



Using a Personal-Disclosure Mutual-Sharing Approach to Deliver a Team-Based Mindfulness Meditation Program to Enhance Cohesion

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Meditation Program to Enhance Cohesion

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Abstract

In an effort to increase perceptions of cohesion among intercollegiate soccer players, a team-based mindfulness meditation program was undertaken. This team-building program was delivered by using a personal-disclosure mutual-sharing (PDMS) approach. A total of 31 female intercollegiate soccer players from two teams participated. One team ($n = 17$), assigned to the intervention condition, was a Canadian Intercollegiate team (U Sports), while the other team ($n = 14$) who served as the control condition, was an American Intercollegiate team (NCAA, Division II). Participants completed a measure of cohesion (Group Environment Questionnaire) pre- and post-intervention. The eight-week team-based mindfulness meditation program resulted in significantly higher perceptions of social cohesion for the intervention group compared to the control group at post-intervention. However, there were no significant differences for task cohesion between the intervention and control group at post-intervention. Using PDMS seems a viable approach by which to deliver a team-based mindfulness meditation program to enhance a team's social cohesion.

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21 Mindfulness Meditation Program to Enhance Cohesion

22 In sport, numerous teams have been considered dynasties; the New York Yankees in
23 baseball, the Montreal Canadiens in hockey, the Chicago Bulls in basketball, and Manchester
24 United in soccer. Moreover, they have anecdotally attributed their success to having strong team
25 unity or team cohesion. Cohesion is viewed in such high regard due to the fact that it is a key
26 attribute of successful groups across many contexts including work, exercise, military, and sport
27 (Carron, Brawley, & Widmeyer, 1998; Carron & Eys, 2012; Martin, Paradis, Eys, & Evans,
28 2013). From an empirical perspective, the importance of cohesion comes not only from its
29 association with performance and team success (Carron, Bray, & Eys, 2002; Carron, Colman,
30 Wheeler, & Stevens, 2002), but also in its positive relationship with variables such as
31 satisfaction, passion, and intention to return (Paradis & Loughead, 2012; Paradis, Martin, &
32 Carron, 2012; Spink, Wilson, & Odnokon, 2010). With cohesion being an essential part of sport
33 teams, it is defined as a dynamic emergent state (McEwan & Beauchamp, 2014) “reflected in the
34 tendency for a group to stick together and remain united in the pursuit of its instrumental
35 objectives and/or for the satisfaction of member affective needs” (Carron et al., 1998; p. 213).

36 Not surprisingly, coaches and sport psychology consultants have taken particular interest
37 in methods to enhance cohesion within their respective teams. Team-building is one method by
38 which to develop cohesion (Paradis & Martin, 2012). The present study operationalized team-
39 building as the process of promoting a sense of cohesion that enables the team to work more
40 smoothly and effectively (Brawley & Paskevich, 1997; Widmeyer & Ducharme, 1997). In order
41 to help guide team-building interventions, Carron and Spink (1993) forwarded an applied team-
42 building model comprised of factors believed to enhance perceptions of cohesion. This is a linear

43 model consisting of inputs, throughputs, and outputs. The inputs include team environment (e.g.,
44 team togetherness, team distinctiveness) and team structure (e.g., team norms, leadership, roles).
45 These two factors are hypothesized to influence the throughput of team processes (e.g., team
46 interaction and communication, team sacrifices), which then impacts the output of cohesion. For
47 the purposes of the current study, the focus was on the team processes of team interaction and
48 communication to increase perceptions of cohesion.

