

ORIGINAL SCIENTIFIC PAPER

Effects of Self-Management Behavior of Closed Sports Athletes on Concentration and Competition State Anxiety

Mun-Gyu Jun¹, Kyung-Rok Oh¹, Chulhwan Choi^{2*}

¹Kyung Hee University, College of Physical Education, Department of Coaching, Yongin-si, Gyeonggi-do, Republic of Korea, ²Gachon University, Department of Physical Education, Seongnam-si, Gyeonggi-do, Republic of Korea

Abstract

Athletes are required to strive to demonstrate their best performance not only in physical training but also in mental toughness. This study aims to understand the effects of self-management behaviors of athletes competing in closed-skill sports on maintaining concentration and resolving competition state anxiety. An offline survey was conducted with 301 participants, shooting athletes selected using convenience sampling. This questionnaire consists of 14 items, and 11 sub-factors. All items were measured using a five-point Likert scale (1 = not at all, 5 = very much). Results revealed that self-management behaviors (training, mental power, interpersonal, intrinsic, and physical management) have significant positive effects on athletes' concentration (attention, confidence, immersion, and goal setting). Additionally, self-management behaviors (training and mental power) positively affect competition state anxiety (somatic and cognitive). The results of this study confirm that managing athletes' mental health could play an important role in the concentration and anxiety that affect athletic performance. This study provides important data for athletes who need to demonstrate their best performance in competitions.

Keywords: *training, mental power, interpersonal, intrinsic, physical, psychological state*

Introduction

It is important for athletes to manage their individual training time and daily life activities to achieve physical and mental stability and optimal performance. Recently, athletes have emphasized the mental aspects of improving and maintaining their abilities (Heo, 2003). Shooting competitions can be divided into rifle, pistol, and clay competitions according to the type of bullet and firearm used; however, most shooting competitions are conducted in the same pattern and are representative of closed sports not affected by external factors such as opponents or referees. Shooting competitions are also classified as closed sports because athletes are required to maintain a firing posture without moving or making physical contact with their competitors. Given these conditions, overcoming psychological obstacles such as maintaining extreme concentration and resolving anxiety,

becomes the deciding factor in this sport (Jun, 2019).

Until recently, studies in this field have clarified that proper and clear self-management by athletes, regardless of sport, is a crucial factor in maintaining a certain level of athletic performance, including strategies, tactics, skills, and the physical strength required to maintain the best performance (Ahn, 2016). Particularly, in closed sports, the information processing and nervous systems are very important, as are the physical factors such as appropriate muscle strength, flexibility, muscle endurance, and coordination (Kim, 2011). In addition, concentration through psychological stability must precede the stabilization of near-sightedness and information processing systems (Shin, 2015). Concentration has long been discussed as a positive factor in improving performance. Discussions have explored methods to suppress anxiety as much as possible to improve performance. Additionally, players'



Correspondence:

C. Choi

Gachon University, Department of Physical Education, Seongnam-daero, Sujeong-gu, Seongnam-si, Gyeonggi-do, Republic of Korea 13120, Korea

E-mail: chulhwanchoi@gachon.ac.kr

self-management factors have been discussed as mediating factors for concentration and anxiety. However, most Korean studies have followed the objective perspective (Jang, 2012; Moon, Sung, & Jang, 2017) or rarely show qualitative perspectives (Lee, Park, Kim, & Nam, 2015; Park, Park, & Jeon, 2017).

Previous studies evaluating the self-management of athletes playing closed sports mainly focused on archery, golf, and gymnastics (Moon & Park, 2008; Yeo, 2010; Shin & Yoon, 2018). This study will focus on shooting. The study will produce practical discourses that will help shooting athletes improve their performance and will also provide useful information to support their professional growth, such as developing coaching and training methods. Furthermore, the results of this study will provide baseline data for forming new discourses aimed at improving athletic performance in fixed-target sports such as archery, shooting, golf putting, and basketball free throws. Therefore, this

study aims to identify the factors affecting concentration maintenance and competition state anxiety in practice by analyzing the self-management of shooting athletes. These athletes are relatively understudied even though shooting is a representative closed sport in which psychological factors such as concentration and competitive anxiety are crucial to athletes' success.

Research hypotheses and study design

H1-1, 2, 3, 4. Athletes' self-management behaviors have a significant effect on concentration (attention, confidence, immersion, and goal setting).

H2-1, 2. Athletes' self-management behaviors have a significant effect on competition state anxiety (both somatic and cognitive).

