

VARIABILITY OF SELECTED INDICATORS OF PHYSICAL ACTIVITY IN A RANDOMIZED SAMPLE OF THE CZECH POPULATION BETWEEN THE YEARS 2003–2006: RESULTS FROM THE SHORT AND LONG SELF ADMINISTERED FORMAT OF THE IPAQ QUESTIONNAIRE

Erik Sigmund, Dagmar Sigmundová, Josef Mitáš, František Chmelík,
Jana Vašíčková, Karel Frömel

Faculty of Physical Culture, Palacký University, Olomouc, Czech Republic

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The effort to gain worldwide data on the levels of physical activity (PA) of different populations, which would be comparable, led to the creation and standardization of the International Physical Activity Questionnaire (IPAQ). The main goal of this study is to determine the variability of PA indicators of two equivalent forms of the Czech self administered format of the IPAQ questionnaire applied in a randomized sample of the Czech population between the years 2003–2006. A randomized sample of 11277 (5683 females and 5594 males) of the Czech population aged 15–69 took part in the study. The short self administered format of the IPAQ was applied in 2066 women and 1976 men in Fall 2003 and Spring 2004. The long self administered format of the IPAQ (or as a part of the ANEWS questionnaire) was applied to 1688 women and 1689 men in Fall 2004 and Spring 2005 (or in 1929 women and 1929 men in Fall 2005 and Spring 2006). Individual samples of respondents were randomized according to sex, age, and size of the location of residence in compliance with the data from the Czech Statistical Office (www.czso.cz). There are no significant differences found between men and women in MET - minutes/week in total PA, transportation PA, job related PA and walking as shown by the separately applied long self administered format of the IPAQ and the ANEWS questionnaire (inc. long format of IPAQ). In the self administered format of the IPAQ, we have found both in men and women lower values of total PA ($p < 0.0001$) than in the long self administered format of the IPAQ or the ANEWS questionnaire. No differences between the values of MET - minutes/week for walking and sitting both in men and women on working days were found in the different forms of the IPAQ questionnaire. Having used the equivalent forms of the short or long Czech self administered format of the IPAQ questionnaire, we have not found any differences between MET - minutes/week for walking and sitting on working days. The long self administered format of the IPAQ provides more detailed results on PA. However, the value of total PA is significantly higher than that obtained using the short self administered format of the IPAQ. In order to obtain more exact data on PA, we recommend using the long self administered format of the IPAQ simultaneously with pedometer or accelerometer PA monitoring.

Keywords: MET - minutes/week, walking, sitting, short and long IPAQ format.

INTRODUCTION

Physical activity (PA) is recognized worldwide as an essential determinant of a healthy lifestyle (Miles, 2007). Walking has been frequently recommended to adults, seniors and patients in the convalescence period due to its health benefits, simplicity and ease in order to enhance their health and physical fitness (Eyler, Brownson, Bacak, & Housemann, 2003; Lee & Buchner, 2008; Zhu, 2008). There is, however, a wide scope of techniques for monitoring regular daily PA and walking in adults. The methods of physical activity monitoring not only vary from country to country, but also within countries (Macera & Powell, 2001). The variety of methods brings difficulties regarding the international comparison of PA data, search for general patterns and trends in

carrying out PA. The difficulties are thus also regarding the prediction of future development and trends and the establishment of health recommendations and effective PA programs.

At the turn of the 20th and 21st centuries, the appeal for the establishment of internationally valid and recognized methods for PA monitoring allowing international comparisons between different cultures was strengthened (Katzmarzyk, 2001; Pratt, Macera, & Blanton, 1999). As a result, an internationally standardized questionnaire to monitor weekly PA in the 15–69 year old population, the International Physical Activity Questionnaire (Craig et al., 2003; www.ipaq.ki.se) was developed.

The IPAQ has two versions, namely a short (9 items) and a long (31 items) format. Both formats are compiled to assess the level of PA during the last 7 day or

during a “typical week” (Craig et al., 2003; Fogelholm et al., 2006). The short format contains only one question for each area of vigorous intensity PA, moderate intensity PA, walking and sitting. The long format asks questions for each of the area of vigorous intensity PA, moderate intensity PA and walking which are structured into four categories: job related PA, transportation PA, housework PA and leisure time PA. There is an individual category containing two questions asking about times spent sitting on working and weekend days. The short self administered format of the IPAQ was applied to a nationwide survey in the Czech Republic between 2003 and 2004 for the first time. The results of this survey were published in 2006 (Frömel, Bauman et al., 2006).

