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RESEARCH PAPER

Is the International Physical Activity Questionnaire-Short Form (IPAQ-SF) valid for assessing physical activity in chronic fatigue syndrome

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Abstract

Purpose. To evaluate the criterion validity and internal consistency of the International Physical Activity Questionnaire-short form (IPAQ-sf) in Chronic Fatigue Syndrome (CFS) patients.

Method. Fifty-six CFS patients completed the IPAQ-sf after they wore a tri-axial accelerometer and filled out activity diaries during 1 week. Spearman rank correlation coefficients and Cronbach's Alpha were calculated.

Results. The IPAQ-sf correlated significantly with the energy expenditure and Metabolic Equivalents (METs) minutes spent moderately to vigorously active following the activity diary and accelerometer. These correlation coefficients were however low (r varying between 0.282 and 0.426) and rather irrelevant, since CFS patients hardly reach moderate or vigorous activity levels. Internal consistency between the three subitems used for the total score of the IPAQ-sf was 0.337.

Conclusion. The observed associations between the IPAQ-sf data and the data obtained from the accelerometer (gold standard) and the diaries were too low to be in support of the use of the IPAQ-sf in patients with CFS. The IPAQ-sf does not seem an appropriate tool to assess physical activity in CFS patients. Further study is required to seek for a valid, practical and affordable tool.

Keywords: *Chronic fatigue syndrome, exercise, IPAQ-SF*

Introduction

Chronic Fatigue Syndrome (CFS) is known to be a debilitating and complex disorder, characterised by extreme fatigue. Following the 1994 Centre of Disease Control (CDC) criteria, the fatigue does not improve by bed rest, may be aggravated by physical or mental activity and leads to a substantial reduction of the premorbid activity level [1]. To fulfil the older 1988 CDC criteria for CFS, a 50% reduction of the premorbid activity level was required [2]. This 50% reduction was hard to objectify, but the reduction in physical activity is still an important part of the 1994 criteria. The renewal of the 1988 criteria, led to the less stringent 1994 criteria. The 1994 criteria select a less symptomatic and impaired group of individuals leading to a more heterogeneous patient groups experiencing more variability and wider ranges of illness severity and functional disability [3]. According to the literature, CFS patients are 15–45% less active compared to sedentary controls [4–6].

Since a reduced physical activity level may lead to further deconditioning and to a subsequent negative symptoms course in patients with CFS, many therapeutic interventions have emphasised on activity regulation [4,5]. In order to steer and to evaluate the approach, reliable and valid measurement tools are necessary.

Besides the double labelled water method, the accelerometer is the most accurate and objective way to measure physical activity. Researchers have validated and calibrated them in diverse populations [7,8]. Accelerometers are based on an electric sensor

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and yield highly reliable data, also in CFS patients [4–6]. But for clinical settings, accelerometers are not feasible given the high cost price [4]. In addition, not all accelerometers are waterproof and cannot be worn during swimming, cleaning, doing the dishes, etc. [5]. Some patients may also be unwilling to wear the device [9], because of the discomfort or the apparentness.

A cheap alternative is the activity diary. The diary gives information on the type, intensity and duration of activities [10]. The validity of activity diaries in healthy subjects is sufficiently provided by several studies revealing significant correlations with pedometers or accelerometers [10–13] and with the gold standard, the double labelled water method [14]. In CFS patients, we also found the activity diary to be moderately valid (unpublished data). One of the demerits of the activity diary is the time-consuming labour of completing the diary after every activity (patient) and of the analysis of the activity level (therapist/assessor). Especially for CFS patients, with their specific memory problems and concentration difficulties [1], the completion of such a diary during a longer period of time may be exhausting. On the other hand, some CFS patients reported to become more conscious of their physical activity, which could influence activity behaviour.

To avoid these problems, one simple questionnaire could be useful in clinical practice. The International Physical Activity Questionnaire (IPAQ) is a self-reported measure of physical activity suitable for assessing population levels of physical activity across countries, developed by the International Consensus Group for Physical Activity Measurement (1996), with four short and four long versions of the questionnaire. These could be administered by telephone interview or self-administration. Given the cognitive problems, experienced by CFS patients, the short self-administered version seemed the most appropriate for this patient population. The IPAQ-short form (IPAQ-sf) (nine items) provides information on the time spent walking, in vigorous and moderate intensity activity and in sedentary activity. An international study has demonstrated that reliable and valid physical activity data can be collected by the IPAQ instruments in many countries in healthy middle-aged adults [15].

