



## Original Article

### Translation to Filipino and Validation of the Victorian Institute of Sport Assessment-Patella (VISA-P) Questionnaire for Patellar Tendinopathy

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## Abstract

**Background:** Patellar tendinopathy is an overuse injury characterized by pain on the distal part of the patella caused by specific movement patterns like jumping. To assess the severity of patellar tendinopathy, the self-administered VISA-P questionnaire was developed in the English language. The purpose of this study was to translate and cross-culturally adapt the VISA-P questionnaire into Filipino and determine its psychometric properties. **Methods:** A psychometric study design was used in this study. The VISA-P was translated from English to Filipino following the guidelines set by Beaton et al. and Sousa et al. There were six stages: (1) forward translation to Filipino, (2) synthesis, (3) backward translation, (4) expert committee review, (5) pilot testing/cognitive briefing, and (6) preliminary psychometric testing. The psychometric testing was conducted on eight patients with patellar tendinopathy and eight healthy subjects. **Results:** The Filipino VISA-P questionnaire (VISA-P-Fil) successfully underwent translation and cross-cultural adaptation. It exhibited excellent face, content validity (Item-Content Validity index and Scale-Content Validity Index= 1.00), construct validity ( $p>0.05$ , except for Item 6), internal consistency (Cronbach  $\alpha= 0.81$ ) as well as reliability (ICC= 0.99; 95% CI: 0.994 – 0.999; SEM= 0.42; minimum detectable change at 95% confidence level= 1.79). No ceiling and floor effects were noted for the VISA-P-Fil. **Conclusion:** In conclusion, the VISA-P-Fil questionnaire was translated and cross-culturally adapted successfully with good validity. Preliminary testing also showed its excellent reliability.

**Keywords:** translation, Filipino, questionnaire, patellar tendinopathy, knee pain

## INTRODUCTION

Patellar tendinopathy is an overuse injury represented by activity-associated pain in the distal part of the patella or in the proximal patellar tendon caused by repetitive pressures in the knee extensor, resulting in debilitating function in sports.<sup>1</sup> It is reported that the prevalence of this condition is 14.2%.<sup>1</sup> It commonly affects jumping sports such as volleyball (45%) and basketball (31.9%).<sup>2,3</sup> In the study of Cook et al., 33% of diagnosed athletes with patellar tendinopathy were incapable of playing within six months.<sup>2</sup> There has also been an accounted 53% of the athletes with patellar tendinopathy who were led to

retirement. Therefore, the consequence of the disabling injury could be extended absence and potential retirement from participation in sports.<sup>2</sup> This warrants the importance of properly assessing the severity of the condition to give appropriate rehabilitation programs to patients.

Immediate diagnosis and treatment of patellar tendinopathy are essential for athletes to prevent a long time away from sports activities. Blazina's grading scale for jumper's knee, 7-point Nirschl pain scale, visual analog scale, Cincinnati, and Lysholm knee scales are the various tools

that have been administered to assess symptoms that involve function and sports capacity in patients with patellar tendinopathy; however, none has been referenced as exceptional.<sup>3,4</sup> There are also several patient-administered outcome measure tools available to use for assessment. The WOMAC osteoarthritis index, which assesses pain, stiffness, and function in a patient with osteoarthritis, has extensive literature on the validity and reliability of different translated versions.<sup>5</sup> The Knee injury and Osteoarthritis Outcome Score (KOOS) has good reliability and validity in measuring impairment, disability, and handicap level after a knee injury.<sup>6</sup> Despite these numerous assessment tools, there is still no tool that will specifically assess the severity of patellar tendinopathy.

With this, the Victorian Institute of Sports Assessment-Patella (VISA-P) questionnaire was developed in Australia to assess the severity of patellar tendinopathy in athletes in 1998. It is a brief self-administered questionnaire that assesses symptoms, simple tests of the function of the knee, and the ability to play sports.<sup>4</sup> This has also been used to evaluate changes in the severity of symptoms after therapeutic intervention and other management of the injury of patients.<sup>7,8</sup> Visentini et al. emphasized that the VISA-P is not a diagnostic test.<sup>4</sup> The questions in the VISA-P scale that test functional performance distinguishes the necessary changes associated with patellar tendinopathy.<sup>4</sup>

