

Situational Correlates of Emotional Adjustment to Athletic Injury

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Abstract: Patients at a sports medicine clinic served as subjects in an investigation of the relationship between various situational variables and emotional adjustment to athletic injury. Physician-rated current injury status, perceived impairment of sport performance, and perceived social support for rehabilitation were significantly correlated with postinjury depression. Age was negatively associated with postinjury mood disturbance. In general, patients demonstrated a positive mental health profile. The results suggest that although most patients cope well with their injuries, some patients experience clinically meaningful psychological distress that is associated with certain situational factors. **Key Words:** Depression—Emotion—Psychology—Athletic injury. *Clin J Sport Med* 1995;5(4):241-5.

Depression frequently accompanies physical illness (15,30) and physical disability (10,35). In addition, both clinical observations (4,13,19,21,26,29) and empirical studies (6,17,22,23,27,31,33) have documented elevated levels of depression and other forms of mood disturbance in association with athletic injury. Because emotional distress may intensify perceptions of somatic symptoms (18) and prolong the course of physical rehabilitation (3,20), it is important to identify factors that are related to emotional adjustment (and maladjustment) to athletic injury.

Traditionally, psychological adjustment to athletic injury has been conceptualized in terms of stage models, based on models of grief and loss (29). In the stage approach, it is hypothesized that injured athletes proceed through a predictable sequence of psychological responses (including anger and depression) before eventually coming to accept their injuries.

Recently, however, alternative frameworks for examining psychological responses to athletic injury have emerged. Just as researchers investigating the psychosocial antecedents of athletic injury have borrowed heavily from models of stress and coping

(1,34), so too have researchers studying the psychological consequences of athletic injury (12,14,28,36,39). There are a number of conceptually similar theoretical models (12,14,28,36,39), two of which (14,39) evolved directly from the injury prediction model of Andersen and Williams (1). These models hypothesize that an individual's emotional response to an athletic injury is determined by his or her interpretation, or cognitive appraisal, of the injury and its effects.

That cognitive appraisal is thought to be affected by the combined influence of personal and situational factors. Personal factors are stable, dispositional characteristics of the individual (e.g., self-esteem, trait anxiety, locus of control); and situational factors are unstable, variable aspects of the social and physical environments. Situational factors that have been identified as potentially related to emotional adjustment to athletic injury include injury severity, injury status, time of the season, injury duration, personal control over rehabilitation, recovery progress, pain, physical impairment, and social support (28,36,39).

Preliminary support for the hypothesized role of situational factors in emotional response to athletic injury has been obtained. Injury severity (31,33), injury duration (22,31), and physical impairment (7) have been positively associated with postinjury emotional disturbance. Inverse correlations with emotional disturbance in injured athletes have been

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documented for perceptions of recovery progress (22,32). The purpose of this exploratory investigation was to examine the relationships between a variety of theoretically meaningful situational factors (28,36,39) and emotional adjustment to athletic injury.

METHODS

Subjects were 121 patients (81 males and 40 females) at a sports medicine clinic. Only patients who agreed to participate were given the battery of questionnaires used in this study. Potential subjects were asked to participate at their first office visit after initiation of the study. This data collection strategy ensured a wide cross-section of injury durations among subjects. Completed questionnaires were received from 121 of the 178 patients who were given the battery of questionnaires, resulting in an adequate response rate of 68%.

For each patient who agreed to participate in the study, the patient's physician (one of three D.O. physicians specializing in sports medicine and family practice) rated the patient's injury severity on a three-point scale (1, mild; 2, moderate; 3, severe) and rated current injury status on a seven-point scale (1, acutely injured; 7, completely recovered). Respondents did not differ significantly from non-respondents in physician-rated injury severity or current injury status. Means and SDs of the physician ratings are displayed in Table 1.

