

An investigation into the mediation effect of coping style on the relationship between psychological resilience and perceived stress among athletes with sports injury

Una investigación sobre el efecto de mediación del estilo de afrontamiento sobre la relación entre la resiliencia psicológica y el estrés percibido en atletas con lesiones deportivas

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Abstract: This study was aimed at evaluating the effect of coping styles on the relationship between psychological resilience and perceived stress among injured athletes. The statistical population included 800 players of sports teams of the Iranian national sports leagues, among whom 300 athletes were chosen as the study sample based on Morgan's table by a purposive convenience sampling method. The study instruments were 3 standard questionnaires. Pearson Coefficient test and linear regression were used to test the hypotheses. The results showed that the dimensions of stress coping style had a significant effect on perceived stress and psychological resilience. Despite the mental and physical problems stress brings about for individuals, it seems they are not inactive toward stress. To cope with stress and its unfavorable consequences, individuals often adopt some behaviors which originate from their coping styles. As personality characteristics, approach and avoidance coping styles can help injured patients have psychological resilience.

Keywords: psychological resilience, perceived resilience, coping style, injured athletes.

Resumen: Este estudio tuvo como objetivo evaluar el efecto de los estilos de

afrontamiento en la relación entre la resistencia psicológica y el estrés percibido en atletas lesionados. La población estadística incluyó a 800 jugadores de equipos deportivos de las ligas deportivas nacionales iraníes, entre los que se seleccionaron 300 atletas como muestra del estudio, basándose en la tabla de Morgan por un método de muestreo de conveniencia intencional. Los instrumentos de estudio fueron 3 cuestionarios estándar. La prueba del coeficiente de Pearson y la regresión lineal se usaron para probar las hipótesis. Los resultados mostraron que las dimensiones del estilo de afrontamiento del estrés tenían un efecto significativo sobre el estrés percibido y la resiliencia psicológica. A pesar de los problemas mentales y físicos que el estrés provoca para las personas, parece que no están inactivos hacia el estrés. Para lidiar con el estrés y sus consecuencias desfavorables, los individuos a menudo adoptan algunos comportamientos que se originan a partir de sus estilos de afrontamiento. A partir de las características de la personalidad, los estilos de afrontamiento de aproximación y evitación pueden ayudar a los pacientes lesionados a tener una capacidad de recuperación psicológica. **Palabras clave:** resiliencia psicológica, resistencia percibida, estilo de afrontamiento, atletas lesionados.

Introduction

Successful performance of athletes is partly dependent on their stress coping strategies. Adverse stimuli among athletes not only lead to emergence of negative emotional responses but also cause damage to their health. Many of these harmful consequences are not caused by the stimuli themselves but as a result of the athletes' reaction to them (Holahan, Moos, Holahan, & Brennan, 1995). Stress is one of the factors that influences the athletes' behavior and performance. Athletes are not only affected by different and severe stresses but they also react differently to them (Anshel, & Sutarso, 2007; Dias, Cruz, & Fonseca, 2012). Sports activity faces athletes with a variety of physical and psychological stressors. Research has shown that disability to cope with sports stresses can

harm the athletes' performance and personal satisfaction (Williams & Andersen, 1998). As a result, knowing sources of stress and coping strategies is associated with lots of advantages because it provides coaches and athletes with useful knowledge about coping approaches. In general, some athletes adapt to stressful conditions, while some might cope with them (Anshel, & Sutarso, 2007). There have been numerous cases in which athletes who showed high levels of skill and ability during their practice but failed to use their capacity fully and have an acceptable performance during competitions due to their inability to cope with the stress caused by the atmosphere of the tournament, the fans, coaches, referees, and competitors; therefore, they could not obtain the scores they did during their exercise (Carver, Scheier, & Weintraub, 1989). The effect of stress on performance depends on individual differences of the athletes because some athletes and coaches control and manage stressful situations better than

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others. Kobasa (1979) attributed the individuals' different reactions to identical stressful events to difference in their personality which is best described through psychological resilience. As a protective shield to stress Personality structure is composed of three components namely commitment, control, and challenge. Commitment refers to the tendency of deeply engagement in a task. Committed people seldom give up stressful conditions. Control is a belief through which life events and their consequences are considered as predictable and controllable. Individuals with a feeling of control pay more attention to their attempts and performance than luck and believe that they can control and manage whatever happens around them through their attempts. Challenge is a belief whereby life changes are perceived as natural and interpreted positively.

Methods

The present study was a correlational one. In terms of its aim, it was an applied research, and a field study regarding data collection method.

Participants

The statistical population included 800 athletes from national sports leagues including group and individuals sports. The sample consisted of 300 athletes who were selected based on Morgan's table by a purposive convenience sampling method. In so doing, first a number of national leagues were selected using a cluster method, and then, all of the athletes of the chosen leagues were selected as the final sample by a convenience sampling method.

