JURNAL UPI

JURNAL PENDIDIKAN KEPERAWATAN INDONESIA

Journal Homepage: http://ejournal.upi.edu/index.php/JPKI

JPKI

Indonesian Adaptation of The International Physical Activity Questionnaire (IPAQ): Psychometric Properties

Dhika Dharmansyah[1*], Dian Budiana[2]

[1]Program Study of Nursing, Faculty of Sport and Health Education,
Universitas Pendidikan Indonesia, Bandung, Indonesia
[2]Program Study of Elementary School Teacher, Faculty of Sport and Health Education,
Universitas Pendidikan Indonesia, Bandung, Indonesia
*Corresponding email**:** dhika.dharmansyah@upi.edu

A B S T R A C T

The International Physical Activity Questionnaire (IPAQ) was created to assess physical activity in the community. This study aims to explore the use of IPAQ in Indonesia with a psychometric approach and cross-cultural adaptation of Indonesia. Stages of Psychological Evaluation The IPAQ questionnaire began with translating the questionnaire from English to Indonesian, construct assessment by expert judgment, and statistical measurements were carried out to determine the validity and reliability tests. The questionnaire was tested on 25 respondents. The Indonesian version of the IPAQ has a satisfactory criterion validity. A total of 7 question items in the IPAQ were valid. The Kaiser-Meyer-Olkin value was 0.910, and Bartlett's test of sphericity was X2 = 573,434 (df=28, p<0.000). The Indonesian version of IPAQ is valid and reliable as a measuring tool for physical activity in Indonesian people.

ARTICLE INFO

Article History:

Received: October 04, 2021
Revised: December 04, 2021
Accepted: December 29, 2021
First Available Online: December 30, 2021
Published: December 30, 2021

Keywords:
Physical Activity, IPAQ, International Physical Activity Questionnaire

1. INTRODUCTION

Physical activity is defined as muscle and supporting system movement. Muscles require energy from sources other than metabolism to move. The heart and lungs require additional energy to transport nutrition and oxygen throughout the body and eliminate nutrients that remain after physical activity. The energy required is regulated by the amount and duration of muscle movement (Fahad & others, 2013).

The International Physical Activity Questionnaire (IPAQ) was developed to assess physical activity for health purposes (PA) in a population (Adlakha & Parra, 2020; Dinangsit, 2017; Hagströmer, Oja, & Sjöström, 2006; Hastuti, 2013; Kim & Lee, 2015; Matthews, 2016; Ng, Barron, & Swami, 2015; Peltzer, Yi, & Pengpid, 2017; Pratiwi, 2019; Stevelink & van Brakel, 2013; Teo, Lee, Khoo, & Morris, 2015). The abbreviated form of IPAQ has been extensively evaluated and is now being utilized in many international investigations. IPAQ has two versions: a Long version and a short version. IPAQ-SF has been translated into Indonesian. Prior to performing a structured interview utilizing the IPAQ's short-form, professional judgment and language comprehension assessments were administered. Researchers involve one party as a professional judgment or competent expert to conduct rational analysis to test the feasibility or relevance of the contents of the IPAQ interview guide (IPAQ, 2016).

The short-form version of the IPAQ Guide is a questionnaire measuring a person's physical activity. The IPAQ's reliability and validity have been evaluated in 12 different nations (Craig et al., 2003). This questionnaire consists of seven questions about the respondents' physical activity during the last seven days. The received interview findings are then processed using the IPAQ scoring methodology guide in conjunction with the IPAQ automatic report in order to generate data on physical activity. The IPAQ measures performance in MET (metabolic equivalents of task). The following MET scores were utilized in the calculation: Walking equals 3.3 MET, moderate activity equals 4.0 MET, and vigorous exercise equals 8.0 MET; these values are multiplied by the intensity in minutes and days and then added to determine the overall physical activity score (Oyeyemi et al., 2011).

This study aims to explore the validity characteristics of the short version of the IPAQ. The test of understanding the language of the IPAQ interview guide was conducted on 25 respondents in West Java who have the same characteristics.

2. METHOD

Instrument Translation

The instrument used in this research is the international physical activity questionnaire-short form (IPAQ-SF) to measure physical activity. This questionnaire was designed to measure a person's physical activity based on the Metabolic Equivalent Task (MET) used for the last seven days. The questionnaire can be tested in the age range of 15-69 years (IPAQ, 2016). This instrument was adapted into Indonesian. The stages included forward translation, a back-translation expert group, pre-testing, and a cognitive interview. The objective is to obtain a final language version of IPAQ in Indonesian.

