

## Physical activity questionnaire for older children (PAQ-C) versi Indonesia: confirmatory factor analysis

### Cuestionario de actividad física para niños mayores (PAQ-C) versión Indonesia: análisis factorial confirmatorio

\*, \*\*Indah Prasetyawati Tri Purnama Sari, \*Muchsin Doewes, \*M. Furqon Hidayatullah, \*\*Awan Hariono  
\*Sebelas Maret University (Indonesia), \*\*Yogyakarta State University (Indonesia)

**Abstract.** This study aims to adapt the Physical Activity Questionnaire for Older Children (PAQ-C) for Indonesian children aged 9 to 11. It is an analytical survey with a cross-sectional study approach. The instrument was adapted the research developed by Kowalski et al., 1997. It was translated to Indonesian language and also validated by academics of sports science so that the adaptation of the questionnaire was better before the data was collected. The results of the questionnaire adaptation contained the identity of the sample (name, gender, date of birth and age, class, weight, height) and 10 question items. A sample of 401 students, aged 9-11, was collected from urban, suburban, and rural areas. The data analysis used was Confirmatory Factor Analysis (CFA) using LISREL. The results of this study showed that the Standardized Loading Factor (SLF) value in each questionnaire item was  $>0.5$ , the Average Variance Extracted (AVE) value was  $0.659 > 0.5$ , and the Construct Reliability (CR) value was  $0.892 > 0.7$ . Based on these results, the questionnaire had good convergent validity. Thus, the PAQ-C Indonesian version for ages 9 – 11 was suitable for use. It can be concluded that the measuring instrument can accurately measure the level of children physical activity in urban, suburban, and rural areas, and provide confidence for researchers in Indonesia to use it. Overall, this study emphasizes the importance of a holistic and integrated approach in supporting children's physical activity, which is influenced by the interaction of various layers of the physical and social environment.

**Keywords:** Physical Activity Questionnaire, Children, Physical Education

**Resumen.** Este estudio tiene como objetivo adaptar el Cuestionario de Actividad Física para Niños Mayores (PAQ-C) para niños indonesios de 9 a 11 años. Es una encuesta analítica con un enfoque de estudio transversal. El instrumento fue adaptado de la investigación desarrollada por Kowalski et al., 1997. Fue traducido al idioma indonesio y también validado por académicos de ciencias del deporte para que la adaptación del cuestionario fuera mejor antes de que se recopilaran los datos. Los resultados de la adaptación del cuestionario contenían la identidad de la muestra (nombre, sexo, fecha de nacimiento y edad, clase, peso, altura) y 10 preguntas. Se recogió una muestra de 401 estudiantes, de 9 a 11 años, de áreas urbanas, suburbanas y rurales. El análisis de datos utilizado fue el Análisis Factorial Confirmatorio (CFA) utilizando LISREL. Los resultados de este estudio mostraron que el valor de carga factorial estandarizada (SLF) en cada ítem del cuestionario fue  $>0,5$ , el valor de varianza media extraída (AVE) fue  $0,659 > 0,5$  y el valor de fiabilidad del constructo (CR) fue  $0,892 > 0,7$ . Con base en estos resultados, el cuestionario tuvo una buena validez convergente. Por lo tanto, la versión indonesia del PAQ-C para edades de 9 a 11 años fue adecuada para su uso. Se puede concluir que el instrumento de medición puede medir con precisión el nivel de actividad física de los niños en áreas urbanas, suburbanas y rurales, y brindar confianza a los investigadores indonesios para su uso. En general, este estudio enfatiza la importancia de un enfoque holístico e integrado para apoyar la actividad física de los niños, que está influenciada por la interacción de varias capas del entorno físico y social.

**Palabras clave:** Cuestionario de Actividad Física, Niños, Educación Física

---

Fecha recepción: 21-08-24. Fecha de aceptación: 03-09-24

Indah Prasetyawati Tri Purnama Sari

[indahprasty14@student.uns.ac.id](mailto:indahprasty14@student.uns.ac.id)

[indah\\_prasty@uny.ac.id](mailto:indah_prasty@uny.ac.id)

## Introduction

Physical activity is one of the important components in supporting children's health and development. Adequate physical activity has a positive impact on physical health, such as improving physical fitness and improving the quality of movement (Santoso et al., 2024). Other positive impacts can prevent obesity, contributing to children's mental health and cognitive development (Pulungan et al., 2021). Therefore, it is important to measure children's level of physical activity accurately and reliably.

Physical Activity Questionnaire for Older Children (PAQ-C) is one of instruments that has been widely used internationally to assess physical activity in children. PAQ-C was developed by Kowalski, Crocker, and Faulkner in 1997 and has been shown to have good validity and reliability in a variety of contexts (Kowalski et al., 1997). In addition, PAQ-C can also be used to measure children in cities and villages (Guerrero et al., 2020). However, to date, no Indonesian version of PAQ-C has been adapted and tested

for validity and reliability.

