Research on the Relationship between Competitive Achievement Motivation and Competitive State Anxiety of Physical Examinees

DOI: 10.23977/appep.2023.040104 ISSN 2523-5842 Vol. 4 Num. 1

Wenxing Tan^{1,2}, Jingsong Wang¹, Liwei Zheng^{1,*}, Feiying Huang¹, Weihua Cui³, Yan Long³

¹School of Sports and Health Science, Xiangsihu College of Guangxi Minzu University, Nanning, 530008, China

²Graduate School, University of Baguio, Baguio City, 2600, Philippines ³School of Sports and Health Science, Guangxi Minzu University, Nanning, 530006, China *Corresponding author

Keywords: Physical education college entrance examination, physical examinee, competitive state anxiety, competitive achievement motivation

Abstract: Objective: To explore the relationship between competitive achievement motivation and competitive state anxiety in order to provide some ideas for the regulation of athletic anxiety of physical examinees. Methods: A questionnaire survey was conducted among examinees for college entrance examination in P.E. in Guangxi in 2022 from November 24 to December 3, 2021 using The Achievements Motive Scale (AMS) and the Competitive State Anxiety Inventory-2, CSAI-2). Results: There was significant difference in the avoidance of failure (P<0.01) and state confidence (P<0.05) between the physical examinees of different genders, no statistically significant difference in all dimensions among the physical examinees from different origins, i.e. P>0.05 and with different competition experiences (P>0.05). Physical examinees with different psychological skills training experience had statistically significant differences only in state confidence (P<0.01). There were statistically significant differences in the dimensions of avoidance of failure (P<0.05), achievement motivation (P<0.01), cognitive state anxiety (P<0.05), somatic state anxiety (P<0.01), and state confidence (P<0.001) among physical examinees with different experiences of stress relief education. Only the dimensions of cognitive state anxiety and somatic state anxiety in the CSAI—2 did not have statistically significant correlation with the dimension of achievement motivation in the AMS, and the other dimensions all showed statistically significant correlation (r =-0.216-0.335, P<0.05). Conclusions: The competitive achievement motivation of physical examinees can directly affect the competitive state anxiety. The higher the motivation to pursue achievement or avoid failure, the more likely it is to cause physical examinees to have anxiety state.

1. Introduction

Examinees for college entrance examination in physical education (physical examinees), also known as physical education students or students with physical education specialty (sports students),

refer to the group of students who have received physical training for a long time and passed physical examination to enter a higher school, as a special group for entering a higher school. The Physical Education College Entrance Examination is the main channel for training reserve sports talents in China. Nowadays, even though sports students are generally not favored by the society, it has not affected the rapid development of sports in China. It is gradually accepted that physical education has become an important subject in the school education system, and the employment recognition of physical education majors in colleges and universities is generally improved. Physical examinees need to pass the physical education examination to enter a higher school. Although physical examination as a professional examination is the same as the sports events in terms of organizational structure, physical examinees are different from professional athletes, not only in the level of sports, but also closely related to their sports experience and competitive psychology. Apart from the physical examination, physical examinees will participate in all kinds of competitions at all levels that have higher requirements for both their competitive ability and other factors such as competitive psychology. Clearly, the professional development of physical examinees has higher requirements on their willpower quality, team cooperation ability and even adaptability [1]. The actual research results show that athletes' competitive anxiety has a significant correlation with sports performance. Thus, the relationship between athletes' competitive psychology and athletic performance has been explored by predicting their future stress anxiety [2]. The research on college basketball players' selffocusing and self-expression shows that there are different correlations between their shooting performance and self-focusing and self-expression in different stress situations, and there is a very significant moderate positive correlation between shooting performance and self-focusing and selfexpression in natural stress situations, and a very significant high positive correlation between selffocusing and self-expression [3]. Athletic psychological fatigue of young athletes has a negative impact on their pre-competition state of mind, and competitive motivation has a direct relationship with the degree of psychological fatigue [4]. The existing research results generally focus on professional athletes and college students, involving popular sports such as basketball, volleyball, football, tennis and table tennis, as well as relatively special-interest sports such as wrestling, weightlifting and rowing. As an important part of national examination, college entrance examination for physical education has attracted more and more attention from all walks of life in recent years, especially it has the dual characteristics of "competition" and "examination". However, students' anxiety level is generally improved under the situational pressure of physical college entrance examination, showing an inverted U-shape which affects the exam scores [5]. The higher the social support and positive response of the physical examinees, the lower their learning burnout level, because social support can not only directly reduce their learning burnout level, but also indirectly alleviate their learning burnout level by influencing their coping styles [6]. At present, no breakthrough has been made in the research on the pre-competition psychological status of physical examinees. Based on the research results of athletes' competitive anxiety by relevant scholars, and with the examinees who participated in the Physical Education College Entrance Examination in 2022 in Guangxi as the survey object, this study aims to explore the relationship between the competitive achievement motivation and competitive state anxiety of physical examinees from the perspective of psychological regulation, and the research results will provide a reference for the research on the competitive psychological training of physical examinees and the regulation of competitive state anxiety.

