Cross-Cultural Adaptation and Determination of the Validity and Reliability of the Persian Version of the Patient-Rated Tennis Elbow Evaluation (PRTEE) Questionnaire in Iranian Tennis Players

Ali Mansoori[1] , Shohreh Noorizadeh Dehkordi[*2], Soheil Mansour Sohani[2], Afsun Nodehi Moghadam[3]

1. *MSc. Student, Department of Physiotherapy, Iranian Center of Excellence in Physiotherapy, School of Rehabilitation Sciences, Iran University of Medical Sciences, Tehran, Iran*
2. *Associate Professor, Department of Physiotherapy, Iranian Centre of Excellence in Physiotherapy, School of Rehabilitation Sciences, Iran University of Medical Sciences, Tehran, Iran*
3. *Associate Professor, Department of Physiotherapy, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran*

Article Info

How to Cite This Article

Use your device to scan and read the article online

ABSTRACT

Background and Objectives: The objective of this study was to evaluate the cross-cultural adaptation of the Persian version of the Patient-Rated Tennis Elbow Evaluation (PRTEE) in Iranian tennis players with lateral epicondylitis.

Materials and Methods: The original version of the PRTEE questionnaire was translated into the Persian language by two bilingual translators in accordance with the instructions provided by Beaton et al. One hundred and two tennis players (64 males and 38 females) suffering from lateral epicondylitis and 40 tennis player with no lateral epicondylitis participated in this study. In order to determine the construct validity, the correlation between the Persian version of the PRTEE and disabilities of the arm, shoulder and hand questionnaire (DASH) were all investigated. The reliability of the questionnaire was determined from two different aspects of the test-retest reliability and internal consistency.

Results: There was a high correlation between PRTEE and DASH questionnaires (r = 0.88). The coefficient of Cronbach's alpha for the total score of the PRTEE questionnaire was 0.96 and the intra-class correlation (ICC) coefficient for the total score was 0.95. There was a significant difference in the scores of patients (M=45.56, SD=20.56) and healthy (M=7.23, SD=5.5) tennis players; (t =17.31, *P*<0.0001).

Conclusion: The Persian version of the PRTEE questionnaire to assess pain and functional problems in patients with lateral epicondylitis is highly reliable and valid in this setting.

Keywords: PRTEE questionnaire, Reliability, Validity, Lateral epicondylitis.

Corresponding information: Shohreh Noorizadeh Dehkordi, Associate Professor, Department of Physiotherapy, Iranian Centre of Excellence in Physiotherapy, School of Rehabilitation Sciences, Iran University of Medical Sciences, Tehran, Iran
E mail: Noorizadeh.sh@iums.ac.ir

Introduction

Tennis elbow, known as lateral epicondylitis, causes lots of pain in the upper extremity, especially the elbow and the forearm, in athletes and workers who often perform manual activities (Kurppa, Viikari-Juntura et al. 1991; Verhaar 1994, Ono, Nakamura et al., 1998; Leclerc, Landre et al., 2001). Tennis elbow occurs due to degeneration in insertion of the wrist extensor muscles, especially the extensor carpi radialis brevis muscle (Regan, Wold et al., 1992). The prevalence of this syndrome is 2% among injuries of the elbow region (Verhaar, 1992). Among tennis players, the prevalence of this injury is reported to be about 39.7%. The prevalence of this disease in tennis players is increased by aging (Gruchow and Pelletier , 1979). Its incidence is increasing in sports and huge expenses are imposed on the treatment of athletes. For the lack of a specific treatment to improve this situation as soon as possible (Kohia, Brackle et al., 2008), the need for the tools that can detect early musculoskeletal problems to inform the patient and therapist regarding improvements in the patient's condition is becoming more and more important and demanded (MacDermid, 2001). The objective tools such as dynamometer and isokinetic in spite of their advantages like high accuracy and exact determination have some disadvantages like high price and not being appropriate for the patients to understand the results.

The questionnaires are accessible and affordable tools that, if properly developed and cross-culturally adapted, can provide accurate and useful information regarding the patient's condition to the therapists (Lambert, Burlingame et al., 1996; John, Angst et al. , 2007). In order to use the questionnaires in different languages the translation in the first step, , then, the validity and reliability of the questionnaire will be determined in the target language (Guillemin, Bombardier et al., 1993; Guillemin, 1995; Beaton, Bombardier et al., 2000).

