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Team Building
Using a Challenge Ropes Course Experience in Youth Sport

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Abstract

This study examined the efficacy of a challenge ropes course team building (TB) intervention for increasing group cohesion in a youth sport team using a mixed methods approach. Athletes (n = 10, M_{age} = 12.3) and coaches from a competitive female U14 ringette team participated in a one-day challenge ropes course experience approximately one month into the season. Questionnaires were completed to assess group cohesion pre- and post-intervention. Interviews were also conducted to further explore the efficacy of the intervention on the group's dynamics. Results revealed that task cohesion significantly increased post-intervention. Additional benefits were also illuminated through interviews including increased trust, teamwork, communication and interaction,, camaraderie, and team development. The findings support the use of a TB intervention using a challenge ropes course experience for a youth sport team.

Keywords: youth, sport, team building, challenge ropes course

Résumé

Développer l'esprit d'équipe : 1e recours à une expérience en parcours d'hébertisme aérien en sport jeunesse

Cette étude évalue au moyen d'une méthodologie mixte l'effet d'une participation à un parcours d'hébertisme aérien sur la cohésion d'une équipe de sport jeunesse. Les athlètes (n = 10, $M_{âge}$ = 12,3 ans) et les entraîneurs d'une équipe de compétition de ringuette, 14 ans et moins, ont participé à une expérience d'une journée sur un parcours d'hébertisme aérien environ un mois après le début de leur saison. Les participants ont répondu à un questionnaire avant et après l'intervention. Des entrevues ont également été réalisées afin d'examiner de façon plus approfondie l'effet de l'intervention sur la dynamique du groupe. Les résultats révèlent une augmentation significative de la cohésion post-intervention. Les entrevues ont par ailleurs mis en lumière d'autres effets positifs, soit une amélioration de la confiance, du travail d'équipe, de la communication, de l'interaction, de la camaraderie et de l'équipe en général. Les conclusions de l'étude sont favorables au recours à une intervention de consolidation de l'esprit d'équipe sur parcours d'hébertisme aérien dans le contexte d'une équipe de sport jeunesse.

Mots-clés : jeunes, sport, esprit d'équipe, parcours d'hébertisme aérien

Introduction

Team building (TB) within a sport setting has become a popular group-based intervention used to improve the cohesion of a sport team (Bruner, Eys, Beauchamp, & Côté, 2013). Cohesion can be defined as, "a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or the satisfaction of member affective needs" (Carron, Brawley, & Widmeyer, 1998, p. 213). There is strong empirical evidence supporting the relationship between cohesion and success in sport (Carron, Bray, & Eys, 2002). Many researchers and practitioners in sport have sought to improve cohesion by using a TB intervention (Martin, Carron, & Burke, 2009). In addition to increased cohesion, researchers have also reported many other individual and group benefits resulting from TB interventions including increased honesty, confidence, and trust within the group, and improved communication (Beauchamp, Lothian, & Timson, 2008; Bloom, Stevens, & Wickwire, 2003; Dunn & Holt, 2004; Pain & Harwood, 2009).

While there is considerable support for the TB-cohesion relationship in sport, studies conducted in a youth sample are rare (Martin et al., 2009). A small but emerging body of research has highlighted the efficacy of TB in youth sport (Bloom, Loughead, & Newin, 2008; Newin, Bloom, & Loughead, 2008; Senécal, Loughead, & Bloom, 2008). A study by Newin and colleagues (2008) found that coaches of youth hockey whose teams participated in TB exercises reported that their athletes bonded as a team through the experience, which helped them work together more efficiently. A second study examined the effectiveness of a season-long TB goal-setting intervention in a sample of female high school basketball teams (Senécal et al., 2008). Results revealed that those youth participants exposed to the TB intervention reported significantly stronger perceptions of cohesion post-intervention in comparison to the participants in the control condition (Senécal et al., 2008). The findings of these two studies in youth sport are encouraging and support the well-established links between TB and cohesion with adult samples (Martin et al., 2009).

There have been multiple approaches to implementing TB interventions in sport. Martin and colleagues (2009) characterized team building interventions into four different areas: (a) single task-oriented protocols such as goal-setting, (b) task-oriented protocols that incorporate multiple psychological constructs, (c) socially-oriented protocols focusing on interpersonal relations, and (d) adventure-based experiences. In their meta-analysis, Martin and colleagues (2009) concluded that adventure-based TB interventions yield some of the most promising results and, given the likelihood for success, should be considered by coaches.

