Development and Validation of QOLS for University Athletes

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ABSTRACT

Background/Purpose: The purpose of this study was to develop and validate the quality of life scale (QOLS) for the university athletes in Korea. Athletes in the university setting are unique and different from normal population, so a valid QOLS is needed to be developed. Convergent and discriminant validity evidence using confirmatory factor analysis (CFA) were examined to establish the validity evidence based on the internal structure of the QOLS.

Method: Based on the literature review and through consultation with content and measurement experts, a 25-item QOLS was generated. The scale consists of five factors: physical function (PF), economics (EC), social relationship (SR), self-esteem (SE), and emotional state (ES), and each factor has 5-items. The scale was administered to 221 university athletes in Korea. For convergent and discriminant validity, AMOS 21.0 program was used to analyze the data. Convergent validity was determined by composite reliability (CR) and average variance extracted (AVE). If CR is over 0.70 and AVE is over 0.50 for each factor, convergent validity is supported. Discriminant validity was determined by AVE and coefficient of determination (CD) that is a squared correlation between each two factors (i.e., PF-EC, PF-SR, PF-SE, PF-ES, EC-SR, EC-SE, EC-ES, SR-SE, SR-ES, and SE-ES). If each two factors' AVE is bigger than the CD, discriminant validity is supported (Anderson & Gerbing, 1988).

Analysis/Results: 15 of the 25 items had good path coefficient (> .50) with acceptable fit statistics. The 10 items were eliminated from the final estimation, which resulted in 3-items for each factor. Overall, model fits the data well (non-normed fit index [NNFI] = .921; comparative fit index [CFI] = .940; root mean squared error of approximation [RMSEA] = .067). All factors (PF, EC, SR, SE, and ES) have acceptable CR (> .70) and AVE (> .50). All two factors' CDs (i.e., PF↔EC = .43, PF↔SR = .26, PF↔SE = .33, PF↔ES = .00, EC↔SR = .44, EC↔SE = .39, EC↔ES = .00, SR↔SE = .34, SR↔ES = .01, and SE↔ES = .00) are lower than the AVEs, which demonstrated convergent and discriminant validity evidence.

Conclusions: This result supports validity evidence based on the internal structure of the QOLS. The scale can be used to assess the quality of life of individuals properly and provide meaningful information to university athletes. The newly developed QOLS for athletes in Korea should be validated with another sample to increase external validity.

ITEMS and SCALES

Based on content validity, 25-item was selected in the quality of life items that were established. 14-item (Q1~Q14) was measured by five Likert scales(level of satisfaction: 1-very dissatisfied, 2-dissatisfied, 3-unsure, 4-satisfied, 5-very satisfied), and the other 11-item (Q15~Q25) was measured by five Likert scales (level of good/bad: 1-very negative, 2-negative, 3-neutral, 4-positive, 5-very positive). The number of the 25-item contents are shown in Table 1.

Table 1: 25-item's contents

	How do you think your ____
Q1	physical health?
Q2	home and circumstance?
Q3	general livelihood?
Q4	relationship with your parents?
Q5	relationship with your brothers or kinfolks?
Q6	vitality?
Q7	physical function?
Q8	friendship?
Q9	position in your family?
Q10	property?
Q11	a sleep?
Q12	relationship with your workers in job?
Q13	level of clothes?
Q14	family total income?
	Do you think ____
Q15	you have certain purpose in your life?
Q16	you eat good meal?
Q17	you work well in your responsibility?
Q18	you feel defeat easily?
Q19	you have ambitious living?
Q20	you adapt in changing environment?
Q21	you feel fear easily?
Q22	you get angry?
Q23	you have self-esteem?
Q24	you have mental pain?
Q25	you are depressed?

Based on the literature review and through consultation with content and measurement experts, the 25-item consists of five factors: physical function (PF: Q1, Q6, Q7, Q11, Q16), economics (EC: Q2, Q3, Q10, Q13, Q14), social relationship (SR: Q4, Q5, Q8, Q9, Q12), self-esteem (SE: Q15, Q17, Q19, Q20, Q23), and emotional state (ES: Q18, Q21, Q22, Q24, Q25).

