The Optimum Performance Programme in Sports: A Case of Bulimia Nervosa in a Lean Sport Athlete

Marina Galante, Brad Donohue, Yulia Gavrilova

Correspondence concerning the chapter should be addressed to Brad Donohue, Ph.D., University of Nevada, Las Vegas, 4505 S. Maryland Parkway MS 5030, Las Vegas, NV 89154. Email: bradley.donohue@unlv.edu

About the Contributors

Marina Galante, M.S. Clinical psychology doctoral candidate at University of Nevada, Las Vegas.

Bradley Donohue, **Ph.D.** Licensed psychologist and Full Professor in the Psychology Department at the University of Nevada, Las Vegas.

Yulia Gavrilova, M.A. Clinical psychology doctoral candidate at University of Nevada, Las Vegas.

After reading this chapter you should be able to:

1. Understand how sport culture relates to the development of mental health difficulties, particularly eating disorders, in student-athletes.
2. Learn how to adapt mental health interventions to be sensitive to sport culture and engage athletes in performance programming services.
3. Understand core interventions of The Optimum Performance Programme in Sports (TOPPS) and how these interventions can be utilised to address a range of mental health concerns.
4. Appreciate the process for critically evaluating treatment programmes designed for student-athletes.

Introduction to the Theme

This chapter will describe a controlled implementation of The Optimum Performance Programme in Sports (TOPPS) in a lean sport athlete demonstrating eating disorder pathology who previously rejected a campus-based psychological intervention programme. Of particular interest to the current case is the high prevalence of eating disorders in lean sports. Lean sports are characterised as sports that place high emphasis on appearance, such as figure skating, gymnastics, and long distance running (Reardon & Factor, 2010; Sundgot-Borgen & Torstveit, 2010). In a sample of Australian female elite athletes, Byrne and McLean (2002) determined that 15% of lean athletes evidence either bulimia nervosa or anorexia nervosa, whereas these conditions are estimated to occur in only 2% of non-lean sport athletes and only 1% in non-athletes. More recent research has confirmed that lean sport athletes evidence higher instances of eating disorders than other sport athletes and non-athletes (Kong & Harris, 2015; Sundgot-Borgen & Torstveit, 2004, 2010; Torstveit, Rosenvinge, & Sundgot-Borgen, 2008).

Unfortunately, there are no known standardised and evidence-supported interventions designed to treat eating disorders in athlete populations specifically. This can pose substantial difficulties for athletes seeking treatment to prevent the host of negative consequences often associated with eating disorders, like malnourishment and dehydration, decreased concentration, lowered aerobic capacity, depleted energy, reproductive health difficulties, and even death (Keski-Rahkonen & Mustelin, 2016; O'Brien, Whelan, Sandler, Hall, & Weinberg, 2017; Thompson & Sherman, 2007). Additionally, eating disorders in athletes may be particularly difficult to treat due to the pervasiveness of sport-related pressures to stay thin (Ferrand, Magnan, Rouveix, & Filaire, 2007). Combined with athlete tendencies to avoid treatment (Watson, 2005) and a lack of university sport psychologists employed to concurrently address

mental health and sport performance optimisation (Cannole et al., 2014; Wrisberg, Withycombe, Simpson, Loberg, & Reed, 2012) validation of culturally adapted treatments for athletes who evidence eating disorders is necessary.

The present case example aims to provide an empirically-supported framework for which to successfully address eating disorder pathology in collegiate athletes. Procedures for cultural adaptations, assessments by an independent assessor, and symptom improvements at post- and follow-up assessment points will be indicated. Lastly, recommendations for enhancing college campus-based psychological intervention adapted for athlete populations are discussed in light of the strong results, including methods of enhancing college campus-based psychological intervention to better fit the culture of sport.

The Client

Anna presented to TOPPS as a female, non-married, collegiate athlete in a lean sport at a Division I university who struggled with disordered eating behaviours. Anna belonged to an ethnic minority and was 19 years of age at the time of intervention. Anna self-referred upon learning about the programme through a performance workshop conducted with her team, but was also encouraged by her coach to attend meetings. The workshop was implemented to give awareness of the services offered by TOPPS, and involved several mental skills interventions intended to improve performance on sport-specific activities. After receiving one session at a campus counseling center, Anna sought treatment at TOPPS for binge eating and purging behaviours that interfered with her athletic performance and caused significant distress. Anna was not receiving any additional services at the time. Upon intake at TOPPS, Anna reported dissatisfaction with her previous treatment provider not only because sport-related concerns were not integrated into treatment, but she also reported feeling as if the providers did not understand

how her concerns were tightly integrated with her sport demands. In addition to eating pathology, Anna conveyed that she was critical of herself and evidenced negative thoughts and fears specific to re-injury; she reported having a "negative attitude" towards her sport participation, poor performance, and was unsure if she desired to continue competing. Anna desired to build a "healthy relationship with food," and improve her self-confidence related to sport and life activities.

Consistent with typical age of onset for eating disorders, Anna's struggle with dieting and compensatory behaviours began at age 15, after a coach commented that she would "never become a good athlete at [her] current weight." Her other teammates also dieted to stay thin, and she modeled their dieting behaviours (e.g., skipping meals, eating low calorie foods). She reported first attempting dieting solely to lose weight for improved sport performance, but this transformed into holding a negative body image. Because she had insufficient caloric intake, she had high levels of hunger and engaged in her first binge episode. This led to automatic, self-critical thoughts, feelings of guilt, and behaviuoral compensation by exercising excessively and eating very little the next day. These compensatory behaviours acted as negative reinforcers that minimised the anxiety associated with the idea of potential weight gain. Further, Anna also began to associate positive feelings with binge eating, like feeling hunger satisfaction (positive reinforcement). The behaviour originally developed as a method to improve sport performance, but through operant conditioning, shifted as a coping mechanism for feelings of anxiety and guilt.

Anna also reported experimenting with alcohol and drugs at 18 years of age, occasionally using marijuana and alcohol to "have fun" with friends. Although she reported that she does not enjoy the taste of alcohol, alcohol use had positive effects in social situations (positive

reinforcement) and also reduced negative effects of anxiety (negative reinforcement). Nevertheless, she reported using substances sparingly due to a family history of substance abuse. Because she recognised negative consequences associated with alcohol use, she reported using strategies such as volunteering to act as designated driver to deter alcohol use.

The first time Anna had unprotected sex was when she was 17 years of age. She reported not "thinking it through" and that she was "insecure" and "submissive" to her partner. Throughout high school and college, Anna occasionally engaged in sexual activities without condoms. This behaviour was influenced in several ways, including (a) inconvenience of getting condoms during sexual activities (antecedent condition), (b) restriction of sensation due to condom use (antecedent condition), and (c) Anna's lack of assertiveness in requesting her partners to wear condoms (antecedent condition associated with deficit in positive assertion). Anna received positive attention from her partners when she engaged in unprotected sex (positive reinforcement), which led her to continue unsafe sexual practices. When she presented to TOPPS, she was not in a monogamous relationship and was unconcerned about contracting an STI.