The original version of the VISA-P has been tested among different western populations and attained wide recognition. Its use has also been established in different groups of athletes.<sup>3</sup> This had been translated and cross-culturally adapted into several languages, including Italian, Spanish, Turkish, German, Brazilian, and Greek. In the Philippines, there is still no Filipino translation and cross-cultural adaptation of the VISA-P questionnaire. Cross-cultural adaptation of a questionnaire in different countries is beneficial since it allows better communication, permitting a clear exchange of knowledge within the population.<sup>9</sup> The nature of the questionnaire being self-administered implies that special attention in the word construction and format should be given to prevent the study from any measurement error.<sup>10</sup>

The purpose of this study was to translate and cross-culturally adapt the VISA-P questionnaire into Filipino and determine its validity and reliability as an assessment tool among Filipino athletes with patellar tendinopathy in the University of Santo Tomas (UST).

The Filipino version of the VISA-P questionnaire (VISA-P-Fil) would help patients to understand the context of the questions better. With an increased understanding of the questionnaire, the VISA-P scores would be more accurate, helping the physicians and therapists assess the severity of patellar tendinopathy. This will form an integral part of the rehabilitation management of the patient. This would also be useful to future Filipino research, which would aim to further translate the VISA-P into other major dialects of the Philippines and reference the Filipino translation and cross-cultural adaptation of other questionnaires to assess musculoskeletal conditions.

## METHODS

**Ethical Considerations.** This study underwent a technical review process and was approved by the Ethics Research Committee of the College of Rehabilitation Sciences, University of Santo Tomas (SI-20018-018-RI).

**Study Design.** This is a quantitative study that utilized a psychometric study design to assess the validity and reliability of the translated questionnaire.

**Participants.** Purposive sampling was used to gather the participants from the senior and junior athletes of the University of Santo Tomas. In the pilot testing stage, there were a total of 17 participants who joined the study. Sousa et al. recommend a sample size of 10-40 for a pilot test from the target population.<sup>11</sup> In the psychometric testing, there were 8 participants with patellar tendinopathy and 8 participants without any lower extremity conditions. Those who are: (1) able to understand both the English and Filipino language, with the latter being the mother language, (2) 18 years old and above, and (3) competing in any sports were recruited in the study. For those with patellar tendinopathy, they must be clinically diagnosed or is assessed with patellar tendinopathy during the screening

process. Individuals who had pain on the inferior pole of the patella, patellar tendon, or its insertion when palpated and during squatting were included in the study.<sup>12,13</sup> These were used based on the clinical definition of patellar tendinopathy. Those who: (1) have difficulty in the Filipino language and (2) had other lower extremity musculoskeletal conditions such as ankle sprain, ACL injury, meniscal injury were excluded in the study. The study was conducted inside the Sports Science Laboratory at the University of Santo Tomas.

**Tool.** The VISA-P is an 8-item self-administered questionnaire designed to quantify and assess the severity of symptoms and functional limitations in patients with patellar tendinopathy. Six out of eight questions use the visual analog scale of 0-10, with 10 representing maximal health. Question 7 has four categories scored with 0,4,7, and 10, while the last question is scored depending on their pain and ability to train. The maximum score for healthy individuals is 100, and the minimum is 0. This tool has very good reliability ( $r=0.87$ ) and excellent internal consistency ( $\alpha=0.83$ ).<sup>4,14</sup>

**Procedures.** The process of translation and cultural adaptation was based on the guidelines by Sousa et al. and Beaton et al.<sup>11,15</sup> This involved six (6) stages which include: (1) initial translation to Filipino, (2) synthesis of the translations, (3) back translation, (4) expert committee review, (5) pilot testing/cognitive briefing, and (6) preliminary psychometric testing of the pre-final translated version (P-TFL) in a sample of the target population. Before translation, the researchers sought permission from the original developers of the questionnaire and were granted the approval to translate it to Filipino. The researchers adapted the pilot testing from the protocol of Sousa et al.<sup>11</sup>

**Forward Translation.** This was performed by two independent bilingual individuals whose native language was Filipino. The first translator was a physician who was knowledgeable about the concepts in the VISA-P questionnaire, and the other translator was a linguistic translator without a medical background.

**Synthesis.** Synthesis was performed by the researchers who combined and revised the

translation of the two translators producing a standard translation from English to Filipino.

**Back Translation.** This was done by two independent native English speakers fluent in Filipino and was blinded to the original VISA-P questionnaire. The first translator was an orthopedic physician who was knowledgeable about the concepts in the VISA-P questionnaire, and the other was a linguistic translator without a medical background. A consensus back-translated version was obtained from independent back-translators.

