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Validation of the Arabic Version of the Inventory of Coping Strategies of Competitive Sport (ISCCS)

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Abstract

The aim of our study is to validate the Arabic version of the inventory of coping strategies of competitive sports (ISCCS) using factor analysis. After critical analyses of adapted sports versions, Gaudreau and Blondin (2002) proposed the ISCCS questionnaire to measure coping strategies in the field of competitive sports (André & Laurencelle, 2010). The ISCCS identify ten coping strategies that are divided in two dimensions: the coping task-oriented and the coping emotion-oriented. 419 athletes (273 men and 146 women; age 16.79 ± 3.82 years, 14 to 34) in different individual and team competitions, volunteered to participate in the study. Data were collected and analyzed for reliability and validity using the test-retest method, reliability, correlation analysis and confirmatory factor analyses. Statistical analysis was performed with SPSS version 22.0.0 the IBM AMOS. The confirmatory factor analyses showed good adjustments for coping models of task-oriented (chi-square 359.35, CFI: 0.92; TLI: 0.91; GFI: 0.93; RMSEA: 0.040 and p value < 0.001), and the coping oriented emotion (chi-square 215.45, CFI: 0.93; TLI: 0.91; GFI, 0.94; RMSEA: 0.054 and p < 0.001). In conclusion, ISCCS was translated and validated in various languages, including French, English, Spanish, and Turkish… Arabic version demonstrated good psychometric properties adjustments and can be used in other surveys in the area of sports competition.

Keywords

Coping Strategies, Coping Task-Oriented, Emotion-Oriented Coping, Validity, Arabic Language

1. Introduction

Coping is getting more and more attention in the sport field (Bruchon, 2002; Beal,

Weiss, Barros & MacDermid, 2005); it helps to better understand the explanatory mechanisms between stressful events and their consequences (Doron, Stephan, & Le Scanff, 2013; Hoar, Kowalski, Gaudreau, & Crocker, 2006).

In terms of performance optimization, the athlete must confront the stressful situation in order to maximize its chances of success (Molinero, Salguero, & Márquez, 2010).

Lazarus and Folkman (1984) define coping as the set of cognitive and behavioral efforts to master the external and/or the internal voltages that mobilize or exceed human resources. Lazarus and Folkman (1984) propose the transactional model. It offers two dimensions of coping strategies: coping oriented problem (TOC) and coping oriented emotions (WCC) (Ponnelle & Lancry, 2002; Gaudreau & Blondin, 2002; Skinner, Edge, Altman, & Sherwood, 2003). The coping strategy is affected by personal characteristics (Costa, Somerfield, & Mac Crae, 1996), and the specific stressful circumstances (Chabrol & Callahan, 2004).

Two methodologies are used to measure the coping (Crocker & Major, 1998; Folkman & Moskowitz, 2000; Nicholls & Polman, 2007). The first is based on lists of thoughts or behaviors to manage stressful situations retrospective. Several questionnaires illustrate this methodology, such as the Ways of coping (Folkman and Lazarus, 1980), the COPE (Carver, Scheier, & Weintraub, 1989), the Coping inventory's response (Moos, 1993), the Coping strategy indicator (Amirkhan, 1990) or the Coping inventory for stressful situations (Endler & Parker, 1990).

The second methodology is the Daily coping inventory developed by Stone and Neale (1984). It avoids the response distortion on an extended recall in the first methodology. In the Daily coping inventory, people are asked the same day the stressful situation. Recent studies develop and implement methods that would minimize the retrospective bias (Calmeiro & Tenenbaum, 2007; Calmeiro, Tenenbaum, & Eccles, 2010, 2014; Doron & Gaudreau, 2014; Evans, Hoar, Gebotys, & Marchesin, 2014; Gaudreau et al., 2010).

