

VALIDATION OF MEASUREMENT MODEL OF MENTAL TOUGHNESS IN SPORT FOR YOUNG LAO ATHLETES

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Abstract:

In order for Lao PDR to have a qualified and standardized mental toughness inventory for young Lao athletes, the purpose of this research were to validate the measurement model of mental toughness inventory, to measure the level of mental toughness and to compare the level of mental toughness of experienced and gender differences of young Laos athletes. The Thai version of mental toughness inventory (Julvanichpong et al, 2010) was translated into Lao language and administrated to samples of 404 young Lao athletes (189 females and 215 males, with an age range between 14-18 years old) who experienced the competitions more than 1 year. The data of mental toughness were analyzed by using a computer application program, and the construct validity and confirmatory factor were analyzed through LISREL 8.50.

The results of mental toughness inventory of construct validity consisted of 12 factors: 1) self-efficacy, 2) positive comparisons, 3) task value, 4) potential, 5) task familiarity, 6) personal bests, 7) stress minimization, 8) mental self – concept, 9) positivity, 10) perseverance, 11) task focus, and 12) goal commitment. The overall reliability of the inventory as indicated by coefficient alpha was found to be as .95 while factor correlation was .499-.989. The inventory construct validity is acceptable at good level (Chi square = 42.231; P = 0.13025), df=33, AGFI = 0.959, CFI = 0.999, RMR = 0.0132. Laos male athletes (\bar{x} = 6.56, SD = 0.95) show higher level of mental toughness than female (\bar{x} = 6.49, SD = 0.86) statistically significant differences (F=1.805, p=.011). The group of athletes who had more experienced (5 years or above), were significantly higher than the group of 3-4 years and 1-2 years (p.<.05).

Keywords: Measurement, mental toughness, sport for young.

INTRODUCTION

Current sporting events, every athlete needs to be trained and mentally self-developed to be strong, which is very important because the mind helps manage stress and anxiety effectively. Although sometimes the body is sick and weak, but if the mind is strong it will be able to have patience and endeavor to overcome obstacles as the saying "spirituality is the body of a slave", especially in situations of playing sports or in the stressful, intensive and long sport competitions. Mental strength is an ability that helps to control emotions well, be determined and dedicated in the competition (Loehr, 1986). Athletes who deal with

themselves and situation in a positively pressured way will be more successful than fear, failure or loss. The idea that there is no fear of failure will allow athletes to better concentrate on playing. Don't worry about not being able to do or afraid of being blamed by those around you if playing wrong

Although it is clearly known that the mental strength of the athlete is very important while practicing and competing in sports. However the research on this topic is very small due to the lack of standard psychological tools that can be accurately and validly assessed the level of mental strength according to psychological principles, especially in Laos where research

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and application of sports psychology to create or develop mental strength, and today, Laos has no sports psychologists or sports psychology associations that support sporting events. However, personnel's knowledge in sports have been developed through encouraging them to education according to the guidelines of the party and state in the development of education (Agreement of the Minister No. 2402). Therefore, this study aims to develop tools that are suitable for evaluating the mental strength of young athletes attending sporting events in Laos

For athletes with different levels of skill and gender participating in drills and competitions, athletes are more capable will have higher mental strength than those who are less capable Suriyan Sompong, Wimolmas Prachakul and Suphit Samahito (2011), while athletes with different sexes participating in the competition were no different in mental toughness (Thanida Chulavichitpong and Faculty, 2010) whereas athletes who participated in training and sports competitions in Laos there was no information about how Lao athletes possess mental strength, males and females have the same level of mental strength? Therefore, the researcher is interested in studying this issue.

Based on the data studied and developed the mental strength questionnaire of athletes in the past found that they were studied and appropriately applied to athletes in many countries in the west and the east. Thailand studied and developed a mental strength questionnaire for athletes as of Thanida Chulavanichpong et al (2010). It found that the questionnaire developed from principles and questionnaires of Middleton et al (2005) can be used for Thai national athlete mental toughness questionnaire. The Thai version consists of 12 elements (36 items), 3 items each, with total confidence level equal to .95. The questionnaire used in this study was the Thai version, but translated into Lao. Therefore, it was considered to be an important step in the development of sports psychology of Laos and will lead to the development of the ability of Lao athletes in one way if the questionnaire is able to assess the

level of mental strength of the athlete. It will also be beneficial to create mental strength for athletes in Laos as well. Therefore, the development of the mental strength test of Thanida Chulavanichpong et al (2010) into Lao version is important and is a way of studying about the mental strength of Lao athletes.