However, different scales have been used to assess the elbow conditions (Hudak, Amadio, et al., 1996; Pransky, Feuerstein et al., 1997; King, Richards et al., 1999; Overend, Wuori-Fearn, et al., 1999; Mac-

Dermid, 2001; Sathyamoorthy, Kemp et al., 2004; MacDermid, 2005; Longo, Franceschi et al., 2008). The Patient-Rated Tennis Elbow Evaluation (PRTEE) questionnaire is the only questionnaire that can specifically measure the pain and disability levels of individuals with lateral epicondylitis in various communities, including athletes and non-athletes (MacDermid, 2007)

PRTEE questionnaire, formerly known as the Patient-Rated Forearm Evaluation Questionnaire (PRFEQ), was developed so that tennis elbow braces could be evaluated for a master's project (MacDermid , 2007).

To test the PRTEE's test-retest reliability, 47 patients with unilateral lateral epicondylitis completed the PRTEE on two days in a row. The pain, function and the total scores all demonstrated excellent reliability (ICC 0.89, 0.83, 0.89, respectively). When the reliability was assessed by subgroups (men vs. women; chronic vs. acute; work-related vs. non-work-related), the ICCs were all greater than 0.75. Concurrent validity was assessed by correlating the PRTEE scores with the pain-free grip strength. The total PRTEE score (r = -0.36) and the pain subscale (r = -0.37) had a significant moderate correlation with the pain-free grip strength but not the function subscale (r = -0.30) (Overend, 1999). This questionnaire has been translated in various languages such as Chinese (Leung, Yen et al., 2004), Dutch (van Ark, Zwerver et al., 2014), French (Blanchette and Normand, 2010), Swedish (Nilsson, Baigi et al., 2008), Turkish (Altan, Ercan et al., 2010), English (Rompe, Overend et al., 2007), Greek (Stasinopoulos, Papadopoulos, et al., 2015), and Italian (Cacchio, Necozione et al., 2012). Due to the lack of a questionnaire that can measure pain and disability levels in Persian-speaking tennis players who suffer from lateral epicondylitis, accordingly, the aim of this study was to cross-cultural adaption of the original version of the PRTEE questionnaire into the Persian language, as well as to determine the validity and reliability of the Persian version in tennis players with lateral epicondylitis.

Materials and Methods

To translate the PRTEE questionnaire in Persian language for Persian-speaking tennis players, we followed guidelines for the translation in medical literature introduced by Beaton et al (Beaton, Bombardier et al., 2000). Initially, the original version of the PRTEE questionnaire was translated into Persian by two bilingual translators whose native language was Persian. Then, at a meeting with three physiotherapists who were professional English translators and aware of the concept of questioner, the quality of the two translations were compared together and then compared with the original version of the PRTEE questionnaire. Finally, taking into consideration intercultural differences, the final Persian version of the PRTEE questionnaire was prepared.

During the third stage, the prepared forward translation of the questionnaire was handed over to a bilingual translator with no background in medical sciences whose native language was English. Then, at a meeting with an English language specialist and two physiotherapists, who were familiar with English language, the backward translated questionnaire was compared to the original version and the translation was evaluated in terms of its semantic, idiomatic, experiential, and perceptual features.

Participants

In this survey, the sampling methods were non-random and accessible.

Firstly, the questionnaire was distributed among 230 tennis players with lateral epicondylitis, finally, only 102 tennis players (64 males and 38 females) with an average age range of 27±8.5 (between 15-60 years old) who were diagnosed with tennis elbow by a physician were included in this study. The tennis players who had positive results in local pressure pain test, pain during resisted wrist extension test and pain during resisted middle finger extension test entered the survey. These tennis players were selected from Mohebe Fatemeh Hospital, Azadi, Enghelab, Ararat, Velayat, Hejab sports clubs and medical clinics in Tehran and Fars provinces. The inclusion criteria of this study comprised of the presence of lateral epicon-

dylitis according to the physician's diagnosis as well as reading and writing literacy. The exclusion criteria of this study were having an infection in the elbow region, having radiculopathy and myelopathy in the neck region, thoracic out let syndrome (TOS), carpal tunnel syndrome, a history of fractures and elbow surgeries, and use of local injections of anesthetics and steroids in the past 3 months. Furthermore, 40 healthy tennis players, with the mean average age, educational level, and the level of sport activity close to the target group (28 years old), were randomly selected for the control group.

