

# Translation, Cross-Cultural Adaptation, and Validation of the Traditional Chinese Version of the VISA-P Questionnaire

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**Background:** The Victorian Institute of Sport Assessment-Patella (VISA-P) questionnaire is a widely accepted instrument for measuring the severity of symptoms and pain in patients having sustained patellar tendinopathy.

**Purpose:** To adapt the VISA-P questionnaire cross-culturally to a traditional Chinese version (VISA-P-Ch) and validate its psychometric properties.

**Study Design:** Cohort study (diagnosis); Level of evidence, 3.

**Methods:** The VISA-P questionnaire was adapted to a traditional Chinese version following international recommended guidelines, including translation, synthesis, back translation, revision by expert committee, pretesting, and validation. The psychometric properties were tested in 15 healthy controls and 15 participants with patellar tendinopathy. Face validity was judged by the authors and participants. Known-groups validity was tested by comparing the VISA-P-Ch scores between symptomatic and asymptomatic participants using an independent *t* test. Concurrent validity was determined by comparing the Blazina classification of the participants against VISA-P-Ch scores using the Spearman correlation coefficient. Test-retest reliability was assessed by calculating the intraclass correlation coefficient (ICC) following a 24- to 48-hour interval. Internal consistency was determined by the Cronbach alpha.

**Results:** The expert committee and participants reported good face validity of the VISA-P-Ch. Significantly higher scores were found in the control group than in the patellar tendinopathy group ( $98.47 \pm 3.04$  vs  $65 \pm 11.9$ ;  $P < .001$ ). Concurrent validity showed a high correlation between VISA-P-Ch and the Blazina classification system ( $r = -0.899$ ;  $P < .01$ ). The test-retest reliability was excellent (ICC = 0.964). Internal consistency was found to be good for both the first and second assessments (Cronbach  $\alpha = 0.834$  and 0.851).

**Conclusion:** The VISA-P-Ch was proven to be a reliable and valid questionnaire with similar psychometric properties as the original VISA-P.

**Keywords:** VISA-P-Ch; patellar tendinopathy; reliability; validity

Patellar tendinopathy is the most common overuse injury in sports, especially for sports that require repeated jumping and landing.<sup>15</sup> High demand for knee extensor mechanism during jumping and landing leads to the cumulative repetitive microtraumas of the patellar tendon, which subsequently causes tenderness during sports at the insertion of the patellar tendon.<sup>3,10,20,26</sup> Particularly high prevalence of patellar tendinopathy has been found in sports

characterized by high demands of leg power and speed, such as volleyball (45%) and basketball (32%).<sup>15</sup>

Due to the high prevalence of patellar tendinopathy, early diagnosis and treatment are important for athletes so as to avoid interruption to sports activity and performance. Whereas imaging may assist in the differential diagnosis of other anterior knee pain sources, the poor correlation between ultrasound and clinical symptoms,<sup>14</sup> combined with the high cost and limited accessibility of magnetic resonance imaging (MRI), the diagnosis of patellar tendinopathy remains largely clinical.<sup>6</sup> This highlights the need and importance of a questionnaire-based index of severity to identify relevant symptoms in patients suspected of having patellar tendinopathy.

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The Victorian Institute of Sport Assessment-Patella (VISA-P) questionnaire was developed in 1998 and has repeatedly proved reliable in assessing and quantifying severity of patellar tendinopathy.<sup>22</sup> It has also been applied to assess results after treatment.<sup>9</sup> As the only disease-specific scale for patellar tendinopathy, VISA-P is a widely accepted and valid tool for the assessment of patellar tendinopathy, and it has been adapted for Swedish, Italian, Dutch, German, Spanish, Brazilian, Korean, Turkish, French, Greek, Kannada, and simplified Chinese populations in the past few years.<sup>\*\*</sup> However, there is currently no traditional Chinese version of the VISA-P (VISA-P-Ch) available for use.

Given the efficacy of the VISA-P in clinical assessment of patellar tendinopathy, we aimed to validate the VISA-P-Ch to broaden the use of this tool for this specific population. We hypothesized that the VISA-P-Ch would be a valid and reliable instrument for the Chinese population specifically.