**Expert Committee Review.** The committee consisted of two forward translators, two backward translators, two physiotherapists, two rehabilitation doctors, an anthropologist, a linguist, a research methodologist, and two athletes. In the review, the expert committee further examined the revised translated version of the instrument for clarity of instructions, items and response format, and the content equivalence of the instrument in the translated language and the source language. A dichotomous scale (clear or unclear) was used to examine the clarity of instructions, items, and response formats. Committee members who rated the instructions, response format, or any unclear item were asked to provide suggestions about how it can be made clearer. Content validity index per item (I-CVI) and content validity index per scale (S-CVI) were used to examine content equivalence. Semantic, idiomatic, experiential, and conceptual equivalence were all addressed during this stage. Conflicts were resolved through a focus group discussion of the expert review committee. This stage produced the pre-final translated version (P-FTL) version of the questionnaire.<sup>11</sup>

**Pilot Testing/Cognitive Debriefing.** This stage aims further improve the understandability of the questionnaire by the target population. A licensed physical therapist screened the participants. All those eligible participants were given the pre-final translated version of the questionnaire. Participants were asked to evaluate the instructions, response format, and items to know if they understood the translated questionnaire. The participants rated the instructions and items as "yes" or "no" regarding the clarity and were asked to make suggestions

on making the items clear. 80% was set to be the minimum inter-rater agreement among the sample.<sup>11</sup> This was done to support the face, content, and construct validity of the P-FTL version further. After which, it was submitted to the experts for approval. The output of this step is the final version of the translated questionnaire, which was subjected to psychometric testing.

**Preliminary Psychometric Testing.** Eight (8) healthy and eight (8) symptomatic athletes performed the preliminary psychometric testing of the P-FTL.<sup>16</sup> Participants were given the translated version initially. A washout period of 2 hours was implemented before the original questionnaire was administered.<sup>16</sup> This step was done to establish construct validity.<sup>11</sup> To examine the test-retest reliability, the same participants in the preliminary testing were again requested to answer the translated questionnaire after 24 hours.

**Statistical Methods.** All data gathered were extracted from the forms and were tabulated using MS Excel. Statistical analyses were done using IBM SPSS Statistics 22 software. Descriptive statistics such as mean, standard deviation, and frequency were used to describe the demographic variables of the participants. Face validity, content validity, and construct validity were analyzed through inferential statistics to determine if the questionnaire was valid. Content validation was performed by the experts committee. The relevance of each item was rated using this scale: 1 for not relevant; 2 for unable to assess relevance; 3 for relevant but needs minor alteration; 4 for very relevant and succinct. Items classified as 1 (not relevant) or 2 (unable to assess relevance) should be revised. Content validity index per item (I-CVI) and at scale (S-CVI/Ave) were calculated. The I-CVI of 0.78 or above and S-CVA/Ave of 0.90 or above was the minimum acceptable indices.<sup>11</sup> Items that will not attain the minimum adequate indices were revised and re-evaluated until acceptable indices of content-related validity were attained. For the known group validity, a group with an established trait of the outcome of the construct was compared with a group in whom the trait was not yet established. Two groups of respondents were known; it was expected that the measured construct would be

higher in the group with a related attribute but lower in the group with the unrelated attribute.<sup>17</sup> Shapiro-Wilk Test was used to determine the normality of the participants. The data followed the normal distribution, but Mann-Whitney was used to analyze the between-groups difference in the per-item and overall questionnaire score due to the small sample size. This was also used to determine the known-group validity, a type of construct validity. Furthermore, internal consistency was determined using Cronbach's alpha ranging from an excellent,  $\alpha \geq 0.9$  to an unacceptable,  $0.5 > \alpha$ . A Cronbach's alpha of at least 0.70 should be scored to indicate adequate internal consistency.<sup>17</sup> Test-retest was evaluated using intraclass correlation coefficient (ICC) and Spearman's correlation coefficient. A larger coefficient meant stronger test-retest reliability, reflecting that measurement error of the questionnaire was less likely to be attributable to changes in the individuals' responses over time. A correlation coefficient ( $r$ ) value of  $r \geq 0.70$  was already considered good.<sup>17</sup> The standard error of measurement (SEM) was also calculated using the formula:  $SEM = \text{Standard deviation (SD)} \times \sqrt{1 - \text{test-retest reliability coefficient}}$ .<sup>17</sup> The minimum detectable change (MDC) at 95% CI is computed using this formula:  $MDC = 1.96 \times \sqrt{2} \times SEM$ .<sup>17</sup> Ceiling and floor effects were computed by getting the percentage frequency of the respondents who had the maximum and minimum score in the questionnaire. If 15% of the participants reached the maximum and minimum scores, then there is a ceiling and floor effect noted.<sup>1</sup>