To verify the research hypotheses, the study was designed as follows (Figure 1).

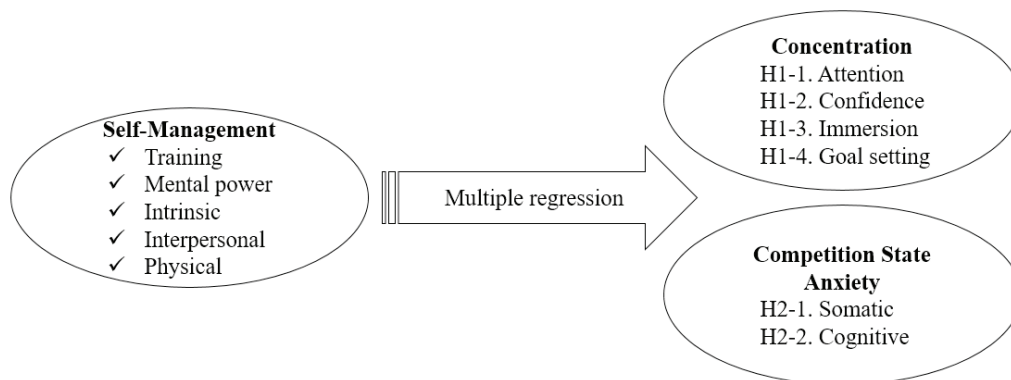


FIGURE 1. Study design

Self-management behavior

Self-management has been used in various fields, and the sports field is no exception (Kim & Cruz, 2021). Self-management, which has also been described as the concept of self-regulation or self-control (Suh, 2005), is defined as the ability to manage oneself physically and mentally to achieve goals (Weinberg & Gould, 2015). Self-regulation in everyday life plays an important role in athletes' self-management, and self-regulation acts as motivation to control oneself in sports (Lee, 2010). A study on the mental preparation and psychological strategies undertaken by national team players to maintain and exercise their best performance highlights the significance of self-regulation in athletic performance (Yu, 1996). Self-management in sports and exercise involves mentally preparing for obstacles and overcoming them through self-restraint (Heo, 2001). Athletes' self-management includes various internal, external, and environmental factors (physical and mental) that affect their goal-achievement (Yu, 1996).

Concentration

Concentration is the ability to focus on one's mind or attention. This is also considered a state of complete psychological and emotional immersion. In highly competitive sports, concentration is vital to maximizing performance. The four elements of concentration required for sports performance are selectivity (analytical skill), flexibility (conversion ability), persistence (concentration duration), and capacity (total amount of energy) (Etzel, 1979; Lee, 2020). Concentration can be considered a key prerequisite for successful sports performance. Kim (2005) presented goal-setting, attention control, repetitive practice before performance, faith, and attention as psychologi-

cal techniques that help achieve the highest concentration states psychologically, emotionally, and physically. According to Kirk and Chalfant (1984), concentration is the ability to bring one's abilities together, and the mental power to selectively accept and concentrate on the external stimuli one needs. In addition, Lee and Kim (2011) and Reid and Hresko (1981) argued that the ability to control consciousness from internal or external stimuli is concentration. In the end, concentration is described as the ability to select specific information from among various external information, focus on and pay attention to that information, and the process of information processing that can be continuously focused while adjusting the amount and assigning attention according to the information you choose.

Competition state anxiety

Anxiety is a state of depression, tension, and excitement (oversensitivity) accompanied by discomfort or irritation as a reaction to a subjective and imagined threat (Martens, 1977). The psychological state of anxiety is closely related to the concept of fear of failure (Gustafsson, Sagar, & Stenling, 2017). Fear of failure occurs due to shame and embarrassment caused by failure in evaluation situations and has been defined as a concept of social self-evaluation, resulting from scenarios created entirely by individuals (Sagar & Lavallee, 2010). The most obvious characteristic of sports situations in which competition is an essential element is competition state anxiety, and the anxiety in competitive situation may occur various consequences; the psychological, physiological, biochemical, and behavioral symptoms (Singer, 2002). In addition, the competition state anxiety by fear of failure is accompanied by negative results such as stress (Gustafsson et al., 2017), decline in performance

(Sagar, Lavalley, & Spray, 2009), and dropout (Sagar, Lavalley, & Spray, 2007). Therefore, Competition anxiety, an inevitable psychological state of athletes, needs to be properly managed.