Questionnaires

Patient-Rated Tennis Elbow Evaluation (PRTEE)

This questionnaire contains 15 items and three subscales which are specifically designed for the patients with lateral epicondylitis. Regarding the pain, specific and usual activities subscales, it has 5 and 10 (6, 4) items, respectively. For each item, the participant could only select one response choice (choice labels 0 meant that there was no problem and no pain in performing the activity, and 10 meant that the activity was so hard and painful that the person was unable to perform it). The scores that the individual obtained from the different subscales were used to calculate their overall score at the end. For each participant, the overall score of 0 represented the most ideal condition, and the overall score of 100 represented the worst case scenario. The method used to calculate the overall score was initially the sum of the 10 items related to the function subscale for weighting equally with the pain subscale divided by 2. Then, the resulting numbers were added to the total pain score. It took about 5 minutes to complete the PRTEE questionnaire, indicating that it was a simple and understandable questionnaire for the patients. The PRTEE questionnaire is the only questionnaire specifically designed to measure functional problems and pain in patients with lateral epicondylitis (MacDermid 2007).

The Disabilities of the Arm, Shoulder and Hand questionnaire (DASH)

DASH questionnaire has 30 items that measure the degree of disability in the upper limb joints. The over-

all score is between 0 and 100. For each item, a score of 0 means no pain and difficulty in performing the activities, and a score of 5 means that there is a lot of pain and inability to perform the activities. In this research, the Persian version of DASH was used after the admission of the group that cross culturally adapted to Persian (Mousavi, Parnianpour et al., 2008).

Process

Data collection of this study lasted for a period of 6 months (from April 2017 to the end of September 2017). The tennis players initially completed the PRTEE and DASH questionnaires. Then, in order to assess the reliability of the questionnaire, 53 tennis players who participated in this study were asked to complete the PRTEE questionnaire after a week (Deyo, Diehr et al., 1991). In order to prevent significant changes during this period, the tennis players were asked not to receive any therapeutic interventions (medication, physiotherapy and local infusion). The research was approved by the Ethics Committee of Iran University of Medical Sciences (Ref. number: IR.IUMS.REC1395.9411452007).

Data Analysis

Construct validity

To assess the construct validity, the Pearson correlation between subscales and the total score of PRTEE and DASH questionnaires were used with a 95% confidence interval. In this research, "r" values of 0 – 0.19, 0.20 to 0.39, 0.4 to 0.49, 0.7 to 0.89 and 0.9 to

1 showed very poor, poor, moderate, strong, and very strong correlations, respectively (Cacchio, Necozione et al., 2012).

Reliability

To evaluate the reliability of the PRTEE scores, the test-retest, ICC coefficient and the coefficient with 95% confidence interval (CI) were calculated. The calculation was based on 2-way random variance analysis. Additionally, Standard Error of Measurement (SEM) $(SEM=SD[1-ICC————√]$ $SEM=SD[1-ICC])$ was calculated. The ICC value was interpreted as follows: less than 0.4 as weak reliability, 0.4 to 0.74 as moderate to good reliability, and a value greater than 0.75 showed excellent reliability (Cacchio, Necozione, et al., 2012). To measure the internal consistency of the items in each PRTEE questionnaire, Cronbach's alpha coefficient was calculated with a 95% CI. The acceptable value for the Cronbach's alpha coefficient was more than 0.70 (Cacchio, Necozione, et al., 2012). All the statistical tests were performed using SPSS 21.0 for Windows.

Results

A summary of the demographics data of the patients is presented in Table 1 and a summary of the PRTEE scores in the target and control groups is presented in Table 2. There was a significant difference in the scores of the patients (M=45.56, SD=20.56) and healthy (M=7.23, SD=5.5) tennis players; t =17.31, *P*<0.0001.