The initial validation of the short and long IPAQ formats showed good test-retest repeatability $r_s = 0.81$ (long format) and $r_s = 0.76$ (short format) and there is acceptable between-format comparability $r_s = 0.67$ (coefficient of concurrent validity). The criterion of validity against the CSA accelerometer was fair to moderate, with a pooled coefficient of 0.33 and 0.30 for the long and short formats, respectively (Craig et al., 2003). However, a comparative study by Hallal, Victora, Wells, Lima and Valle (2004) showed differences between PA data obtained using the short and long IPAQ formats despite the fact that a moderately high coefficient of concurrent validity $r_s = 0.67$ was observed.

The international applicability of the IPAQ questionnaires and their validity and reliability under different socio-cultural conditions and in different continents has been proven by a number of studies carried out in various countries: China (Deng et al., 2008; Macfarlane, Lee, Ho, Chan, K. L., & Chan, D. T. S., 2007), Nigeria (Oyeyemi, A. L., Adegoke, Oyeyemi, A. Y., & Fatudimu, 2008), Sweden (Alexander, Bergman, Hagströmer, & Sjöström, 2006; Ekelund et al., 2006), Finland (Fogelholm et al., 2006; Hagströmer, Oja, & Sjöström, 2006), the Netherlands (Vandelanotte, Bourdeaudhuij, Philippaerts, Sjöström, & Sallis, 2005), and the Czech Republic (Frömel, Mitáš, & Kerr, 2009). On the basis of acceptable reliability and validity from the studies cited, it can be argued that the IPAQ questionnaires are suitable tools for the assessment of PA patterns of adults with the possibility to be applied internationally. Ainsworth et al. (2006) and Ekelund et al. (2006) however they point to the potential overestimates of the prevalence of the PA of populations showed by the IPAQ. Therefore, in order to obtain more objective data, the combination of the IPAQ questionnaire and PA monitoring using devices such as a pedometer (Yamax – Deng et al., 2008), or in a better case, an accelerometer (ActiGraph – Macfarlane et al., 2007; Vandelanotte et al., 2005) is recommended.

The IPAQ questionnaire is used to estimate socio-environmental attributes, correlates and determinants of the active lifestyle of the adult population (Alexander et al., 2006; Frömel, Mitáš, & Kerr, 2009; Oyeyemi et al., 2008). The comparison of PA levels from the IPAQ questionnaire (MET – minutes/week) to the fitness levels is questionable (VO_{2max} – Fogelholm et al., 2006; Hagströmer, Oja, & Sjöström, 2006; Kurtze, Rangul, & Hustvedt, 2008). On the other hand, the IPAQ questionnaire is frequently used to estimate the prevalence of physical inactivity (PI) in populations which do not meet existing guidelines of last week PA (≥ 3 days of vigorous activity consisting of at least 20 minutes per day or ≥ 5 days of moderate intensity activity consisting of at least 30 minutes per day or ≥ 5 days of any combination of walking, moderate, or vigorous intensity activities achieving a minimum of at least 600 MET – minutes/week – www.ipaq.ki.se/scoring.htm). Results of worldwide surveys assessing the variability of PI in 51 countries and in 4 continents using the IPAQ questionnaire show generally high PI for older age groups and lower in rural as compared to urban areas. PI has been, especially in developed countries, an important risk factor for chronic diseases (Guthold, Ono, Strong, Chatterji, & Morabia, 2008).

Therefore, this study focuses on the examination of differences and coincidences in results obtained from the short and long self administered format of IPAQ. Contrary to previous studies, we focus on the comparison of data (PA – MET – minutes/week and sitting minutes/workdays) from three subsequent nationwide surveys (Fig. 1). The main goal of this study is to determine the variability of PA indicators of two equivalent forms of the Czech self administered format of the IPAQ questionnaire applied to three subsequent nationwide surveys in a randomized sample of the Czech population between the years 2003–2006.

