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ORIGINAL RESEARCH

Examining the Relationship Between Social Support Satisfaction and Perceived Stress and Depression in Athletic Training Students

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Context: Although social support has been reported to be a factor that increases retention of athletic trainers in their profession, there is a lack of literature examining the specific relationship of social support satisfaction and its predictive influence on stress and depression among athletic training students.

Objective: To determine which sources of social support were perceived to be the most salient and ascertain whether social support satisfaction can predict stress and depression among athletic training students.

Design: Cross-sectional study.

Setting: Nine Commission on Accreditation of Athletic Training Education–accredited professional athletic training programs.

Patients or Other Participants: A total of 204 athletic training students from Commission on Accreditation of Athletic Training Education–accredited athletic training programs were included in this study.

Main Outcome Measure(s): Participants completed the Perceived Stress Scale, Center for Epidemiologic Studies Depression Scale, and the Social Support Questionnaire.

Results: Social Support Satisfaction significantly predicted overall perceived stress ($P = .010$) and depression ($P < .001$). Satisfaction of support from family ($P = .043$) and other athletic trainers ($P = .011$) were significant predictors of perceived stress, whereas satisfaction of support from family ($P = .003$), other athletic trainers ($P = .002$), and athletes ($P = .038$) significantly predicted depression.

Conclusions: The current study suggests that having an increased satisfaction of social support may reduce stress perceptions and depression in athletic training students.

Key Words: Psychology, education, coping

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Examining the Relationship Between Social Support Satisfaction and Perceived Stress and Depression in Athletic Training Students

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KEY POINTS

- Social support plays an important role in helping athletic training students deal with stress and depressive symptomology.
- Social support satisfaction from family and other athletic trainers predicted overall stress in athletic training students.
- Support from athletes, family, and other athletic trainers predicted depressive symptomology.

INTRODUCTION

Athletic training students are required to gain clinical experience while simultaneously progressing through their professional athletic training program, which can be very demanding.[1] These students may encounter a considerable amount of stress and depressive symptomology given the specific parameters and demands of their athletic training education. These programs require rigorous academic work and many hours devoted to clinical education. Students may find it hard to balance the demands of their athletic training education with other life responsibilities (eg, family, finances, social relationships). Higher levels of emotional exhaustion and depersonalization have been reported among athletic training students in response to the increasing demands of the educational requirements of an athletic training degree.[2] Perceived stress and depression symptomology has been shown to be prevalent among the college-aged population, particularly due to the differing stressors that college students encounter, such as geographical change, academic challenge, financial strain, and a new social environment.[3,4] However, it is important to understand whether a higher level of perceived stress and depression symptomology exists specifically among athletic training students, when compared with students in non–allied health care academic programs. In addition, a coping mechanism often associated with improved mental and emotional health is social support.[5] Therefore, it is also important to understand if and how social support might influence stress and depression symptomology in professional athletic training students.[6]

Research has found that athletic training students' stress levels fluctuated throughout the academic year, with academic and financial concerns being the most significant stressors reported.[7] Thoits[8] suggested three major forms of stressors in the average individual's life, including daily hassles and life events. Though the average individual is subject to these major stressors, athletic training students may also encounter more unique day-to-day stressors, given the nature of their program. Common stressors reported that are specific to athletic training students include perceived pressure from coaches to clear athletes before they are ready to return, demands of a team's travel schedule, and dealing with athletic department organizational politics.[9–11]

Although college can be an exciting time and experience, it is also a stressful time for young adults, with mental health issues (eg, anxiety, depression) becoming more of a problem.[12–14] Moreover, very little research exists on depression specifically in undergraduate athletic training students. Furthermore, Clement and Gilson[10] suggested that athletic training programs may not be effectively equipped with teaching their students how to cope with issues of stress and depression symptomology that may be associated with a career in athletic training.

