The Sport Psychologist, 2020, 34, 62-70
https://doi.org/10.1123/tsp.2018-0174

Human Kinetics
PROFESSIONAL PRACTICE

Using the Team Environment AssessMent (TEAM) to Enhance Team Building in Sport

Mark W. Bruner
Nipissing University

Mark Eys
Wilfrid Laurier University

Jeremie M. Carreau
Wendigo Lake Expeditions, Inc.

Colin McLaren and Rachel Van Woezik
Nipissing University

Team building (TB) is recognized as one of the most prevalent and promising group-development interventions applied in sport. However, most coaches lack the necessary information to effectively and efficiently target and enhance specific group characteristics and processes. The aim of this study was to develop and apply the Team Environment AssessMent (TEAM) to better inform a TB intervention. Twenty-three male adolescent athletes (mean age 17.9 years) from an elite hockey team completed the TEAM and measures of cohesion before and after a TB intervention. Based on initial TEAM scores, role acceptance and leadership were identified and purposefully targeted in the TB intervention. Athletes' perceptions of role acceptance, leadership, and task cohesion were stronger after the TB intervention. Furthermore, follow-up interviews with team members and coaches provided additional empirical support for the utility of the TEAM to assess and enhance the efficiency of a TB intervention in sport.

Keywords: cohesion, group dynamics, group-based intervention, leadership, roles

Group cohesion is defined as an emergent state that "is reflected in the tendency for a group to stick together and remain united in the pursuit of instrumental objectives and/or for the satisfaction of member affective needs" (Carron, Brawley, & Widmeyer, 1998, p. 213). There is a rich foundation of knowledge documenting the personal and team outcomes associated with athletes engaged in task-cohesive and socially cohesive groups (see Eys & Brawley, 2018, for a review). Given the considerable benefits of this emergent group property, examining how to effectively enhance cohesion in teams is an important undertaking. One popular and established group-based intervention used by coaches and practitioners to enhance cohesion is team building (TB). TB has been recognized as one of the most prevalent and promising group-development interventions applied in sport organizations (Bruner, Eys, Beauchamp, & Côté, 2013).

With its origins in the organizational-development literature, TB has been defined as a group-based intervention designed to "promote a greater sense of unity and cohesiveness, and to enable the team to function more smoothly and effectively" (Newman, 1984, p. 27). There is a steady accruement of evidence to support the utility of TB to enhance cohesion and improve both individual (e.g., enhanced cognitions including satisfaction, self-confidence, quality of life, and self-efficacy) and group outcomes (e.g., performance) in sport settings (Beauchamp, Lothian, & Timson, 2008; Bloom, Stevens, & Wickwire, 2003; Dunn & Holt, 2004; Martin, Carron, & Burke, 2009; Newin, Bloom, & Loughead, 2008; Pain & Harwood, 2009; Senecal, Loughead, & Bloom, 2008).

Bruner, McLaren, and Van Woezik are with the School of Physical and Health Education, Nipissing University, North Bay, ON, Canada. Eys is with the Depts. of Kinesiology/Physical Education and Psychology, Wilfrid Laurier University, Waterloo, ON, Canada. Carreau is with Wendigo Lake Expeditions, Inc., South River, ON, Canada. Bruner (markb@nipissingu.ca) is corresponding author.

There is a wide array of approaches to implement a TB intervention in sport. Common TB approaches have typically involved the implementation of one or more of four approaches identified in the organizational psychology literature, including the improvement of goal setting, problem solving, interpersonal relationships (e.g., cohesion), and role development (Beer, 1976; Buller, 1986). Despite these options and the intuitive appeal of TB, many coaches are unclear as to the proper use of TB and lack the knowledge to implement a TB approach (Bloom, Loughead, & Newin, 2008). TB is complex and many coaches are unaware that improper TB activities can be detrimental to the team, leading to the development of cliques and the alienation of teammates (Bloom et al., 2008).

Multiple attempts have been made to guide coaches, sport psychology practitioners, and researchers with respect to TB approaches in sport (e.g., Evans, Eys, Bruner, & Kleinert, 2014; Spink, 2015), including a special supplement in the *Journal of Applied Sport Psychology* (1997). A featured approach in the TB sport literature has been the use of a conceptual framework developed primarily by Carron and Spink (Carron & Spink, 1993; Carron, Spink, & Prapavessis, 1997; Spink, 2015; see Figure 1). As illustrated in Figure 1, the framework is underpinned by the construct of group cohesion and is considered to be the desired product of two inputs (team environment and team structure) and one throughput (team processes). Within these broad categories, a number of attendant factors have been identified as contributing to the enhancement of cohesion in a sport setting. These include the development of team distinctiveness and togetherness (team environment); fostering role clarity and acceptance, leadership, norms, and conformity to standards (team structure); and enhancing processes such as establishing goals and objectives, as well as increasing sacrifices, cooperation, and communication.

