

# Translation and cultural adaptation into Spanish of the IKDC-Subjective knee form and Tegner Activity Scale

## Traducción y adaptación cultural al español de la escala IKDC-Subjetiva y la Escala de Actividad de Tegner

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### Abstract

**Objective:** To perform the translation and cultural adaptation into Spanish of the IKDC-Subjective Knee Form (IKDC-Subjective) and the Tegner Activity Scale (TAS). These are very relevant and widely used subjective scales, but their Spanish version is not available. **Methods:** The ISPOR methodology based on ten stages was followed: 1) preparation, 2) forward translation (two translations from English to Spanish), 3) reconciliation (unification of the two Spanish versions), 4) back translation (translation of the unified Spanish version into English), 5) back translation review (comparison with the original scale), 6) harmonization, 7) cognitive debriefing (assessment of comprehensibility with 10 patients and 10 doctors), 8) review, 9) proofreading, and 10) final report. **Results:** The translation and cultural adaptation into Spanish of the IKDC-Subjective and TAS scales have been performed. When comparing the back translation into English and the original English version, complete conceptual equivalence was observed in all items. The comprehension tests of both scales showed that all items presented "clear comprehensibility". **Conclusions:** When applying the IKDC-Subjective and TAS scales to Spanish-speaking patients, it is recommended to use the Spanish version presented in this article.

**Keywords:** Translation. Cross-cultural adaptation. IKDC. Tegner. Spanish.

### Resumen

**Objetivo:** Realizar la traducción y adaptación cultural al idioma español de las escalas IKDC-Subjective Knee Form (IKDC-Subjetiva) y Tegner Activity Scale (TAS). Son escalas subjetivas muy relevantes y muy utilizadas, pero no se dispone de su versión en español. **Métodos:** Se siguió la metodología ISPOR basada en diez etapas: 1) preparación, 2) traducción directa (dos traducciones del inglés al español), 3) reconciliación (unificación de las dos versiones españolas), 4) traducción inversa (traducción de la versión unificada española al inglés), 5) revisión de la traducción inversa (comparación con la escala original), 6) armonización, 7) prueba de comprensión (valoración de la comprensibilidad con 10 pacientes y 10 médicos), 8) revisión, 9) corrección de errores y 10) informe definitivo. **Resultados:** Se ha realizado la traducción y adaptación cultural al idioma español de las escalas IKDC-Subjetiva y TAS. Al comparar la traducción inversa al inglés y la versión original inglesa se observó una completa equivalencia conceptual en todos los ítems. Las pruebas de comprensión de ambas escalas mostraron que todos los ítems presentaban «comprensibilidad clara». **Conclusiones:** Al aplicar las escalas IKDC-Subjetiva y TAS a pacientes de habla española es recomendable utilizar la versión en español presentada en este artículo.

**Palabras clave:** Traducción. Adaptación transcultural. IKDC. Tegner. Español.

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## Introduction

Patient-reported outcomes, known as PROMs (*Patient-Reported Outcome Measure*), are very important for assessing patients' subjective perception of pain, functionality, quality of life, and activity level in relation to a pathology or intervention<sup>1</sup>. Using translated and culturally adapted scales following a systematic and validated method allows the use of the most understandable language, terms, and expressions for the target population<sup>2</sup>.

Various subjective scales are used in the field of knee pathology<sup>1</sup>. The *International Knee Documentation Committee Subjective Knee Evaluation Form* (IKDC-Subjective) was created by an international committee of knee experts in 2000<sup>3</sup>. This knee-specific PROM consists of 10 questions divided into three sections (symptoms, sports activity, and functionality). The IKDC-Subjective has been validated for a wide variety of knee pathologies<sup>4,5</sup>. On the other hand, the *Tegner Activity Scale* (TAS) assesses the maximum level of sports or work activity (levels 0-10) performed by the patient<sup>6</sup>. Although initially designed for knee ligament pathology, it has also been validated for other injuries of this joint<sup>7,8</sup>.

