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original research

Social Support Patterns of Collegiate Athletes Before and After Injury

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Context: Social support has been identified as an important factor in facilitating recovery from injury. However, no previous authors have prospectively assessed the change in social support patterns before and after injury.

Objective: To examine the preinjury and postinjury social support patterns among male and female collegiate athletes.

Design: Prospective observational study.

Setting: A Big Ten Conference university.

Patients or Other Participants: A total of 256 National Collegiate Athletic Association Division I male and female collegiate athletes aged 18 or older from 13 sports teams.

Main Outcome Measure(s): Injury incidence was identified using the Sports Injury Monitoring System. Social support was measured using the 6-item Social Support Questionnaire. Data on preinjury and postinjury social support patterns were compared.

Results: Male athletes reported more sources of social support than female athletes, whereas female athletes had greater satisfaction with the support they received. Athletes' social support patterns changed after they became injured. Injured athletes reported relying more on coaches ($P = .003$), athletic trainers ($P < .0001$), and physicians ($P = .003$) for social support after they became injured. Athletes also reported greater postinjury satisfaction with social support received from friends ($P = .019$), coaches ($P = .001$), athletic trainers ($P < .0001$), and physicians ($P = .003$).

Conclusions: Our findings identify an urgent need to better define the psychosocial needs of injured athletes and also strongly suggest that athletic trainers have a critical role in meeting these needs.

Key Words: psychology, athletic trainers

Key Points

- The psychosocial needs of injured athletes must be better defined, so that appropriate support can be provided to them.
- Athletic trainers can play a key role in meeting these needs, but they must have the relevant knowledge, skills, and strategies in order to do so.

An athletic injury frequently has profound negative consequences on the physical health of a college athlete and can also cause a great deal of psychological distress, evoking anger, depression, anxiety, tension, fear, and lower self-esteem.[1,2] Mood disturbances are especially apparent among competitive athletes who are seriously injured.[1,3] Such functional loss or the inability to continue team participation can be devastating and cause difficulties in coping with the injury cognitively, emotionally, and behaviorally.[4–6]

A growing body of research has identified social support as an important factor in facilitating recovery from physical illness and injury.[7–11] The findings indicate that positive social support could serve as a protective factor that helps to reduce distress after an injury and improves motivation during rehabilitation.[11–15] Social support is measured as the number and quality of individuals on whom a person can rely during periods of stress.[15,16] Injured athletes may need more support than injured nonathletes during their recoveries because they may be removed from practice or play and be worried about their healing process. However, relatively little is known about the various aspects of social support in the context of athletic injury.

Although several authors[17,18] have investigated the composition of athletes' social support networks and the sources of support, few have specifically addressed the athletic trainer's role in providing social support. A researcher[9] who examined the role of coping and social support among injured athletes during rehabilitation from knee injuries found that their perceived satisfaction with social resources remained relatively constant throughout their recoveries. However, whether athletes' needs or patterns of social support change before and after injury and whether male and female athletes differ in their social support needs or patterns remains unclear.

Understanding sex differences in social support patterns as well as the effect of injury on such patterns is important for providing effective social support to male and female athletes. Sex-specific interventions may also help injured athletes to adopt a more optimistic approach during their recovery process. The aims of this study were (1) to

examine the sex differences in social support patterns, including the differences in sources of social support and satisfaction with the social support received, among a sample of National Collegiate Athletic Association (NCAA) Division I male and female collegiate athletes, and (2) to assess the changes in social support patterns before and after injury among injured collegiate athletes.

METHODS

Study Population

The study population was a cohort of male and female collegiate athletes from 1 university in the Big Ten Conference. Athletes who were at least 18 years of age and who participated in NCAA Division I–sponsored sports between September 1, 2005, and April 30, 2006, were invited. A total of 260 collegiate athletes from 13 sports teams enrolled in the study (men's teams were football, wrestling, baseball, gymnastics, golf, and tennis; women's teams were basketball, track, cross-country, golf, rowing, and field hockey; coed team was spirit squad), with a response rate of 80% (260/327). Of the 260 athletes who completed the surveys, 4 were excluded from the analysis. Of those individuals excluded, 1 was injured at the time of the baseline survey, whereas 3 skipped more than half of the questions. All study procedures were approved by the Institutional Review Board at the University of Iowa.

