

## 2014 NCAA Innovations Grant

**Final Report: Injured athlete support group: Evaluation of a pilot program**  
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### **Research in Brief:**

**Overview:** There is a critical need for support for injured athletes at the collegiate level. However, access to these services is currently limited and there are little data demonstrating how best to help support this vulnerable population. This need has been recognized by Stanford University, which has funded a one-year pilot program for an injured athlete support group. **The current research initiative was designed to evaluate the efficacy of this pilot program in improving psychosocial functioning and adaptive coping skills among injured athletes. It also was aimed to address whether student-athlete needs were met with this service.**

**Methods:** The pilot injured athlete support group meets weekly for 1.5 hours over 8 weeks, with each session including both psychoeducation and peer-centered discussion. Psychoeducation topics were: 1) the “athlete identity”, 2) introduction to cognitive behavioral therapy, 3) effective communication skills, 4) building resilience, 5) sadness/shame, 6) anxiety/fear, 7) social support, and 8) goal setting. All student athletes enrolling in the group were eligible to participate in this research initiative, which included completing online questionnaires before and after the group. These questionnaires assessed functioning multiple domains, including depression, anxiety, stress, coping and social support. We also collected qualitative data on goals for group participation and recovery status prior to the group, as well as satisfaction with the group after participation.

**Results:** During the duration of the initial funding period, seven student athletes participated in the injured athlete group and all chose to enroll in the study. Five of these participants completed all pre and post measures. Participants were 43% men and had a mean age of  $18.7 \pm 0.82$  years. Participants were all from team sports (rather than individual sports), and they identified a range of injuries, including torn ligaments, fractures, and concussion. During a no-cost extension to the study, one additional injured athlete group was held although, due to participant feedback, the format was changed significantly. As only one participant in this group completed pre-and post- measures, and another completed baseline only, only qualitative feedback from these participants are included.

The majority of participants identified that they were completely or very well-satisfied (66%) with their experience in group (all others were fairly well satisfied). At least in part due to the small sample size, we did not observe any significant differences in pre/post measures resulting from our intervention. However, the group met 89% of their goals for participation, on average. While a range of responses was provided for the most valuable aspect of the group, common themes were focused on social support and psychoeducation about recovery from injury. As put by one participant: *“This is the first place on campus where I have felt that people understand my injury and how much my life has been impacted by [it].”*

**Implications:** Despite logistical barriers to participation, an injured-athlete support group remains a highly desired resource by both student-athletes and athletic staff. Participants reported high levels of satisfaction with the group, particularly in domains of received social support; however, a significant impact was not seen on psychological domains assessed before/after participation. This suggests that our intervention may not yet be optimally meeting needs of this population. Logistical barriers (e.g., schedule, length of the group) also prevented many interested athletes from accessing our service. We are currently considering revising the format of the injured athlete support groups, in an effort to improve our mission to provide the most beneficial service to the largest number of injured athletes on campus.

### **Problem statement:**

There is a critical need for support for injured athletes at the collegiate level. However, access to these services is currently limited and there are little data demonstrating how best to help support this vulnerable population. Injured athletes are in need of additional resources to improve their psychosocial functioning and effective coping, and to facilitate their recovery. This need has been recognized by Stanford University, which funded Dr. Lisa Post (Chief of Sports Psychology in Psychiatry) to conduct a one-year pilot program for an injured athlete support group.

Assessing the specific benefits of this pilot program and identifying ways to strengthen it for the future has the potential to broaden the scope and impact of this pilot program. **The current grant was designed to address two essential questions: 1) how effective is an injured athlete support program in improving psychosocial functioning and adaptive coping skills and 2) are student-athlete needs being met with this service?** Findings from this research have the potential to improve the well being of student athletes at Stanford University as well as at other NCAA-affiliated institutions.

### **Literature review:**

There is increasing evidence that athletes require increased support following injury and that this burden of care often falls on coaches, trainers, and other medical staff (Yang et al., 2010). Anecdotal evidence at Stanford University suggested that there is a need for additional support services for injured athletes, as evidenced by early-stage Facebook groups (for student-based support) and direct requests from athletes to medical and training staff.