## RESULTS

**Translation.** Most of the revisions in the questionnaire were on the contextual application and grammatical correctness of the translated words, such as pain, normal gait cycle, and knee extension. Other words like squat, single-leg hop, and full weight-bearing lunge were retained but with visual representation. Overall, the expert committee agreed with the translation of the questionnaire. Supplement A shows the final translated version of the questionnaire.

**Demographics.** Table 1 shows the demographic characteristics of the participants. A total of 16 athletes, 8 (50%) had patellar tendinopathy

(symptomatic group), and 8 (50%) had no patellar tendinopathy (healthy group), participated in the study. In the healthy group, 75% were males, and 25% were females, while in the symptomatic group, 62.5% were males and 37.5% were females. The range of the mean age for both groups is 19-20 years old. Participants came from different sports such as taekwondo, tennis, swimming, basketball, badminton, cheer dance, and volleyball. The participants were homogenous at baseline based on the Shapiro-Wilk Test ( $p= 0.10$ ).

**Validity**

Face Validity. The face validity of the final translated questionnaire was judged as good by the participants. All the questions were understood and represented well.

Content Validity. Table 2 summarizes the result of content validation of each item by the experts. Results showed that the I-CVI and S-CVI for all the items were rated as 1.00. This means that the experts rated each item  $\geq 3$  and deemed it to be very relevant and appropriate.

Ceiling and Floor Effects. Only 12.5% of all the participants reached the questionnaire's maximum score, and none of the participants had minimum scores. No ceiling and floor effects were noted.

Construct Validity. Table 3 gives the summary of the known group validity results and corresponding p-value and test statistic. Results showed that there is a statistically significant difference ( $p < 0.05$ ) in the VISA-P scores of the healthy and symptomatic participants on almost all items except item 6 ( $U_{7.00}, p= 0.83$ ). Those without patellar tendinopathy have higher means on most items compared to those with the condition. Results showed no statistically significant difference ( $U_{117.5}, p= 0.69$ ) between the scores from the original and the translated version.

Reliability. Table 4 shows the summary of the test-retest reliability results using the Spearman correlation and intraclass correlation coefficient.

Internal Consistency. Results showed that the questionnaire has a good internal consistency with a Cronbach  $\alpha$  of 0.81 on the first assessment and 0.83 on the second assessment.

Test-Retest Reliability. The intraclass correlation coefficient (ICC) was 0.99 ( $p=0.001, 95\% CI 0.994 - 0.999$ ). The Spearman correlation coefficient of each item also ranges from 0.97 to 1.00, with a total of 0.99. This means that the items in the questionnaire have a very strong correlation after administering twice with a 24-hour interval. The SEM for the first and second assessments is 0.42 and 0.43, respectively, with an  $MDC_{95}$  of 1.79 and 1.83.

**Table 1.** Demographic Characteristics of Participants

Demographic Variables	Healthy Group (n= 8)		Symptomatic Group (n= 8)	
	n	%	n	%
Sex				
Male	6	75	5	62.5
Female	2	25	3	37.5
Sports				
Taekwondo	1	12.5	-	-
Tennis	3	37.5	-	-
Swimming	4	50	1	12.5
Basketball	-	-	2	25
Badminton	-	-	1	12.5
Cheer dance	-	-	3	37.5
Volleyball	-	-	1	12.5
Age (yr) (mean $\pm$ SD)	19.63 $\pm$ 1.06		20.00 $\pm$ 2.07	

**Note:** SD= standard deviation

Table 2. Summary of Results for Content Validity

	Relevant (Ratings: ≥3)	Non-Relevant (Ratings: ≤2)	I-CVI	Interpretation	S-CVI
Instructions	11	0	1.00	Appropriate and Very Relevant	
Item 1	11	0	1.00	Appropriate and Very Relevant	
Item 2	11	0	1.00	Appropriate and Very Relevant	
Item 3	11	0	1.00	Appropriate and Very Relevant	
Item 4	11	0	1.00	Appropriate and Very Relevant	
Item 5	11	0	1.00	Appropriate and Very Relevant	
Item 6	11	0	1.00	Appropriate and Very Relevant	
Item 7	11	0	1.00	Appropriate and Very Relevant	1.00
Item 8	11	0	1.00	Appropriate and Very Relevant	
Item 8a	11	0	1.00	Appropriate and Very Relevant	
Item 8b	11	0	1.00	Appropriate and Very Relevant	
Item 8c	11	0	1.00	Appropriate and Very Relevant	