Based on the results of the initial review in previous studies, assessing children's physical activity using the Physical Activity Questionnaire for Older Children (PAQ-C) aims to accurately measure their physical activity levels, support health research, provide data for educational and health interventions, monitor the development of physical activity over time, increase awareness of the importance of physical activity, and support public health policies and planning (Hidding et al., 2018; Yang et al., 2019; Marasso et al., 2021). Using PAQ-C, researchers and practitioners can understand children's physical activity patterns, design more effective programs, and develop policies that promote children's health and well-being.

Indonesia, with diverse cultural and social backgrounds, requires instruments that can assess children's physical activity specifically according to the local context. Adapting PAQ-C into the Indonesian language and culture is an important step to ensure that the measurement of children's physical activity can be done accurately and relevantly

(Ma'arif et al., 2023) . In addition, the validity and reliability of the adapted instrument must be tested through Confirmatory Factor Analysis to ensure that the instrument can be used effectively in the Indonesian context (Rahayu et al., 2022) .

Therefore, this study aims to adapt and test the validity and reliability of the Indonesian version of PAQ-C for Indonesian children aged 9 to 11. The results of previous studies found that PAQ-C can be used to measure moderate to strong results in children aged 9 to 12 years (Valenciano Valcárcel et al., 2023) , so this study will focus on a smaller population scope. It is expected that this study contributes to provide measuring instruments that can be used by researchers, educators, and health practitioners to assess the physical activity of Indonesian children accurately and reliably. Thus, the results of this study will support efforts to improve the health and well-being of children in Indonesia through more targeted measurements and interventions.

## Material and Methods

### Study Organization

The type of this research is an analytical survey with a cross-sectional study approach. Analytical survey research with a cross-sectional approach is a type of research that evaluates the relationship between variables at a certain time. In this study, data were collected simultaneously to see the relationship of items to variables. However, the data used in this research is secondary data based on the results of previous descriptive research (Sari et al., 2023) . The results of each item in the Physical Activity Questionnaire for Older Children (PAQ-C) variable will determine the level of validity and reliability of PAQ-C in Indonesian using Confirmatory Factor Analysis (CFA). A cross-sectional approach with confirmatory factor analysis has been carried out in previous Physical Activity Questionnaire research (Welk & Eklund, 2005 ; Rahayu et al., 2022 ; Bajamal & Robbins, 2023) , but no Physical Activity Questionnaire for Older Children (PAQ-C) has been found. Therefore, this research method is expected to be one of the results of novelty research.

The first stage of this research procedure was to analyze previous research using a review. The purpose of this stage was to identify research objectives and to prepare a questionnaire. Preparing the questionnaire in the first stage, including translating the instrument so that it can be used in Indonesian language as well as validation involving sports science academics to provide advice. The second stage was to prepare a research permit letter provided by the university institution number 2167/UN27.11/PK.03.08/2021,

then the letter was submitted to each school that was used as the object of research as proof that the research had been carried out. The third stage was data collection. Before students fill out the questionnaire, the students were asked to fill out a letter of willingness to become a respondent. At the time of collection, the teachers at the school were asked to accompany the students to make it easier for them to retrieve data. The fourth stage was data analysis and research results report in the form of scientific work.

### Study Participants

The sampling of this study used the Probability sampling technique, this sampling technique where each member of the population has an equal chance of being selected, and one type is random sampling. So that each member of the population has a fair and independent opportunity to be part of the sample, which increases the representativeness and validity of the research results. Sampling was carried out in urban, suburban, and rural areas. The sample of this study was 401 students aged 9-11 years. Students come from urban, suburban, rural areas. The selection of samples in urban, suburban, and rural areas aims to obtain a representative picture of the physical activity of children aged 9-11 years in different types of environments with unique characteristics, such as access to facilities, safety, culture, and socioeconomic factors (Gonzalez et al., 2024). In this way, the study can explore differences and similarities in physical activity participation based on the residential environment, as well as understand the influence of social ecological factors. This is important for designing more effective and contextual interventions for each region (Labrador & Ventola, 2023). The characteristics of the sample will be explained in the research results section.

### Instrument

This instrument is adapted from research conducted by Kowalski et al (1997). After the instrument was successfully found, it was continued by translating the questionnaire into Indonesian language. For the instrument to have a better and more reliable level of validity, the focus group discussion (FGD) involving academics in sports science was carried out. The results of the questionnaire adaptation contained the identity of the sample (name, gender, date of birth and age, class, weight, height) and 10 question items. The procedure for filling out each of these questions was answered with a check mark. The answers to this questionnaire were converted to a Likert scale of 1 to 5. The following is the questionnaire form (Table 1).