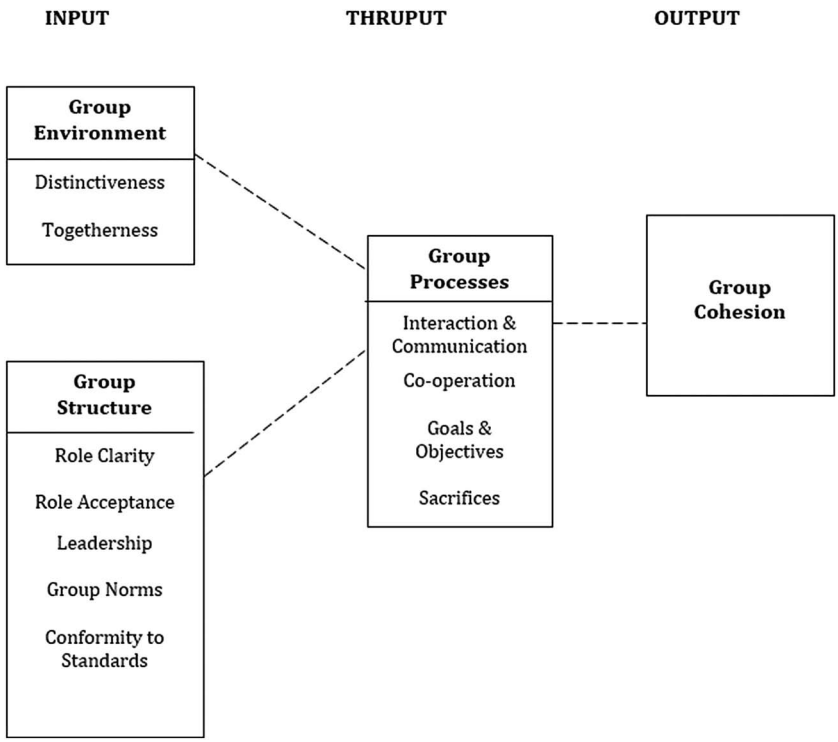

Figure 1 — Team-building conceptual framework (adapted with permission from Carron & Spink, 1993; adapted to sport by Carron, Spink, & Prapavessis, 1997).

Although this TB intervention framework has been successfully implemented in different settings (Bruner & Spink, 2010; Estabrooks & Carron, 1999; Newin et al., 2008; Prapavessis, Carron, & Spink, 1996; Spink, 2015; Spink & Carron, 1993; Watson, Martin-Ginis, & Spink, 2004), one caveat worth highlighting is that specific factors of the TB conceptual model (e.g., group distinctiveness, communication, and interaction) have predicted cohesion, group task satisfaction, and attendance better than other factors in past research (Bruner & Spink, 2010, 2011). This prompted the suggestion to develop an inventory to assess the developmental needs of the team and the athletes that could help inform what is included in the TB intervention (e.g., Bruner & Spink, 2010). The compilation of this inventory with the end point of increasing team cohesiveness represents the main objective of this research.

The development of an inventory also would be consistent with recommendations put forward by Brawley and Paskevich (1997), who suggested that preintervention assessments provide important information to help guide TB interventions in a systematic fashion. The current absence of a TB assessment measure to identify the developmental needs of teams would appear to be a primary limiting factor to improving the efficiency of TB in sport. Coaches and practitioners could develop more controlled, targeted TB interventions by employing a TB assessment inventory, which would in turn lead to more effective results (Brawley & Paskevich, 1997). Thus, the first aim of this research was to develop an inventory that could be used before consideration of a TB intervention. In practice, this inventory could help users target the specific needs of a team, especially under circumstances where time and resources are limited.

A second aim within the main objective was to apply the inventory in a specific case (i.e., sport team) before and after a TB intervention. The context selected for this case study has been touted as a particularly promising TB intervention: adventure programming (Martin et al., 2009). Adventure programing is used to accomplish recreational, educational, developmental, and therapeutic goals in an outdoor setting with many activities including outdoor expeditions, physical challenges, and challenge ropes courses (Hans, 2000). With youth, challenge ropes courses have been found to be an effective group-based strategy in academic, adventure therapy, and, more recently, sport settings (Conley, Caldarella, & Young, 2007; Ebbeck & Gibbons, 1998; Gibbons & Black, 1997; Glass & Benshoff, 2002; Long, 2001; Stewart, Carreau, & Bruner, 2016). Therefore, our research question asks whether a challenge ropes course that targeted aspects of the group identified as lower-scoring from participant responses to the inventory be a viable approach to increase the cohesiveness of a sport team?

Methods

Participants (The Case)

Twenty-three male adolescent athletes (mean age 17.9, *SD* 1.30 years) from a Major Junior A Ontario Hockey League (OHL) team served as participants in the current case. The head coach and coaching staff (i.e., two assistant coaches and head trainer) were also important participants in the case study. The head coach had been involved in Major Junior A hockey for 20 years and also had experience coaching Canada at an international U18 and U20 level. The two assistant coaches had been with the team for four and one seasons, respectively, at the time, which followed the completion of their own Major Junior and professional hockey careers. The head trainer had been with the team for two seasons after previous

experience in professional football and hockey. At the beginning of the study, the team had competed in six preseason games, with an overall record of two wins and four losses, and by the end of the study had competed in eight regular-season games, amassing a record of four wins and four losses.

Procedure

Prior to conducting the research, we obtained ethical approval from the lead author's university, and support was gained from the head coach of the participating OHL team. The athletes over the age of 18 signed a consent form agreeing to participate in the study. For any athletes under the age of 18, an athlete assent and parental consent form were signed. The participants were also required to obtain parental consent to participate in the challenge ropes course activities.