2. Objects and Methods

2.1. Research Objects

From November 26 to December 3, 2021, a questionnaire was randomly distributed to all the

examinees who participated in the unified examination (physical education college entrance examination or PE examination) for the enrollment of physical education major in colleges and universities in Guangxi Zhuang Autonomous Region. According to statistics, there were a total of 305 valid questionnaires, including 245 males and 60 females (about 4: 1), and 213 students from rural areas and 92 students from urban areas.

2.2. Methodology

2.2.1. Questionnaires

(1) The Achievements Motive Scale (AMS)

The revised *Achievements Motive Scale (AMS)* [7] compiled by psychologists T.Gjesme and R.Nygard of Oslo university in Norway in 1970 and refined by Ye Renmin (1992) was adopted. The scale consists of 30 questions, which were slightly modified according to the actual situation of physical education examination and competition, and was divided into two subscales, i.e., the subscale of motivation for success (Ms, 15 questions, odd questions) and the subscale of motivation for avoidance of failure (Mf, 15 questions, even questions). A 4-point scale was used (1–4 indicates "completely non-compliant" to "completely compliant"). The total scores of the questions were added and then averaged. The higher the score, the higher the motivation for success or avoiding failure. The score of competitive achievement motivation was equal to the Ms minus Mf (total score =Ms-Mf). The negative score indicated that avoidance of failure accounted for the main motivation. The closer the score was to zero, the two motivations accounted for the main motivation. The higher the score was, the stronger the motivation for success was.

(2) The Competitive State Anxiety Inventory-2 (CSAI—2)

The Competitive State Anxiety Questionnaire, compiled by Professor R Martens and others of the University of Illinois in the United States (1990) based on the multidimensional theory of competitive state anxiety, became the *Competitive State Anxiety Inventory-2* [8,9] after a series of revisions by Professor Zhu Beili and other scholars (1994), and related common models were established. The scale was divided into three scales (cognitive state anxiety, somatic state anxiety, and state confidence) to score 27 questions, which were scored according to the four-level Likert scale (1-4 means "not at all" to "very strong"), in which the 14th question was scored backwards, and all other questions were scored positively. The higher the score, the higher the cognitive state anxiety, somatic state anxiety and state confidence.

2.2.2. Pre-test of Questionnaire

A total of 80 students majoring in sports science of Grade 2021 in Guangxi Minzu University (no distinction was made between majors in general enrollment) were selected as the pretest subjects to fill out the questionnaire, which provided a guarantee for revising and testing the reliability and validity of the questionnaire. A total of 80 valid questionnaires were collected during the pretest, with an average time of 6min. The questionnaires were revised according to the questions in the pretest and the final questionnaire was determined.

2.2.3. Collection and Processing of Questionnaires

A total of 317 questionnaires were collected in the form of online questionnaire survey. Twelve invalid questionnaires with random filling and inconsistent experience were excluded, and 305 valid questionnaires were retained. The Effective Rate Of The Questionnaire Was 96.21%.

2.2.4. Data Analysis

Excel2010 was used to sort out the data and SPSS 26.0 was used for statistical analysis. The measurement data obtained from the questionnaire were expressed by $\bar{X} \pm S$ (mean \pm standard deviation), and the data between the two groups were compared by T test. Pearson correlation analysis was used to test the relationship between variables.