Challenge ropes courses (hereafter referred to as challenge courses) are commonplace as adventure-based experiences with origins in the military as obstacle courses in 1941 and later in Outward Bound schools in the 1940's in Britain and 1960's in the United States (Rohnke, Rogers, Tait, & Wall, 2007). Challenge courses are apparatuses constructed out of wood, ropes, and steel cables that are suspended from trees or utility poles, and range in height from ground level to 50 feet (Prouty, Panicucci, & Collinson, 2007). Challenge courses are typically classified as low or high ropes courses. Low ropes courses comprise a series of elements that are constructed close to the ground, ranging between a few inches to 12 feet (4 meters). Low elements are commonly oriented to group problem-solving activities, and safety is generally managed through spotting. High ropes courses comprise elements suspended at heights between 20 and 50 feet (6 to 15 meters), and are commonly oriented to individual challenges. Participants wear rock-climbing style safety equipment, such as a seat harness and helmet. A belay system

keeps the participant safe by maintaining a secure point of contact on the course to prevent a fall from height (Prouty et al., 2007).

Challenge courses can be facilitated in recreational, educational, developmental, and therapeutic contexts (Rohnke et al., 2007) and have been shown to be efficacious for different youth group contexts. A one-day experience for at-risk middle school students led to increased social involvement in the classroom (Conley, Caldarella, & Young, 2007). Glass and Benshoff (2002) found that group cohesion among adolescents was developed after a one-day low ropes course experience. Long (2001) found that throughout a challenge course trust was established between at-risk youth girls. Gillis and Speelman (2008) conducted a meta-analysis on challenge course research and found that of these four foci, the developmental (i.e., concerned with enhancing functional behavior and attitudes; Priest & Gass, 2006) context is the most salient with youth populations.

In the team building literature, one noteworthy study yielded promising results after an adventure-based TB intervention with youth physical education students. Ebbeck and Gibbons (1998) evaluated the effectiveness of a TB intervention on the self-conceptions of youth physical education students through the facilitation of a series of adventure-based physical challenge activities. The results revealed that perceptions of self-conceptions for those in the treatment group post-intervention were significantly higher than those in the control group. Moreover, the researchers reported that females experienced a greater benefit from the intervention than did males. Subsequently, Gibbons and Black (1997) conducted a study evaluating the same TB intervention on self-conceptions of youth physical education students, which yielded similarly promising results over the control group, further reinforcing the benefits of adventure-based activities as a TB approach.

To our knowledge, researchers have not yet examined the effectiveness of challenge ropes course experiences as an adventure-based TB intervention for a youth sport team. Given the support for adventure-based programming approaches to TB for sport teams generally (Martin et al., 2009) and the promising findings from challenge course and adventure-based experiences in various youth group contexts (e.g., Conley et al., 2007; Ebbeck & Gibbons, 1998; Gibbons & Black, 1997; Gillis & Speelman, 2008; Glass & Benshoff, 2002; Long, 2001), the present study was devised to determine whether group cohesion would increase using a challenge ropes course experience as a TB intervention for a youth sport team. A mixed method approach was utilized with one case to address the purpose of this exploratory study.

Method

Participants

A convenience sampling approach was taken in recruiting a case for participation in the study. Through a relationship between the first author and a Northeastern Ringette Association (Ontario, Canada), ten female athletes aged 11 to 14 from an U14 representative ringette team (M_{age} = 12.3) were recruited and are the focus of the study. Ringette is a sport indigenous to North America played on an ice surface with straight sticks and a rubber ring. It is a team-oriented sport with the objective of the game being to score on the other team's goal. The athletes had been playing ringette for an average of six years with seven returning athletes and three new athletes on the team. Four adult coaches (one female and three males) participated in the study in varying degrees, described further below. Athletes and coaches were all Caucasian.

Procedure

Prior to conducting the research, ethical approval was obtained from the University and the Board of Directors of the participating ringette association. The team was recruited by the first author through email communication with this association. An interested coach agreed to invite the researcher to seek consent from his athletes to take part in the study. Participants and coaching staff were introduced to the study and the role of the participants was described. Subsequently, voluntary consents were obtained from coaches, athletes, and parents. Participants were also required to submit a signed waiver in order to participate in the challenge course activities.

