

# Psychological Vulnerability Associated With Stress Coping Strategies in Japanese University Athletes

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This study examined the stress coping strategies of athletes with high psychological vulnerability. The participants were 487 university athletes (mean age = 19.8 years,  $SD = 0.88$ , 153 women). Data were collected using the Vulnerability Scale for University Athletes and General Coping Questionnaire and analyzed by conducting a multivariate analysis of variance. The results showed significant relationships between vulnerability and coping strategies ( $r = .11-.39$ ). Vulnerability was most strongly related to the emotional support seeking aspect of emotion-oriented coping ( $r = .39$ ). There was no significant difference in cognitive reinterpretation ( $r = .07$ ). Vulnerability had a stronger relationship with emotion-oriented than problem-oriented coping, and high (vs. low) vulnerability athletes had significantly higher emotion-oriented-coping scores. These results suggest that vulnerable athletes need to be provided with appropriate emotional support to cope with stressful situations, as they rely heavily on a stress management strategy focusing on emotion regulation.

**Keywords:** mental health, psychological pain, emotional hurt, depressive symptoms

Mental health is important for competitive athletes. Among mental health issues, depression has become a serious problem. The prevalence rate of probable depression among university athletes participating in Division I National Collegiate Athletic Association-sponsored sports ranges from 15.6% to 21% (Wolanin et al., 2015; Yang et al., 2007). Athletes have increased mental health risk factors compared with nonathlete populations, which can be attributed to high training loads, tough competition, and stressful lifestyles (Gorczyński et al., 2017; Rice et al., 2016). Athletes may have trouble leading healthy competitive lives due to depressive symptoms (Lebrun et al., 2018). Furthermore, Gulliver et al. (2015) suggested that elite athletes experience a broadly comparable risk of a high prevalence of mental disorders (i.e., anxiety, depression), relative to the general population.

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These mental health problems do not occur in all athletes. Some athletes can respond flexibly when faced with stressors, however, some of them cannot. During competition, there are many situations in which athletes might face psychological difficulties (e.g., mistakes that cost their team the game). Such events may be traumatic for some athletes, resulting in impaired mental health or depressive mood. Furthermore, people with a negative predisposition (e.g., those with a higher level of vulnerability) are more likely to display maladaptation when faced with a stressful event than those with a more positive predisposition (Ishizu & Ambo, 2013). Therefore, a person's level of vulnerability can affect their level of psychological pain.

Vulnerability refers to a cognitive structure that is more susceptible to stress (Sinclair & Wallston, 1999). Hayashi (2002, p. 1) defined vulnerability as "a susceptibility to damaging oneself, a possible state of brittleness or emotional hurt." According to Weisman (1976), vulnerability can impact one's coping ability and result in a pessimistic attitude toward recovery. There are two possible types of vulnerability: "trait vulnerability" based on inherent characteristics and "state vulnerability," which varies depending on the situation and environment. Because this study focused on examining vulnerability and stress conditions, we applied Hayashi (2002) definition of state vulnerability.

Research into vulnerabilities has focused primarily on the fields of social welfare, education, and disability. In the field of psychology, the concept of vulnerability has not received much attention to date. However, a study showed that events that may not be usually deemed hurtful might still have a strong negative impact on individuals with a high level of vulnerability (Enomoto, 2016). Furthermore, according to Brunner (2005), the "human mind is originally vulnerable, but its danger is not evenly distributed: it expresses that people with high risk are easily vulnerable" (p. 5).