Instruments

The required data were collected using the following standard questionnaires: (a) Sport Stress Coping Styles Scale (SSCSS); (b) Psychological Resilience Questionnaire; and (c) Perceived Stress Questionnaire.

Procedures

First, a number of national leagues with different geographical dispersion were chosen. Afterwards, necessary coordination was made with Sports and Youth Department located in the capital of the selected provinces, so that the researcher would not face any problems during data collection. Since the chosen cities/towns were far from each other, the researcher required some well-trained and justified people distribute the questionnaires and collect the required data. Those researcher assistants were taught to give the respondents necessary explanations while distributing the questionnaires. It should be noted that some of the athletes were not present when the researcher or her assistants refer to the clubs for data collection; therefore, they left the questionnaires at the clubs and referred back another day to collect them completed.

Statistical Analysis

Descriptive statistics was used to compute mean, frequency percentage, standard deviation, and so forth, and in order to examine the reliability, Cronbach's Alpha was used. Given the large size of the study sample which confirmed data distribution normality, and for the results of Kolmogorov-Smirnov test (significance of all components was over $\alpha \geq 0.05$), the parametric test of Pearson correlation test and linear regression were employed to examine the study's hypotheses. All statistical analyses were carried out at a significance level of 5%. In so doing, SPSS ver. 22.0 was utilized.

Results

As observed in Table 1, and based on the results of Kolmogorov-Smirnov test aimed at determining data normality, distribution of all of the collected data was normal because the level of significance was over $\alpha \geq 0.05$. Also, parametric tests were employed to examine the relevant statistical hypotheses.

Table 1. Kolmogorov-Smirnov test results to check data distribution normality.

Variable	N.	Degree of freedom	Sig.	Test result
Stress coping style	300	299	0.143	Data distribution is normal
Resilience	300	299	0.273	Data distribution is normal
Perceived stress	300	299	0.101	Data distribution is normal

First hypothesis

Hypothesis 1: There is no relationship between psychological resilience and perceived stress.

Table 2. Results of Pearson correlation test for the 1st hypothesis.

Variables	N	Pearson correlation coefficient (r)	Sig.
Psychological resilience	300	0.241	0.001**
Perceived stress			

As presented in Table 2, the null hypothesis, i.e. lack of relationship between resilience and perceived stress among athletes with sports injury, was rejected, and the first hypothesis was confirmed ($p < 0.05$). In other words, there was a significant negative relationship between the injured athletes' psychological resilience and perceived stress.

Table 4. Multivariable regression to determine the effect of stress coping style on resilience.

Sources of changes	Sum of squares	Degree of freedom	Mean of squares	F value	Sig.
Regression	765.918	2	32.959	39.623	0.001
The rest	319.420	298	0.832		
Total	385.339	299			

According to the table below and multivariable regression coefficients and also the calculated regression coefficients, it can be stated there was a significant relationship between avoidance coping style and resilience ($p < 0.05$) and between approach coping style and resilience ($p < 0.05$).

Table 6. Multivariable regression to determine the effect of stress coping style dimensions on perceived stress

Sources of changes	Sum of squares	Degree of freedom	Mean of squares	F value	Sig.
Regression	7.234	2	3.617	3.674	0.026
The rest	378.10.4	298	0.985		
Total	385.339	298			

According to the following table and multivariable regression coefficients and also the calculated regression coefficients, it can be concluded that there was a significant relationship between avoidance coping style and perceived stress ($p < 0.05$) and between approach coping style and perceived stress ($p < 0.05$).

Table 7. Regression coefficient relevant to Table 6.

Criterion variable	B value	β coefficient	t value	Sig.
Avoidance coping style	0.012	0.083	1.637	0.050
Approach coping style	0.016	0.103	2.027	0.03

Second hypothesis

Hypothesis 2: Coping style has no effect on the relationship between psychological resilience and perceived stress.

Table 3. Summary of single-variable regression model to determine the effect of stress coping style on resilience.

Model	R	R ²	Adjusted coefficient of determination	The standard error of the estimate
1	0.404	0.163	0.160	1.07733

According to the following table and given the calculated F value, it can be stated that there was a significant relationship between stress coping style and resilience at a level of $\alpha = 0.05$. Therefore, in order to identify and explain regression coefficients, it is necessary to present them in a table.

Table 5. Regression coefficient relevant to Table 4.

Criterion variable	B value	β coefficient	t value	Sig.
Avoidance coping style	0.005	0.036	0.55	0.579
Approach coping style	0.068	0.388	6.005	0.001

Finally, to examine the indirect effect of stress coping style on the relationship between psychological resilience and perceived stress, and based on the results obtained from the regression tests, Sobel test was utilized, which led to the following results presented in Table 8.

