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Greek adaptation and validation of the Patient-Rated Tennis Elbow Evaluation (PRTEE)

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ABSTRACT

Purpose of the study: To cross-culturally adapt and validate the Greek version of the Patient-Rated Tennis Elbow Evaluation (PRTEE-G) Questionnaire.
Methods: Four bi-lingual translators were involved in the translation and cultural adaptation procedures. Eighty-two patients (61 women and 21 men) with Lateral Elbow Tendinopathy (LET) participated in the study. To establish test - retest reliability, the patients were asked to complete the PRTEE-G Questionnaire before and after the first physiotherapy treatment. Internal consistency of the translated instrument was measured using Cronbach 'alpha'. An intraclass correlation coefficient was used to assess the test - retest reliability of the PRTEE-G Questionnaire. Concurrent validity was measured by correlating the PRTEE-G Questionnaire scores with the Greek version of the Disabilities of the Arm, Shoulder, and Hand Questionnaire (DASH) scores using Pearson's correlation coefficient.
Results: The Greek PRTEE questionnaire has acceptable internal consistency (Cronbach 'alpha' = 0.95), excellent test - retest reliability (ICC = 0.94) and demonstrates expected concurrent validity ($r > 0.72$).
Conclusion: The Greek version of PRTEE Questionnaire is a reliable and valid measure when administered to patients with LET.

Introduction

Lateral elbow tendinopathy (LET), commonly referred to as lateral epicondylitis, lateral epicondylalgia, lateral epicondylosis and/or tennis elbow is one of the most common work-related or sport-related pain disorders of the arm. However, LET is the most appropriate term to use in clinical practice because all the other terms make reference to inappropriate etiological, anatomical and pathophysiological terms.[1] The condition is usually defined as a syndrome of pain in the area of the lateral epicondyle[2–4] that may be degenerative or failed healing tendon response rather than inflammatory.[5] The dominant arm is commonly affected, the peak prevalence of LET is between 30 and 60 years of age,[2,6] and the disorder appears to be of longer duration and severity in women.[2,6,7]

Pain and decreased function are the main complaints of patients with LET. A wide array of physiotherapy treatments such as electrotherapeutic (ultrasound, laser, ESWT) and non-electrotherapeutic (exercise programme, soft tissue techniques, manual therapy) modalities have been recommended for the management of LET.[8–10] These treatments have different theoretical mechanisms of action, but all have the same aim: to reduce pain and improve function.

Several instruments have been developed to determine the outcome of elbow conditions[11–15] including LET. The PRTEE questionnaire[16] which is an updated version of the Patient-Rated Forearm Evaluation Questionnaire (PRFEQ),[16,17] is a 15-item questionnaire specifically designed for patients with LET. The items investigate pain (5 items) and the degree of difficulty in performing various activities (6 specific and 4 usual activity items) due to LET over the preceding week. Patients rate their pain and functional limitation on a scale of 0–10, with 0 being no difficulty and 10 being unable to perform. The scores for the various items are used to calculate an overall scale score ranging from 0 (best score) to 100 (worst score). The scale is scored such that 50% of the score is obtained by summing the five pain items and the remaining 50% is by obtained by summing the 10 functional (specific and usual activity) items and then divided that subtotal by 2. This creates a score out of 100 points where 100 is the highest level of pain and disability. The PRTEE questionnaire, provides a very quick (it takes less than 5 min to complete), easy, and standardized quantitative description of pain and functional disability in patients with LET.[18] It has been translated and culturally adapted into German,[18] Italian[19] and Swedish.[20]

There is no Greek version of the PRTEE questionnaire available at present. In order to administer this questionnaire to a Greek-speaking population, a rigorous process of cross-cultural adaption and validation is needed. Thus, the aim of the current study was to

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translate and culturally adapt the PRTEE into the Greek language and culture and to test its validity and reliability.

Methods

The official guidelines for cross-cultural adaption were used in the current study.[21,22] Therefore the following three phases were followed: (1) translation and adaption into the Greek culture and language; (2) assessment of the comprehensibility of the pre-final version and modification; and (3) the assessment of validity and reliability of the final version. The authors obtained approval from the first author of the original PRTEE questionnaire to translate and culturally adapt the questionnaire into Greek.

Translation and cultural adaption

The first step was the forward translation of the English (original) PRTEE questionnaire into Greek by two independent translators (D.S. and C.P.), who are Greek in origin. Both translators aimed to translate the scale conceptually rather than literally. In their written reports, they recorded their comments and difficulties during the translation process and the criteria used to make their decisions. The two reports were then compared and discussed amongst them and a consensus was reached. Therefore, a single Greek version of the scale was created from the two reports and the comments of the two translators. This version was then translated back into English by two official English translators (M.A. and L.N.), who compared the scale with the original one to confirm whether the semantic, conceptual, and experimental equivalence was met. The pre-final translation was constructed by a group of experts, after examining these two English versions. This pre-final version was then used for pilot testing (Appendix).