Intervention

A one-day challenge course experience was facilitated for the TB intervention approximately one month into the season. The second author, who has an advanced background in facilitating challenge courses across various recreational, educational, developmental, and therapeutic contexts (Rohnke et al., 2007), planned and conducted the TB intervention with the assistance of another trained challenge course facilitator. The intervention was prescribed to improve communication among players and coaches and focused more broadly on task and social cohesion. That is, the activities required effective communication for successful completion, and encouraged cohesion through social and task pursuits. The intervention, elaborated upon below, took place at Wendigo Lake Expeditions in Ontario, Canada.

According to Bisson (1999), to have a positive effect on cohesion an appropriate sequence of activities in an adventure program comprises: (a) acquaintance activities, (b) de-inhibitizer activities, (c) communication activities, (d) trust activities, (e) group problem-solving activities, (f) low ropes course activities, (g) high ropes course activities, and (h) outdoor pursuit experiences. Using this sequence as a guiding framework, the TB intervention included an introduction/icebreaker activity, creation of a full value contract, a progression of trust activities, low ropes course activity, high ropes course experience, and a final debrief at the end of the day. All athletes and the four coaches participated together as a team in the day's activities.

The introduction/icebreaker activity was used to familiarize the athletes and coaches with the two facilitators and to begin to foster a positive, collaborative, and cohesive environment. The facilitators then had the participants create a full value contract (i.e., a written agreement created by members outlining behavior expectations; Schoel, Prouty, & Radcliffe, 1988). Taking turns writing down their ideas, the completed full value contract became a point of reference with which the group could evaluate their behaviors and interactions for the remainder of the intervention.

Next, the team participated in a progression of trust activities, which required effective communication for safe participation. This activity progression started with a simple activity where participants took turns falling backwards into the arms of their peer, who supported them and returned them back to a standing position. Next, the first activity was repeated with the addition of a third member who placed themselves in front of the faller and supported them the same way as the peer behind, enabling a safe forwards-and-backwards 'tic-tock' pattern. The team was then split into two subgroups, including two coaches per group. One participant stood surrounded by a circle of the remaining participants who were standing shoulder-to-shoulder and facing inwards. The participant in the middle then proceeded to sway freely in any direction as the circled participants supported that individual, guiding them back to a standing position. The final activity in the trust progression was a 'Trust Fall'. One participant would stand on top of a

wood box that was approximately 4 feet tall. The remaining members lined up in front of the box in two lines facing each other, with arms outstretched and ready to catch the faller. When the faller was ready, she fell backwards off the box safely into the arms of their teammates. Following this final activity, the facilitators conducted a debrief where participants were encouraged to share their experiences and to reflect on how the activities related to being a member of their ringette team.

The low ropes course activity was called 'Nitro Crossing' (Rohnke et al., 2007). Participants were split into four groups and each group assembled on one of the four activity platforms spread equally apart with a rope hanging in the middle. The objective was for each participant to get from their starting platform to an assigned destination platform without touching the ground, using only the rope and their teammates for support. If any member touched the ground, the entire team was asked to restart the activity. Following this activity, the team participated in an activity debrief where members were encouraged to reflect upon and share their experiences related to how the activity benefited the team. While all members contributed to the debrief, the coaches elected to observe the activity itself, allowing the athletes to work through the initiative.

The high ropes course experience began with a thorough safety briefing prior to inviting any participants onto the course. The high ropes course was approximately 40 feet high (12 meters) and consisted of 14 separate elements. The athletes and two coaches attempted at least one element on the high ropes course while the other two coaches participated by belaying members as they climbed onto and down from the course. This activity took up a majority of the day and was facilitated to be the main TB event as it requires effective communication for participation, and invites encouragement, teamwork, and camaraderie.

At the conclusion of the high ropes course experience, the team participated in a final debrief. The athletes and coaches sat in a circle and talked about the day's activities. Metaphor cards (i.e., a deck of cards, each with its own unique image) were used as a processing tool to help the participants reflect on their overall experience and to draw connections between the lessons they learned from the various activities and their team environment (e.g., cohesion) and processes (e.g., communication).

Data Collection and Analysis

A mixed methods approach was employed using a convergent parallel design (Creswell & Plano Clarke, 2011). This design, where methods were equally prioritized, was chosen for its potential to reveal a more comprehensive understanding of the athletes' experiences with the challenge course and the potential influence on group cohesion. Note that while each method strand was conducted and analyzed independently, the results were merged for the overall interpretation to highlight the findings from this case.