A mixed-method approach was taken to address the two objectives of the study. The first method, quantitative in nature, involved the creation of the Team Environment AssessMent (TEAM) to evaluate 11 TB factors and the administration of this newly created tool along with an established measure of group cohesion (i.e., Youth Sport Environment Questionnaire; Eys, Loughead, Bray, & Carron, 2009a) 1 week before the outdoor-adventure-based TB intervention. The lowest-scoring TB factors identified during the preassessment were then targeted during the planning and implementation of the TB intervention. After the intervention, the participants completed the TEAM and group-cohesion measures at two additional time points (i.e., immediately after participating in the TB intervention and at 1-month follow-up).

The second method was qualitative in nature. Our qualitative investigation was underpinned by a critical realistic approach (Bhaskar, 1978). A critical realist approach acknowledges that knowledge is acquired through subjective frames of reference and should be challenged and continually revised through scientific efforts (Bhaskar, 1978). After the TB challenge ropes course intervention and the administration of the 1-month follow-up questionnaire, focus-group interviews were conducted with the athletes and coaching-staff members. In addition, a personal interview with the head coach was conducted to evaluate the intervention. We conducted the qualitative interviews to garner descriptive accounts about the TB experience from multiple perspectives. The first author conducted the interviews using a semistructured interview guide through which the interviewer asked a question and further probed participants' answers, similar to a conversation (Patton, 2002).

Measures

TEAM. The TEAM consists of 11 TB factor items drawing from Carron and Spink's (1993) TB conceptual model and specific components that researchers in the area of group dynamics have identified as contributing to the development of cohesion in sport and exercise groups (see Prapavessis et al., 1996, for an overview of the specific categories and components; Carron et al., 1997; Carron & Spink, 1993; Spink, 2015). Prapavessis et al. (1996) provided descriptions of eight TB factors that served as the conceptual basis for nine of the TEAM items. One of the original eight components put forward by Prapavessis and colleagues, role clarity and acceptance, was divided into two distinct components (i.e., role clarity and role acceptance) based on the extant literature (see Eys, Schinke, Surya, & Benson, 2014). Two additional TB factors (i.e., norms and communication/interaction) were drawn from Carron and Spink's (1993) TB conceptual framework. In total, 11 TB factors were proposed to be evaluated in the TEAM as they may differ across groups (Carron et al., 1997). Each item included an operationalization and specific example(s). Specific wording for each of the 11 TB factor items was generated by the first, second, and third authors based on Prapavessis et al.'s (1996) descriptions (if relevant) and/or other operational definitions in the group-dynamics literature. The three investigators, who have graduate training and expertise in group dynamics, then assessed the content validity of the items, including their relevance to a youth population, duplication/similarity of items, and clarity of item wording, similar to processes outlined by Eys et al. (2009a). Each investigator independently appraised whether each item should be retained and offered edits and comments to the items as deemed necessary (Eys et al., 2009a). Participants responded to the 11 items on a 9-point Likert-type scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*) that evaluated role clarity, role acceptance, leadership, group norms, conformity to standards, togetherness, goals and objectives, cooperation, distinctiveness, sacrifices, and interaction and communication (see Appendix for the TEAM items). An example of an item from the TEAM pertaining to role acceptance is "Team members accept their role on the team."

Group Cohesion. Cohesion was assessed using the Youth Sport Environment Questionnaire (YSEQ; Eys et al., 2009a). The YSEQ was administered with the TEAM at each of the three measurement points. The 16-item YSEQ evaluates two dimensions of cohesion: task and social. The items were answered using a 9-point Likert-type scale anchored at 1 (*strongly disagree*) and 9 (*strongly agree*). An example of a task-cohesion item is "I like the way we work together as a team." An example of a social-cohesion item is "Some of my best friends are on this team." The internal consistencies of the task- and social-cohesion scales were assessed and found to be acceptable ($\alpha = .91$, .93, and .92 for task cohesion and $\alpha = .93$, .93, and .91 for social cohesion for pre-, post-, and follow-up respectively). The YSEQ was originally developed with an adolescent sample (Eys et al., 2009a) but is also appropriate for young adults. Furthermore, there have been conceptual questions about the Group Environment Questionnaire's use with a younger sample (Eys, Loughead, Bray, & Carron, 2009b). In light of these considerations, as well as a desire to have a consistent measure of task and social cohesion across the sample, the YSEQ was selected for this study.

Intervention

The TB intervention included a 1-day challenge ropes course experience between preseason and regular-season competition. The results from the preintervention TEAM were provided to the third author, who delivered the TB intervention with the first author. The third author, who has an advanced background and training in implementing challenge ropes courses, as well as graduate training in sport psychology, planned the TB intervention with the first author from the initial results of the TEAM. Based on the initial TEAM scores it appeared that two TEAM factors, role acceptance and leadership, were lower than others in terms of overall group mean scores and were deemed appropriate targets for intervention in the TB challenge ropes course intervention. Both of the scores for these variables fell below 7 on the 9-point scales.

The TB intervention included an introduction/icebreaker activity, a high-ropes course experience, and a final debrief. The introduction/icebreaker activity was used to familiarize the players and coaches with the lead TB facilitator and a trained assistant. The team then received an interactive briefing on the safe participation in the high-ropes course experience, which included familiarizing participants with the course and related equipment and

practicing prescribed communication protocols and safety-line transfers (required to move from one activity element to another while remaining tethered to the course at all times) before heading onto the course. One way role acceptance was targeted was by having the participants differentiate and commit to the varying roles to successfully complete the high-ropes task (e.g., belayer). While working in small groups, the facilitator challenged the participants to discuss and work through the sequence of steps and roles involved. It was emphasized that accepting each role was instrumental to the safe and efficient completion of the task. Also, by letting the athletes decide how to execute the activity (as opposed to being told by the coaching staff), a more democratic leadership was emphasized. Final debriefing was facilitated after all participants had the opportunity to experience the course. The focus of the debrief was on helping the team draw connections between their experience on the course and their development as a team, including the concepts of role acceptance and leadership.