Study Protocol

The data were from a prospective study with repeated measures to examine the relationship between social support and injury recovery. After approval from coaches of the respective sport teams, we administered a baseline survey during a scheduled team meeting at the beginning of each sport season. All eligible athletes were invited to participate in the study through signed consent. Data collected included athletes' demographic characteristics, sports experience, history of injury, source of and satisfaction with social support, and other study measures. Injury incidence was identified using the Sports Injury Monitoring System (SIMS),[19] an ongoing injury surveillance system established for the Big Ten Athletic Conference. Enrolled athletes identified in SIMS as experiencing an injury were contacted 3 months after their injuries. They were asked about their sources of and satisfaction with social support during the injury recovery period (regardless of their injury status at the time the survey was conducted). This analysis compares injured athletes' social support measures during injury recovery with their baseline data.

Main Measures

Social support has not been consistently defined or measured in existing literature. In this study, we defined *social support* as athletes' appraisal of the support that might be available to them from their social network and how satisfied they were with that support.[15,16] Social support was measured using the modified 6-item Social Support Questionnaire (SSQ6),[15,16] a shorter version of the 27-item Social Support Questionnaire that has been validated in the undergraduate student population. Each item in the SSQ6 assesses 2 dimensions. The first part measures the number of available ''others'' or sources that the injured collegiate athlete feels he or she can turn to in various situations, including when he or she needs help, feels generally ''down in the dumps,'' is very upset, and is under pressure or feeling tense. The questions asked were ''Whom could you really count on to be dependable when you need help?'' and ''Whom could you really count on to help you feel better when you are feeling generally down in the dumps?'' Participating athletes were asked to answer each of 6 questions using response choices of (1) *family*, (2) *friend*, (3) *coach*, (4) *athletic trainer*, (5) *physician*, (6) *counselor*, or (7) *other*. The number of different sources of social support was calculated by summing the total number of available individuals for the 6 questions and then dividing this number by 6. The second part of each item assessed the athlete's degree of satisfaction with each available source of support, using a score of 1 to 6 with 1 indicating *very dissatisfied* and 6 indicating *very satisfied*. An overall satisfaction score was computed by adding the total satisfaction scores of the 6 questions and then dividing by 6.[15,16] Internal reliabilities for the SSQ6 have been reported as ranging from 0.93 to 0.96.[20] Data collected 3 months postinjury addressed injured athletes' social support during the injury recovery period. The instrument was pilot tested before data collection.

Injury was defined as any reportable injury that required medical attention and restricted full participation for 1 day or longer.[21] The injury information was obtained from SIMS. The SIMS database includes the following information: a roster of all team members; a daily log for all coach-directed team practice and game activities; and a detailed record of all reportable injuries, including type and location of injury and the medical attention the injured athlete received. Team certified athletic trainers were responsible for data entry.

Analysis

The characteristics of participating athletes and their injuries were described. Using the baseline survey administered to all participating athletes, the average number of social support sources (ie, family, friend, coach, athletic trainer, physician, counselor, or other) and satisfaction (very satisfied to very dissatisfied) were calculated among male and female participating athletes. Sex differences in social support sources and satisfaction were compared using χ^2 and t tests, respectively.

Changes in social support sources and satisfaction were assessed for the subgroup of athletes who were injured and who completed both baseline and follow-up surveys. Of the 92 athletes who were injured, data from 23 were removed because the first injury occurred during the last 3 months of the study, which prevented the 3-month follow-up surveys from being conducted. An additional 27 athletes were lost to follow-up; these were primarily athletes with less severe injuries who returned to practice within days of the injury (and thus the 3-month follow-up occurred long after their return to play). The final analysis includes the remaining 42 injured athletes. Of those, 21 athletes sustained multiple injuries during the study period and, thus, only the data