Quantitative method. Athletes completed the Youth Sport Environment Questionnaire (YSEQ; Eys, Loughead, Bray, & Carron, 2009), a measure designed to assess perceptions of group cohesion in youth sport teams, one week prior to attending the TB intervention (i.e., baseline) and two weeks after the TB intervention. Athletes completed questionnaires at both time points at the arena after practice sessions, facilitated by the first author.

The 16-item YSEQ is a measure used to evaluate task (8 items) and social (8 items) dimensions of cohesion. Participants scored each item using a 9-point Likert-type scale anchored by 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 reliability of the task and social cohesion scales were found to be

acceptable at both assessment time periods (α = 0.88 and 0.85 for task cohesion pre- and post-intervention; α = 0.73 and 0.93 for social cohesion pre- and post-intervention).

Descriptive statistics and bivariate correlations were calculated for task and social cohesion pre- and post-intervention using SPSS 22.0. To compare task and social cohesion before and after the intervention, two paired sample t-tests were conducted.

Qualitative method. Focus group interviews following general guidelines proposed by Stewart, Shamdasani, and Rook (2007) was conducted with all athlete participants. Furthermore, a personal interview following general guidelines proposed by Patton (2002) was conducted with the head coach of the team. All interviews were conducted on the same day approximately one month after the intervention, after a practice session at the arena. A semi-structured interview guide (Patton, 2002) was employed for each interview, which provided direction for the interviewer while allowing flexibility to pursue questions in a natural progression and conversational style (see Tables 1 and 2). One interviewer (i.e., first author) conducted the interviews for two reasons. The first reason was to ensure consistency between all interviews. The second reason was because the interviewer did not develop or conduct the TB intervention so there was no pressure on the participants to respond in a positive manner regarding the efficacy of the intervention.

Focus group interviews had three or four athletes in each session, and lasted approximately 15-20 minutes each. Before the questions were asked, the interviewer facilitated a guided reflection, read from a script, which prompted participants to recall the day's activities and associated sensory and emotional experiences from introduction to debrief. This exercise was facilitated to remind the participants about their experience in hopes of promoting richer data collection opportunities with each question.

Table 1
Focus Group Interview Guide for Athletes
Questions:

1. Could you please tell me about the challenge course that you took part in?
2. Could you describe the content of the different components of the challenge course?
3. Could you describe the strengths/positive aspects of the challenge course?
4. As a result of the challenge course is there anything that has changed or been altered on your team?
5. As a result of the challenge course have your feelings toward your team been altered or changed?
6. Could you describe any ways in which you would change or improve the challenge course?
7. In your opinion, which aspect of the intervention was most novel for your team?
8. Do you have any other thoughts and feelings to add about the team building intervention?

The interview guide followed Mayan's (2009) suggestion that questions be divided into three sections: (a) introduction, (b) formal segment, and (c) conclusion. The interviewer started with more general introduction questions asking participants to describe their challenge course experience (e.g., "Could you please tell me about the challenge course that you took part in?"). The next set of questions, comprising the formal interview segment, focused on any changes that the participants experienced as a result of the TB intervention (e.g., "As a result of the challenge course experience, have your feelings towards your team been altered or changed in any way?").

The concluding questions gave the participants a chance to offer any additional comments or questions that they had (e.g., "How would you change or improve the challenge course experience?"). Finally, athletes had the opportunity to share any other thoughts and feelings that they had about the TB intervention. Probing questions were used throughout the interviews when needed to encourage clarification, elaboration, and detail in the responses of the athletes (Patton, 2002).

The personal interview with the coach followed a similar format as that of the focus group interviews. Initially, the coach was asked introductory questions to lead into the topic of TB (e.g., "Could you describe in your own words what is meant by team building?"). The coach was then asked about the impact of the athletes' experiences (e.g., "Could you tell me how useful the challenge course was to you as a coach?"). Concluding questions then gave the coach an opportunity to make suggestions about the TB intervention and to talk about anything else not previously addressed (e.g., "Could you describe any ways in which the challenge course could be changed or improved?"). Probing questions were again used throughout the interview to encourage clarification, elaboration, and detail (Patton, 2002).