3. Results

3.1. The Competitive Anxiety of Physical Examinees under Demographic Statistics

Table 1: Differences between competitive achievement motivation and competitive state anxiety level of physical examinees under demography statistics ($\bar{X} \pm S$, N=305)

Items	Category (headcount)	ΛŤ	Avoidance of failure	Competitive achievement motivation	Cognitive state anxiety	Somatic state anxiety	State confidence
Gender	Male(245)	2.83 ± 0.28	2.54 ± 0.59	0.29 ± 0.61	21.16±5.09	20.33 ±4.5	423.60±5.25
	Female(60)	2.95 ± 0.57	2.79 ± 0.53	0.16 ± 0.53	20.15 ± 5.29	19.67 ±5.14	421.92±5.53
	t value	-1.587	-2.989**	1.475	1.371	0.989	2.212*
Origin	Villages(213)	(2.84 ± 0.52)	2.59 ± 0.56	0.24 ± 0.53	20.65 ±5.10	20.21 ±4.6	123.32 ± 5.33
	Cities(92)	2.88 ± 0.58	2.58 ± 0.65	0.29 ± 0.71	21.70±5.17	20.17 ±4.82	223.16±5.40
	t value	-0.612	0.092	-0.64	-1.639	0.064	0.241
Competition experience	Yes(78)	2.87 ± 0.57	2.55 ± 0.57	0.32 ± 0.62	20.77±5.17	19.40±4.6′	724.12±5.32
	No(227)	2.85 ± 0.53	2.61 ± 0.59	0.24 ± 0.59	21.03±5.14	20.48±5.32	222.99 ±5.33
	t value	0.254	-0.759	0.99	-0.384	-1.768	1.614
Psychological	Yes(169)	2.87 ± 0.54	2.56 ± 0.57	0.31 ± 0.60	20.80 ± 5.24	19.93 ±4.90	024.09 ± 5.30
skill training	No(136)	2.82 ± 0.54	2.62 ± 0.61	0.21 ± 0.58	21.16±5.02	20.54 ±4.34	422.26±5.23
_	t value	0.725	-0.795	1.445	-0.602	-1.132	3.003**
Stress relief education	Yes(191)	2.87 ± 0.53	2.53 ± 0.58	0.34 ± 0.63	19.61±5.49	19.06±4.8	124.49±5.16
	No(114)	2.82 ± 0.55	2.69 ± 0.59	0.14 ± 0.50	20.96±5.31	20.89 ±4.54	421.93 ±4.82
	t value	0.599	-2.374*	3.083**	-2.107*	-1.493**	4,310***

Notes: * indicates P<0.05, i.e., significant correlation at level 0.05 (double-tailed), * * indicates P<0.01, significant correlation at level 0.01 (double-tailed), * * * indicates P<0.001, and significant correlation at level 0.001 (double-tailed) (the same below).

Independent sample T-test was used to compare the differences of physical examinees with different genders, origins, competition experience, psychological skill training experience and stress relief education experience in three dimensions of competitive state anxiety: cognitive state anxiety, somatic state anxiety and state confidence, and three dimensions of competitive achievement motivation: pursuit of success, avoidance of failure and achievement motivation. According to the data in Table 1, there were statistically significant differences in the avoidance of failure (P<0.01) and state confidence (P<0.05) of physical examinees of different genders, but no statistically significant differences in all dimensions among students of different origins (P>0.05) and with different competition experiences (P>0.05). There was a statistically significant difference in state confidence (P<0.01) among physical examinees who had the same experience in psychological skills training. There were statistically significant differences in avoidance of failure (P<0.05), achievement motivation (P<0.01), cognitive state anxiety (P<0.05), somatic state anxiety (P<0.01) and state confidence (P<0.001) among physical examinees with different experiences in stress relief education.