Focus Groups

After the completion of the 1-month follow-up data-collection period, 22 players and three members of the coaching staff (two assistant coaches, one trainer) participated in five focus-group interviews (four player focus groups, one coaching-staff focus group) led by the first author. A personal interview was conducted with the head coach. The interviewer focused the questions on the team-building experience. The interviews were audio-recorded and transcribed verbatim.

Data Analysis

Quantitative Analysis.. Descriptive statistics were calculated for the TEAM and cohesion scores at the three time points (before, immediately after, and 1-month follow up). Repeated-measures ANOVAs were conducted to assess athletes' scores on the lowest-scoring and targeted TB factors (role acceptance and leadership) and the two cohesion dimensions before, immediately after, and 1 month after the TB intervention. The targeted focus of the analysis was due to the small sample size and power concerns.

Qualitative Analysis.. The first and fifth authors reviewed all the qualitative data from the athlete and coach interviews. Data were coded into meaning units, then placed into subthemes and higher themes. The themes were developed deductively based on a critical realist approach (Bhaskar, 1978), the TB conceptual model, and the overall purpose of the case study to determine the utility of the TEAM in a sport setting by placing the quantitative results in context.

Quality of the Research

A list of criteria was developed and implemented to enhance the rigor of the data collection, analyses, and findings (Smith & McGannon, 2017; Sparkes & Smith, 2014). As recommended by Smith and McGannon (2017), to ensure rigor researchers need to be clear of the epistemology and ontology, as well as the criteria used in the study. In the context of this study, in which we subscribed to a critical realist approach, the following criteria were selected: peer debriefing, negotiated verification, and reflexivity. Credibility of the findings was enhanced by engaging in the process of peer debriefing (Creswell & Miller, 2000). The lead author and the fifth author met with the research team regularly, who challenged the researcher's assumptions regarding the data analysis. Field notes and analysis notes were kept to ensure a continuous audit trail for dependability of the findings. Several of the techniques used to achieve credibility also contributed to appropriate and thoughtful methods, as well as the process of negotiated verification. In this context, negotiated verification was provided through meetings to achieve consensus and provide justification for the development of themes. Finally, we used a critical friend (the second author) to discuss and reflect on the findings (Sparkes & Smith, 2014).

Results

Descriptive statistics for each variable are presented in Table 1. Role acceptance, leadership, and the desired TB outcome of group cohesion (task, social) were subjected to data analysis. Findings from the qualitative data analysis were used to provide context to the quantitative results.

Table 1 Results for the Team Environment AssessMent (TEAM) Across Time

	Time 1		Time 2		Time 3	
	M	*SD*	*M*	*SD*	*M*	*SD*
Team-building factors						
Role clarity	7.04	0.98	7.48	0.85	7.61	0.78
Role acceptance	6.65	1.27	7.48	0.85	7.52	0.73
Leadership	6.70	1.22	7.22	1.44	7.52	1.27
Group norms	7.65	1.11	7.78	0.80	7.83	0.89
Conformity to standards	7.48	0.99	7.61	0.78	7.78	0.80
Togetherness	7.70	1.40	8.04	0.82	8.13	0.97
Goals and objectives	7.39	1.44	7.83	0.83	7.74	0.96
Cooperation	7.13	1.22	7.52	1.08	7.39	1.20
Distinctiveness	7.87	1.17	7.83	0.98	7.74	1.18
Sacrifices	7.39	1.16	7.26	1.42	7.78	1.00
Interaction and communication	7.09	1.24	7.48	1.12	7.78	0.90
Youth Sport Environment Questionnaire						
Task cohesion	7.37	0.86	7.76	0.68	7.91	0.73
Social cohesion	7.84	1.02	7.96	0.77	8.05	0.76

Role Acceptance

After the TB activity, repeated-measures ANOVA results revealed increased and sustained perceptions of role acceptance, $F(2, 21) = 6.89$, $p < .01$, $\eta_p^2 = .40$. Specifically, perceptions of role acceptance increased from baseline to immediately after the TB intervention ($p < .01$, Cohen's $d = .78$) and from baseline to follow-up ($p < .01$, Cohen's $d = .87$) but did not differ between the two postintervention time periods ($p = .80$, Cohen's $d = .05$).

The athletes and coaches recognized the need for role acceptance within the group. The athletes felt that trust within the group and the coaching staff was necessary when establishing and accepting these roles. The importance of trust was highlighted by one assistant coach:

> It's the guys trusting each other when you start giving guys different roles and different expectations. As long as there's a trust within the group, I think both socially as well as your actual physical role, or what you're supposed to do. (C4)

Athletes understood the importance of role acceptance, sharing that everyone on the team has a different role and that these roles are all pieces of the team that complement each other: "At the end of the day that's what a team is, everyone joins together and has a different role and some players' aspects of their game help other players' aspects of their game" (A5).

Leadership

Repeated-measures ANOVA results revealed increased perceptions in leadership, $F(2, 21) = 6.50$, $p < .01$, $\eta_p^2 = .38$. Specifically, perceptions of leadership increased from baseline to follow-up ($p < .01$, Cohen's $d = .66$) and did not differ from baseline to immediately after ($p = .09$, Cohen's $d = .39$) or from immediately after to follow-up ($p = .17$, Cohen's $d = .22$).

