

# Psychological Correlates of Dance Injuries

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**Abstract**—This study investigates stress and self-esteem as possible psychological correlates of dance injuries. The subjects were 39 female university students majoring in dance. Four assessments were made of stress and self-esteem over an 8-month period. Injury records were maintained continuously by the subjects during this time period. A strong correlation was found between psychological stress and total duration of injury. As negative stress increased, so did duration of injury. On the other hand, as positive stress increased, the duration of injury decreased. No significant relationship was found between self-esteem and total duration of injury. In order to assess the possibility of a causal relationship between stress and duration of injury in dance, an experimental design is needed in future research. The present study emphasizes the need to consider psychological aspects of the injury process. The authors recommend that dancers, educators, and medical practitioners enhance their awareness of the roles of stress and stress-management strategies for dancers' health and performance. *Med Probl Perform Art* 8:3-6, 1993.

Compared with the plethora of literature on injuries in sport, little information exists with respect to injuries in dance. This lack of data is surprising, because the injury rate in dance has been reported to be as high as 97% over an 8-month period.<sup>1</sup> Together, the magnitude of the injury rate and the relative paucity of information suggest a need for further research on injuries and their causes in dance.

Muscular imbalance, postural misalignment, poor technique, inadequate floor surface, and poor nutrition have been reported in the literature as possible physical causes of dance injuries.<sup>2,3</sup> However, other variables that have been shown to be significantly related to sports injuries have yet to be investigated fully in dance. Specifically, both psychological stress and self-esteem have been significantly correlated with injuries in a variety of sports. Here we examine the influence of these variables on the injury process in dance.

## BACKGROUND LITERATURE

### Psychological Stress

Most of the studies in sports have found a significant relationship between psychological stress and athletic injuries.<sup>4-11</sup> In these studies, stress was assessed with checklists of life events or life stressors. Life stressors can be either negative events, such as losing a loved one or experiencing financial difficulties, or positive events, such as getting married or starting a new job. Whether positive or negative, these events cause some change in lifestyle to which we must adjust or adapt, and this adaptation requires energy.<sup>12</sup> An event becomes stressful if the individual appraises or evaluates the demands of the change as exceeding his or her capacities to cope effectively.<sup>12</sup> Appraisal of life events involves considerable individual differences, so that the same event may be evaluated as extremely negative to one person and positive to another.<sup>13</sup> An accumulation of stressful life events taxes an individual's coping resources, leaving him or her more susceptible to fatigue, illness, or injury.<sup>14</sup>

Significant positive relationships between life stress and injury have been reported in football,<sup>4-7</sup> gymnastics,<sup>7,8</sup> skiing,<sup>9</sup> biathlon, race walking, figure skating, basketball,<sup>7,10</sup> softball, tennis, track,<sup>11</sup> and wrestling.<sup>7</sup> In dance, Novaco<sup>15</sup> predicted that "conditions of stress present risk for injury." One study by Hamilton, et al.<sup>16</sup> examined personality, stress, and injuries in professional ballet dancers. Contrary to the findings in the sports literature, stress levels did not differ according to severity and type of injury.

Recent literature concerning stress and illness has also indicated the importance of considering various types of stressors.<sup>17,18</sup> General stressors, for example, are common to most individuals, such as changing residence, beginning or ending a relationship, and financial concerns. Specific stressors, on the other hand, are unique to our social roles. Dancers, for example, experience unique stressors such as upcoming performances, relationships with choreographers, and maintaining an ideal body weight. Stressors associated with our daily social roles are similar to the

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“daily hassles” cited by Kanner, et al.<sup>17</sup> or the “role strains” described by Pearlin.<sup>18</sup> Thus, to obtain a complete picture of a dancer’s stress level, both general and role-specific stressors need to be assessed.<sup>19</sup>

In addition, some researchers have reported differential effects of positive versus negative stressors, with negative stressors contributing more significantly to the etiology of illness.<sup>20</sup> Passer and Seese,<sup>6</sup> for example, found that football players who were unable to participate for more than 7 days had experienced a greater number of negative, but not positive, life changes over the previous year. Positive stressors for dancers might include selection for an important performance or dance company. Although positive, these events remain stressful because they involve change and therefore require the dancer to adjust or adapt. Negative stressors may include experiencing difficulties with the choreographer or financial strains. Whether an event is positive or negative, however, depends upon the individual’s appraisal or evaluation.

### Self-Esteem

Self-esteem is the evaluative component or attitude toward oneself and one’s behavior. It represents a personal judgment of worthiness,<sup>21</sup> the degree to which an individual feels positive about her- or himself.<sup>22</sup> Often the terms self-esteem and self-concept are used interchangeably, but self-concept is a more global appraisal and recognition of individual identity.