There is a range of psychological responses to injury among athletes. A recent study of rehabilitated athletes found that anxiety about re-injury and return to previous level of performance, feelings of isolation, lack of an athlete identity, and perceived inadequate social support were common (Podlog et al., 2011). A survey of sports medicine physicians reports that fears about re-injury and lack of patience with recovery/rehabilitation were the most frequently reported psychological concerns (Mann et al., 2007). The psychological impact of injury among of competitive athletes may be greater than for recreational athletes, with one study finding higher levels of mood disturbance in competitive (compared to recreational) athletes at two weeks and two months post-injury (Morrey et al., 1999).

Individuals who strongly identify with the athlete role are at increased risk for adjustment difficulties following sports injuries (Manual et al., 2002) or medical retirement from sport (Webb et al., 1998). The presence of high levels of athletic identity after injury has been associated with depressive symptoms -- even after accounting for injury severity -- while higher levels of social support were associated with lower depressive symptoms (Manual et al., 2002). Perceived social support has been associated better psychological outcomes (e.g., well-being, stress) and increased rehabilitation behaviors following injury in multiple studies (Lu & Hsu et al., 2013; Mitchell et al., 2013; Clement & Shannon, 2011).

Psychological factors also play a key role in return-to-sport outcomes. Good psychological functioning in athletes is associated with appropriate utilization of, and benefit from, physical rehabilitation (Lampton et al., 1993; Levy et al., 2008). Return-to-sport concerns are also associated with higher levels of negative affect and self-esteem levels following injury (Podlog et al., 2010). Those facing retirement following injury present with a range of psychological responses, including changes in mood, insomnia, weight/eating patterns, motivation, and relationships with others (Stankovich et al., 2001).

Research suggests that empirically-based psychological interventions can be effective when utilized with athletes. In one study, written emotional disclosure was found to increase personal understanding of an injury and attenuate athletes' grief-related responses (Mankad & Gordon, 2010). A cognitive behavioral intervention designed to impact postsurgical recovery among injured athletes found that participants in the treatment group demonstrated significantly less postsurgical pain and anxiety during rehabilitation and required fewer days to return to play compared to athletes provided a control treatment (Ross & Berger, 1996). Additionally, in a double-blind cognitive behavioral stress management intervention (CBSM), athletes randomly assigned to the CBSM group experienced significant reductions in the number of illness and injury days compared to athletes in the control group (Perna et al., 2003).

Together, this literature demonstrates that injured athletes are in need of additional resources to improve their psychosocial functioning and to facilitate their recovery. Data also suggests that psychological interventions may help improve a range of outcomes following injury. This grant funded research was designed to assess the effects of an injured athlete support group on psychosocial functioning and adaptive coping skills among student-athletes at Stanford University.

### **Conceptual Framework:**

This proposed research dovetailed with the one-year pilot program for clinical services that was funded by the Department of Athletics at Stanford University. Injured athletes were identified for potential enrollment in the group by a range of methods: self-identification, through psycho-educational materials provided to athletes, or referral by coaches or training staff. Interested injured student-athletes were assessed by Dr. Lisa Post in an initial meeting before joining the group. Participation in the group was not limited to those who chose to enroll in the research study; student-athletes were made aware that participation in the research study was entirely voluntary. Athletes who enrolled in the study completed a packet of research measures before and after the 8-week group. Program data were analyzed using quantitative and qualitative methods to assess: 1) the efficacy of the program (on psychosocial functioning and adaptive coping) and 2) how well student-athlete needs were met.