Methodology

Data collection procedure and participants

Shooting athletes registered with the Korea Shooting Federation were selected using convenience sampling, a non-probability sampling method. The study participants responded to a self-administered questionnaire after being informed of the study's objective, and data from 301 partici-

pants were analyzed. All participants participated voluntarily and were not penalized for withdrawing from the study. Additionally, this study did not collect any sensitive personal information from survey participants, allowing it exemption from IRB review. This is in accordance with the Helsinki Declaration. All participants were informed of the details of this study and their rights as survey respondents. Finally, all survey respondents reported demographic information, such as sex, age, athletic career, daily training hours, and level of performance. The descriptive statistics of the survey participants are presented in Table 1.

Table 1. Descriptive statistics of study participants

Variables	Categories	N (%)
Gender	Male	157 (52.2%)
	Female	144 (47.8%)
Age	Early 20s	105 (34.9%)
	Mid to late 20s	116 (38.5%)
	Over 30s	80 (26.5%)
Athletic career	4 – 8 years	90 (29.9%)
	9 – 15 years	140 (46.5%)
	Over 16 years	71 (23.6%)
Training hours per week	Less than three hours	55 (18.3%)
	Four hours	87 (28.9%)
	Five hours	86 (28.6%)
	More than 6 hours	73 (24.3%)
Perceived performance level	Low	25 (8.3%)
	Medium	184 (49.2%)
	High	92 (30.6%)
	Very high	36 (12.0%)
Total		301 (100.0%)

Instruments

The Questionnaire to Measure Athletes' Self-Management Behaviors developed by Kim (2003) was used to measure the self-management of participants in this study. This tool was also used by Kim (2018) and Kang and Yoo (2018). This questionnaire consists of 20 items and five sub-factors: four items on training management, five items on mental power management, four items on intrinsic management, three items on interpersonal management, and four items on physical management.

Additionally, this study employed a modified and supplemented version of the Athletic Concentration Measurement Scale, developed by Park and Kim (2007) and used by Chun (2017) and Kim and Park (2016), to measure the concentration demonstrated by the study subjects in this study. The survey comprised 14 items and four sub-factors: four items on attention, four items on confidence, three items on immersion, and three items on goal setting.

Finally, the Competition State Anxiety scale, developed by Martens et al. (1990), was used to measure the competition state anxiety of study subjects. Recently, Kim et al. (2016) used it to measure competitive state anxiety in athletes. It was modified to meet the present study's objectives. This questionnaire consists of 14 items and two sub-factors: seven items on somatic anxiety and seven on cognitive anxiety. All items were measured using a five-point Likert scale (1 = not at all, 5 = very much).

Data analysis

This study used SPSS 23.0 for statistical data analyses (IBM

SPSS Statistics for Windows, version 23.0. Armonk, NY: IBM Corp.). First, descriptive statistics of participants' demographic information was obtained using frequency. The instruments used for data collection have been verified to have satisfactory validity and reliability in previous studies. However, as this study modified and supplemented the instruments for the research topic and purpose, three exploratory factor analyses (EFA) and Cronbach's alpha coefficients were calculated for each factor to ensure adequate statistical clarity. Finally, to determine the relationship between the variables, multivariate regression analyses were implemented with a statistical significance level of .05.

Results

Scale validity and reliability

Based on the results of the EFAs with Varimax rotation, eigenvalues greater than 1.0 and factor loadings greater than 4.0 were retained as follows: (a) self-management behavior (training, mental power, intrinsic, and physical), (b) concentration (attention, confidence, immersion, and goal setting), and (c) competition state anxiety (somatic and cognitive anxiety). Additionally, the reliability of the items was tested using Cronbach's alpha. The results were finalized with a cutoff value of 0.70 as a satisfactory internal consistency for reliability (Nunnally & Bernstein, 1994): (a) training management, $\alpha=0.810$; (b) mental power management, $\alpha=0.865$; (c) intrinsic management, $\alpha=0.797$; (d) interpersonal management, $\alpha=0.853$; (e) physical management, $\alpha=0.783$; (f)

attention, $\alpha=0.794$; (g) confidence, $\alpha=0.865$; (h) immersion, $\alpha=0.857$; (i) goal setting, $\alpha=0.881$; (j) somatic anxiety, $\alpha=0.914$; and (k) cognitive anxiety, $\alpha=0.937$. All measure-

ment tools showed satisfactory statistical reliability. The detailed results of the EFAs and Cronbach's alpha are presented in Table 2.

