

# VALIDATION OF THE CHILD AND ADOLESCENT INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRES IN IRANIAN CHILDREN AND ADOLESCENTS

Zahra Faghihmani<sup>(1)</sup>, Mojghan Nourian<sup>(2)</sup>, Amir Hossein Nikkar<sup>(1)</sup>,  
Ziba Farajzadegan<sup>(3)</sup>, Nooshin Khavariyan<sup>(1)</sup>, Shohreh Ghatrehsamani<sup>(1)</sup>,  
Parinaz Poursafa<sup>(4)</sup>, Roya Kelishadi<sup>(5)</sup>

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## Abstract

**BACKGROUND:** With reference to the importance of physical activity during childhood and adolescence in their health promotion and prevention of chronic diseases during adulthood, it is necessary to have a reliable and valid method for evaluating physical activity level in this age group. Physical activity questionnaire child (PAQ-C) and adolescents (PAQ-A) have been designed for this purpose. This study aimed to validate these questionnaires in a representative sample of Iranian children and adolescents.

**METHODS:** After translating the PAQ-C and PAQ-A to Persian, the face and content validities of these questionnaires were assessed by a committee of experts of different specialties including specialists in pediatrics, community medicine, social specialist and sport medicine. After minor modification of some items of the questionnaires according to the available types of physical activity and the socio-cultural conditions, the final questionnaires were prepared. Thereafter, 82 children and adolescents with 8 to 18 years of age completed the questionnaires.

**RESULTS:** To assess the questionnaire reliability Iranian students and the validity accreditation was modified and got from the committee. A Cronbach's alpha of 0.894 was produced at the end of the analysis showing it has been reliable for this population.

**CONCLUSION:** According to the results found in this survey, PAQ questionnaire can be used as a reliable and valid method for next studies; so health planning based on Iranian students' physical activity will be possible in future.

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**Keywords:** Physical Activity Questionnaire, Reliability, Validity.

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## Introduction

Unhealthy lifestyle behaviors including physical inactivity during childhood might track to adulthood, and in addition to their short-term health hazards, they might be associated with chronic diseases later in life. Sedentary lifestyle is a well-documented predisposing factor for obesity, metabolic syndrome, non-alcoholic fatty liver disease etc in younger ages resulting in further chronic problems in adulthood, e.g. cardiovascular dis-

eases, diabetes mellitus, hyperlipidemia, hypertension, cancers and osteoporosis.<sup>1-3</sup>

It is essential to pay attention to the fact that modifying and interpretation of individual's lifestyle habits can prevent such early and late onset complications. Because of the importance of physical activity during childhood, assessing its level is essential to modify unhealthy life styles as soon as it is detected. Therefore, various methods have been suggested to evaluate the physical activ-

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1- MD, Research Assistant, Department of Pediatric Preventive Cardiology Department, Isfahan University of Medical Sciences, Isfahan, Iran

2- PhD Student, Community Nutrition, Lecturer, Department of Nutrition, Isfahan University of Medical Sciences, Isfahan, Iran

3- MD, Associate Professor of Community Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

4- MSc, Research Assistant, Pediatric Preventive Cardiology Department, Isfahan University of Medical Sciences, Isfahan, Iran

5- MD, Associate Professor of Pediatrics, Pediatric Preventive Cardiology Department, Isfahan University of Medical Sciences, Isfahan, Iran

Corresponding author: Roya Kelishadi, MD; E-mail: kelishadi@med.mui.ac.ir

ity level in this age group. A valid and feasible tool is essential for reaching this goal.<sup>4,6</sup>

In 1997, two questionnaires named PAQ-C (Physical Activity Questionnaire for Children) and PAQ-A (Physical Activity Questionnaire for Adult) were suggested by Crocker and colleagues to evaluate physical activity in children and teenagers. After confirming validity and reliability of these questionnaires, they have been used in several studies in Western countries successfully providing the fact that these questionnaires are cost-effective and self report methods.<sup>7-9</sup>

Considering the limited numbers of studies about physical activity in children and teenagers in our country, it would be essential to assess the validity of such questionnaires according to cultural and social conditions of non-Western countries. This study aimed to validate the aforementioned questionnaires in a representative sample of Iranian children and adolescents.

### Materials and Methods

PAC-Q questionnaire has been designed for students 8 to 14 years old; including 9 parts with 5 scores each. PAC-A questionnaire is suited for 14 to 20 years old students with 5 scores for each section. These questionnaires have been arranged with reference to the students' last 7 days physical activity. Every questionnaire has a total score from adding all parts' average scores.

