

# Reliability and Validity of Hindi Version of International Physical Activity Questionnaire - Short form in Middle Aged Adults - An Observational Study

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**Abstract:** *Background:* Amongst the various challenges India is facing as a developing country, one such grave challenge is the public health and nutritional transition. Physical activity has proved to either eliminate the risk or deter the chances of developing such grave conditions in the individuals in the society. As, per our knowledge International Physical Activity Questionnaire-Short Form is not available in Hindi Version. So, if the reliability and validity of this study is found to be good it will be helpful for clinical use and community also. *Purpose:* To find out reliability & validity of Hindi version of IPAQ-SF in middle aged adults. *Study Type:* Observational study. *Subjects:* 75 middle aged adults (34-60 years). *Methodology:* English version of IPAQ-SF is translated in Hindi version and 75 middle aged adults were given to fill the Hindi version of IPAQ-SF questionnaire and from that Test-retest reliability and validity is calculated. *Result:* Result suggests that IPAQ-SF is having excellent interclass correlation coefficient (ICC = 0.910) which concluded that by measuring the test-retest reliability with the interval of 24 hours. *Conclusion:* Hindi version of International Physical Activity Questionnaire-Short Form has an excellent test-retest reliability and validity to be used in middle aged population to measure Physical Activity.

**Keywords:** Reliability, Validity, Middle aged adults, IPAQ-SF, Hindi Version

## 1. Introduction

Amongst the various challenges India is facing as a developing country, one such grave challenge is the public health and nutritional transition. <sup>[1]</sup>As Indians are moving away from traditional diets high in cereal and fiber to more western pattern diets high in sugars, fat and animal-source food (fast food culture) that are closely associated with different non communicable diseases (NCDs) seen in later years. <sup>[2]</sup> Along with nutrition Physical inactivity is also an important public health issue <sup>[1]</sup>. Physical inactivity is a leading risk factor for premature mortality, type 2 diabetes, osteoporosis and certain types of cancer. Physical activity is defined as any bodily movement produced by skeletal muscles that result in energy expenditure. Physical activity in daily life can be categorized into occupational, sports, conditioning, household, or other activities. Regular physical activity and health-related physical fitness are key indicators of health outcomes. Physical activity also improves emotion and stress control <sup>[3]</sup>. Sedentary lifestyles are associated with increased obesity, type 2 diabetes and cardiovascular disease and hence the promotion of active lifestyles is an important public health priority <sup>[4]</sup>.

According to the world health organization (WHO), in developing countries, almost half of the middle-aged adult population does not perform enough physical activity for health benefits <sup>[3]</sup>. Electronic gadgets would definitely prove to be more reliable, but looking at the robust population of India and the cost constraints, they are not suitable for

epidemiological studies. Thus, a consensus on valid and reliable tool for measuring physical activity internationally on the same platform is required. <sup>[5]</sup>There are various tools to measure physical activity such as self-reported questionnaires, physical activity diaries, accelerometers, motion sensors, heart rate monitors, etc. International Physical Activity Questionnaire is one of such questionnaires and is reliable and valid tool for measuring physical activity. The long and short forms of the questionnaire are available <sup>[4]</sup>. The International Physical Activity Questionnaire Short Form (IPAQ-SF) is designed with only 7 questions and is frequently used to assess physical activity level in large-scale population-based studies <sup>[3]</sup> Only few works have been conducted with the purpose to validate these instruments for the evaluation of the Physical activity limitation and help to collect physical activity information for the previous 7 days regarding vigorous and moderate activity, walking and sedentary behaviour. <sup>[5]</sup>This scale is not available in Hindi version. Hence, if the reliability and validity of this study is good, it will be helpful for clinical use and community also <sup>[6]</sup>.

## 2. Materials and Methodology

- **Source of data:** Middle aged adults from Ahmedabad district
- **Study type:** Observational analytical study
- **Sample size:** 75 middle aged participants
- **Study duration:** 1 month
- **Sampling technique:** Convenience sampling

Volume 11 Issue 8, August 2022

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**Inclusion Criteria**

- Age group-34 to 60 years of age
- Both male and female
- Adequate literacy to fill the questionnaire

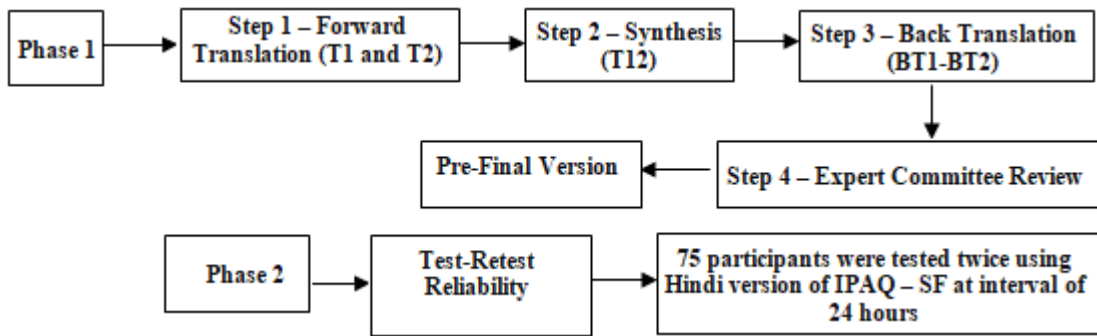
**Exclusion Criteria**

- Participants with severe physical disability that prohibit their activity.