Table 1. Characteristics of Enrolled and Injured Collegiate Athletes

	Enrolled Athletes, No. (%)	Injured Athletes, No. (%)	*P* Value[a]
All	256 (100)	92 (35.9)	
Sex			.410
Male	167 (65.2)	57 (34.1)	
Female	89 (34.8)	35 (39.3)	
Collegiate class			.778
Freshman	61 (23.8)	21 (34.4)	
Sophomore	70 (27.3)	28 (40.0)	
Junior	66 (25.8)	21 (31.8)	
Senior	59 (23.1)	22 (37.3)	
Race			
White	231 (90.2)	82 (35.5)	.6558
Nonwhite	25 (9.8)	10 (40.0)	
Sport			<.0001
Football	56 (21.9)	13 (23.2)	
Baseball	36 (14.1)	9 (25.0)	
Wrestling	32 (12.5)	20 (62.5)	
Spirit squad	30 (11.7)	8 (26.7)	
Women's rowing	20 (7.8)	6 (30.0)	
Women's basketball	14 (5.5)	10 (71.4)	
Men's gymnastics	13 (5.1)	10 (76.9)	
Men's golf	12 (4.7)	1 (8.3)	
Women's field hockey	12 (4.7)	7 (58.3)	
Men's tennis	11 (4.3)	1 (9.1)	
Women's cross-country	8 (3.1)	4 (50.0)	
Women's golf	8 (3.1)	0 (0.0)	
Women's track and field	4 (1.6)	3 (75.0)	
History of injury?			.001
Yes	136 (53.1)	62 (45.6)	
No	120 (46.9)	30 (25.0)	

[a] *P* values were based on χ^2 tests.

from the first injury were included to rule out any carryover effects of the first injury. The social support data collected among injured male and female athletes 3 months after the injury were compared with their baseline data, using a McNemar test and paired *t* tests, respectively. All analyses were conducted in SAS (version 9.00; SAS Institute Inc, Cary, NC). The statistically significant level was defined as $\alpha = .05$.

RESULTS

Characteristics of the Participating Collegiate Athletes

A total of 256 collegiate athletes from 13 study sports were included in the analysis. Of these, approximately two-thirds were male (n = 167, 65.2%; Table 1), and most were white (90.2%). The average age of participants was 20 ± 1.3 years. Football players comprised the largest number of study participants (21.9%), followed by baseball (14.1%), wrestling (12.5%), and spirit squad (11.7%). More than half of the participants (n = 136, 53.1%) reported sustaining at least 1 athletic injury in the 12 months before the study.

During the 8-month study period, 92 athletes sustained at least 1 injury, and of these, 34 (37%) had more than 1 injury. Of the 92 injured athletes, 57 were men and 35 were women. Wrestlers comprised the largest number of injured athletes (n = 20), followed by football players (n = 13). However, the proportion of injured athletes was also high among enrolled athletes in men's gymnastics, women's track and field, and women's basketball. Athletes with a history of injury were also more likely to be injured during the season than those without a history of injury ($P = .001$; Table 1).

Sources of Social Support and Satisfaction With the Support Received at Baseline for All Athletes

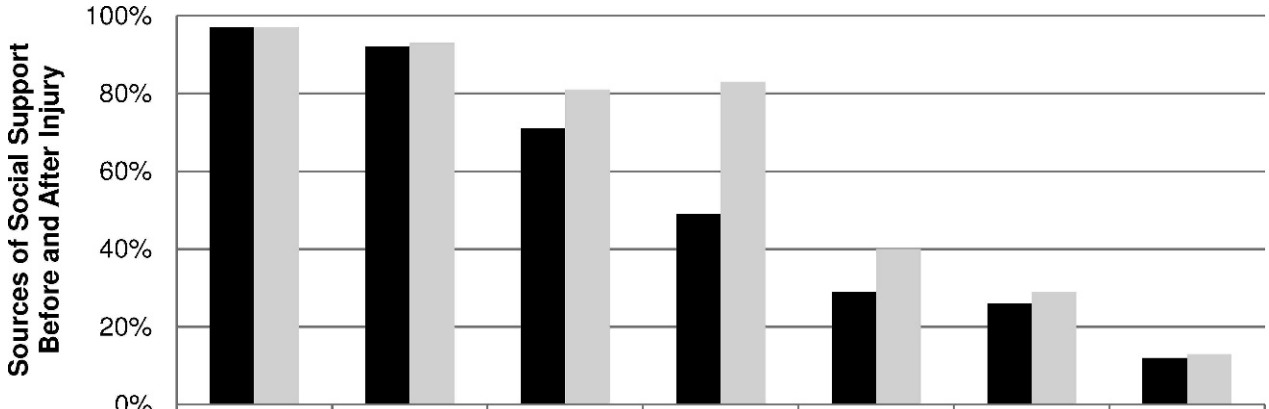
Social support measured from the baseline survey of all enrolled athletes indicated that family and friends were the primary sources of social support. On average, 96% (n = 246) of all participating athletes reported that they relied on their family for social support, with a satisfaction score of 5.7 of 6; 93% (n = 238) reported that they relied on their friends for social support, with a satisfaction score of 5.4 of 6 (Table 2).