49 To help foster team interaction and communication, the method used in the current study
50 was personal-disclosure mutual-sharing (PDMS) (Crace & Hardy, 1997; Dunn & Holt, 2004;
51 Holt & Dunn, 2006). PDMS is a team-building approach that invites individuals to disclose
52 stories and information to teammates (Evans, Slater, Turner, & Barker, 2013). This type of team-
53 building approach allows athletes to cultivate greater appreciation for their teammates, such as
54 understanding their values, beliefs, attitudes, and personal motives (Hirsch, 1992). That is,
55 collaborative personal disclosure matched with mutual sharing provides group members an
56 opportunity for empathic responses and can foster enhanced understanding and appreciation of
57 one another's experiences (Dryden, 2006). PDMS, as a team-building intervention, has not only
58 increased perceptions of cohesion but also increased team functioning, collective efficacy, and
59 trust in teammates, as well as greater self and teammate awareness and understanding (Barker,
60 Evans, Coffee, Slater, & McCarthy, 2014; Dunn & Holt, 2004; Evans et al., 2013; Holt & Dunn,
61 2006; Pain & Harwood, 2009; Windsor, Barker, & McCarthy, 2011). For instance, Pain and
62 Harwood (2009) found their PDMS intervention led to increases in cohesion, communication,
63 trust, and confidence in teammates. Similarly, Dunn and Holt (2004) found enhanced cohesion,
64 improved confidence in teammates, and better understanding of self and others following one

65 PDMS session. Players reported feelings of enhanced closeness and connectedness coupled with
66 feelings of increased collective efficacy, and invincibility (Dunn & Holt, 2004).

67 The PDMS approach was the means by which a team-based mindfulness meditation
68 program was delivered in the current study. A team-based mindfulness meditation program was
69 selected based on Cleirigh and Greaney's (2015) contention that mindfulness may positively
70 influence cohesion since the former is related to reduced social anxiety, increased acceptance,
71 and emotional regulation. Consequently, interpersonal attraction (an element of cohesion) is
72 enhanced due to the effects of mindfulness creating an atmosphere that is more welcoming and
73 less threatening thereby allowing individuals to view their group members with openness and
74 receptivity.

75 To test their contention, Cleirigh and Greaney (2015) randomized 34 undergraduate
76 students from an applied psychology course into either a mindfulness or control condition.
77 Participants in the mindfulness condition received a 10-minute audio recording consisting of an
78 introduction to mindfulness along with two exercises to help participants become mindful of
79 their breath and emotions. Participants in the control condition listened to two educational
80 excerpts. Next, all participants were placed in groups of four within their respective experimental
81 condition and completed a hypothetical group task consisting of a winter survival activity
82 whereby the groups ranked the items (e.g., compass, axe) in order of importance for the group's
83 survival. Following the completion of the task, all participants completed a cohesion inventory
84 measuring a sense of belonging and feelings of group morale. It was found that participants in
85 the mindfulness intervention condition scored higher in cohesion than those in the control
86 condition.

87 Baltzell, Carabello, Chipman, and Hayden (2014) conducted a qualitative study
88 examining mindfulness with a Division I women's soccer team. All team members ($N = 19$)
89 received 12 mindfulness sessions (completed in a team setting) over six weeks. At the end of the
90 six-week intervention, seven of the 19 athletes participated in individual interviews to discuss
91 their experiences with the intervention. Within the results, one of the higher order themes related
92 to the impact of the intervention on the team. In particular, one of the mindfulness intervention
93 activities was related to having caring thoughts about the self and team. In discussing this
94 activity, the participants indicated that these thoughts made the team feel more united, inferring a
95 strengthening of the team's cohesion.

96 Although both of the aforementioned studies suggest that mindfulness is positively
97 related to cohesion, caution should be used when interpreting the findings. First, in the Cleirigh
98 and Greaney (2015) study, there were no baseline cohesion scores to control for whether
99 cohesion actually changed as a result of the intervention. Second, in both studies (Baltzell et al.,
100 2014; Cleirigh & Greaney, 2015), participants completed the mindfulness sessions in a group
101 setting, however, there were limited opportunities to discuss aspects of the mindfulness sessions
102 as a group. If team-based mindfulness programs are going to be used to enhance cohesion, then it
103 would be important that opportunities for the participants to interact and discuss with one another
104 exist. A PDMS approach offers the opportunity, through interpersonal interaction, to impact
105 relationship functioning such as feelings of closeness, relatedness, acceptance, and satisfaction
106 which are key attributes of mindfulness training (Carson, Carson, Gil, & Baucom, 2004).