Anna had struggled with disordered eating practices for four years before she attended TOPPS. Her motivation to improve her eating behaviours was influenced by a repetitive skeletal injury due to malnourishment. Anna desired to prevent future injuries through proper nutrition; she reported a recognition that she did not need to have a certain body type to be an exceptional athlete, which improved her help-seeking behaviours and motivation to attend meetings at TOPPS.

Initial Needs Assessment

Baseline, 5- and 9-Months Post-Baseline

Upon self-referral to the programme, Anna was scheduled for a 2-hour baseline assessment within one week of informed consent. A trained assessor administered a comprehensive battery of psychometrically validated assessment measures 9 days prior to intervention to establish a baseline. Anna completed the same battery of standardised tests at the completion of formal intervention (5-months post-baseline) to determine immediate treatment effects, and 9-months post-baseline to assess treatment durability.

Measures included (a) a structured demographics interview to assess age, gender, ethnicity, sport, referral source, employment status, marital status, and income; (b) the Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders* (SCID-IV; 4th ed., text rev; *DSM-IV-TR;* American Psychiatric Association [APA], 2000) to determine the presence or absence of *DSM-IV-TR* psychological disorders; (c) the Timeline Followback (TLFB) to obtain information regarding number of days of binge drinking, number of alcoholic drinks consumed, number of legal citations, drug use, and instances of unprotected sex (Sobell, Sobell, Klajner, Pavan, & Basian, 1986); (d) the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) to assess mood symptoms across the past two weeks; (e) Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1994) to measure how much psychiatric symptoms distressed an individual over the past week (items rated on a scale from 0 = *Not At All* to 4 = *Extremely*); (f) Sport Interference Checklist (SIC; Donohue, Silver, Dickens, Covassin, & Lancer, 2007) to evaluate the extent to which various factors interfere with sport performance in training, competition, and life outside of sport (items rated on a scale from 1 = *Never* to 7 = *Always*); (g) Student Athlete Relationship Instrument (SARI; Donohue, Miller, Crammer, Cross, & Covassin, 2007) to assess problems in relationship with teammates, family, coaches, and peers (items rated on a scale from 1 = *Strongly Disagree* to 7 = *Strongly Agree*); (h) and the Consumer Satisfaction

Questionnaire (CSQ-8; Larsen, Attkisson, Hargreaves, & Nguyen, 1979) to measure satisfaction with services received during the course of intervention (items rated on a 4-point scale). All measures have been psychometrically validated and deemed reliable and valid (Beck et al., 1996; Donohue et al., 2004; Donohue, Hill, Azrin, Cross, & Strada, 2007; Donohue, Miller et al., 2007; Donohue, Silver et al., 2007; Horowitz, Rosenberg, Baer, Ureño, & Villaseñor, 1988; Kelly et al., 2007). Likewise, various versions of the SCID are often considered the "gold standard" in diagnostic assessment (Drill, Nakash, DeFife, & Westen, 2015).

Baseline Assessment Results

Anna's pre-intervention results on the SCID-IV indicated that she met full DSM-IV-TR criteria for Bulimia Nervosa. In the past 120 days as indicated on the TLFB, Anna reported 1 day of alcohol binge drinking, 4 drinks (approximately 1 drink per month), and 3 days of unprotected sex (1 day per month). She reported no days of drug use.

Table 1 displays Anna's responses to the SIC, SARI, SCL-90-R, and BDI-II measures at baseline assessment. Anna's self-reported SIC scores indicated that she experienced Dysfunctional Thoughts and Stress and Injury Concerns that interfered with her performance in training, competition, and life outside of sports. Anna's scores were elevated on a number of mental health symptoms as indicated on the SCL-90-R, including recurrent unpleasant thoughts, overeating, difficulty making decisions, and awakening in the early morning (listed in order of highest to lowest elevation). SARI subscale scores for Family, Coaches, and Peers conveyed a lack of problems in these areas of relationships, suggesting these relationship domains were functioning sufficiently in regards to her sport. BDI-II scores indicated a lack of endorsement of depressive symptoms.

Framework and Intervention for delivery

The authors utilised the optimisation approach, built on the tenets of cognitive-behavioural therapy, in which thoughts, behaviours, and feelings are conceptualised to reciprocally influence one another and sport performance; individuals receiving services work towards optimum mental and behavioural health through cognitive and behavioural skill acquisition (Gavrilova & Donohue, in press). An important strength of the optimisation approach to wellness is the goal to improve cognitive and behavioural skills beyond the absence of pathology; an athlete seeking optimisation is not required to demonstrate dysfunction to receive services (see Gavrilova, Donohue, & Galante, 2017; Gavrilova & Donohue, in press). The goal of performance programming is to facilitate cognitive and behavioural skill development along the optimisation continuum from non-optimal to optimal. The optimisation approach is supported with the incorporation of significant others (e.g., coaches, teammates, family members).

The Optimum Performance Programme in Sports (TOPPS; Donohue, Pitts, Gavrilova, Ayarza, & Cintron, 2013; Donohue et al., 2014), developed with support from the National Institutes of Health to concurrently address athletes' mental health and elevate performance on sport-related activities, actively promotes the optimisation model of mental health as evidenced through case trials and randomised controlled trials (Chow et al., 2015; Donohue et al., 2014; Pitts et al., 2015). The developers of TOPPS assert that athletes are more likely to engage into optimisation services that are sport culture-sensitive and not focused exclusively on pathology (Donohue et al., 2013). For example, to reduce stigma associated with mental health services in athletes (Lopez & Levy, 2013), TOPPS professionals, referred to as "performance coaches", use non-stigmatising language, such as "intervention meetings" instead of "treatment sessions," and employ a strength-based approach consistent with optimisation. This is particularly relevant to

the treatment of eating disorders in athletes because stigma-reducing strategies might motivate athletes to receive much needed mental health care.

Performance Programming

Anna's Performance Coach (PC) was a doctoral student with a background in collegiate athletics and comprehensive training in intervention delivery. Anna attended all 16 of her scheduled meetings at TOPPS. Her supportive others (SOs) included both parents, a sibling, and a teammate. Each meeting lasted between 60 and 90 minutes and occurred across a 4.5-month period. Anna's intervention plan was specifically tailored to her intervention goals and baseline assessment. Intervention components were introduced cumulatively and successively; the PC implemented interventions ranked by Anna and her SOs in the order of priority and then reviewed these interventions progressively throughout treatment, but to a lesser extent relative to initial implementation.