Table 1. *Demographic data of the patient and healthy groups*

Parameter	Patient group (n = 102)	Healthy group (n = 40)
Gender	Male: 64 (62.7%) Female: 38 (37.3%)	Male: 26 (65%) Female: 14 (35%)
Age (years), mean ± SD	27.75±8.5	28.45±6.8
Dominant side (Rt/Lt)	88/14	35/5
Affected side (Rt/Lt/both Educational level	84/13/5	
Under graduate	5 (4.9%)	1 (2.5%)
graduate	9 (8.8%)	(2.5%) 1
Post graduate	88 (86.3%)	38 (95%)

P value <0.001

Table 2. *Descriptive statistics of Persian PRTEE, DASH in both groups*

Variable	Patients	Control	P value
*PRTEE pain subscale score	24.08 (11.01)	3.67 (3.49)	<0.001
PRTEE function subscale score	21.48 (10. 1)	3.56 (2.81)	<0.001
PRTEE overall score	45.56 (20.56)	7.23 (5.48)	<0.001
**DASH symptoms subscales score	38.84 (16.12)	-	-
DASH function subscale score	40.33 (18.98)	-	-
DASH overall score	39.19 (16.15)	-	-

* Patient Rated Tennis Elbow Evaluation questionnaire
** Disabilities of the Arm, Shoulder, and Hand questionnaire

The Cross-Cultural Adaptation Process

In the process of cross-cultural adaptation of the questionnaire, there were differences between the backward translation and the original version of the questionnaire. For example, in special activities, Question 6 was changed from "Turn doorknob or key" to "Turning the door handle or key". In Question 7 "office bags" was replaced with "briefcase" and in Question 10 "pull up pants" was changed to "wearing trousers".

Construct validity

The construct validity was determined by measuring Pearson's correlation and the overall subscales of the PRTEE and DASH questionnaires. The results of which are summarized in Table 5. According to the data obtained in Table 3, there was a high correlation between the total scores of the PRTEE and DASH questionnaires (r = 0.88, *P*< 0.001).

Reliability

In examining the reliability of the test-retest, the PRTEE questionnaire had a 95% confidence interval for its total score, pain and function subscales as excellent ICC reported (higher than 0.90) (Table 4). The SEM values were 4.20 for total score of PRTEE , 2.71 for the pain subscale and 2.27 for functional subscale.

In the internal consistency survey, the Cronbach's

alpha for the subscale of pain was 0.92 and 0.95 for the functional subscale, and 0.96 for the total score. All of these values represented a very high internal correlation in the Persian version of the PRTEE questionnaire (in Table 5, in the event of omitting each item and adjusting the general-item correlation, the Cronbach's alpha value was mentioned for all the questions).

The T-test was used to distinguish the healthy subjects from the patients and determine the cut-off point. The total score of the questionnaire was used for the T-test for both the patient and healthy groups, the value of which was 17.3 (*P* < 0.001) according to the Youden's index (Fluss, Faraggi et al., 2005). This value indicated that the Persian version of the questionnaire was able to easily distinguish the healthy individuals from the patients.

In the 10 questionnaires, there was a number of missing/empty data, in which the average score of the other items in that subscale was placed. The participants in this research answered at least 10 out of 15 items of the questionnaire. Therefore, none of the participants were excluded for missing values in the final statistical analysis.

Table 3. *Pearson's correlation between different items of PRTEE and DASH questionnaires*

Item	PRTEE Pain subscale score r	PRTEE Function subscale score r	PRTEE Overall score R
DASH function score	0.75	0.76	0.77
DASH symptoms score	0.83	0.87	0.87
DASH overall score	0.84	0.87	0.88

Table 4. *Test–retest reliability of the Persian version of PRTEE*

m	ICC	95 (%) CI	
		Lower limit	upper limit
Pain	0.93	0.89	0.96
Function	0.94	0.90	0.96
Total	0.95	0.91	0.97

Table 5. *Adjusted item-total correlation and Cronbach's alpha when each item in the Persian PRTEE questionnaire was omitted*