The existing findings regarding the psychological aspects of vulnerability suggest that some athletes are likely to experience more state vulnerability than others, possibly to an excessive degree. Considering all the potential stressors that are particular to competitive environments, it is possible that the vulnerability of an individual athlete may vary depending on the situation. In fact, Yamaguchi et al. (2019), referring to Hayashi (2002), investigated the types of competitive situations during which athletes experience the most vulnerability and developed a scale to measure state vulnerability among athletes. According to Yamaguchi et al. (2019), Japanese female athletes are generally more vulnerable than Japanese male athletes. Vulnerable athletes are more likely to experience depressive symptoms and other stress reactions (Yamaguchi et al., 2018). As mentioned above, while vulnerable athletes tend to respond to stress, the stress coping strategies that they use remain unclear. Even if vulnerability is high, when a person uses an appropriate coping strategy when faced with a stressor, the stress reaction can be reduced, and serious problems, such as depression and burnout, can be avoided. In fact, vulnerable individuals display a negative interpretation of life events only when they are confronted with certain stressors, which places them at high risk for depression and a wide range of other negative outcomes (Ingram & Luxton, 2005). For example, optimists are generally more likely to persevere in the face of adversity than those with more negative expectations for themselves and the future (Updegraff & Taylor, 2000). Therefore, it is necessary to understand the stress coping strategies employed by highly vulnerable athletes.

Stress coping strategies are defined as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (Folkman & Lazarus, 1980, p. 220). Coping strategies can be very generally characterized by either approach (i.e., engagement) or avoidance (i.e., disengagement; Tobin et al., 1989). According to Lazarus and Folkman (1984), two types of adaptive coping styles are “emotion-focused coping” and “problem-focused coping.” Strategies that regulate emotional distress (e.g., deep breathing, visualization, and acceptance) are categorized within the emotion-focused dimension, while strategies that solve or manage the problem (e.g., goal setting, planning, and time management) are referred to as problem-oriented coping strategies (Lazarus, 1999).

Tobin et al. (1989) explained that problem-oriented coping strategies include “problem-solving” and “cognitive restructuring,” whereas emotion-oriented coping strategies include “emotional expression” and “social support.” Problem-solving is the act of trying to resolve the stressor when faced with an adverse event, whereas cognitive restructuring refers to reconsidering the stressors to identify situational opportunities and trying to find a beneficial direction (Sasaki & Yamasaki, 2002; Tobin et al., 1989). Emotional expression is the recognition of stressors and expression of feelings when facing a difficult problem-solving situation. In contrast, the need for social support highlights the importance of interacting with others (Sasaki & Yamasaki, 2002; Tobin et al., 1989). Problem-oriented coping may be most effective in situations that are controllable because problem-solving enables individuals to identify solutions and potentially gain control over a stressful event. In contrast, emotion-oriented coping may be most effective for uncontrollable events, as these situations require individuals to adjust to the situation rather than attempt to fix it. Hence, effective coping may best be characterized by the flexible deployment of coping strategies that match situational demands (Cheng, 2001).

Research on stress coping has been actively conducted in the field of sports psychology. Anshel and Kaissidis (1997) conducted a study on stress coping among basketball players. They found that in stressful situations, problem-oriented coping is used when it is highly feasible to control stress; however, emotion-oriented coping is used when one perceives low potential for control. Nixdorf et al. (2013) found that athletes with higher levels of depressive symptoms tended to use more negative coping strategies (i.e., escaping the situation, resignation, and self-pity) than athletes with lower levels. Studies have also revealed that the effectiveness of coping strategies is negatively associated with the intensity level of stress experienced by athletes (Laborde et al., 2014). Thus, although studies focusing on the relationship between stress coping, stressors, and stress response have been conducted, no studies have examined the relationship between vulnerability and stress coping, which is an intervening factor in this relationship.

Regarding the relationship between negative emotions and coping, the personality trait of neuroticism (proneness to irrational beliefs and negative emotional states) is negatively correlated with problem-oriented coping and positively correlated with emotion-oriented coping (Preet & Shourie, 2019). Thus, individuals with high levels of neuroticism show high reactivity to stress. These correlations indicate that those with higher neuroticism tend to adopt emotion-oriented coping strategies more easily but use problem-oriented coping

much less compared with those with lower neuroticism. Regarding optimism, some specific effects of optimism on adjustment include greater well-being, less perceived stress (Aspinwall & Taylor, 1992), and less psychological symptomatology (Scheier & Carver, 1985). Hart and Hittner (1995) found optimism to be associated with greater use of active coping strategies and less reliance on avoidant strategies. Moreover, male and female university athletes in Japan adopt different coping strategies when competition results are stagnant, and there is a negative association between problem-oriented coping and depressive reactions (Nakajima & Yamada, 2007). Therefore, based on the finding that people with high levels of neuroticism tend to use emotion-oriented coping, it may be reasonable to expect that those who are particularly vulnerable will also mainly use emotion-oriented coping. Consequently, we predicted that vulnerability, which is associated with negative emotions, is related to emotion-oriented rather than problem-oriented coping.