### **Data and Methodology:**

#### **Intervention Format**

The injured athlete support group met weekly for 8 weeks. New injured athletes could enroll in the group at the beginning of an 8-week session, or at week 4 (and subsequently continuing for the first four weeks of the next group session). Dr. Lisa Post conducted all of the group meetings, assisted by a psychology graduate student. Each group meeting was designed to be 90 minutes, including 30 minutes of psycho-education followed by a check in by group members (15 minutes) and a peer-centered discussion (45 minutes). However, based on feedback from group participants, the length of each meeting was shortened to 60 minutes. The group was conducted in the Sports Medicine Center on campus. Psychoeducation topics were: 1) the "athlete identity", 2) introduction to cognitive behavioral therapy, 3) effective communication skills, 4) building resilience, 5) sadness/shame, 6) anxiety/fear, 7) social support, 8) goal setting. Based on difficulty recruiting over the summer, and the Stanford quarter system, only one of the anticipated four series of groups were conducted over the funding period; an no-cost extension allowed for the completion of one additional group (see recruitment section below). Participants in the last group requested and received a less structured format; more information about these changes can be found in the "Qualitative Feedback from Group Leader" section below.

### Recruitment:

There are approximately 800 student-athletes at Stanford University. Currently, approximately 10 athletes per month self-refer or are referred by medical or training staff for individual treatment in the Sports Psychology Clinic. The number of athletes who are injured at any one time is significantly higher. We anticipated that with appropriate education about this resource for injured-athletes, we would draw a significantly larger pool of students interested in the group (compared to those who are motivated to seek individual psychotherapy). Our estimates for higher levels of interest in group services were in part based on interest from the Cardinal Counsel, a student-led organization of Stanford athletes, which in 2013 voted to provide financial support to pilot an injured athlete support group.

When injured athletes expressed interest in the injured athlete support group, Dr. Post conducted a brief interview to determine psychiatric diagnoses (if any) and appropriateness for the group. Athletes with any physical injury were eligible for participation; the only exclusion criterion for participation was the presence of a psychiatric disorder requiring more intensive (e.g., inpatient) treatment, such as a significant eating or substance use disorder. We did not recruit any participants who were ineligible to participate due to this enrollment criterion.

As described above, we were able to conduct only one group (compared to the four anticipated) over the duration of the funding period, and one small additional group during the no cost extension. There were two major barriers to us meeting our enrollment goals:

*Barrier 1. Timing/Difficulty running groups over academic breaks.* The start of our funding period began at the end of spring quarter. As many student athletes are off campus over the summer, it was not possible to complete an 8 week group without losing the majority of participants (leaving for break). Over the summer, the volume of student athletes is significantly lower and, as we found, many injured athletes in particular are off campus. This prevented us from initiating our first group until the beginning of the fall quarter, which at Stanford occurs at the end of September. We were able to run one full group during this period, but could not start a second group session due to overlap with the winter break. We found that during the no-cost extension, the fact that the group was set to overlap the approach to finals period at the end of the year was also a significant barrier to enrollment.

*Barrier 2. Scheduling/Logistics.* Despite scheduling the group to meet at a time that many student athletes are free (as observed through scheduling of individual therapy appointments), we found that academic and practice conflicts were a major barrier for enrollment for a large number of injured athletes. As our low enrollment became apparent, we increased our recruitment efforts to include attendance/personal recruitment at annual team medical screening, peer-to-peer recruiting, and increased psychoeducation to trainers and other referring medical staff. While these efforts generated an increase in the number of *interested* injured athletes, this did not translate into a higher number of students who were able to attend the group meeting time.

Our recruitment challenges were the major limitation of our study, and we are currently evaluating whether creating a mandatory, rolling-admission group that is held during practice times (rather than needing to be scheduled around it) is feasible. However, this challenge specifically related to enrollment in the injured-athlete support group, not participation in the research project itself. One hundred percent of athletes enrolling in the group participated in our research study during the funding period. During the no-cost extension, two out of three student athletes consented to participate and one completed all study measures; as described above, the overlap of the group with the approach of final exams was identified as a barrier to completion of study measures and participation. Outside of these scheduling conflicts,

however, the athletes expressed a high level of commitment to participating in research with a goal of increasing care and support for their peers.

#### Data Collection:

Based on availability of the student athlete, either Dr. Simpson or a graduate student obtained informed consent. Dr. Simpson supervised the online completion of the pre- and post- group assessment packets (see below for measures) and organized the collected data into an SPSS file for data analyses.