Meeting Agendas (Meetings 1-16). Each performance meeting began with a meeting agenda intended to elicit positive expectations for the meeting and introduce planned interventions. The PC briefly described interventions and estimated times for implementation. Anna and her SOs were invited to adjust the intervention plans, including the order and duration of each agenda item, to tailor each meeting to Anna's needs. The PC also elicited positive expectations for the meeting and outlined how Anna and her SOs would contribute to the meeting. Meeting participants chose to maintain the proposed agenda items and implementation in 13 out of 16 meetings. In meetings in which implementation was changed, spontaneous life events made certain interventions more relevant to Anna than others.

Meeting Conclusions (Meetings 1-15). Each performance meeting ended with a structured meeting conclusion. The PC and Anna reviewed upcoming practice assignments for

the next meeting to assure completion and understanding, and incorporated engagement strategies like proactively scheduling the next upcoming meeting, and planning the PC's attendance of practices or competitions, as desired by Anna.

Programme Orientation (Meeting 1). The PC gave an overview of TOPPS with a structured Programme Orientation that allowed Anna to understand the structure and guidelines of the programme, while allowing the PC to assess for motivational factors. For example, Anna was motivated to attend TOPPS to cultivate "healthy" eating habits and enhance performance, and was also encouraged by her coach to attend the programme (Anna subsequently cited her coach as a strong motivator for performance in sport and in life). Additionally, Anna and her PC discussed SO involvement, communication guidelines, and ways in which the PC could be optimally supportive of Anna's goal achievement.

Cultural and Athletic Enlightenment (Meeting 1). Following Programme Orientation, the first meeting also included a Cultural Enlightenment intervention and an Athletic Enlightenment intervention to address Anna's unique ethnic and sport culture. Anna endorsed minority group membership in her ethnic background. Based on the results of the Semi-Structured Interview for Consideration of Ethnic Culture in Therapy Scale (SSIECTS; Donohue et al., 2006), Anna disagreed that her ethnic culture was a big part of her life, but agreed that her ethnic culture was of great importance to her and that there were many things she liked about her ethnic culture. She reported no negative comments or arguments due to her ethnic culture, and she was unsure whether or not she would like a professional to address her ethnic culture if she were to pursue intervention. Alternatively, Anna agreed that her sport culture was a big part of her life, was of great importance to her, and that there were many things she liked about her sport culture. Although others had not said offensive things about her sport culture, she reported

experiencing some arguments/problems with others due to her sport culture. Anna felt it would be very important to consider her sport culture in intervention meetings. Thus, performance programming was tailored to appeal to Anna's unique sport culture.

Dynamic Goals and Rewards (Meetings 2-15). The second intervention meeting involved review of assessment results to determine goal-worthy items and subscales based on elevations. Using the assessment results, the PC and Anna collaboratively developed optimal cognitive and behavioural goals. In addition to the programmatic goals at TOPPS (i.e., regular meeting attendance, SO involvement, completion of practice assignments, avoidance of substance use and gambling, safe sexual practices, and maintenance of optimal relationships with others), Anna's goals focused on reducing stress, employing strategies to reduce binge and purge episodes, restructuring negative thoughts to be neutral and positive, enhancing confidence, and establishing sport-specific strategies to improve performance. For example, to reduce binge and purge episodes, Anna set goals to have more productive thoughts surrounding eating and body image, and to move towards adequate nutrition. These goals included utilising strategies to recognise triggers of binging and manage those triggers to limit and eliminate binge episodes, daily caloric intake of 1600-1900 calories and daily calcium drink (prescribed by consultation with nutritionist), and engaging in appropriately-portioned, regularly scheduled meals throughout the day to reduce hunger and impulsivity to binge. To modify negative thought patterns and increase confidence, additional goals included challenging irrational beliefs (e.g., thought stopping and reframing), becoming more praiseworthy of self (e.g., noting positive aspects of performance), and utilising motivational statements (e.g., "I am prepared"; Miller & Donohue, 2003).

To enhance relationships, the PC and Anna worked to develop assertiveness and communication skills. For example, Anna set a goal to be assertive when telling sexual partners to use a condom. Goals like studying in optimal environments (e.g., library instead of dorm room), and utilising a planner to enhance productivity were applied to cultivate strong academic habits. Sport-specific strategies included relaxation strategies (e.g., diaphragmatic breathing), focus statements (e.g., instructional self-talk like "arms up"), and motivational statements (e.g., I am strong) utilised at optimal times in routines to improve activities specific to sport.

Following goal development, Anna began monitoring her progress and goal achievement on a weekly basis. Anna's SOs provided her with support (at any point during the week) and rewards (contingent on weekly goal accomplishment). For example, for support Anna's SOs passionately encouraged her and offered help in attaining sport-specific goals. Rewards included fun activities with friends (e.g., hiking) and outings with her parents and sister.

Anna continued to monitor her goals in the next 13 meetings. Goal monitoring was an active process engaging both Anna and the PC, in which new goals were occasionally added or existing goals revised to optimise goal accomplishment and improve outcomes. As early as in the third meeting, Anna began to show progress in accomplishing both programmatic and personal goals. For example, Anna was consistently able to avoid alcohol and drug use, and reported improved ability to stop and restructure negative thoughts, and better communication with supportive others. The seventh week of intervention marked only the second time in four years in which Anna was successful in avoiding both bingeing and purging behaviours in a given week. From this week forward, Anna was able to completely avoid purging behaviours throughout intervention, and eliminate bingeing from meetings 11-16 (over 5 weeks). Throughout the programme, Anna maintained high goal achievement (average 90.96% achievement per

meeting), with the highest achievement occurring in meetings 11-15 (average 94.62 % achievement per meeting).

Performance Planning (Meeting 3). In this athlete-driven intervention, Anna and her SOs ranked each intervention in order of importance (1=first priority, 8=last priority). The intervention plan was then tailored by the PC to echo Anna's wishes, reflecting the following order from highest to least priority: Environmental Control, Self-Control, Positive Request, Performance Timeline, Dream Job Development, Job Getting Skills, Financial Management, and Goal Inspiration. The order of implementation was modified slightly in Meeting Agendas based on life events that made certain interventions more relevant than others.

Environmental Control (Meetings 4, 5, and 8). The Environmental Control (EnvCo) intervention involved altering Anna's environment so that more time was spent with goal-compatible cues and less time was spent with goal-incompatible cues. During the initial meeting, the PC explained that certain environmental cues make goal attainment more or less likely to occur. Then, Anna and her PC collaboratively developed a list of cues (i.e., people, places, situations, emotions) that facilitated Anna's goal attainment and a list of cues that inhibited her goal attainment. For example, Anna identified certain teammates who were facilitative of her study goals, while a campus buffet and feeling stressed were identified as cues incompatible with her goals of avoiding binge and purge behaviours. Once these cues were established, Anna and her PC brainstormed strategies to spend more time with cues associated with goal attainment, and to decrease time with cues that were incompatible with goal accomplishment. Anna and the PC monitored these cues in subsequent meetings. With each future implementation of EnvCo, Anna reported improvements in study habits, eating behaviours, and self-confidence.