It should be noted that other allied health degree programs may be similar to athletic training with regard to educational demands and have shown correlating results for stress and depression symptomology among athletic training students.[15,16] With particular respect to nursing, studies investigating stress and depression among undergraduate nursing students showed that financial difficulty, sleep disturbance, lack of social interaction, and time constraints were all correlated with higher stress and depression symptomology.[17]

One factor that has been considered important within the coping literature for stress and depression is social support. The relationship between social support and mental health within the college-aged population has been examined, particularly with regard to how social support can involve a personal connection with important persons in the individual's life (ie, family, friends).[18] These connections are believed to help an individual more readily express and communicate their feelings and thoughts. Mazerolle and Pagnotta[19] reported that social support and taking personal time were two main coping mechanisms used by athletic training students when stressed and that teamwork, sharing a mutual understanding of the athletic training job demands, and having a network of support outside the athletic training room were considered important to athletic training students. In addition, Reed and Giacobbi[20] found that certified graduate assistant athletic trainers regarded social support as an important coping strategy to use in dealing with work-related stress.

Whereas social support has been shown to be a salient factor that increases retention of athletic trainers in their profession, there is still a lack of literature examining the specific relationship of social support satisfaction and its predictive influence on stress and depression symptomology in undergraduate athletic training students.[21–23] Therefore, the current study aimed to examine this potential relationship and ascertain whether social support satisfaction will predict stress and depression symptomology in a subset of undergraduate athletic training students. The research questions that were asked included (1) What is the perceived stress and depression symptom levels of undergraduate athletic training students and are there any sex differences? (2) What are the most salient sources of social support for undergraduate athletic training students? and (3) What effect does social support satisfaction have on perceived stress and depression sympto-

mology in undergraduate athletic training students? It was hypothesized that undergraduate athletic training students who had lower social support would have increased stress and depressive symptomology.

METHODS

Participants

A total of 204 undergraduate athletic training students from 9 professional baccalaureate Commission on Accreditation of Athletic Training Education–accredited athletic training programs throughout the United States participated in the current study. Criteria for inclusion in the study included being enrolled in an accredited professional athletic training program and not yet having attempted the Board of Certification exam. Individuals were excluded from this study if they were not currently enrolled in the professional baccalaureate phase of their athletic training program.

Instrumentation

Perceived Stress Scale. The Perceived Stress Scale (PSS) is a 14-item questionnaire used for measuring stress related to general life events.[24] The generality of this survey allows it to be used with a variety of populations.[25] Students were asked to rate all questions related to perceptions within the last month. The 14 items are rated on a 5-point Likert scale, ranging from 0 (*never*) to 4 (*very often*). Seven of the items are considered negatively weighted questions, whereas the other 7 items are positively weighted questions. An example of a negative item is "In the last month, how often have you felt nervous and stressed?" An example of a positive item is "In the last month, how often have you been able to control irritations in your life?" The positively weighted questions were reverse scored. The PSS has a maximum score of 56, with higher scores indicating higher levels of perceived stress. Previous research has reported the PSS to be both valid and reliable in the general population.[24,25] Reliability ranges from coefficient α of .75 to .85.[24,25]

Center for Epidemiologic Study Depression Scale. The Center for Epidemiologic Study Depression Scale (CES-D) is a scale developed to examine depressive symptoms in various populations; however, it is important to note that this instrument is not to be used for the diagnoses of depression.[26] The CES-D contains 20 items, with 4 of the items being reversed scored due to their positive weight. An example of a negative item is "I felt that I could not shake off the blues even with help from my family or friends." An example of a positive item is "I felt hopeful about the future." Items are rated on a 4-point Likert scale ranging from rarely or none of the time ($0 \leq 1$ day) to most or all of the time ($3 = 5$ to 7 days). The CES-D has a maximum score of 60, with a cutoff of 16. Participants with scores that are 16 or higher are considered to have depressive symptomology, with scores closer to 60 indicating greater severity. The Cronbach α has been reported to range from 0.85 to 0.90 in the general population.[26]