Although a few empirical studies have investigated the relationship between self-concept and sport injuries, the results are equivocal. For example, Young and Cohen<sup>23</sup> did not find a significant relationship between self-concept (as measured by the Tennessee Self-Concept Scale (TSCS)) and injury for female high-school basketball players. However, in a reanalysis of these data, Cohen and Young<sup>24</sup> reported a trend toward positive correlation between self-concept scores and incidence of injury. The authors suggested that athletes with higher self-concepts are more willing to take risks and thus sustain more injuries.

Irvin,<sup>25</sup> on the other hand, reported that the number of injuries for football players was inversely related to self-concept scores. Similarly, Lamb<sup>26</sup> found that female varsity field-hockey players with low self-concepts tended to have more injuries. It may be argued that athletes with poor self-concepts also lack self-confidence and therefore are overly cautious or focus more on themselves than on the task at hand.

To date, no studies have examined the possibility of a relationship between self-esteem or self-concept and injuries in dance.

## PURPOSE OF THE STUDY

The purpose of the study was to examine both psychological stress and self-esteem as possible correlates of injuries in dance. The study examined the effects of general versus specific and positive versus negative stressors.

## METHOD

### Subjects

The subjects included 39 female university students majoring in dance. Their mean age was  $21 \pm .05$  years, and all subjects were volunteers. Although the dancers had an equal amount of technical training in ballet and modern dance, their rehearsal and performance repertoires were primarily in modern dance.

### Assessment of Injuries

An injury record, designed for the purpose of this study, was maintained by the dancers. Because many injuries do not cause the dancers to refrain totally from practice, an injury was defined as physical harm resulting in pain or discomfort that causes one or more of the following: (1) cessation of activity; (2) negative effects on training or performance; or (3) sufficient distraction to interfere with concentration.

The dancers were asked to identify the day on which each injury occurred and to record the duration of each injury. Duration scores of each injury were added together to derive the total duration of injury.

### Assessment of Psychological Stress

Two measures were used to determine the stress levels of the dancers: the Life Experiences Survey (LES) and the Dance Experiences Survey (DES). The LES<sup>27</sup> assessed general stress or stressors shared by most people. This scale was chosen over alternative scales because of its applicability to university students. The 45 items require approximately 8 minutes to complete. In addition to responding to the applicability of each item, the subject assessed the positive or negative effect of each event on a scale ranging from -3 to +3. Adding the positive and negative ratings separately provided the opportunity to distinguish between positive and negative stressors, respectively.

Test-retest correlations range from .56 to .88.<sup>27</sup> With respect to validity, the LES has shown positive relationships with state and trait anxiety. No relationship has been demonstrated with the social desirability of the experience, and a negative relationship has been demonstrated with academic achievement.<sup>27</sup>

In the absence of a published, standardized measure to assess role-specific stressors in dance, a DES was developed for the purpose of this study. Following the same format as the general LES, the DES included 48 stressors unique to dancers, such as “relationships with teachers,” “relationship with choreographers,” and “politics associated with dance activities.” The subjects were asked to rate each applicable event on an impact scale from -3 to +3. For example, “relationship with the choreographer” may be rated as +2 if the relationship is fairly positive, enjoyable, and productive, or as -2 if the relationship is characterized by moderate conflict or distress. Blank spaces were provided for subjects

to report any stressors not included in the list. Approximately 8 minutes were required to complete this survey. The DES was selected over alternative measures because of its similarity to the already established and tested LES and because of the opportunity it provides to distinguish between positive and negative stressors.

### Assessment of Self-Esteem

The Rosenberg Self-Esteem Scale,<sup>28</sup> which has been recommended as a content-free scale that assesses general self-worth,<sup>29</sup> was used for global assessment of self-esteem. Wylie<sup>30</sup> rated Rosenberg's scale as one of the best instruments for evaluating overall self-regard. Furthermore, the Rosenberg scale has been used in physical education studies.<sup>31,32</sup>

The Rosenberg scale consists of 10 items answered on a four-point Likert scale that ranges from strongly disagree to strongly agree. Test-retest reliability of .85 has been reported, and validity has been established.<sup>33</sup> The scale, which was self-administered, required approximately 5 minutes to complete, thus corresponding to the time required for the other assessments.

## PROCEDURE

Consent was obtained from the Ethics Review Committee, the chair of the dance department, the dance instructors, and the dancers. Four assessments were made over an 8-month period (1 every second month), ranging from pre-season to peak season. The first assessment, which occurred prior to the start of the academic year and the performance cycle, served as a baseline measure. At each of the four assessments, the dancers completed the self-esteem and the two stress measures. The injury records, which were maintained continuously by the dancers, were collected by the experimenters at each assessment. The self-reported injury data were partially validated through a semi-structured interview conducted at each assessment. At the completion of the study, the results were disseminated to all subjects, faculty, and the chair of the dance department, without individual identification of subjects.

