Relationships Between Vulnerability and Depression Among Japanese University Athletes

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Introduction & Purpose: In the case of an excessive burden imposed on self, a person with vulnerability he/she perceives unprotected against the load. Vulnerability is defined as “a susceptibility to damage to self, a state that may be fragile or hurt.” University athletes may often experience psychological, physical, and social stressors, which may cause vulnerable athletes to exhibit stress responses. Our previous studies of vulnerability among athletes have revealed that women have higher scores than men. Therefore, this study aimed to examine the relationship between vulnerability and depression among Japanese university athletes by gender.

Method: Participants were 363 university athletes (men = 193, women = 170, mean age = 19.0 years, SD = 1.07). The Athletic Vulnerability Scale (AVS) and Self-Depression Scale (SDS) were used. We analyzed the relationships between these variables using the Pearson's product-moment correlation coefficient by gender.

Result & Discussion: The results revealed a significant relationship between the total scores on the AVS and SDS in both men and women ($r = 0.26$ and 0.32 respectively, $p < 0.01$). Additionally, in both men and women, the subscale scores on the AVS and SDS were also significantly correlated (men: $r = 0.18-0.30$, $p < 0.01$ and 0.05 , women: $r = 0.22-0.31$, $p < 0.01$).

Conclusion: We concluded that vulnerability and depression are closely associated in both men and women athletes, and its relationship differs by gender.

Key words: vulnerability, depression, mental health, University athletes, correlation coefficient

Introduction

When excessive burden is imposed on the self, a person with vulnerability perceives lack of protection against the load. Vulnerability is a state defined as “a susceptibility to damage to self, a state that may be fragile or hurt”¹⁾.

In the sports context, there are always victors and losers. This causes many stress factors psychological, physical, and social. Some examples

of stress factors are problems with competition performance, conflict of interpersonal relationship with leaders and teammates, withdrawal of competition due to injury or illness, and compatibility of academics with competition. The above stress factors in daily and athletic life experienced by athletes not only act negatively in exercising high competitive performances but also affect mental health decline²⁾. Additionally, when the stress factors are severe, learned helplessness, burnout,

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depression, and female specific disorders may develop. Athletes high in vulnerability may have difficulty flexibly dealing with the stress factors listed above, and there may be a high risk of mental health malfunction. Further, according to Brunner³⁾, the “human mind is originally vulnerable, but its danger is not evenly distributed: it expresses that people with high risk are easily vulnerable.” Thus, as “vulnerability” is not evenly distributed, some athletes are likely to be excessively vulnerable.

However, vulnerability studies in the sphere of sports are rare in countries such as Japan. This is why the concept of vulnerability has originated in the fields of medicine, welfare, and disaster. Additionally, the “weakest link model” has been advocated in the field of engineering, which is defined as follows: “In the case of pulling the chain, assume that the entire chain has been destroyed by breaking the weakest ring.” This model has similarities to the human mind. In other words, athlete with high vulnerability may hurt mental health if it touches some kind of injury factor and worsens competition performance or mental health disorder. On the other hand, since athletes are thought to be mentally stronger, hardier, and healthier than general people, emotional problems of athletes are often denied by their surroundings⁴⁾. Therefore, understanding the vulnerability of athletes is important in achieving stable competitive results and prevention of mental health problems.

According to Hiramatsu⁵⁾, people high in vulnerability have lower risk of self-evaluation and less danger of leading to maladaptive states such as withdrawal and depression. From this finding, since vulnerability is strongly related to depression, people high in vulnerability have a high risk of depression. Our previous studies on vulnerability among athletes have revealed that women have higher vulnerability than men^{6) 7)}. Therefore, we hypothesized that vulnerability may be related to stress response (i.e., depression). When focusing on athletes’ mental health, it is possible to measure the tendency of depression from the vulnerability score, and it contributes to the prevention of mental health issues. In previous studies, it has been confirmed that there is a positive correlation between vulnerability and depression¹⁾.

However, there are no detailed studies on vulnerability and depression, and it is necessary to examine the relationships between subscales of vulnerability and depression for differences in men and women. In the field of sports, since psychological support matching the needs of individuals is required, we believe that new knowledge can be obtained by analyzing the relationship between vulnerability and depression in consideration of gender difference. Specifically, we think that it will help mental health support and psychological education.

Purpose

This study aimed to clarify the relationship between vulnerability and depression among Japanese university athletes by gender.