Table 2
Focus Group Interview Guide for Coach
Questions:

1. How many years have you been coaching/specifically coaching this team?
2. Could you describe in your own words what is meant by teambuilding?
3. What were the pros and cons of delivering the teambuilding content as a challenge course?
4. Do you feel your athletes gained anything from the challenge course?
5. Were there any other team events over the course of this season that could be seen as team building?
6. Could you tell me how useful the challenge course was to you as a coach?
7. As a result of the challenge course is there anything that you have changed/altered in the way that you now coach?
8. Could you describe any ways in which the challenge course could be changed or improved?
9. In your opinion which aspect of the intervention was most novel for your team?
10. Do you have any other thoughts and feelings about the team building intervention?

Each interview was audio recorded and transcribed verbatim using Gear Player software (V4.5.5543). Audio recordings allowed the first author to transcribe each interview accurately and without missing any important details. The interview transcripts were then read and re-read by the first author, until every meaningful reference containing one single idea (meaning unit; Tesch, 1990) was identified. A thematic content analysis was subsequently conducted collaboratively by the first and third authors where all relevant themes were identified and considered within the broader context of the qualitative data set (Braun & Clarke, 2006). To enhance the trustworthiness of the findings (Lincoln & Guba, 1985), the third author independently reviewed the data set and feedback was discussed and included. Differing points of view were discussed and resolved through consensus. Moreover, field notes taken by the first author during the intervention facilitated triangulation (Denzin, 1978) of the various data sources

(i.e., respondents' comments, transcriptions, and field notes) to strengthen the credibility of the results (Lincoln & Guba, 1985).

Results

Descriptives and bivariate correlates for each variable are presented in Table 3. An examination of the descriptive statistics for task and social cohesion indicated increases in both variables pre-post intervention.

The paired sample t-tests indicated that task cohesion improved significantly from pre to post assessment (t (8) = -3.02. p = 0.02, Cohen's d = 2.13; ES=0.73) while social cohesion did not significantly change from pre to post assessment (t (8) =-.868, p = 0.41; *Cohen's d* = 0.61; ES=0.29). The effect sizes were medium to large for each variable.

Table 3 ***Descriptive and Bivariate Statistics***

Variables	Mean	SD	1	2	3	4
1. Task Cohesion – Pre	7.63	.81	-	.29	.85**	.44
2. Social Cohesion – Pre	7.06	.94		-	.33	.72*
3. Task Cohesion – Post	8.07	.60			-	.26
4. Social Cohesion – Post	7.30	1.2				-

Note: ***p <.01; *p<.05*

Six distinctive themes were identified from the qualitative data representing experiences and beliefs pertaining to the TB intervention. Four themes represent the athletes' experiences: (a) trust, (b) teamwork, (c) interaction/communication, and (d) cohesion. Additionally, four themes were underlined from the coach's experience: (a) trust (b) teamwork, (c) camaraderie, and (d) team development. The six distinctive themes are discussed below, followed by participants' evaluation of the challenge course intervention.

Trust

The athletes found that the level of trust between the team members had increased as a result of the TB intervention. One athlete stated, "I feel a lot closer to some girls because I've grown trust with them and I bonded with a lot of girls during the intervention" (P7). Another athlete remarked, "There's a lot more trust on the team because you really had to trust the person that you're with and they had to trust you back, especially during the high ropes" (P5). Similarly, the coach found that trust had improved among athletes following the intervention: "I think the intervention relays itself out onto the ice because the players trust each other to back one another up." When the coach was asked what changed the most among the athletes, he identified trust.

Teamwork

Athletes found that many of the activities required everyone to work together. One shared, "You had to work together. You couldn't do it alone" (P2). Another noted, "It helped us become a team because we had to help and depend on each other" (P4). Similarly, reporting on the importance of teamwork generally, one athlete suggested, "Teamwork and talking and interacting with each other have improved on the team, we learned that you have to help each other because you'd never be able to accomplish anything alone" (P6). The coach also identified

that his athletes were working better as a team following the intervention. He shared, "I think it made me see that the athletes saw how useful teamwork really is."

Interaction/Communication

Athletes highlighted that interaction and communication improved within the team as a result of the challenge course experience and improved their overall performance as a ringette team. One athlete stated, "I think the intervention had a really good impact on the way we play now. After we did the experience we got to know each other a little better, communication improved, and now we've moved on and are way better than we were before" (P2). Another reflected, "On the ice there is a big difference now. Before the teambuilding day, we weren't understanding the concept of what talking can do for your team" (P8). After the intervention many athletes found that they were able to interact and socialize with each other more often off the ice as well: "I wasn't very close with some of the others and now we actually talk and hang out" (P1). The coach also noticed an increase in interaction and communication from more withdrawn athletes on his team during the intervention. He said, "One of the girls really surprised me as being a vocal helper because she is normally very independent and more or less did her own thing. I expected to see that on the ropes course and I didn't."