Social Support Questionnaire. The Social Support Questionnaire (SSQ6) is a short, 6-item questionnaire designed to evaluate sources and satisfaction of social support.[27] Sources of support can be input according to the specific population being used (ie, athletic training students) and are rated on a scale of 1 (*very dissatisfied*) to 6 (*very satisfied*). An example question of the SSQ6 is "Whom could you really count on to be dependable when you need help?" When the participants circled a number indicating satisfaction with a source of support, that also indicated they receive support from that source. If there is no response to an item, it is coded as the participant not having received support from that individual. The specific sources of social support examined for the current study included friends (non–athletic training students), family members, coaches, other athletic trainers, athletes, and other. If the respondents chose "other," there was a space to specify the supporting individual (eg, pastor, husband/wife). Alpha scores have been reported to range from .90 to .93 in the general population.[27]

Procedures

The research protocol was approved before data collection by the university's institutional review board for the protection of human subjects. This current study was considered exempt due to deidentifiable data; therefore, completing the surveys was considered consent to participate in the study. To establish face and content validity before data collection, the surveys were designed from natural sources of social support on the basis of previous research and feedback from multiple athletic trainers and psychologists. Surveys were distributed via e-mail, postage, and SurveyMonkey online software (San Mateo, CA) to 9 universities across all regions of the United States and spanning multiple divisions (ie, National Collegiate Athletics Association Division I, II, and III and National Association of Intercollegiate Athletics). The 9 institutions used in the study were selected on the basis of a process of networking with certified athletic trainers who shared a previous academic or professional connection with the researchers of the current study. E-mail addresses were obtained for 1 or more certified athletic trainers at each institution, and an e-mail was sent containing a web link to the online survey. The certified athletic trainers then forwarded the e-mail to their students within the athletic training program. Also, certified athletic trainers who requested paper-and-pencil format were mailed printed copies of the surveys, along with return postage.

The questionnaire was a 1-time assessment completed in early to mid-October, during the fall academic semester. It was composed of 54 items divided into 4 sections and took approximately 15 minutes to complete. The order of the sections was demographic information (Table 1), the PSS, CES-D, and SSQ6.

Data Analysis

Data were analyzed using descriptive and inferential statistics. Overall internal consistency for the cohort on the PCSS, CES-D, and SSQ6 was determined by a series of Cronbach α reliability tests. The percentage at which participants used each source of support was calculated by dividing the number of times that source was selected for each question by the total amount possible that each source could have been selected for each question. Overall social support score was determined by adding up the sources of support for all 6 questions. Two separate linear regressions were conducted to determine whether overall social support satisfaction scores predicted perceived stress and depression among participants. Two

Table 1. Demographics of the Athletic Training Students, n (%)

Division	
National Collegiate Athletics Association	
I-A	118 (58.4)
I-AA	33 (16.3)
I-AAA	2 (1.0)
II	45 (22.3)
III	3 (1.5)
National Association of Intercollegiate Athletics	1 (0.5)
Race/Ethnicity	
Caucasian/White	174 (85.3)
African American/Black	5 (2.5)
Hispanic/Latin-American	9 (4.4)
Asian/Pacific Islander	6 (2.9)
American Indian/Eskimo	2 (1.0)
2 or more races/Mixed	6 (2.9)
Prefer not to report	2 (1.0)
Class standing	
5th-year senior	29 (14.2)
Senior	75 (36.8)
Junior	76 (37.2)
Sophomore	24 (11.8)
Years in athletic training program	
1	65 (32.0)
2	77 (38.0)
3+	61 (30.0)
Clinical site location	
On-campus	116 (56.9)
Off-campus	88 (43.1)

separate multiple regressions were conducted to determine which specific sources of social support (eg, other athletic trainer) contributed the most to the perceptions of stress and depression. All analyses were conducted using SPSS version 24.0 (IBM Corp, Armonk, NY). The level of significance was set a priori at $P \leq .05$.

RESULTS

Surveys were administered to 660 athletic training students; a total of 204 completed the survey, for a response rate of 30.9%. The average age of participants within the current study was 21.14 ± 1.8 years; 140 (69%) of the participants were women and 64 (31%) were men.