Self-Control (Meeting 5). Self-Control (SeC) is designed to teach athletes to recognise and manage triggers (e.g., thoughts, images, feelings, and behaviours) that lead to undesired, impulsive behaviours. Anna learned to identify triggers of undesired behaviours through backward chaining. Then, to effectively avoid the undesired impulsive behavior, she utilized strategies like thought stopping, considering the negative consequences for self and others, relaxation strategies (e.g., diaphragmatic breathing), generating alternative solutions, reviewing pros and cons of these solutions, and engaging in imagery for the selected alternative.

Anna chose to practice SeC for management of bingeing and purging behaviours. After a practice trial, Anna and the PC evaluated the completed steps in terms of their correctness (on a 0-100% scale), discussed what was liked about each step and what could be enhanced, and identified the most effective step. Anna then assessed the likelihood of an undesired behaviour prior to using Self-Control and immediately after. Anna reported that solution generation was the most effective step in reducing the impulsive behaviours, and the PC encouraged her to emphasise this step in subsequent trials. Anna completed all of her assigned SeC practice assignments and added generated solutions to her goals worksheet for monitoring. Anna experienced her first binge/purge-free week two meetings following SeC implementation.

Positive Request (Meetings 6 and 7). The Positive Request intervention improves positive communication skills that increase the likelihood of agreement with a request while preventing arguments. A series of nine steps are followed, in which the athlete (1) makes a specific request using “please”; (2) acknowledges how it might be difficult for another person to complete the request (i.e., empathy); (3) mentions expected benefits for both self and (4) the other person; (5) offers to help the person in completing the request and (6) suggests something that can be done in exchange; (7) states appreciation for request completion; (8) provides an

alternative request if the original request cannot be completed; and (9) invites the person to generate their own alternative if the original request cannot be completed.

The initial meeting of Positive Request involved modeling by the PC and role-plays by Anna to assure skill acquisition. Subsequent meetings involved review of in-vivo practice assignments. For example, Anna used Positive Request to ask her teammates to make more positive remarks and avoid making negative remarks in practice to help maintain a positive attitude. Her teammates were eager to accept her request and Anna noted this contributed to a more positive mindset related to sport and relationships.

Reciprocity Awareness (Meetings 5, 7, and 10). The Reciprocity Awareness intervention is designed to enhance relationships by having athletes and their SOs share things they like, admire, respect, or appreciate about one another. Theoretical foundations of this intervention ascertain that individuals who provide reciprocal positive reinforcement are likely to have better relationships. Reciprocity Awareness was implemented each time a new SO attended performance meetings, totaling three times throughout the course of intervention. Reciprocity Awareness includes both in-session positive exchanges and positive exchanges assigned for practice outside of TOPPS. Anna reported that Reciprocity Awareness elicited positive changes in her personal relationships, specifically with her mother, father, and sister.

Performance Timeline (Meeting 7). The Performance Timeline is designed to enhance factors that contribute to optimum performance in sport and life situations. Each performance event is viewed on a time continuum, where performance is influenced at key time points: days, minutes, and seconds before the event, the event itself, and seconds, minutes, and days after the event. Anna was asked to choose a performance situation (e.g., competition) and the time point she viewed as most vital for her optimal performance. Anna identified “days before” as the most

important time point, so the PC and Anna brainstormed how to optimise a number of factors (nutrition, thoughts, motivation) to enhance performance within that time point. For example, Anna used diaphragmatic breathing to reduce her stress and motivational thoughts, such as "I am prepared" and "I work hard." These strategies can be viewed as sport-specific routines for optimal performance that can be generalised to a number of performance situations in sport or life (e.g., competition, training, academic exams or presentations, job interviews, etc.).

Dream Job Development (Meeting 14). The Dream Job Development (DJDev) intervention is designed to prepare athletes for their dream career. The PC and Anna discussed important aspects of the most desirable career (e.g., financial situation, benefits, travel) and generated important educational prerequisites, qualifications, and people (including SOs) who could assist in achieving the dream job. Certain steps of DJDev (such as finding an internship opportunity) were added to Anna's goal worksheet. Anna was successful in securing a summer position in the field of her dream career, making steps towards achieving her long-term goals.

Financial Management (Meeting 15). Financial Management (FinM) represents an ideal intervention for helping athletes learn to increase income and decrease expenses. Anna and her PC identified monthly expenses within different domains (e.g., school, living, sport-related) and monthly income from various sources. The PC calculated the difference between income and expenses; although Anna was in a financial surplus, she and her PC discussed ways to decrease expenses and increase income to optimise her financial situation. The proposed solutions offered a projected $400 in extra income and $200 in savings and gains. Anna and her PC then worked collaboratively to execute these money-saving and income-generating strategies.

Goal Inspiration (Meeting 12). Goal Inspiration is adapted from Consequence Review, an evidence-based intervention used to review the negative consequences of substance use and

other undesired behaviours to deter participants from engaging in detrimental behaviours. Consistent with the TOPPS model, this intervention has been modified to focus on the positive consequences of achieving specific goals. Anna chose a goal-worthy area in which she desired increased motivation (i.e., adhering to her prescribed nutrition and calcium plan). Anna and her PC collaboratively brainstormed immediate and delayed positive consequences that would arise from these regular eating habits, utilising a consequence tree format. This strategy was implemented to increase Anna's motivation to abstain from binge and purge episodes, while adhering to her physician- and nutritionist-prescribed guidelines.

Last Meeting Intervention Generalisation (Meeting 16). Last Meeting Generalisation was implemented and included: (1) reviewing overall progress in optimising performance in relationships, factors specific to performance, mental health, avoidance of substance use, and prevention of STIs and risk factors for HIV; (2) establishing ways Anna can maintain goal progress after TOPPS; (3) PC providing descriptive praise for effort and strategies utilised and brainstormed, and (4) exchanging was loved, admired, respected, or appreciated about all persons involved in Anna's optimisation process, including the PC. Anna conveyed that her participation in TOPPS "changed [her] life," particularly for providing skills to overcome future adversities. This ends performance programming on a positive note, while incorporating relapse prevention and utilisation of TOPPS strategies in the future.

Managed Care. As a college-athlete, Anna had access to numerous services and resources. Anna was not receiving any additional psychological services prior to or during the TOPPS programme. She did seek consultation with a team physician during the course of intervention, who provided recommendations to Anna about safe exercise levels. Anna and her PC briefly consulted (~30 minutes) with a nutritionist to ensure that Anna was meeting adequate

nutritional guidelines for her energy expenditure. Anna and the PC then worked to adhere to these guidelines and to manage safety and health of Anna throughout her recovery.

Intervention Integrity

Several strategies were employed to ensure intervention integrity. Intervention was implemented consistent with the existing FBT treatment manual (i.e., Donohue & Allen, 2011), including the use of structured agendas and standardised protocol checklists to guide intervention and measure protocol adherence; random review of session audio-recordings to measure inter-rater reliability; documentation of techniques employed during sessions, the athlete's level of participation, and progress toward goal achievement, using standardised progress notes; and consumer satisfaction. The PC implementing TOPPS received ongoing clinical supervision by a licensed psychologist, including review of audio-recordings and corrective feedback.