Piloting the pre-final version

The pre-final version of the questionnaire was tested in a group of 12 participants who reported to have LET (8 women and 4 men), mean age: 47.3 $\pm$ 10.4 years. They were all native Greek speakers. All participants were asked to complete the questionnaire by reading the instructions. Each participant was asked to provide the research team with any comments on the questionnaire or words that were difficult to apprehend. All questions and answer options were found to be well conceivable by all participants. Thus, no further changes were made to the pre-final version.

Reliability and validity of the final Greek version of the PTREE questionnaire

Subjects

Participants were recruited from 17 different private physiotherapy clinics in Athens, Greece from September 2012 to February 2014. Patients between 18 and 60 years old were included in the study if, at the time of presentation they had been evaluated as having clinically diagnosed LET for at least 4 weeks.[23] Patients were included in the study if they reported (a) pain on the facet of the lateral epicondyle when palpated, (b) less pain during resistance supination with the elbow in 90° of flexion rather than in full extension and (c) pain in at least two of the following four tests[1,23]:

1. Tomsen's test (resisted wrist extension)
2. Resisted middle finger test
3. Mill's test (full passive flexion of the wrist)
4. Handgrip dynamometer test.

Patients were excluded from the study if they had one or more of the following conditions: (a) dysfunction in the shoulder, neck and/or thoracic region; (b) local or generalized arthritis; (c) neurological deficit; (d) radial nerve entrapment; (e) limitations in arm functions; (f) the affected elbow had been operated on and (g) had received any conservative treatment for the management of LET in the 4 weeks before entering the study.[23]

All patients were referred for physical therapy by a private practice doctor or by the National Health Sector. All participants were examined by a physical therapist to evaluate if their symptoms were attributable to soft tissue lesions. Finally, informed consent was obtained from all participants. The study protocol was approved by the Ethics Committee of the European University of Cyprus, Cyprus. The study was conducted in accordance with the Declaration of Helsinki.

Procedures

In order to assess test-retest reliability, the participants were asked to complete the Greek version of PTREE questionnaire twice during their initial visit to the physiotherapy clinic. The first was before and the second was right after their first treatment. Physiotherapy treatment was controlled across all participants. Physiotherapists assessed the participants in the first treatment. This initial physiotherapy session was considered unlikely to elicit any noticeable effects. The same process was followed by Irrgang et al in the original work for the development of the Knee Outcome Survey-Activities of Daily Living Scale (KOS-ADLS).[24] The test-retest reliability was established by comparing the results of the first with the second PTREE questionnaire. Details about the PTREE-G questionnaire score were presented in the introduction section.

To assess concurrent validity, the results of the PTREE-G questionnaire were correlated with the results of the Greek version of Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire.[25] All patients were asked to complete the DASH questionnaire along with the PTREE questionnaire before treatment. The DASH questionnaire has been translated into different languages such as Italian[26] and is an upper-extremity specific outcome measure[14] which has been shown to be reliable and valid in people with elbow disorders.[18–20] It measures symptoms and functional disorders of the elbow joint.

Statistical analysis

The analysis was performed with SPSS Statistical Package for Windows (v. 20, IBM, New York, USA). The statistical level of significance was set at $p < 0.05$. All data were tested for normal distribution using the Kolmogorov–Smirnov test. If the criterion of normality was met, parametric tests were used. Otherwise, non-parametric statistics were used. Test-retest reliability of the item and total scores of the PTREE-G questionnaire was evaluated by using the Intraclass Correlation Coefficient (ICC) with a two-way random model and type: absolute agreement.[22,27] The smallest detectable difference (SDD) was calculated based on the data obtained from the test-retest reliability analysis. Internal consistency was estimated using Cronbach alpha, a measure which indicates the strength of the relationship between the items within the questionnaire.[28] A Cronbach alpha value greater than 0.80 was considered as acceptable.[29] Concurrent validity was tested by examining correlation of the DASH questionnaire data with PTREE-G questionnaire data collected before and after treatment using Pearson's product moment correlation coefficient. The r values were interpreted as follows: 0.00–0.19 means very weak correlation, 0.20–0.39 means weak correlation, 0.40–0.69 means moderate correlation, 0.70–0.89 means strong correlation, and 0.90–1.00 means very strong correlation.[30] The correlations were