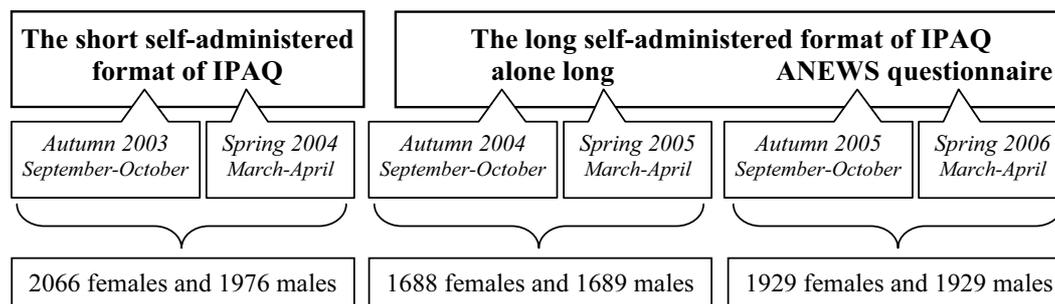
METHODS

Participants and Randomization

The analysis of the variability of PA indicators of the Czech self administered format of the IPAQ includes data from a randomized sample of 5683 females and 5594 males who completely and correctly filled in one of the equivalent forms of the IPAQ between the years 2003–2006 (Fig. 1). The short self administered format of the IPAQ was applied in Fall 2003 and in Spring 2004 to 2066 females and 1976 males. The long self administered format of the IPAQ was applied in Fall 2004 and in Spring 2005 to 1688 females and 1689 males. The ANEWs questionnaire with long self-administered format of the IPAQ (www.ipenproject.org/surveyanews).

Fig. 1

Design of the IPAQ related survey in randomized sample of Czech population aged 15–69



htm) was applied to 1929 Czech women and 1929 Czech men in Fall 2005 and in Spring 2006 (Fig. 1).

Individual samples of participants were randomized according to sex, the frequency of representation in the age categories of 15–69 years old, and the size of location of residence in compliance with the data from the Czech Statistical Authority (www.czso.cz). The selection of the stratification variables used in the randomization in the individual forms of the IPAQ was reflected in equal representation of smokers, respondents with paid jobs, people living in family houses or people living alone or in families with children (Sigmund et al., 2007).

Data processing and variables

All fully completed Czech self administered IPAQ questionnaires were cleared and processed in compliance with the “Guidelines for the data processing and analysis of the International Physical Activity Questionnaire (IPAQ)” (www.ipaq.ki.se/scoring.pdf). Out of the total of more than 30000 applied questionnaires, 11277 were randomly selected for the final analysis.

The volume of PA was computed by weighting each type of PA by its energy requirements defined in METs to yield a score in MET - minutes. METs are multiples of the resting metabolic rate and a MET - minute is computed by multiplying the MET score of an PA by the minutes performed. The following values to be used for the data analysis of short format of IPAQ: walking = 3.3 METs, moderate PA = 4.0 METs and vigorous PA = 8.0 METs. Using these values, four continuous scores are defined (www.ipaq.ki.se/scoring.pdf):

- **Walking** (MET - minutes/week) = $3.3 \times \text{walking minutes} \times \text{walking days}$.
- **Moderate PA** (MET - minutes/week) = $4.0 \times \text{moderate intensity PA minutes} \times \text{moderate intensity PA days}$.
- **Vigorous PA** (MET - minutes/week) = $8.0 \times \text{vigorous intensity PA minutes} \times \text{vigorous intensity PA days}$.
- **Total PA** (MET - minutes/week) = sum of Walking + Moderate + Vigorous MET - minutes/week scores.

The volume of PA from the IPAQ long format is calculated separately in 4 domains (job related PA, trans-

portation PA, housework PA, leisure time PA) with the following MET values:

1) Job related PA

- **Walking** (MET - minutes/week) at work = $3.3 \times \text{walking minutes} \times \text{walking days at work}$.
- **Moderate PA** (MET - minutes/week) at work = $4.0 \times \text{moderate intensity PA minutes} \times \text{moderate intensity PA days at work}$.
- **Vigorous PA** (MET - minutes/week) at work = $8.0 \times \text{vigorous intensity PA minutes} \times \text{vigorous intensity PA days at work}$.
- **Job related PA** (MET - minutes/week) = sum of Walking + Moderate + Vigorous MET - minutes/week scores at work.

2) Transportation PA

- **Walking** (MET - minutes/week) for transport = $3.3 \times \text{walking minutes} \times \text{walking days for transportation}$.
- **Cycle** (MET - minutes/week) for transport = $6.0 \times \text{cycling minutes} \times \text{cycle days for transportation}$.
- **Transportation PA** (MET - minutes/week) = sum of Walking + Cycling MET - minutes/week scores for transportation.