Note: I-CVI= item-level content validity index, S-CVI= Scale-level content validity index

Table 3. Summary of Known Group Validity Results of VISA-P-Fil

Item Number	Healthy group (n= 8, mean ± SD)	Symptomatic group (n= 8, mean ± SD)	U statistic	p-value
1	10.00 ± 0.00	5.50 ± 3.20	4.00	0.001*
2	9.88 ± 0.35	5.50 ± 2.33	0.00	0.001*
3	9.75 ± 0.46	6.75 ± 2.12	6.00	0.005*
4	8.88 ± 1.13	5.13 ± 2.47	5.00	0.003*
5	9.50 ± 0.53	5.63 ± 3.16	4.00	0.002*

6	8.50 ± 1.77	6.38 ± 2.60	15.00	0.083
7	9.25 ± 1.39	5.00 ± 2.98	7.00	0.007*
8 (a,b, or c)	27.5 ± 4.63	13.00 ± 6.87	3.00	0.001*
<b>Total Score</b>	93.25 ± 6.61	52.87 ± 16.47	6.435	0.001*

**Note:** \*= Statistically significant difference in the results (p<0.05); U= Mann-Whitney test statistic result; SD= standard deviation

**Table 4.** Test-Retest Reliability Results of the VISA-P-Fil

Item Number	Spearman Correlation Coefficient (r)	Interpretation	ICC	95% CI	Interpretation
Item 1	1.00	Very Strong Correlation	1.00	1.00	Excellent
Item 2	1.00	Very Strong Correlation	1.00	1.00	Excellent
Item 3	0.984	Very Strong Correlation	0.997	0.990-0.999	Excellent
Item 4	1.00	Very Strong Correlation	1.00	1.00	Excellent
Item 5	0.972	Very Strong Correlation	0.997	0.992-0.999	Excellent
Item 6	0.971	Very Strong Correlation	0.995	0.986-0.998	Excellent
Item 7	1.00	Very Strong Correlation	1.00	1.00	Excellent
Item 8 (a,b,or c)	0.994	Very Strong Correlation	0.914	0.655-0.979	Excellent
<b>Total Score</b>	0.999	Very Strong Correlation	0.998	0.994 – 0.999	Excellent

**\*Note:** ICC= intraclass correlation coefficient; CI= confidence interval

**Discussion**

**Translation.** The expert review committee agreed with most of the translations and back translations of the questionnaire except for some words that were initially translated out of context of their original word. Some words needed visual representation to provide understanding to the reader further.

The expert panel discussed that a brief description of the questionnaire should follow immediately after the title. This included the purpose of the questionnaire and a figure that points out where the pain is. The inclusion of the figure was suggested to make the questionnaire further understandable & help them accurately answer the succeeding questions.

The word “*sakit*”, which referred to pain, was changed to “*pananakit*”; since the former may

also mean any ailment or medical condition in the Filipino context. Also, words like “*ng*” and “*nang*” were emphasized to be used correctly since the two words have different grammatical usage. The term “*isports*” was also used as a standard translation of sports. These changes were done on all the parts of the questionnaire that contain those words. For item number two (2), the “normal gait cycle” could not be translated since it is medical jargon. However, the expert panel agreed to just state the phrase, “naglalakad pababa ng hagdan,” to make it more understandable in the Filipino context. For item number three (3), the word “*dinidiretso*” was questioned due to its directional meaning when translated back to English. The panel discussed another alternative to use and ended with “*inuunat*”. Other changes include the use of technical terms such as squats, full weight-bearing lunge, and single-leg hops in items 4-6. The expert panel agreed that these terms should be used in their original English form instead of translating them. However, each term should have an explanation in the Filipino language on the procedure of the movement. An image of these words was added to clarify their meaning further.

On item number seven (7), the semantic changes were made within the choices of the question. The first choice, which was “*wala*” was changed to “*hindi*” since the question was answerable by a “yes” or “no” and it was also highlighted that the original version used the term “not at all.” The word “modified” was retained as it was already understood in this form. Finally, the word “*kumpetisyon*” was changed to “*kompetisyon*” and “*lebel*” was changed to “*antas*” on all the choices that contain this word for consistency.