RESULTS

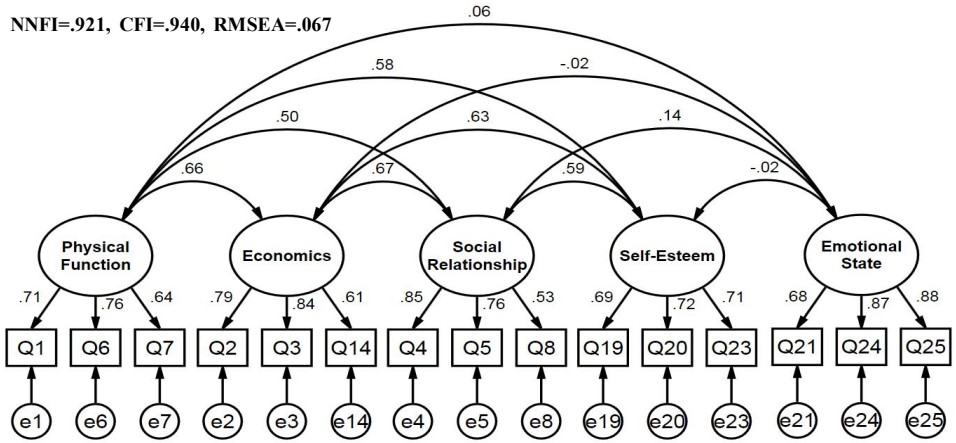

Figure 1: CFA to verify construct validity

Figure 1 shows that 10 items were eliminated from the final estimation because model fit is not satisfied. Specifically, NNFI=.799, CFI=.822, RMSEA=.084, so Q11, Q16 were eliminated in PH factor, and Q10, Q13 in EC factor, Q9, Q12 in SR factor, Q15, Q17 in SE factor, Q18, Q22 in ES factor were eliminated. It means 15 of the 25 items had good path coefficient (>.50) with acceptable fit statistics, which resulted in 3-items for each factor. Overall, model fits the data well (NNFI=.921, CFI=.940, RMSEA=.067).

Table 2: Convergent validity

LV		OV	SE	ME	CR	AVE
Physical Function	→	Q1	.71	.56	.75	.50
	→	Q6	.76	.43		
	→	Q7	.64	.50		
Economics	→	Q2	.79	.32	.81	.60
	→	Q3	.84	.20		
	→	Q14	.61	.60		
Social Relationship	→	Q4	.85	.22	.78	.56
	→	Q5	.76	.40		
	→	Q8	.53	.65		
Self-Esteem	→	Q19	.69	.48	.77	.53
	→	Q20	.72	.38		
	→	Q23	.71	.47		
Emotional State	→	Q21	.68	.57	.84	.63
	→	Q24	.87	.30		
	→	Q25	.88	.30		

Table 3: Discriminant validity

LV		LV	R	R^2	Latent variables' AVE
PF	↔	EC	.66	.43	PF(.50), EC(.60)
PF	↔	SR	.50	.26	PF(.50), SR(.56)
PF	↔	SE	.58	.33	PF(.50), SE(.53)
PF	↔	ES	.06	.00	PF(.50), ES(.63)
EC	↔	SR	.67	.44	EC(.60), SR(.56)
EC	↔	SE	.63	.39	EC(.60), SE(.53)
EC	↔	ES	-.02	.00	EC(.60), ES(.63)
SR	↔	SE	.59	.34	SR(.56), SE(.53)
SR	↔	ES	.14	.01	SR(.56), ES(.63)
SE	↔	ES	-.02	.00	SE(.53), ES(.63)

Table 2 shows result of convergent validity(LV=Latent Variable; OV=Observed Variable, SE=Standard Error; ME=Measurement Error, CR=Construct Reliability; AVE=Average Variance Extracted), and Table 3 shows result of discriminant validity. All factors (PF, EC, SR, SE, and ES) have acceptable CR (≥.70) and AVE (≥.50). All two factors' R^2 (i.e., PF↔EC=.43, PF↔SR =.26, PF↔SE =.33, PF↔ES =.00, EC↔SR =.44, EC↔SE =.39, EC↔ES =.00, SR↔SE =.34, SR↔ES =.01, and SE↔ES =.00) are all lower than the AVEs. The QOLS that developed in this study was verified convergent validity and discriminant validity evidence.

CONCLUSION