## RESULTS

Table 1 contains the Pearson Product Moment Correlation Coefficients between stress, self-esteem, and injuries.

**Athletic Stress.** Significant positive correlations exist between total duration of injury and negative athletic stress at every trial except trial 1, which served as a baseline measure. Duration of injury was also significantly correlated with positive athletic stressors in an inverse direction from trial 2 through trial 4.

**General Stress.** Significant positive correlations exist between duration of injury and negative general stress at trials 3 and 4. A significant inverse relationship is apparent between duration of injury and positive general stress at trials 3 and 4.

TABLE 1. Pearson Product Moment Correlations Between Psychological Stress, Self-Esteem, and Total Duration of Injury (N = 39)

	Total Duration of Injury			
	Trial 1	Trial 2	Trial 3	Trial 4
Athletic Stress				
Positive	.002	-.35*	-.46**	-.55**
Negative	.009	.46**	.54**	.45**
General Stress				
Positive	.03	.21	-.33*	-.39*
Negative	.04	.04	.50**	.38*
Self-Esteem	.004	.008	.06	.05

\*  $p < .05$

\*\*  $p < .001$

**Self-Esteem.** No significant correlations were found between self-esteem and duration of injury from trial 1 through trial 4.

## DISCUSSION

The findings indicate that stress is related to the amount of time the dancers are injured. Although this result is contrary to the finding by Hamilton et al.<sup>16</sup> with respect to professional ballet dancers, the significant relationship between stress and injuries is well-supported by numerous studies in sport. A fairly consistent finding has been demonstrated in sports ranging from gymnastics to football and skiing: as the amount of reported stress increases, the number of injuries incurred also increases.

More specifically, the results of this study indicate that as negative stress increases, the duration of injury also increases. In contrast, as positive stress increases, the duration of injury decreases. These results partially support previously reported studies in the sport literature. Most of the sport-related studies have found that total stress, positive and negative, is related significantly to athletic injuries.<sup>7-11</sup> One exception is Passer and Seese's<sup>6</sup> finding that only negative stress had a significant positive correlation with football injuries.

Even Selye,<sup>34</sup> the grandfather of stress research, wrote that although both positive and negative stressors demand energy to adapt, negative stress is more debilitating. The latter tends to last longer and is associated with secondary stressors such as lingering worries, self-doubts, and loss of self-esteem.

The results of the present study also emphasize the importance of distinguishing between positive and negative stressors in assessing the effect of stress. When positive and negative stress were analyzed together, total stress was not significantly related to injuries. Positive stress scores appeared to cancel out the effects of the negative stress scores or vice versa, thereby obscuring the underlying effects.

The significant relationships between athletic stress and total duration of injury make intuitive sense because the dance-specific stressors are encountered on a daily basis.

The significant correlations between general stress and injuries suggest that stressors experienced outside of dance are somehow related to injuries within dance. Although dancers, teachers, and choreographers would like to think that each dancer arrives at class or rehearsal without emotional baggage from other aspects of life, the results do not support this assumption. General positive events seem to be related to a shorter duration of injury, whereas general negative events are associated with a longer duration of injury. Felsten and Wilcox<sup>19</sup> also emphasize the importance of examining both general and athletic stress to obtain a complete picture of an athlete's experience of stress. Dance practitioners must enhance their awareness of the relationship between outside stressors and dancers' performance and health.

The findings of significant relationships between stress and injuries suggest a need for stress-management strategies with dancers. For example, if dancers learned to "park" or put aside their worries before practice, their concentration might be focused on the task at hand. In addition, dance teachers and choreographers need to be aware of, and sensitive to, dancers who are experiencing negative stress.

This study is the first to show a significant relationship between stress and injuries in dance. The next step is to replicate these findings and to conduct an experimental study to determine whether or not a causal relationship exists between psychological stress and total duration of injury. It is possible that stress causes injuries, injuries cause stress, or both.

The study is limited by the lack of psychometric properties in the DES. Future work needs to validate this measure. Furthermore, the injury process will be understood more fully with the collection of additional demographic data, such as the dancers' height, weight, percent ideal weight, onset of training, and amount of training.

Future studies might consider investigating specific dimensions of self-esteem. For example, an examination of physical self-esteem, or how dancers feel about their bodies, may be more relevant to a study of dance injuries.

## CONCLUSIONS

This study shows that psychological factors such as stress cannot be ignored in considering the injury process in dance. Although physical aspects of training are probably the primary correlates of injuries in dance, negative stress also appears to be a significant contributor. The authors recommend that further attention be devoted to the psychological state of the dancer in attempts to prevent or reduce injuries in dance.

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