In patient populations, however, the results for the clinimetric properties of the IPAQ are less clear. One study reported measurement properties in schizophrenia patients that are comparable to those reported in the general population [16], while substantial overreporting occurred in breast cancer patients [17] and HIV-patients [18]. Also in fibromyalgia patients the IPAQ was not an appropriate measurement tool [19]. To our knowledge only one study evaluated the validity of the IPAQ in CFS patients [20]. They reported an acceptable validity, although the authors would not call the instrument satisfactory. They found a Spearman correlation of 0.33 between the IPAQ and an accelerometer [20]. Nevertheless, we chose the IPAQ-sf since the outcome of such a questionnaire is not dependent on the therapist's skills and the validity of such a questionnaire might be higher and more stable than that of an interview [20]. Furthermore, a short self-administered questionnaire is probably the least demanding for both CFS patients and therapists. Previous attempts to develop a questionnaire specifically for CFS, seemed not more accurate than the IPAQ. This implies in the first place that the design of a questionnaire especially for CFS patients did not result in a significantly higher validity than the already existing IPAQ [20]. In addition, a generic questionnaire allows comparisons with other patient populations.

The main focus of Scheeres et al. [20] was to evaluate whether the IPAQ-sf, in comparison to the accelerometer, is able to discriminate between rather passive and active CFS patients (discriminative validity), given the relevance of differentiation to steer behavioural interventions. They used a uniaxial accelerometer and the patients that participated were all patients that visited an expert centre in chronic fatigue to start with cognitive behavioural therapy. That sample may reflect a subgroup of the CFS population.

Therefore, in the present study we wanted to evaluate the validity of the IPAQ-sf in comparison to a tri-axial accelerometer and to an activity diary in a CFS sample that was not specifically seeking for help. The criterion validity of the IPAQ-sf will be evaluated by comparing physical activity data collected with the IPAQ-sf with those collected with an accelerometer and an activity diary. The accelerometer was chosen as gold standard, since comparisons with double labelled water method are not usable in real-life situations in larger samples as the present. Finally, internal consistency will be studied.

Materials and methods

Patients

CFS patients were randomly (medical file number were randomly chosen by lottery) selected from the medical files available at our university-based chronic fatigue clinic. All patients fulfilled the criteria for CFS as described by the CDC [1]. Therefore, all patients underwent an extensive medical evaluation by the same physician prior to study participation. The patients were contacted by telephone to verify in- and exclusion criteria and to invite them for participation. To fulfil the inclusion criteria patients had to be diagnosed with CFS following the CDC criteria, Dutch speaking, female and aged between 18 and 65 years old. Patients not diagnosed following the CDC criteria or with severe comorbidity (precluding the diagnosis of CFS) were excluded. A total of 56 CFS patients fulfilling all study requirements participated.

Design

Study information and requirements were already provided orally during the telephonic invitation. At the first contact moment (several day after the telephone call), a leaflet explaining once again the purpose of the research was handed out. After a careful reading and in case of agreement, patients were asked to sign the informed consent. The protocol and the information leaflet were approved by the local ethics committee (University Hospital Vrije Universiteit Brussel; O.G. 016). Patients received an accelerometer for activity monitoring. Height, weight and gender were entered in the accelerometer before attaching it on the non-dominant wrist. Patients were instructed to wear it 24 h a day until the second appointment, one week later. Besides, patients were asked to complete an activity diary in this week. At the second appointment, patients filled out the Dutch IPAQ-SF and the accelerometer data were read in.