## METHODS

The study protocol was approved by our institutional review board, and all participants provided written informed consent. The study participants were administered the VISA-P-Ch twice within a 24- to 48-hour time interval. All data acquisition and procedures were conducted by the same investigator (F.-Y.S.) to standardize the procedure. The investigator obtained the demographic data from the participants, evaluated the participants according to the Blazina classification system (1, pain only after sports; 2, pain only at the beginning of sports; 3, constant pain at rest and with activity; 4, patellar tendon rupture), and obtained the first score of the VISA-P-Ch. The score of the second evaluation was obtained via return mail from participants. There was no loss to follow-up between the first and second evaluations.

## Participants

A total sample of 30 participants was divided into 2 groups according to their self-reported symptoms during

functional activities. The patellar tendinopathy group was defined by the presence of pain at the patellar tendon during functional activities such as jumping, squatting, and landing for >3 months in the past year. The participants were classified into the asymptomatic group if they reported to have never been diagnosed with patellar tendinopathy and there was no pain on the anterior part of the knee. Participants who had other conditions, such as lower extremities fracture; a history of surgery; pain in joints other than the knee; or rheumatic, systematic, and neurological diseases, or who could not understand Chinese were excluded.

## Description of VISA-P Questionnaire

The VISA-P is scored from 0 to 100, with a lower score indicating more severe symptoms of patellar tendinopathy. There are a total of 8 questions; the score for each of the first 7 items ranges from 0 to 10 points. The eighth question is divided into 3 parts (8a, 8b, and 8c) for different conditions and scores independently. Of the 8 questions, 6 rate the degree of symptoms in daily living and simple functional tests. The remaining 2 questions concern ability in sports participation (Appendix Figure A1).

## Translation Procedure

*Initial Translation.* The forward translation is the initial step for translating the questionnaire from English to traditional Chinese. This step was performed independently by 2 bilingual speakers (Y.-L.L., C.-Y.C.) whose native language is traditional Chinese. Both translators were professors of physical therapy with extensive knowledge of the English language and the context of VISA-P.

*Synthesis.* After the initial translation, the 2 translators, as well as members of the research team, held a meeting to achieve an initial translation consensus and synthesized a pretesting of the VISA-P-Ch.

*Backward Translation.* The backward translation was performed independently by 2 native English speakers who were fluent in Chinese. One was a professor of physical therapy and the other was a medical student, and both were blinded to the original VISA-P. (A.C., B.Y.-T.H.)

*Expert Committee Meeting.* An expert committee consisted of 2 native traditional Chinese speakers and 2 native English speakers (Y.-L.L., C.-Y.C., A.C., B.Y.-T.H.) met to

\*\*References 1, 5, 7, 8, 11, 13, 16, 17, 19, 23, 24, 27.

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review the traditional Chinese version of the VISA-P and to achieve consensus on each item within the questionnaire; 3 members were professors of physical therapy, while 1 was a medical student. All committee members had comprehensive knowledge of sports orthopaedics.

All the translators and research team then met to consider and discuss all of the versions of the questionnaires until a general consensus was reached to produce a provisional VISA-P-Ch that is semantically, idiomatically, conceptually, and experimentally equivalent to the original VISA-P.

### Pretesting

The provisional traditional VISA-P-Ch was administered to 8 asymptomatic participants (3 men and 5 women). After completing the questionnaire, each participant was interviewed regarding linguistic understanding, fluency, and expression relevance to the Chinese culture of each item. The test of the provisional version revealed that the term “full weightbearing” in Chinese was hard to understand, there was no specific term for the word “lunge” in Chinese, and the symbol “±” in the sentence was confusing for participants. Thus, the committee agreed to add an explanation after the word “full weightbearing” in Chinese and an illustration for “lunge” as well as exchange the “±” for “and/or.”

The final version of the VISA-P-Ch was then administered for psychometric evaluation to determine its validity and reliability.

### Validity Testing

**Face Validity.** Face validity was assessed by showing the questionnaire to authors and participants to determine whether they perceived the items to be appropriate and relevant.

**Concurrent Validity.** Concurrent validity was determined by the correlation between Blazina classification measures and the scores of VISA-P-Ch. The Blazina classification measures the impact of pain in functional activities for patellar tendinopathy, which has been used in the research and development of Greek, German, and Kananda versions of the VISA-P and has been proven to be highly correlated with the VISA-P questionnaire.

**Known-Groups Validity.** Known-groups validity was assessed by the comparing the VISA-P-Ch scores between symptomatic and asymptomatic groups.