TABLE 1. Descriptive statistics and zero-order correlations of demographic and situational variables with emotional adjustment measures^a

Variable	M	SD	r (BDI)	r (TMD)
BDI	7.17	6.84	—	0.48 ^b
TMD	41.00	38.10	0.48 ^b	—
Age (yr)	24.36	10.61	-0.20 ^c	-0.24 ^b
Physician-rated injury severity	2.19	0.58	0.08	0.07
Physician-rated current injury status	2.78	1.63	-0.24 ^b	-0.15
Duration of injury (days)	27.00	28.23	0.11	0.02
Missed practices	11.72	17.30	0.01	0.05
Missed competitions	2.10	2.98	0.00	-0.17 ^c
Expected duration of restriction from sport participation (days)	36.56	46.03	0.02	0.03
Personal control over recovery	5.08	1.52	-0.19 ^c	-0.03
Current injury status	4.10	1.46	0.05	-0.08
Recovery progress	3.67	1.75	0.10	-0.02
Pain	3.80	1.50	0.06	0.00
Impairment of sport performance	5.82	1.51	-0.26 ^b	-0.00
Impairment of everyday task performance	3.43	2.04	0.04	0.02
Social support for sport involvement	5.80	1.47	-0.07	0.08
Social support for rehabilitation	5.68	1.60	-0.21 ^b	-0.18 ^c

BDI, Beck Depression Inventory; TMD, total mood disturbance.

^a N = 59-63.

^b p < .05.

^c p < .10.

Consenting subjects were given a battery of questionnaires to take home following an office visit. The questionnaire batteries were in large manila envelopes with return postage affixed. Details of the study were described in an introductory cover letter. The questionnaires included in the battery that are relevant to the present investigation were the Postinjury Questionnaire (PQ), the Athletic Identity Measurement Scale (AIMS) (5), the Beck Depression Inventory (BDI) (2), and the Profile of Mood States (POMS) (24).

The PQ has questions pertaining to demographic variables (e.g., age, sex) and situational factors thought to effect emotional adjustment to injury. To examine the duration of injury and impact of injury on sport participation, subjects were asked to list the date the injury occurred, the number of practices they had missed, the number of competitions they had missed, and the number of days that they expected the injury to prevent them from participating in their sport.

The following situational variables were assessed with seven-point Likert-type scales (scale anchors are parenthesized): personal control over recovery (1, no control; 7, a lot of control), current injury status (1, severely injured; 7, completely recovered), progress of recovery (1, slower than expected; 7, faster than expected), pain (1, no pain; 7, pain as bad as it can be), impairment of sport performance (1, not at all; 7, very much), impairment of everyday task performance (1, not at all; 7, very much), social support for sport involvement (1, no support; 7, a lot of support), and social support for rehabilitation (1, no support; 7, a lot of support). Items were written in the present tense (e.g., "How much pain due to injury are you currently experiencing?").

The AIMS (5) is a 10-item questionnaire assessing extent of psychological investment in the role of "athlete." Responses are given on seven-point Likert-type scales with anchors of "strongly disagree" (rating of 1) and "strongly agree" (rating of 7). Support for the internal consistency, test-retest reliability, and construct validity of the AIMS has been obtained (5).

The BDI (2) and the POMS (24) are well-established measures of depression and mood disturbance, respectively. The POMS has subscales measuring tension, depression, anger, vigor, fatigue, and confusion. A measure of total mood disturbance (TMD) can be calculated by summing the scores on the five negative mood scales and subtracting the score on the vigor scale.

RESULTS

To examine optimally the relationship between situational variables and emotional adjustment to acute (as opposed to chronic) athletic injuries of some significance, only subjects who had been in-

jured ≤ 120 days and who indicated that they expected to be prevented from participating in their sport for ≥ 1 day were included in the statistical analyses. Although most subjects had been injured for >1 day ($M = 27.00$, $SD = 28.23$ days) and expected to be prevented from participating in their sport for >1 day ($M = 36.56$, $SD 46.03$ days), it was important to have a wide range of injury durations to thoroughly assess temporal influences on emotional adjustment in the cross-sectional research design. A series of t -tests comparing included and nonincluded subjects on the demographic and situational variables was calculated. Included subjects reported significantly higher impairment of sport performance, $t(117) = 4.26$, $p < 0.001$, and impairment of everyday task performance, $t(118) = 2.06$, $p < 0.05$, than nonincluded subjects. In addition, included subjects were rated as more acutely injured by their physician, $t(110) 4.36$, $p < 0.001$, than nonincluded subjects.

The mean AIMS score for subjects was 48.54 ($SD 9.96$). This value corresponds to those obtained by intercollegiate athletes in previous studies (5,11), indicating that the subjects were, on average, psychologically invested in sport participation.