Table 2. Results of three exploratory factor analyses and Cronbach's alphas coefficients

Items	1	2	3	4	5	Items	6	7	8	9	Items	10	11
A1	.813	.176	.075	.025	.127	B1	.801	.147	.158	.210	C1	.808	.358
A2	.808	.073	.242	.247	.115	B2	.746	.344	.129	.162	C2	.784	.241
A3	.780	.041	.286	.268	-.001	B3	.726	.239	.360	.167	C3	.779	.353
A4	.769	.173	.045	.174	.123	B4	.649	.154	.452	.185	C4	.756	.277
A5	-.011	.766	.043	.256	.119	B5	.225	.862	.169	.065	C5	.742	.341
A6	.187	.764	-.028	.033	.239	B6	.250	.798	.227	.138	C6	.681	.456
A7	.186	.705	.068	.198	.251	B7	.112	.767	.332	.135	C7	.607	.435
A8	.167	.655	.288	.311	-.091	B8	.203	.825	.316	.183	C8	.295	.836
A9	.143	.502	.054	.094	.104	B9	.215	.326	.818	.082	C9	.278	.807
A10	.151	.073	.825	.121	.213	B10	.439	.184	.802	.243	C10	.294	.791
A11	.240	.030	.807	.310	.095	B11	-.024	.265	.707	.167	C11	.282	.781
A12	.154	.244	.800	.084	.138	B12	.155	.120	.047	.817	C12	.358	.772
A13	.140	.184	.723	.154	.139	B13	.446	-.047	.093	.650	C13	.442	.730
A14	.355	.173	.202	.804	.130	B14	.382	.011	.247	.621	C14	.421	.709
A15	.255	.328	.188	.742	.293								
A16	.050	.261	.149	.706	.154								
A17	.234	-.053	.220	.138	.778								
A18	.062	.382	-.066	.166	.710								
A19	.051	.297	.290	.260	.628								
A20	.221	.058	.454	-.095	.611								
Eigenvalues	3.010	2.717	2.669	2.532	2.269		2.921	2.516	2.490	2.417		5.048	4.729
Variance(%)	15.18	14.30	14.05	13.33	11.94		20.86	17.97	17.78	17.26		36.05	33.78
α	.810	.865	.797	.853	.783		.794	.865	.857	.881		.914	69.83

Note. 1 = Training management, 2 = Mental power management, 3 = Intrinsic management, 4 = Interpersonal management, 5 = Physical management, 6 = Attention, 7 = Confidence, 8 = Immersion, 9 = Goal setting, 10 = Somatic anxiety, 11 = Cognitive anxiety; Factor loadings higher than .40 are highlighted and in bold.

Hypothesis verification (effects of self-management on concentration)

1) Effects of athletes' self-management on attention

This study evaluated the effects of five independent variables and sub-factors of self-management on the attention of the study participants and found that the developed regression

model was significant ($F=12.692, p<.001$). Specifically, training management ($\beta=.206, t=2.758$) and mental power management ($\beta=.174, t=2.694$) significantly affected attention. Intrinsic, interpersonal, and physical management were not significant variables. The model developed using the self-management variables explained 17.7% of the variance in atten-

Table 3. Effects of athletes' self-management on attention

Variables	Concentration			
	B	β	t-value	VIF
<Constant >	1.558		6.260	
Training	.190	.206	2.758**	1.998
Mental Power	.159	.174	2.694***	1.499
Intrinsic	.023	.027	.405	1.633
Interpersonal	.076	.080	1.243	1.475
Physical	.040	.042	.627	1.635
F=12.692***	R squared =.177(adj.R ² =.163)			

p<.01, *p<.001, β =beta, VIF=variance inflation factor

tion. The standardized coefficients representing the relative contributions of the independent variables showed that the magnitude of the influence on attention was in the order of training and mental power management.

2) Effects of athletes' self-management on confidence

An evaluation of the effects of five independent variables and sub-factors of self-management on the confidence of the study participants found that the developed regression model was significant ($F=54.153, p<.001$). Specifically, training

management ($\beta=.279, t=4.699$), mental power management ($\beta=.318, t=6.184$), and interpersonal management ($\beta=.158, t=3.091$) had significant effects on confidence. The model developed using the self-management variables explained 47.9% of the variance in confidence. The standardized coefficients representing the relative contributions of the independent variables showed that the magnitude of the influence on confidence was in the following order: mental power management, training management, and interpersonal management.