IPAQ-sf

The purpose of the questionnaire (Appendix 1) is to obtain data on health-related physical activity. We used the short self-administered version in the present study. The short form IPAQ is a 9-item scale, assessing the amount of minutes spent in vigorous and moderate intense activity and walking during the last 7 days. Also the amount of minutes spending sitting on week days in the past 7 days is assessed. For all categories patients have to define on how many days and how many minutes they spent at a specific activity category. For all categories, the amount of *Metabolic Equivalents* (*METs*)*-minutes* is calculated by multiplying the amount of minutes with 8 (vigorous), 4 (moderate), 3.3 (walking), or 1.3 (sitting). Besides these four subscores, a total score is calculated by counting the METs-minutes of the first 3 categories together. The IPAQ has a good test-retest reliability (Spearman's $\rho = 0.80$) and a moderate criterion validity (Spearman's $\rho = 0.30$) with an accelerometer in healthy adults [15].

In order to obtain the *energy expenditure* (expressed in kilocalories or kcal), METs-minutes were multiplied by the patients' weight and divided by 60 (METs-minutes $\times$ weight/60).

Accelerometry

The Actical accelerometer (Mini Mitter, Bend, OR) has an omnidirectional sensor, which functions via a cantilevered rectangular piezoelectric bimorph plate and seismic mass, and it is capable of detecting movements in the 0.5- to 3-Hz range. Voltage generated by the sensor is amplified and filtered via analogue circuitry. The amplified and filtered voltage is passed into an analogue to a digital converter, and the process is repeated 32 times per second (32 Hz). The resulting 1-s value is divided by four, and then added to an accumulated activity value (activity counts) for the epoch. The Actical is the smallest accelerometer available (28 $\times$ 27 $\times$ 10 mm, 17 g) and is water resistant. The Actical has previously been used in studies and has shown to be valid [7,21]. For the present study, the monitors were initialised to save data in 1-minute intervals (epochs). The Actical is able to subdivide the daily activities in four activity levels: sedentary activity ($\leq$1 METs), light activity ($<$3 METs), moderate activity (3–6 METs), and vigorous activity ($>$6 METs). The Actical can generate the amount of minutes spent per category.

In order to obtain *METs-minutes*, parallel to those calculated with the IPAQ-sf, the minutes spent per activity category were multiplied by the same factors. The minutes spent sedentary are multiplied with 1.3; moderate with 4 and vigorous with 8. Since walking registered by the IPAQ-sf cannot be compared with light activity monitored by the Actical, we did not calculate the METs-minutes of light activity registered by the Actical. For the same reason the total activity (including the light activity) will not be calculated and compared.

Energy expenditure (kcal) is calculated by the Actical based on weight, height, gender and activity counts.

Activity diary. The activity diary consisted of pieces of paper, each containing a large table with four columns for filling out (1) the specification of the type of activity, (2) the initiation and termination time for each activity, (3) the total activity duration and (4) corresponding METs-values. Patients were instructed to complete the first three columns of the activity diary individually, and to leave the final column to the investigators. For every new activity patients had to start a new row. Every day has separate pages and additional pages could be added when necessary. Patients were instructed to specify their activities in detail immediately, in order to avoid mistakes in recall. In one of our own studies the validity of the activity diary seemed acceptable in CFS patients (unpublished data).

The METs-values, filled out in the fourth column, are based on the Compendium of Physical Activities Tracking Guide [11]. To calculate the *METs-minutes* the METs-value is multiplied by the amount of minutes spent on this activity. Daily physical activity was also subdivided in the four activity levels: sedentary activity ($\leq$1 Metabolic Equivalent (METs)), light activity ($<$3 METs), moderate activity (3–6 METs), and vigorous activity ($>$6 METs).

In order to obtain *energy expenditure*, expressed in kcal, METs-minutes were multiplied by the patients weight and divided by 60 (METs-minutes × weight/60).

Statistics

All data were analysed using SPSS 14.0© for Windows. According to the one-sample Kolmogorov–Smirnov goodness-of-fit test activity data were not normally distributed and therefore non-parametric statistics were used.

In order to study *criterion validity*, we used the Spearman rank correlation coefficient to evaluate the correlations between the IPAQ-sf and the accelerometer in CFS patients. The p-value was set at 0.05.

Cronbach's Alpha was calculated to study the *internal consistency* between the three items of the IPAQ-sf that are used to obtain the total score (walking, vigorous and moderate activity).