Table 8. Direct, indirect, and total effect of the relationship between psychological resilience and perceived stress on the mediation role of coping style

Type of effect Variable	Direct effect		Indirect effect			Total effect	
	B	Sig.	B	Sobel test	Sig.	B	Sig.
The relationship between psychological resilience and perceived stress	0.068	0.001	16.078	2.461	0.01	17.278	0.001

As indicated in Table 8, the relationship between psychological resilience and perceived stress and the mediation role of coping style is about 16.078 ($p < 0.05$). Therefore, it can be stated that coping style and its dimensions have an effect of the relationship between psychological resilience and perceived stress.

Discussion

Regarding the study's second hypothesis, the results of the present study showed that the null hypothesis, i.e. coping style has no effect on dimensions of resilience among athletes, was rejected ($p < 0.05$). In other words, there was a significant relationship between coping style and resilience ($R = 0.414$, $p < 0.05$). This finding is in agreement with those of the studies carried out by Besharat et al (2011), Bahadori and Khayer (2013), Rees et al (2016), Dehghani and Kajbaf (2013), Watson and Hubbard (1996), Cahn (2015), Gill, Williams, and Reifsteck (2017), and Lazarus (1996). This discrepancy can probably be attributed to difference in thoughts and cultures, different participants, and unclear levels of education, gender, and so on. Based on the results of other studies which mostly reported a relationship between coping style and resilience, it can be justified how coping style and resilience are related (Rook et al, 2018). According to the theory of Lazarus (1996), problem-oriented coping style deals with and focuses on collecting data related to stressful events. An individual with this coping style evaluates the available resources and make plans to utilize them. He/she not only relies on his/her resources but also attracts support from friends through his/her social skills. A successful problem-oriented coping style utilizes more cognitive components to evaluate situations and resources realistically. Therefore, as an important cognitive factor, coping style can have a significant effect on resilience of athletes. Kobasa hypothesis, referring to the positive effect of this construct on the individuals' wellbeing while facing stressful events of life, is confirmed by research studies of psychological resilience that have been carried out over the last two decades. Some studies; however, have not confirmed such effects on resilience. Psychological resilience is something beyond the three components of commitment, control, and challenge. Kobasa, Maddi, & Kahn (1982) held that cognitive flexibility of resilient individuals does not merely originate from the sole effect of these components, but it is caused by a certain coping style which is in line with the

dynamic combination of these three components. Therefore, resilience and coping style can even replace one another. In fact, Maddie (2002) stated that resilience is a combination of an attitude that causes bravery and motivation to do hard and strategic work which changes the stressful situation and converts it from probable disaster to an opportunity for growth and development.

Regarding the second hypothesis, the results of the present study indicated that the null hypothesis, i.e. lack of the effect of coping style on perceived stress among athletes, was rejected ($p < 0.05$). Also, to determine and explain regression coefficients, it is necessary to present table of regression coefficients. Based on the multivariable regression coefficients and also the calculated regression coefficients, it can be stated that avoidance coping style has a significant effect on perceived stress ($B = 0.016$, $p < 0.05$) and that approach coping style significantly affects perceived stress ($B = 0.012$, $p < 0.05$). This finding is in agreement with those reported by Salim, Wadey, & Diss (2015) and Lazarus and Folkman (1984). There is no doubt that individuals are not inactive toward stress despite the physical and psychological problems it causes to them. In order to deal with stress and its adverse consequences, individuals usually adopt various behaviors and actions that originate from their coping style (Rio, 2004).

Conclusion

It seems that sports and physical activity are effective in keeping the level of stress down, and more people start doing sports with a rise in stress rate in communities. The importance and value of sports as a preventive factor on the one hand and a treatment method on the other hand are proved through other methods and tools focused on in various studies. Although sports activities, as claimed by researchers, might be considered as a method to cope with stress, athletes can experience stress, too. Sports injuries create conditions in which perceived stress rises among athletes. Therefore, coping styles need to be boosted among athletes in order to reduce their perceived stress. Generally speaking, research results have shown that unlike approach coping styles (such as instrumental support and planning), an avoidance coping style (i.e. positive reconstruction and emotional support) influences the relationship between resilience and perceived stress. This finding is in contradiction to the concept of resilience which states that emotional (avoidance) and problem-

oriented (approach) coping styles can change a potential disabling weak situation into an opportunity for growth and progress (Maddi, 2002). The probable explanation for this finding is that only one of the criteria and conditions of the variable was examined in the present study. For example, ap-

proach coping style might help individuals with high resilience control and manage stressful controllable situations, while avoidance coping style helps them turn such situations into opportunities for growth and progress.

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