Generally all instruments adapted to the sports field: the WCQ (Folkman and Lazarus (1980)) as well as the COPE (Carver et al., 1989) have shown questionable results (Nicholls & Polman, 2007). The exception is the Athletic Coping Skills Inventory-28 (ACSI-28) developed by Smith, Schutz, Smoll, & Ptacek (1995), the Coping Style Inventory for Athletes (CSIA), developed by Anshel and Kaissidis (1997), the Coping Style Scale for Sport (CSSS), created by Anshel, Williams and Williams (2000) and the Coping Function Questionnaire for Adolescent and Sport developed by Kowalski and Crocker (2001).

Gaudreau and Blondin (2002) have proposed an inventory of coping strategies in sports competition (coping strategies in sports competition inventory), specifically designed for the sport questionnaire. The ISCCS was created to evaluate athlete's actions to prepare for a competition (pre-competition) and those used for sporting competition (Gaudreau & Blondin, 2002). The ISCCS included a literature review of the coping actions used by sportsmen and a study analysis of the coping pressure, anxiety, and performance (André & Laurencelle, 2010). These two steps have allowed Gaudreau and Blondin to identify six subscales belonging to TOC: mental imagery, control of though-

ts, relaxation, invested effort, research support, and logical analysis. Also, four subscales belonging to the WCC are defined: the extraction of negative emotions, the mental distraction, the resignation and the social avoidance.

Besides its original language (French Canada), the ISCCS is validated in several other versions, such as the English version by the same authors (Gaudreau & Blondin, 2002), the Turkish version (Arsan & Koruç, 2011), the Spanish version (Campillo, Salguero, Márquez, & Molinero, 2013).

The purpose of this study is to explore the validation of the Arabic version of ISCCS and examine its psychometric properties.

2. Methodology

The sample used in this study consists of 419 athletes (273 male and 146 female) that have voluntarily participated in this study (mean age 16.79 years and 3.82). They represent different competitive disciplines, including 294 team sports and 125 individual sports.

All our athletes regularly participate in official competitions nationwide, among them international required preparing to take part in the Olympic Games in 2016 (the Tunisian national team of canoe Kayak).

3. Procedure

Gaudreau and Blondin (2002) proposed the ISCCS. They identify 39 items, divided into ten subscales (mental imagery, control of thoughts, relaxation, invested effort, seeking support, analysis logic, negative emotions extraction, mental distraction, resignation and social avoidance).

We are referred to the back-translation procedure (see Vallerand, 1989) to get the translation of the Arabic ISCCS version.

Athlete participation was voluntary. We require managers and coaches authorization of each athlete. Their anonymity was assured, and parental consent is required for those under 18 years.

Before data collection, all athletes were widely informed about the purpose and study procedures, and were informed that the results would be made available at the end of the study. Participants respond to a Liker scale of 5 points, ranging from 1 (never) to 5 (always). Each participant completed a socio-demographic form indicating their age, gender, sport and its affiliate club. The ISCCS was administered 2 hours at maximum 1 day after competition. According to Gaudreau and Blondin (2002), the peculiarity of this questionnaire is to be used before, during and after competition. Unfortunately, we were forbidden to ask athletes before and during the competition. Therefore, our study is limited to the after competition period.

4. Data Analysis

Data descriptive analyses of study groups (mean, standard deviation) are provided in Table 1.

The ISCCS temporal stability

Table 1. Mean scores and the respective standard deviations for each subscale of the ISCCS.

Subscales	Mean	Standard deviation
Mental imagery	15.63	3.17
Thought control	15.76	3.42
Effort expenditure	12.82	2.47
Seeking support	13.78	3.72
Relaxation	14.03	3.43
Logical analysis	14.98	3.59
Venting of unpleasant emotions	13.69	4.10
Disengagement	14.15	4.47
Social withdrawal	11.26	3.89
Mental distraction	9.76	4.11

We calculate the test-retest index to study the ISCCS temporal stability. The athlete is observed twice times by waiting a certain period of time between two collections (2 weeks). The stability is established by the degree of correlation between the answers provided by the same subject (N = 20), (Shrout & Fleiss, 1979).

Internal consistency was measured by calculating the Cronbach's alpha coefficient between the subscales of the questionnaire. It assesses whether each of the elements reproduced repeatedly and consistently measuring the same construct.