Table 4. Effects of athletes' self-management on confidence

Variables	Concentration			
	B	β	t-value	VIF
<Constant >	.205		2.792	
Training	.057	.279	4.699 ***	1.998
Mental Power	.049	.318	6.184 ***	1.499
Intrinsic	.047	-.014	-.270	1.633
Interpersonal	.050	.158	3.091 **	1.475
Physical	.052	.134	2.495	1.635
F=54.153***	R squared =.479(adj.R ² =.470)			

p<.01, *p<.001, β =beta, VIF=variance inflation factor

3) Effects of athletes' self-management on immersion

Evaluating the effects of five independent variables and sub-factors of self-management on the immersion of study participants revealed that the developed regression model was significant ($F=20.551, p<.001$). Specifically, interpersonal management ($\beta=.392, t=6.431$) had significant effects on immersion.

The model developed using the self-management variables explained 25.8% of the variance in immersion. The standardized coefficients representing the relative contributions of the independent variables showed that the magnitude of influence on immersion was in the following order: mental power management, training management, and interpersonal management.

Table 5. Effects of athletes' self-management on immersion

Variables	Concentration			
	B	β	t-value	VIF
<Constant >	.254		6.372	
Training	.070	.069	.974	1.998
Mental Power	.060	.097	1.574	1.499
Intrinsic	.059	-.104	-1.631	1.633
Interpersonal	.062	.392	6.431 ***	1.475
Physical	.064	.110	1.717	1.635
F=20.551***	R squared =.258(adj.R ² =.246)			

***p<.001, β =beta, VIF=variance inflation factor

4) Effects of athletes' self-management on goal setting

Investigating the effects of five independent variables and sub-factors of self-management on the goal setting of the study participants showed that the developed regression model was significant ($F=25.589, p<.001$). Specifically, training management ($\beta=.189, t=2.752$), mental power management ($\beta=.234, t=3.927$), intrinsic management ($\beta=-.130, t=-2.090$), interpersonal management ($\beta=.201, t=3.401$), and physical management ($\beta=.169, t=2.710$) had significant effects on goal setting. The developed model using self-management variables explained 30.3% of the variance in goal-setting. The standardized coefficients presenting the relative contributions of the independent variables showed that the magnitude of influence on goal setting was in the following order: mental power man-

agement, interpersonal management, training management, and physical management.

Hypothesis verification (effects of self-management on competition state anxiety)

1) Effects of athletes' self-management on somatic anxiety

This study evaluated the effects of five independent variables and sub-factors of self-management on somatic anxiety in the study participants and found that the developed regression model was significant ($F=1.910, p<.05$). Specifically, mental power management ($\beta=.193, t=2.747$) had significant effects on somatic anxiety. The model developed using the self-management variables explained 2.8% of the variance in somatic anxiety.

Table 6. Effects of athletes' self-management on goal setting

Variables	Concentration			
	Goal setting			
	B	β	t-value	VIF
<Constant >	.264		3.883	
Training	.073	.189	2.752**	1.998
Mental Power	.063	.234	3.927***	1.499
Intrinsic	.061	-.130	-2.090*	1.633
Interpersonal	.065	.201	3.401***	1.475
Physical	.067	.169	2.710**	1.635
F=25.589***	R squared =.303(adj.R ² =.291)			

*p<.05, **p<.01, ***p<.001, β =beta, VIF=variance inflation factor

Table 7. Effects of athletes' self-management on somatic anxiety

Variables	Competition State Anxiety			
	Somatic Anxiety			
	B	β	t-value	VIF
<Constant >	.335		9.266	
Training	.093	.150	1.850	1.998
Mental Power	.080	-.193	-2.747**	1.499
Intrinsic	.077	-.021	-.288	1.633
Interpersonal	.082	.023	.333	1.475
Physical	.085	-.015	-.198	1.635
F=1.910*	R squared =.028(adj.R ² =.012)			

*p<.05, **p<.01, β =beta, VIF=variance inflation factor

2) Effects of athletes' self-management on cognitive anxiety

On evaluating the effects of five independent variables and sub-factors of self-management on the cognitive anxiety of the study participants, this study found that the developed regression model was significant (F=2.395, p<.05). Specifically, training management (β =.176, t=2.179) and mental power management (β =-.215, t=-3.075) significant-

ly affected cognitive anxiety. The model developed using the self-management variables explained 3.9% of the variance in cognitive anxiety. The standardized coefficients presenting the relative contributions of the independent variables showed that the magnitude of the influence on cognitive anxiety was in the order of mental power and training management.