#### Domains of Interest/Measures

1. Athletic Identity  
*Athletic Identity Measurement Scale (AIMS: Brewer & Cornelius 2001)*
2. Rehabilitation progress  
Assessed with a single item on which participants rate their percent rehabilitated (from 0-100%; McDonald & Hardy)
3. Depression  
*The Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001)*
4. Anxiety  
*Generalized Anxiety Disorder-7 (GAD-7; Spitzer et al., 2006)*
5. Sleep Quality/Disturbances  
*Pittsburgh Sleep Quality Index (PSQI; Buysse et al., 1989)*
6. Coping Style  
*The Brief COPE (Carver, 1997)*
7. Perceived Stress  
*The Perceived Stress Scale (PSS; Cohen et al., 1983)*
8. Perceived Support (in Sport)  
*The Perceived Available Support in Sport Questionnaire (PASS-Q; Freeman et al., 2011).*

We also developed two questionnaires to collect additional qualitative data. The first questionnaire assessed demographics, baseline injury status, and goals for their physical rehabilitation and group participation. The second questionnaire collected information about changes in recovery/medical status, satisfaction with individual components of the support program, as well solicited open feedback about the group.

#### Study Payment:

Students who enrolled in the group and participated in our research study received \$40 dollars for completion of pre- and post-group measures. Partial payments were provided for participants completing only the pre-group assessment. Participants who completed all measures were eligible for a raffle for the iPad drawings that were conducted at the end of each group.

#### Data Analysis & Dissemination:

The research measures completed before and after treatment allowed us to better quantify the impact of this intervention on student athletes and to generate information that will allow us to maximize program effectiveness.

### **Findings**

Demographics: Seven participants enrolled in the research study during the initial funding period. Five of these participants completed both pre and post measures; one participant was unable to complete the questionnaires prior to the start of the group and another chose not to

complete the post-group assessment. One of the six athletes completing the post- group feedback began the group at week four; her data is included in the following analyses due to the sample size and the pertinence of her qualitative feedback.

Participants had a mean age of 18.7±0.82 years (4 women, 3 men) and were currently in their freshman through junior years (modal participant was a sophomore). Participants were all from team sports, and identified a range of injuries: soft tissue, fractures, and concussion. The most common referral source was athletic trainers, with the next most common being medical staff.

**Baseline Qualitative Measures:** Participants identified a range of responses to the question “What is the most difficult part of the recovery process?” The majority of these responses focused on the inability to engage fully with the team (e.g., “Not being able to play or contribute to the team.” When participants were asked about their top priority for participating in the group, the most common responses included finding a sense of community and improving coping skills.

**Pre/Post Quantitative Measures:** In part due to the small sample size (n=5 with pre/post measures), we did not observe any significant differences resulting from our intervention outside of one measure subscale. Due to the multiple comparisons and the small data set, it is most likely that this is a spurious significant association. The table below summarizes the domains assessed, including the range of potential responses and statistical comparisons.

Table 1. Pre and post group measures, including average values and pre-post comparisons

Domain/Scale	Range	Mean (SD) PRE	Mean (SD) POST	Between-group difference
<b>Athletic Identity</b> ( <i>Athletic Identity Measurement Scale: Brewer &amp; Cornelius 2001</i> )	7-49	33.50 (9.93)	30.17 (8.01)	t=0.40, p=.71
<b>Depression</b> ( <i>The Patient Health Questionnaire-9; Kroenke et al., 2001</i> )	0-27	13.83 (3.83)	12.17 (2.04)	t=1.05, p=.35
<b>Anxiety</b> ( <i>The Patient Health Questionnaire-9; Kroenke et al., 2001</i> )	0-21	13.00 (6.42)	12.00 (4.30)	t=1.53, p=.20
<b>Perceived Support in Sport</b> ( <i>The Perceived Available Support in Sport Questionnaire; Freeman et al., 2011</i> ) – subscales below:				
Emotional support	0-4	3.30 (0.49)	3.50 (0.47)	t=-1.20, p=.30
Esteem support	0-4	3.00 (0.65)	3.42 (0.46)	t=-2.50, p=.07
Informational support	0-4	3.00 (0.62)	2.92 (0.65)	t=-0.54, p=.62
Tangible support	0-4	2.33 (0.92)	2.58 (0.79)	t=-.63, p=.56
<b>Optimism</b> ( <i>Life Orientation Test - Revised; Scheier et al., 1994</i> )	0-24	17.3 (2.07)	18.2 (3.11)	t=-1.33, p=.28
<b>Coping Styles</b> ( <i>Brief COPE; Carver et al., 1997</i> ) - subscales listed below:				
Self distraction	1-8	5.17 (1.94)	6.33 (1.37)	t=-1.58, p=.19
Active coping	1-8	6.67 (1.21)	6.67 (1.21)	t=-1.00, p=.37
Denial	1-8	5.00 (1.41)	5.00 (1.55)	t=-0.30, p=.78
Substance use	1-8	2.17 (0.41)	2.00 (0.00)	t=1.00, p=.37