### Test-Retest Reliability

The test-retest reliability determines the consistency of an instrument in measuring the performance of a group of subjects over a period. For this analysis, the interval between the 2 evaluations was set to 24 to 48 hours to minimize a change in disease status but long enough to avoid recall of responses.

### Internal Consistency

The internal consistency indicates the homogeneity between different items in the same measurement tool that propose to measure the same construct produce similar scores. Internal consistency of the VISA-P-Ch was evaluated by determining the Cronbach alpha coefficient ( $\alpha$ ).

### Statistical Analyses

Differences in demographic data between the patellar tendinopathy group and healthy group were compared using an independent *t* test. Concurrent validity was established by the Spearman rank correlation between VISA-P-Ch scores and Blazina classification. Known-groups validity was obtained through comparing the VISA-P-Ch score between groups using 1-way analysis of variance. Test-retest reliability was conducted by intraclass correlation coefficient (ICC) to compare VISA-P-Ch scores between the 2 evaluation timepoints. ICC values were interpreted as poor if  $<0.5$ , moderate if between 0.5 and 0.75, good if between 0.75 and 0.9, and excellent if  $>0.9$ .<sup>12</sup> Internal consistency of the total VISA-P-Ch score was assessed using the Cronbach alpha. Standard error of measurement (SEM) was calculated to indicate the absolute reliability of the measure. The minimal detectable change was calculated to represent the minimum amount of change that can be interpreted as a real change and not attributed simply to measurement error. The level for statistical significance was set at  $P < .05$ .

## RESULTS

The characteristics of the participants are presented in Table 1. The training frequency was significantly higher in the patellar tendinopathy group ( $2.81 \pm 1.99$  vs  $11.71 \pm 11.03$  hours per week;  $P = .008$ ). The VISA-P-Ch score was  $98.5 \pm 0.8$  for the control group and  $65.0 \pm 3.1$  for participants with patellar tendinopathy.

### Validity

The face validity of the VISA-P-Ch questionnaire was judged as good by the expert committee. Known-groups validity was demonstrated by significantly lower VISA-P-Ch scores in the patellar tendinopathy group compared with the control group ( $P < .001$ ) (Table 2). Concurrent validity was demonstrated by the significantly high correlation between VISA-P-Ch scores and Blazina classification in all participants ( $r = -0.899$ ;  $P < .001$ ) (Table 2).

### Test-Retest Reliability

The results of reliability testing are presented in Tables 3 and 4. The ICC for the VISA-P-Ch was 0.964 overall, with ICCs of 0.86 (95% CI, 0.59-0.95) in the symptomatic group and 0.78 (95% CI, 0.46-0.92) in the control group,

TABLE 1  
Characteristics of Participants<sup>a</sup>

	Patellar Tendinopathy (n = 15)	Control (n = 15)
Age, y	26 ± 6.15	24 ± 1.36
BMI, kg/m <sup>2</sup>	24.21 ± 5.54	22.33 ± 3.37
Training frequency, hours per week*	11.71 ± 11.03	2.81 ± 1.99

<sup>a</sup>Data presented as mean ± SD. BMI, body mass index.

\*Statistically significant difference between groups ( $P < .01$ ).

TABLE 2  
Concurrent Validity and Known-Groups Validity<sup>a</sup>

	Patellar Tendinopathy)	Control	Known-Groups Validity
First VISA-P-Ch score	65 ± 11.9	98.47 ± 3.04	-0.899
Blazina classification	2.03 ± 0.44	1 ± 0	
Concurrent Validity (Spearman $r$ )*		-0.899	

<sup>a</sup>Data presented as mean ± SD. VISA-P-Ch, traditional Chinese version of the Victorian Institute of Sport Assessment-Patella.

\*Statistically significant ( $P < .001$ ).