3) Housework PA

- **Vigorous PA** (MET - minutes/week) yard chores = $5.5 \times \text{vigorous intensity PA minutes} \times \text{vigorous intensity PA days doing yard work}$ (note: the MET value of 5.5 shows that vigorous yard work should be considered a moderate intensity activity for scoring and calculating total moderate intensity PA).
- **Moderate PA** (MET - minutes/week) yard chores = $4.0 \times \text{moderate intensity PA minutes} \times \text{moderate intensity PA days doing yard work}$.
- **Moderate PA** (MET - minutes/week) inside chores = $3.0 \times \text{moderate intensity PA minutes} \times \text{moderate intensity PA days doing inside work}$.
- **Housework PA** (MET - minutes/week) = sum of Vigorous yard + Moderate yard + Moderate inside MET - minutes/week scores.

4) Leisure time PA

- **Walking** (MET - minutes/week) leisure = $3.3 \times \text{walking minutes} \times \text{walking days in leisure}$.

- **Moderate PA** (MET - minutes/week) leisure = $4.0 \times$ moderate intensity PA minutes \times moderate intensity PA days in leisure.
- **Vigorous PA** (MET - minutes/week) leisure = $8.0 \times$ vigorous intensity PA minutes \times vigorous intensity PA days in leisure.
- **Leisure time PA** (MET - minutes/week) = sum of Walking + Moderate + Vigorous MET - minutes/week scores in leisure.

Total PA MET score of the IPAQ long format is computed as follows:

- **Total PA** (MET - minutes/week) = sum of job related + transportation + housework + leisure time MET - minutes/week scores.

The short and long formats of the IPAQ are compared according to three variables: total PA (MET - minutes/week), walking (MET - minutes/week), and sitting (minutes/workdays). The separately applied long format of the IPAQ and long format of the IPAQ as a part of the ANEWS questionnaire are compared according to MET - minutes scores of transportation PA, job related PA, housework PA and leisure time PA.

In short and long formats of the IPAQ, the ratio of physically inactive men and women are to be compared.

Statistics

The variables for sitting (minutes/workdays) and MET scores of total PA, walking, transportation PA, job-related PA, housework PA and leisure time PA (MET - minutes/week) are quantified in median values and interquartile ranges. The graphic figures present the means and standard deviation or median and interquartile ranges of explained variables (Cardinal & Aitken, 2006). The statistical comparison of variables

in the individual formats of IPAQ (short \times long; short \times ANEWS; long \times ANEWS) will be carried out using Mann-Whitney U tests separately for the sets of females and males. In each compared pair of variables, the coefficients of "effect size" are computed. The most common interpretation of the values of the d coefficient is: 0.2 - small effect, 0.5 - medium effect and 0.8 - large effect (Cortina & Nouri, 2000). All data were analyzed using the STATISTICA 8 software (Statsoft CR, 2007).

RESULTS

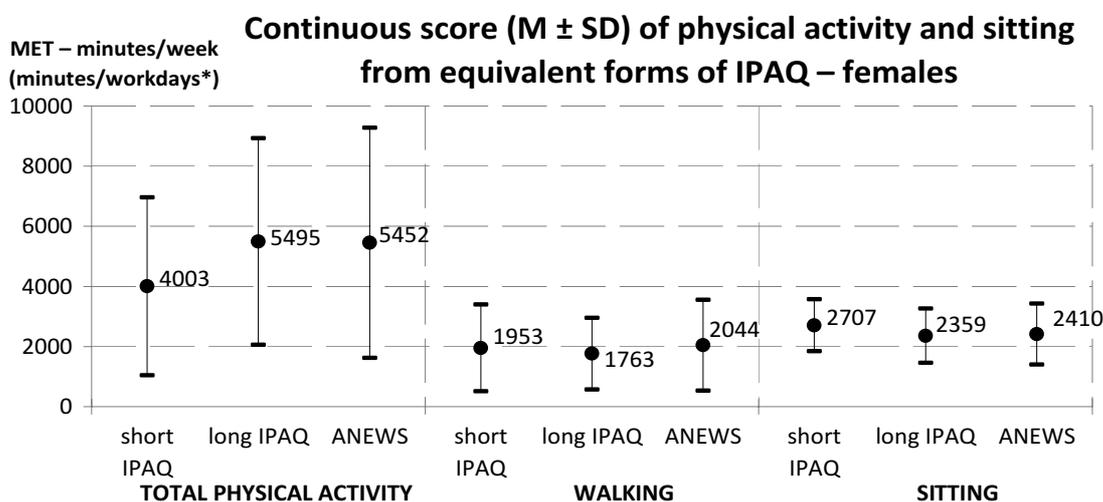
The comparison of the short and long Czech self administered format of the IPAQ (or the ANEWS questionnaire) shows minimal non significant differences between values of walking (MET - minutes/week) in a group of women (Fig. 2) and in men (Fig. 3) and also in time spent sitting on working days (Fig. 2 and 3). The value of total PA (MET - minutes/week) obtained from the short format of the IPAQ is significantly lower than the value of total PA (MET - minutes/week) obtained from the long format of the IPAQ or the ANEWS in both women (long \times short: $Z = 14.20$, $p < 0.0001$, $d = 0.46$; ANEWS \times short: $Z = 11.98$, $p < 0.0001$, $d = 0.38$) and men (long \times short: $Z = 7.68$, $p < 0.0001$, $d = 0.25$; ANEWS \times short: $Z = 12.29$, $p < 0.0001$, $d = 0.39$).