Protocol Adherence. To measure intervention integrity in this study, first, the performance coach implementing TOPPS interventions calculated the adherence to standardised protocols. The overall protocol adherence over the course of 16 sessions was 88% (SD = 13%, range = 57-100%). Second, an independent rater reviewed 10% of randomly selected session audio recordings to determine the performance coach's adherence to intervention protocols. Lastly, inter-rater agreement between the performance coach and the independent rater was calculated and showed an average reliability of 86.4% (SD = 20%, range = 42-100%). The interventions in this study were implemented with high reliability (see guidelines from Bellg et al., 2004).

Consumer Satisfaction and Engagement Ratings. Consumer satisfaction was measured by Athlete's Helpfulness Ratings on a scale 1 through 7 (1 = *Extremely Unhelpful*; 7 = *Extremely Helpful*) and indicated that, on average, interventions were "*Extremely Helpful*". Following

completion of TOPPS, Anna reported high satisfaction with the intervention, as indicated by the CSQ-8. Additionally, the PC rated Anna's Level of Engagement in each intervention component (based on attendance/promptness, participation, conduct, and home assignment completion), using a 0-100% scale (0% = *Not At All Optimal*; 100% = *Completely Optimal*). On average, Anna's level of engagement was rated at 99.75%.

5-Month Post-Baseline Assessment Results

A post-intervention assessment was administered by the same assessor 6 days following Anna's completion of TOPPS. The SCID-IV re-assessment indicated that Anna met criteria for Bulimia Nervosa in Full Remission. Post-intervention assessment results for the SIC, SARI, SCL90-R, and BDI are presented in Table 1. Anna substantially reduced her scores on the SIC Dysfunctional Thoughts and Stress and Academic Problems subscales (greater than 40% improvements) in both training and competition domains. She additionally endorsed notable improvements on Lack of Motivation in training and showed a moderate reduction on Injury Concerns in both training and competition. The SARI results generally remained non-problematic, indicating optimal maintenance of relationships with teammates, family members, coaches, and peers. On the SCL90-R, notable improvements occurred in the Obsessive-Compulsive subscale, likely indicative of Anna's reduction in weight concerns. Interpersonal Sensitivity, Depression, Anxiety, Phobic Anxiety, Paranoid Ideation, Psychoticism, and the Global Severity Index scores remained within 1-2 standard deviations below the mean. Although in the average range, Somatization scores increased by one standard deviation, likely due to behavioural monitoring during the intervention. The BDI total score was reduced from 9 to 3. The TLFB results indicate that, although there was little change in alcohol use and unprotected sex, Anna did not engage in binge drinking (see Table 2).

9-Month Post-Baseline Assessment

Between post and follow-up assessments, Anna came to TOPPS for a 40-minute booster meeting in which she reported some communication difficulties. Her PC reviewed the communication skills she learned at TOPPS, and engaged in problem-solving to generate solutions. Anna was offered additional meetings if she desired, but she felt confident in her skills and politely declined.

According to the SCID-IV results, Anna maintained full remission of her initial diagnosis of Bulimia Nervosa. The SIC scores continued to improve in Dysfunctional Thoughts and Stress in training (greater than 50% improvement) and Injury Concerns in both training and competition (greater than 70% improvement), and were largely maintained in Academic Problems (see Table 1). The SARI scores indicated absence of problems in all relationship domains, and the SCL90-R scores indicated improvements of two standard deviations in most psychiatric dimensions. The BDI total score remained in the minimal range with an improvement of 55% from baseline assessment. On the TLFB, improvements were shown in unprotected sex and binge drinking, while the number of days of alcohol consumption and the number of drinks increased. Further, as a result of the Dream Job Development intervention, Anna secured an internship position in her field of study and dramatically increased the amount of hours worked at follow-up.

Intervention Evaluation

This case study permitted an initial evaluation of the efficacy of TOPPS in treating Bulimia Nervosa in a lean sport athlete. Assessments conducted after formal intervention revealed substantial reductions in binge-purge behaviours and full remission of eating disorder symptomatology, as well as improvements in other mental health areas, including dysfunctional

thoughts, stress, and obsessive-compulsive symptoms. Initiating Environmental Control and Self-Control was associated with a substantial decrease in binge/purge behaviours, as well as intrusive, negative thoughts pertaining to eating disorder symptomatology. Through continued implementation of Dynamic Goals and Rewards, Anna abstained from purging for nine consecutive weeks, and reported no binge episodes for six consecutive weeks near the end of treatment (see Figure 1). Although not targeted with specific interventions, Anna reported reductions in worrying about injuries.

Lessons Learned through Self-Reflection

Previous research indicates that psychological outcomes are enhanced when family members are involved with treatment planning (Sisson & Azrin, 1986). However, family involvement with interventions poses several barriers for student-athletes, like family members residing out-of-town, or conflicting schedules from SOs who are employed full or part-time. To address these barriers, PCs at TOPPS encouraged phone and FaceTime participation to involve supportive-others and accommodate Anna's schedule. Anna was reluctant to involve supportive others due to time constraints and a desire for independence. The sport culture of self-reliance and self-sufficiency (e.g., Etzel, Pinkney, & Ferrante, 1991; Etzel & Watson, 2007) likely also contributed to this mindset. Although Anna was ultimately successful in attending all 16 meetings as part of the programme, additional engagement strategies like motivational interviewing would have likely enhanced Anna's desire to involve supportive others in her performance optimisation meetings, providing additional support by which to achieve her goals.

There is also a concern of confidentiality with family-based interventions. Although meeting confidentiality is protected by state and federal laws (with the exception of harm to self and others), family members are not required to abide by the same laws as psychologists.

Therefore, PCs at TOPPS introduce family members to the programme, explaining the extent of their participation and awareness of confidentiality issues. The PC in this study was also trained to avoid disclosure of information Anna specified she desired to keep confidential from her SOs.

The optimisation model was ultimately well-suited to Anna's needs and presenting concerns. It is important to indicate that Anna initially evidenced resistance to mental health intervention. The optimisation approach and interventions tailored to sport culture appropriately engaged Anna into treatment, and allowed her to receive mental health services she otherwise may not have pursued. Engagement into services is particularly important for Bulimia Nervosa, as early reductions in purging behaviour consistently predict successful treatment outcome and sustained remission (Fairburn, Agras, Walsh, Wilson, & Stice, 2004; Vall & Wade, 2015).