107 Kabat-Zinn (2003) defined mindfulness as "the awareness that emerges through paying
108 attention on purpose, in the present moment, and non-judgmentally to the unfolding of
109 experience moment by moment" (p. 145). Put simply, mindfulness is the state of being attentive

110 to and aware of what is taking place in the present moment, attending to one's internal
111 experiences as they unfold in one's life, and the ability to manage these experiences within
112 oneself (Brown & Ryan, 2003).

113 Various researchers have shown that athletes who participate in mindfulness training
114 developed a better acceptance of external events and are able to better focus on internal
115 information (Gooding & Gardner, 2009; John, Verma, & Khanna, 2011). For example,
116 mindfulness training allowed athletes to reduce distraction around them and be more focused on
117 relevant moment-to-moment information to optimize performance (Bernier, Thienot, Cordon, &
118 Fournier, 2009). Mindfulness has also been related to decreasing stress, depression, anxiety, and
119 rumination (Li, Yuan, & Zhang, 2016; Remmers, Topolinski, & Koole, 2016), along with
120 increased observing and non-judging, where the individual's attention is heightened to observe
121 their present moment without judging their experience (Labelle, Campbell, Faris, & Carlson,
122 2015). Additionally, college students who participated in a mindfulness meditation program
123 reported enhanced self-control and vitality, along with better regulation of emotions and
124 suppression of thoughts (Canby, Cameron, Calhoun, & Buchanan, 2015; MacDonald & Baxter,
125 2016).

126 The current study adopted the mindfulness program, 'Koru', designed for university-aged
127 students (Rogers & Maytan, 2012). The word Koru is derived from the New Zealand Maori
128 culture which symbolizes balanced growth, new life, and harmony. Koru is a training program
129 that specifically targets young adults, teaching them mindfulness meditation that includes several
130 mind-body skills, such as abdominal breathing and guided imagery. Compared to other
131 mindfulness-based interventions (e.g., Mindful Sport Performance Enhancement, Kaufman,
132 Glass, & Pineau, 2018; Mindfulness-Acceptance-Commitment Approach, Gardner & Moore,

2004; Mindfulness Meditation Training for Sport, Baltzell & Akhtar, 2014; Berlin Mindfulness-based Training for Athletes, Jekauc, Kittler, & Schlagheck, 2017), Koru is intentionally delivered in a group setting to capitalize on interactions amongst participants, which aligns with PDMS. Participants are provided with a space for open group discussion, sharing of information, and improved communication. As noted by Greeson, Juberg, Maytan, James, and Rogers (2014), Koru provides participants with “a greater sense of connection through common humanity and less isolation” (p. 231). As a result, an important aspect of Koru is the group focused nature of the mindfulness sessions where chairs are arranged in a circle to encourage inclusion and capitalize on peer interactions, which is a fundamental component of PDMS. That is, PDMS allows participants to develop a better understanding of their teammates, cultivating trust, mutual respect, and support (Pain & Harwood, 2009), leading to a better functioning environment (Evans et al., 2013) and ultimately providing a positive environment for enhancing cohesion.

Therefore, the purpose of the present study was to explore the effects of a team-based mindfulness meditation program on perceptions of cohesion using PDMS, where participants shared their current experiences with their mindfulness practices with their teammates. Using a quasi-experimental design, it was hypothesized that individuals receiving the team-based mindfulness meditation training program intervention would have stronger perceptions of cohesion compared to individuals in the control condition following the intervention.