Table 8. Effects of athletes' self-management on cognitive anxiety

Variables	Competition State Anxiety			
	Cognitive Anxiety			
	B	β	t-value	VIF
<Constant >	.378		9.149	
Training	.105	.176	2.179*	1.998
Mental Power	.090	-.215	-3.075**	1.499
Intrinsic	.087	-.011	-.151	1.633
Interpersonal	.093	-.012	-.175	1.475
Physical	.096	-.053	-.724	1.635
F=2.395*	R squared =.039(adj.R ² =.023)			

*p<.05, **p<.01, β =beta, VIF=variance inflation factor

Discussion

The results of this study revealed that training and mental power management—the sub-factors of self-management—affect shooting athletes' concentration. These results are in line with those of Kim et al. (2017) and Kim and Kim (2018), who reported similar results. Training management involves regu-

lating personal physical strength, conditions, and intensity of training duration required to meet daily goals in the process of setting and achieving specific training goals. However, mental power management involves maintaining and improving athletic performance (e.g., shooting for shooting athletes). In particular, shooting athletes require strict, systematic, and

continuous management because spontaneous behaviors, such as firing, are directly related to the results of the game. Considering that the training and mental power management of shooting athletes directly affect attention and concentration, developing a long-term plan to improve their attention is necessary. Interestingly, training management was found to be more effective than mental power management in enhancing performance, which is meaningful for coaches (Jun, 2019). As a strategy to improve athletes' concentration within a limited time training management and mental power management should receive attention rather than other factors such as intrinsic management, interpersonal management, and physical management. In particular, investing in training management improves athletes' concentration for a shorter period than making efforts for other elements.

Somatic anxiety in athletes is accompanied by various physiological symptoms; increased heart rate, dry throat, high blood pressure, or sweaty palms (Parnabas, Mahamood, & Parnabas, 2013). Somatic anxiety is a critical factor (Ong & Chua, 2021) that can seriously deteriorate athlete performance in shooting competitions, where a winner is determined in split seconds. Efforts have been made to overcome this problem through training. Notably, the results of this study suggest that self-management, especially mental power management, can reduce somatic anxiety (Ong & Chua, 2021). The speculation that mental power is related to anxiety is convincing from a psychological perspective. Simultaneously, previous studies have also reported cases that could prove this speculation in other sports (Park, 2012; Woon, 2008). In the context of self-management and somatic anxiety, mental power management, a sub-factor of self-management, is believed to reduce cognitive anxiety to a certain degree.

The results of this study invite discourse that will effectively improve the performance of athletes, and also provide useful information for improving athlete support, such as training programs. Although the results of this study are valuable, it had some limitations. First, it is necessary to explore the effects of self-management, concentration, and competitive anxiety on performance through in-depth interviews or qualitative observations rather than a quantitative investigation. More valuable findings can be obtained using various research approaches. Second, there may be factors other than players' self-management, concentration, and competitive anxiety

that affect performance. Thus, subsequent multidimensional studies on other variables are required to comprehensively understand the various factors affecting performance. Finally, there are natural physical abilities beyond mental abilities that also affect athletes' performance; therefore, case and follow-up studies on how the relationships between mental and physical factors change should be conducted in parallel.

Conclusions

This study investigated the effects of self-management behaviors, concentration, and competition state anxiety on athletic performance. Furthermore, this study conducted an in-depth exploration into related phenomena through the content and interpretation of self-management, concentration, and competitive anxiety experienced by athletes. The results showed that athletes' self-management behaviors significantly affected their concentration. Among the sub-factors of self-management behavior, training management and mental strength management had a significant positive (+) effect on attention among the sub-factors of self-management behavior, mental strength management, training management, and interpersonal management have a significant positive (+) effect on confidence among the sub-factors of self-management behavior. In addition, among the sub-factors of self-management behavior, interpersonal management had a significant positive (+) effect on immersion, and training management, mental power management, intrinsic management, interpersonal management, and physical management had a significantly positive (+) effect on goal setting. The results showed that athletes' self-management behaviors had a significant effect on their competition state anxiety. Among the sub-factors of self-management behavior, mental power management had a significant positive (+) effect on somatic anxiety among the sub-factors of competition state anxiety, and training and mental strength management had a significant positive (+) effect on cognitive anxiety among the sub-factors of competition state anxiety. These results help anticipate and produce discourse that will help improve athletic performance. The results also provide useful information for implementing various strategies to improve athletic performance. Finally, this study's findings provide basic data necessary to encourage future research, in turn leading to the growth of discourse on fixed-target sporting events.