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39351
e-ISSN 2477-3743 | p-ISSN 2541-0024

Instrument Adaptation, Validity and Reliability

The cross-cultural adaptation test, as well as validity and reliability tests, were used in this research. This research was conducted with face validity, content validity, and the use of judge panels. Validity, Reliability, Exploratory Factor Analysis (EFA), and Confirmatory Factor Analysis were all assessed using SPSS 23. (CFA). This study was conducted in Bandung, Indonesia, with 25 participants completing questions by internet zoom and google form.

The advantages of this IPAQ instrument are that it is fast, can be used en masse, and has been validated in various countries, including Indonesia. However, there are shortcomings in using questionnaires, depending on the subject's ability to recall their habits in detail. In addition, the questionnaire is also difficult to convert qualitative activity information (e.g. playing for 30 minutes) into quantitative data (e.g. kcal/training time). As a result, this conversion is dependent on the activity factors or intensity factors for each activity, referred to as METs, where METs are multiples of REE (Kandola & Bann, 2021). Physical activity categories according to the IPAQ are grouped into three levels on the IPAQ, namely light, moderate and high (Bayraktar et al., 2021; IPAQ, 2016; Oyeyemi et al., 2011).

3. RESULTS

Demographic characteristics

Table.1 Characteristics of the population (n=25)

Variable	n(%)
Gender	
Female	21(84%)
Male	4 (16%)
Body Measurement	
Height (SD)	159.36 (7.54)
Weight (SD)	54.72 (9.61)
Body Weight Index (SD)	21.47 (3.64)
Educational background	
Senior High School Class IPA	11 (44%)
Senior High School Class IPS	14 (56%)

Content Validity

Expert panellists evaluated the content validity of this tool. The item content validity index is calculated for each question item and has a value greater than 0.8. Each item in the question is relevant and has a Scale Content Validity Index (S-CVI) of 0.94. Respondents stated that filling out the IPAQ was easy to understand and could be completed within 3-5 minutes. The question items in this questionnaire ask in the last seven days, how many days the respondent did a series of heavy and moderate physical activity, and walked at least 10 minutes/day. the last 2 questions were also asked about the duration of time spent walking and sitting on weekdays.

Construct validity

The Kaiser-Meyer-Olkin (KMO) coefficient was 0.910, and X2 = 573.434 (df = 28, p 0.000) was the value obtained from Bartlett's sphericity test. The KMO and Bartlett tests indicated that the data were suitably sampled and thus suitable for EFA analysis. Each item had a factor loading ranging from 0,890 to 0,995.

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39351
e-ISSN 2477-3743 | p-ISSN 2541-0024

Reliability

Table 3. Reliability alpha Cronbach's

Item Number	Cronbach alpha value
1	0.859
2	0.851
3	0.834
4	0.901
5	0.828
6	0.902
7	0.826
Total	0.884

Cronbach's alpha coefficient for the IPAQ questionnaire is 0.884 (0.828-0.902)

4. DISCUSSION

The IPAQ was utilized in this study since it was created to assess the amount of physical activity in a community. Psychometric tests have been carried out to establish the validity of the instrument. The analysis shows that the 7 question items in the IPAQ can be used as a whole in the Indonesian context to measure the community's physical activity. The METs score, which is the ratio of the metabolic rate at work to the metabolic rate at rest, was used to evaluate the level of physical activity (IPAQ, 2016; Oyeyemi et al., 2011).

Physical activity categories according to the IPAQ are grouped into 3 based on the IPAQ, namely light, moderate and high (Adlakha & Parra, 2020; Darmawati, Setiawan, & Permatasari, 2015; Dinangsit, 2017; IPAQ, 2016; Oyeyemi et al., 2011). Light activity means not doing moderate to a high level of physical activity < 10 minutes/day or < 600 METs-minutes/week. The moderate activity consists of 3 categories: > 3 days of vigorous physical activity > 20 minutes/day, 5 days of moderate physical activity/walking > 30 minutes/day, and 5 days of combined walking with moderate to high-intensity activity with a minimum total MET of > 600 METs-minutes/week. The high activity consists of 2 categories: High-intensity activity > 3 days with a total METs of at least 1500 METs-minutes/week, and 7 days of combined walking with moderate to high-intensity activity totaling METs >3000 METs-minutes/week (Hastuti, 2013; IPAQ, 2016; Oyeyemi et al., 2011; WHO, 2020).

Activities can be in the form of daily activities, namely: walking, gardening, garden work, washing clothes, mopping floors, going up and downstairs, carrying groceries. Activities include pushups, running, cycling, swimming, skating, jumping rope, dancing, and team sports such as football, basketball, and volleyball. The World Health Organization recommended that 12 engage in moderate-intensity physical activity for at least 30-60 days and exercise at least twice a week. (WHO, 2021).