The proportion of male and female athletes who relied on their family for social support did not differ. However, compared with male athletes, more female athletes reported relying on friends for social support ($P = .001$), but fewer reported relying on coaches ($P = .007$), athletic trainers ($P < .0001$), physicians ($P < .0001$), and counselors ($P < .0001$) for social support. Female athletes

Table 2. Injured Athletes' Sources of Social Support and Satisfaction With Each Source of Support at Baseline (n = 256)

	Source of Social Support, n (%)[a]						
	Family	Friend	Coach	Athletic Trainer	Physician	Counselor	Other
All athletes	246 (96)	238 (93)	175 (68)	133 (52)	102 (40)	85 (33)	18 (7)
Men	160 (96)	153 (92)	118 (71)	97 (58)	80 (48)	70 (42)	13 (8)
Women	86 (97)	85 (96)	57 (64)	36 (40)	21 (24)	15 (17)	5 (5)
P Value[b]	.747	.001	.007	<.0001	<.0001	<.0001	.047
	Satisfaction With Social Support Received, n (%)[c]						
All athletes	5.7	5.4	4.7	4.5	4.2	4.2	5.5
Men	5.7	5.3	4.7	4.5	4.1	4.1	5.3
Women	5.8	5.5	4.7	4.7	4.6	4.7	5.8
P value[d]	.022	.001	.882	.002	.001	.002	.013

[a] Proportion of athletes who reported social support from each source.
[b] *P* value was based on χ^2 test of the difference between men and women.
[c] Satisfaction with each source of support was measured on a scale of 1 to 6, with 1 indicating *very dissatisfied* and 6 indicating *very satisfied*.
[d] *P* value was based on independent-samples *t* test for the difference between men and women.



	Family	Friend	Coach [a]	Athletic trainer [a]	Physician [a]	Counselor	Other
Before	97%	92%	71%	49%	29%	26%	12%
After	97%	93%	81%	83%	40%	29%	13%

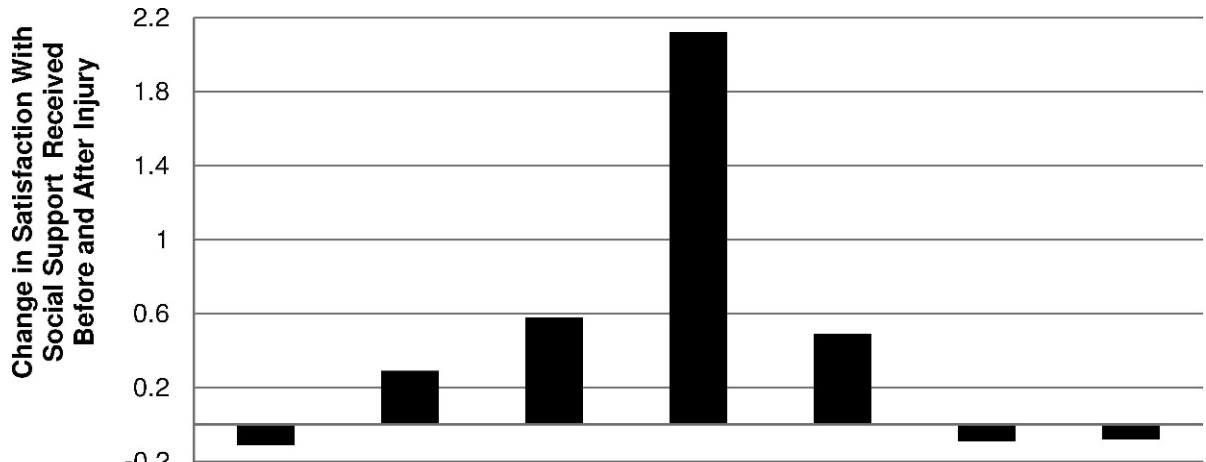
Figure 1. Sources of social support before and after injury (n = 42). [a] $P < .01$ based on the McNemar test. Before and after values reflect proportion of athletes who reported social support from each source.

also reported higher satisfaction scores with the social support received from all denoted sources except for coaches (Table 2).