We observed a large number of participants (419) which is higher than the minimum number of 300 suggested by Tabachnick and Fidell (1996). Confirmatory factor analysis (CFA) was treated with AMOS 22.0.0, in order to validate the structure and arrangement of ISCCS factors.

We use several indices of adequacy (Hoyle & Panter, 1995; Kline, 2005) to evaluate the fit models to data collected such as the χ^2 statistic that overcomes the abnormality data (Sattora and Bentler, 1994), the compared fit index CFI (Bentler, 1990) and TLI (Tucker-Lewis Index), the Goodness of Fit Index GFI (Jöreskog & Sörbom, 1984) and the Root Mean Square error of approximation RMSEA (Browne & Cudeck, 1993).

Finally, we conduct a MANOVA analysis to examine the effects of gender and sport (collective and individual sports) on the use of coping strategies.

5. Results

5.1. Descriptive Analyses

The mean scores and the respective standard deviations for each sub-level are presented in Table 1.

5.2. The Temporal Stability of the Instrument

The reliability data test-retest is studied by the correlation coefficients between the

scores of the ISCCS subscales (see Table 2 and Table 3).

As concerned with coping strategies, the Pearson correlation coefficient is 0.95 (Effort Expenditure) and 0.69 (mental distraction), ($p \leq 0.001$). Furthermore, overall score correlation coefficient of the questionnaire is 0.97 ($p < 0.001$).

5.3. The Internal Consistency, Cronbach Alpha

Measured using Cronbach's alpha, the internal consistency of the Arabic version of ISCCS demonstrated good reliability (Table 4). The coefficients of different coping strategies are from 0.63 to 0.75. For the two dimensions (coping task-oriented and

Table 2. The test-retest coefficients for the subscales TOC of the ISCCS.

	Mental imagery	Thought control	Effort expenditure	Seeking support	Relaxation	Logical analysis
Pearson correlation	0.782	0.901	0.949	0.940	0.910	0.816
Significance level p	0.000	0.000	0.000	0.000	0.000	0.000
N	20	20	20	20	20	20
Number of the elements	4	4	3	4	4	4

Table 3. The test-retest coefficients for the subscales EOC of the ISCCS.

	Venting of unpleasant emotions	Disengagement	Social withdrawal	Mental distraction
Pearson correlation	0.888	0.868	0.721	0.690
Significance level p	0.000	0.000	0.000	0.001
N	20	20	20	20
Number of the elements	4	4	4	4

Table 4. Reliability coefficients for the ten factors in the Arabic version and original version of ICSSC.

Subscales	Cronbach alpha of the Arabic version	Cronbach alpha the original version Gaudreau & Blondin, 2002
Mental imagery	0.67	0.74
Thought control	0.66	0.73
Effort expenditure	0.63	0.79
Seeking support	0.67	0.70
Relaxation	0.63	0.80
Logical analysis	0.70	0.67
Venting of unpleasant emotions	0.74	0.87
Disengagement	0.75	0.68
Social withdrawal	0.69	0.71
Mental distraction	0.72	0.76

oriented coping emotion) coefficients are 0.81 and 0.64 respectively. Otherwise, the overall coefficient of the questionnaire is 0.78.

5.4. Relations between the Subscales of ISCCS

Significant positive correlations ($p < 0.05$) were observed respectively between mental imagery, the mind control, relaxation, the deployment effort, seeking social support, logical analysis, breakdown of unpleasant emotions and disengagement (between 0.109 and 0.606). The correlation coefficient between isolation and relaxation is 0.180 and between isolation and mental distraction is 0.189.

As shown in Table 5, mental distraction, mental imagery, control of thoughts, Effort Expenditure, logical analysis, the breakdown of unpleasant emotions and disengagement are negatively and significantly correlated ($p < 0.05$). The scores range from −0.219 to −0.100. A negative correlation is observed also between isolation, the breakdown of unpleasant emotions and disengagement between −0.173 and −0.101.