Question	Adjusted item-total correlation	Cronbach's alpha when item is deleted
Item 1	0.79	0.96
Item 2	0.81	0.96
Item 3	0.85	0.96
Item 4	0.86	0.96
Item 5	0.76	0.96
Item 6	0.83	0.96
Item 7	0.87	0.96
Item 8	0.82	0.96
Item 9	0.73	0.96
Item 10	0.71	0.96
Item 11	0.87	0.96
Item 12	0.80	0.96
Item 13	0.78	0.96
Item 14	0.87	0.96
Item 15	0.72	0.96

Discussion

The PRTEE has been cross-culturally adapted for patients in Iran and translated into the Persian language. No difficulties were encountered in translating the questionnaire except for the 3 different questions, and the back translation corresponded very well to the original version. The reason why door handle replaced doorknob in the sixth question was that doorknob is not widely used in Persian language. This replacement was in accordance with the Italian version (Cacchio, Necozione et al., 2012). The reason of the next change which has occurred in question seven was that office bag is more popular among Persian language users. In question ten pull up pants was changed to wearing trousers because in formal Persian writing, pull up pants is never used and wearing trousers was the most suitable option for this replacement. In a pilot study, the translated version of the PRTEE questionnaire was handed over to 10 tennis players with tennis elbow. They were asked about the comprehensibility and fluency of the translation. All the questions were considered to be easy to understand by all the tennis players who filled out the Persian PRTEE questionnaire. They did not have any problem answering the questions. After the meeting and testing the translated version of the questionnaire, taking into account the points given by the English language specialist, the Persian version of the PRTEE questionnaire was prepared.

The results of this study showed that the Persian version of the PRTEE questionnaire was valid and reliable in the studied population. In the construct validity of the study, the Persian version of the PRTEE questionnaire had a high correlation with the Persian version of the DASH questionnaire ($r = 0.88$). The findings were consistent with the Swedish 0.88 (Nilsson, Baigi et al., 2008), Italian 0.83 (Cacchio, Necozione et al., 2012), Greek 0.71 – 0.77 (Stasinopoulos, Papadopoulos, et al., 2015), English 0.75 (Rompe, Overend et al. 2007), Turkish 0.67 (Altan, Ercan et al., 2010), and Dutch 0.65 (van Ark, Zwerver et al., 2014) versions.

In examining the test-retest reliability of it, the ICC

for the total score and subscales of pain and function was more than 0.90, which is comparable with the results from the original English version (Overend, Wuori-Fearn et al., 1999). Therefore, both versions of the PRTEE should be regarded as highly test-rest reliability. This was similar to the ICC score of PRTEE questionnaire in other languages (between 0.87-0.99) (Overend, Wuori-Fearn et al., 1999; Leung, Yen et al., 2004; Rompe, Overend et al., 2007; Nilsson, Baigi et al., 2008; Altan, Ercan et al., 2010; van Ark, Zwerver et al., 2014; Stasinopoulos, Papadopoulos et al., 2015). The results showed that the total score of the Persian version of PRTEE questionnaire had an acceptable absolute reliability (SEM = 4.20). The results of this study were similar to those of Cacchio, Leung and Van Ark studies. The SEMs were reported to be 3.25, 3.28 and 3.8, respectively in these studies.

The Cronbach's alpha level for the subscales, as well as the overall score of the Persian version of the PRTEE questionnaire were more than 0.90, indicating a high internal correlation in the Persian version of the PRTEE questionnaire. This was similar to the Cronbach's alpha score of the total PRTEE questionnaire in the Italian (Cacchio, Necozione et al., 2012), English (Rompe, Overend et al., 2007), and Swedish (Nilsson, Baigi et al., 2008) versions (0.95, 0.94, and 0.94, respectively). The analysis of each item in the questionnaire showed that all the items used in this questionnaire were significant and the Cronbach's alpha values of all the items were identical to the Cronbach's alpha total score of the questionnaire, which indicates that this questionnaire had a very high internal correlation.

Considering that none of the tennis players participating in this study received neither a minimum score (zero score) nor a maximum score (100 score), therefore, the ceiling and floor effects were not observed for the Persian version of the PRTEE questionnaire. There was consistency, in terms of not having the ceiling and floor effects in the PRTEE questionnaire, between the findings of the present study and that of a French study conducted in Canada (Blanchette and Normand, 2010).