Changes in Source of Social Support and Satisfaction With Support Received Before and After Athletic Injury

Changes in social support sources and satisfaction were examined for the 42 injured athletes who completed a 3-month follow-up survey (23 men, 19 women). Overall, compared with their baseline measures, injured athletes reported relying more on coaches ($P = .003$), athletic trainers ($P < .0001$), and physicians ($P = .003$) for social support after they became injured (Figure 1). Because 96% of athletes reported relying on family at baseline, an increase after injury would be unlikely. Athletes also noted greater postinjury satisfaction with social support received from friends ($P = .019$), coaches ($P = .001$), athletic trainers ($P < .0001$), and physicians ($P = .003$; Figure 2).

More male athletes reported relying on athletic trainers for social support postinjury ($P < .0001$), and their satisfaction with the postinjury support received from athletic trainers was also greater than at baseline ($P < .0001$; Figure 3A and B). After injury, male athletes also reported greater satisfaction with the support received from their physicians postinjury ($P = .048$) but decreased satisfaction with the support from their family ($P = .011$; Figure 3B). Similar to male athletes, female athletes relied more on athletic trainers ($P < .0001$) for social support after they became injured and reported increased satisfaction with the social support received from athletic trainers during that time ($P < .0001$; Figure 4A and B). Unlike male athletes, female athletes noted higher postinjury



	Family	Friend [a]	Coach [b]	Athletic trainer [b]	Physician [b]	Counselor	Other
Average Δ [c]	-0.11	0.29	0.58	2.12	0.49	-0.09	-0.08

Figure 2. Change in satisfaction with social support received before and after injury (n = 42) based on paired-samples *t* tests. [a] $P < .05$; [b] $P < .01$; [c] average change in satisfaction scores with support received before and after injury.