TABLE 3  
Test-Retest Reliability of VISA-P-Ch<sup>a</sup>

	Patellar Tendinopathy	Control
VISA-P-Ch score		
First assessment	65 ± 11.9	98.47 ± 3.04
Second assessment	61.7 ± 14.3	98.4 ± 3.14
ICC (95% CI)	0.864 (0.591-0.946)	0.784 (0.463-0.922)
SEM	4.85	1.44
MDC <sub>95</sub>	13.45	3.98

<sup>a</sup>Data are presented as mean ± SD unless otherwise indicated. CI, confidence interval; ICC, intraclass correlation coefficient; MDC<sub>95</sub>, minimal detectable change; SEM, standard error of measurement; VISA-P-Ch, traditional Chinese version of the Victorian Institute of Sport Assessment-Patella.

indicating good reliability.<sup>12</sup> The SEM was 1.43 for the control group and 4.85 for the patellar tendinopathy group. The minimal detectable change for test-retest reliability was 3.98 for the control group and 13.45 for the patellar tendinopathy group (Table 3). Internal consistency was found to be good for both assessment points ( $\alpha = 0.834$  and 0.851, respectively) (Table 4).

## DISCUSSION

The major finding of this work indicates that the VISA-P questionnaire was successfully translated and adapted into traditional Chinese, with results showing that the translated version was a reliable and valid tool with which to assess the symptoms of patellar tendinopathy in the Chinese population in this study.

During the pretest period, we consulted 8 participants about the VISA-P-Ch questionnaire, with some misunderstanding and confusion reported for question 4 regarding

TABLE 4  
Internal Consistency of the VISA-P-Ch<sup>a</sup>

VISA-P-Ch Item	Cronbach $\alpha$ if Item Deleted	
	First VISA-P-Ch Score	Second VISA-P-Ch Score
1	0.829	0.831
2	0.812	0.827
3	0.812	0.827
4	0.787	0.818
5	0.815	0.815
6	0.783	0.820
7	0.821	0.850
8	0.876	0.907
Cronbach $\alpha$	0.834	0.851

<sup>a</sup>VISA-P-Ch, traditional Chinese version of the Victorian Institute of Sport Assessment-Patella.

the words “full weightbearing” and “lunge.” As there is no specific word for “lunge” in Chinese, an illustration of the action to explain what it means was added. We also added a word in Chinese to have a better explanation of “full weightbearing.” The symbol “±” in question 7 also caused confusion as some of the participants could not comprehend its meaning; therefore, “±” was replaced with “and/or” for easier understanding. No other misunderstanding of the questions was reported. The rest of the translation and cross-cultural adaptation, as well as the evaluation of the psychometric properties, was conducted successfully according to guidelines recommended by Beaton et al<sup>2</sup> for the intended Chinese-speaking population.

Known-groups validity was demonstrated by a significant difference in VISA-P-Ch scores between groups where the scores of the symptomatic group were significantly lower than the control group. This result was consistent with the original version and other translated versions of the VISA-P.<sup>††</sup>

The concurrent validity of the VISA-P-Ch was demonstrated by a high correlation between the VISA-P-Ch scores and the Blazina classification of participants in this study. This was similar to results reported previously for the German, Greek, and Kannada adaptations of the VISA-P.<sup>1,13,16</sup> Although the Blazina classification has been questioned for having only 4 categories for grading the severity level of patellar tendinopathy, it is a disease-specific scale and has been used as a standard for comparing with the VISA-P questionnaire.<sup>4</sup>

Test-retest reliability of VISA-P-Ch scores was excellent as a whole (ICC = 0.96), with ICCs of 0.78 in the control group and 0.86 in the symptomatic group. It is acknowledged that the ICC value of the control group was lower than the value of all participants. This might be due to a small within-subject variance in the control group. Nevertheless, the level of measurement reliability for the control group was in the range of good test-retest reliability (ICC > 0.75).

To assess test-retest reliability, a 24- to 48-hour time interval between first and second evaluation was chosen to avoid significant changes in the clinical status of participants. According to a study published by Marx et al, the recommended time interval for test-retest reliability between evaluations was 2 days to 2 weeks.<sup>18</sup> In the French-speaking translation of the VISA-P, a 30-minute time interval was chosen to evaluate test-retest reliability, and showed good reliability (ICC = 0.99). However, the authors also recommended longer time intervals to avoid recall effects.<sup>11</sup> In contrast, a 2.5-week interval was used in the Dutch version of the adaptation and the reliability was still found to be good (ICC = 0.74). Regardless of the varied range of time intervals chosen for the different translated versions of the VISA-P (30 minutes, 2 hours, 24 hours, 1 week, 2 weeks), test-retest reliability has all been reported to be good or excellent (ICC = 0.74-0.99).<sup>††</sup> The consistency of the results showed that the VISA-P

questionnaire, including our translated VISA-P-Ch, is a stable and reproducible instrument that can be administered over a period.