RESEARCH METHODS

The researcher translated the Thai mental toughness questionnaires of Thanida Chulavanichpong et al (2010), consisting of 12 elements and 36 items, with the following steps

Step 1: Send the mental toughness questionnaire. Thai version of Thanida Chulavanichpong et al (2010), allowing experts to translate questioners from Thai into Lao by using experts who have knowledge of language and psychology 1 person to translate questionnaire

Step 2: Send the mental toughness questionnaires in Lao version to 2 content experts and they checked the consistency in the content, the language and culture by commenting whether they agree or not or gave suggestions/comments that should be adjusted to suit the contents, language and culture.

By comparing the two questionnaires between the original questionnaire and the questionnaire translated into Lao. All aspects and items were compared in which the experts to bring the Lao language questionnaire to compare with the original in Thai language whether there was language consistency, the content was correct and the culture was appropriate. After that, the questionnaire was adapted according to the advice of experts who commented that they were not sure of the items 15 and 30, adjusted according to the advice of the expert's opinion on the language. Then sent a mental toughness questionnaires that was modified to the expert again before the questionnaire was used to find level of confidence in a sample like group before the measuring with the actual sample group which will make the mental toughness test form more suitable for Lao youth athletes and the questionnaire used in this research has the level of confidence of .98.



Laos-exchange students are learning to improve their qualification at Bac Ninh Sports University (photo by: upes1)

Sample

The sample group that participated in this research was 404 people, aged between 14-18 years old with, 215 males and 189 females, classified by experiences: 1-2 year-experienced consisted of 146 athletes, 3-4 years experienced consisted of 145 athletes and 113 athletes with 5 years or more experienced.

Research tools

The instrument used in this research is the mental toughness questionnaire of Thai athletes (Thai version Thanida Chulavanichpong at al 2010), which is a self-assessment form with an 8 rating scale (No. 1 is not true for me until the 8 is true for me) that the researcher has carried out by translating from Thai into Lao, which has 12 factors, 36 items in each factors, there were 3 items, namely, self-Efficacy: SEFF items 4, 16, and 28) Feeling positive when compared to competitors (Positive Comparisons: PCOMP item 8, 20 and 32), Knowing the value of work (Task Value: VAL items 9, 21 and 33), potential (Potential: POT items 6, 18 and 30), task familiarity: TFAM items 10, 22 and

34), personal best: PB items 2, 14 and 26, dealing with Less stress (Stress Minimization: MIN items 3, 15 and 27), mental self-concept (MSC items 12, 24 And 36), positive thinking (Positivity: POSI items 11, 23 and 35), perseverance: PERS item 7, 19 and 31), the collection of intentions only with the work done (Task Specific Attention: TFOC items. 5, 17 and 29) and goal commitment (COMM item 1, 13 and 25) with the confidence level of .95. The statistics used are Confirmatory component analysis by using LISREL 8.50 program to find the mean and standard deviation of mental toughness questionnaire. The questionnaire was used to compare gender differences and experiences differences of the sample group by using polynomial variance analysis techniques (Multivariate Analysis of Variance: MANOVA)

Data Collection

In this study, the researcher conducted the collection by herself by taking a questionnaire translated into Lao and approved by the experts in terms of content, language and culture to test athletes ages between 14-18 years and had

Component	1	2	3	4	5	6	7	8	9	10	11
1. SEFF											
2. MSC	0.675										
3. POT	0.737	0.694									
4. TFAM	0.789	0.73	0.76								
5. PB	0.75	0.69	0.76	0.75							
6. VAL	0.726	0.65	0.767	0.737	0.716						
7. COMM	0.631	0.568	0.591	0.596	0.63	0.499					
8. PERS	0.71	0.683	0.673	0.722	0.738	0.638	0.705				
9. TFOC	0.706	0.69	0.703	0.681	0.721	0.623	0.715	0.691			
10. MIN	0.746	0.69	0.782	0.794	0.73	0.732	0.607	0.671	0.704		
11. POSI	0.736	0.644	0.725	0.709	0.989	0.645	0.686	0.657	0.745	0.763	
12. PCOMP	0.747	0.654	0.792	0.78	0.715	0.804	0.596	0.678	0.704	0.802	0.726