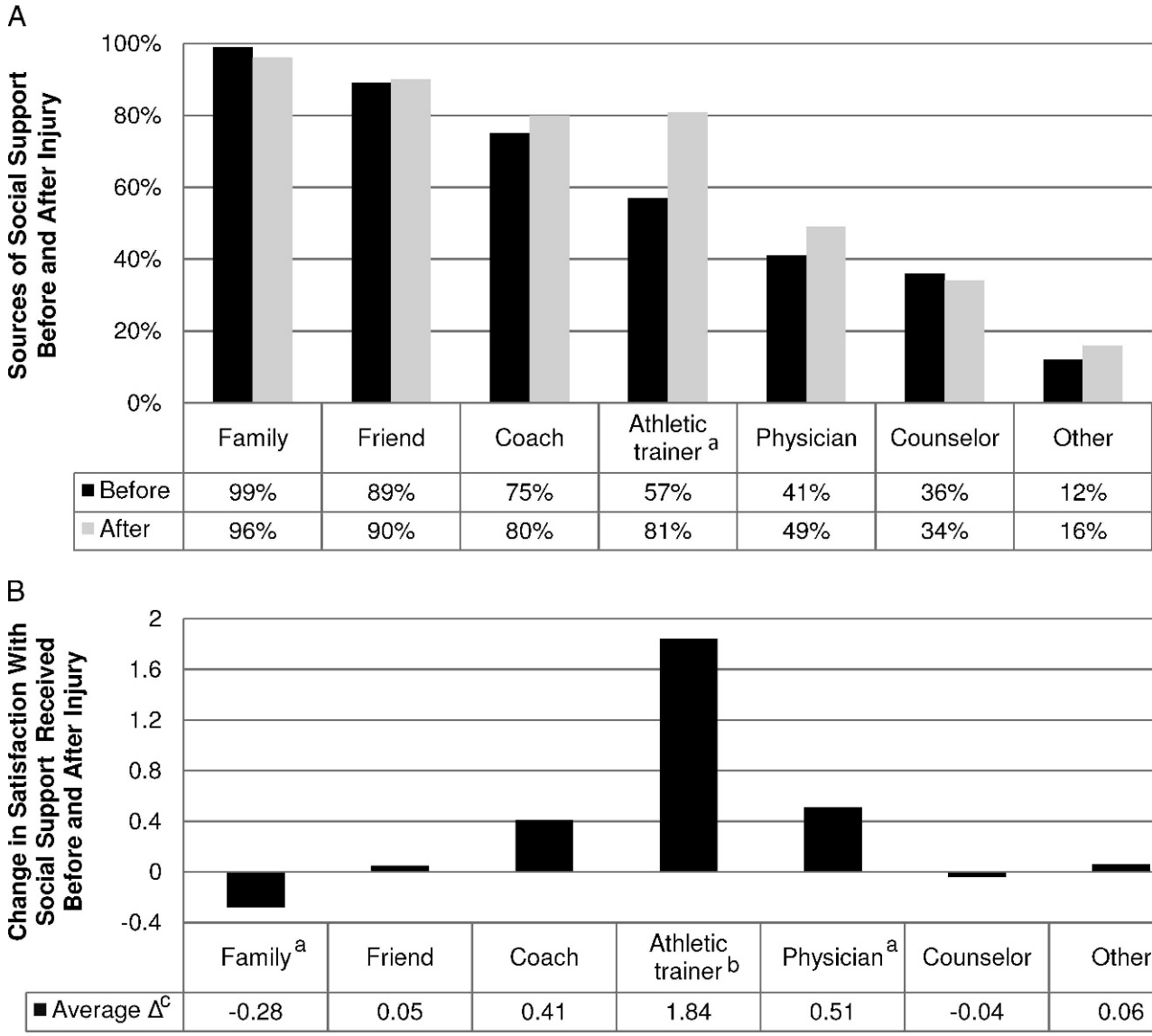


Figure 3. Men's social support before and after injury (n = 23). A, Sources. [a] Indicates $P < .01$ based on the McNemar test. Before and after values reflect proportion of athletes who reported social support from each source. B, Change in satisfaction based on paired-samples *t* tests. [a] Indicates $P < .05$; [b] $P < .01$; [c] average change in satisfaction scores with support received before and after injury. A positive score reflects increased satisfaction after injury.

satisfaction with the social support received from friends ($P < .0001$), coaches ($P = .002$) and physicians ($P = .019$; Figure 4B).

DISCUSSION

We are among the few to examine different sources of social support and the degree of satisfaction with that social support among Division I male and female collegiate athletes. No previous authors have prospectively assessed the change in social support patterns before and after injury in this population. Our findings indicate that athletes' social support patterns change after they become injured. In particular, perceived social support from athletic trainers increased, both in the number of athletes who identified athletic trainers as a source of support and in the degree of satisfaction with the support received. Male and female athletes reported different social support patterns preinjury and postinjury. These findings have important implications for future research and practice in the area of athletic training. In addition to caring for the athlete's physical ailments, it is clearly important for athletic trainers both to recognize the range of psychological responses after injury and to be able to either provide support or make appropriate referrals for further psychological consultations or treatment.

Our finding that athletes need emotional support during an injured period is supported by previous study findings.[7,9,17,18] Emotional support is crucial to an injured athlete's recovery.[7,17] Although family members are a vital part of athletes' social networks and serve as an important source of support both preinjury and postinjury,[9] we found that an increased number of athletes turn to coaches, athletic trainers, and physicians after they become injured. Injured athletes also reported increased satisfaction with the support received from friends, coaches, athletic trainers, and physicians. This may be due, in part, to the fact that most collegiate athletes are away from their