On item number eight (8), the changes made were both contextual and semantic. On the instructions, the phrase “*ang isa lamang*” was changed to “*ang isa sa*” as it was agreed to be more appropriate. Also, “*kumpletuhin*” a term mostly used to fill in the blank questions, was changed to “*sagutin*” to make the instructions more generalized. For the questions on item number eight (8), the only changes that were made were to add “*mag-ensayo*” or “*pag-ensayo*,” to the question; alongside “*magsanay*” or “*pagsasanay*”, as the context of the original version also used two words in the question

which was, “train/practice.” The word “*ihinto*” was also changed to “*tapusin*”, as the latter means “to finish” and was appropriate for the sentence. On the choices throughout the questionnaire, the minimal changes that occurred were as follows: “*matinding sakit*” was changed to “*napakatinding pananakit*” as the expert panel stated that the original tool used a superlative tone; hence, it should also be applied with the translated version, while “*nil*” was changed to the number “0” as the word did not have any direct Filipino translation.

**Demographics.** In both groups, male participants were higher in number compared to female participants. This is in line with the literature that patellar tendinopathy is prevalent in males, especially in the symptomatic group.<sup>1</sup> The age of the participants is within the reported range (15-30 years old), where patellar tendinopathy is common.<sup>2</sup> The sports on each group varied; however, the training regimen may still involve repetitive loading of the patellar tendon that may predispose participants to patellar tendinopathy. Despite this, the participants were homogenous, which means that they possess similar characteristics at baseline measurement.

**Validity.** Face validity was judged as good and can easily be understood by all participants. The Item-Content Validity Index (I-CVI) and the Scale-Content Validity Index (S-CVI) was 1.00 after an iterative process of rewording, rephrasing, and ensuring the contextual translation of the words. This means that all experts agreed that each item and the overall questionnaire measure the content domain that it is intended to measure.

In terms of known group validity, all items resulted in significant differences between the two groups except for question 6, which asks the participant to rate the pain he experiences during or after ten single leg hops. Several factors can explain this result, such as the time of answering the questionnaire, familiarity with the movement, and the number of repetitions. The athlete may have answered the questionnaire after extensive training or workout, which can contribute to pain. Some of the participants also are in sports that do not require repetitive single-leg hop on their workout or training. This



may be an unfamiliar movement that could trigger pain, given the number of repetitions they need to do. This warrants further exploration of this item in future studies. Despite the result, VISA-P is not a diagnostic tool. It is a tool that will assess the severity of patellar tendinopathy only. To avoid this, the researchers suggest ensuring homogeneity in the level of activity of participants by quantifying their levels of activity, such as the Tegner and Lyshold activity grading scale.<sup>18</sup> Other items showed higher mean scores from those without the condition. This significant difference in known group validity result is expected and is similar to the German version since the comparison group does not possess the characteristics this tool intends to measure.<sup>3</sup>

Furthermore, the questionnaire was found to have a Cronbach  $\alpha$  of 0.81 on the first assessment and 0.83 on the second assessment. This means the questionnaire has a good internal consistency and the items are homogenous and nonredundant. The result of this study is similar to the results of German, Spanish, and Swedish translations of VISA-P, which also have good to very good internal consistency.<sup>3,14,16</sup>

For the ceiling and floor effects, the percentage of the number of participants who had the maximum score was below the 15% threshold, while none had the minimum score. This means that the questionnaire does not have any ceiling or floor effects similar to the results of the Brazilian version. This further suggests that the translated questionnaire can be used for the full spectrum of the severity of patellar tendinopathy.<sup>1</sup>

**Reliability.** The questionnaire exhibited a very strong correlation and excellent ICC between the first and the second administration. This means that the questionnaire is stable despite the interval of time that the question was administered. In this study, the participants were given only a 24-hour washout period between administrations. There were three points of administration of the questionnaire in the Korean version – 2 hours and 1-week interval. Other VISA-P translations used 1-week interval,<sup>3,14</sup> 2.5 weeks,<sup>10</sup> 15-17 days,<sup>12</sup> or 24-48 hours.<sup>1</sup> Although the 24-hour interval is within the washout time range of 10 minutes to 1

month as cited by other test-retest studies, the authors suggest that the time interval should be long enough to avoid learning, carry-over, or recall effect but short enough to decrease chances of significant changes in the condition.<sup>19</sup>

In terms of the level of agreement, the VISA-P-Fil may be considered excellent similar to the Brazil version.<sup>1</sup> The SEM value ranging from 0.42 - 0.43 during the first and the second administration of the questionnaire represents a very small portion of the scale. Also, the MDC<sub>95</sub> was 1.79 and 1.83 during the first and second administration, respectively. This means that one is confident that a change in the score is not occurring randomly from measurement errors if it is at least 1.79 or 1.83 points.