The IKDC-Subjective<sup>9-13</sup> and TAS<sup>14-16</sup> scales have been translated into several languages. Despite being widely used scales, there is no Spanish translation performed using a systematic and validated method, and even less so a cultural adaptation to our population. The aim of this study was to perform the translation and cultural adaptation into Spanish of the IKDC-Subjective and TAS scales.

## Methods

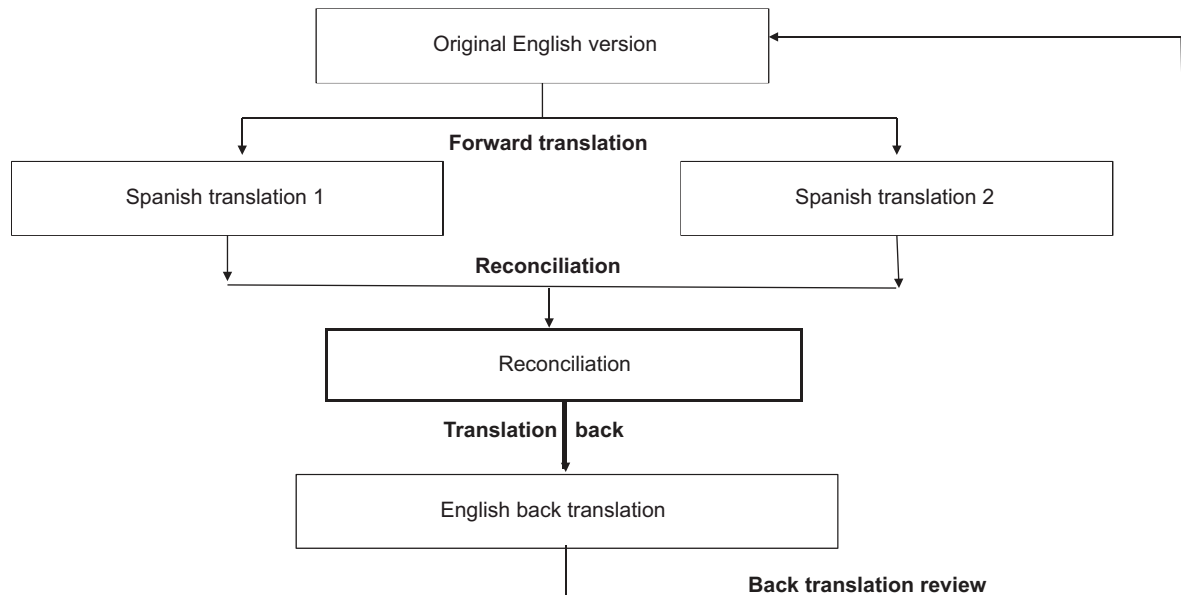
The Clinical Research Ethics Committee of our hospital approved the realization of this study.

To carry out the translation and cross-cultural adaptation into Spanish, the original versions of the IKDC-Subjective<sup>3</sup> and TAS<sup>6</sup> scales were used. The systematic approach and guidelines proposed by the ISPOR guide (*Principles of Good Practice for the Translation and Cultural Adaptation Process for PROMs*)<sup>2</sup>, which distinguishes 10 stages (Fig. 1), were followed:

- 1) Preparation: permission was requested from the author (Tegner) to use his work (TAS), he was invited to participate in this project, and he provided us with the latest version of the scale. The use of the IKDC-Subjective scale is

authorized for academic purposes by the American Orthopaedic Society for Sports Medicine. During this stage, the different roles within the working group were assigned. The main author (OP) and the second author (DGM) were the guides for the execution of the work and the mediators in discrepancies.