Results

Descriptive statistics

Fifty-six female CFS patients with a mean age of 41.09 years (SD: 9.51; range: 20–62) and mean illness duration of 93.61 months (SD: 78.41; range: 6–360) participated in the study. Nine patients did not complete all items of the questionnaire. The items that they did complete are used in the statistical analysis. Descriptive statistics for MET-minutes per week, collected by the IPAQ-sf, accelerometer and activity diary, are presented in Table I. Energy expenditure is presented in Table II.

Criterion validity

We revealed some weak to moderate correlations between the data obtained from the IPAQ-sf, accelerometer and activity diary in CFS patients (Table III). Only variables that correlated significantly are shown. Correlations coefficients were overall low (r varying between 0.282 and 0.426). Moreover, these correlations may be irrelevant because correlations were particularly found for the moderate and vigorous activity categories. These are the activity categories that are hardly performed by CFS patients. In consequence, the recorded values for these activity levels are very low or even approaching zero.

Table I. METs-minutes per week.

	N	Median	Minimum	Maximum	P25	P50	P75
IPAQ							
Sedentary	52	3276.00	273.00	6552.00	2184.00	3276.00	3822.00
Moderate	51	360.00	0.00	8400.00	0.00	360.00	1080.00
Vigorous	51	0.00	0.00	4320.00	0.00	0.00	480.00
Walking	51	446.00	0.00	6930.00	99.00	446.00	1155.00
Total	51	1179.00	0.00	17250.00	594.00	1179.00	3342.00
Actical							
Sedentary	56	4841.85	1768.00	6638.00	3525.60	4841.85	5391.10
Moderate	56	2812.00	696.00	5924.00	2112.00	2812.00	3375.00
Vigorous	56	8.00	0.00	984.00	0.00	8.00	30.00
Diary							
Sedentary	56	4449.00	2349.00	6317.00	3919.85	4449.00	4948.60
Light	56	7010.650	3403.50	10666.10	6007.28	7010.65	8016.15
Moderate	56	277.50	0.00	7940.00	103.03	277.50	661.75
Vigorous	56	0.00	0.00	2425.00	0.00	0.00	0.00

(METs, Metabolic Equivalents; IPAQ, International Physical Activity Questionnaire; P25–P50–P75=percentile 25–50–75).
The amount of Metabolic Equivalents (METs)-minutes =

- *IPAQ:* minutes reported per category × 1.3 (sedentary); × 4 (moderate); × 8 (vigorous); × 3.3 (walking). Total=sum final 3.
- *Actical:* minutes recorded per category × 1.3 (sedentary); × 4 (moderate); × 8 (vigorous). No separate recording of walking.
- *Diary:* METs-values per activity based on Compendium of Physical Activities Tracking Guide × minutes per activity, subdivided in sedentary activity ($\leq$1 METs), light activity ($<$3 METs), moderate activity (3–6 METs), and vigorous activity ($>$6 METs).

Table II. Energy expenditure (in kcal) per week.

	N	Median	Minimum	Maximum	P25	P50	P75
IPAQ							
Sedentary	52	3221.20	263.90	8008.00	2613.98	3221.20	4501.09
Moderate	51	360.00	0.00	11900.00	0.00	360.00	1072.00
Vigorous	51	0.00	0.00	4896.00	0.00	0.00	426.00
Walking	51	420.75	0.00	9817.50	110.55	420.75	1168.20
Total	51	1277.10	0.00	24437.50	542.85	1277.10	3385.80
Actical							
Sedentary	56	4439.93	2806.00	8668.00	3946.36	4439.93	5496.08
Light	56	7386.88	2351.27	12121.71	6184.64	7386.88	8787.33
Moderate	56	2923.86	223.99	7492.00	2072.66	2923.86	4010.01
Vigorous	56	2.86	0.00	672.00	0.00	2.86	16.73
Diary							
Sedentary	56	4479.47	0.00	9026.00	3900.24	4479.47	5616.33
Light	56	7087.19	0.00	14827.08	5974.69	7087.19	8632.30
Moderate	56	251.13	0.00	9131.00	89.52	251.13	786.17
Vigorous	56	0.00	0.00	2425.00	0.00	0.00	0.00

kcal, kilocalories; IPAQ, International Physical Activity Questionnaire; P25–P50–P75=percentile 25–50–75.
The amount of kcal =

- *IPAQ:* METs-minutes reported per category × weight/60.
- *Actical:* calculated by Actical based on weight, height, gender and activity counts.
- *Diary:* METs-minutes reported per category × weight/60.