The internal consistency of the VISA-P-Ch was 0.83 to 0.85 in this study, which is within the range recommended by Terwee et al<sup>21</sup> (0.7-0.95). The internal consistency of the VISA-P has been validated in other language adaptations of the VISA-P questionnaire, with Cronbach alpha ranging between 0.73 and 0.98, indicating the high degree of homogeneity among items in the questionnaire and no redundant items.<sup>1,8,11,13,16,17,23,24</sup>

## Limitations

There are limitations to our study. The present study was conducted with a limited number of participants in a specific area, which may increase the risk of type 2 error and limit the generalizability of the results. The eligibility of the symptomatic group relied heavily on self-reported signs and symptoms. Given the heterogeneity of patellar tendinopathy, the inclusion of Doppler ultrasound or MRI scans to obtain images of the patellar tendon would have helped to better confirm participant eligibility.

## CONCLUSION

The VISA-P-Ch was proven to be a reliable and valid questionnaire with similar psychometric properties as the original VISA-P questionnaire and can be used in the Chinese-speaking population to assess the severity of symptoms associated with patellar tendinopathy.

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## REFERENCES

1. Acharya GU, Kumar A, Rajasekar S, Samuel AJ. Reliability and validity of Kannada version of Victorian Institute of Sports Assessment for patellar tendinopathy (VISA-P-K) questionnaire. *J Clin Orthop Trauma*. 2019;10(Suppl 1):S189-S192. doi:10.1016/j.jcot.2018.08.017
2. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine (Phila Pa 1976)*. 2000;25(24):3186-3191. doi:10.1097/00007632-200012150-00014
3. Bisseling RW, Hof AL, Bredeweg SW, Zwerver J, Mulder T. Are the take-off and landing phase dynamics of the volleyball spike jump related to patellar tendinopathy? *Br J Sports Med*. 2008;42(6):483-489. doi:10.1136/bjsm.2007.044057
4. Blazina ME, Kerlan RK, Jobe FW, Carter VS, Carlson GJ. Jumper's knee. *Orthop Clin North Am*. 1973;4(3):665-678.

††References 1, 8, 11, 13, 16, 19, 24, 25, 27.

‡‡References 1, 8, 11, 13, 16, 17, 19, 24, 25, 27.