Cohesion

The athletes identified that cohesion had increased on their team and further suggested that this growth led to increased performance. One youth summarized the effect:

> We were all working together and I find that the intervention transferred onto the ice afterwards because now we can talk to each other and make better passes. It definitely transferred to the ice and improved our performance. We also got a lot closer as a team and as friends. (P3)

A second athlete supported this statement by saying, "We are congratulating each other more and when a goal is scored on us we go tap [the goal tender's] pads and say, 'shake it off' and I have found it's made a big difference from before the intervention" (P5). The coach commented, "The players back each other up more on the ice if a mistake is made."

Camaraderie

Athletes noticed an increase in camaraderie between each other after the challenge course intervention:

> [The intervention] taught you to rely on your teammates because you know they are not going to let you down because they were right by your side during the ropes courses and it definitely had a huge impact on how we are today. (P3)

The coach admitted that he was surprised to see a marked increase in camaraderie among his players after the TB intervention. He stated, "I didn't think I would see the camaraderie and the helpfulness within the team after only one or two activities that were delivered." Reflecting on the team after the experience, the coach noted, "Nobody ever criticizes each other on the ice or in the change room. Everybody is really supportive of one another and I think the ropes course may have helped with that."

Team Development

The athletes noticed how they developed as a team after the intervention: "I think the trust from the high ropes transferred to trust on the ice because now I don't hesitate when I pass to someone, I can trust that who I'm passing to will get the ring" (P7). Athletes also thought the low ropes course attributed to team development: "I liked the low ropes because you had to build on your team strengths by figuring out the best way to complete the activity" (P4). Another athlete shared, "For the low ropes you had to be patient and not get frustrated with your

teammates because not everyone has the same strengths as you" (P5). The coach found that team development increased following the TB intervention:

> I think the ropes course taught me that the kids can be taught to develop as a team … It was really good to see the kids that normally don't interact genuinely helping each other. The high ropes really made the team want to help each other.

Evaluation of Challenge Course Intervention

In addition to group and individual benefits of the TB identified, the players emphasized difference aspects of the TB intervention activities. One athlete mentioned that she thought the trust progressions were very beneficial "I think it was the trust fall, just because you really had to trust, but then when you fell down you got a feeling, you were really relieved, and you got a feeling of safety from your team" (P6).

Most athletes felt that the low ropes course made them interact more as a team: "I liked [the low ropes] because you actually got to build on your team strengths and had to do technical stuff, like figure out which would be the best route to take to get it done" (P1). Another participant noted, "The low ropes were definitely more of a teamwork event than the high ropes but they were both awesome" (P3). With regards to the high ropes course, the coach found that the elements provided a lot of opportunities for partner-based support: "The high ropes course especially was beneficial. It was really cool watching kids who come together for ringette but would not normally interact with each other helping each other and it was genuine…."

The coach reported in the interview that the debrief following the activities really helped the players to focus on making the connection between the activities that they were doing and how they could be transferred to the team outside of the adventure context. He remarked, "I thought it was good because it could have become just a physical activity, whereas [second author] kept steering it a lot of the time towards the whole; he kept reminding us and bringing us to the overall purpose."

Discussion

The purpose of this study was to evaluate the effectiveness of a challenge course experience as a platform for a TB intervention by examining its efficacy for increasing team cohesion. Empirical results revealed task cohesion significantly increased pre-post intervention with a medium-large effect. Six themes were identified from the qualitative data highlighting perceptions of the benefits of the TB intervention to the team. These themes include trust, interaction/communication, teamwork, cohesion, camaraderie, and team development. In combination, the findings demonstrate that challenge courses can be used as an effective TB intervention to foster cohesion in youth sport. Moreover, this study supports and extends previous research highlighting the significance of TB interventions for youth sport teams for increasing cohesion and improving the overall team environment (Bloom et al., 2008). Finally, the results are consistent with the literature that highlights the salience of adventure-based activities for improving perceptions of various individual and groups constructs in diverse female youth participant groups (Ebbeck & Gibbons, 1998; Humberstone, 1995; Long, 2001).