Descriptive statistics and zero-order correlations of the demographic (age) and situational variables with the emotional adjustment measures are presented in Table 1. As shown in Table 1, age (range 12–64 years), physician-rated current injury status, impairment of sport performance, and social sup-

port for rehabilitation were significantly associated with one of the emotional adjustment measures at the $p < 0.05$ level. Trends toward significance ($p < 0.10$) were found for number of missed competitions and personal control over recovery.

Several other findings of interest were obtained. First, the subjects on the average demonstrated a positive emotional adjustment status as indicated by the POMS in spite of their injuries. As shown in Fig. 1, the configuration of mean POMS subscale scores resembles the "iceberg profile" typically associated with healthy competitive athletes (25). Moreover, only three of the subjects (4.8%) scored in the clinical range (>16) on the BDI.

Second, mood disturbance (as measured by the POMS) was global rather than specific. The mean intercorrelation of the POMS subscales was 0.70, which is markedly higher than the mean POMS subscale intercorrelations on the standardization samples (0.42 for male undergraduates, 0.50 for male psychiatric outpatients, and 0.55 for female psychiatric outpatients) (24). This finding suggests that subjects' emotional reactions to injury were not distinct (e.g., tension, depression, anger), but were instead on a continuum ranging from generally positive to generally negative.

Third, significant correlations between patient and physician ratings of injury severity and current injury status were obtained. Patient-rated current injury status was significantly correlated with patient-rated recovery progress ($r = 0.37$, $p < 0.005$),

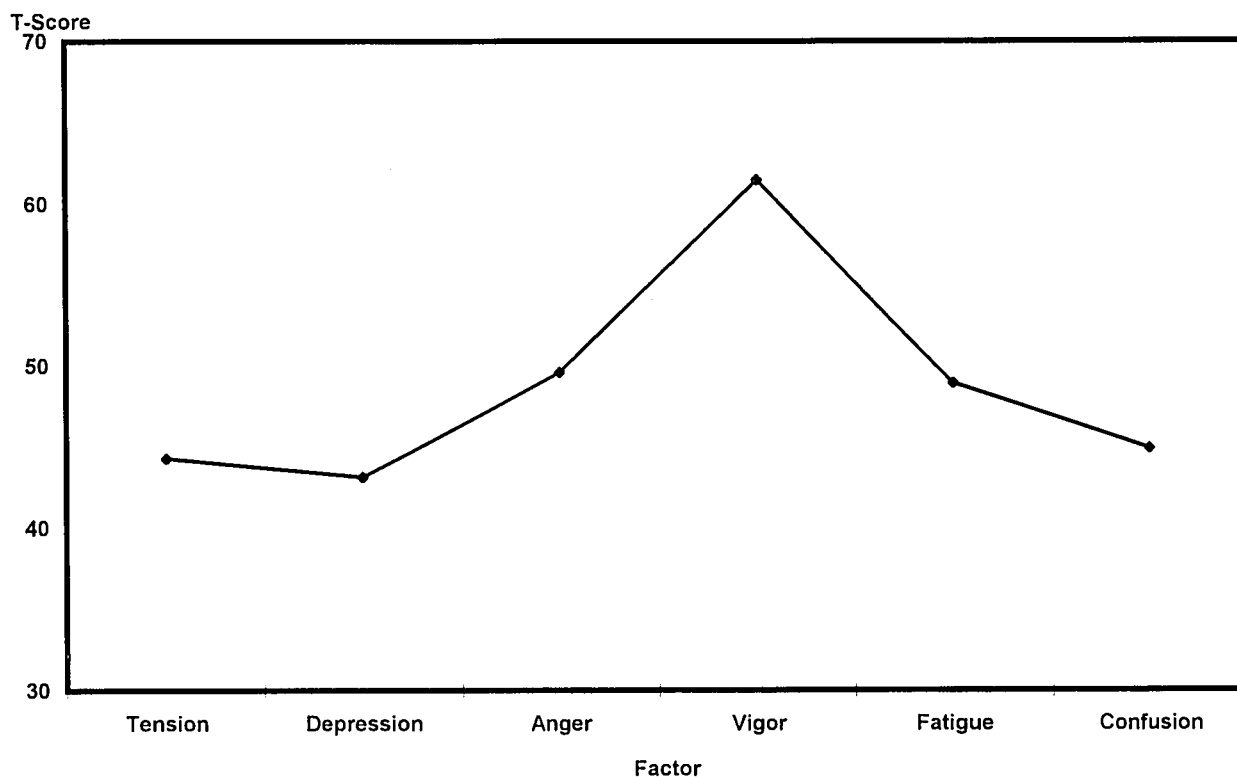


FIG. 1. Profile of Mood States scores of injured athletes.

