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Social Support From the Athletic Trainer and Symptoms of Depression and Anxiety at Return to Play

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Context: Few empirical studies have examined social support from athletic trainers (ATs) and its buffering effect during injury recovery.

Objective: To examine the effect of social support received from ATs during injury recovery on reported symptoms of depression and anxiety at return to play among a cohort of collegiate athletes.

Design: Cohort study.

Setting: Two Big 10 Conference universities.

Patients or Other Participants: A total of 594 injuries sustained by 387 collegiate athletes (397 injuries by 256 males, 197 injuries by 131 females) on 9 sports teams.

Main Outcome Measure(s): Data were collected during the 2007–2011 seasons. Social support was measured using the 6-item Social Support Questionnaire. Symptoms of depression were assessed using the Center for Epidemiological Studies Depression Scale. Anxiety was measured by the State-Trait Anxiety Inventory. We used generalized estimation equation regression models to examine the effect of the social support from ATs on the odds of symptoms of depression and anxiety at return to play.

Results: In 84.3% (n = 501) of injury events, injured athletes received social support from ATs during their recovery. Of these, 264 (53.1%) athletes reported being very satisfied with this social support. Whether or not athletes received social support from ATs during recovery did not affect the symptoms of depression or anxiety experienced at return to play. However, compared with athletes who were dissatisfied with the social support received from ATs, athletes who were very satisfied or satisfied with this social support were 87% (95% confidence interval = 0.06, 0.30) and 70% (95% confidence interval = 0.13, 0.70) less likely to report symptoms of depression at return to play, respectively. Similar results were observed for anxiety.

Conclusions: Our findings support the buffering effect of social support from ATs and have important implications for successful recovery in both the physical and psychological aspects for injured athletes.

Key Words: collegiate athletes, psychological distress, coping, injury recovery

Key Points

- More than 80% of injured athletes in this study relied on social support from their athletic trainers during their recovery.
- Athletes who reported higher levels of satisfaction with the social support from their athletic trainers during recovery were less likely to experience symptoms of depression and anxiety at return to play.
- However, whether or not injured athletes received social support from athletic trainers during their injury recovery did not correlate with psychological outcomes at return to play.

Approximately 40% to 50% of collegiate athletes sustain at least 1 injury requiring medical attention or restricting participation for 1 day or more (or both) during their athletic careers.¹ In addition to negative physical consequences, these injuries often cause psychological disturbances among injured athletes, including depression and anxiety, which in turn play a role in their injury recovery.^{2–4} Results from previous studies show that social support is an important coping resource for athletes dealing with psychological recovery from an injury.^{5–9} Social support could “buffer” the effect of stress on injured athletes and thus indirectly influence their emotional wellbeing. In other words, social support could first help an injured athlete interpret an injury event as less stressful than he or she otherwise would, thus helping to reduce distress after an injury.

Second, social support could help an injured athlete cope with the injury and improve motivation during rehabilitation.^{8,9} Growing evidence also suggests that *emotional social support*, defined as expressions of empathy, love, trust, and caring,^{10,11} may be crucial to recovery for injured collegiate athletes; other types of social support, including instrumental support (ie, provision of tangible aid and services) and informational support (ie, provision of advice, suggestions, and information), may be available to injured collegiate athletes as part of injury treatment.^{10,11} However, although many universities provide psychological services to their students, including injured student-athletes, the psychologists are not always specially trained in the areas of sport and exercise and may not fulfill the injured athletes' needs. Thus, certified athletic trainers (ATs), who are active in the

day-to-day tasks of prevention, recognition, management, and rehabilitation of injuries among athletes, become an important source of emotional social support for injured athletes.¹¹

Advances in sport medicine have reduced the average time required for physical healing from an athletic injury, yet a rapid physical recovery may not provide sufficient time for psychological recovery. Current practices in evaluation and management of injuries address the physical problems underlying an injury and return athletes to full participation as soon as possible, but psychological assessment or care is not usually included.^{12,13} The potential discrepancy between physical healing and psychological recovery necessitates that more attention be given to the latter.¹³ We need to better understand how athletes respond to athletic injury and how external factors, such as social support, may affect athletes' postinjury psychological status and facilitate their injury recovery. Yet relatively few empirical studies have directly examined social support from ATs and its buffering effect during injury recovery among competitive collegiate athletes.^{11,12}

The aim of our study was 2-fold: (1) to describe the social support that injured collegiate athletes received from their ATs during their injury recovery and their satisfaction with such support and (2) to examine the effect of this social support from ATs during the recovery on reported symptoms of depression and anxiety at return to play.