Table 1.  
Adaptation of Physical Activity Questionnaire for Older Children (PAQ-C)

No	Question														
1	Physical activity in your spare time: Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? (Mark only one circle per row.)														
	<table border="1"> <thead> <tr> <th>No</th> <th>1-2 times</th> <th>3-4 times</th> <th>5-6 times</th> <th>7 times or more</th> </tr> </thead> <tbody> <tr> <td> <table border="1"> <thead> <tr> <th colspan="2">Skipping</th> </tr> </thead> <tbody> <tr> <td>Rowing / canoing</td> <td></td> </tr> </tbody> </table> </td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No	1-2 times	3-4 times	5-6 times	7 times or more	<table border="1"> <thead> <tr> <th colspan="2">Skipping</th> </tr> </thead> <tbody> <tr> <td>Rowing / canoing</td> <td></td> </tr> </tbody> </table>	Skipping		Rowing / canoing					
No	1-2 times	3-4 times	5-6 times	7 times or more											
<table border="1"> <thead> <tr> <th colspan="2">Skipping</th> </tr> </thead> <tbody> <tr> <td>Rowing / canoing</td> <td></td> </tr> </tbody> </table>	Skipping		Rowing / canoing												
Skipping															
Rowing / canoing															

	In-line skating																																																
	Tag ( <i>Bermain kucing-kucingan</i> )																																																
	Walking for exercise																																																
	Bicycling																																																
	Jogging or running																																																
	Aerobics																																																
	Swimming																																																
	Baseball , Softball																																																
	Dance																																																
	Football																																																
	Badminton																																																
	Skateboarding																																																
	Soccer																																																
	Street hockey																																																
	Volleyball																																																
	Tennis																																																
	Table tennis																																																
	Basketball																																																
	Martial Arts ( K arate, S ilat, T aekwondo)																																																
	Other :																																																
2	In the last 7 days, during your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)? (Check one only.) <input type="radio"/> I don't do PE <input type="radio"/> Hardly ever <input type="radio"/> Sometimes <input type="radio"/> Quite Often <input type="radio"/> Always																																																
3	In the last 7 days, what did you do most of the time at recess? (Check one only.) <input type="radio"/> Sat down (talking, reading, doing schoolwork) <input type="radio"/> Stood around or walked around <input type="radio"/> Ran or played a little bit <input type="radio"/> Ran around and played quite a bit <input type="radio"/> Ran and hard played most of the time																																																
4	In the last 7 days, what did you normally do at lunch (besides eating lunch)? (Check one only.) <input type="radio"/> Sat down (talking, reading, doing schoolwork) <input type="radio"/> Stood around or walked around <input type="radio"/> Ran or played a little bit <input type="radio"/> Ran around and played quite a bit <input type="radio"/> Ran and hard played most of the time																																																
5	In the last 7 days, on how many days right after school, did you do sports, dance, or play games in which you were very active? (Check one only.) <input type="radio"/> None <input type="radio"/> 1 time last week <input type="radio"/> 2 or 3 times last week <input type="radio"/> 4 times last week <input type="radio"/> 5 times last week																																																
6	In the last 7 days, on how many evenings did you do sports, dance, or play games in which you were very active? (Check one only.) <input type="radio"/> None <input type="radio"/> 1 time last week <input type="radio"/> 2 or 3 times last week <input type="radio"/> 4 or 5 times last week <input type="radio"/> 6 or 7 times last week																																																
7	On the last weekend, how many times did you do sports, dance, or play games in which you were very active? (Check one only.) <input type="radio"/> None <input type="radio"/> 1 time <input type="radio"/> 2 - 3 times <input type="radio"/> 4 - 5 times <input type="radio"/> 6 or more times																																																
8	Which one of the following describes you best for the last 7 days? Read all five statements before deciding on the one answer that describes you. <input type="radio"/> All or most of my free time was spent doing things that involve little physical effort <input type="radio"/> I sometimes (1-2 times last week) did physical things in my free time (eg played sports, went running, swimming, bike riding, did aerobics) <input type="radio"/> I often (3 – 4 times last week) did physical things in my free time <input type="radio"/> I quite often (5-6 times last week) did physical things in my free time <input type="radio"/> I very often (7 or more times last week) did physical things in my free time																																																
9	Mark how often you did physical activity (like playing sports, games, doing dance, or any other physical activity) for each day last week. <table border="1"><thead><tr><th></th><th>None</th><th>Little bit</th><th>Medium</th><th>Often</th><th>Very often</th></tr></thead><tbody><tr><td>Monday</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Tuesday</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Wednesday</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Thursday</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Friday</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Saturday</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Sunday</td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>		None	Little bit	Medium	Often	Very often	Monday						Tuesday						Wednesday						Thursday						Friday						Saturday						Sunday					
	None	Little bit	Medium	Often	Very often																																												
Monday																																																	
Tuesday																																																	
Wednesday																																																	
Thursday																																																	
Friday																																																	
Saturday																																																	
Sunday																																																	
10	Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)																																																

- Forks
- No
- If yes, what prevented you?

### Statistical Analysis

The data analysis method used was confirmatory factor analysis (CFA) using LISREL software. The series of data processing processes included testing measurement models, and the measurements tested were Standardized Loading Factor (SLF), Construct Reliability (CR), and Average Variance Extracted (AVE). The reference value used in this confirmatory factor analysis was according to Hair et al (2020).

Good convergent validity is indicated by a high standardized loading factor (SLF) value of  $\geq 0.5$ . The measure of construct reliability (CR) is also a determining indicator that shows whether or not the convergent validity is good. If the CR value is  $\geq 0.7$ , it means good reliability, and if the CR value is between 0.6 and 0.7, it includes acceptable reliability, with the record of indicator variables showing good validity. While stating the AVE value of  $\geq 0.5$  indicates adequate convergence.