- 2) Forward translation: two independent translations from English to Spanish were performed for each scale, for which two native Spanish translators were engaged, one with clinical experience and an advanced level of English (OP), and the other with an official translation certificate but unrelated to clinical practice.
- 3) Reconciliation: the two direct translations into Spanish of each scale were unified by an independent native Spanish person with an advanced level of English (YL), based on the recommendations included in the ISOQOL TCA-SIG guide<sup>17</sup>.
- 4) Back translation: the unified Spanish version was translated back into English by a third official translator, a native English speaker and unrelated to clinical practice.
- 5) Back translation review: the two main authors observed the similarities and differences between the scale obtained after back translation and the original scale. The concordance of each item between the two versions was assessed to accept it as cognitively equivalent. In case of discrepancies, the original authors would be consulted regarding their degree of agreement on the concordance.
- 6) Harmonization: the resolution of discrepancies between the translations was carried out by the two main authors. The conceptual equivalence of each item was evaluated.
- 7) Cognitive debriefing: 10 patients who consecutively attended the knee unit's outpatient clinic were selected. The inclusion criteria were: age > 18 years, knee pathology, native Spanish speaker, and no cognitive impairment. They were informed about the study, accepted to participate, and signed the informed consent. The main authors applied the scales to these 10 patients, dichotomously assessing the comprehensibility of each item (clear/confusing) and recording their suggestions to improve comprehensibility. Additionally, five orthopedic surgery and traumatology physicians and five physical medicine and rehabilitation physicians, all



**Figure 1.** Schematic summary of the translation and cultural adaptation procedure of the scales following the methodology proposed in the ISPOR guide<sup>2</sup>.

native Spanish speakers, were randomly selected. Through a doctor-patient relationship simulation exercise, the authors applied the scale to the physicians. The authors asked them about the comprehensibility of the items (clear/confusing), recorded successes and errors when applying the scale, and noted their suggestions to improve comprehensibility.

- 8) Cognitive debriefing review: the main authors reviewed the results. To accept an item as “clearly comprehensible,” a comprehension rate of 80% or more is required<sup>18</sup>.
- 9) Proofreading: errors, discrepancies, or lack of concordance in the translations were corrected.
- 10) Final report: definitive elaboration of the translated and culturally adapted scale into Spanish. Drafting of this paper to present the methodology followed and the definitive scale.

## Results

Following the methodology proposed by the ISPOR guide<sup>2</sup> the translations with cross-cultural adaptation of the IKDC-Subjective (see Supplementary Material 1) and TAS (see Supplementary Material 2) scales were obtained. The different versions of the IKDC and TAS scales (original English version, direct Spanish translations, reconciled Spanish version, and back

translation into English) are presented in Supplementary Material 3 and 4, respectively.

When comparing the back translation into English and the original version, a very high degree of similarity and complete conceptual equivalence were observed in all items (Supplementary Material 3 and 4).

The comprehension tests of the two scales were performed on 10 patients who attended the outpatient clinic at the Knee Unit and 10 doctors (five from orthopedic surgery and traumatology and five from physical medicine and rehabilitation). All items were classified as “clearly comprehensible” by 100% of the patients and doctors to whom the scales were applied.

## Discussion

The most important result of this work is that we have performed the translation and cultural adaptation into Spanish of the IKDC-Subjective and TAS scales. For this, we have followed the methodology proposed by the ISPOR guide<sup>2</sup>. Having a scale translated and cross-culturally adapted following a systematic and validated method offers multiple advantages. It allows the physicians to quickly access a reliable scale in their own language, without having to perform translations. These informal translations<sup>15</sup>, often performed in an unplanned manner while applying the scale to the patient, consume time and require effort. Furthermore, since they are performed without following a systematic

methodology, they can introduce biases or errors. Regarding research, it allows for the homogeneous use of a scale, facilitating comparison between studies. Finally, the scale uses the most understandable language, terms, and expressions for the patients<sup>2</sup>.

The IKDC-Subjective and TAS scales have been translated into various languages, but until now, an official Spanish version was not available. When reviewing articles with translations into other languages, it can be observed that most have followed a systematic methodology very similar to the one we used. Like other authors, we believe it is key to follow structured guidelines when performing a translation and cultural adaptation (such as the ISPOR guide<sup>2</sup> or Beaton's<sup>19</sup>), in order to homogenize the translation process, guarantee a level of quality, and limit errors.