METHODS

Study Participants

A cohort of athletes attending 2 Big 10 Conference universities was recruited at the beginning of each sport season from 2007 to 2011 through signed consent. Athletes who were at least 18 years old, participated in 1 of 9 sports (eg, men's baseball, men's basketball, men's football, men's wrestling, women's basketball, women's field hockey, women's soccer, women's softball, and women's volleyball), and sustained at least 1 injury during the study period were included. The institutional review boards at the universities approved the study and protocol before data collection began.

Study Procedure

We used a prospective cohort study design with repeated measures. After receiving approval from the head coach, the research team was scheduled to present at a team meeting to introduce the study and consent process. At the end of the team meeting, eligible athletes were invited to participate in the study. Once consent was obtained, the trained research team member conducted an in-person, paper-and-pencil baseline survey of participating athletes. All participant athletes were followed after enrollment to identify injury incidence through the existing Sports Injury Monitoring System database (SIMS; FlanTech, Inc, Iowa City, IA) that was managed by the team ATs. *Injury* was defined as any event that required medical attention and that resulted in loss of play for at least 1 day.¹⁴ When an injured athlete was identified and deemed eligible, follow-up surveys were conducted prospectively at multiple intervals (eg, 1 week, 1 month, 3 months, 6 months, and 12 months) until the injured athlete's return to play. The

final follow-up survey occurred within 1 week after the injured athlete's return to play, regardless of the time lost. All the follow-up surveys were conducted by the trained research team member at a location and time that was convenient to the injured athlete (eg, before or after the treatment in the athletic training room). For the purpose of this study, data collected from baseline and return-to-play surveys for each injury during the study period were analyzed. Each injury was treated as a unit of analysis. For athletes who sustained multiple injuries during the study period, the return-to-play survey for prior injury served as a new baseline for a subsequent injury. A total of 594 injuries sustained by 387 athletes were included in the analysis, excluding 3 injuries with missing data on both outcome measures of symptoms of depression and anxiety at return to play.

Study Measures

Social support from ATs during recovery was measured by the previously validated 6-item Social Support Questionnaire.^{15,16} Each item in the Social Support Questionnaire assesses 2 dimensions. The first dimension measures the number of individuals who provided the injured athlete with help or support in various situations during the recovery, including when the athlete needed help, felt generally down in the dumps, was upset, was under pressure, or felt tense. The participant was asked to answer each of 6 questions using the response choices of (1) *family*, (2) *friend*, (3) *coach*, (4) *athletic trainer*, (5) *teammate*, (6) *physician*, (7) *counselor*, or (8) *other*. We analyzed social support from ATs during the injury recovery as an outcome variable while various social supports from other individuals mentioned above were treated as covariates or confounding variables in the analysis. Injured athletes who indicated their AT helped or supported them in any of the 6 situations were defined as receiving social support from their ATs during their injury recovery. The second dimension of each item assesses the athlete's degree of satisfaction with the social support received from each individual, with 1 indicating *very dissatisfied* and 6 indicating *very satisfied*. The level of satisfaction with the social support received from ATs during the recovery was measured using the average satisfaction score for the items that injured athletes selected. The average score was then recoded into 4 categories in the analysis: (1) an average score of 6 was defined as *very satisfied with the social support*, (2) an average score between 5 and 5.9 was defined as *satisfied with the social support*, (3) an average score between 4 and 4.9 was defined as *a little satisfied with the social support*, and (4) an average score of less than 4, which collapsed 3 categories into 1 category due to the small counts in these 3 categories, was defined as *dissatisfied with the social support*.