Method

Participants: Participants were 363 athletes belonging to a university sports club (men = 193, women = 170, mean age = 19.0 years, SD = 1.07). The competitive experience varied among participants—international, national, and district levels and no participation experience. The survey was carried out from the middle of May to the middle of June in 2017.

Measurements: (1) Socio-demographic Questions: We asked the participants about their gender, age, grade, sports event, competitive level, and role in the team. The responses were collected using both description and selection formula. (2) The Athletic Vulnerability Scale (AVS): This scale comprised 12 items of 3 factors (vulnerability toward low interpersonal evaluation, vulnerability toward unstable performance, and vulnerability toward denial or being ignored by others). Participants answered on a 4-point scale from “I completely disagree” (1 point) to “I completely agree” (4 points). (3) Self-Depression Scale (SDS): Participants responded on a 4-point scale from “A little of the time” (1 point) to “Most of the time” (4 points).

Statistical Analysis: We analyzed the relationships between these variables using Pearson’s product-moment correlation coefficient by gender.

Table-1 Results of the product-moment correlation coefficients by gender

	SDS	Vulnerability				Mean	SD
		Total score	A	B	C		
men	Total score	0.26**	0.18*	0.30**	0.19**	2.6	0.55
women	Total score	0.32**	0.22**	0.30**	0.31**	2.9	0.52
all	Total score	0.34**	0.26**	0.33**	0.27**	2.7	0.55

* $p < 0.05$, ** $p < 0.01$

Note: A = Vulnerability toward low interpersonal evaluation, B = Vulnerability toward unstable performance, C = Vulnerability toward denial or being ignored from others

Result

First, descriptive statistics for the vulnerability was calculated. As the result, the total vulnerability score was 2.6 for men and 2.9 for women. Next, the product-moment correlation coefficients by gender were calculated (Table-1). The results showed a significant relationship between the total scores on the AVS and SDS in both men and women ($r = 0.26$ and 0.32 respectively, $p < 0.01$). Additionally, in both men and women, the subscale scores on the AVS and SDS were also significantly correlated (men: $r = 0.18$ – 0.30 , $p < 0.01$ and 0.05 , women: $r = 0.22$ – 0.31 , $p < 0.01$).

Discussion

In this study, we aimed to clarify the relationship between vulnerability and depression for university athletes by gender.

First, we checked descriptive statistics of vulnerability and depression. We compared the vulnerability scores by gender. Significant difference was observed, suggesting that women were more vulnerable than men.

Next, the results showed that vulnerability and depression were positively correlated in both men and women. In subscales, men showed low correlation of depression with vulnerability toward low interpersonal evaluation, vulnerability toward denial or being ignored by others and high correlation with vulnerability toward unstable performance. Women showed the opposite results. That is, in women, vulnerability toward low interpersonal evaluation and vulnerability toward denial or being ignored from others were higher than in men.

Women athletes have distinct stress factors and psychological problems compared with men

athletes. Specifically, there are women-specific health problems such as eating disorders, amenorrhea, and osteoporosis⁸⁾, and these three symptoms constitute the female athlete triad⁹⁾. In addition, as a stress factor particular to women, pregnancy/marriage and lack of social assistance in participation in competitions¹⁰⁾ compared with men make it difficult for women to enter sports¹¹⁾.

It is possible that health problems and stress factors specific to these women are related to the level of vulnerability. On the other hand, according to Arai¹²⁾, behavioral characteristics of female athletes relate to the lack of autonomy and dependence on a leader. Additionally, women athletes are more likely to show more emotional instability, such as fear of failing, compared to men athletes, and it is reported that the expression of negative emotions is higher than men¹³⁾. In addition, it has been report that women athletes are more likely to experience signs of depression than men athletes¹⁴⁾. Thus, women athletes have women-specific health problems and stress factors compared to men athletes, and vulnerability is higher in women than in men. However, since appropriate coping style strongly influences suppression factors of depression¹⁵⁾, We think considering the vulnerability and coping style can contribute to suppression of stress and improvement in mental health.

The limitation of this study is its analysis method. In this study, we only considered the correlation between vulnerability and depression and did not make predictions of causality. In addition, this study used a cross-sectional design at one point and, thus, does not provide the benefits of a longitudinal study. Therefore, it is not clear whether vulnerability was increased by the stress factor particular to the competition scene or whether vulnerability at the time of investigation was high. Based on these facts,

in future, it will be necessary to understand the nature of vulnerability by predicting causal relationships using factors of stressors and mental health through, by longitudinal studies.

Conclusion

We concluded that vulnerability and depression are closely associated in both men and women athletes and that the relationship between vulnerability and depression differs by gender.

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