## Purpose

We examined the relationship between vulnerability and stress coping to clarify the stress coping strategies used by athletes with high vulnerability. Specifically, we examined how different vulnerability scores are associated with different stress coping strategies. We hypothesized that athletes with higher scores on vulnerability measures will use emotion-oriented coping strategies more frequently compared with less vulnerable athletes.

## Methods

### Participants

We collected data from 487 Japanese university athletes (334 men and 153 women; mean age = 19.9 years,  $SD = 0.99$ ). Twenty-four competitive sports were represented at the international, national, and district levels.

### Procedure

A face-to-face questionnaire survey was conducted during participants' class lectures from April to May 2018. The survey subjects were recruited from students taking the class of the first author. The first author verbally explained the ethical considerations of the study, which were also written on the cover of the questionnaire for the participants to read. After the study explanation, participants consented by completing the questionnaire. Questionnaires took approximately 5–10 min to complete and were collected immediately thereafter.

### Measures

We asked each university student to provide details regarding their sex, age, grade, sporting event, and competitive level.

We used the Japanese version of the Vulnerability Scale for University Athletes (Yamaguchi et al., 2019). The scale comprises three factors: vulnerability

due to being denied or ignored by others, vulnerability due to inconsistent performance, and vulnerability due to low interpersonal evaluation. Each factor consists of four items ( $N = 12$  items). Participants answered these items using a 4-point scale ranging from *I completely disagree* (1 point) to *I completely agree* (4 points). Scores were calculated using the average item score for each factor. Higher scores indicate greater tendencies toward psychological vulnerability. The minimum score in this study was 1.0, the maximum was 4.0, and the average was 2.62 ( $\pm 0.62$ ). Yamaguchi et al. (2019) reported Cronbach's alpha values of .72, .74, and .75 for the three subscales, respectively. In the present study, the scale showed good reliability, with Cronbach's alpha values of .74, .84, and .81, respectively.

The Japanese version of the General Coping Questionnaire (Sasaki & Yamasaki, 2002) was used to assess coping strategies. This scale consists of four factors: problem-solving, cognitive reinterpretation, emotional expression, and social support. The scale has 32 items in total, with eight items per subscale. Participants responded to these items using a 5-point scale ranging from *I never do* (1 point) to *I always do* (5 points). Total scores were calculated by summing the item scores; the higher the score, the more a particular stress coping strategy was used. The minimum score in this study was 40.0, the maximum was 147.0, and the average was 99.9 ( $\pm 16.58$ ). Sasaki and Yamasaki (2002) reported Cronbach's alpha values of .86, .91, .92, and .90 for the four subscales, respectively. In the present study, this scale showed good reliability, with Cronbach's alpha values of .91, .87, .92, and .84, respectively.

## Ethical Considerations

Prior to the study, we obtained written informed consent from all participants. Each participant was made aware of their right to decline cooperation at any time without repercussions, even after consenting to participate. Ethical approval was obtained from Juntendo University.

## Analysis Method

First, after computing the descriptive statistics for each variable, Pearson's product-moment correlation coefficients were calculated to examine the relationship between vulnerability and stress coping. When calculating the descriptive statistics, the sample size created a bias regarding competition level; therefore, we grouped international and national competitions into one group (high competition), and district and local competitions into another group (low competition), as in Yamaguchi et al. (2019). To examine stress coping according to vulnerability level, instead of classifying vulnerability into two groups (i.e., high and low vulnerability based on mean score), we divided participants into three groups, following Yamaguchi et al. (2019), to provide a more detailed understanding of this relationship. With only two groups, it is possible that a difference of only one point will move a participant from the high to the low group and vice versa; therefore, the participants in our study were categorized into tertiles: high, medium, and low vulnerability. Multivariate analysis of variance (MANOVA) was performed to examine how different vulnerability scores were associated with various stress coping strategies by sex. We performed a MANOVA with these three groups and sex

as independent variables, and the four subscales of stress coping as the dependent variable. The effect size guidelines by Cohen (2013) were used as the criteria for the effect sizes in the MANOVA (small = 0.01, medium = 0.06, and large = 0.14). SPSS (version 27.0) was used for all analyses. Significance was set at 5%.