Method

Participants

Thirty-one intercollegiate female soccer players from two teams participated in the current study. One team and its players ($n = 17$) from a U Sports Canadian university were assigned to the intervention condition. The second team and its players ($n = 14$) from a Division

156 II NCAA American university served as the control condition. The two teams were selected
157 since they are similar in terms of competition level (ESPN, 2007) and the season was equivalent
158 in terms of the number of games played. The average age of the participants was 18.90 years (SD
159 = 1.36), had been on their current team for an average of 1.88 years ($SD = 1.05$), and had been
160 playing soccer for an average of 13.1 years ($SD = 3.29$). At the end of the regular season, the
161 intervention team had a win-tie-loss record of 4-5-8 for a winning percentage of 33.3%. The
162 control team was 2-0-16 for a winning percentage of 11.1%.

163 **Study Conditions**

164 **Intervention condition.** The athletes in the intervention condition were asked to
165 complete a questionnaire package to assess cohesion pre- and post-intervention. Rogers and
166 Maytan's (2012) Koru approach for teaching mindfulness to university students was adapted and
167 implemented as the intervention for the current study. There were eight weekly Koru team
168 sessions lasting between 45 to 55 minutes in duration. During each team session, athletes learned
169 and practiced mindfulness meditation and one or two mind-body skills (see Table 1 for a brief
170 overview of the program). Each team session began with a "check-in," which gave participants
171 an opportunity to share any struggles they were facing when completing the mindfulness
172 meditation and/or any obstacles they currently were dealing with in sport or life. Additionally,
173 the "check-in" served as an opportunity for participants to share any successes. The "check-in"
174 exercise was formatted using a PDMS approach that helped to foster an appreciation of team
175 members' values, beliefs, attitudes, and personal motives (Hirsch, 1992). In addition to the
176 weekly team sessions, the Koru program required each participant to individually practice
177 meditation for a minimum of 10 minutes daily. In order to assess participant adherence and
178 engagement, players completed a daily meditation log, which included documenting two things

179 for which the participant felt grateful. Participants were also required to attend the weekly team
180 sessions.

181 **Control condition.** The athletes in the control condition were asked to complete a
182 questionnaire package to assess cohesion twice during the season; once prior to the start of the
183 regular season and once near the end of the regular season. Throughout the season, the athletes in
184 this condition received no additional support from any sport psychology consultant, including
185 members of the research team.

186 **Measures**

187 All participants, regardless of condition, completed the 18-item Group Environment
188 Questionnaire (GEQ; Carron, Widmeyer, & Brawley, 1985) at two time points (pre- and post-
189 intervention). The GEQ assesses perceptions of cohesion across four dimensions: Individual
190 Attractions to Group-Task (ATG-T; 4 items), Individual Attractions to Group-Social (ATG-S; 5
191 items), Group Integration-Task (GI-T; 4 items), and Group Integration-Social (GI-S; 5 items).
192 Sample items from each dimension are: ATG-T, “I do not like the style of play on this team;”
193 ATG-S, “For me, this team is one of the most important social groups to which I belong;” GI-T,
194 “Our team is united in trying to reach its goals for performance;” GI-S, “Our team would like to
195 spend time together in the off season.” Respondents are asked to rate each item on a 9-point
196 Likert scale anchored at 1 (*strongly disagree*) and 9 (*strongly agree*). It should be noted that 12
197 of the 18 items from the GEQ are negatively worded and need to be reversed scored. Thus,
198 higher scores represent stronger perceptions of cohesion. Evidence for concurrent, predictive,
199 construct, and factorial validity of the GEQ has been demonstrated (Brawley, Carron, &
200 Widmeyer, 1987; Eys & Brawley, 2018; Martin et al., 2013).