The questionnaires offer advantages in evaluation because they are client-centered, accessible and time-efficient. They allow the comparison of clinical outcomes. They supplement, but not replace, other components of clinical evaluation such as history taking and physical examination. In this study, the Persian version of the PRTEE questionnaire was reliable and valid assessment tool that can provide accurate and useful information regarding the patient's condition to the therapists.

In the present study, there were a number of limitations such as having a limited area for taking samples. If sampling was carried out more widely, the samples could be more complete criteria that could be generalized for the Persian speaking society in Iran.

Conclusion

It can be concluded that the Persian version of the PRTEE questionnaire has an acceptable level of validity and reliability. Therefore, Iranian therapists and healthcare professionals can refer to this questionnaire to assess the initial condition and then monitor the improvements in patient with lateral epicondylitis, in a cost-effective and timely manner.

Acknowledgement

Conflict of Interest Statement

All the authors declare that they have no conflict of interest.

References

Altan, L., Ercan, İ., & Konur, S. (2010). Reliability and validity of Turkish version of the patient rated tennis elbow evaluation. Rheumatol Int, 30(8), 1049-1054.

Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. Spine, 25(24), 3186-3191.

Blanchette, M. A., & Normand, M. C. (2010). Cross-cultural adaptation of the patient-rated tennis elbow evaluation to Canadian French. J Hand Ther, 23(3), 290-300.

Cacchio, A., Necozione, S., MacDermid, J. C., Rompe, J. D., Maffulli, N., Di Orio, F., ... & Paoloni, M. (2012). Cross-cultural adaptation and measurement properties of the Italian version of the Patient-Rated Tennis Elbow Evaluation (PRTEE) questionnaire. Physical therapy, 92(8), 1036-1045.

Deyo, R. A., Diehr, P., & Patrick, D. L. (1991). Reproducibility and responsiveness of health status measures statistics and strategies for evaluation. Controlled clinical trials, 12(4), S142-S158.

Fluss, R., Faraggi, D., & Reiser, B. (2005). Estimation of the Youden Index and its associated cutoff point. Biometrical Journal: Journal of Mathematical Methods in Biosciences, 47(4), 458-472.

Gruchow, H. W., & Pelletier, D. (1979). An epidemiologic study of tennis elbow: incidence, recurrence, and effectiveness of prevention strategies. The American Journal of Sports Medicine, 7(4), 234-238.

Guillemin, F. (1995). Cross-cultural adaptation and validation of heatth status measures. Scand J Rheumatol, 24(2), 61-63.

Guillemin, F., Bombardier, C., & Beaton, D. (1993). Cross-cultural adaptation of health-related quality of life measures: literature review and proposed guidelines. J Clin Epidemiol, 46(12), 1417-1432.

Hudak, P. L., Amadio, P. C., Bombardier, C., Beaton, D., Cole, D., Davis, A., ... & Punnett, L. (1996). Development of an upper extremity outcome measure: the DASH (disabilities of the arm, shoulder, and head). Am J Ind Med, 29(6), 602-608.

John, M., Angst, F., Pap, G., Junge, A., & Mannion, A. F. (2007). Cross-cultural adaptation, reliability and validity of the Patient Rated Elbow Evaluation (PREE) for German-speaking patients. Clin Exp Rheumatol, 25(2), 195.

Kari Kurppa, M. O., Viikarl-Juntura, E., MO, E. K., & Matti Huuskonen, M. O. (1991). Incidence of tenosynovitis or peritendinitis and epicondylitis in a meat-processing

factory. Scand J Work Environ Health, 17, 32-7.

King, G. J., Richards, R. R., Zuckerman, J. D., Blasier, R., Dillman, C., Friedman, R. J., ... & Woo, S. L. (1999). A standardized method for assessment of elbow function. J Shoulder Elbow Surg, 8(4), 351-354.

Kohia, M., Brackle, J., Byrd, K., Jennings, A., Murray, W., & Wilfong, E. (2008). Effectiveness of physical therapy treatments on lateral epicondylitis. J Sport Rehabil, 17(2), 119-136.