3.2. The Correlation between Competitive Achievement Motivation and Competitive State Anxiety of Physical Examinees

Table 2: Pearson correlation analysis matrix for competitive achievement motivation and competitive state anxiety of physical examinees (N=305)

	M	S D	Cognitive state anxiety	Somatic state anxiety	State confidence	Pursuit of success	Avoida nce of	Achieve ment motivatio n
Cognitive state	20.		1					
anxiety	96	4	1					
Somatic state	20.	4.6	.608**	1				
anxiety	20	6						
State confidence	23.27	5.3 4	167**	162**	1			
Pursuit of success	2.8 5	0.5 4	.131*	.114*	.134*	1		
Avoidance of failure	2.5 9		.218**	.189**	216**	.445**	1	
Achievement motivation	0.2 6	0.5 9	-0.097	-0.084	.335**	.466**	584**	1

Pearson correlation analysis was used to understand the correlation among competitive anxiety, psychological resilience and achievement motivation of physical examinees. According to the data in Table 2, only the dimensions of cognitive state anxiety and somatic state anxiety in the CSAI—2 did not have a statistically significant correlation with the dimension of achievement motivation in the AMS, but there was a statistically significant correlation between the other dimensions (r = -0.216-0.335, P < 0.05). In the CSAI—2, cognitive state anxiety was significantly positively correlated with the somatic state anxiety (r = 0.608, P < 0.01), and state confidence presented was negatively correlated with cognitive state anxiety and somatic state anxiety (r = -0.167, P < 0.01); r = -0.162, P < 0.01). In the AMS, the pursuit of success was positively correlated with the avoidance of failure (r = 0.445, P < 0.01), and negatively correlated with the avoidance of failure (r = -0.584, P < 0.01).

4. Discussions

4.1. An Analysis on the Difference of Competitive Achievement Motivation of Physical Examinees under Demographic Characteristics

According to the research on competitive motivation, achievement motivation is the power to promote people to carry out special, challenging and difficult events, a manifestation of people's internal driving force, and can also have a direct impact on people's behavior. Studies at home and abroad generally believe that there are serious gender differences in the attribution of achievement motivation and failure motivation, which is mainly manifested in the fact that men often attribute their success to internal factors such as their own strength, and their failure to external factors, such as uncontrollable factors such as interference from others and bad luck. Women are just the opposite to men in attribution. They often attribute their success to the help of external factors, while their failure to their own problems, which clearly reflects the lack of self-confidence of females [10]. The

different attribution of success and failure between men and women affects the achievement difference and behavior difference between the two sexes. In sports activities, people of different genders have different self-confidence, which is the result of their gender activities [11]. Women's self-confidence tends to decline as the competition approaches, which is directly reflected in the reduction of self-confidence. In other words, participating in sports activities makes it easy for women to reduce their self-efficacy when engaging in such activities. In the special environment of physical education examination, stress coping styles of physical examinees are divided into positive emotional coping and negative emotional coping. Male and female athletes have different coping styles, which is reflected in that female athletes are more likely to seek emotional support, while male athletes tend to be positive in the process of stress response. It is also found that male swimmers tend to adopt self-motivation to divert attention and solve problems, while female swimmers tend to adopt ways of self-blame, catharsis, seeking support and fantasy [12]. The motivation of men to avoid failure is lower than that of women, which shows that men's attitude towards physical examination tends to be mild, while women have a more direct feeling of fear of failure, which is related to the attribution characteristics of different genders.

4.2. An Analysis on the Difference of Competitive State Anxiety of Physical Examinees under Demographic Characteristics

As athletes' competitive state anxiety also affects their technical performance, maintaining their good competitive state is conducive to better playing their strength on the field. Experts and scholars at home and abroad have conducted relevant research on the anxiety level of athletes of different genders, and found that factors such as different events and different educational experiences may cause some differences in the anxiety level of athletes. There are obvious differences in age, sports years, experience and educational level in the competitive trait anxiety of elite women football players, and personal factors such as competition experience and sports years have a very significant impact on competitive trait anxiety [13]. There are significant differences in the state confidence subscale of the competitive state anxiety scale between the physical examinees of different genders, and the state confidence of men is much higher than that of women. As one of the five modules of competitive ability, psychological skill training has a great influence on physical examinees' competitive state anxiety, which is mainly reflected in the difference of state confidence, and the facts that physical examinees who have received psychological skill training are higher in state confidence than those who have not. Scientific training is now advocated for sports, and psychological training as a part of scientific training has gradually attracted people's attention. Physical education examination is very important for sports students [14]. Hence, special psychological training means for physical examination should be added in the training, such as simulation training, cognitive training, suggestion training, relaxation training, and imagination training, so as to enable physical examinees to have the ability to adjust their emotions, adjust their self-confidence and focus on examination in daily training, and to be able to use them freely in continuous training. Having good psychological skills is of great help in dealing with physical examination, especially in the adjustment and recovery of psychological state. Faced with the dual characteristics of "competition+ examination" of the physical education college entrance examination, the fear and uncertainty of the unknown will cause the mentality change of the examinees, and the dual conflicting motives of pursuing the success and avoiding the failure of the examination will easily make the examinees bear heavy psychological stress. The examinees who have received and have not received stress relief education during the training have significant differences in the three dimensions of competitive state anxiety, and the differences are distributed according to the size of "cognitive state anxiety-somatic state anxiety-state self-confidence" and gradually increase. Obviously, a benign way of relieving stress is helpful to