Recommendations to Clinicians and Students

The present case study describes a comprehensive approach to intervention with a collegiate lean sport athlete utilising an evidence-based intervention. Although Anna was originally hesitant to seek services at TOPPS, motivating factors unique to her athletic status were integrated into intervention planning to enhance engagement and participation. TOPPS is athlete-driven, which may further enhance autonomy and motivation for change. Other evidence-supported techniques like Financial Management and Dream Job Development were utilised to manage stress and ultimately enhance performance in sport, life, and mental health.

The current sport-specific adaptation of FBT has previously demonstrated significant improvements in student-athlete alcohol and drug use, binge drinking, relationships, mental health, and sport-related activities in uncontrolled trials (Chow et al., 2015; Donohue et al., 2014; Gavrilova et al., 2017; Pitts et al., 2015). The present case study supports the efficacy of TOPPS in concurrently treating Bulimia Nervosa and elevating sport-specific activities, extending the

knowledge-base and applicability of TOPPS to multiple mental health difficulties and athlete types. Leading evidence-supported treatments in Bulimia Nervosa show success in approximately 30-50% of patients (see Cooper & Fairburn, 2011). Therefore, TOPPS may be an efficacious treatment option for athletes demonstrating lack of motivation for eating pathology closely tied with sport-related factors. The latter contention will need to be validated in controlled research involving athletes who evidence this condition.

Many athletes demonstrate low help-seeking behaviours (Watson, 2005) and may never pursue services, potentially citing motivations similar to Anna as reasons for avoiding treatment. Given that many colleges do not or cannot employ sport psychologists within athletic departments (Cannole et al., 2014; Wrisberg et al., 2012), TOPPS offers an efficacious alternative to traditional campus counseling programmes to which student-athletes are frequently referred. The TOPPS program duration (up to 12 meetings) is typical of campus counseling centers (Barr, Rando, Krylowicz, & Winfield, 2010). Arguably the eating disorder treatment with greatest research support (Enhanced Cognitive Behaviour Therapy for Eating Disorders, CBT-E; Fairburn, Cooper, & Shafron, 2003; Fairburn, 2008) typically lasts 20 to 40 sessions depending on diagnostic severity. Thus, TOPPS may offer an additional cost-effective treatment for use on college campuses.

Utilisation of evidence-supported methods of engaging student-athletes may increase numbers of student-athletes who seek services and ultimately, help provide programming to athletes who may not have received treatment otherwise. Such was the case in the present study. In instances where implementing a standardised treatment is not feasible, practitioners are encouraged to work with athletes to incorporate interventions addressing sport culture and

performance programming to enhance motivation and desired treatment outcomes in this special population.

As TOPPS was originally conceptualised and validated in the United States, it would be important to consider cultural adaptations for populations in different countries, circumstances, and ethnic backgrounds. For instance, TOPPS includes cultural competency interviews, such as the Semistructured Interview for Consideration of Ethnic Culture in Therapy Scale (Donohue et al., 2006). However, these instruments were validated in the United States. Relevant to difficulties in intervention implementation, TOPPS includes multiple intervention components requiring substantial training. The provider in this case examination completed approximately 32 hours of workshop training and weekly on-going supervision and training from a licensed clinical psychologist for about 90 minutes a week throughout her delivery of intervention.

As universities and colleges ultimately initiate the implementation of evidence-supported and sport-specific wellness programs for athletes, such as TOPPS, they will need to assure appropriate training, qualifications, and service delivery mechanisms of providers (National Collegiate Athletic Association, 2017). Along these lines, licensed psychologists and sport performance professionals should be incorporated to work together. Within their respective professional contexts, these providers are encouraged to develop integrated programs to assist engagement interventions shown to enhance motivation for sport-specific wellness interventions (Breslin, Shannon, Haughey, Donnelly, & Leavey, 2017). Likewise, an integrated team may assist coaches and other athletic staff in recognizing signs of mental illness and making appropriate referrals via evidence-supported programs (see Sebbens, Hassment, Crisp, Wensley, 2016).

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was supported by grant from the National Institute on Drug Abuse (1R01DA031828, PI Donohue).

Further Reading

The following articles provide further detail of the TOPPS programme, evidence, and associated outcomes in student-athletes.

Donohue, B., Chow, G. M., Pitts, M., Loughran, T., Schubert, K. N., Gavrilova, Y., & Allen, D. N. (2015). Piloting a family-supported approach to concurrently optimize mental health and sport performance in athletes. *Clinical Case Studies*, *14*(3), 1-19.

This literature reviews the innovative aspects of the TOPPS program, results from pilot data, and barriers to implementation.

Chow, G. M., Donohue, B., Pitts, M., Loughran, T., Schubert, K. N., Gavrilova, Y., & Diaz, E. (2015). Results of a single case controlled study of The Optimum Performance Program in Sports in a collegiate athlete. *Clinical Case Studies, 14*(3), 191-209.

This article utilised multiple baseline methodology to demonstrate efficacy of TOPPS in reducing unprotected sex, binge drinking, and detrimental thoughts/stress, while improving relationships.

Pitts, M., Donohue, B., Schubert, K. N., Chow, G. M., Loughran, T., & Gavrilova, Y. (2015). A systematic case examination of The Optimum Performance Program in Sports in a combat sport athlete. *Clinical Case Studies, 14*(3), 178-190.

Authors of this study demonstrated the efficacy of TOPPS in elevating mental health and reducing substance use in a combat sport athlete.

Donohue, B., Pitts, M., Gavrilova, Y., Ayarza, A., & Cintron, K. I. (2013). A culturally sensitive approach to treating substance abuse in athletes using evidence-supported methods. *Journal of Clinical Sport Psychology, 7*(2), 98-119.

This research describes the need for athlete-specific interventions to prevent and treat substance use.

Gavrilova, Y., Donohue, B., & Galante, M. (2017). Mental health and sport performance programming with athletes who present without pathology: A case examination supporting optimization. *Clinical Case Studies, 16*(3), 1-20.

This article describes how TOPPS may be implemented with an athlete evidencing no mental health pathology who desires performance enhancement in sport and in life.

Gavrilova, Y., & Donohue, B. (In press). Sport-specific mental health interventions in athletes: A call for optimization models sensitive to sport culture. *Journal of Sport Behavior.*

. This article reviews the optimization approach to mental wellness and sport performance.

References

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.) Washington, DC: Author.

Barr, V., Rando, R., Krylowicz, B., & Winfield, E. (2010). *The Association for University and College Counseling Center Directors Annual Survey.* Retrieved from http://files.cmcglobal.com/directors_survey_2009_m.pdf

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II.* San Antonio, TX: The Psychological Corporation.

Bellg, A. J., Borrelli, B., Resnick, B., Hecht, J., Minicucci, D. S., Ory, M., … & Czajkowski, S. (2004). Enhancing treatment fidelity in health behavior change studies: Best practices and recommendations from the NIH Behavior Change Consortium. *Health Psychology, 23*(5), 443-451.

Breslin, G., Shannon, S., Haughey, T., Donnelly, P., & Leavey, G. (2017). A systematic review of interventions to increase awareness of mental health and well-being in athletes, coaches and officials. *Systematic Reviews*, *6*(1), 177.