## Results

Table 1 shows the number of athletes by sex and the competitive level to which each participant belonged. No significant difference was found for competitive level or sports category. The descriptive statistics and correlation coefficients of the vulnerability and stress coping scores were also calculated (Table 2). For the two problem-oriented coping strategies, vulnerability had a significant positive correlation with problem-solving ( $r = .11, p = .018$ ); however, the correlation with cognitive reinterpretation was not significant ( $r = .07, p = .108$ ). For the two emotion-oriented strategies, vulnerability had significant positive correlations with both emotional expression ( $r = .20, p < .001$ ) and social support ( $r = .39, p < .001$ ).

Next, in the MANOVA, the three vulnerability groups and sex constituted the independent variables, and the four subscales of stress coping constituted the dependent variable. The results showed significant differences in emotional expression,  $F(2, 486) = 8.22, p < .001, \eta^2 = .03$ , and social support,  $F(2, 486) = 17.67, p < .001, \eta^2 = .11$  (Figure 1). Multiple comparisons showed that among men, the high vulnerability group had higher problem-solving scores ( $p < .05$ ) and higher emotional expression scores ( $p < .01$ ) than the low vulnerability group. Furthermore, the high vulnerability group had higher social support scores than the medium ( $p < .001$ ) and low vulnerability groups ( $p < .001$ ). Among women, the high vulnerability group had higher emotional expression scores than the low vulnerability group ( $p < .01$ ). The high vulnerability group also had higher social support scores than the medium ( $p < .05$ ) and low vulnerability groups ( $p < .01$ ).

## Discussion

We investigated the relationship between vulnerability and stress coping to elucidate the stress coping strategies of athletes with high vulnerability. The results confirmed significant positive correlations between vulnerability and both social support and emotional expression. This shows that the relationship between vulnerability and stress coping is stronger for emotion-oriented coping than problem-oriented coping. When vulnerable people engage in stress coping, they may focus on resolving emotional hurt and negative feelings or seek help from a reliable person. In contrast, there was almost no difference between groups in problem-oriented coping. According to Kosugi & Otsuka (2002), emotion-oriented coping alone does not lead to problem-solving. A problem can be solved by using problem-oriented coping after dealing with unpleasant emotions by emotion-oriented coping. When an individual perceives that they should overcome a challenge alone but ultimately has to rely on someone else, the support obtained from other people can help them to relax and heal their emotional pain (Tamura & Watanabe, 2017). Thus, those who are highly vulnerable are more likely to use emotion-oriented coping than those who are less vulnerable.

**Table 1 Participants' Demographic Characteristics**

	Gender	
	Male (n = 334)	Female (n = 153)
Age (years)		
18	129	68
19	99	49
20	96	35
21	9	1
22	1	0
Individual sports		
Track and field	95	27
Artistic gymnastics	9	7
Kendo	12	8
Judo	16	2
Karate	1	1
Dance	3	5
Swimming	13	10
Squash	4	4
Triathlon	9	4
Tennis	5	9
Keirin	4	1
Climbing	2	0
Badminton	3	5
Power lifting	2	1
Group sports		
Soccer	58	13
Baseball	47	0
Basketball	18	18
Volleyball	9	18
Handball	9	7
Softball	0	9
Futsal	10	3
Rugby	4	0
Ice hockey	1	0
Competitive level		
High	76	48
Low	258	105