Use of emotional support	1-8	6.17 (0.98)	6.83 (1.33)	t=-1.09, p=.34
Use of instrumental support	1-8	6.67 (0.82)	6.50 (1.38)	t=0.00, p=1.00
Behavioral disengage	1-8	2.50 (1.22)	2.33 (0.52)	t=0.59, p=.59
Venting	1-8	3.67 (0.82)	4.33 (1.37)	t=-1.09, p=.34
Positive reframing	1-8	6.33 (1.51)	6.83 (1.17)	t=-1.58, p=.19
Planning	1-8	6.00 (0.89)	6.67 (1.63)	t=-6.00, p=.004
Humor	1-8	4.5 (2.17)	4.33 (0.82)	t=0.93, p=.41
Acceptance	1-8	6.5 (1.05)	7.33 (0.82)	t=-1.14, p=.23
Religion	1-8	4.50 (2.34)	5.33 (1.63)	t=-0.41, p=.70

Incomplete/inappropriate response to questionnaires and the small sample size precluded analyses of the data from the PSQI (sleep measure), PSS (Perceived support scale), ASRQ (Athletes Support Received Questionnaire), and the single item comparison scale of rehabilitation progress.

Post-group Qualitative Measures: The majority of participants identified that they were completely or very satisfied (66%) with their experience in the group. The remaining participants rated that they were ‘fairly well satisfied’ with the group (33%). When asked what percent of their original goals for participation in the program were accomplished, the mean response was 89%.

Participants were asked how much the group helped them with the psychosocial domains specifically targeted by the group. Responses are described in Table 2 with modal responses highlighted in **bold/red**.

Table 2. Evaluation of impact of group on psychosocial functioning.\*

	Made things a lot better	Made things somewhat better	Made no difference	Made things somewhat worse	Made things a lot worse	(Not sure)
Coping with my injury	33%	<b>67%</b>	0%	0%	0%	0%
Increasing social support	<b>67%</b>		33%	0%	0%	0%
Helping with effective communication	33%	<b>67%</b>	0%	0%	0%	0%
Alleviating low mood	33%	<b>50%</b>	17%	0%	0%	0%
Managing anxiety	<b>67%</b>	33%	0%	0%	0%	0%
Goal setting	<b>50%</b>	17%	33%	0%	0%	0%
Preparing for recovery	33%	<b>50%</b>	17%	0%	0%	0%

Data indicates the percent of participants endorsing a specific response.

Additionally, participants were asked how helpful the various session topics (and associated applied skill sets) were to them. These responses are described in Table 3 (see next page). We also assessed the impact of non-specific group factors, as presented in Table 4 (see next page). For both tables, with modal responses are highlighted in **bold/red**.