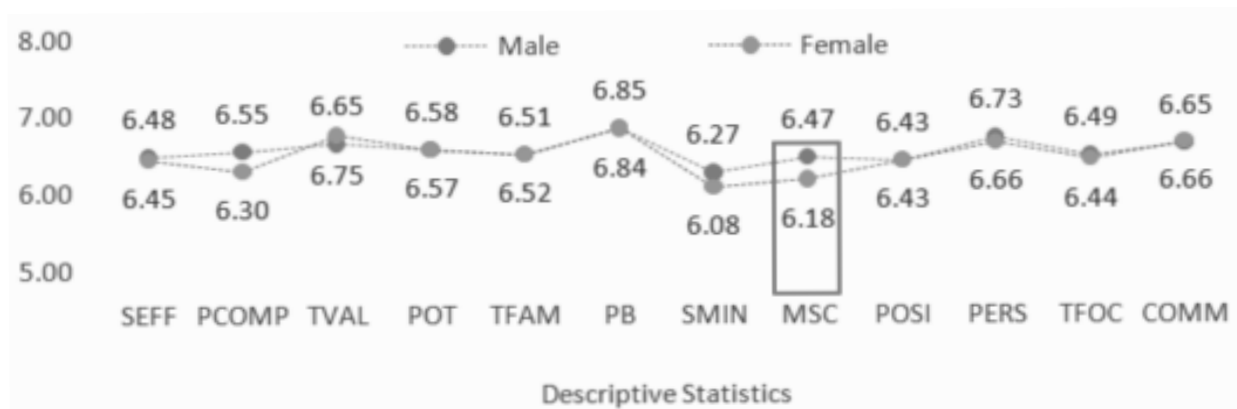
experience in sporting events for 1 year or more both male and female of the samples. The sample group took about 10-15 minutes to answer 36 items of the participants respectively. The mental toughness is divided into 5 levels. the average score ranged 6.41-8.00 was the highest level, For 4.81-6.40 was at a high level, 3.21-4.80 was at a moderate level, 1.61-3.20 was at a relatively low level and 1.00-1.60 was at the lowest level respectively.

Statistical data analysis

After translating the mental toughness questionnaire from Thai version of Thanida Chulavanichpong et al (2010) Multiple statistical data analysis applied, including 1. analyze the structural accuracy of the measurement model with a confirmation element analysis (Confirmatory Factor Analysis: CFA), 2. corrected item-total

correlation: CITC in each aspect of athlete's mental toughness by using the Pearson Product Moment Correlation Coefficient formula (Pearson's Product Moment Correlation Coefficient: rxy), 3. analyzing the reliability of the questionnaire by internal consistency checking from Cronbach's alpha coefficient (Cronbach's alpha), 4. narrative data analysis by calculating basic statistics such as the means (x) and standard deviation (SD) of the mental toughness variables of athletes participating in the overall competition and when classified by sex and experience, and 5. analysis to compare the level of mental toughness of athletes with different sex and experiences using polynomial variance analysis techniques. (Multivariate Analysis of Variance: MANOVA)

RESULTS AND DISCUSSION



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Structural validity checking of the questionnaire

The results of the analysis of the structural validity of the 12 mental toughness items revealed the lowest relationship among them was .499 while the highest was .989 as showed in this table.

Relationship values table of structural component of psychological toughness of Lao youth athletes.

Model analysis results to verify the consistency of the model found that the assertive analysis model of the mental toughness questionnaire of Lao youth athletes is consistent with empirical data. Which obtained the chi-square value equal to 42.231; $P = 0.13025$ at 33 degrees of freedom Comparative consistency (CFI) = 0.999 The root index of the quadratic mean of standard error (RMR) = 0.0132

The mental toughness of the athletes

The results of mental toughness analysis of Lao youth athletes showed that Lao youth athletes are very mentally strong ($\bar{x} = 6.53$, $SD = 0.91$) and when comparing the mental toughness of male and female athletes, it found that male athletes ($\bar{x} = 6.56$, $SD = 0.95$) had stronger mental toughness than females ($\bar{x} = 6.49$, $SD = 0.86$). In terms of good feelings when compared to competitors and psychological self-concept ($F = 2.963$, $p = 0.001$) was statistical significance as shown below

The picture shows the comparison of mental toughness of Lao youth athletes between males and females.

The comparison of mental toughness of Lao youth athletes who have experience in sporting events for 1-2 years, 3-4 years and 5 years or more, found that Athletes with 1-2 years of experience ($\bar{x} = 6.31$, $SD = 0.99$) have less mental toughness than athletes with 3-4 years of experience in sports ($\bar{x} = 6.60$, $SD = 0.83$) and 5 years up ($\bar{x} = 6.71$, $SD = 0.85$) respectively. They were different statistically significant at .05 and when showing the comparison of mental toughness of athletes in pairs according to athletes' experiences participating in sporting events, found that the mental toughness of athletes with 5 years experiences or more had

strongest mental toughness followed by 3- 4 years experiences and 1-2 years experiences respectively. They were different statistically significant at .05. The comparison of 1-2 years of experiences and 3-4 years of experiences showed that athletes with 3-4 years were mentally stronger than 1-2 years of experiences. The results of the comparison of double differences by dividing according to the 12 elements found that 10 elements (F from 4.334 - 8.910, P from .014 - .000) of mental strength are different. Except elements of feeling when compared to their opponents ($F = 2.311$, $P = .100$) and the opinion in the positive way ($F = 2.491$, $P = .084$) indicates that athletes with different experience in engaging in the competitions were different 10 out of 12 mental toughness elements.

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