Cannole, I. J., Shannon, V. R., Watson, J. C., Wrisberg, C., Etzel, E., & Schimmel, C. (2014). NCAA athletic administrators' preferred characteristics for sport psychology positions: A consumer market analysis. *The Sport Psychologist, 28*(4), 406-417.

Chow, G. M., Donohue, B., Pitts, M., Loughran, T., Schubert, K. N., Gavrilova, Y., & Diaz, E. (2015). Results of a single case controlled study of The Optimum Performance Program in Sports in a collegiate athlete. *Clinical Case Studies, 14*(3), 191-209.

Cooper, Z., & Fairburn, C. G. (2011). The evolution of "enhanced" cognitive behavior therapy for eating disorders: Learning from treatment nonresponse. *Cognitive and Behavioral Practice, 18*(3), 394-402.

Derogatis, L. R. (1994). *Symptom Checklist-90-R: Administration, scoring, and procedures manual* (3rd ed.). Minneapolis, MN: National Computer Systems.

Donohue, B., Chow, G. M., Pitts, M., Loughran, T., Schubert, K. N., Gavrilova, Y., & Allen, D. N. (2015). Piloting a family-supported approach to concurrently optimize mental health and sport performance in athletes. *Clinical Case Studies,*1-19.

Donohue, B., Covassin, T., Lancer, K., Dickens, Y., Miller, Y., Hash, A., & Genet, J. (2004). Examination of psychiatric symptoms in student athletes. *Journal of General Psychology, 163,* 29-35.

Donohue, B., Hill, H., Azrin, N.H., Cross, C., & Strada, M. (2007). Psychometric support for contemporaneous and retrospective youth and parent reports of adolescent marijuana use frequency in an adolescent outpatient treatment population. *Addictive Behaviors, 32,* 1787-1797.

Donohue, B., Miller, A., Crammer, L., Cross, C., & Covassin, T. (2007). A standardized method of assessing sport specific problems in the relationships of athletes with their coaches, teammates, family, and peers. *Journal of Sport Behavior, 30,* 375-397.

Donohue, B., Pitts, M., Gavrilova, Y., Ayarza, A., & Cintron, K. I. (2013). A culturally sensitive approach to treating substance abuse in athletes using evidence-supported methods. *Journal of Clinical Sport Psychology, 7*(2), 98-119.

Donohue, B., Silver, N. C., Dickens, Y., Covassin, T., & Lancer, K. (2007). Development and psychometric evaluation of the Sport Interference Checklist. *Behavior Modification, 31,* 937-957.

Donohue, B., Strada, M. J., Rosales, R., Taylor-Caldwell, A., Hise, D., Ahman, S., & ... Laino, R. (2006). The Semistructured Interview for Consideration of Ethnic Culture in Therapy Scale: Initial psychometric and outcome support. *Behavior Modification, 30*(6), 867-891.

Drill, R., Nakash, O., DeFife, J. A., & Westen, D. (2015). Assessment of clinical information: Comparison of the validity of a structured clinical interview (the SCID) and the Clinical Diagnostic Interview. *Journal of Nervous and Mental Disease, 203*(6), 459-462.

Etzel, E. F., Ferrante, A. P., & Pinkney, J. (1991). *Counseling college student-athletes: Issues and interventions.* Morgantown, WV: Fitness Information Technology.

Etzel, E. F., & Watson, J. C. (2007). Ethical challenges for psychological consultations in intercollegiate athletics. *Journal of Clinical Sport Psychology, 1,* 304-317.

Fairburn, C. G. (2008). Cognitive behavior therapy and eating disorders. New York, New York: The Guilford Press.

Fairburn, C. G., Agras, W. S., Walsh, B. T., Wilson, G. T., & Stice, E. (2004). Prediction of outcome in bulimia nervosa by early change in treatment. *American Journal of Psychiatry, 161*(12), 2322-2324.

Fairburn, C. G., Cooper, Z., & Shafran, R. (2003). Cognitive behaviour therapy for eating disorders: A "transdiagnostic" theory and treatment. *Behaviour Research and Therapy, 41*(5), 509-528.

Family Research & Services. (2017). *Family Research & Services* Retrieved from http://toppsatunlv.wixsite.com/frs-at-unlv

Ferrand, C., Magnan, C., Rouveix, M., & Filaire, E. (2007). Disordered eating, perfectionism and body-esteem of elite synchronized swimmers. *European Journal of Sport Science, 7*(4), 223-230.

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. (2002). *Structured clinical interview for DSM-IV-TR axis I disorders, research version, non-patient edition (SICD-I/NP).* New York: Biometrics Research, New York State Psychiatric Institute.

Gavrilova, Y., & Donohue, B. (In press). Sport-specific mental health interventions in athletes: A call for optimization models sensitive to sport culture. *Journal of Sport Behavior.*

Gavrilova, Y., Donohue, B., & Galante, M. (2017). Mental health and sport performance programming with athletes who present without pathology: A case examination supporting optimization. *Clinical Case Studies, 16*(3), 1-20.

Horowitz, L. M., Rosenberg, S. E., Baer, B. A., Ureño, G., & Villaseñor, V. S. (1988). Inventory of interpersonal problems: Psychometric properties and clinical applications. *Journal of Consulting and Clinical Psychology, 56*(6), 885-892.

Kelly, P. J., Kyngdon, F., Ingram, I., Deane, F. P., Baker, A. L., & Osborne, B. A. (2017). The Client Satisfaction Questionnaire-8: Psychometric properties in a cross-sectional survey of people attending residential substance abuse treatment. *Drug and Alcohol Review*.

Keski-Rahkonen, A., & Mustelin, L. (2016). Epidemiology of eating disorders in Europe: Prevalence, incidence, comorbidity, course, consequences, and risk factors. *Current Opinion in Psychiatry, 29*(6), 340-345.

Kong, P., & Harris, L. M. (2015). The sporting body: Body image and eating disorder symptomatology among female athletes from leanness focused and nonleanness focused sports. *The Journal of Psychology, 145*(2), 141-160.

Larsen, D. L., Attkisson, C. C., Hargreaves, W. A., & Nguyen, T. D. (1979). Assessment of client/patient satisfaction: Development of a general scale. *Evaluation and Program Planning, 2,* 197 - 207.

Lopez, R. L., & Levy, J. L. (2013). Student athletes' perceived barriers to preferences for seeking counseling. *Journal of College Counseling, 16,* 19-31.

National Collegiate Athletic Association. (2017, May). *Interassociation consensus document: Mental health best practices.* Retrieved from http://www.ncaa.org/sites/default/files/SSI_MentalHealthBestPractices_Web_20170921.pdf

O'Brien, K. M., Whelan, D. R., Sandler, D. P., Hall, J. E., & Weinberg, C. R. (2017). Predictors and long-term health outcomes of eating disorders. *PLoS ONE, 12*(7), e0181104.