One coach felt that the ropes course placed all athletes on an even "playing field" and allowed them to be removed from their comfort zone and try something new. This allowed equal opportunity for all athletes to step up into a leadership role. He explained:

> I echo the same sentiment in terms of everyone is on the same playing field. Everyone had an opportunity to step up and be a leader or offer a bit of different dynamic than what might be in the dressing room at the current time, which was pretty cool to watch. (C4)

The coaching staff spoke about the positive impact that the intervention had on their leadership group—adding an assistant captain as a result of the ropes course:

> The big change that we've seen is we've added another assistant captain; John [a pseudonym] has been named an assistant captain and maybe that had something to do with it, but we've just been watching, we're looking to add another guy. I think that process helped, in his favor. He was one of the guys who was scared and didn't want to do it but ended up going all the way to the end, and he was pushing guys and it just gave us a chance to sit back and watch. So, that's a major change. (C1)

Group Cohesion

Athlete perceptions across the three measurement points supported the goal of TB to increase group cohesion. Specifically, increased and sustained perceptions of task cohesion were found, $F(2, 20) = 9.98$, $p < .01$, $\eta_p^2 = .47$, and task cohesion increased from baseline to immediately after the intervention ($p = .02$, Cohen's $d = .50$) and from baseline to after the intervention ($p < .01$, Cohen's $d = .68$). Perceptions of task cohesion did not differ between the two postintervention periods ($p = .22$, Cohen's $d = .22$). Athlete perceptions of social cohesion, however, did not significantly differ across time, $F(2,20) = 0.913$, $p = .42$, $\eta_p^2 = .08$.

Athletes defined TB as coming together to be "on the same page" with the same mind-set and developing stronger task cohesion. As an example, one athlete shared the following:

> Team building is supposed to help a team come closer all together, so there's no one on a different page than everyone else. So that everyone is all on the same page and when it comes to the game we're all in the same mind-set. I think that will help the team be more successful. (A5)

Similarly, coaches felt that the high-ropes course was beneficial, as it pushed players out of their comfort zones and forced them to work together in order to succeed. One coach elaborated:

> I think it was a really unique experience for the players. I think about half of them had been through it before and half of them hadn't, and it took them out of their comfort element and put them in an area where they don't have expertise. As a result of that they had to work together to help each other out. (C1)

Discussion

The importance and effectiveness of TB for sport teams are evidenced by reports of enhanced cohesion and improvements in both individual (e.g., enhanced cognitions including satisfaction, self-confidence, quality of life, self-efficacy) and group outcomes (e.g., performance; see Martin et al., 2009). However, it has also been acknowledged that applied practitioners would benefit from an inventory to enhance the delivery of TB interventions in sport by targeting only the specific needs of a given team (Brawley & Paskevich, 1997). Currently, findings to support TB are largely based on intervention protocols that target predetermined constructs, as opposed to gathering the actual needs of the team. As such, the primary purpose of this study was to develop the TEAM to better inform TB interventions.

The results provide preliminary empirical support for the utility of the TEAM to assess and enhance the delivery of TB interventions in sport. Specifically, there is preliminary evidence that the TEAM is sensitive to the constructs being measured. For instance, athletes and coaches spoke to the improvements made in the areas of role acceptance and leadership, which were targeted based on the baseline scores from the TEAM. As such, the TEAM could be a useful tool for coaches and applied sport psychology practitioners to use with a team seeking a TB intervention. Use of the TEAM would enable coaches and practitioners to identify the constructs that will be the primary focus of the TB protocol, as well as those that require less attention. In the case of this study, devoting time and resources to building distinctiveness appeared unnecessary, as the team already scored higher in this area (see Table 1). On the other hand, constructs such as role acceptance and leadership appeared more suited to a targeted intervention.

The secondary aim was to then apply the results of the TEAM in a TB intervention to determine if a focus on specific variables would not only increase these group factors but also fulfill the ultimate goal of increasing group cohesion (e.g., Bloom et al., 2008). The results of this secondary aim supported the potential

utility of the TEAM. In addition to the observed improvements in team task cohesion, the athletes and coaches reported increased perceptions of the target constructs of role acceptance and leadership. The increased perceptions of role acceptance were immediate and significant with large effect sizes after the intervention. Although perceptions of leadership were statistically significant between the first and third time points, leadership only approached significance between the pre- and postintervention time points ($p = .09$). However, we note that the effect size was meaningful with a small to medium effect (Cohen's $d = .39$), and a positive effect was supported by qualitative evidence. One possible explanation is that the more immediate effects for role acceptance are a function of athlete cognitions that are more malleable to the TB intervention activities. In contrast, leadership may require more time to unfold, evolve, and involve additional perceptions of the team environment. This explanation awaits future research. Collectively, the study findings provide empirical support for Carron and Spink's (1993) TB model that identifies role acceptance and leadership as key structural elements (as inputs) contributing to cohesion.

An interesting finding that arose from the qualitative interviews was the natural emergence of athlete leadership as a result of the coaches taking a more democratic leadership style to give the athletes the opportunity to lead and determine the best approach to navigate the ropes course. In fact, existing research supports this finding, as group-dynamics researchers have identified athlete leadership as important for overall group functioning—including perceptions of group cohesion (e.g., Vincer & Loughead, 2010). As a result, Hoffmann (2019) has advanced recommendations for the development of athlete leadership under different controlled conditions such as TB. Based on these findings, two recommendations emerge. The first would be to label leadership (as it stands currently) as coach leadership, and the second would be to add an athlete-leadership item to the TEAM for future use.