### Results

#### Descriptive

These results will display the characteristics of the sample, namely gender, age, height, weight, and body mass index, based on three groups, namely urban, suburban, and rural group. Based on the data collected (Table 2), the number of samples was 401 students aged 9 to 11.

Table 2. Sample Identification Results

Sample Characteristics	Urban (n= 140)	Suburban (n= 76)	Rural (n= 186)
Gender (female/male)	74/66	39/37	100/86
Age (years)	9.9±0.9	9.9±0.8	10.1±0.8
Height (cm)	136.3±8.3	133.8±10.3	137.0±9.6
Weight (kg)	33.4±9.9	30.0±8.1	33.4±9.6
Body mass index	17.8±4.2	16.7±3.7	17.6±3.9

In the urban group, the number of students was 140 students with 74 female and 66 male, with the average (mean±SD) age was 9.9±0.9 years, height was 136.3 ±8.3 centimeters, body weight was 33.4±9.9 kg, body mass index (BMI) was 17.8±4.2. Suburban group, the number of students was 76 students with 39 female and 37 male, with the average (mean±SD) age was 9.9±0.8 years, height was 133.8±10.3 centimeters, body weight was 30.0±8.1 kg, body mass index (BMI) was 17.6±3.9. Rural group, the number of students was 186 students with 100 female and 86 male, with the average (mean mean±elementary school) age was 10.1±0.8 years, height was 137.0±9.6 centimeters, body weight was 33.4±9.6 kg, body mass index (BMI) was 17.6±3.9.

#### Measurement Model

The next analysis method is confirmatory factor analysis.

In this analysis, the first stage was by testing the Standardized Loading Factor (SLF) in Figure 1 and Table 3.

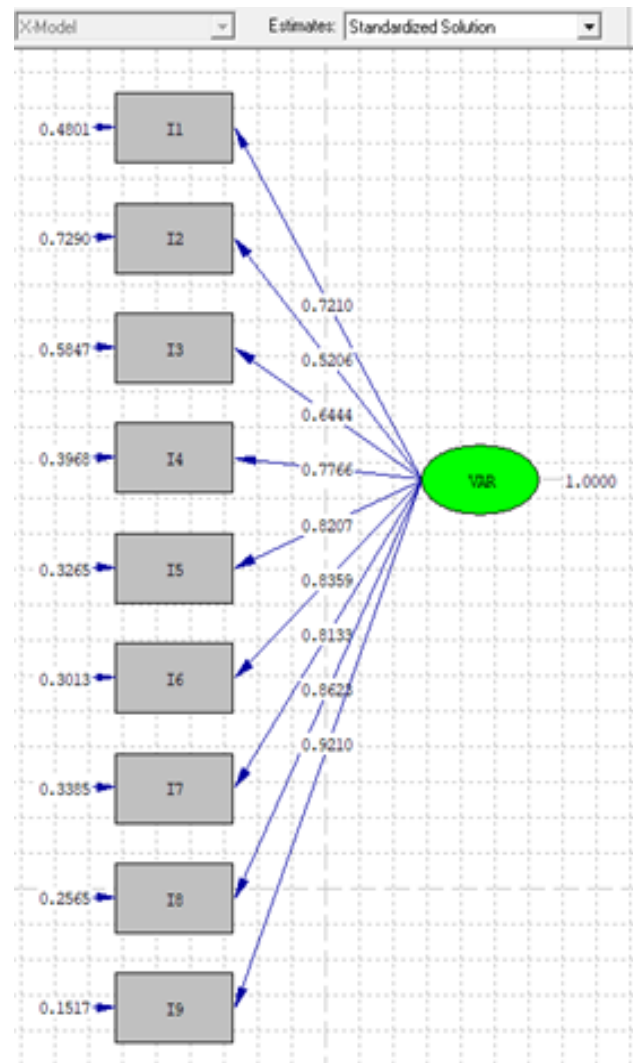


Figure 1. Standardized Loading Factor (source: LISREL)

Table 3. Score of Each Item on the Questionnaire

Item	Standardized Loading Factor (SLF)
I1	0.7210
I2	0.5206
I3	0.6444
I4	0.7766
I5	0.8207
I6	0.8359
I7	0.8133
I8	0.8623
I9	0.9210

Based on Figure 1 and Table 3, it can be seen that all SLF values of each indicator were  $>0.5$ . This shows that good convergent validity properties have been achieved in terms of the SLF measure.

The next test was average variance extracted (AVE) and reliability testing based on construct reliability (CR) which was shown in Table 4.

Table 4.  
Nilai Convergent Validity

Standardized Loading Factor (SLF)	Average Variance Extracted (AVE)	Construct Reliability (CR)
6.9158	0.6598	0.8922

Based on Table 4, it was known that all AVE values were  $>0.5$ , which means that it has met the properties of good convergent validity based on AVE size. Meanwhile, based on the CR value, the entire CR value was  $>0.7$ , which means that it has met the properties of good convergent validity based on the CR size.

