RESEARCH REPORT

Greek adaptation and validation of the Patellofemoral Pain Syndrome Severity Scale

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Abstract   The purpose of this study was to cross-culturally adapt and validate the Greek version of the Patellofemoral Pain Syndrome (PFPS) Severity Scale, a self-reported instrument used for patients with PFPS. Four bi-lingual translators were involved in the translation and cultural adaptation procedures. Eighty-seven patients with PFPS (51 women and 36 men) participated in the study. To establish test–retest reliability, the patients were asked to complete the PFPS Severity Scale twice at initial visit; before and after physiotherapy treatment. The Greek version of the Knee Outcome Survey-Activities of Daily Living Scale (KOS-ADLS) was also administered once. Internal consistency of the translated instrument was measured using Cronbach α. An intraclass correlation coefficient was used to assess the test–retest reliability of the PFPS Severity Scale. Concurrent validity was measured by correlating the PFPS Severity Scale scores with the KOS-ADLS scores using Pearson's correlation coefficient. The results showed that the Greek PFPS Severity Scale has good internal consistency (Cronbach $\alpha = 0.949$), test–retest reliability (ICC $= 0.946$) and concurrent validity ($r > 0.7$). In conclusion, the Greek version of PFPS Severity Scale is a reliable and valid measure when administered to patients with PFPS.

Introduction

Patellofemoral pain syndrome (PFPS) is one of the most common knee problem physicians have to confront, and the second most common musculoskeletal complaint presented to physiotherapists [1,2]. PFPS is characterized by diffuse retropatellar or peripatellar pain during functional activities such as stair climbing, squatting and prolonged knee

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flexion while sitting [3,4]. It represents 70% of anterior knee pain (AKP), affects mainly young active adults and is associated with abnormal loading of the patellofemoral joint, malalignment of the lower extremity and/or the patella, overactivity, and muscular imbalance of the lower extremity [5].

The PFPS Severity Scale [6] is a useful instrument used to measure patellofemoral pain associated with functional activities. It consists of 10 questions regarding PFPS pain in a visual analogue scale (VAS). Each VAS line is 10 cm long and the end point descriptors are "none" and "unbearable". A box with a statement of "not attempted" accompanies eight out of 10 questions because not all activities are undertaken by the person with PFPS; either because they are too painful or they are not in their regular weekly routine. It is a relatively new scale compared to other common and popular scales such as the AKP Scale (AKPS), [7] and it has only been translated and culturally adapted into Chinese [8]. The PFPS Severity Scale is also used increasingly by researchers in the field [9,10]. However, there is no Greek version of the PFPS Severity Scale 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 translate and culturally adapt the PFPS Severity Scale into the Greek language and culture and to test its validity and reliability.

Methods

The official guidelines of the cross-cultural adaptions were used in the current study [11,12]. Therefore the following three phases had to be 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 AKPS to translate and culturally adapt the questionnaire into Greek.

Translation and cultural adaption

The first step was the forward translation of the English (original) PFPS Severity Scale 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.

Piloting the pre-final version

The pre-final version of the scale was tested in a group of 35 participants consisting of students and staff of the European University of Cyprus (EUC) who reported to have PFPS (19 women and 16 men), mean age: 32.1 ± 12.8 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 PFPS Severity Scale

Subjects

Participants were recruited from 10 different private physiotherapy clinics in Athens, Greece. Patients between 18 and 45 years old were included in the study if, at the time of presentation they had been evaluated as having clinically diagnosed PFPS for at least 4 weeks [3—6]. PFPS was defined as a syndrome in which the pain was located around or beneath the patella that could be reproduced with retropatellar palpation or patellar compression [3,4]. All patients were referred for physical therapy by a private practice doctor or by the National Health Sector. However, all participants were examined by a physical therapist to evaluate if their symptoms were attributable to soft tissue lesions. Moreover, patients over the age of 45 were excluded to control for the possible effects of degenerative joint disease [13]. 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 PFPS Severity Scale twice during their initial visit to the physiotherapy clinic. The first was before and the second was right after their first treatment. 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) [14]. The test—retest reliability was established by comparing the results of the first with the second PFPS Severity Scale. The total score of the PFPS Severity Scale was normalized to 100 after considering the number of the questions patients completed. For example, if a patient answered only eight questions out of 10, and scored 42/80, the total score was 52.5/100.

To assess concurrent validity, the results of the PFPS Severity Scale were correlated with the results of the Greek version of KOS-ADLS [15], a scale that all patients were asked to complete along with the PFPS Severity Scale before treatment. The KOS-ADLS is a scale designed