Acknowledgments

There are no acknowledgments.

Conflict of Interest

The author declares that there is no conflict of interest.

Received: 21 February 2023 | **Accepted:** 07 May 2023 | **Published:** 01 June 2023

References

- Ahn, S. (2016). *Achievement objective tendency, self-management behavior, and sport confidence in Sepaktakraw players followed by performance (Unpublished doctoral dissertation)*. Daegu, Korea: Daegu Catholic University.
- Chun, S. Y. (2017). *The Relation between Sports Concentration and Attention by Sports Type (Unpublished master's thesis)*. Seoul, Korea: Ewha Womans University.
- Etzel, E. F. (1979). Validation of conceptual model characterizing attention among international rifle shooters. *Journal of Sports Psychology, 1*, 281-290.
- Gustafsson, H., Sagar, S. S., & Stenling, A. (2017). Fear of failure, psychological stress, and burnout among adolescent athletes competing in high level sport. *Scandinavian Journal of Medicine & Science in Sports, 27*(12), 2091-2102.
- Parnabas, V. A., Mahamood, Y., & Parnabas, J. (2013). The relationship between cognitive and somatic anxiety on performance of student-athletes of University Malaysia Perlis (UNIMAP). *Sport and Art, 1*(3), 61-66.
- Heo, J. H. (2003). Development and Validation of Athletes' Self-Management Questionnaire (ASMQ). *Korean Journal of Sport Psychology, 14*(2), 95-109.
- Heo, J. H. (2001). Theoretical Approach on Sport Self-Management Strategies. *The Research Institute of Sports Science, 14*, 267-284.
- Jang, J. (2012). *The effect of psychological skills training on psychological variable and performance in shooting and archery players (Unpublished doctoral dissertation)*. Gwangju, Korea: Chonnam National University.
- Jones, G., & Hanton, S. (1996). Interpretation of competitive anxiety symptoms and goal attainment expectancies. *Journal of Sport and Exercise Psychology, 18*(2), 144-157.
- Jun, M. G. (2019). *Exploring athletic performance factors of shooting players (Unpublished doctoral dissertation)*. Seoul, Korea: Kyung Hee University.
- Kang, M. G., & Yoo, K. S. (2018). The Relationship among Mentoring Role of General Sport Class Coach's, Sport Confidence, Self-Management Behaviors and Exercise Flow of Participants in Fitness Center. *The Korea Journal of Sport, 16*(1), 147-157.
- Kim, B. H. (2005). Sport Science: The Relationships between Concentration