Symptoms of depression were assessed using the Center for Epidemiological Studies Depression Scale, which consists of 20 items.¹⁷ Respondents were asked to assess the frequency of experiencing the 20 symptoms during the past week, both at baseline and return to play, on a 4-point scale, with 0 indicating that the athlete *experienced the symptom rarely or none of the time* (less than once a week), and 3 indicating that the athlete *experienced it most or all of the time* (5–7 days a week). First, a composite score was

Table 1. Injured Athletes' Characteristics^a (n = 594)

Characteristic	No. (%)
University	
University A	366 (61.6)
University B	228 (38.4)
Sport	
Men's baseball	25 (4.2)
Men's basketball	18 (3.0)
Men's football	235 (39.6)
Men's wrestling	119 (20.0)
Women's basketball	52 (8.8)
Women's field hockey	35 (5.9)
Women's soccer	41 (6.9)
Women's softball	38 (6.4)
Women's volleyball	31 (5.2)
Sex	
Male	397 (66.8)
Female	197 (33.2)
Race^b	
White	445 (74.9)
Nonwhite	148 (24.9)
Year in school when injured	
Freshman	123 (20.7)
Sophomore	129 (21.7)
Junior	160 (26.9)
Senior	182 (30.6)
Injury type	
Sprain	293 (49.3)
Strain	77 (13.0)
Concussion	57 (9.6)
Fracture	53 (8.9)
Contusion/bruise	17 (2.9)
Dislocation	14 (2.4)
Other	83 (14.0)
Injured body region^b	
Knee	130 (21.9)
Head/neck	88 (14.8)
Ankle	80 (13.5)
Shoulder	69 (11.6)
Pelvis, hips, groin	19 (3.2)
Leg	61 (10.3)
Foot/toe	36 (6.1)
Back	30 (5.1)
Wrist/hand/thumb/finger	28 (4.7)
Elbow/arm	19 (3.2)
Face (eye, jaw, nose, teeth)	11 (1.9)
Other	19 (3.2)
Injury severity^b	
Return to play within 1 wk	237 (39.9)
Return to play within 1 mo	166 (27.9)
Return to play within 3 mo	88 (14.8)
Return to play within 6 mo	63 (10.6)
Return to play in more than 6 mo	38 (6.4)

^a Unit of analysis is 1 injury.

^b Total percentage of less than 100 is due to missing value(s).

calculated for these 20 items. Then scores were further categorized dichotomously, with a validated cutoff score of 16 or higher, indicating that the athlete was experiencing symptoms of depression.^{17,18}

Anxiety was measured by the State-Trait Anxiety Inventory, which includes 20 items to measure state anxiety and 20 items to measure trait anxiety.¹⁹ To assess

psychological status at return to play, we used state anxiety as an outcome variable. The items asked how an athlete felt in the moment when he or she returned to play toward 20 situations on a 4-point scale, with 1 indicating *not at all* and 4 indicating *very much so*. Composite scores for trait or state anxiety were further categorized dichotomously, and scores higher than the median for typical college students (38 for males and 40 for females) indicated that the athlete was experiencing anxiety.²⁰ Trait anxiety items asked how an athlete felt in general toward the 20 situations on a 4-point scale, were measured at baseline, and served as a covariate in this study.

In addition, data on athletes' demographics (eg, university attended, sex, race, sport, history of injury), year in school when injured, injury severity, AT's sex, and social support from other sources (eg, family, friend, coach, teammate, physician, counselor, and other) were also included as covariates in the analysis.

Data Analysis

We conducted data analysis using SAS (version 9.2; SAS Institute Inc, Cary, NC). Distributions of participants and injury characteristics were described. Chi-square tests were calculated to assess the relationships between social support from ATs during injury recovery and reported symptoms of depression and anxiety at return to play. Finally, we used the generalized estimation equation (GEE) regression models to examine the effect of the social support from ATs, including whether the athlete received social support and the level of satisfaction with the social support received, on the odds of reported symptoms of depression and anxiety at return to play. The GEE models adjusted for the covariates including athletes' demographics (eg, university attended, sex, race, sport, history of injury), year in school when injured, injury severity, AT's sex, and social support from other sources. In addition, due to the collinearity caused by a high correlation between social support from ATs and that from other sources, we first regressed the social support from ATs against the other 6 sources of social support and then included and adjusted the residual from this regression model in the GEE models while examining the relationships between social support from ATs during the injury recovery and reported symptoms of depression and anxiety at return to play.²¹ In the analysis, each injury was treated as 1 observation, clustered within an injured athlete.