**Table 2 Descriptive Statistics and Correlation Analysis Results**

	1	2	3	4	5	Mean	SD
1. Vulnerability	—					2.6	0.61
2. Problem-solving	.11*	—				28.0	4.99
3. Cognitive restructuring	.07	.69**	—			26.1	6.11
4. Emotional expression	.20**	.05	.13**	—		21.7	6.71
5. Social support	.39**	.28**	.37**	.39**	—	24.2	5.97

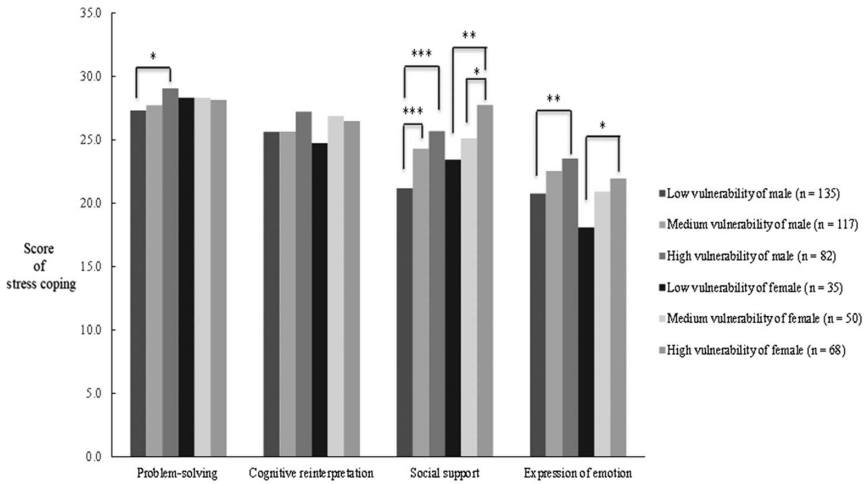
\* $p < .05$ . \*\* $p < .01$ .

Next, the MANOVA results revealed that the high vulnerability group scored higher on the emotion-oriented coping subscales than the low vulnerability group. Significant differences were found in emotional expression and social support. These results support our hypothesis that athletes with higher scores on vulnerability measures will use emotion-oriented coping strategies more frequently compared with less vulnerable athletes. Thus, athletes with high vulnerability used more emotional support seeking strategies than athletes with low vulnerability to overcome (or adapt to) a crisis and deal with stress. The effect size values were 0.01 for both problem-solving and cognitive reinterpretation, 0.03 for emotional expression, and 0.11 for social support, showing a medium effect size for demand for emotional support (Cohen, 2013). Thus, vulnerability has an impact on the use of emotional support seeking, indicating that vulnerable athletes more actively seek emotional support.

Emotional support seeking is defined as “trying to calm one’s feelings while interacting with people” (Sasaki & Yamasaki, 2002, p. 401). In fact, it has been reported that enjoying high level of social support is a source of proper mental health (Morimoto, 2007; Riahi et al., 2011). Athletes with high vulnerability do not immediately cope when faced with some psychological problem but rather enter a state of increased vulnerability and avoid dealing with the problem by focusing on relationships with others. Consulting others may make it easier to positively accept such experiences without prolonging emotional hurt (Nagai, 2018). Hence, by talking to someone, highly vulnerable people can try to improve their hurt feelings and self-perception of being fragile and weak, calm down, and maintain mental health. However, no significant differences were found between groups in problem-solving or cognitive reinterpretation, which are subscales of problem-oriented coping. From the results of the correlation, there was no positive relationship between problem-focused coping and vulnerability. Thus, even if the vulnerability were classified into three groups, the effect on problem-focused coping was not seen.

When examined from the perspective of cultural influence, problem-focused coping scores are high in all countries, but studies comparing Japanese and Chinese coping strategies show characteristics in the subscales of problem-focused coping (Kang & Takamatsu, 2016). Specifically, in the case of Japanese university students, it is conceivable to seek a mutually beneficial solution while considering the relationship with the other party. On the other hand, in the case of Chinese





**Figure 1** — Effects of vulnerability on stress coping strategies.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

university students, it is conceivable to try to solve the problem by sticking to their own behavior and values and actively asking others to improve.