5. Celebi MM, Kose SK, Akkaya Z, Zergeroglu AM. Cross-cultural adaptation of VISA-P score for patellar tendinopathy in Turkish population. *Springerplus*. 2016;5(1):1453. doi:10.1186/s40064-016-3100-x
6. Figueroa D, Figueroa F, Calvo R. Patellar tendinopathy: diagnosis and treatment. *J Am Acad Orthop Surg*. 2016;24(12):e184-e192. doi:10.5435/JAAOS-D-15-00703
7. Frohm A, Saartok T, Edman G, Renstrom P. Psychometric properties of a Swedish translation of the VISA-P outcome score for patellar tendinopathy. *BMC Musculoskelet Disord*. 2004;5:49. doi:10.1186/1471-2474-5-49
8. Hernandez-Sanchez S, Hidalgo MD, Gomez A. Cross-cultural adaptation of VISA-P score for patellar tendinopathy in Spanish population. *J Orthop Sports Phys Ther*. 2011;41(8):581-591. doi:10.2519/jospt.2011.3613
9. Hernandez-Sanchez S, Hidalgo MD, Gomez A. Responsiveness of the VISA-P scale for patellar tendinopathy in athletes. *Br J Sports Med*. 2014;48(6):453-457. doi:10.1136/bjsports-2012-091163
10. Janssen I, van der Worp H, Hensing S, Zwerver J. Investigating Achilles and patellar tendinopathy prevalence in elite athletics. *Res Sports Med*. 2018;26(1):1-12. doi:10.1080/15438627.2017.1393748
11. Kaux JF, Delvaux F, Opong-Kyei J, et al. Cross-cultural adaptation and validation of the Victorian Institute of Sport Assessment-Patella questionnaire for French-speaking patients with patellar tendinopathy. *J Orthop Sports Phys Ther*. 2016;46(5):384-390. doi:10.2519/jospt.2016.5937
12. Koo TK, Li MY. A guideline of selecting and reporting intraclass correlation coefficients for reliability research. *J Chiropr Med*. 2016;15(2):155-163. doi:10.1016/j.jcm.2016.02.012
13. Korakakis V, Patsiaouras A, Malliaropoulos N. Cross-cultural adaptation of the VISA-P questionnaire for Greek-speaking patients with patellar tendinopathy. *Br J Sports Med*. 2014;48(22):1647-1652. doi:10.1136/bjsports-2012-091339
14. Lian O, Holen KJ, Engebretsen L, Bahr R. Relationship between symptoms of jumper's knee and the ultrasound characteristics of the patellar tendon among high level male volleyball players. *Scand J Med Sci Sports*. 1996;6(5):291-296. doi:10.1111/j.1600-0838.1996.tb00473.x
15. Lian OB, Engebretsen L, Bahr R. Prevalence of jumper's knee among elite athletes from different sports: a cross-sectional study. *Am J Sports Med*. 2005;33(4):561-567. doi:10.1177/0363546504270454
16. Lohrer H, Nauck T. Cross-cultural adaptation and validation of the VISA-P questionnaire for German-speaking patients with patellar tendinopathy. *J Orthop Sports Phys Ther*. 2011;41(3):180-190. doi:10.2519/jospt.2011.3354
17. Maffulli N, Longo UG, Testa V, Oliva F, Capasso G, Denaro V. VISA-P score for patellar tendinopathy in males: adaptation to Italian. *Disabil Rehabil*. 2008;30(20-22):1621-1624. doi:10.1080/09638280701786070
18. Marx RG, Menezes A, Horovitz L, Jones EC, Warren RF. A comparison of two time intervals for test-retest reliability of health status instruments. *J Clin Epidemiol*. 2003;56(8):730-735. doi:10.1016/s0895-4356(03)00084-2
19. 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. *Ann Rehabil Med*. 2013;37(5):698-705. doi:10.5535/arm.2013.37.5.698
20. Stanish WD, Curwin S, Rubinovich M. Tendinitis: the analysis and treatment for running. *Clin Sports Med*. 1985;4(4):593-609.
21. Terwee CB, Bot SDM, de Boer MR, et al. Quality criteria were proposed for measurement properties of health status questionnaires. *J Clin Epidemiol*. 2007;60(1):34-42. doi:10.1016/j.jclinepi.2006.03.012
22. Visentini PJ, Khan KM, Cook JL, Kiss ZS, Harcourt PR, Wark JD. The VISA score: an index of severity of symptoms in patients with jumper's knee (patellar tendinosis). Victorian Institute of Sport Tendon Study Group. *J Sci Med Sport*. 1998;1(1):22-28. doi:10.1016/s1440-2440(98)80005-4
23. Wageck BB, de Noronha M, Lopes AD, da Cunha RA, Takahashi RH, Costa LO. Cross-cultural adaptation and measurement properties of the Brazilian Portuguese Version of the Victorian Institute of Sport Assessment-Patella (VISA-P) scale. *J Orthop Sports Phys Ther*. 2013;43(3):163-171. doi:10.2519/jospt.2013.4287
24. Weng WZ, Zhi X, Jia ZY, et al. The adaptation of sport assessment-patella questionnaire into simplified Chinese version: cross-cultural adaptation, reliability and validity. *Health Qual Life Outcomes*. 2020;18(1):269. doi:10.1186/s12955-020-01525-7
25. Yildizer G, Bilgin E, Korur EN, Novak D, Demirhan G. The association of various social capital indicators and physical activity participation among Turkish adolescents. *J Sport Health Sci*. 2018;7(1):27-33. doi:10.1016/j.jshs.2017.10.008
26. Zwerver J, Bredeweg SW, van den Akker-Scheek I. Prevalence of Jumper's knee among nonelite athletes from different sports: a cross-sectional survey. *Am J Sports Med*. 2011;39(9):1984-1988. doi:10.1177/0363546511413370
27. 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 Musculoskelet Disord*. 2009;10:102. doi:10.1186/1471-2474-10-102

APPENDIX


維多利亞體育學院評估量表

1. 您可以坐著幾分鐘而不會疼痛?  
 0分鐘             100分鐘 分數   
 0 1 2 3 4 5 6 7 8 9 10

2. 您以正常步態下樓梯時，是否會疼痛?  
 強烈嚴重             不會疼痛的疼痛 0 1 2 3 4 5 6 7 8 9 10 分數

3. 您在沒有承重的狀況下完全伸直膝蓋，膝蓋是否會疼痛?  
 強烈嚴重             不會疼痛的疼痛 0 1 2 3 4 5 6 7 8 9 10 分數