Based on these results, it is important to acknowledge the presence of alternative explanations for the study findings. Although it may be possible to interpret and attribute the changes in role acceptance, leadership, and task cohesion to the targeted TB intervention, the longitudinal study design also may have contributed to the results. More specifically, in the absence of a control condition, the increases in these variables could be due in part to natural group development over time, given that the variables not targeted for the TB (but captured in the TEAM inventory) also increased over time. Other variables not accounted for in the analyses (e.g., team performance, collective efficacy) also may have contributed to these findings. One approach to build on this limitation is to experimentally test the utility of the TEAM to enhance TB in sport settings using control groups. As an example, a quasi-experimental design may include three conditions: assignment of teams to (a) use the TEAM to intervene on specific TB factors, (b) a usual-care condition that targets all TB factors, and (c) a true control condition. Using this approach, the variance in targeted group constructs and cohesion can better be teased apart to understand the effectiveness of the TB intervention versus other explanations.

Given the preliminary nature of the study, it is also important to note other constraints on the generalizability of the findings. First, the case study included only one team. Future research should investigate multiple teams in other sports to determine the utility of the TEAM across contexts. Second, given the case-study approach and preliminary findings demonstrating proof of concept for the applied tool, next steps must involve assessing the psychometric properties of the TEAM. This may include a panel review with other experts in the area of group dynamics and a larger-scale cross-sectional study to establish reliability and validity of the inventory. Third, given that the initial descriptive statistics for cohesion indicated a team with a high level of cohesion, the findings may only be generalizable to moderately to highly cohesive teams. In the present case, the TEAM was effective at pinpointing specific TB factors to target, although it may be of equal and potentially greater benefit to use the TEAM and outdoor-adventure-based TB interventions with teams that indicate lower perceptions of cohesion. Fourth, the TEAM was only used to evaluate the team before, immediately after, and 1 month after the intervention. An innovative longitudinal approach may involve using the TEAM at multiple points throughout the entire season to inform a series of TB activities. Finally, the effect on social cohesion was not present in the current study. Given that task cohesion often develops in primarily task-based groups before social cohesion begins to develop, it is possible that the timing of the study could explain this finding (e.g., Arrow, Poole, Henry, Wheelan, & Moreland, 2004). Relevant to the longitudinal future research direction, it would also be interesting to test social cohesion later in the life span of this group (i.e., mid- or late season). Taken together, a longitudinal study design could track the natural progression of team dynamics over the course of a season (e.g., ethnography). This would help identify other factors that may have increased over the course of the season and whether they related to the TB intervention.

From an applied perspective, recent advances in technology (e.g., Mentimeter; https://www.mentimeter.com/) offer coaches and consultants the opportunity to survey a team quickly using mobile devices (e.g., cell phones). These athlete perceptions can then be used to tailor a targeted TB intervention for any team at any point throughout a season. Taken together, using the TEAM to identify and target specific TB factors in an intervention should be more efficient in terms of time and resources than broader approaches typically used for TB in sport.

Conclusion

Designed with the specific intention of enhancing group cohesiveness, TB is a useful intervention for sport psychology practitioners to bring a group of individual members closer together as a team (Newman, 1984). However, one gap in our understanding to date is a method to determine exactly which aspects of the group are lower and may be preventing a team from reaching its peak levels of cohesion (Brawley & Paskevich, 1997). Currently, practitioners would be instructed to lead the team through exercises that focus on all components of the TB model (Carron & Spink, 1993; see Figure 1). But is that necessary and efficient? Is it possible that some of these variables are already present to a high degree and serve as a cue to inform current cohesion perceptions (McLaren & Spink, 2018)?

The current study represented an initial step in this direction to see if a targeted TB approach would be sufficient to increase athlete perceptions of team cohesion. This is important because time is often limited between a request for TB and the implementation of a TB intervention, and a program based on specific team needs would optimize impact. Although the findings of this study will need to be replicated with other sport teams (and the inventory subject to further psychometric attention), it appears that the TEAM may have promise as a tool for practitioners to maximize the efficiency of a TB program.

References

Arrow, H., Poole, M.S., Henry, K.B., Wheelan, S., & Moreland, R. (2004). Time, change, and development: The temporal perspective on groups. *Small Group Research, 35,* 73–105. doi:10.1177/1046496403259757

Beauchamp, M.R., Lothian, J.M., & Timson, S.E. (2008). Understanding self and others: A personality preference-based intervention with an elite co-acting sport team. *Sport & Exercise Psychology Review, 4,* 4–20. doi:10.1080/02640414.2014.970220

Beer, M. (1976). The technology of organization development. In M.D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 937–994). Chicago, IL: Scott, Foresman.

