the respondent must have either left blank or given a valid response to each subset of the physical activity questions AND have given a valid response to <u>at least one subset</u> of the physical activity questions (CLN=1).			
<b>Created Variables</b>	Work	Indicates whether or not respondent did any work-related activity	"did work activity"	P1=1 OR P4=1
			"did no work activity"	ELSE
	Trans	Indicates whether or not respondent did any transport-related activity	"did transport activity"	P7=1
			"did no transport activity"	ELSE
	Rec	Indicates whether or not respondent did any recreation-related activity	"did recreation activity"	P10=1 OR P13=1
			"did no recreation activity"	ELSE
	CLN	Checks to see if all physical activity responses, as a combined set, are valid: all subsets of responses must be clean and at least one subset of responses must have a response (not missing)	1	Valid=1 AND P1t3CLN=1 AND P4t6CLN=1 AND P7t9CLN=1 AND P10t12CLN=1 AND P13t15CLN=1 <b>AND</b> P1≠(.) OR P4≠(.) OR P7≠(.) OR P10≠(.) OR P13≠(.)
			2	ELSE

- Composition of total physical activity** Description: Percentage of total physical activity on average per day that comes from each of the 3 types of activity: work-, transport-, or recreation-related.
- Instrument questions
- **P1-P6a&b:** activity at work
  - **P7-P9&b:** travel to and from places
  - **P10-P15a&b:** recreational activities

Composition of total physical activity							
Age Group (years)	Gender						
	n	% Work	95% CI	% Transport	95% CI	% Recreation	95% CI

<b>Qu. Used</b>	P1-P15a&b			
<b>Program</b>	<b>Pcomposition</b> (unweighted), <b>PcompositionWT</b> (weighted)			
<b>Program Information</b>	Reports the percentage of activity that comes from each of the three types of activity (work, transport, or recreation). Before any of the below variables are created ALL CleanRecode programs are called. To be included in the output, the respondent must have either left blank or given a valid response to each subset of the physical activity questions AND have given a valid response to <u>at least one subset</u> of the physical activity questions (CLN=1).			
<b>Created Variables</b>	<b>Name</b>	<b>Purpose</b>	<b>Values</b>	<b>Condition</b>
	P1t3	Vigorous work activity in minutes per week	P2*P3 (.)	P1t3CLN=1 ELSE
	P4t6	Moderate work activity in minutes per week	P5*P6 (.)	P4t6CLN=1 ELSE
	P7t9	Transport activity in minutes per week	P8*P9 (.)	P7t9CLN=1 ELSE
	P10t12	Vigorous recreational activity in minutes per week	P11*P12 (.)	P10t12CLN=1 ELSE
	P13t15	Moderate recreational activity in minutes per week	P14*P15 (.)	P13t15CLN=1 ELSE
	Ptotal	Sum of all activity per week	p1t3+p4t6+p7t9+p10t12+p13t15	
	Percent-Work	Percent of all activity from work-related activities	(p1t3+p4t6)/Ptotal*100	
	Percent-Trans	Percent of all activity from transportation-related activities	p7t9/Ptotal*100	
	Percent-Rec	Percent of all activity from recreational activities	(p10t12+p13t15)/Ptotal*100	
	CLN	Checks to see if all physical activity responses, as a combined set, are valid: all subsets of responses must be clean and at least one subset of responses must have a response (not missing)	1	Valid=1 AND P1t3CLN=1 AND P4t6CLN=1 AND P7t9CLN=1 AND P10t12CLN=1 AND P13t15CLN=1 <b>AND</b> P1≠(.) OR P4≠(.) OR P7≠(.) OR P10≠(.) OR P13≠(.)
			2	ELSE

**No vigorous physical activity** Description: Percentage of respondents not engaging in vigorous physical activity.  
 Instrument questions  
 • **P1-P6a&b**: activity at work  
 • **P7-P9&b**: travel to and from places  
 • **P10-P15a&b**: recreational activities

No vigorous physical activity									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI

<b>Qu. Used</b>	P1-P15a&b			
<b>Program</b>	<b>Pnovigorous</b> (unweighted), <b>PnovigorousWT</b> (weighted values)			
<b>Program Information</b>	Reports percentage of respondents who did no vigorous physical activity. Before any of the below variables are created ALL CleanRecode programs are called. To be included in the output, the respondent must have either left blank or given a valid response to each subset of the physical activity questions AND have given a valid response to <u>at least one subset</u> of the physical activity questions (CLN=1).			
<b>Created Variables</b>	<b>Name</b>	<b>Purpose</b>	<b>Values</b>	<b>Condition</b>
	C	Output table values	"did vigorous physical activity"	P1=1 OR P10=1
			"did no vigorous physical activity"	ELSE
	CLN	Checks to see if all physical activity responses, as a combined set, are valid: all subsets of responses must be clean and at least one subset of responses must have a response (not missing)	1	Valid=1 AND P1t3CLN=1 AND P4t6CLN=1 AND P7t9CLN=1 AND P10t12CLN=1 AND P13t15CLN=1 AND P1≠(.) OR P4≠(.) OR P7≠(.) OR P10≠(.) OR P13≠(.)
2			ELSE	

**Sedentary** Description: Minutes spent in sedentary activities on average per day.

Instrument questions

- **P16:** sedentary behaviour

Mean/Median minutes spent in sedentary activities on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	# minutes	95% CI	n	# minutes	95% CI	n	# minutes	95% CI

<b>Questions Used</b>	P16a&b			
<b>Program</b>	<b>Psedentary</b> (unweighted mean & median values), <b>PsedentaryWT</b> (weighted mean values), <b>PsedentarymedianWT</b> (weighted median values)			
<b>Program Information</b>	Reports the mean or median amount of sedentary activity in minutes. Before any of the below variables are created ALL CleanRecode programs are called. To be included in the output, the respondent must have either left blank or given a valid response to each subset of the physical activity questions AND have given a valid response to <u>at least one subset</u> of the physical activity questions (CLN=1). Note: P16 was created in CleanRecodeP16 from P16a and P16b. It contains the total sedentary time in mins.			
<b>Created Variables</b>	<b>Name</b>	<b>Purpose</b>	<b>Values</b>	<b>Condition</b>
	CLN	Checks to see if all physical activity responses, as a combined set, are valid: all subsets of responses must be clean and at least one subset of responses must have a response (not missing)	1  2	Valid=1 AND P16CLN=1  ELSE