4. 當進行完全承重(不扶東西)的弓箭步時，您是否會疼痛?  
 強烈嚴重             不會疼痛的疼痛 0 1 2 3 4 5 6 7 8 9 10 分數



5. 您蹲下的時候會不會有問題?  
 無法             沒有問題 0 1 2 3 4 5 6 7 8 9 10 分數

6. 您做十下單腳跳的時候或做完之後馬上會疼痛嗎?  
 強烈嚴重             不會疼痛的疼痛/ 無法 0 1 2 3 4 5 6 7 8 9 10 分數

7. 您目前有從事運動或其他身體活動嗎?  
 0  完全沒有  
 4  參與經調整後而較為緩和的訓練 (以及/或是) 較為緩和的競賽  
 7  參與完整的常規訓練 (以及/或是) 常規競賽，但跟症狀開始前不同等級  
 10  競賽的等級與症狀開始前相同或更高

8. 在這個問題中，請完成 A、B 或 C 其中一題

- 如果您在從事運動時不會疼痛，請只完成 8a
- 如果您在從事運動時會疼痛，但不會因此讓您無法完成活動，請只完成 8b
- 如果您有讓您無法完成運動的疼痛，請只完成 8c

8a. 如果您在從事運動的時候不會疼痛，您可以訓練或練習多久?  
 無  1-5 分鐘  6-10 分鐘  7-15 分鐘  大於 15 分鐘  分數   
 0 7 14 21 30

或

8b. 如果您在從事運動時有些疼痛，但不會因此讓您無法完成您的訓練或練習，您可以訓練或練習多久?  
 無  1-5 分鐘  6-10 分鐘  7-15 分鐘  大於 15 分鐘  分數   
 0 4 10 14 20

或

8c. 如果您有讓您無法完成訓練或練習的疼痛，您可以訓練或練習多久?  
 無  1-5 分鐘  6-10 分鐘  7-15 分鐘  大於 15 分鐘  分數   
 0 2 5 7 10

總分

**VICTORIAN INSTITUTE OF SPORT ASSESSMENT SCALE**

1. For how many minutes can you sit pain-free? POINTS   
 0 mins             100 mins

2. Do you have pain walking downstairs with a normal gait cycle? POINTS   
 strong severe pain             no pain

3. Do you have pain at the knee with full active non weight bearing knee extension? POINTS   
 strong severe pain             no pain

4. Do you have pain when doing a full weight bearing lunge? POINTS   
 strong severe pain             no pain

5. Do you have problems squatting? POINTS   
 unable             no problems

6. Do you have pain during or immediately after doing 10 single leg hops? POINTS   
 strong severe pain/ unable             no pain

7. Are you currently undertaking sport or other physical activity? POINTS   
 0  Not at all  
 4  Modified training ± modified competition  
 7  Full training ± competition but not at same level as when symptoms began  
 10  Competing at the same or higher level as when symptoms began

8. Please complete EITHER A, B or C in this question.  
 \* If you have no pain while undertaking sport please complete Q8a only.  
 \* If you have pain while undertaking sport but it does not stop you from completing the activity, please complete Q8b only.  
 \* If you have pain that stops you from completing sporting activities, please complete Q8c only.

8a. If you have no pain while undertaking sport, for how long can you train/practise?  
 NIL  0-5 mins  6-10 mins  11-15 mins  >15 mins   
 0 7 14 21 30  
 @R POINTS

8b. If you have some pain while undertaking sport, but it does not stop you from completing your training/practice, for how long can you train/practise?  
 NIL  0-5 mins  6-10 mins  11-15 mins  >15 mins   
 0 4 10 14 20  
 @R POINTS

8c. If you have pain that stops you from completing your training/practice, for how long can you train/practise?  
 NIL  0-5 mins  6-10 mins  11-15 mins  >15 mins   
 0 2 5 7 10  
 POINTS

**TOTAL VISA SCORE**

Figure A1. Left, final version of VISA-P-Ch. Right, original VISA-P. VISA-P, Victorian Institute of Sport Assessment-Patella; VISA-P-Ch, traditional Chinese version of the VISA-P.