Pitts, M., Donohue, B., Schubert, K. N., Chow, G. M., Loughran, T., & Gavrilova, Y. (2015). A systematic case examination of The Optimum Performance Program in Sports in a combat sport athlete. *Clinical Case Studies, 14*(3), 178-190.

Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry: A systematic review of diagnosis and medical treatment of mental illness in athletes. *Sports Medicine, 40*(11), 961-980.

Sebbens, J., Hassmén, P., Crisp, D., & Wensley, K. (2016). Mental health in sport (MHS): Improving the early intervention knowledge and confidence of elite sport staff. *Frontiers in Psychology, 7,* 1-7.

Sisson, R. W., & Azrin, N. H. (1986). Family-member involvement to initiate and promote treatment of problem drinkers. *Journal of Behavior Therapy and Experimental Psychiatry, 17,* 15-21.

Sobell, M. B., Sobell, L. C., Klajner, F., Pavan, D., & Basian, E. (1986). The reliability of the timeline method of assessing normal drinker college students' recent drinking history: Utility of alcohol research. *Addictive Behaviors, 11,* 149-162.

Sundgot-Borgen, J., & Torstveit, M. K. (2004). Prevalence of eating disorders in elite athletes is higher than in the general population. *Clinical Journal of Sports Medicine, 14,* 25-32.

Sundgot-Borgen, J., & Torstveit, M. K. (2010). Aspects of disordered eating continuum in elite high-intensity sports. *Scandinavian Journal of Medicine & Science in Sports, 20*(2), 112-121.

Thompson, R. A., & Sherman, R. T. (2007). *Managing Student-Athletes' Mental Health Issues.* Retrieved from https://www.ncaa.org/sites/default/files/2007_managing_mental_health_0.pdf

Torstveit, M. K., Rosenvinge, J. H., & Sundgot-Borgen, J. (2008). Prevalence of eating disorders and the predictive power of risk models in female elite athletes: A controlled study. *Scandinavian Journal of Medicine & Science in Sports, 18,* 108-118.

Vall, E., & Wade, T. D. (2015). Predictors of treatment outcome in individuals with eating disorders: A systematic review and meta-analysis. *International Journal of Eating Disorders, 48*(7), 946-971.

Watson, J. C. (2005). College student-athletes' attitudes toward help-seeking behavior and expectations of counseling services. *Journal of College Student Development, 46*(4), 442-449.

Wrisberg, C., Withycombe, J., Simpson, D., Loberg, L. A., & Reed, A. (2012). NCAA Division-I administrators' perceptions of the benefits of sport psychology services and possible roles for a consultant. *The Sport Psychologist, 26,* 16-28.

Table 1.

Pre, Post, and 4-Month Follow-up Results for SIC, SARI, and SCL-90-R

Variable Assessed	**Pre Assessment**	**4 Month Post Assessment**	**4 Month Follow-up**
SIC Training			
Dysfunctional Thoughts and Stress	5.50	3 (-45.45%)	2.50 (-54.55%)
Academic Problems	3.33	1.67 (-49.85%)	2 (-39.94%)
Injury Concerns	3.67	2.33 (-36.51%)	1 (-72.75%)
Poor Team Relationships	1	1 (0%)	1 (0%)
SIC Competition			
Dysfunctional Thoughts and Stress	6.25	2.75 (-56%)	3.25 (-48%)
Academic and Adjustment Problems	1.67	1 (-40.12 %)	1.67 (0%)
Lack of Motivation	2.50	1 (-60%)	1 (-60%)
Overly Confident and Critical	1	1 (0%)	1 (0%)
Injury Concerns	6.50	5.50 (-15.38%)	1 (-84.62%)
Pain Intolerance	2	1 (-50%)	1 (-50%)
SARI Teammates			
Poor Relationship and Lack of Support	1	1 (0%)	1 (0%)
Pressure to Use Illicit Drugs and Being Difficult During Training	1	1 (0%)	1 (0%)
Not a Team Player and Too Non-competitive	3.50	4 (+14.29%)	1 (-71.43%)
Poor Relationships	1	1 (0%)	1 (0%)
Pressure to Drink Alcohol and Interfere During Competition	1	1 (0%)	1 (0%)
SARI Family			
Poor Relationship and Lack of Support	1	1 (0%)	1 (0%)
General Pressure	1	2.17 (+117%)	1 (0%)
Pressure to Quit or Continue Unsafely	1	1 (0%)	1 (0%)
Embarrassing Comments and Negative Attitude	1	1 (0%)	1 (0%)
SARI Coaches			
Poor Relationship and Lack of Support	1	1 (0%)	1 (0%)
Lack of Concern for Teamwork and Safety	1	1 (0%)	1 (0%)
Lack of Involvement and High Expectations	1	2.25 (+125%)	1 (0%)
Too Demanding	1	1 (0%)	1 (0%)
SARI Peers			
Poor Relationship and Lack of Support	1	1 (0%)	1 (0%)
Use of Recreational and Performance-enhancing Substances	1	1 (0%)	1 (0%)
SCL-90-R			
Somatization	0.08 (34)	0.17 (46)	0 (30)
Obsessive-Compulsive	0.70 (42)	0.20 (33)	0 (30)
Interpersonal Sensitivity	0.11 (31)	0 (30)	0 (30)
Depression	0.23 (31)	0 (30)	0 (30)
Anxiety	0.00 (30)	0 (30)	0 (30)
Hostility	0.00 (32)	0 (32)	0 (32)
Phobic Anxiety	0.00 (38)	0 (38)	0 (38)
Paranoid Ideation	0.00 (33)	0 (33)	0 (33)
Psychoticism	0.00 (30)	0 (30)	0 (30)
Global Severity Index	0.21 (30)	0.06 (30)	0 (30)
BDI-II			
Somatic-Affective	4	0 (-100%)	2 (-50%)
Cognitive	5	3 (-40%)	2 (-60%)
Total	9	3 (-66.67%)	4 (-55.56%)

Note. For SIC, SARI, and BDI, percent change from baseline is presented in parentheses. For SCL-90-R, T-scores are presented in parentheses (Mean=50, SD=10). Percentages are reported in relation to baseline.

Table 2.

Pre, Post, and Follow-up Results for TLFB

Variable	Pre-Assessment	4 Month Post-Assessment	4 Month Follow-up Assessment
Timeline Followback	120 day period	149 day period	124 day period
Number of Drinks	4	4	8
Alcohol Days	2	3	6
Average Drinks per Day of Drinking	2	1.33	1.33
Binge Drinking Days	1	0	0
Days of Hard Drugs	0	0	0
Days of Unprotected Sex	3	3	1
Hours Worked	0	0	288
Incarcerated	0	0	0

Note. TLFB results are presented as actual occurrences of each behaviour during the respective time period.

Figure 1.

Binge and Purge frequency throughout the Intervention