In our study, the reconciliation stage was carried out according to the ISOQOL (International Society for Quality of Life Research) guide. Of the 10 items on the IKDC scale, eight showed exact concordance, and one showed minor differences that did not affect the understanding of the parameter. Referring to question 4 ("How stiff or swollen has your knee been?"), the non-medical translator used the gradation "none, mild, moderate, quite, or extreme," and the medical translator used "nothing, slight, moderate, much, extreme." In question 7, there were relevant differences. It was translated by the non-medical translator as "What is the maximum level of activity you can perform without feeling your knee giving way?" and by the medical translator as "(.) without feeling your knee unstable?" In both cases, the medical translation was considered to reflect the original information more correctly and precisely.

On the other hand, of the 11 items on the TAS scale, five showed exact concordance and six showed slight differences. Most of the differences were due to the various ways of mentioning a sport. In each case, the option considered most understandable for the target population was selected. For example, *running on even surface* was translated by one translator literally as "correr en superficie desigual" (running on an uneven surface), while the other translated it as "correr en terreno irregular" (running on irregular terrain). We considered the latter translation and adaptation to be better. Another difference was that the term work, which appears in several parameters, was translated by one translator as "actividad" and by another as "trabajo." It was decided to use the second term, as it was considered more specific to refer to "actividad laboral." The title of the scale given by the medical translator, "Escala de actividad de Tegner" (Tegner

Activity Scale), was used, instead of the non-medical translator's title, which was "Puntuación de la escala de Tegner" (Tegner Scale Score).

We believe it is important to highlight that this study not only performed a literal translation but also a cultural adaptation. For example, the occupational activity "reindeer herder" is not applicable to our target population; instead, the term "large mammal farmer" was used. When translating the IKDC scale into Arabic, Ahmed et al.<sup>11</sup> also emphasized the importance of performing a correct cultural adaptation. They argued that adaptation is necessary to achieve excellent equivalence with the original version, adopting the habits, way of life, and manner of expression of the society to which it is addressed. Tigerstrand et al.<sup>12</sup>, in their Swedish translation, changed the term *basketball* to *handball* or *floorball*, as they considered these sports to be more common in their country and to have similar knee requirements. Likewise, in the Indonesian translation, the term *skiing* was replaced by "badminton."

Finally, in this study, the back translation into English performed by our team and the original English version were compared, and a very high degree of similarity and complete conceptual equivalence were found in all items. This review of the back translation allowed us to verify that the translation procedure had been carried out correctly and that we could use the Spanish version. Subsequently, comprehension tests were carried out to ensure that the scales were understandable for both doctors and patients. In both scales, 100% of the items were classified as "clearly comprehensible."

## Conclusions

The translation and cultural adaptation into Spanish of the IKDC-Subjective and TAS scales have been performed. It is recommended to use these two versions when the IKDC-Subjective and TAS scales in the Spanish-speaking population.

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## Conflicts of interest

The authors declare that they have no conflicts of interest.

## Ethical considerations

**Protection of persons and animals.** The authors declare that the procedures followed conformed to the ethical standards of the responsible human experimentation committee and in accordance with the World Medical Association and the Declaration of Helsinki.

**Confidentiality, informed consent, and ethical approval.** The authors have followed the confidentiality protocols of their institution, have obtained informed consent from the patients, and have the approval of the Ethics Committee. The recommendations of the SAGER guidelines have been followed, according to the nature of the study.

**Declaration on the use of artificial intelligence.** The authors declare that they did not use any type of generative artificial intelligence for the writing of this manuscript.

## Supplementary material

Supplementary material is available at DOI: 10.24875/CIRU.23000460. This material is provided by the corresponding author and published online for the benefit of the reader. The content of the supplementary material is the sole responsibility of the authors.

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