RESULTS

Characteristics of Injuries

A total of 594 injuries were sustained by 387 participating athletes during the study period (Table 1). Of these, 61.6% were reported from university A and 38.4% were from university B. Twice as many injuries occurred in men (n = 397, 66.8%) as in women (n = 197, 33.2%). Football players incurred the most injuries during the study period (n = 235, 39.6%), followed by wrestlers (n = 119, 20.0%) and women's basketball players (n = 52, 8.8%). Sprains were the most common injury types and accounted for nearly half of the injuries (n = 293, 49.3%). The knee was the body part injured most often (n = 130, 21.9%), followed by injury to the head/neck (n = 88, 14.8%), ankle (n = 80,

Table 2. Social Support from Athletic Trainers During Recovery

Social Support Items	Received Social Support ^a (n = 594) No. (%)
During your injury recovery, your athletic trainer is the one whom you could really count on to	
(1) Be dependable when you need help?	471 (79.3)
(2) Help you feel more relaxed when you are under pressure or tense?	337 (56.7)
(3) Accept you totally, including both your worst and your best points?	390 (65.7)
(4) Care about you, regardless of what is happening to you?	355 (59.8)
(5) Help you feel better when you are feeling generally down in the dumps?	282 (47.5)
(6) Console you when you are very upset?	267 (45.0)
Any of 6 items	501 (84.3)

^a Number and percentage are the athletes who indicated receiving social support from athletic trainers.

13.5%), and shoulder (n = 69, 11.6%). About 40% (n = 237, 39.9%) of injured athletes lost 1 week or less from play, approximately another 30% (n = 166, 27.9%) lost between 1 week and 1 month, and the remaining 189 (31.2%) lost more than 1 month.

Social Support from ATs During Recovery

In 501 injury events (84.3%), injured athletes reported receiving social support from ATs during their recovery. Specifically, in 471 (79.3%) injury events, athletes reported that their AT was the person they could really count on to be dependable when they needed social support during their recovery (Table 2). In more than half of the injury events, athletes reported that ATs helped them feel relaxed (n = 337, 56.7%), ATs accepted them (n = 390, 65.7%), and ATs cared about them (n = 355, 59.8%) during their recovery. In more than 40% of injury events, injured athletes indicated that their ATs helped them feel better when they were feeling down (n = 282, 47.5%) and consoled them when they were upset (n = 267, 45.0%).

Athletes were very satisfied with the social support received from ATs more than half of the time (n = 264, 53.1%; Table 3). In about another one-third of the injury events, athletes were satisfied with the social support received from ATs (n = 144, 29.0%). In 36 (7.2%) injury events, athletes were dissatisfied with the social support received from ATs.

Effect of Social Support During Recovery on Symptoms of Depression and Anxiety at Return to Play

Upon returning to play after 131 (22.2%) injury events, athletes reported symptoms of depression, and in 164 (27.8%) injury events, athletes reported anxiety (Table 3). We found no statistically significant differences in reported symptoms of depression ($P = .83$) and anxiety ($P = .39$) at return to play between those who did and did not receive social support from ATs. However, athletes who were very satisfied or satisfied with the social support received from ATs were less likely to report symptoms of depression ($P < .0001$) or anxiety ($P < .0001$) at return to play compared with athletes who were dissatisfied with the social support received from ATs.

Further GEE analyses confirmed the results from the binary analysis, which revealed that receipt of social support from ATs during their injury recovery did not correlate with reported symptoms of depression or anxiety at return to play. However, athletes who were

very satisfied or satisfied with the social support received from ATs were 87% (odds ratio = 0.13, 95% confidence interval [CI] = 0.06, 0.30) and 70% (odds ratio = 0.30, 95% CI = 0.13, 0.70), respectively, less likely to report symptoms of depression and 88% (odds ratio = 0.12, 95% CI = 0.05, 0.29) and 78% (odds ratio = 0.22, 95% CI = 0.09, 0.54), respectively, less likely to report anxiety at return to play compared with athletes who were dissatisfied with the social support received from ATs (Table 4).

DISCUSSION

This research contributes to the small but growing body of evidence that social support from ATs is one of the major supports that injured athletes rely on to cope with their injuries. This social support can positively influence both physical and psychological recovery outcomes of injured collegiate athletes.^{5-9,11} Our findings indicate that in more than 80% of injury events, injured athletes received social support from ATs during their recovery. Those who reported higher levels of satisfaction with the social support received from their ATs during recovery were significantly less likely to experience symptoms of depression and anxiety when they returned to play.