**3. Procedure**

For translation of International Physical Activity Questionnaire-Short Form (IPAQ-SF) from English language to Hindi language permission taken for Hindi version of IPAQ-SF from the developer of the IPAQ-SF through E-mail. International Physical Activity Questionnaire was translated into Hindi from English using forward-backward-forward method using the instructions given in the International Physical Activity Questionnaire manual for reliability and validity. Two independent bilinguals i. e., a layperson and an expert of Hindi language

translated the questions into Hindi, and subsequently the preliminary version was back translated into English following careful cultural adaptation by two independent translators, who knew both English and Hindi language and had no information of the original scale which was in English language. To ensure the accuracy of the translation both the translators were not aware about the concepts of scale measures to avoid bias. It helps into reveal misunderstandings or unclear wordings in the initial (English) translations. Then a bilingual (in English and the Hindi language) expert panel was convened which included the forward translator person and professionals with skill in scale translation and development. Changes were done in translated scale based on the suggestions of the expert panel. Then the final version of IPAQ-SF was performed by 75 middle aged individuals both male and female, who fulfilled the inclusion & exclusion criteria were selected through convenient sampling. Scale was re-evaluated by same individuals after 24 hours of interval.



**Flow chart of the scale translation procedure**

**4. Statistical Analysis**

Data of 75 individuals were analysed using statistical package for social science version 26 (SPSS v.26) with level of significance 5%. Test-retest reliability of International Physical Activity Questionnaire-Short Form was assessed by interclass correlation coefficient (ICC) and Internal consistency was assessed by using Cronbach’s alpha.

**Table 3: Reliability analysis of Hindi version of IPAQ-SF**

Cronbach's Alpha	No of Items
0.912	2

Table 3 shows the reliability analysis of Hindi version of IPAQ-SF with Cronbach's Alpha of 0.912.

**5. Results**

**Table 1: Frequency of gender**

Gender	Frequency	Percentage
Male	39	52%
Female	36	48%

Table 1 shows a total of 75 middle aged adults were recruited for the study among the 75 participants out of which 39 were male and 36 were female.

**Table 2: Mean age and Standard deviation**

Total no of participants	Mean Age	Standard Deviation
75	47.32	6.19

Table 2 shows the mean age of the subjects was 47.32 with a standard deviation (SD) of 6.19 (47.32±6.19) years.

**Table 4: Interclass correlation coefficient of Hindi version of IPAQ-SF**

ICC	Lower Bound	Upper Bound	Value
0.910	0.858	0.943	11.406

Table 4 shows the Interclass correlation coefficient (ICC) of Hindi version of IPAQ-SF

Findings suggest that Hindi version of IPAQ-SF is having excellent interclass correlation coefficient (ICC = 0.910) concluded by measuring the test-retest reliability with the interval of 24 hours.

**6. Discussion**

Due to physical inactivity among middle aged adults’ serious health problems and its precursors including mental health and other disorders and injuries, are thus on an increasing trend in the society amongst people. It is not only taking a toll on the rich young resource of India but also taking its grip all over the world in terms of mortality,

morbidity, disability and socio-economic losses. Therefore, monitoring of physical activity and sedentary behaviour is important both for individuals to assess their daily movement patterns and for society to evaluate the effectiveness of policies to combat non-communicable diseases. As the psychometric profiles of self-report instruments can be impacted by culture or language differences and by age related cognitive ability and the feasibility of the IPAQ -SF in Indian middle-aged adults is also unknown. So, the purpose of this study was to determine the reliability and validity of Hindi version of International Physical Activity Questionnaire Short Form among middle aged adults which may help to assess their physical activity. We made efforts to translate the English version of International Physical Activity Questionnaire-Short Form into Hindi version using a standardized tool and to assess Hindi version of International Physical Activity Questionnaire-Short Form. International Physical Activity Questionnaire-Short Form was self-administered by participants to avoid potential examiner's bias. 24 hours of short interval was kept between test and retest to minimize the possibility of change in general health status of participants. To our knowledge this was the first study to validate Hindi version of International Physical Activity Questionnaire-Short Form. The results of this study indicate that the validity indices of Hindi version of International Physical Activity Questionnaire-Short Form are similar to English version of International Physical Activity Questionnaire-Short Form. Hindi version of International Physical Activity Questionnaire-Short Form has shown acceptable properties for assessing physical activities in middle aged adults. Study has found the questionnaire to have good test-retest reliability and satisfactory criterion validity for middle aged adults and a suitable instrument for monitoring habitual physical activity and could provide a useful data for international comparison purposes. Thus, looking at the discussion one comes to the conclusion that the Hindi version of IPAQ SF is proposed to be a possible standard questionnaire for comparing the results of diverse populations. Also, the results of this study endorse that it is a reliable test, so it can be used to study in different regions at different periods of time for intra and inter regional comparison of data.

## 7. Conclusion

Hindi version of International Physical Activity Questionnaire-Short Form has an excellent test-retest reliability and validity to be used in middle aged population to measure Physical Activity.

## 8. Limitations

- Content & concurrent validity are not measured.
- Specific age group.

## 9. Future Scope of the study

- Can find out the content and concurrent validity for the scale.
- The study can be carried out for different age groups.

## Financial Support

No funding was taken for this study.

## Acknowledgment

- Authors are greatly thankful to Committee of International Physical Activity Questionnaire-Short Form for permission to translate the questionnaire into Hindi language.
- Authors are thankful to both English and Hindi scholar for kind help in the process of translation.
- Authors are thankful to all participants for being part of this study.

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