physician-rated injury severity ($r = -0.24, p < 0.05$), and physician-rated current injury status ($r = 0.23, p < 0.05$). Patient-rated recovery progress was significantly correlated with physician-rated injury severity ($r = 0.23, p < 0.05$), but not with physician-rated current injury status ($r = -0.02, p > .05$). Physician ratings of injury severity and current injury status were significantly correlated ($r = -0.46, p < 0.005$). These findings indicate that there was general agreement between patient and physician injury appraisals (7).

DISCUSSION

This study investigated situational correlates of emotional adjustment to athletic injury. In general, situational factors were only weakly associated with the emotional responses of injured athletes. Physician-rated current injury status, impairment of sport performance, and social support for rehabilitation were the situational variables most strongly associated with emotional adjustment. These findings highlight the complexity of psychological adjustment to athletic injury and suggest that, consistent with contemporary theory (12,14,28,36,39), it is unlikely that any single situational factor will account for a large portion of the variance in emotional adjustment. It is also possible that significant relationships between other situational factors and emotional adjustment were obscured by the use of one-item scales. Future research should address this possibility.

Interestingly, age (a personal factor) was negatively associated with postinjury emotional disturbance. This finding, which is consistent with previous research (31), suggests that older athletes are better able to cope with the emotional effects of athletic injury.

It is noteworthy how positively subjects appeared to be coping with their injuries. The relative absence of depression and general emotional distress is indicative of adaptive coping and is inconsistent with stage models of psychological adjustment to athletic injury (29). Indeed, the obtained percentage of subjects scoring in the clinical range on the BDI (4.8%) is comparable with the prevalence rate for depression (5.7%) in the general population (37).

Clearly, there are individual differences in psychological response to athletic injury. All individuals do not proceed through a predictable sequence of psychological reactions and it should not be assumed that they do. The results of this study suggest that situational factors (and personal factors) may help explain why some athletes experience emotional distress and some athletes do not experience emotional distress following injury. Even though the actual *percentage* of subjects who exhibited clinical levels of emotional distress was quite small, it should be noted that this small percentage multiplied by the millions of athletic inju-

ries that occur each year (16) is likely to produce a large *number* of injured athletes with emotional disturbance. Further, it is possible that subclinical levels of depression and other forms of mood disturbance can negatively affect rehabilitation outcomes.

In two previous studies (22,31), mood disturbance was found to decrease over time during injury rehabilitation. No such temporal pattern was found in two more recent studies (17,23). Similarly, duration of injury was not associated with emotional adjustment measures in this study. The fact that subjects in this study had been injured for an average of 27 days and expected to be restricted from sport participation for another 37 days at the time of assessment indicates that subjects in this study may have been more severely injured than subjects in the previous studies in which temporal effects on emotional adjustment were observed (22,31). The restricted range in injury severity (86% of subjects had injuries classified as "moderate" or "severe") may have prevented significant correlations between injury severity and emotional adjustment. Perhaps injury duration and expected duration of restriction from sport participation are less important determinants of emotional adjustment among more severely injured patients.

CONCLUSIONS

Consistent with both theory (12,14,28,36,39) and previous research (22,31-33), the results of this study indicated that several situational factors were associated with emotional adjustment to athletic injury. Although most patients appeared to be coping well with their injuries, some patients experienced psychological distress that could interfere with successful rehabilitation. It can be tentatively concluded that young, acutely injured athletes who perceive a lack of support for and control over their rehabilitation may be most vulnerable to emotional distress following injury.

Further research is needed to identify the correlates of psychological adjustment to athletic injury. Although this study employed a cross-sectional research design, longitudinal research designs (17, 22,23,31-33) will afford a more refined analysis of the role of situational factors in emotional adjustment to athletic injury. As empirical data accumulate, intervention strategies (12,28,29,36,38,39) can be developed to reduce postinjury emotional distress, enhance adherence to injury rehabilitation regimens (8,9), and facilitate optimal rehabilitation of athletic injuries.

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