In this way, in Japan, characterized by a culture that seeks harmony with others, it is possible that even problem-focused coping is performed with consideration for others' emotions. On the other hand, in China, which emphasizes coping behavior that prioritizes the stability of one's own mind, the coping approach differs from that of Japan, thereby suggesting possible cultural differences.

On the other hand, there is also a different view (Bartczuk et al., 2020). Among coping factors, some are more culturally stable (seeking social support, avoidance, assertive action, instinctive action, as well as antisocial action and/or aggressive action) and some are more sensitive to the cultural context (social joining, cautious action, and indirect action). Stress coping may have more of a cultural difference in the problem-focused type than in the emotion-focused type. Furthermore, research on emotion-focused coping showed contradictory findings; some studies reported that Asian Americans used more emotional coping (Lee & Seligman, 1997), while others reported contrasting results: U.S. children appeared to be problem focused and action oriented (Cole et al., 2002). Thus, studies of cultural differences in stress coping have not provided consistent findings, and little has been clarified about coping in vulnerable individuals. Among them, those who are vulnerable have a large range of emotional-focus-type scores; thus, in the future, it will be necessary to conduct research with international comparisons of coping strategies among those who are vulnerable.

Men and women may cope differently because of the different stress situations they experience in daily life or their different appraisals regarding similar stress situations (Carver et al., 1989): for example, predicting more problem-focused coping in men and support seeking and emotion-focused coping in women (Ptacek

et al., 1992). In fact, studies on gender differences and stress coping have revealed that women used more social support strategies than men (Eschenbeck et al., 2007; Matud, 2004). Furthermore, men have been found to seek quick solutions to problems, whereas women prefer to talk about their feelings (Holloway et al., 2018). Therefore, women may find it easier to use emotion-focused coping than men. A study of stress coping in Japan also revealed that women scored higher in emotion-focused coping than men (Sasaki & Yamasaki, 2002, 2004). The results of the present study showed that women scored 26.0 points and men scored 23.4 points for social support, with significantly higher scores for females and supporting the previous study mentioned above. Therefore, stress coping between men and women in Japan seems to follow the same patterns as in other countries.

On the other hand, no significant difference was found between the two factors of problem-solving coping. The reason may be attributed to the sporting spirit of having to solve problems as an athlete, apart from gender differences. The mean scores for the four subscales of stress coping were as follows: problem-solving was 28.1 points, cognitive reinterpretation was 26.1 points, emotional expression was 21.6 points, and social support was 24.4 points. Thus, participants had a high mean problem-solving score, which is similar to that found in other studies; for example, in a study of general university students (Sasaki & Yamasaki, 2002), among the subscales of stress coping, problem-solving scores were the highest (26.4 points), and social support scores were the lowest (23.0 points). Additionally, in studies conducted in Jordan and Spain, problem-oriented coping scores were higher than emotion-oriented coping scores (Al-Gamal et al., 2016; Crego et al., 2016). Furthermore, problem-solving coping has shown a strong influence on student stress reduction (Crego et al., 2016). In the current study, the problem-solving score was 28.1 points, which is higher than the score (26.4 points) reported in Sasaki and Yamasaki's (2002) study of general university students, which used the same scale. This might be because Japanese athletes experience the same stressors in daily life as general university students in addition to stressors particular to competition (e.g., stagnation of competition performance, interpersonal relationships, frictions, and injuries). Therefore, it is conceivable that athletes have many opportunities to frequently use problem-solving coping. In fact, athletes often strive to adapt well to the many stressors that they experience during practice and competition by using stress coping strategies (Crocker et al., 2015). Among them, athletes actively adopt problem-oriented coping (Nicholls et al., 2007).

Levy et al. (2011) posited that when an athlete faces a stressor, the coping strategy used depends on whether the event is perceived as a challenge or as a threat. According to Nicholls et al. (2012), problem-oriented coping strategies are more adaptive to competitive performance than emotion-oriented coping strategies. In addition, problem-oriented coping reduces athletes' depressive response (Nakajima & Yamada, 2007). Thus, athletes may use problem-focused coping because they consider their problems as challenges rather than as threats they need to avoid. For the athletes in the current study, the problem-solving score was the highest among the subscales of the General Coping Questionnaire, which is consistent with results from Nicholls et al. (2007). Even when vulnerability was classified into three groups, there was no difference in scores for problem-oriented coping. Therefore, a high problem-solving score indicates that when an athlete faces a stressor, they can manage their hurt emotions and eventually face the problem.