The difference in the value of total PA between the short and long format of the IPAQ is both in women (Fig. 2) and men (Fig. 3) and higher in the case of 600 MET - minutes/week, which is the minimal value to be classified in IPAQ - related level of PA as low (www.ipaq.ki.se/scoring.htm).

The smallest difference between the continuous score of MET - minutes/week of the long form of the IPAQ and the ANEWS questionnaire is found in trans-

Fig. 2

Comparison of the total physical activity, walking and sitting (mean \pm standard deviation) between equivalent forms of Czech self administered format of IPAQ - females



portation and job related PA (Fig. 4 and 5). Statistically non significant data between MET - minutes/week in the long form of the IPAQ and the ANEWS questionnaire are found in transportation PA in females and job related PA in males. Due to the high number of participants, the differences between job related PA in females (or transportation PA in males) in the long form of the IPAQ and the ANEWS questionnaire are statistically significant $Z = 5.45, p < 0.0001, d = 0.19$ (or $Z = 2.75, p < 0.01, d = 0.09$). However, the "effect size" d coefficients show a minimal effect of the differences.

The value in MET - minutes/week of total PA is computed as a sum of the values in MET - minutes/

week for 4 domains of PA: job related PA, transportation PA, housework PA, leisure time PA. Therefore, the value of 150 MET - minutes/week ($600/4$) can be considered as a limit in assessing the logical significance of the results found in the individual domains. Those differences found in the variables of transportation PA and job related PA between the long form of the IPAQ and the ANEWS questionnaire, which on average do not surpass the value of 150 MET - minutes/week, can be therefore considered as logically insignificant.

Significant differences in the continuous score of MET - minutes/week between the long form of the IPAQ and the ANEWS questionnaire as a part of the ANEWS question-

Fig. 3

Comparison of the total physical activity, walking and sitting (mean \pm standard deviation) between equivalent forms of Czech self administered format of IPAQ - males

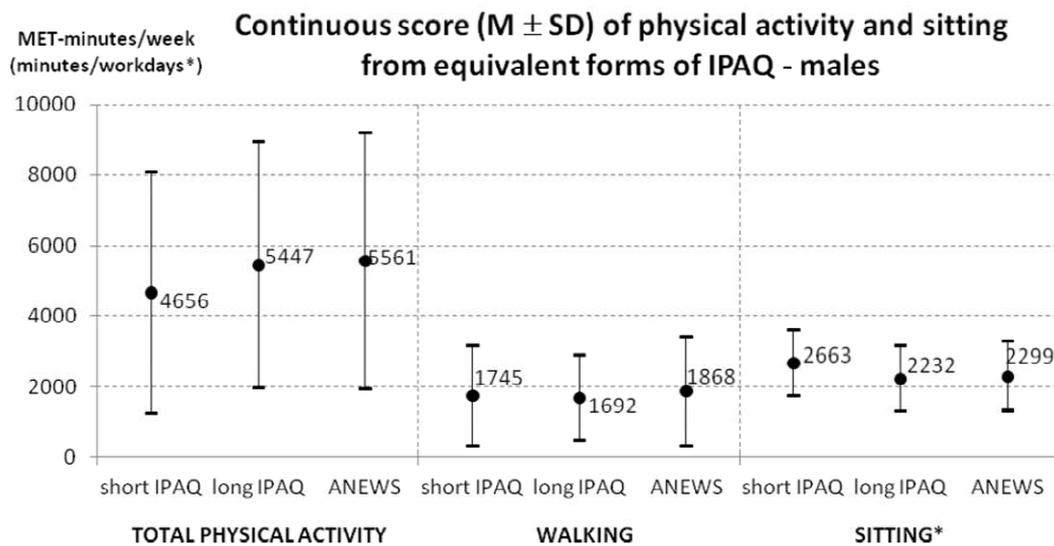


Fig. 4

Comparison of transportation PA, job related PA, housework PA and leisure time PA (median; interquartile ranges) between the long form of IPAQ and ANEWS - females