relieve physical anxiety and promote mental health [15]. It also verifies that the stress relief education plays a positive role in alleviating the competitive anxiety of physical examinees, and further proves that there is a training blind area in the relief of competitive anxiety for physical education students. Negative coping styles of stress include self-escape, self-abandonment, psychological collapse, etc. Therefore, physical examinees should be psychologically monitored in time during training to build up self-confidence, because self-confidence is very important for physical examinees, which can ensure the stable development of training level in exams and sometimes stimulate the potential of physical examinees. Withal, a good and harmonious training atmosphere should be established so that coaches and students can encourage and guide each other in training, which can be of great help in interpersonal assistance, guide physical examinees to self-regulate, relieve their psychological stress, and help them deal with stress scientifically and reasonably.

4.3. Correlation between Competitive Achievement Motivation and Competitive State Anxiety of Physical Examinees

Neither has a recognized result been reached on the debate on the relationship between the three internal dimensions of the competitive anxiety scale, nor has a unified conclusion been reached on athletes' competitive anxiety level in special environment. According to Martens, cognitive state anxiety and somatic state anxiety are independent theoretically but are related in many stress situations. Under the specific stress environment of physical examination, which has the dual characteristics of examination and competition, there is a statistically significant correlation among the three dimensions of the competitive anxiety scale. In the environment of college entrance examination for physical education, the dimensions of cognitive state anxiety and somatic state anxiety in the competitive anxiety scale are positively correlated, while the dimensions of state confidence are negatively correlated with the dimensions of cognitive state anxiety and somatic state anxiety. That is to say, cognitive state anxiety will be increased along with somatic state anxiety, and the stronger state confidence is, the lower the state anxiety about cognition and body. The results show that when the cognitive state anxiety of physical examinees increases, the somatic state anxiety also presents a concomitant increase, and vice versa. At the same time, it shows that the higher the confidence level, the lower the anxiety level of athletes in competition, including somatic state anxiety and cognitive state anxiety. There is a significant positive correlation between the two dimensions of competitive level, which accords with the psychological state of physical examinees during the examination. They want to pursue success but are in fear of failure, which is the unique nature of entrance examination and the functional embodiment of talent selection and diversion. The college entrance examination of physical education is to test the examinees' specific physical qualities and special skills in an open and fair competition in a special sports venue. It requires the examinees to bear the pressure of entering a higher school brought by the success or failure of the examination, the pressure of physical exercise load, and the pressure from competitors in the same competition. In addition, the influence of the onlookers and supporters around the examination venue (relatively isolated and not fully enclosed) can not only become the psychological motivation of the examinees, but also make them feel the psychological burden, all of which constitute the unique examination atmosphere of the college entrance examination for physical education, in which most examinees have shown a strong emotional tension reaction. Therefore, the psychological quality of the examinees is also required. As physical examinees are generally nervous and anxious during the examination, and many coaches fail to realize and pay attention to it during the usual training, many examinees have abnormal performance and unsatisfactory results during the examination. Thus, it is necessary to pay attention to the research on the psychological characteristics of examinees and the cultivation of their psychological quality. However, there is almost no analysis and research on the psychological characteristics of physical examinees at present, so it is particularly necessary to pay attention to it. In the ordinary training, they only pursue the improvement of athletic ability, which is an important factor that affects many examinees' abnormal performance. The higher the motivation for success, the stronger the self-confidence and the lower the anxiety level. When the motivation to avoid failure is high, the level of anxiety will also increase and the level of self-confidence will decrease, indicating that the high motivation to pursue success will make it easier to reduce anxiety and have a positive impact on physical examination. Therefore, students' motivation to avoid failure should be actively reduced before physical examination, which will help physical examinees to play their competitive level normally.