The use of a challenge course experience to improve perceptions of group cohesion has been previously reported in the outdoor adventure literature in various group settings (e.g., Bisson, 1998; Conley et al., 2007; Glass & Benshoff, 2008, Long, 2001). While this group construct has not been explored in the context of youth sport in an outdoor adventure context due to a lack of research interest until now, the results are promising and point to an opportunity for

further applied research in this area. Sport researchers may thus consider expanding on the current findings to establish further empirical support for the use of challenge course experiences to increase group cohesion in youth sport. Sport researchers may also consider expanding on the findings herein to understand other previously established individual and group benefits in youth sport to participation in challenge course experiences (Gillis & Speelman, 2008).

To this end, the players and coach noted benefits beyond cohesion from the challenge course experience. While the facilitators focused on delivering activities that would promote improvements to perceptions of group cohesion, it was not surprising that participants highlighted other benefits given the approach taken for the intervention. That is, the progression of adventure-based activities that was facilitated inherently supported opportunities for growth in a variety of individual and group constructs. Walsh and Golins' (1976) process model offers a conceptual framework that highlights the hallmarks of the participant experience in developmental outdoor adventure programs. In the Outward Bound Process Model (Walsh & Golins, 1976), participants are placed in a unique physical and social environment, given a characteristic set of problem-solving tasks, learn lessons through adaptive dissonance, experience mastery, and reorganize the meaning and direction of those experiences. Accordingly, the TB intervention was facilitated in a manner that was designed to afford the youth athletes and their coach an opportunity to experience growth and development through the prescription of novel activities in a novel setting where mastery was designed to be achievable with effective group functioning. It is important to note however that in the context of this design, the participants are left to understand their learning and its relevance, which was elucidated through the results of the interviews. These additional themes identified from the data support the benefits of TB approaches used in broader sport, adventure therapy, and education settings (e.g., Bloom et al., 2008; Conley et al., 2007; Dunn & Holt, 2004; Ebbeck & Gibbons, 1998; Glass & Benshoff, 2002; Long, 2001; Martin et al., 2009; Stevens & Bloom, 2003).

The present study supports previous calls to expand on the body of literature by evaluating TB interventions used in sport and exercise settings (Brawley & Paskevich, 1997; Bruner & Spink, 2010). While these initial findings are encouraging, it is important to acknowledge the limitations of the study. The first limitation concerns the sample size and composition. The project was intentionally designed as an exploratory case study. To ameliorate the limitation of a small sample size, a mixed method approach was employed. Nonetheless, the sample size and younger female sample is limiting to researchers who wish to build upon this area of research in future projects. Subsequent investigations could include multiple teams with both genders represented and even with multiple sports and age ranges to support more generalizeable findings. Secondly, the researchers employed a pre-experimental design in this study. An experimental design with a control group to compare outcomes would strengthen the study design. Finally, Martin and colleagues (2009) previously asserted that the longer the intervention in duration, the greater the opportunity for more significant results. Researchers should consider designing and evaluating challenge course TB interventions of longer duration or involving multiple sessions over a team's season to increase opportunities for success.

The researchers sought to establish whether or not a challenge course experience as a TB intervention could present a promising avenue for youth sport team growth and development. There are a number of future research directions that emerged from this project. First, researchers should consider replicating this study using a full season intervention that captures multiple assessment points and includes multiple interviews over the season. This longitudinal approach can evaluate whether the effects of a TB intervention are sustained, continue to enhance, or

weaken throughout the season. A second direction relates to the perceptions of cohesion among participants prior to an intervention. When looking at the pre-assessment descriptives, perceptions of cohesion were high. It may be informative to work with a team that has low perceptions of cohesion at baseline to better understand the potential positive impact of the intervention. Finally, when speaking with the participants during interviews, it was revealed that the low ropes course promoted teamwork while the high ropes course provided more partner-based support. Based on these comments, it would be beneficial to examine the specific elements of the challenge course TB intervention in relation to cohesion.

From an applied perspective, this study offers an opportunity for coaches and teams to benefit. Broadly speaking, youth sport coaches should consider seeking out opportunities to engage their athletes in adventure-based experiences. While this study only offers results from one exploratory case, the results considered in combination with previous assertions of the efficacy of adventure-based TB approaches (Martin et al., 2009) suggest that there is a realistic opportunity for individual and group benefits. Furthermore, these benefits may extend beyond the focus of an experience to other constructs as was noteworthy in the findings herein.

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