## Discussion

The results of this study showed that all items in the Indonesian version of the Physical Activity Questionnaire for Older Children (PAQ-C) for ages 9 to 11 were declared valid and reliable (Andriyani et al., 2024). Validity refers to the extent to which the questionnaire can measure what should be measured, while reliability indicates the consistency of the measurement results obtained if the questionnaire is reused under the same conditions. The published results shows that the Physical Activity Questionnaire had also been adapted to Malay language with validity using Spearman correlation and reliability test using Pearson correlation, Alpha Cronbach, and intraclass correlation coefficient (Koh et al., 2020). Similar research with PAQ-C is the questionnaire in Czech language that can be used after going through test-retest, intraclass correlation coefficient, and independent sample t-test (Cuberek et al., 2021). Then PAQ-C has also been tested for psychometric validity for children in Saudi Arabia (Sirajudeen et al., 2022). The cross-sectional study research method, PAQ-C, has also been tested in Hungarian on 620 children aged 10.62 through confirmatory factor analysis and was declared valid (Makai et al., 2023). With valid and reliable results, the Indonesian version of PAQ-C can be considered a credible measuring instrument for assessing children's physical activity. It is important because language adaptation is often necessary to ensure that measuring instruments can be understood correctly by respondents and produce accurate data.

In addition, the Indonesian version of PAQ-C is declared suitable for use by children aged 9 to 11, so that other researchers in Indonesia can use it in their research without concerns about the accuracy of measuring instruments. It is an important period in a child's development where physical activity plays a crucial role in supporting their physical and mental health (González et al., 2024). Without systematic measurement, it is difficult to know whether children aged 9–11 are achieving the levels of physical activity recommended for their health and development. Lack of physical activity in children can lead to a range of health problems such as obesity, type 2 diabetes, and cardiovascular disorders, as well as motor development problems, muscle and bone weakness, and a weakened immune system, all of which can compromise their growth and development (Bao et al., 2021; Neil-Sztramko et al., 2021; Nguyen et al.,

2023). With the right measuring tool, researchers can better understand the level of physical activity in this age group, which in turn can help in designing appropriate interventions to improve fitness and health in children.

The physical activity of children aged 9 to 11 is important since this period is a critical phase in the development of their physical and social abilities, where children experience rapid growth which involves increasing muscle strength, motor coordination, and cardiovascular development (Chaeroni et al., 2024). Physical activity helps optimize this development by strengthening bones and muscles, increasing lung capacity, and developing gross and fine motor skills (Santoso et al., 2024). Furthermore, it has the indirect benefits of healthy weight management to prevent obesity, a growing problem globally (Yulia et al., 2021; Kurniawan et al., 2024). In addition, physical activity positively impacts cognitive function, such as improved concentration, memory, and academic performance, and supports social development through participation in group games or team sports that teach social skills such as cooperation, communication, and problem-solving (Meli et al., 2022; Wibowo et al., 2024; Sridana et al., 2024).

Then, the Indonesian version of the Physical Activity Questionnaire for Older Children (PAQ-C) aged 9–11 can be used for children living in urban and rural areas. It suggests that these gauges can accommodate a variety of different environmental conditions, which is an important factor in studies involving heterogeneous populations. This adaptability allows for more inclusive and representative research, which can provide a more comprehensive picture of children's physical activity in various regions in Indonesia. Then, in the context of the results of social ecology research, it can be seen how the physical and social environment affects the participation of children aged 9–11 in physical activity (Chaeroni et al., 2024). Children in urban areas may face challenges such as limited open spaces, pollution, and heavy traffic, but have better access to sports facilities. Conversely, children in rural areas may have more natural open spaces, but face limitations in sports facilities and organized programs. The results of the study on the relationship between social ecology research and physical activity emphasize that the interaction between various layers of the environment, including family support, schools, sports clubs, public spaces, and policies, is very important in promoting physical activity from an early age (Woods et al., 2021; Salvador-García et al., 2022; Zhang & Warner, 2023). A holistic and integrated approach is needed to increase physical activity participation, both in urban and rural environments. Some steps of a holistic and integrated approach that are easy to do are motivating children to participate in extracurricular sports in school or outside school, holding regular sports events between classes assisted by sports organizations to foster sports, or introducing various types of sports to train children's multilateral movements (Juita et al., 2024; Wijayanti et al., 2024).

Thus, the Indonesian version of the Physical Activity

Questionnaire for Older Children (PAQ-C) aged 9 – 11 is not only used as a measurement tool for physical activity but can be used to evaluate and search for talented athletes. Therefore, it is important to support regular physical activity in children, starting from the age of 9-11 years so that the child has the motivation and grows the confidence to choose to become an athlete in the future (Latief et al., 2024; Djaba et al., 2024; Mandan et al., 2024). Because, athletes who have been professional tend to be active in sports since an early age. It is expected that future research can increase the number of samples that are still lacking in this study. In addition, in further research it is important to explore more deeply the economic status, social conditions in the place of residence, and parental background of students. Then, it is also important to add statistical methods such as exploratory factor analysis and test-retest so that the instrument has a more reliable level of validity and reliability.