5. Conclusions

Evidently, the formation of competitive state anxiety of physical examinees is not affected by a single factor. In addition to the pursuit of success and failure, which motivate athletes to produce cognitive state anxiety and somatic state anxiety, the pursuit of both success and failure will lead to more complex competitive state anxiety. Furthermore, the data obtained in this study provides a norm reference for the competitive anxiety level of physical examinees, which can be selected by sports psychologists and first-line coaches for scientific research or routine training.

Acknowledgements

This work was supported by the Guangxi Education Science "13th Five-Year Plan" 2020 annual examination enrollment research topic *Analysis and research on the conversion of comprehensive scores of Guangxi Physical Education College Entrance Examination* [number 2020ZJY220]; 2023 Guangxi Young and Middle-aged Teachers Basic Research Ability Improvement Project "A Study on the Linkage Mechanism between Athletic Achievement Motivation and Athletic State Anxiety of Sports Examinees"[number 2023KY1668] Project Results; Key project supported by Xiangsihu College of GuangXi Minzu University in 2022, "The Causes of Students' competitive state Anxiety from the perspective of Conflict Theory and the Strategies for Sustainment and Release" [number 2022XJKY07], was the phased achievement.

References

- [1] Xu Liling. Cultivation of psychological quality of high school physical education students. Mental Health Education in Primary and Secondary School, 2020(31):63-65.
- [2] Hu Naijian, Chen Chen, Yan Jin, Dai Qingqing, Tang Yunxiang, Quan Zhiwei. Shooters' Anxiety Prediction and the Relationship with Sports Performance. China Journal of Health Psychology, 2010, 18(08):1006-1008.
- [3] Jiang Han, Qiu Ting. Effects of Self-personality Traits of College Basketball Players on Sport Performance under Pressure. Journal of Wuhan Institute of Physical Education, 2014, 48(11):96-100.
- [4] Zhou Xihua. Relationship between Psychological Fatigue, Competitive Motivation and Pre-match Mood of Young Athletes. China Journal of Health Psychology, 2012, 20(07):1064-1067.
- [5] Yin Xiaowang, He Yaoxin, Tao Zicheng. Research on the relationship between anxiety level and the results of physical education college entrance examination. China Sports Science, 2002(02):131.
- [6] Wang Ye. Research on the relationship between social support, coping style and learning burnout of physical examinees in Jiangsu Province. Yangzhou University, 2022.
- [7] Ye Renmin, Kunt A. Hagtvet. Measurement and Analysis of Achievement Motivation. Psychological Development and Education, 1992(02):14-16.
- [8] Martens R, et al. Competitive anxiety in sport. Human Kinetics Books, 1990.
- [9] Zhu Beili. Revision of China Norm of CSAI-2. Journal of Psychological Science, 1994(06):358-362+385.
- [10] Qiang Haiyan. Gender differences in self-confidence and girls' education. Education Review, 1999(02):51-53
- [11] Guo Zhiping, Li Zhengzhong, Liu Oumei. A preliminary research on self-confidence in sport. Journal of Hubei Normal University (Natural Science Edition), 2008(02):66-70.

- [12] Feng Yan, Feng Chang. Cognitive-Behavioral Intervention of Stress Coping Strategies on Elite Athletes. Shaolin and Taichi, 2011(11):42-48.
- [13] Zhu Jianmin, Yang Xingquan. Study of Athletic Trait Anxiety of Female Football Elites. Journal of Shanghai University of Sport, 2004(04):68-72.
- [14] Wan Chengwu, He Jingkang. A brief analysis of the psychological characteristics of physical examinees. Western Leather, 2017, 39(12):216.
- [15] Tan Wenxing, Li Nianmao, Yang Ya, Zhu Baoyu, Wang Zhengyang, Zhao Fuguo, Huang Bin, Wei Lichun. Relationship between student health and the way of pressure release in the context of healthy China. China Journal of Health Psychology, 2021, 29(09):1416-1420.