## CONCLUSIONS

In conclusion, the VISA-P questionnaire was successfully translated, validated, and cross-culturally adapted to the Filipino language. The validity of VISA-P-Fil is similar to other translated versions and the original version. However, there is still a need to conduct and evaluate the full psychometric properties of this questionnaire.

**Limitation of the study.** The study has several limitations. In the translation process, the researchers were not able to meet the two forward translators due to the unavailability of a common schedule. This prompted the researchers to merge the two translations in the interest of time. Also, the original developers of the questionnaire were not involved in the process of the translation. Aside from that, the sample size of the study is small. The study included only athletes from diverse sports, and there is not enough representation from all sports. The level of physical activity of the participants was also not considered in the demographics. The 24-hour interval between the two administrations of the questionnaire may not be enough to decrease the chances of learning or recall effect.

**Recommendation.** During the translation process, the authors strongly recommend that the two translators will meet, in any way, to come up with a consensus on forward

translation of the questionnaire. Although there has been no consensus on a set of rigid procedures in the translation and cross-cultural adaptation,<sup>20</sup> the numerous available guidelines should still be followed to avoid any possible bias during the process. During the expert committee review part of the translation process, the original developers of the questionnaire should, as much as possible, be in close contact with the committee to develop the pre-final version of the translated questionnaire. The sample size should be increased, and the participants should also include those that are recreational athletes. Should further studies focus on athletes, then there should be a good representation from all sports. The interval between the first and the second administration of the questionnaire should also be long enough to decrease the recall or learning effect. Lastly, the authors recommend that further studies should investigate the full psychometric property of this questionnaire.

### Individual author's contributions

K.S., P.R.; Designed and collected data, analyzed data and co-wrote the paper, supervised the research; M.S.: collected data; R.S., S.A., S.C., R.D., R, E, I.F, A.G., L.S.; Performed the experiment, analyzed the data and co-wrote the paper.

### Disclosure statement

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### Conflicts of interest

The authors of this paper declare no conflicting interest.

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### Supplementary Material

[Supplementary Material A. Filipino Version of VISA-P.](#)

### References

1. Wageck BB, de Noronha MA, Lopes AD, da Cunha RA, Takahashi RH, Pena Costa LO. Cross-cultural adaptation and measurement properties of the Brazilian Portuguese Version of the Victorian Institute of Sport Assessment-Patella (VISA-P) scale. *Journal of Orthopaedic & Sports Physical Therapy*. 2013 Mar;43(3):163-71. DOI: 10.2519/jospt.2013.4287.
2. Malliaras P, Cook J, Purdam C, Rio E. Patellar tendinopathy: clinical diagnosis, load management, and advice for challenging case presentations. *Journal of Orthopaedic & Sports Physical Therapy*. 2015 Nov;45(11):887-98. DOI: 10.2519/jospt.2015.5987.
3. Lohrer H, Nauck T. Cross-cultural adaptation and validation of the VISA-P questionnaire for German-speaking patients with patellar tendinopathy. *Journal of Orthopaedic & Sports Physical Therapy*. 2011 Mar;41(3):180-90. DOI: 10.2519/jospt.2011.3354.
4. Visentini PJ, Khan KM, Cook JL, Kiss ZS, Harcourt PR, Wark JD, Victorian Institute of Sport Tendon Study Group. The VISA score: an index of severity of symptoms in patients with jumper's knee (patellar tendinosis). *Journal of Science and Medicine in Sport*. 1998 Jan 1;1(1):22-8. DOI: 10.1016/S1440-2440(98)80005-4.
5. Söderman P, Malchau H. Validity and reliability of Swedish WOMAC osteoarthritis index: a self-administered disease-specific questionnaire (WOMAC) versus generic instruments (SF-36 and NHP). *Acta Orthopaedica Scandinavica*. 2000 Jan 1;71(1):39-46. DOI: 10.1080/00016470052943874.
6. Garratt A, Brealey S, Gillespie WJ. Patient-assessed health instruments for the knee: a structured review. *Rheumatology*. 2004 Nov 1;43(11):1414-23. DOI:10.1093/rheumatology/keh362.
7. Maffulli N, Longo UG, Testa V, Oliva F, Capasso G, Denaro V. VISA-P score for patellar tendinopathy in males: adaptation to Italian. *Disability and Rehabilitation*. 2008 Jan 1;30(20-22):1621-4. DOI: 10.1080/09638280701786070.
8. Hernandez-Sanchez S, Hidalgo MD, Gomez A. Cross-