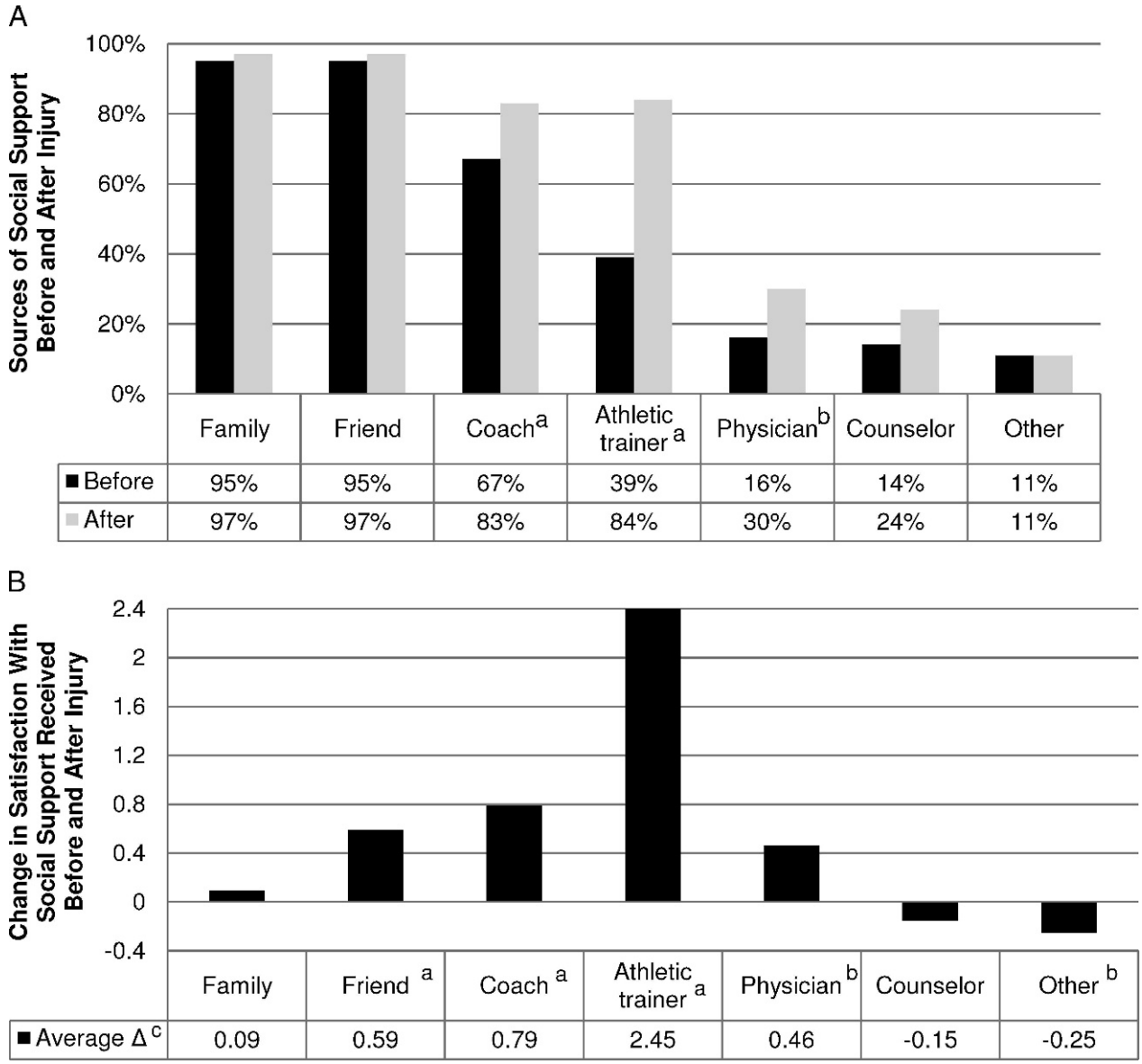


Figure 4. Women's social support before and after injury (n = 19) based on the McNemar test. A, Sources. [a] Indicates $P < .01$; [b] $P < .05$. Before and after values reflect proportion of athletes who reported social support from each source. B, Change in satisfaction based on paired-samples *t* tests. [a] Indicates $P < .01$; [b] $P < .05$; [c] average change in satisfaction scores with support received before and after injury. A positive score reflects increased satisfaction after injury.

families during their college years, often for the first time, with reduced parental support structures. Although family still remains a main source of social support, individuals added to an athlete's support network (eg, coaches, athletic trainers, and teammates) may become a new source of support to the injured athlete when family members are not available. Another possible explanation is that athletic trainers play a key role in the prevention, recognition, management, and rehabilitation of injuries among athletes, and they are closely involved in treating injured athletes on a daily basis in the athletic training room.[22] Because of their availability and easy access for the athletes, athletic trainers thus become natural social support providers to injured athletes. Barefield and McCallister[17] examined the types of social support athletes needed or expected to receive from athletic trainers and found that injured athletes particularly needed athletic trainers to take the time to listen to them and understand what they were going through. Injured athletes also needed to know that the rehabilitation exercises and work they accomplished were appreciated by the athletic trainers.[17]