This large proportion of injured athletes seeking and receiving social support from ATs was consistent with previous study findings.^{9,11,22,23} In 1 previous study with a similar study population,²² the proportion of athletes who received social support from ATs increased significantly from 43% preinjury to 83% postinjury. Social support has been recognized as an effective psychological intervention in athletes' injury recovery. Throughout injury recovery, social support facilitates coping, relieves distress, and helps injured athletes stay focused and motivated during their rehabilitation.²⁴

Athletic trainers work very closely with injured athletes from their initial injury to their return to unrestricted activity.¹¹ Athletic trainers are often more available and contribute more to overall wellbeing than coaches and teammates with regard to social support.¹¹ Such a role has been acknowledged in the 5th edition of the National Athletic Trainers' Association's *Athletic Training Educational Competencies*,²⁵ which devoted an entire set of competencies to psychosocial strategies and referral. These competencies stressed the importance of preparing ATs to provide psychological intervention to injured athletes.²⁵⁻²⁷ Many ATs recognize the psychological consequences that an injured athlete may experience and are willing to help injured athletes cope

Table 3. Injured Athletes' Symptoms of Depression and Anxiety at Return to Play by Social Support Received from Athletic Trainers During Recovery (n = 594)

Receipt of and Satisfaction With Social Support	All, No. (%)	Symptoms of Depression at Return to Play? ^a			Anxiety at Return to Play? ^a		
		Yes, No. (%)	No, No. (%)	<i>P</i> Value ^b	Yes, No. (%)	No, No. (%)	<i>P</i> Value ^b
All	594 (100.0)	131 (22.1)	459 (77.3)		164 (27.6)	426 (71.7)	
Received social support from athletic trainer during injury recovery?				.8274			.3853
Yes	501 (84.3)	110 (22.0)	389 (77.6)		135 (26.9)	363 (72.5)	
No	93 (15.7)	21 (22.6)	70 (75.3)		29 (31.2)	63 (67.7)	
Satisfaction with the social support from athletic trainer during injury recovery ^c	497 (100.0)			<.0001 ^d			<.0001 ^d
Very satisfied	264 (53.1)	34 (12.9)	228 (86.4)		44 (16.7)	219 (83.0)	
Satisfied	144 (29.0)	42 (29.2)	102 (70.8)		45 (31.3)	98 (68.1)	
A little satisfied	53 (10.7)	16 (30.2)	37 (69.8)		25 (47.2)	28 (52.8)	
Dissatisfied	36 (7.2)	17 (47.2)	19 (52.8)		21 (58.3)	15 (41.7)	

^a Four injuries with missing value of symptoms of depression and 4 injuries with missing value of anxiety.

^b *P* values are based on χ^2 tests.

^c Includes only athletes who reported receiving social support from athletic trainers.

^d Significant ($P < .05$).

appropriately with the psychological side of injury, as well as with the physical effects of injury²⁸⁻³⁰; however, few reported feeling qualified or comfortable in doing so.^{24,30} In a study of recently certified ATs, none of the 11 participants reported learning anything about social support or counseling skills during their undergraduate education, although all ATs reported they were willing to implement psychological interventions if they had the knowledge or skills to do so.³¹ Our findings on the buffering effect of social support from ATs in recovery, along with results from other studies,^{26,27,30} suggest that current athletic training education programs need to incorporate the psychosocial competencies into their curricula to better serve injured athletes and facilitate effective physical and psychological recovery from injury. Future researchers should also evaluate if newly certified ATs feel competent in the psychological aspect of injury recovery.

Similar to Lavalley and Flint,³² who found that greater satisfaction with social support was associated with a

decreased risk of depression, we also noted that a higher level of satisfaction with the social support received from ATs was associated with fewer symptoms of depression and anxiety at return to play. However, whether or not injured athletes received social support from ATs during their injury recovery did not correlate with the psychological outcomes at return to play, suggesting that having social support from ATs may be just the first step in psychological recovery. To help injured athletes cope with postinjury psychological distress, further steps are needed to maximize not only the quantity but also the quality of social support. Udry⁵ concluded that the right type of social support provided at the right time is important to meet injured athletes' needs. Evidence suggests that athletes may need more emotional support immediately after injury,^{9,22} upon return to play, and if rehabilitation is progressing slowly.⁹ After time passes, injured athletes may benefit more from informational support.⁹ Previous findings also revealed that skiers with psychological disruption after injury reported a strong