Table 3. Assessment of how helpful each session topic was for participants, with respect to psychoeducation and skill based components.\*

		Very helpful	Moderately helpful	Slightly helpful	Not at all helpful	Not applicable**
Athlete ID	Education	67%	17%			17%
	Skill set	67%		17%		17%
Cognitive behavioral therapy	Education	33%	33%	17%		17%
	Skill set	33%	33%	33%		
Social support	Education	67%	17%	17%		
	Skill set	67%	17%	17%		
Effective Communication	Education	67%	17%			17%
	Skill set	50%	17%	33%		
Depression/ loss	Education	33%	50%	17%		
	Skill set	50%	17%	33%		
Anxiety/fear	Education	50%	50%			
	Skill set	67%	17%	17%		
Resilience/ Adaptive coping	Education	33%	50%	17%		
	Skill set	17%	50%	33%		
Goal setting	Education	17%	83%			
	Skill set	33%	33%	17%		

\* Data indicates the percent of participants endorsing a specific response.

\*\*indicated when either the athlete missed this group session, or did not recognize this as a topic/skill set.

Table 4. Evaluation of the impact of non-specific group factors. Data indicates the percent of participants endorsing a specific response.\*

	Very helpful	Moderately helpful	Slightly helpful	Not at all helpful	Not applicable*
Receiving in put from, or feeling supported by, other group members	83%		17%		
Receiving referrals for other psychiatric or support services	17%		17%	17%	50%
Feeling that my injury/recovery is being taken seriously and that it is understood.	67%	17%	17%		
Feeling hopeful that I will continue to improve in my recovery	67%	17%	17%		

Data indicates the percent of participants endorsing a specific response.

Athletes were also asked about what they found to be the most and least valuable aspects of the group. While a range of responses was provided for the most valuable aspect, there were shared elements focused on social support, anxiety reduction, and psychoeducation about

recovery from injury. As put by one participant: "This is the first place on campus where I have felt that people understand my injury and how much my life has been impacted by the injury." As stated by another: "It was so so helpful, every other injured athlete I have come across, I have recommended the group...hopefully they followed through."

Regarding the least valuable aspects, a few participants did not find the discussion about athlete identify helpful, although more wished there was more focus on this component. Another pointed out that it was sometimes difficult to have a range of recovery progressions in the group together. The majority of factors identified as things that participants would change were logistical, including changing the meeting time, shortening the meeting, reducing the didactic content, and considering a drop in-group. Interestingly, feedback to shorten and have less structured didactic content was incorporated into the group that was conducted during the no-cost extension. Feedback from one participant in this group was that they would have like to "speak more about other things that can come along with anxiety, like eating disorders, depression, etc," suggesting that some athletes may benefit from a continued emphasis on psychoeducation.

### **Qualitative Feedback from Group Leader**

In addition to qualitative data collected from injured athletes as a formal part of the research study, we also would like to present some additional informal data that was collected/observed by Dr. Post, the group leader. These data include her professional assessment and judgments over the duration of the group, as well as more immediate feedback from participating athletes. **Perhaps most importantly, and less captured by study data, was the fact that group was highly valued by these injured athletes in part because it was a reflection that the school and administration were investing in them and their recovery.**

Dr. Post observed that participation in the group also was helpful in normalizing the athletes' range of emotional responses to injury. She describes that they learned that they were not alone in having strong negative emotions or experiencing stress following injury. This was particularly important given that many athletes had received opposing messages from trainers and coaching staff to "just stay positive" or to "look on the bright side." Social support in this context was also very helpful. The athletes supported each other; Dr. Post observed that some of the best group meetings took place when the students "took over" and shared and gave their own experiences and advice to each other. In this context, feeling nurtured seemed to be an important aspect of the group and encouraged higher levels of student attendance, warmth and participation. Increasing a sense of being nurtured was facilitated both by the content of the group as well as the structure (e.g., with healthy food or snacks available).

Overall, Dr. Post found that the students were relatively savvy and able to reflect on their experiences, but a clear area of deficit was in the area of emotional intelligence. This was particularly true in the sense of being able to label the emotions they are experiencing; most athletes were initially unable to name or describe their emotional experiences. Additionally, many athletes presented to group with a 'poker face' (masked facial emotion) that made it difficult to assess group dynamics and the impact of topics presented. While having some skill in not displaying facial emotions may be adaptive in athletics, it can be more challenging for the group leader who is managing the group process and also for building the much-valued social support aspect of the program.