5.5. Confirmatory Factor Analysis

The six factors model statistics are: [$X^2 = 359.35$; $p < 0.001$; df: 215; $X^2/df = 1.67$; CFI = 0.92; TLI = 0.91; GFI = 0.93 and RMSEA = 0.040].

Table 5. Correlations between the subscales of ISCCS.

Subscales		1	2	3	4	5	6	7	8	9
Mental imagery		1								
Thought control	Pearson correlation	0.306**	1							
	Significance level p	0.000								
Effort expenditure	Pearson correlation	0.337**	0.378**	1						
	Significance level p	0.000	0.000							
Seeking support	Pearson correlation	0.187**	0.204**	0.148**	1					
	Significance level p	0.000	0.000	0.002						
Relaxation	Pearson correlation	0.255**	0.194**	0.110*	0.208**	1				
	Significance level p	0.000	0.000	0.025	0.000					
Logical analysis	Pearson correlation	0.403**	0.309**	0.393**	0.241**	0.295**	1			
	Significance level p	0.000	0.000	0.000	0.000	0.000				
Venting of unpleasant emotions	Pearson correlation	0.117*	0.109*	0.159**	0.084	0.044	0.072	1		
	Significance level p	0.017	0.026	0.001	0.085	0.370	0.141			
Disengagement	Pearson correlation	0.232**	0.156**	0.202**	0.189**	0.146**	0.178**	0.606**	1	
	Significance level p	0.000	0.001	0.000	0.000	0.003	0.000	0.000		
Social withdrawal	Pearson correlation	−0.001	−0.101*	0.014	0.043	0.180**	0.027	−0.173**	−0.106*	1
	Significance level p	0.977	0.039	0.774	0.380	0.000	0.583	0.000	0.030	
Mental distraction	Pearson correlation	−0.111*	−0.122*	−0.100*	−0.040	0.063	−0.219**	−0.128**	−0.156**	0.189**
	Significance level p	0.023	0.013	0.041	0.417	0.201	0.000	0.009	0.001	0.000

The four factors model statistics are: [X^2 = 215.45; p < 0.001; df: 98; X^2/df = 2, 20; CFI = 0.93; TLI = 0.91; GFI = 0.94, and RMSEA = 0.054], see Table 6.

The two hypothetical models (6 factors (TOC) and 4 factors (EOC)) parameters were statistically significant at p < 0.05 (see Figure 1 and Figure 2).

Table 6. Confirmatory factor analysis and models of the ISCCS.

Models	X^2	df	X^2/df	CFI	TLI	GFI	RMSEA
6 FACTOR COT	359.35	215	1.67	0.92	0.91	0.93	0.040
4 FACTOR EOC	215.45	98	2.20	0.93	0.91	0.94	0.054