Bhaskar, R. (1978). On the possibility of social scientific knowledge and the limits of naturalism. *Journal for the Theory of Social Behaviour, 8,* 1–28. doi:10.1111/j.1468-5914.1978.tb00389.x

Bloom, G.A., Loughead, T.M., & Newin, J. (2008). Team building for youth sport. *Journal of Physical Education, Recreation & Dance, 79,* 44–47. doi:10.1080/07303084.2008.10598246

Bloom, G.A., Stevens, D.E., & Wickwire, T.L. (2003). Expert coaches' perceptions of team building. *Journal of Applied Sport Psychology, 15,* 129–143. doi:10.1080/10413200305397

Brawley, L.R., & Paskevich, D.M. (1997). Conducting team building research in the context of sport and exercise. *Journal of Applied Sport Psychology, 9,* 11–40. doi:10.1080/10413209708415382

Bruner, M.W., Eys, M.A., Beauchamp, M.R., & Côté, J. (2013). Examining the origins of team building in sport: A citation network and genealogical approach. *Group Dynamics: Theory, Research, and Practice, 17,* 30–42. doi:10.1037/a0030114

Bruner, M.W., & Spink, K.S. (2010). Evaluating a team building intervention in a youth exercise setting. *Group Dynamics: Theory, Research, and Practice, 14,* 304–317. doi:10.1037/a0018296

Bruner, M.W., & Spink, K.S. (2011). Team building and adherence in youth exercise participants. *Group Dynamics: Theory, Research, and Practice, 15,* 161–172. doi:10.1037/a0021257

Buller, P.F. (1986). The team building–task performance relation: Some conceptual and methodological refinements. *Group and Organizational Studies, 11,* 147–168. doi:10.1177/105960118601100303

Carron, A.V., Brawley, L.R., & Widmeyer, W.N. (1998). The measurement of cohesiveness in sport groups. In J.L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 213–226). Morgantown, WV: Fitness Information Technology.

Carron, A.V., & Spink, K.S. (1993). Team building in an exercise setting. *The Sport Psychologist, 7,* 8–18. doi:10.1123/tsp.7.1.8

Carron, A.V., Spink, K.S., & Prapavessis, H. (1997). Team building and cohesivness in the sport and exercise setting: Use of indirect interventions. *Journal of Applied Sport Psychology, 9,* 61–72. doi:10.1080/10413209708415384

Conley, L., Caldarella, P., & Young, E. (2007). Experience for at-risk secondary chool students. *Journal of Experiential Education, 30,* 21–35. doi:10.1177/105382590703000103

Creswell, J.W., & Miller, D.L. (2000). Determining validity in qualitative inquiry in qualitative inquiry. *Theory Into Practice, 39,* 124–130. doi:10.1207/s15430421tip3903_2

Dunn, J.G.H., & Holt, N.L. (2004). A qualitative investigation of a personal-disclosure mutual-sharing team building activity. *The Sport Psychologist, 18,* 363–380. doi:10.1123/tsp.18.4.363

Ebbeck, V., & Gibbons, S.L. (1998). The effect of a team building program on self-conceptions of Grade 6 and 7 physical education students. *Journal of Sport & Exercise Psychology, 20,* 300–310.

Estabrooks, P., & Carron, A.V. (1999). The influence of the group with elderly exercisers. *Small Group Research, 30,* 438–452. doi:10.1177/104649649903000403

Evans, M.B., Eys, M.A., Bruner, M.W., & Kleinert, J. (2014). Building cohesive groups. In A. Papaioannou& D. Hackfort (Eds.), *Routledge companion to sport and exercise psychology* (pp. 513–528). New York, NY: Routledge.

Eys, M.A., & Brawley, L.R. (2018). Reflections on cohesion research with sport and exercise groups. *Social and Personality Psychology Compass, 12,* e12379. doi:10.1111/spc3.12379

Eys, M.A., Loughead, T.M., Bray, S.R., & Carron, A.V. (2009a). Development of a cohesion questionnaire for youth: The Youth Sport Environment Questionnaire. *Journal of Sport & Exercise Psychology, 31,* 390–408. PubMed ID: 19799000 doi:10.1123/jsep.31.3.390

Eys, M.A., Loughead, T.M., Bray, S.R., & Carron, A.V. (2009b). Perceptions of cohesion by youth sport participants. *The Sport Psychologist, 23,* 330–345. doi:10.1123/tsp.23.3.330

Eys, M.A., Schinke, R.J., Surya, M., & Benson, A.J. (2014). Role perceptions in sport groups. In M. Beauchamp& M. Eys (Eds.), *Group dynamics in exercise and sport psychology* (pp. 131–146). Oxford: Routledge.

Gibbons, S.L., & Black, K.M. (1997). Effect of participation in team building activities on the self-concepts of middle school physical education students. *Avante, 1,* 46–60.

Glass, S.J., & Benshoff, J.M. (2002). Facilitating group cohesion among adolescents through challenge course experiences. *Journal of Experiential Education, 25,* 268–277. doi:10.1177/105382590202500204

Hans, T.A. (2000). A meta-analysis of the effects of adventure programming on locus of control. *Journal of Contemporary Psychotherapy, 30,* 33–60. doi:10.1023/A:1003649031834

Hoffmann, M.D. (2019). Considerations for facilitating the development of peer mentoring relationships between athletes. *Journal of Sport Psychology in Action, 10*(1), 59–72. doi:10.1080/21520704.2018.1509164

Long, A. (2001). Learning the ropes: Exploring the meaning and value of experiential education for girls at-risk. *Journal of Experiential Education, 24,* 100–108. doi:10.1177/105382590102400207

Martin, L.J., Carron, A.V., & Burke, S.M. (2009). Team building interventions in sport: A meta-analysis. *Sport & Exercise Psychology Review, 5,* 3–18. doi:10.1080/21520704.2011.653047

McLaren, C.D., & Spink, K.S. (2018). Examining communication as information exchange as a predictor of task cohesion in sport teams. *International Journal of Sport Communication, 11,* 149–162. doi:10.1123/ijsc.2018-0004

Newin, J., Bloom, G.A., & Loughead, T.M. (2008). Youth ice hockey coaches perceptions of a team building intervention program. *The Sport Psychologist, 22,* 54–72. doi:10.1123/tsp.22.1.54

Newman, B. (1984). Expediency as benefactor: How team building saves time and gets the job done. *Training and Development Journal, 38,* 26–30.