Lambert, M. J., Burlingame, G. M., Umphress, V., Hansen, N. B., Vermeersch, D. A., Clouse, G. C., & Yanchar, S. C. (1996). The reliability and validity of the Outcome Questionnaire. Clin Psychol Psychother, 3(4), 249-258.

Leclerc, A., Landre, M. F., Chastang, J. F., Niedhammer, I., & Roquelaure, Y. (2001). Upper-limb disorders in repetitive work. Scandinavian journal of work, environment & health, 27(4), 268-278.

Leung, H. B., Yen, C. H., & Tse, P. Y. T. (2004). Reliability of Hong Kong Chinese version of the Patient-rated Forearm Evaluation Questionnaire for lateral epicondylitis. Hong Kong Med J, 10(3), 172-178.

Longo, U. G., Franceschi, F., Loppini, M., Maffulli, N., & Denaro, V. (2008). Rating systems for evaluation of the elbow. Br Med Bull, 87(1), 131-161.

MacDermid, J. (2005). Update: the patient-rated forearm evaluation questionnaire is now the patient-rated tennis elbow evaluation. J Hand Ther, 18(4), 407-410.

MacDermid, J. C. (2001). Outcome evaluation in patients with elbow pathology: issues in instrument development and evaluation. J Hand Ther, 14(2), 105-114.

MacDermid, J. C. (2007). The Patient-Rated Tennis Elbow Evaluation (PRTEE) User Manual. Hamilton, Canada: School of Rehabilitation Science, McMaster University.

Mousavi, S. J., Parnianpour, M., Abedi, M., Askary-Ashtiani, A., Karimi, A., Khorsandi, A., & Mehdian, H. (2008). Cultural adaptation and validation of the Persian version of the Disabilities of the Arm, Shoulder and Hand (DASH) outcome measure. Clin Rehabil, 22(8), 749-757.

Nilsson, P., Baigi, A., Marklund, B., & Månsson, J. (2008). Cross-cultural adaptation and determination of the reliability and validity of PRTEE-S (Patientskattad Utvärdering av Tennisarmbåge), a questionnaire for patients with lateral epicondylalgia, in a Swedish population. BMC Musculoskelet Disord, 9(1), 79.

Ono, Y., Nakamura, R., Shimaoka, M., Hiruta, S., Hattori, Y., Ichihara, G., ... & Takeuchi, Y. (1998). Epicondylitis among cooks in nursery schools. Occup Environ Med, 55(3), 172-179.

Overend, T. J., Wuori-Fearn, J. L., Kramer, J. F., & MacDermid, J. C. (1999). Reliability of a patient-rated forearm evaluation questionnaire for patients with lateral epicondylitis. J Hand Ther, 12(1), 31-37.

Pransky, G., Feuerstein, M., Himmelstein, J., Katz, J. N., & Vickers-Lahti, M. (1997). Measuring functional outcomes in work-related upper extremity disorders: development and validation of the Upper Extremity Function Scale. J Occup Environ Med, 39(12), 1195-1202.

Regan, W., Wold, L. E., Coonrad, R., & Morrey, B. F. (1992). Microscopic histopathology of chronic refractory lateral epicondylitis. Am J Sports Med, 20(6), 746-749.

Rompe, J. D., Overend, T. J., & MacDermid, J. C. (2007). Validation of the patient-rated tennis elbow evaluation questionnaire. J Hand Ther, 20(1), 3-11.

Sathyamoorthy, P., Kemp, G. J., Rawal, A., Rayner, V., & Frostick, S. P. (2004). Development and validation of an elbow score. Rheumatology, 43(11), 1434-1440.

Stasinopoulos, D., Papadopoulos, C., Antoniadou, M., & Nardi, L. (2015). greek adaptation and validation of the Patient-rated Tennis Elbow Evaluation (prtee). J Hand Ther, 28(3), 286-291.

van Ark, M., Zwerver, J., Diercks, R. L., & van den Akker-Scheek, I. (2014). Cross-cultural adaptation and reliability and validity of the Dutch Patient-Rated Tennis Elbow Evaluation (PRTEE-D). BMC Musculoskelet Disord, 15(1), 270.

Verhaar, J. A. N. (1992). Tennis elbow [thesis]. Maastricht: State University Maastricht.