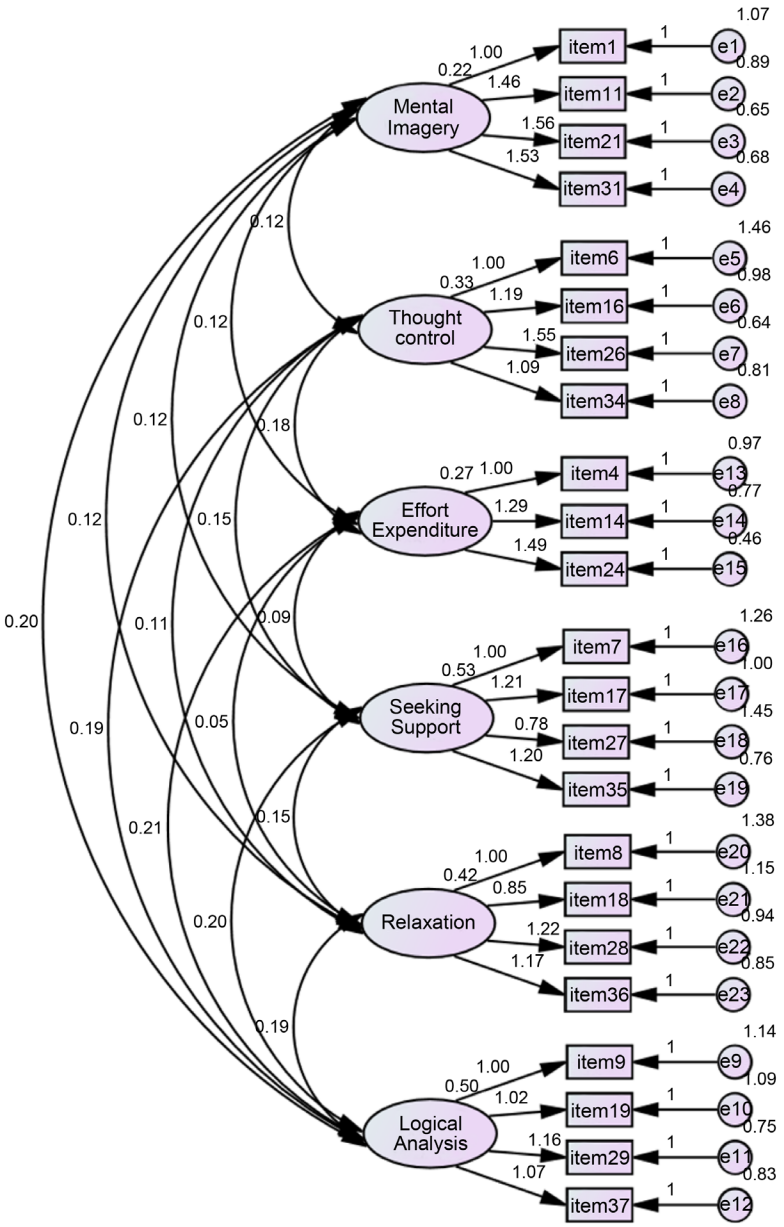
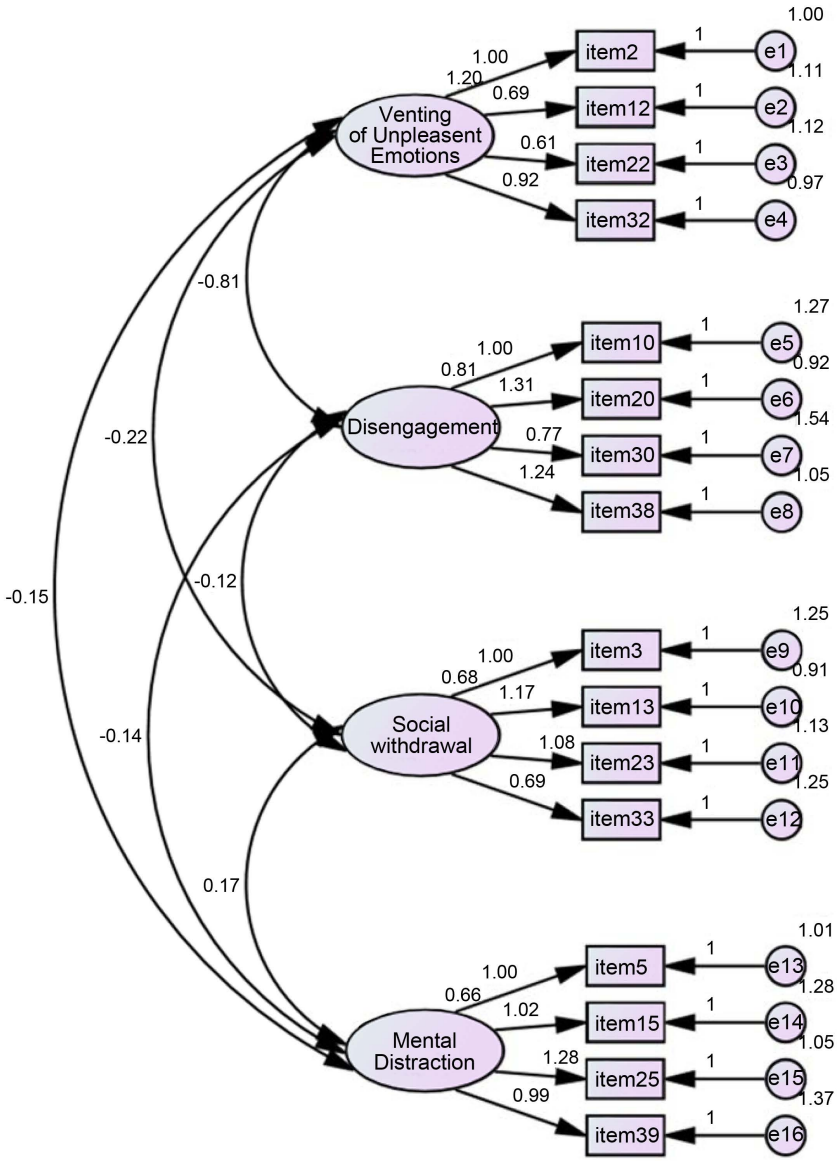