The average score for the PSS was 25.27 ± 7.3 (range, 6 to 50) of 56, signifying moderate stress, whereas the average score for the CES-D was 15.19 ± 10.4 (range, 0 to 49) of 60. However, roughly one-third (35.7%, n = 73) of athletic training students scored above the clinical cutoff of 16 on the CES-D, indicating a risk for clinical depression (Table 2). Mean results for the SSQ6 are outlined in Table 3. Overall, the PSS and CES-D displayed a high internal consistency, comparable to previous research with a Cronbach α between 0.75 and 0.85 on the PSS and 0.85 to 0.90 on the CES-D.[24–26] Additionally, the SSQ6 had a Cronbach α of 0.93, which is consistent with previous research.[27]

Table 2. Frequency Distribution of Perceived Stress Questionnaire (n = 204) and Center for Epidemiologic Study Depression Scores (n = 201) Among Athletic Training Students, n (%)

Perceived Stress Questionnaire[a]	
0–9	1 (0.5)
10–19	40 (19.6)
20–29	111 (54.4)
30–39	44 (21.6)
40–49	7 (3.4)
50–56 (max)	1 (0.5)
Center for Epidemiologic Study Depression Scale[b]	
0–9	78 (38.8)
10–19	75 (37.3)
20–29	27 (13.4)
30–39	12 (6.0)
40–49	9 (4.5)
50–60 (max)	0 (0.0)

[a] Scored out of 56, with higher scores indicating high stress.
[b] Scored out of 60, with higher scores indicating higher risk of depression; cutoff score of 16.

Regarding sex, there were no differences between men (23.95 ± 7.06) and women (25.88 ± 7.28) on the PSS ($P = .07$) or on the CES-D ($P = .63$; men: 14.67 ± 10.28 versus women: 15.43 ± 10.46). No differences were reported between years in the program on the PSS ($P = .55$) and the CES-D ($P = .51$). On the SSQ6, women were more likely to use friends as a social support than were men ($P = .004$), but no differences were reported on any other sources of support on the SSQ6 (P range, .07 to .98). Overall, the PSS (Cronbach $\alpha = 0.83$) and CES-D (Cronbach $\alpha = 0.89$) displayed high internal consistency, whereas the SSQ6 displayed a moderate internal consistency (Cronbach $\alpha = 0.61$).

Social Support Sources Most Used by Athletic Training Students

Social support sources most used by athletic training students were family (91.5%), friends who were not athletic training students (87.9%), other athletic trainers (63.7%), athletes (37.4%), coaches (35.7%), and other (21.7%). Cited sources of support for those who indicated "other" included God, pastor, and significant other. Given the variability in

Table 3. Means and Standard Deviations for the Social Support Questionnaire Among Athletic Training Students[a]

Source of Support	n (%)	Mean ± SD
Friend	170 (83)	5.07 ± 1.11
Family	181 (89)	5.45 ± 0.95
Coach	68 (33)	2.25 ± 1.52
Other athletic trainer	113 (55)	4.30 ± 1.35
Student-athletes	69 (33)	2.72 ± 1.49
Other	42 (20)	4.45 ± 1.75

[a] The Social Support Questionnaire is rated on a scale of 1 (*very dissatisfied*) to 6 (*very satisfied*).

responses of "other," it was decided that it should be removed from the regression analyses.

Social Support Satisfaction Predicting Perceived Stress

Results of the linear regression indicated that overall average PSS scores had a low, but significantly negative correlation ($\beta = -1.44$, $r = -.180$, $P = .010$) with overall average social support satisfaction scores. As satisfaction of support increased within the athletic training student, his or her perception of stress conversely decreased. However, the results indicated that satisfaction of social support only explained 3.2% of the variance ($R^2 = 0.032$, $F_{1,202} = 6.73$, $P = .010$).

Social Support Satisfaction Predicting Depression Symptomology

Results of the linear regression indicated that the overall average CES-D scores had a low but significantly negative correlation ($\beta = -2.85$, $r = -.249$, $P < .001$) with overall average social support satisfaction scores. As satisfaction of support increased within the athletic training student, his or her depressive symptoms conversely decreased. The results of the regression indicated that satisfaction of social support only explained 6.2% of the variance ($R^2 = .062$, $F_{1,199} = 13.09$, $P < .001$).