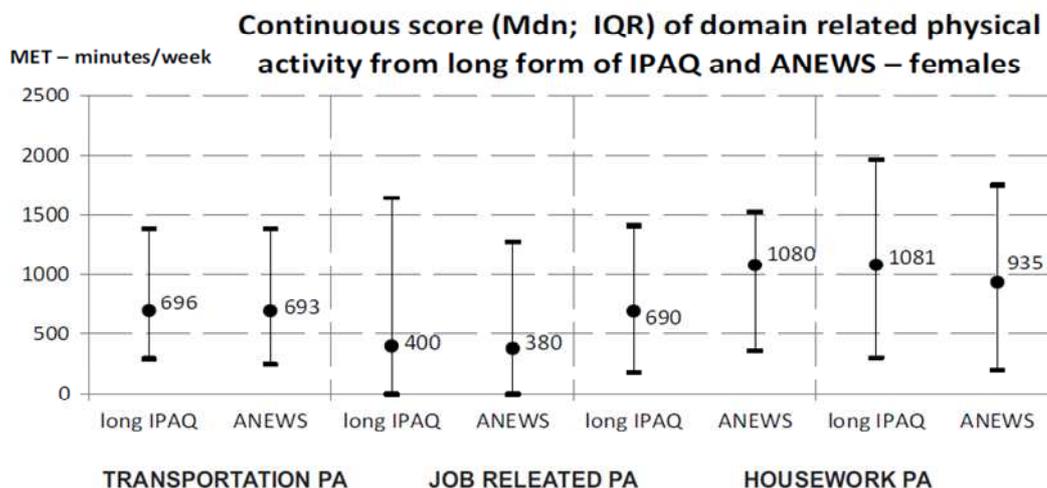
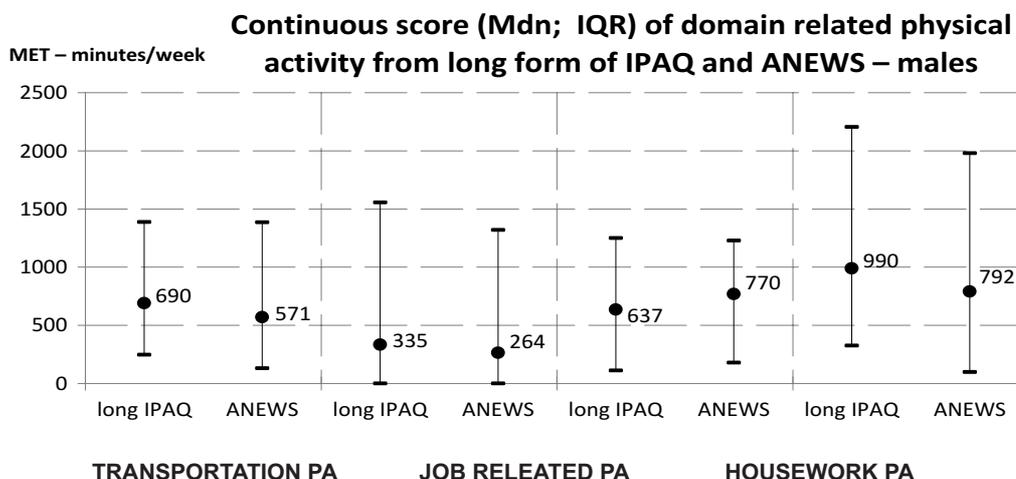


Fig. 5

Comparison of transportation PA, job related PA, housework PA and leisure time PA (median; interquartile ranges) between the long form of IPAQ and ANEWS – males



naire are found in housework and leisure time PA (Fig. 4 and 5). Significantly higher values of housework PA (MET - minutes/week) have been identified in the ANEWS questionnaire than in the long form of the IPAQ (female: $Z = 10.98$, $p < 0.0001$, $d = 0.37$; male: $Z = 4.87$, $p < 0.0001$, $d = 0.16$). On the contrary, the results obtained using the ANEWS questionnaire show significantly lower values of leisure time PA (MET - minutes/week) than data obtained using the IPAQ (female: $Z = 7.83$, $p < 0.0001$, $d = 0.26$; male: $Z = 5.83$, $p < 0.0001$, $d = 0.19$).

The short self administered format of the IPAQ estimates that 8.5% of women and 10.5% of men do not meet existing guidelines of last week PA (www.ipaq.ki.se/scoring.htm) and are considered as physically inactive. The results of the long self administered format of the IPAQ (or ANEWS questionnaire) show PI in 4% females and 4% males (or 5.5% females and 6.5% males).