- and Athlete Performance. *Korean Journal of Sports Science*, 27, 35-41.
- Kim, B. J. (2003). A Survey of Korean Athletes About Psychological Skills and Sport Psychology Services. *Korean Society of Sport Psychology*, 14(4), 205-222.
- Kim, B. S., Lee, S. K., & Kim, J. Y. (2017). the effect of fencing athletes' self-management on exercise flow and concentration. *The Korean Journal of Sport*, 15(3), 785-794.
- Kim, G. Y., & Park, J. H. (2016). Badminton player, sport spirit, sports concentration, perceived performances, latent means analysis, multi-group analysis. *Journal of Coaching Development*, 18(1), 67-78.
- Kim, H. D., & Cruz, A. B. (2021). Psychological influence of self-management on exercise self-confidence, satisfaction, and commitment of martial arts practitioners in Korea: A meta-analytic approach. *Frontiers in Psychology*, 12, 691974.
- Kim, H. K. (2016). *The structural relationship among stress, competitive anxiety and sport-confidence of youth soccer athletes (Unpublished doctoral dissertation)*. Seoul, Korea: Sungkyunkwan University.
- Kim, Y. (2011). *The influences of self-management and psychological skills on concentration among elite shooting athletes (Unpublished master's thesis)*. Mokpo, Korea: Mokpo National University.
- Kim, Y. M. (2018). The Influence Relationship between Achievement Goal Orientation, Self-Management and Sport Self-Confidence in Cyclists. *The Korean Journal of Sport*, 16(1), 481-493.
- Kirk, S. A., & Chalfant, J. C. (1984). *Academic and developmental learning disabilities: Attentional disabilities*. Columbus Ohio: Love Publishing Company.
- Lee, A., Park, S., Kim, N., & Nam, Y. (2015). Qualitative research on actual wearing conditions and satisfaction of rifle shooting clothing. *Journal of the Korean Society of Clothing and Textiles*, 39(4), 517-528.
- Lee, E. K. (2011). *The development of a psychological skills scale for elite archery (Unpublished dissertation)*. Seoul, Korea: Korea University.
- Lee, M. K., & Kim, A. R. (2011). Development and validation of attention-concentration ability test for children and adolescent. *Korean Journal of Counseling*, 12(4), 1391-1411.
- Lee, S. (2020). *An Analysis of the Differences in Psychological Factors Recognized by Superior and Non-Excellent Athlete during a Competition (Unpublished master's thesis)*. Gwangju, Korea: Chosun University.
- Martens, R. (1977). *Sport competition anxiety test*. Champaign, IL: Human Kinetics publishers.
- Martens, R., Burton, D., Vealey, R. S., Bump, L. A., & Smith, D. E. (1990). Development and validation of the Competitive State Anxiety Inventory-2 (CSAI-2). In R. Martens, R. S. Vealey, & Burton, D. *Competitive anxiety in sport (pp. 117-213)*. Champaign, IL: Human Kinetics.
- Moon, H. S., & Park, J. S. (2008). The Relationship between Archers' Self-management and Self-confidence. *Korean Journal of Sport Psychology*, 19(1), 19-32.
- Moon, W., Sung, C., & Jang, D. (2017). The effect of self-management on sport coping in shooters. *Korean Society for Wellness*, 12(1), 385-397.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory (3rd ed.)*. McGraw-Hill.
- Ong, N. C., & Chua, J. H. (2021). Effects of psychological interventions on competitive anxiety in sport: A meta-analysis. *Psychology of Sport and Exercise*, 52(18), 101836.
- Park, G. M. (2012). *The Influence of Self-Management on Competition Anxiety of Middle School Men's Tennis Player. (Unpublished master's thesis)*. Seoul, Korea: Myongji University.
- Park, J. S., & Kim, S. H. (2007). Development and Validation of Sports Concentration Scale. *Korean Journal of Sport Psychology*, 18(3), 87-100.
- Park, S., Park, B., & Jeon, J. (2017). Exploring the competition preparation behavior of shooting players applying theory of planned behavior (TPB). *Sport Science*, 34(2), 39-46.
- Reid, D. K., & Hresko, W. P. (1981). *A cognitive approach to learning disabilities*. New York, NY: McGraw-Hill.
- Sagar, S. S., Lavallee, D., & Spray, C. M. (2007). Why young elite athletes fear failure: Consequences of failure. *Journal of Sports Sciences*, 25(11), 1171-1184.
- Sagar, S. S., Lavallee, D., & Spray, C. M. (2009). Coping with the effects of fear of failure: A preliminary investigation of young elite athletes. *Journal of Clinical Sport Psychology*, 3(1), 73-98.
- Sagar, S. S., & Lavallee, D. (2010). The developmental origins of fear of failure in adolescent athletes: Examining parental practices. *Psychology of Sport and Exercise*, 11(3), 177-187.
- Shin, J. (2015). *The effect of rosemary and basil aromatherapy on shot concentration and mental-body stability of male amateur golfer (Unpublished master's thesis)*. Busan, Korea: Youngsan University.
- Shin, J. S., & Yoon, H. K. (2018). The Relationships between Self-Management Behavior, Self-Efficacy, and Performance of College Golf Athletes. *Korean Journal of Sports Science*, 27(2), 283-294.
- Singer, R. N. (2002). Preperformance state, routines, and automaticity: what does it take to realize expertise in self-paced events? *Journal of Sport and Exercise Psychology*, 24(4), 359-375.
- Suh, Y. J. (2005). *Conceptual construction on professional dancer's self-management (Unpublished master's thesis)*. Seoul, Korea: Seoul National University.
- Weinberg, R. S., & Gould, D. (2015). *Foundations of sport and exercise psychology (6th ed.)*. Champaign, IL: Human Kinetics.
- Woon, B. M. (2008). The Influences of Self-Management on Self-Confidence and Competition Anxiety of High School Bowling Players (Unpublished master's thesis). Yongin, Korea: Dankook University.
- Yeo, Y. G. (2010). The Relationship between the Self-Management and Sports Psychological Skills of Gymnasts. *Journal of Coaching Development*, 12(2), 87-95.
- Yoo, J. (1966). Development of Psychological Skill Test for Korean Athletes. *The Korean Journal of Physical Education*, 35(3), 107-124.