Figure 1. The hypothesized model of 6-factor (TOC) of the Arabic version of ISCCS.



The ellipses represent unrealized buildings and squares represent measured variables. All parameters are normalized and are significant at p < 0.05. The remaining differences are shown in small circles.

Figure 2. The hypothesized model of 6-factor (TOC) of the Arabic version of ISCCS.

For the exploratory factor analysis (Table 7), the factor loadings of the items for the 6-factor model were between 0.547 and 0.757 and between 0.535 and 0.795 for the four-factor model (see Table 8).

Finally a multivariate analysis, MANOVA was conducted to examine the effects of gender and the kind of sport practiced. The results revealed an important effect of sex [Wilks' lambda = 88; F = 5.54; df = 408; $p < 0.001$] and the kind of sports practiced [Wilks' lambda = 77; F = 12.73; df = 408; $p < 0.001$] on the use of coping strategies.

6. Discussion

For stability over time, we find that the test-retest reliability scores are generally greater

Table 7. Standardized solutions for factor loadings for the task oriented coping (TOC).

Items	Factor loadings					
	1	2	3	4	5	6
Item 1	0.693					
Item 11	0.670					
Item 21	0.663					
Item 31	0.651					
Item 19		0.757				
Item 37		0.749				
Item 29		0.617				
Item 9		0.547				
Item 7			0.730			
Item 17			0.728			
Item 35			0.716			
Item 27			0.612			
Item 16				0.740		
Item 6				0.611		
Item 34				0.609		
Item 26				0.608		0.351
Item 36					0.749	
Item 28					0.729	
Item 18					0.612	
Item 8					0.576	
Item 4						0.713
Item 24						0.713
Item 14						0.646

or equal than 0.9, indicating a very good repeatability. Usually a high correlation means that the questionnaire remains rather stable over time and that an overall score very close in consecutive reversals. The score ranges between 0.70 and 0.80 for mental imagery and isolation and correlation is rather weak only for mental distraction strategy ($r < 0.70$).

The coefficients of reliability for mental imagery, control of thoughts, deployment efforts, seeking support, relaxation and isolation are high ($0.60 < \alpha < 0.70$; Kline, 1998). Also the Cronbach alpha coefficients are reasonable, as they range between 0.70 and 0.80 for logical analysis, the breakdown of unpleasant emotions, mental disengagement and distraction.

There are no big differences between the Arabic and the original form version based on internal consistency. Generally according to DeVellis (1991), alpha values that are

Table 8. Standardized solutions for factor loadings for the emotion oriented coping (EOC).

Items	Factor loadings		
	1	2	3
Item 20	0.775		
Item 32	0.746		
Item 38	0.740		
Item 2	0.735		
Item 10	0.640		
Item 12	0.626		
Item 30	0.545		
Item 22	0.535		
Item 25		0.778	
Item 5		0.729	
Item 15		0.707	
Item 39		0.697	
Item 13			0.795
Item 23			0.737
Item 3			0.656
Item 33			0.646

above 0.60 are considered as acceptable. Cronbach alpha coefficients of the Arabic version are very close to their original version counterparts.