Pain, M., & Harwood, C. (2009). Team building through mutual sharing and open discussion of team functioning. *Human Kinetics, 23,* 523–542. doi:10.1123/tsp.23.4.523

Patton, M.Q. (2002). *Qualitative research and evaluation methods*. Thousand Oaks, CA: Sage.

Prapavessis, H., Carron, A.V., & Spink, K.S. (1996). Team building in sport. *International Journal of Sport Psychology, 27,* 269–285.

Senecal, J., Loughead, T.M., & Bloom, G.A. (2008). A season-long team-building intervention: Examining the effect of team goal setting on cohesion. *Journal of Sport & Exercise Psychology, 30,* 186–199. PubMed ID: 18490790 doi:10.1123/jsep.30.2.186

Smith, B., & McGannon, K.R. (2017). Developing rigor in qualitative research: Problems and opportunities within sport and exercise psychology. *International Review of Sport and Exercise Psychology, 11,* 101–121. doi:10.1080/1750984X.2017.1317357

Sparkes, A.C., & Smith, B. (2014). *Qualitative research methods in sport, exercise and health: From process to product*. New York, NY: Routledge/Taylor & Francis Group.

Spink, K.S. (2015). Group cohesion in sport and exercise. In. P.R.E. Crocker (Ed.), *Sport and exercise psychology: A Canadian perspective* (3rd ed., pp. 227–225). Toronto, ON, Canada: Pearson.

Spink, K.S., & Carron, A.V. (1993). The effects of team building on the adherence patterns of female exercise participants. *Journal of Sport & Exercise Psychology, 15,* 39–49. doi:10.1123/jsep.15.1.39

Stewart, K.L.N., Carreau, J.M., & Bruner, M.W. (2016). Team building using a challenge rope course experience in youth sport. *Physical and Health Education Nexus Journal, 7,* 1–15.

Vincer, D.J., & Loughead, T.M. (2010). The relationship among athlete leadership behaviors and cohesion in team sports. *The Sport Psychologist, 24,* 448–467. doi:10.1123/tsp.24.4.448

Watson, J., Martin-Ginis, K., & Spink, K. (2004). Team building in an exercise class for the elderly. *Activities, Adaptation & Aging, 28,* 35–47. doi:10.1300/J016v28n03_03

Appendix:Team Environment AssessMent (TEAM)

The following questions ask about your perceptions of your team. Please read each statement and circle a number from 1 to 9 to show how much you agree with the statement as it pertains to your team.

1. Role Clarity: Team members clearly understand their role on the team.

e.g., a scorer, an enforcer

1	2	3	4	5	6	7	8	9
Strongly disagree								Strongly agree

2. Role Acceptance: Team members accept their role on the team.

1	2	3	4	5	6	7	8	9
Strongly disagree								Strongly agree

3. Leadership: When appropriate, the coach is open to engaging in a participative style of leadership, allowing for democratic decision making for some issues.

1	2	3	4	5	6	7	8	9
Strongly disagree								Strongly agree

4. Group Norms: Expectations are established for the behavior considered appropriate for team members.

e.g., team norms have been established, such as all team members try their hardest for every drill in practice, everyone arrives early to practice, etc.

1	2	3	4	5	6	7	8	9
Strongly disagree								Strongly agree

5. Conformity to Group Norms: Team members conform to the team's established group norms.

e.g., team members try their hardest during drills in practice since hard work is a behavioral expectation.

1	2	3	4	5	6	7	8	9
Strongly disagree								Strongly agree

6. Togetherness: Team members are consistently in close physical proximity with one another.

e.g., the team practices, trains, and competes together multiple times per week. Team will occasionally spend time together even on off days.

1	2	3	4	5	6	7	8	9
Strongly disagree								Strongly agree

7. Goals and Objectives: Team members participate in the development of team goals.

e.g., all team members help develop team goals for the season, such as certain number of wins or winning a championship.

1	2	3	4	5	6	7	8	9
Strongly disagree								Strongly agree

8. Cooperation: Team members work together as a group rather than as individuals.

e.g., while team members do compete against one another for playing time and in practice, all players understand that these processes are necessary to get better as a team.

1	2	3	4	5	6	7	8	9
Strongly disagree								Strongly agree

9. Distinctiveness: Team members are distinguishable from others who are not on the team.

e.g., jerseys, cheers, track suits, etc. that distinguish them from non–team members.

1	2	3	4	5	6	7	8	9
Strongly disagree								Strongly agree

10. Sacrifices: Individual team members make sacrifices in order to benefit the whole team.

e.g., team members make sacrifices such as picking up water bottles, ensuring that the dressing room is clean, or listening to others' warm-up music to benefit the team.

1	2	3	4	5	6	7	8	9
Strongly disagree								Strongly agree

11. Interaction and Communication: All teammates interact and communicate freely with one another.

e.g., the team uses lots of group drills that encourage interaction and communication rather than individual drills.

1	2	3	4	5	6	7	8	9
Strongly disagree								Strongly agree