Multiple Regression for Social Support, Perceived Stress, and Depression

A multiple regression was performed to determine whether satisfaction of support scores from the 5 (after "other" was removed from analyses) sources of social support together would predict perceived stress and depression symptoms. Perceived stress was found to have the strongest correlations and beta weights for social support satisfaction from family ($r = -0.256$, $\beta = -1.58$, $P = .043$) and other athletic trainers ($r = -0.346$, $\beta = -1.44$, $P = .011$). Satisfaction from the 5 sources of social support together accounted for 44.1% of the variance ($R^2 = 0.441$, $F_{5,74} = 3.56$, $P = .006$). Results for depression revealed the strongest correlations and beta weights for satisfaction of social support from family ($r = -0.400$, $\beta = -3.64$, $P = .003$), fellow athletic trainers ($r = -0.415$, $\beta = -2.75$, $P = .002$), and athletes ($r = -0.319$, $\beta = -2.25$, $P = .038$). Satisfaction from the 5 sources together accounted for 57.7% of the variance ($R^2 = 0.557$, $F_{5,73} = 7.28$, $P < .001$).

DISCUSSION

Mental health has become a growing concern among the college student population in recent years, with research showing a continued rise in the prevalence of mental health disorders.[28,29] The particular prevalence of anxiety and depressive disorders has been noted to span a wide demographic among college students.[30] The current study showed that perceived stress was present at a moderate level for undergraduate athletic training students. In addition, depressive symptomology was present at a moderate level, with one-third of the study sample scoring above the proposed cutoff score that would indicate risk for clinical depression symptomology. It is well known that college can be an exciting time for students, and yet it can also impose stressful conditions such as learning to gain independence, academic stressors, financial stability, and preparation for the future.[31,32] The endeavor of becoming an athletic trainer also imposes additional stressors unique to this particular major that include but are not limited to game and travel schedules, clinical rotations, certification and licensure, and overall responsibility for student-athlete health and safety.

Social Support

The current study also suggests that social support satisfaction can play a key role in undergraduate athletic training students' perception of stress and depression. Family and friends were rated as the 2 most used sources of social support, and social support satisfaction predicted outcomes in athletic training students' perceived stress and depression symptomology. Moreover, family and other athletic trainers were shown to be strong predictors of perceived stress, whereas friends, other athletic trainers, and athletes proved to be strong predictors of depression symptomology. The research has consistently demonstrated the effectiveness and efficacy of social support in mitigating stress perceptions and depressive symptomology. It has been suggested that those without a strong source of social support may encounter negative effects when experiencing stressful events.[33] Results have been further demonstrated showing that college students who rated their social support as higher also reported stronger and more positive physical and mental health perceptions and wellbeing.[34,35] Likewise, college students who reported lower social support associations were shown to display higher anxiety and suicidal ideation while also showing higher risk for depressive symptology.[6]

Research suggests that family and friends may provide significant sources of support to the college-aged student when they encounter stressors.[36,37] The findings of the current study suggest that family and friends were the 2 most used support sources (91.5% and 87.9%, respectively). The current study also indicated that overall satisfaction of social support significantly predicted perceived stress scores. That is, as satisfaction of support increased, perceived stress decreased. These findings are similar to Hendrix et al[38] who reported that certified athletic trainers with lower levels of social support had higher levels of perceived stress. Conversely, certified athletic trainers with higher satisfaction of support reported lower levels of perceived stress. Thus, having a social support network would allow athletic training students to feel more capable of handling stress when it occurs.[39]

Perceived Stress and Depression

In addition to perceived stress, overall satisfaction of social support also predicted depression symptoms. Results indicated that as satisfaction of support increased, depression symptomology also decreased. Although this specific relationship has been understudied in an athletic training population, previous research has supported a positive predictive influence of social support on depressive symptomology in populations such as college-aged individuals.[40] Social support is thought to help increase the chances an individual will react positively to a negative situation that may elicit depression symptomology.[41]

The present study's findings indicate that satisfaction of support from family and fellow athletic trainers contributed the most in predicting levels of perceived stress. Family often represents a strong social support structure given the unique nature of the familial relationship. Likewise, other athletic

trainers have a unique understanding in the sense that they are likely experiencing many of the same daily stressors and can relate to one another more easily.