DISCUSSION

The main aim of the study was to compare the results obtained using the short and long Czech self administered format of the IPAQ (or ANEWS) questionnaire, applied in three subsequent nationwide surveys in a randomized sample of the Czech population between the years 2003–2006. Similarly to Hallal et al. (2004) we have identified higher values of total PA using the long format of the IPAQ than in the short format of the IPAQ. Unlike Hallal et al. (2004), we did not quantify total PA using time (minutes/week), but using a continuous score of MET - minutes/week.

Significantly higher values of total PA (MET - minutes/week) from the long format of the IPAQ in comparison to the short format can be caused by the actual structure of the questionnaire. While in the short format of the IPAQ, there are only three questions asking about PA in the last 7 days, the long format of the IPAQ contains 3 questions asking about vigorous PA, 4 questions about moderate PA and 3 about walking in different parts of the questionnaire. The structure of the long format of the IPAQ leads the respondent better through the questionnaire, and the risk of omitting some type of PA is thus lessened. The higher number of questions, however, potentially overestimates the prevalence of PA. Despite the more detailed structure, the long format of the IPAQ still contains only 2 questions asking about sitting, which could result in a smaller percentage ratio of physically inactive participants than in the short format of the IPAQ. Having used the short format of the IPAQ, we have found a similar ratio of physically inactive participants (8.5% females and 10.5% males) as did Guthold et al. (2008) (7.0% females and 10.0% males). Having used the long format of the IPAQ (or ANEWS questionnaire), we have found a smaller ratio of PI participants in more than 3% of the cases.

The concept of total PA in the long format of the IPAQ containing questions asking about moderate and vigorous intensity PA in all 4 domains is relatively broad and complex. Using it, we gain more detailed data on PA than from the short format of the IPAQ, but with higher variability. Smaller differences between the equivalent forms of the Czech self administered format of the IPAQ are found in variables of walking (MET - minutes/week), sitting (minutes/workdays), transpor-

tation PA (MET – minutes/week) and job related PA (MET – minutes/week) than in the variables of total PA (MET – minutes/week), housework PA (MET – minutes/week) and leisure time PA (MET – minutes/week) (Fig. 2–5). The variables with small differences between the forms of the IPAQ are clearer and narrower in terms of content and they are more easily quantifiable for the participants.

In broad and unspecified populations of respondents, to analyze moderate PA and vigorous PA in both the short and long formats of the IPAQ separately is not efficient. Similarly, it is not efficient to estimate separately the values of PA only in one of the 4 domains in the long format of the IPAQ: job related PA, transportation PA, housework PA, and leisure time PA. In general the adult population, lower values of e.g. moderate PA (or job related or housework PA) can be “compensated” for by higher vigorous PA (or transportation or leisure time PA). On the basis of significant correlations between applied PA monitoring using meters and the IPAQ questionnaire (accelerometers $r = 0.34$, $p < 0.001$ and pedometers $r = 0.58$, $p < 0.001$), it is more efficient to use the IPAQ for estimating total self reported PA (Ekelund et al., 2006) and walking (Deng et al., 2008). The use of the IPAQ is also efficient in identifying the ratio of inactive individuals in population related studies (Guthold, Ono, Strong, Chatterji, & Morabia, 2008).

Generally, the results obtained from the self administered format of the IPAQ which is a part of the ANEWS questionnaire were not different to the results obtained from the independent IPAQ questionnaire. Therefore, we can conclude that questions asking about PA environment, neighborhood facilities, services, surroundings and safety included in the ANEWS questionnaire do not influence the answers concerning PA in the last 7 days. It is efficient to use this questionnaire when we are identifying the correlates (or determinants) of PA in adults from different countries under different socio-economic conditions (Alexander et al., 2006; Ekelund et al., 2006; Frömel, Mitáš, & Kerr, 2009; Oyeyemi et al., 2008).

Due to the nationwide design of the monitoring, the IPAQ questionnaires were not applied repeatedly to the same participants. Therefore, pair comparison of individual scores and assessing the test-retest reliability using a correlation coefficient were not possible. This is one of the study’s limits. Therefore, further studies in smaller population samples will include the assessment of test-retest reliability and validity in comparison to PA monitoring using meters.

CONCLUSIONS

- Having used the equivalent forms of the self administered versions of the IPAQ questionnaire, we have

not found different values in walking (MET – minutes/week) and sitting (minutes/workdays). Both versions of the IPAQ (short and long) estimate the volume of the last 7 days of walking and the last working days sitting adequately.