The amount of physical activity performed can be measured using the International Physical Activity Questionnaire (IPAQ). The IPAQ questionnaire has been translated into Indonesian and tested for validity and reliability in 14 places and 12 countries. The validity and reliability values of this questionnaire are 0.30 and 0.80. So this questionnaire has been used internationally as an instrument to measure physical activity in adults between 15-49 years old (IPAQ, 2016). The advantage of the IPAQ questionnaire is that physical activity is described as not only exercising,

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39351
e-ISSN 2477-3743 | p-ISSN 2541-0024

such as physical activity at leisure, homework, physical activity related to work or physical activity related to movement/transport in the last seven days. The weakness of this questionnaire is that it can only explore the respondent's activities during the past week. This instrument cannot estimate the amount of time spent by respondents.

This questionnaire consists of IPAQ short form and IPAQ long form. The IPAQ short form asks in general about three types of activity: light, moderate, and heavy. The long from IPAQ ask in detail about the physical activities undertaken, including walking for transportation and leisure activities or physical activities related to movement or transport in the past seven days (IPAQ, 2016). There are seven question items in this survey. One of the expert judgment panelists believes that questions 2 and 4 are irrelevant. For each of the five-question items, the I-CVI value is 1. The I-CVI value for question items 2 and 4 is 0.80. S-CVI has a total value of 0.94 for all question items. The Indonesian version of the IPAQ has seven-question items that can be used.

IPAQ has shown great reliability when assessing body image, eating behaviors, and physical activity (IPAQ, 2016). The instrument's reliability and validity have been widely examined. According to this study, the IPAQ Indonesian version has a high test-retest reliability of 0.884 and a validity correlation with accelerometers of 0.00. The reliability tests validate the instruments' application in Indonesian adults.

5. CONCLUSIONS

The Indonesian version of the IPAQ was adopted with good validity and reliability scores in this study. This Indonesian IPAQ version can assess the community's level of physical activity.

6. ACKNOWLEDGEMENT

We would like to express our gratitude to the Faculty of Sport and Health Education, Universitas Pendidikan Indonesia.

7. REFERENCE

Adlakha, D., & Parra, D. C. (2020). Mind the gap: Gender differences in walkability, transportation and physical activity in urban India. Journal of Transport & Health, 18, 1-10.

Bayraktar, D., Karsli, T. Y., Kaya, D. O., Sarac, D. C., Gucenmez, S., Gercik, O., … Akar, S. (2021). Is the International Physical Activity Questionnaire (IPAQ) a valid assessment tool for measuring physical activity of patients with axial spondyloartritis? Musculoskeletal Science and Practice, 55, 1-10.

Craig, C. L., Marshall, A. L., Sjöström, M., Bauman, A. E., Booth, M. L., Ainsworth, B. E., … others. (2003). International physical activity questionnaire: 12-country reliability and validity. Medicine \& Science in Sports \& Exercise, 35(8), 1381–1395.

Darmawati, I., Setiawan, A., & Permatasari, H. (2015). Menurunkan indeks massa tubuh perempuan dewasa dengan kelebihan berat badan dan kegemukan melalui latihan fisik interval training. Jurnal Keperawatan Indonesia, 18(2), 88–94.

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39351
e-ISSN 2477-3743 | p-ISSN 2541-0024

Hagströmer, M., Oja, P., & Sjöström, M. (2006). The International Physical Activity Questionnaire (IPAQ): a study of concurrent and construct validity. Public Health Nutrition, 9(6), 755–762.

Kim, W.-S., & Lee, M.-R. (2015). Policy proposal for monitoring of evidence-based physical activity projects. Korean Journal of Health Education and Promotion, 32(1), 67–76.

Ng, S.-K., Barron, D., & Swami, V. (2015). Factor structure and psychometric properties of the Body Appreciation Scale among adults in Hong Kong. Body Image, 13, 1–8.

Oyeyemi, A. L., Oyeyemi, A. Y., Adegoke, B. O., Oyetoke, F. O., Aliyu, H. N., Aliyu, S. U., & Rufai, A. A. (2011). The Short International Physical Activity Questionnaire: cross-cultural adaptation, validation and reliability of the Hausa language version in Nigeria. BMC Medical Research Methodology, 11(1), 1–11.

Peltzer, K., Yi, S., & Pengpid, S. (2017). Suicidal behaviors and associated factors among university students in six countries in the Association of Southeast Asian Nations (ASEAN). Asian Journal of Psychiatry, 26, 32–38.

Stevelink, S. A. M., & van Brakel, W. H. (2013). The cross-cultural equivalence of participation instruments: a systematic review. Disability and Rehabilitation, 35(15), 1256–1268.

Teo, E. W., Lee, Y. Y., Khoo, S., & Morris, T. (2015). Translation and validation of the Malay version of Shiffman-Jarvik withdrawal scale and cessation self-efficacy questionnaire: a review of psychometric properties. Health and Quality of Life Outcomes, 13(1), 1–9.

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39351
e-ISSN 2477-3743 | p-ISSN 2541-0024