### Conclusion

Based on the results of this study, it can be concluded that the Indonesian version of the Physical Activity Questionnaire for Older Children (PAQ-C) for children aged 9 to 11 has proven to be valid and reliable. This measuring instrument can accurately measure the level of physical activity in children, giving confidence for researchers in Indonesia to use it without doubt regarding the accuracy and consistency of the results. The Indonesian version of PAQ-C is also proven to be suitable for use in various environments, both urban and rural, which shows its flexibility in accommodating different environmental conditions. This adaptability makes PAQ-C an inclusive and representative measuring tool, important for research throughout Indonesia. Overall, this study emphasizes the importance of a holistic and integrated approach in supporting children's physical activity, which is influenced by the interaction of various layers of the physical and social environment. Thus, the Indonesian version of PAQ-C can be used as a credible instrument to assess and support the physical and mental development of Indonesian children through adequate physical activity.

### Conflict of Interest

The researchers have no conflicts both with the researchers and the results of other studies.

### Acknowledgement

The author would like to thank Universitas Sebelas Maret for supporting the results of this scientific work which will later be used to obtain a Doctoral degree. Special thanks also be addressed to teachers and students in each elementary school who have participated in this study.

### References

- Andriyani, F.D., Indra, E.N., Priambadha, AA, & Monnaatsie, M. (2024). Validity and reliability of the Indonesian version of Physical Activity Questionnaire for adolescents (PAQ-A) and older children (PAQ-C). *Jurnal Pendidikan Jasmani Indonesia*, 20 (1), 18–23. <https://doi.org/http://dx.doi.org/10.21831/jppi.v20i1.73750>
- Bajamal, E., & Robbins, L.B. (2023). Psychometric properties of the Arabic version of Physical Activity Questionnaire for Adolescents (PAQ-A). *Applied Nursing Research*, 69. <https://doi.org/10.1016/j.apnr.2022.151660>
- Bao, Y., Gao, M., Luo, D., & Zhou, X. (2021). Effects of Children's Outdoor Physical Activity in the Urban Neighborhood Activity Space Environment. *Frontiers in Public Health*, 9. <https://doi.org/10.3389/fpubh.2021.631492>
- Chaeroni, A., Pranoto, N.W., Talib, K., Ahmed, M., Khishe, M., Okilanda, A., & Lani, M.N. (2024). The Effects of Physical Activity on Physical Health, Behavior and Personality by Social Status of Urban and Rural Children: A Systematic Review. *Challenges*, 56, 1148–1160. <https://doi.org/10.47197/retos.v56.104519>
- Cuberek, R., Janíková, M., & Dygrýn, J. (2021). Adaptation and validation of the Physical Activity Questionnaire for Older Children (PAQ-C) among Czech children. *PLoS ONE*, 16 (1 January). <https://doi.org/10.1371/journal.pone.0245256>
- Djaba, H. S. W., Siswantoyo, Budiarti, R., Fauzi, Sukanti, E. R., Tomoliyus, & Prabowo, T. A. (2024). The Impact of Motivation on Decision-Making of Futsal Goalkeepers in Indonesia: An Analysis of Self-Confidence as Mediator. *Sport Mont*, 22(2), 3–9. <https://doi.org/10.26773/smj.240707>
- González, F., Hun, N., Aliste, S., Aguilera, C., Cárdenas, M., & Salazar, M. (2024). Level of physical activity in Chilean preschoolers and schoolchildren during the covid-19 pandemic. *Challenges*, 54, 320–327. <https://doi.org/10.47197/RETOS.V54.102268>
- Guerrero, MF, Molina, SF, & Ramírez, MS (2020). Physical self-concept in terms of sociodemographic variables and their relationship with physical activity. *Culture, Science and Sports*, 15 (44), 189–199. <https://doi.org/10.12800/ccd.v15i44.1461>
- Hair, J.F., Howard, MC, & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research*, 109, 101–110. <https://doi.org/10.1016/j.jbusres.2019.11.069>
- Hidding, LM, Chinapaw, MJM, van Poppel, MNM, Mokkink, LB, & Altenburg, TM (2018). An Updated Systematic Review of Childhood Physical Activity Questionnaires. In *Sports Medicine* (Vol. 48, Issue 12, pp. 2797–2842). Springer International Publishing. <https://doi.org/10.1007/s40279-018-0987-0>
- Juita, A., Tomoliyus, T., Hariono, A., Syahriadi, S., Sukanti, E. R., Fauzi, F., Alim, A., & Prabowo, T. A.