Table III. Spearman Rank Correlations between IPAQ-sf and Actical and activity diary (n=51).

	METs-minutes			*Energy expenditure*			
	Actical		*Diary*	*Actical*		*Diary*	
	MOD	VIG	MOD	MOD	VIG	SED	MOD
IPAQ METs-minutes							
MOD	0.282*	0.220	0.426**	0.240	0.102	−0.208	0.316*
VIG	0.016	0.303*	0.263	0.048	0.331*	−0.255	0.191
TOTAL	0.152	0.201	0.295*	0.288*	0.180	−0.321*	0.201
IPAQ Energy expenditure							
MOD	0.271	0.217	0.397**	0.227	0.098	−0.165	0.299*
VIG	0.030	0.307*	0.274	0.068	0.341*	−0.242	0.204
TOTAL	0.147	0.176	0.276	0.300*	0.166	−0.259	0.193

IPAQ-sf = International Physical Activity Questionnaire-Short Form; METs = Metabolic Equivalents; MOD = moderate; VIG = vigorous; SED = sedentary;
*Significant at the 0.05 level.
**Significant at the 0.01 level.

Both the correlations with the diary or with the accelerometer were quite similar.

Internal consistency

The items walking, moderate and vigorous activities are used to calculate the total IPAQ-sf score. The Cronbach's Alpha for these three items was 0.337.

Discussion

The aim of the present study was to evaluate the criterion validity and the internal consistency of the IPAQ-sf in CFS patients.

Criterion validity

We correlated the physical activity data collected with a tri-axial accelerometer and an activity diary with the data registered by the IPAQ-sf. We revealed only a small amount of significant correlations between the various variables. In addition, the significant correlations were weak and only existent for the moderate or the vigorous activity level. These are the activity levels that are hardly reached in our CFS sample. Most patients did not perform any activity in this category and if they did, they remembered well while completing the IPAQ-sf. For the sedentary activities, which they perform most of the time, no correlations could be revealed.

Different reasons can be found for the poor criterion validity of the questionnaire in this population. First of all, the IPAQ-sf appeals to the memory of patients, since it is a recall of the last 7 days. Polls et al. [22] found that assessments based on self-report are not reliable in patients with memory difficulties. There may have been a recall bias, despite the fact that our patients would have been more conscious of their activity level in the preceding 7 days by the completion of their activity diary. This recall bias may be the reason why the activity diary was more valid for activity assessment in CFS patients (unpublished data). In the activity diary activities were reported immediately, without appealing to recall. For CFS patients it is also difficult to give a mean estimation of the time spent per activity category per day, given the fluctuating nature of their complaints. Their symptoms may fluctuate during the week or even the day, and so does their activity level [23]. Besides intra-individual differences in symptom and activity pattern, there are also major inter-individual differences between different patients. This heterogeneity in patients may explain why Scheeres et al. [20] reported acceptable validity. Their sample was a mixed sample of younger patients with an overall shorter illness duration. Possibly, this sample reflects a ''better part'' of the CFS population and the IPAQ-sf is probably more appropriate for the more active populations, given the validity of the instrument in healthy populations.

Another reason was suggested by Vercoulen et al. [4]. Answers could be biased by cognitions concerning illness and disability. Maybe some patients under-reported their activity level to emphasise their disability or other may have over-reported in order to come up to social expectancies. However, this type of bias might have been reduced due to the feeling of being 'supervised' (i.e., monitored continuously) by the accelerometer.

On the other hand, it can be argued that the accelerometer is not appropriate for activity assessment in CFS patients. Specific characteristics of the study populations can influence the accuracy of the motion sensors. Reliability and validity of physical activity monitors are not only specific to the device, but also to the population, and the activity behaviour being studied. For example, older adults with limited mobility may move so slowly that the motion is not detected by the sensor [24]. Furthermore, field studies have shown that accelerometers seem to underrate the amount of vigorous activity [25]. In our study, however, the accelerometer always registered more METs-minutes and a higher energy expenditure for each activity category, compared to the IPAQ-sf and the diary. The literature further confirms that accelerometers are more sensitive in detecting activity differences in inactive populations and more sensitive at detecting short activity periods than recall measures [26,27]. Another point of discussion may be the sedentary activity. The IPAQ-sf assesses the minutes spent sitting, while the wrist-worn accelerometer may record light activity levels instead of sedentary activity levels during sedentary activities requiring rapid hand movements (for example typing). But again, the Actical generated higher activity levels in all categories. Given all these facts, it seems rather doubtful that the validity of accelerometer would be the cause of the weak correlation with the IPAQ-sf.