Table 4. Odds Ratios of Symptoms of Depression and Anxiety at Return to Play

Receipt of and Satisfaction With Social Support	n	Symptoms (Yes Versus No)			
		Depression		Anxiety	
		Odds Ratio (95% Confidence Interval)	<i>P</i> Value	Odds Ratio (95% Confidence Interval)	<i>P</i> Value
Received social support from athletic trainer during injury recovery? ^a					
Yes	501	1.20 (0.59, 2.44)	.8385	0.81 (0.44, 1.49)	.5440
No	93	Referent		Referent	
Satisfaction with the social support from athletic trainer during injury recovery ^a					
Very satisfied	264	0.13 (0.06, 0.30)	<.0001 ^b	0.12 (0.05, 0.29)	<.0001 ^b
Satisfied	144	0.30 (0.13, 0.70)	.0055 ^b	0.22 (0.09, 0.54)	.0009 ^b
Little satisfied	53	0.43 (0.16, 1.11)	.0802	0.55 (0.20, 1.52)	.2499
Dissatisfied	36	Referent		Referent	

^a Adjusted for university, sex, race, school year when injured, injury severity, symptoms of depression or anxiety at enrollment, athletic trainer's sex, and social support from all other sources.

^b Significant ($P < .05$).

need for listening support and emotional comfort.⁷ Athletes with motivational difficulties in rehabilitation reported a strong need for informational support to help them initiate and sustain active coping strategies.⁷ However, we did not qualify the types of social support injured athletes received from ATs or identify the timing of the social support received at each point in the injury recovery. Future authors will need to integrate these facets of social support into their study designs to better quantify the role of social support during injury recovery.

Our findings suggest that injured athletes' social support needs from ATs vary across different situations. Although nearly 80% of injured athletes reported that they really counted on their ATs for help during their injury recovery, only about half of the injured athletes indicated that their AT(s) helped them feel better when they were feeling down or consoled them when they were upset (or both). Athletic trainers would benefit from recognizing these situations and being able to provide the appropriate type of support. Barefield and McCallister²³ indicated that, even though more than 90% of injured athletes also sought social support from their family members and friends after their injuries, the athletes needed ATs to listen and show understanding of what they were going through during their injury recovery. Thus, calling on ATs as health advisors who offer a unique perspective may be a cost-effective component of an intervention designed to improve athletes' injury recovery and psychological health after injury.

This study had several limitations. First, the timing and type of social support needed, both of which may change during the course of injury recovery, were not captured in this study. Second, reported symptoms of depression and anxiety upon return to play could be due to another life event(s) unrelated to the injury. However, we were not able to tease these out. Finally, the relationship between social support from ATs and reported symptoms of depression and anxiety in this study was based on injured athletes from 2 universities and may not generalize to other universities.

CONCLUSIONS

More than 80% of injured athletes in this study relied on social support from their AT during the recovery process. Injured athletes who had a higher level of satisfaction with the social support from their AT reported fewer depression and anxiety symptoms when they returned to play. Our findings support the buffering effect of social support from ATs during injury recovery and have important implications for successful physical and psychological recovery for injured athletes. Future researchers should also evaluate if newly certified ATs are able to meet the psychological needs of the injured athlete during recovery.

REFERENCES

1. Hootman J, Dick R, Agel J. Epidemiology of collegiate injuries for 15 sports: summary and recommendations for injury prevention initiatives. *J Athl Train*. 2007;42(2):311–319.
2. van Wilgen CP, Kaptein AA, Brink MS. Illness perceptions and mood states are associated with injury-related outcomes in athletes. *Disabil Rehabil*. 2010;32(19):1576–1585.