- (2024). The effect of service quality and coach competency on the motivation and achievement of Riau basketball student-athletes. *SPORT TK-Revista EuroAmericana de Ciencias Del Deporte*, 13, 12. <https://doi.org/https://doi.org/10.6018/sportk.564821>
- Koh, D., Zainudin, N.H., & Zawi, M.K. (2020). Validity and reliability of the modified physical activity questionnaire for adolescents (Paq-a) among Malaysian youth. *International Journal of Human Movement and Sports Sciences*, 8 (6), 355–360. <https://doi.org/10.13189/saj.2020.080606>
- Kowalski, K.C., Crocker, P.R.E., & Faulkner, R.A. (1997). Validation of the Physical Activity Questionnaire for Older Children. *Pediatric Exercise Science*, 9 (2), 174–186. <https://doi.org/10.1123/pes.9.2.174>
- Kurniawan, F., Hidayatullah, M. F., Kristiyanto, A., Riyadi, S., Ekawati, F. F., Ningrum, N. R., & Prabowo, T. A. (2024). Physical literacy needs in esports: literature review. *Retos*, 58, 495–505. <https://doi.org/10.47197/retos.v58.107885>
- Labrador, R. M. S., & Ventola, A. R. M. (2023). Variables associated with motivation to engage in physical activity in adolescents. *Retos*, 50, 925–930. <https://doi.org/10.47197/retos.v50.96892>
- Latief, H., Suherman, W. S., Rismayanthi, C., Alim, A., Huda, M. S., Yulianto, W. D., & Prabowo, T. A. (2024). The influence of performance in training on self-confidence of wheelchair athletes with coach-athlete intimacy as a moderating variable. *Retos*, 58, 760–768. <https://doi.org/https://doi.org/10.47197/retos.v58.103726>
- Ma'arif, I., Nurhasan, Suroto, Setyawan, R., Basuki, Zen, MZ, Prasetyo, R., Saputra, Y.D., & Synthiawati, N.N. (2023). CORRELATION OF BODY MASS INDEX, PHYSICAL ACTIVITY, AND PHYSICAL FITNESS IN ELEMENTARY SCHOOL STUDENTS. *Physical Education Theory and Methodology*, 23 (1), 58–64. <https://doi.org/10.17309/tmfv.2023.1.08>
- Makai, A., Prémusz, V., Dózsa-Juhász, O., Fodor-Mazzag, K., Melczer, C., & Ács, P. (2023). Examination of Physical Activity Patterns of Children, Reliability and Structural Validity Testing of the Hungarian Version of the PAQ-C Questionnaire. *Children*, 10 (9). <https://doi.org/10.3390/children10091547>
- Mandan, A., Tomoliyus, T., Alim, A., & Prabowo, T. A. (2024). The Impact of Service Quality on Self-Confidence of Wheelchair Athletes: An Analysis of Family Support as Moderator. *Sport Mont*, 22(2), 3–9. <https://doi.org/10.26773/smj.240717>
- Marasso, D., Lupo, C., Collura, S., Rainoldi, A., & Brustio, P.R. (2021). Subjective versus objective measure of physical activity: A systematic review and meta-analysis of the convergent validity of the physical activity questionnaire for children (PAQ-C). In *International Journal of Environmental Research and Public Health* (Vol. 18, Issue 7). MDPI AG. <https://doi.org/10.3390/ijerph18073413>
- Meli, AM, Ali, A., Jalil, AMM, Yusof, HM, & Tan, MMC (2022). Effects of Physical Activity and Micronutrients on Cognitive Performance in Children Aged 6 to 11 Years: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. In *Medicina (Lithuania)* (Vol. 58, Issue 1). MDPI. <https://doi.org/10.3390/medicina58010057>
- Neil-Sztramko, S. E., Caldwell, H., & Dobbins, M. (2021). School-based physical activity programs for promoting physical activity and fitness in children and adolescents aged 6 to 18. *Cochrane Database of Systematic Reviews*, 2021(9). <https://doi.org/10.1002/14651858.CD007651.pub3>
- Nguyen, P., Nguyen, D. X., Khanh-Dao Le, L., Ananthapavan, J., Na, P. D., & Tang, H. K. (2023). Results from Viet Nam's 2022 report card on physical activity for children and youth. *Journal of Exercise Science and Fitness*, 21(1), 52–57. <https://doi.org/10.1016/j.jesf.2022.11.002>
- Pulungan, AB, Fadiana, G., & Annisa, D. (2021). Type 1 diabetes mellitus in children: Experience in Indonesia. In *Clinical Pediatric Endocrinology* (Vol. 30, Issue 1, pp. 11–18). Jeff Corporation Co. Ltd. <https://doi.org/10.1297/cpe.30.11>
- Rahayu, A., Sumaryanti, & Arovah, N.I. (2022). THE VALIDITY AND RELIABILITY OF THE PHYSICAL ACTIVITY QUESTIONNAIRES (PAQ-A) AMONG INDONESIAN ADOLESCENTS DURING ONLINE AND BLENDED LEARNING SCHOOLING. *Physical Education Theory and Methodology*, 22 (2), 173–179. <https://doi.org/10.17309/tmfv.2022.2.04>
- Salvador-García, C., Santágueda-Villanueva, M., Valverde-Esteve, T., & Chiva-Bartoll, Ó. (2022). Socio-Ecological Correlates of Physical Activity in Children with Autism Spectrum Disorder: A Cross-Sectional Study in Spain. *International Journal of Disability, Development and Education*, 69 (1), 302–318. <https://doi.org/10.1080/1034912X.2021.1975264>
- Santoso, NP, Subagyo, S., Santoso, N., Prabowo, TA, & Yulianto, WD (2024). Assessing the Effect of Traditional Games on Manipulative Movements in Elementary School Students Based on Gender. *Physical Education Theory and Methodology*, 24 (3), 441–448. <https://doi.org/10.17309/tmfv.2024.3.13>
- Sari, IPTP, Doewes, M., Hidayatullah, M.F., Hariono, A., & Sari, IPTP (2023). *Physical Activity Levels of Children Aged 9–11 Years in Indonesia* (Issue Yishpress). Atlantis Press International BV. [https://doi.org/10.2991/978-94-6463-356-6\\_32](https://doi.org/10.2991/978-94-6463-356-6_32)
- Sirajudeen, M.S., Waly, M., Manzar, M.D., Alqahtani, M., Alzhrani, M., Alanazi, A., Unnikrishnan, R., Muthusamy, H., Saibannavar, R., & Alrubaia, W. (2022). Physical activity questionnaire for older children (PAQ-C): Arabic translation, cross-cultural adaptation,