Although we have considered vulnerability from the perspective of problem-oriented coping and emotion-oriented coping, stress cannot be reduced simply by communicating negative experiences such as through emotion-oriented coping. Therefore, communication aimed at problem-solving is required (Costanza et al., 1988). However, young athletes are self-reliant and foster psychological well-being through active planning, cognitive restructuring, emotional control, and social support (Romero Carrasco et al., 2013). Active planning and cognitive restructuring for problem-solving are important. In fact, adopting problem-solving as a stress coping strategy is less likely to cause mental and physical stress reactions and improves health. Emotion-focused coping, on the other hand, tends to exhibit stress reactions and lowers health; hence, stress management education that employs problem-solving as a stress coping strategy is effective (Kokado & Mizuno, 2009). Moreover, coping strategies, such as problem-focused coping, have been shown to affect psychological growth (Paton, 2006). However, emotional control and social support are also important, and this study reveals that emotionally focused coping is easier to use for those who are particularly vulnerable. Therefore, it is thought that understanding the stress coping strategies used by vulnerable people and helping with problem-focused coping can lead to problem-solving.

This study helped to clarify that vulnerability is related to emotion-oriented coping, and that those who are more vulnerable are more likely to seek emotional support. For vulnerable athletes, listening to them when they are faced with a problem and providing them with support can help them to develop stress coping strategies that allow these vulnerable individuals to maintain good mental health.

This study had some limitations. We conducted a one-time, cross-sectional survey. The concept of vulnerability used in this study is regarded as a state, and it may not be possible to examine in detail the changes and characteristics of vulnerability in a cross-sectional survey at one point in time. Athletes are expected to change their psychological states often depending on the situation. In addition, it is not possible to identify a causal relationship between vulnerability and stress coping. In future research, it is necessary to conduct a longitudinal survey to identify more specific factors. Furthermore, as the target audience was university athletes, a similar survey targeting different populations, such as professional athletes and competitive high school athletes, should be conducted. By applying the knowledge obtained from this study to other populations, further knowledge on sports psychology can be gained.

## Clinical Implications

The results of this study have implications for preventing depressive symptoms among vulnerable athletes. Few vulnerability-related studies have been conducted in Japan, and this focus is key in the fields of clinical sports psychology and health psychology. Because this study clarified how vulnerable athletes cope with stress, based on these survey results, it can be expected that instructors may be better positioned to provide social support to athletes, which will lead to problem-focused coping even for vulnerable athletes who tend to use emotion-focused coping. Strengthening university athletes' positive coping skills may be helpful for them to effectively deal with various stressors. Interacting with vulnerable athletes and

reaching out can open the possibilities of stress coping. In addition, emotion-focused coping should be considered for vulnerable athletes with high depressive symptoms. On the other hand, for athletes who refuse clinical psychological counseling and mental health support, it is important to first understand their vulnerabilities and alleviate their resistance to support.

The more vulnerable athletes are the less likely they are to ask for help, and it is possible that they may not know how to ask for help in the first place. Therefore, it is expected that there is a high possibility of engaging in care that focuses on one's own injured heart (emotion-focused coping) instead of problem-focused coping. Therefore, deciding on the kind of treatment for athletes who are vulnerable that can be used by instructors and athletes can lead to proper mental health care.

## Conclusion

In university athletes, vulnerability was strongly associated with emotion-oriented coping, with higher vulnerability groups scoring higher on emotion-oriented coping than lower vulnerability groups. Thus, athletes with higher vulnerability may use more emotion-oriented coping strategies. Therefore, it is important to understand the emotion-oriented coping used by vulnerable athletes. More importantly, it is necessary to develop a system that can support problem-solving coping.

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