These observations about weaker development in areas of emotional intelligence are the main reasons why we have decided to maintain at least a minimum core element of psychoeducation/skills content in each group. In addition to developing a greater understanding

of emotions, another topic that was particularly engaging for the group was the concept of the Athlete Identity, which also proved to be a very framework to anchor the rest of the didactic content. Psycheducation on communication skills, particularly with coaches and family, and anxiety management (particularly regarding re-entry to sport) was also helpful. Finally, in addition to providing needed skills, the interactive component of this process created some ice-breaking elements that facilitated social interaction between members. Many of these athletes did not know each other and it is hard to initiate a social support system without a basic relationship.

As described above, the main observed barrier to participation in the injured athlete support group was logistical factors. Dr. Post observed that athletes appeared to benefit most from entering the group early in their injury cycle. She notes that while student athletes can initially struggle with high levels of emotional distress, for the most part they are resilient; when they get the necessary support to navigate this initial period, most seem to improve quickly. This observation emphasizes the need to increase access to these services in order to aid a larger number of athletes quickly, as well as to minimize the potential for higher risk situations, e.g., through identification of athletes who may need more support or intensive intervention such as individual therapy associated with ongoing injury-related distress.

### **Campus-level Programming Implications**

There are several major campus-level programming implications that can be drawn from this research. The first is that, despite logistical barriers to entry, an injured-athlete support group remains a highly desired resource by both student-athletes and athletic staff. Athletes who participated in the group expressed that they met the vast majority of their goals for participation, were very satisfied with the group, and would recommend it to a friend.

Secondly, the need for this group (or other forms of psychological support for athletes) was emphasized by the fact that the average depression and anxiety scores for participants were in the moderate range at baseline. While these scores did not change significantly following group participation, they do indicate that this population is experiencing high levels of distress, and (based on qualitative data) participants felt that they benefitted from the increased level of support provided by the group. Along these lines, the normalization of negative emotional responses to injury was also valuable to athletes, given the occasionally relentless positive reframing of their experiences by other members of the athletic staff.

Third, the social support aspect of the group and feeling like their injuries were being taken seriously, were highly valued aspects of the program. This suggests that future groups should emphasize the sense of community and support in this population of student athletes who are often temporally isolated from their team/teammates. An additional highly valued aspect was the brief meditation exercise that was introduced in the anxiety module and was requested to be implemented at the beginning of all of the remaining groups. This again emphasizes the importance of stress reduction and social support, in addition to psychoeducational/skills based content.

Finally, although interest in this service by both athletes and athletic staff remains high, logistical barriers prevented many interested athletes from accessing this service. This is particularly true given the formal group sessions (i.e., no rolling admission or drop in access) and the fact that this service was only offered at one date/time per week. Additionally, the length of the group (8 sessions) added an additional layer of scheduling challenges, particularly with the short quarter system currently in place at Stanford. During the no-cost extension of the grant, we completed one additional group that was designed to improve accessibility and content based on initial

feedback. These groups met for a one-hour period and had less emphasis on structured didactic content. These changes were received positively but were not sufficient to result in much higher numbers of athletes being able to participate. The logistical factors described above (athlete availability, ability to commit to an 8-week group, the academic quarter schedule) still remained significant barriers to enrollment.

As a direct result of these study findings, we have proposed making the group, or some version of it, a mandatory part of rehabilitation following injury. For example, every athlete with a significant injury could be required to attend at least two group sessions, with a rolling admission group held during regularly scheduled practice time. We believe that it will be important to emphasize that the psychological aspects of injury rehabilitation are as important as the actual physical recovery.

We are also considering creating an online resource where injured athletes can access structured content, as well as handouts and specific tools to help with individual needs (e.g., increasing effective interpersonal communication). Use of this online resource to connect athletes with a goal of social support is another possibility. It is our goal to continue to improve our ability to help student athletes cope with injury and to engage in a more comprehensive whole-body rehabilitation.

We view our work to date part of a process of successive approximation, in which data collected from group members can help progressively improve the services we can provide to this vulnerable population. When we have improved the program to the point that we are confident that we are providing effective support to our injured athletes, we will formalize our program and make it available to other collegiate institutions.

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