Similar to earlier studies [4], the present study showed that one has to be very careful with using self-report questionnaires as measures for actual activity level. It may be clear that self-report questionnaires are no perfect parallel tests for an accelerometer in CFS patients.

Furthermore, total activity could not be compared between the IPAQ-sf and the other tools, since sedentary activity is not included in the total activity following the IPAQ-sf. The IPAQ-sf is rather directed to more intense activities, which are hardly performed by CFS patients. They perform mainly sedentary and light activities.

Internal consistency

The total activity score of the IPAQ-sf brings us to the internal consistency of the questionnaire. The total score is based on three subitems: walking, moderate and vigorous activity. To evaluate the internal consistency, Cronbach's Alpha was calculated for these items, resulting in a very low internal consistency. This may also be explained by the fact that IPAQ-sf is more directed to more intense activities. In healthy controls the total activity level may be chiefly dependent on the amount of more intense activities, while in CFS patients the total activity amount is mainly reflected by their sedentary activities. Predominance of one activity category, may cause weak coherence.

Future research should seek for valid and clinical applicable activity assessments. These assessment tools should be affordable, not too time-consuming or complicated for patient and therapist, and valid. Therefore it is wishful to avoid subjective interpretations and to use simple questions with simple answers [4], and not to rely on recall over a long period of time. There has to be the possibility to differentiate in the different sedentary or light activity categories and less emphasis should be laid on heavier activities. Instead of solely looking at the activity level, it would also be interesting to study activity patterns: the dispersal of activities, the balance between rest and activity, the duration of activity peaks, etc. Because CFS patients would present sustained efforts during their good moments, leading to an exacerbation of symptoms and thus a longer period of resting [28]. Rehabilitation should therefore not only strive to an increase in activity level, but also to a better management. To fulfil all these requirements, a sort of an activity diary seems the most appropriate up to now. To reduce the labour for patient and therapist a digitalised version would be preferable, with for example fixed moments on which patients have to recall their activities in the last couple of hours.

Conclusions

We can conclude that the IPAQ-sf is not the most appropriate tool to assess physical activity in CFS patients. Both the method and the questions are not appropriate for CFS patients. Further research is necessary to find a proper instrument to use in CFS patients. If the accelerometer cannot be used, the principle of an activity diary seems the best alternative up to now.

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Appendix 1. IPAQ-sf

International Physical Activity Questionnaire

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask you about the time you spent being physically active in the **last 7 days**. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the **vigorous** activities that you did in the **last 7 days**. **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think *only* about those physical activities that you did for at least 10 min at a time.

1. 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 → ***Skip to question 3***
2. How much time did you usually spend doing **vigorous** physical activities on one of those days?
   _____ **hours per day**
   _____ **minutes per day**
   Don't know/Not sure

   Think about all the **moderate** activities that you did in the **last 7 days**. **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 min at a time.
3. 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 → ***Skip to question 5***
4. How much time did you usually spend doing **moderate** physical activities on one of those days?
   _____ **hours per day**
   _____ **minutes per day**
   Don't know/Not sure

   Think about the time you spent **walking** in the **last 7 days**. This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.
5. During the **last 7 days**, on how many days did you **walk** for at least 10 min at a time?
   _____ **days per week**
   No walking → ***Skip to question 7***
6. How much time did you usually spend **walking** on one of those days?
   _____ **hours per day**
   _____ **minutes per day**
   Don't know/Not sure

   The last question is about the time you spent **sitting** on weekdays during the **last 7 days**. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.
7. During the **last 7 days**, how much time did you spend **sitting** on a **week day**?
   _____ **hours per day**
   _____ **minutes per day**
   Don't know/Not sure