The inter-scale correlations are significant as the average correlations vary between 0.20 and 0.40 (Briggs & Cheek, 1986). According to Klein (2005), if the correlation between two factors equal to 1.00 (more than 0.85), the two factors are equal, which implies the omission of one of these two factors. In our study, the inter-scale correlations were in the acceptable range.

For the confirmatory factor analysis, chi-square as well as normed X^2 (X^2/df) statistics values were important for both models. They are in an acceptable range ($X^2 \leq 1/df \geq 3$); see Wheaton, Muthen, Alwin and Summers (1977) and Tabachnick and Fidell, (2007).

The adjustment indices of the two models (the six factors model and the four factors model): CFI, TLI and GFI are lower than 0.90 (Roussel, Durrieu, Campoy, & El Akremi, 2002). The RMSEA is respectively lower than 0.05 (Brown, 2006) and 0.06 (Hu & Bentler, 1999), for the model with six factors and four factors.

For the exploratory factor analysis, standardized factor loadings can be interpreted as Pearson correlations estimated between an indicator and factor (Kline, 2005). Factor loads of 0.30 and above are commonly used (Brown, 2006).

For the model of coping oriented emotion, we distinguished saturations with 3 factors. Consequently, we estimated two models: the four factors and the three factors

models [X^2 = 268.46; $p < 0.001$; df: 101; X^2/df = 2, 66; CFI = 0.89; TLI = 0.88; and RMSEA = 0.063]. The results, suggest the best match of the original four-factor model that we used in the empirical study.

Finally united various analyses have concluded that mental imagery, control of thoughts, research support, the breakdown of unpleasant emotions, and disengagement vary with the athletes sex. More precisely, we find that most men use mental imagery and seeking support, whereas women use control thoughts, the breakdown of unpleasant emotions, and disengagement.

For the practiced sport, the coping strategies: research support, relaxation, ventilation unpleasant emotions, disengagement and mental distraction vary according to the kind of sport practiced. Formally athletes belonging to individual sports use more of the coping strategies indicated above.

However, our study suffers from some limitations. The first limitation concerns the timing of the administered questionnaire: The ISCCS was administered two hours at maximum one day after the competition (retrospective method). We know that this could be a source of bias, the output of the competition (success or failure) could have influenced the answers.

Also, the factor of stability ISCCS through the different phases of a sporting competition has not been tested (Gaudreau & Blondin, 2002).

Further, we did not ISCCS cross-validation with other scales that invest coping, which affect the choice of the coping strategies used by our participants.

7. Conclusion

In this research, we propose an Arabic version of the inventory of coping strategies in sports competition. The loyalty of the ISCCS being excellent, the majority of the variables used for the validity and sensitivity to change are acceptable. The results of this study suggest that ISCCS is an evaluation tool in the sports field. Moreover, it is valid for assessing coping task-oriented and the coping emotion-oriented in the collective as well as in the individual sport before, during and after the competition. Psychologists and sports practitioners in the Arab world could use ISCCS to differentiate the coping strategies used by athletes and for preventive interventions.

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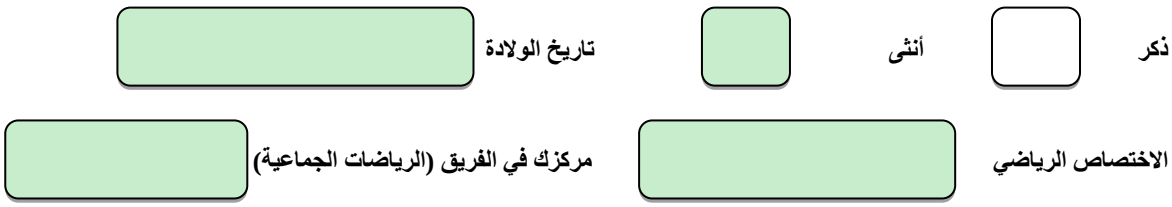
Appendix

Supplementary material: Arabic translated version of the ISCCS.