- The long administrative format of the IPAQ provides more detailed results on PA. However, the value of total PA is significantly higher ($p < 0.0001$) than the value of total PA from the short version of the questionnaire.
- The values of job related and transportation PA (MET – minutes/week) are nearly the same when using the long administrative format of the IPAQ separately or as a part of the ANEWS questionnaire.
- To control habitual, health supported or intervention PA (especially walking) in the context of lifestyle in the general population, the IPAQ questionnaires are efficient monitoring tools.
- In order to estimate PA more precisely, we recommend using the long administrative format of the IPAQ simultaneously with PA monitoring using devices, using at least pedometers, while in the better case using accelerometers.

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**VARIABILITA VYBRANÝCH INDIKÁTORŮ
 POHYBOVÉ AKTIVITY U RANDOMIZOVANÝCH
 SOUBORŮ ČESKÉ POPULACE V LETECH
 2003–2006: VÝSLEDKY Z KRÁTKÉ A DLOUHÉ
 ADMINISTRATIVNÍ VERZE IPAQ DOTAZNÍKU
 (Souhrn anglického textu)**

Snaha o získání celosvětově srovnatelných výsledků o úrovni pohybové aktivity (PA) různých populačních skupin vyústila ve vytvoření a standardizaci Mezinárodního dotazníku o pohybové aktivitě (IPAQ). Hlavním cílem této studie bylo zjistit variabilitu vybraných proměnných PA ze dvou ekvivalentních forem českých administrativních verzí IPAQ dotazníku aplikovaných u randomizovaných souborů české populace v letech 2003–2006. Ve studii byla použita data od 11277 obyvatel České republiky (5683 žen a 5594 mužů) ve věku 15–69 let. Krátká administrativní verze IPAQ byla

u 2066 žen a 1976 mužů aplikována na podzim 2003 a jaře 2004. Dlouhá administrativní verze IPAQ (resp. jako součást ANEWS dotazníku) byla použita u 1688 žen a 1689 mužů na podzim 2004 a jaře 2005 (resp. u 1929 žen a 1929 mužů na podzim 2005 a jaře 2006). Jednotlivé soubory účastníků byly randomizovány podle pohlaví, věku a velikosti místa bydliště v souladu s údaji Českého statistického úřadu (www.czso.cz). Mezi samostatně aplikovanou dlouhou verzí IPAQ a ANEWS dotazníkem (obsahujícím dlouhou verzi IPAQ) nenacházíme u mužů ani žen výrazné rozdíly v MET - minut/týden v celkové PA, transportní PA, PA v zaměstnání a chůzi. U krátké verze IPAQ zaznamenáváme u mužů i žen nižší hodnoty celkové PA ($p < 0,0001$) než v dlouhé verzi IPAQ (resp. ANEWS dotazníku). Bez rozdílu mezi jednotlivými ekvivalentními formami IPAQ dotazníku jsou u mužů i žen hodnoty MET - minut/týden za chůzi a doba sezení v pracovních dnech. Při použití ekvivalentních administrativních verzí IPAQ dotazníku nezjistíme rozdílné hodnoty u MET - minut/týden za chůzi a denní doby sezení. Dlouhá administrativní verze IPAQ podává detailnější výsledky o PA, avšak její celková hodnota je významně vyšší než při použití krátké verze IPAQ. Pro přesnější zjišťování PA doporučujeme souběžné používání dlouhé administrativní verze IPAQ s přístrojovým monitorováním, alespoň pomocí pedometru, lépe však pomocí akcelerometru.

Klíčová slova: MET - minut/týden, chůze, sezení, krátká a dlouhá verze IPAQ.

Erik Sigmund, Ph.D.



Palacký University
Faculty of Physical Culture
tř. Míru 115
771 11 Olomouc
Czech Republic

Education and previous work experience

He is a researcher and academic worker of Center for Kinanthropology Research at Faculty of Physical Culture in Palacký University, Olomouc. Graduated in Mathematics and Physical Education high school

teacher from Palacký University (Czech Republic) and obtained his Mgr. in 1997. In the field of Kinanthropology he obtained Ph.D. in Department of Kinanthropology from Palacký University (Czech Republic). His scientific interests are in the areas of physical activity and life style of children and data analysis, especially formal concept analysis. He is a member of the American College of Sports Medicine (ACSM), member of the European Public Health Association (EUPHA) and member of the Czech Kinanthropology Society.

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