- and psychometric validation in school-aged children in Saudi Arabia. *PeerJ*, 10. <https://doi.org/10.7717/peerj.13237>
- Sridana, R., Tomoliyus, T., Sukamti, E. R., Prabowo, T. A., & Abrori, R. B. (2024). The Effect of Coaching Style on Performance of Athletes Through Anxiety as Mediating Variable in Adolescent Swimmers El efecto del estilo de entrenamiento sobre el rendimiento de los deportistas a través de la ansiedad como variable mediadora en nadadores. *Retos*, 55, 241–248. <https://doi.org/https://doi.org/10.47197/retos.v55.103150>
- Valenciano Valcárcel, J., Jiménez-Loaisa, A., Rieiro, I., & Martínez-Martínez, J. (2023). Convergent validity of the Physical Activity Questionnaire for Children (PAQ-C): assessing moderate-to-vigorous or total physical activity? *Measurement in Physical Education and Exercise Science*, 27 (1), 32–42. <https://doi.org/10.1080/1091367X.2022.2062244>
- Welk, G.J., & Eklund, B. (2005). Validation of the children and youth physical self-perceptions profile for young children. *Psychology of Sport and Exercise*, 6 (1), 51–65. <https://doi.org/10.1016/j.psychsport.2003.10.006>
- Wibowo, M. S. R., Prasetyo, Y., Sriwahyuniati, C. F., Yulianto, W. D., & Prabowo, T. A. (2024). The effect of self-efficacy, social support, and achievement motivation on archery athlete's performance. *Retos*, 54, 348–354. <https://doi.org/https://doi.org/10.47197/retos.v54.102211>
- Wijayanti, N. P. N., Tomoliyus, Alim, A., Wedi, S., Artanayasa, W., Sudiana, K., Sukamti, E. R., Fauzi, Hariono, A., & Prabowo, T. A. (2024). The influence of coaches' behavior on achievement motivation and performance of Riau athletes. *Sport TK*, 13. <https://doi.org/10.6018/sportk.564811>
- Woods, C.B., Crowley, E., Powell, C., O'Brien, W., Murphy, M.H., Belton, S., Saunders, J., Connolly, S., Farmer, O., & Ng, K. (2021). Socio-ecological correlates of physical activity in a nationally representative sample of adolescents across Ireland and Northern Ireland. *Preventive Medicine Reports*, 23. <https://doi.org/10.1016/j.pmedr.2021.101472>
- Yang, X., Chen, J., Zhai, Y., & Zhao, W. (2019). A systematic review of evaluation studies on physical activity questionnaires for children and adolescents. In *Chinese Journal of Preventive Medicine* (Vol. 53, Issue 12, pp. 1290–1295). Chinese Medical Journals Publishing House Co.Ltd. <https://doi.org/10.3760/cma.j.issn.0253-9624.2019.12.016>
- Yulia, C., Khomsan, A., Sukandar, D., & Riyadi, H. (2021). Effect of nutrition education and traditional game-based physical activity interventions, on lipid profile improvement in overweight and obese children in west java indonesia. *Nutrition Research and Practice*, 15 (4), 479–491. <https://doi.org/10.4162/nrp.2021.15.4.479>
- Zhang, X., & Warner, M.E. (2023). Linking Urban Planning, Community Environment, and Physical Activity: A Socio-Ecological Approach. *International Journal of Environmental Research and Public Health*, 20 (4). <https://doi.org/10.3390/ijerph20042944>

### Datos de los/as autores/as y traductor/a:

Indah Prasetyawati Tri Purnama Sari  
 Muchsin Doewes  
 Muhammad Furqon Hidayatullah  
 Awan Hariono  
 Resna Suci Nurfalalah

indahprasty14@student.uns.ac.id  
 muchsindoewes@staff.uns.ac.id  
 mohammadfurqon@staff.uns.ac.id  
 awan\_hariono@uny.ac.id  
 resnasucinurfalah@gmail.com

Autor/a  
 Autor/a  
 Autor/a  
 Autor/a  
 Traductor/a