استبيان استراتيجيات التأقلم في مواجهة قلق المنافسة



لا توجد إجابات صحيحة أو إجابات خاطئة

التوجيهات:

1/ قراءة كل سؤال بتركيز

2/ لا تضيع الكثير من الوقت على كل سؤال

3/ اختر الجواب الذي يصف بشكل أفضل ما شعرت به دقائق قبل المباراة

	العبارات	أبدا	نادرا	أحيانا	غالبا	دائما
01	تصورت أنني في منتهى السيطرة على الوضع قبل المسابقة	1	2	3	4	5
02	نطقت بألفاظ سيئة في سري أو بصوت عالي لأعبر عن غضبي	5	4	3	2	1
03	ابتعدت عن بقية زملائي	1	2	3	4	5
04	انعزلت مع نفسي لتوفير جهد مستمر في المسابقة	1	2	3	4	5
05	شغلت نفسي بالتفكير في أشياء أخرى غير المسابقة	1	2	3	4	5
06	حاولت ألا أقع تحت تأثير المنافس	1	2	3	4	5
07	طلبت نصائح من حولي لتساعدني في تحضير نفسي ذهنيا	1	2	3	4	5
08	حاولت أن أجعل جسمي في حالة استرخاء	1	2	3	4	5
09	قمت بتحليل إنجازاتي في المسابقات السابقة	1	2	3	4	5
10	فقدت كل الأمل في الوصول إلى هدفي في المسابقة	5	4	3	2	1
11	قمت باستعادة تنفيذ أحسن حركاتي الفنية في ذهني	1	2	3	4	5
12	كنت غاضبا	5	4	3	2	1
13	انزويت (ابتعدت) وحدي في مكان ملائم للتفكير	1	2	3	4	5
14	فكرت ببذل مجهود كبير في المسابقة	1	2	3	4	5
15	فكرت في هوياتي المفضلة لأجتنب التفكير في المسابقة	1	2	3	4	5
16	حاولت إزاحة شكوكي في قدراتي وذلك بالتفكير في أشياء إيجابية	1	2	3	4	5
17	طلبت نصائح تساعدني في المباراة من زملائي في الفريق	1	2	3	4	5
18	حاولت التخفيف من حدة توتر عضلاتي	1	2	3	4	5
19	قمت بتحليل نقاط ضعف المنافس	1	2	3	4	5
20	أصبحت محبطا (أصبحت يائسا)	5	4	3	2	1
21	تخيلت أنني بصدد تحقيق أداء عظيما في المسابقة	1	2	3	4	5

Continued

22	عبرت عن استيائي (عبرت عن ضيقي)	5	4	3	2	1
23	اختليت بنفسي (انفردت بنفسي)	1	2	3	4	5
24	عزمت على تقديم أقصى جهد في المسابقة	1	2	3	4	5
25	قمت بأشياء مسلية حتى لا أفكر في المسابقة	1	2	3	4	5
26	حاولت استبدال أفكاري السلبية بأخرى إيجابية	1	2	3	4	5
27	وضعت ثقتي في شخص جدير بها	1	2	3	4	5
28	قمت بتمارين للاسترخاء	1	2	3	4	5
29	فكرت في الحلول الممكنة للسيطرة على الوضع	1	2	3	4	5
30	تمنيت أن تنتهي المباراة فورا	5	4	3	2	1
31	تصورت القيام بأفضل مباراة لي في حياتي	1	2	3	4	5
32	عبرت عن مشاعر الإحباط (اليأس)	5	4	3	2	1
33	بحثت عن الهدوء	1	2	3	4	5
34	فكرت في نجاحي عوضا عن فشلي	1	2	3	4	5
35	تحدثت إلى شخص قادر على تحفيزي	1	2	3	4	5
36	جعلت عضلات جسمي في حالة استرخاء	1	2	3	4	5
37	قمت بتحليل متطلبات المباراة	1	2	3	4	5
38	لم أعد أؤمن بقدراتي (يئست من قدرتي) على تحقيق الفوز	5	4	3	2	1
39	فكرت في عائلتي وأصدقائي لإبعاد تركيزي على المسابقة	1	2	3	4	5

الأسئلة المؤشر عليها باللون الأسود هي أسئلة ذات اتجاه عكسي