Existing literature suggests that for social support to be most effective, it is crucial to have the right type of support available at the right time, because the way individuals cope with stress can change over time.[9] Shortly after an athletic injury, athletes may prefer emotional support. Over time, as injured athletes receive medical care and come to understand the nature and extent of their injuries, they may prefer more informational support.[11] Our findings, along with those of others, suggest that postinjury social support from coaches, athletic trainers, and physicians, in addition to that from family and friends, is important in helping injured athletes to minimize the distress caused by injury and to pursue the rehabilitation exercises and regimens

necessary for a successful recovery. We found that coaches, athletic trainers, and physicians were critical elements of postinjury social support networks and that these individuals may offer a unique understanding of the athlete's identity and the experience of being an injured athlete. Therefore, they are able to provide a shared perspective with regard to both emotional and informational support.

Male athletes reported more sources of social support than female athletes, whereas female athletes were more satisfied with the support they received preinjury. It is worth noting that a large proportion of female athletes relied on family and friends for social support preinjury, yet when they became injured, their sources of social support grew significantly. The observed difference in social support patterns between male and female athletes before and after injury may be because women, in general, are more willing than men to seek help when they encounter health problems; thus, they might reach out to more individuals for social support after injury, including coaches, athletic trainers, and physicians.[23] Other possible reasons for such a difference may result from female athletes having varied preferences about the type of help they seek or being more comfortable with certain support providers.[22,24] Because social support is a multidimensional construct and no type of support is universally preferred, further research is warranted to develop sex-specific intervention strategies that facilitate male and female athletes' recoveries, especially those recoveries related to psychological aspects. Different care and support systems should also be established to meet male and female student-athletes' needs.[25]

The role of the athletic trainer in providing psychological services to athletes is currently receiving considerable attention.[18,22,26] Our findings strongly suggest that athletic trainers may be among the most effective sources of high-quality support for injured athletes. Previous surveys of athletic trainers' roles in counseling athletes revealed that most of the athletic trainers thought it was important to treat the psychological aspects of an athletic injury, including anger, depression, anxiety, tension, fear, and lower self-esteem; many had referred athletes for psychological counseling.[22,27,28] Supported by the result of these surveys, the National Athletic Trainers' Association stressed the importance of counseling preparation in athletic training curriculums and listed Psychological Intervention and Referral as 1 of the 12 educational competencies required for an entry-level athletic trainer. This competency emphasizes the need to educate athletic trainers about the use of sport psychology techniques.[29]

Despite the increasing attention given to psychological issues in educational reform and professional practice among athletic trainers, it remains unclear whether athletic trainers are well prepared and have the skills to deliver psychological services to athletes and to what extent such services should be provided by athletic trainers. Some athletic trainers feel that their roles go beyond the care and prevention of athletic injuries, yet they do not necessarily feel qualified to counsel athletes or comfortable doing so.[22] Many do not recall that they have had formal training on psychological intervention during their undergraduate or graduate education.[30] Although most athletic trainers are familiar with on-campus student support services to which collegiate athletes with personal issues could be referred for assistance, the majority do not have access to a sport psychologist.[22] Furthermore, many athletes may not need the level of support required by external counseling and would be much better served by effective support provided within the constructs of their physical rehabilitation routine.

Our study has several limitations. First, the findings from this study were based on a convenience sample of athletes from a single university, with a large number of male and white athletes. Thus, the increased social support from athletic trainers after an injury observed in this study may reflect the relationship between injured athletes and athletic training staff only at this university, and the finding may not be generalizable to other universities. Second, we only included 42 injured athletes who had completed both baseline and 3-month follow-up surveys in our subgroup analysis. The number of injured athletes lost to follow-up resulted in a small analytic sample of injured athletes, which limited our ability to use multivariate models to assess the effect of an injury on social support pattern change. Finally, teammates may be great resources for emotional support, but they were not included in this study; however, teammates were added in our follow-up study as a result.

CONCLUSIONS

Our findings identify an urgent need to better define the psychosocial needs of injured athletes and also strongly suggest that athletic trainers have a critical role in meeting these needs. Athletic trainers need not only knowledge but also skills and strategies to provide positive psychological support to assist athletes in rehabilitation. Specific training is required to better equip athletic trainers with the knowledge and skills for providing services beyond the prevention and care of athletic injuries.[26,29,30]

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