- cultural adaptation of VISA-P score for patellar tendinopathy in Spanish population. *Journal of Orthopaedic & Sports Physical Therapy*. 2011 Aug;41(8):581-91. DOI: 10.2519/jospt.2011.3613.
9. Nunes G, de Castro LV, Wageck B, Kume V, Chiesa GS, de Noronha M. Translation into Portuguese of questionnaires to assess knee injuries. *Acta Ortopedica Brasileira*. 2013;21(5):288. DOI: 10.1590/S1413-78522013000500010.
  10. Zwerver J, Kramer T, van den Akker-Scheek I. Validity and reliability of the Dutch translation of the VISA-P questionnaire for patellar tendinopathy. *BMC Musculoskeletal Disorders*. 2009 Dec;10(1):1-5. DOI: 10.1186/1471-2474-10-102.
  11. Sousa VD, Rojjanasrirat W. Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: a clear and user-friendly guideline. *Journal of Evaluation in Clinical Practice*. 2011 Apr;17(2):268-74. DOI: 10.1111/j.1365-2753.2010.01434.x.
  12. Korakakis V, Patsiaouras A, Malliaropoulos N. Cross-cultural adaptation of the VISA-P questionnaire for Greek-speaking patients with patellar tendinopathy. *British Journal of Sports Medicine*. 2014 Dec 1;48(22):1647-52. DOI: 10.1136/bjsports-2012-091339.
  13. Acharya GU, Kumar A, Rajasekar S, Samuel AJ. Reliability and validity of Kannada version of Victorian Institute of Sports Assessment for patellar tendinopathy (VISA-PK) questionnaire. *Journal of Clinical Orthopaedics and Trauma*. 2019 Oct 1;10:S189-92. DOI: 10.1016/j.jcot.2018.08.017.
  14. Frohm A, Saartok T, Edman G, Renström P. Psychometric properties of a Swedish translation of the VISA-P outcome score for patellar tendinopathy. *BMC Musculoskeletal Disorders*. 2004 Dec;5(1):1-7. DOI: 10.1186/1471-2474-5-49.
  15. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*. 2000 Dec 15;25(24):3186-91. DOI: 10.1097/00007632-200012150-00014.
  16. Park BH, Seo JH, Ko MH, Park SH. Reliability and validity of the Korean version VISA-P questionnaire for patellar tendinopathy in adolescent elite volleyball athletes. *Annals of Rehabilitation Medicine*. 2013 Oct;37(5):698. DOI: 10.5535/arm.2013.37.5.698.
  17. Bolarinwa OA. Principles and methods of validity and reliability testing of questionnaires used in social and health science researches. *Nigerian Postgraduate Medical Journal*. 2015 Oct 1;22(4):195. DOI: 10.4103/1117-1936.173959.
  18. Tegner Y, Lysholm J. Rating systems in the evaluation of knee ligament injuries. *Clinical Orthopaedics and Related Research*. 1985 Sep 1(198):43-9. DOI: 10.1097/00003086-198509000-00007.
  19. Marx RG, Menezes A, Horovitz L, Jones EC, Warren RF. A comparison of two time intervals for test-retest reliability of health status instruments. *Journal of Clinical Epidemiology*. 2003 Aug 1;56(8):730-5. DOI: 10.1016/S0895-4356(03)00084-2.
  20. Korakakis V, Saretsky M, Whiteley R, Azzopardi MC, Klauznicer J, Itani A, Al Sayrafi O, Giakas G, Malliaropoulos N. Translation into modern standard Arabic, cross-cultural adaptation and psychometric properties' evaluation of the Lower Extremity Functional Scale (LEFS) in Arabic-speaking athletes with Anterior Cruciate Ligament (ACL) injury. *PLoS one*. 2019 Jun 10;14(6):e0217791. DOI: 10.1371/journal.pone.0217791.