Verhaar, J. A. N. (1994). Tennis elbow. Int Orthop, 18(5), 263-267.

معادل‌سازی فرهنگی (ترجمه) و تعیین روایی و پایایی نسخهٔ فارسی پرسش‌نامهٔ PRTEE (Patient–Rated Tennis Elbow Evaluation) در تنیس‌بازان ایرانی مبتلا به التهاب اپیکندیل خارجی آرنج

علی منصوری۱، شهره نوری‌زاده دهکردی*۲، سهیل منصور سوهانی۱، افسون نودهی مقدم۳

۱. دانشجوی کارشناسی ارشد، گروه فیزیوتراپی، قطب فیزیوتراپی ایران، دانشکدهٔ توان‌بخشی، دانشگاه علوم پزشکی و خدمات درمانی ایران، تهران، ایران

۲. دانشیار، گروه فیزیوتراپی، قطب فیزیوتراپی ایران، دانشکدهٔ توان‌بخشی، دانشگاه علوم پزشکی و خدمات درمانی ایران، تهران، ایران

۳. دانشیار، دپارتمان فیزیوتراپی، دانشکدهٔ توان‌بخشی، دانشگاه علوم بهزیستی و توان‌بخشی، تهران، ایران

اطلاعات مقاله	**چکیده**

نویسندهٔ مسئول:

شهره نوری‌زاده دهکردی

دانشیار، گروه فیزیوتراپی، قطب فیزیوتراپی ایران، دانشکدهٔ توان‌بخشی، دانشگاه علوم پزشکی و خدمات درمانی ایران، تهران، ایران

پست‌الکترونیک:

Noorizadeh.sh@iums.ac.ir

زمینه و هدف: هدف از پژوهش حاضر، معادل‌سازی بین فرهنگی و ترجمهٔ پرسشنامهٔ PRTEE به زبان فارسی است. همچنین پایایی و روایی نسخهٔ فارسی پرسش‌نامهٔ PRTEE در ورزشکاران رشتهٔ تنیس مبتلا به التهاب اپیکندیل خارجی آرنج مورد ارزیابی قرار می‌گیرد.

روش کار: نسخهٔ اصلی پرسش‌نامهٔ PRTEE با توجه به دستورالعمل‌هایی که Beaton و همکاران مطرح کرده بودند، به زبان فارسی ترجمه و بومی‌سازی شد. سپس این پرسش‌نامه بین ۱۰۲ بیمار (۶۴ مرد و ۳۸ زن) مبتلا به التهاب اپیکندیل خارجی و ۴۰ تنیس‌باز سالم توزیع شد. برای سنجش اعتبار سازه از پرسش‌نامهٔ DASH (Disabilities of the Arm, Shoulder, and Hand questionnaire) استفاده شد. همچنین پایایی پرسش‌نامه از دو جنبهٔ تکرارپذیری آزمون ـ بازآزمون با فاصلهٔ زمانی یک هفته و هم‌خوانی درونی انجام گرفت.

نتایج: همبستگی بالایی بین پرسش‌نامه‌هایPRTEE و DASH به دست آمد (r=۰/۸۸). ضریب آلفای کرونباخ برای نمرهٔ کل پرسش‌نامه PRTEE ۰/۹۶ و میزان ICC نمرهٔ کل آن ۰/۹۵ به دست آمد. همچنین اختلاف معناداری بین نمرات دو گروه مبتلا به التهاب اپیکندیل خارجی آرنج (انحراف‌معیار: ۲۰/۵۶، میانگین: ۴۵/۵۶) با گروه سالم (انحراف‌معیار: ۵/۵، میانگین: ۷/۲۳) وجود داشت (P<۰/۰۰۰۱، T=۱۷/۳۱).

نتیجه‌گیری: نسخهٔ فارسی پرسش‌نامهٔ PRTEE ابزاری روا و پایا برای تشخیص و ارزیابی میزان درد و ناتوانی ورزشکاران پس از ابتلا به التهاب اپیکندیل خارجی آرنج است.

کلید واژه‌ها: پرسشنامه PRTEE، روایی، پایایی، آرنج تنیس بازان