3. Wiese-Bjornstal DM. Psychology and socioculture affect injury risk, response, and recovery in high-intensity athletes: a consensus statement. *Scand J Med Sci Sports*. 2010;20(suppl 2):103–111.
4. Thatcher J, Kerr J, Amies K, Day M. A reversal theory analysis of psychological responses during sports injury rehabilitation. *J Sport Rehabil*. 2007;16(4):343–362.
5. Udry E. Social support: exploring its role in the context of athletic injuries. *J Sport Rehabil*. 1996;5(2):151–163.
6. Hardy CJ, Crace RK, Burke KL. Social support and injury: a framework for social support-based interventions with injured athletes. In: Pargman D, ed. *Psychological Bases of Sport Injury*. 2nd ed. Morgantown, WV: Fitness Information Technology; 1999: 175–198.
7. Bianco T. Social support and recovery from sport injury: elite skiers share their experiences. *Res Q Exerc Sport*. 2001;72(4): 376–388.
8. Aronson E, Wilson TD, Akert RM. *Social Psychology*. 6th ed. Upper Saddle River, NJ: Pearson Prentice-Hall; 2007.
9. Johnston LH, Carroll D. The provision of social support to injured athletes: a qualitative analysis. *J Sport Rehabil*. 1998;7(4):267–284.
10. Cohen S, Underwood LG, Gottlieb BH, eds. *Social Support Measurement and Intervention: A Guide for Health and Social Scientists*. New York, NY: Oxford University Press; 2000.
11. Clement D, Shannon VR. Injured athletes' perceptions about social support. *J Sport Rehabil*. 2011;20(4):457–470.
12. Weiss MR. Psychological aspects of sport-injury rehabilitation: a developmental perspective. *J Athl Train*. 2003;38(2):172–175.
13. Williams JM, Anderson MB. Psychosocial antecedents of sport injury: review and critique of the stress and injury model. *J Appl Sport Psychol*. 1998;10(1):5–25.
14. Albright JP, Powell JW, Martindale A, et al. Injury patterns in big ten conference football. *Am J Sports Med*. 2004;32(6):1394–1404.
15. Sarason IG, Sarason BR, Shearin EN, Pierce GR. A brief measure of social support: practical and theoretical implications. *J Soc Pers Relat*. 1987;4:497–510.
16. Sarason IG, Levine HM, Basham RB, Sarason BR. Assessing social support: the social support questionnaire. *J Pers Soc Psychol*. 1983; 44(1):127–139.
17. Radloff LS. The CES-D scale: a self-report depression scale for research in the general population. *Appl Psychol Meas*. 1977;1:385–401.
18. Radloff LS. The use of the Center for Epidemiologic Studies Depression Scale in adolescents and young adults. *J Youth Adolesc*. 1991;20(2):149–166.
19. Spielberger CD, Gorsuch RL, Lushene RE. *The State-Trait Anxiety Inventory (STAI) Test Manual for Form X*. Palo Alto, CA: Consulting Psychologists Press; 1970.
20. Spielberger CD, Gorsuch RL, Lushene RE, Vagg PR, Jacobs GA. *Manual for the State-Trait Anxiety Inventory (Form Y)*. Palo Alto, CA: Consulting Psychologists Press; 1983.
21. Willett W. *Nutritional Epidemiology*. 2nd ed. New York, NY: Oxford University Press; 1998.
22. Yang J, Peek-Asa C, Lowe JB, Heiden E, Foster DT. Social support patterns of collegiate athletes before and after injury. *J Athl Train*. 2010;45(4):372–379.
23. Barefield S, McCallister S. Social support in the athletic training room: athletes' expectations of staff and student athletic trainers. *J Athl Train*. 1997;32(4):333–338.
24. Unruh S, Unruh N, Moorman M, Seshadri S. Collegiate student-athletes' satisfaction with athletic trainers. *J Athl Train*. 2005;40(1): 52–55.
25. National Athletic Trainers' Association. *Athletic Training Educational Competencies*. 5th ed. Dallas, TX: National Athletic Trainers' Association; 2011.

26. Misasi SP, Davis CF, Morin GE, Stockman D. Academic preparation of athletic trainers as counselors. *J Athl Train.* 1996; 31(1):39–42.
27. Roh JL, Perna FM. Psychology/Counseling: a universal competency in athletic training. *J Athl Train.* 2000;35(4):458–465.
28. Moulton MA, Molstad S, Turner A. The role of athletic trainers in counseling collegiate athletes. *J Athl Train.* 1997;32(2):148–150.
29. Clement D, Granquist MD, Arvinen-Barrow MM. Psychosocial aspects of athletic injuries as perceived by athletic trainers. *J Athl Train.* 2013;48(4):512–521.
30. Hamson-Utley JJ, Martin S, Walters J. Athletic trainers' and physical therapists' perceptions of the effectiveness of psychological skills within sport injury rehabilitation programs. *J Athl Train.* 2008;43(3): 258–264.
31. Stiller-Ostrowski JL, Ostrowski JA. Recently certified athletic trainers' undergraduate educational preparation in psychosocial intervention and referral. *J Athl Train.* 2009;44(1):67–75.
32. Lavalley L, Flint F. The relationship of stress, competitive anxiety, mood state, and social support to athletic injury. *J Athl Train.* 1996; 31(4):296–299.

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