The current study found that the results for social support satisfaction and depression symptomology indicated that athletic training students also relied on family and other athletic trainers. We think it interesting that satisfaction of social support from student-athletes was also a significant predictor of depression symptoms. Although there are no specific research studies on athletes providing social support to athletic trainers, the reverse relationship has been documented for athletic trainers providing significant social support to student-athletes in stressful situations (eg, sport injury).[42,43] Evidence of athletes acting as a support structure for athletic trainers may indeed be an important finding, given how much time athletic trainers spend with their student-athletes. When student-athletes feel that their athletic trainers invest in them, they may be likely to return the favor if the athletic trainers appear to need support. Student-athletes are often the same age and have similar schedules while balancing classes and athletics as athletic training students, potentially making it easier to relate to one another.

Coaches acting as a source of social support for athletic training students may appear to be contradictory. That is, it can be inferred that coaches may often be the source of anxiety for athletic training students given coaching demands for success, scheduling, and pressure to keep student-athletes healthy. This result may be explained in part that athletic training students perceived the daily communication and proximity to coaches as supportive, as well as the possibility of coaches offering task appreciation for athletic training students' efforts. However, due to the lack of research with this particular social support relationship of athletic training student and coach, this dynamic should be further examined.

LIMITATIONS AND FUTURE DIRECTIONS

This study was not without limitations. It can only be generalized to a small subset of undergraduate athletic training students. In addition, the study was conducted during the fall academic semester, and the participants may not have been experiencing as much stress then as during the late fall or spring semester. This sample was mostly women (69%), so it would be beneficial to seek out more male athletic training students in the future. However, it should be noted that the current study's proportion of male participants (31%) is similar to the reported percentage of male National Athletic Trainers' Association athletic training student members (39%).[44] The current study did not consider any preexisting psychological conditions (eg, anxiety disorders, stress disorders) that may have been present within the sample and could have influenced responses. It was also unknown whether any participants within the present sample were being treated for a mental health condition with pharmacological or counseling intervention strategies. Furthermore, response bias was a limitation because participants may not have been honest regarding their stress and depression appraisals, thus responding in a more favorable manner. This study also included a 1-time assessment, which would not be sensitive to the ebb-and-flow nature of perceived stress and depression symptomology. Future studies may benefit from a multiple time-point assessment to account for various changes that occur during a typical semester and sport season, which may influence perceived stress and depression symptoms. Future researchers should attempt to disseminate the potential bidirectional relationship of social support between professional athletic training students and student-athletes. More specifically, researchers should seek to investigate the level of social support that athletic training students receive from student-athletes under their care. Further investigation should also aim to examine sex differences in social support, stress, and depression in athletic training students, as compared with students in peer health care professional programs.

Last, the participants of this study were currently enrolled in Commission on Accreditation of Athletic Training Education–accredited baccalaureate-level athletic training programs. With the ongoing and future change of the professional degree to the master's level, it remains unclear what effect that will have on the social support, stress, and depressive symptomology of athletic training students. This study attempted to control for the years in the program by having participants state their class relative to their university classmates, given that a senior student or fifth-year student will likely be in his or her final year of the athletic training program and facing current stressors, such as graduation, preparation for the Board of Certification exam and applying for entry-level jobs or graduate programs. Future research should aim to investigate what effect moving to the entry-level master's degree program for athletic training may have on the psychosocial variables of athletic training students.

CONCLUSIONS

This study presented significant and important findings, particularly for athletic training students and athletic training program directors. Social support plays an important part in helping individuals deal with stress and depressive symptomology. This is especially important for helping athletic training students balance and manage the demands of their academic programs and clinical experiences. If athletic training students are educated to properly create, maintain, and seek social support networks, along with positive coping, it could be pivotal in decreasing stress and depressive symptoms, leading to a much healthier lifestyle and athletic training career.

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