Reliability and validity of the physical activity questioner was assessed through the following process:

- 1) At first, PAQ-C and PAQ-A were translated to Persian.
- 2) After retranslation to English, Persian and English questionnaires were checked by 3 experts.
- 3) The final corrected questionnaire was translated to Persian
- 4) To assess the face and content validity, four students from the school sport teams who had been asked by these questionnaires, were evaluated by an expert committee consisting of experts of different specialties including specialists in Pediatrics, Community Medicine, Social

specialist and Sport Medicine. Then some minor changes were made in questionnaires according to Iranian socio-cultural conditions and available sport activities, and the final physical activity questionnaire was prepared.

There were 9 sections in the questionnaire including 5 levels each:

**Section one:** physical activity in recreation time with combined score and clear definition for each activity.

**Section two:** Physical activities during school sport classes, dinner times, afternoons, holidays and immediately after school closing time. The questions were arranged from the lowest to the highest levels of activity.

**Final section:** This section was not used in scoring system. It was just used to determine the students' inactivity in the previous 7 days.

The final score was composed of the average of sections scores.

To assess the questionnaire reliability, 95 primary, guidance and high school students, including 33 boys and 66 girls in 7 to 18 years of age have been questioned. This selection has been done by random from different schools. To avoid missing data, students filled in the questionnaires under supervision of the study researchers.

The final score which was the average of the sections scores was analyzed with SPSS software version 15.0, and then the alpha Cronbach has been calculated to determine the reliability of the questionnaire.

The research was undertaken under the medical ethics standards.

### Results

Different levels of physical activity were in proportion to different health levels and having a reliable way to assess physical activity is necessary. This survey was brought out With reference to our country demand for a valid measure of physical activity.

A committee arranged for evaluating face and content validity of questionnaires, made following changes in PAQ-A and PAQ-C:

- 1) PAQ-A and PAQ-C were mixed together.

- 2) Common sports practiced among Iranian students were considered in section one.
- 3) Necessary changes due to Iranian cultural and social condition were made in the next sections of the questionnaire; then the final version of physical questionnaire was issued after accreditation by the committee.

From 95 questioned students in the survey, who had been selected from primary, Guidance and high school, 82 had full cooperation and 13 were omitted from the survey. The 62 students, who remained till end of the survey, were 62 girls and 20 boys.

SPSS software was used to evaluate the questionnaire validity and alpha Cronbach was calculated as 0.894 which shows the questionnaire is valid.

### Discussion

To the best of our knowledge, this is the first study validating the PAQ-child questionnaire in a non-Western population of children and adolescents.

A variety of ways such as direct observation, self report and movement sensors have been designed to determine the amount of physical activity. Self report has been the most effective method in different surveys.<sup>10-12</sup>

PAQ has been designed in such a way to be economic and easy to do in wide-screen surveys.<sup>7</sup>

Students' physical activity can be affected by several factors including; culture, social level and economy. PAQ Reliability and validity have been proved through the wide-screen studies among white Canadian students. According to different studies, PAQ efficiency differs due to diversity of racial and cultural parameters; so it needs to be modified with reference to race and region.<sup>13</sup>

This survey has been performed to make necessary changes in questionnaire with reference to Iran cultural and ethnical specification and this goal has been achieved under the supervision of a committee. Finally, the validity of this modified questionnaire for Iranian students was approved by the committee members.

In 1997, validity and reliability of the questionnaire was approved by Crocker and colleagues

through wide-screen study among 8 to 18 years old Canadian students with a calculated Cronbach's alpha at 0.8 and 0.83 for boys and girls which are close to what has been in our survey (0.89). In their research, girls had more cooperation for filling the questionnaires in comparison with the boys.<sup>7</sup>

Validity and reliability of the PAQ-A has been assessed by Gomez and colleagues among Spanish teenagers with produced numbers of alpha Cronbach as 0.65 and 0.67; so the PAQ-A was approved as a valid and reliable method for these teenagers.<sup>14</sup>

In our research, the questionnaire was evaluated for validity by the determined committee and then it was used for 8 to 18 years old students through primary, guidance and high school levels. After final analysis, Cronbach's alpha was 0.89 approving the reliability of PAQ for Iranian students.

Until now, PAQ has been used in various wide-screen studies and has showed high efficacy in determining the amount of children's physical activity and its relationship with diverse health factors.<sup>15-18</sup>

PAQ is economic and time saving and has been designed in a way to be reminding in each section.

As a matter of fact, this should be noted that PAQ has some limitations; it is only effective during school season, not through the holidays and also does not make a difference in various activities and neither does make a clue for energy estimation in physical activities. This questionnaire has been actually created on the basis of the individual's ability in recalling the last 7 days physical activities.

However with all these advantages and disadvantages of PAQ, it has been designed with reference to the necessity of evaluating Iranian students' physical activity. With this modified questionnaire we will have an effective method for our future wide-screen integrations and evaluations.

### Conflict of Interests

Authors have no conflict of interests.

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