201 **Procedure**

202 Ethical approval for the study was obtained from the university's research ethics board.
203 All data were collected using Qualtrics software. Participants had the opportunity to be entered
204 into a draw to win one of two \$50 Amazon gift cards. The head coach of the intervention team
205 approached members of the research team two months prior to the start of the competitive season
206 to ask if we were interested in delivering a season long team-building program. The research
207 team agreed to assist the soccer team with the primary investigator being the individual
208 responsible for delivering the team-building program. A PDMS approach was selected as the
209 method for team-building based on the notion that this type of approach is useful in increasing
210 perceptions of cohesion (Dunn & Holt, 2004; Holt & Dunn, 2006; Pain & Harwood, 2009), and
211 that mindfulness meditation programs have been shown to enhance cohesion (Baltzell et al.,
212 2014; Cleirigh & Greaney, 2015). A meeting was scheduled with the participants of the
213 intervention group to outline the mindfulness-based team-building intervention. All of the
214 athletes consented to participate in the study. The athletes in the intervention condition were
215 informed that they would be involved in a season long mindfulness meditation team-building
216 program using a PDMS approach and would complete the GEQ (Carron et al., 1985) two times
217 during the season; a baseline measure prior to the start of the regular season (Time 1), and post-
218 intervention that occurred near the end of the regular season (Time 2). The primary researcher
219 had the requisite training through a formalized workshop training program to teach mindfulness
220 (Ahlin & Kjellgren, 2016) and team-building workshops. Therefore, the first author was
221 responsible of implementing and monitoring the athletes in the mindfulness meditation team-
222 building program. Athletes in the control condition completed the GEQ at the same two time
223 points as the athletes in the intervention condition.

224

Results

225 A summary of the descriptive statistics can be found in Table 2. Data were analyzed
226 using SPSS 24 software (IBM SPSS Predictive Analytics, Chicago, IL). Given that intact teams
227 were used (i.e., one team served as the intervention group and the other as the control group),
228 Schumacker (2016) recommends the use of a MANCOVA since the “purpose of MANCOVA is
229 to adjust post means for initial differences in groups (generally based on pretest measures of
230 intact groups, where random selection and random assignment to group was not possible)” (p.
231 84). Consequently, the dependent variables were the post-intervention (Time 2) dimensions of
232 cohesion. The fixed factor was condition (intervention vs. control) and the covariates were the
233 baseline (Time 1) dimensions of cohesion. The results yielded a significant multivariate effect:
234 Pillai’s trace $F(4, 22) = 6.04, \eta^2 = .52, p < .05$, and univariate analyses demonstrated that the
235 groups differed significantly in perceptions of cohesion on the two social dimensions, with the
236 intervention group holding greater perceptions than the control group: ATG-S, $F(1, 25) = 3.90,$
237 $\eta^2 = .14, p < .05, d = 0.82$, and GI-S, $F(1, 25) = 19.48, \eta^2 = .44, p < .05, d = 1.26$. There were no
238 significant differences between the groups on the two task dimensions of cohesion: (ATG-T,
239 $F(1, 25) = .013, \eta^2 = .00, p = .91$; GI-T, $F(1, 25) = .65, \eta^2 = .03, p = .43$).

240 Discussion

241 The purpose of the present study was to examine the effects of a PDMS influenced team-
242 based mindfulness meditation team-building program on perceptions of cohesion. It was
243 hypothesized that participants in the intervention condition would have stronger perceptions of
244 cohesion following the 8-week program compared to participants in the control condition. It is
245 important to note the novelty of using the PDMS framework as a means by which a team-based
246 mindfulness meditation team-building program was delivered. Therefore, the current study is the
247 first of its kind in the realm of sport to use a team-based approach. To date, researchers have

248 investigated *individual-based* mindfulness meditation programs within sport and found the
249 programs to influence individual outcomes such as performance (e.g., Baltzell & Akhtar, 2014;
250 Kaufman et al., 2018), stress (Goodman, Cashdan, Mallard, & Schumann, 2014), injury risk
251 (Ivarsson, Johnson, Andersen, Fallby, & Altemyr, 2015), psychological well-being, life
252 satisfaction, and positive affect (Baltzell & Akhtar, 2014). However, the present study expanded
253 upon the extant literature to examine a team-based outcome in the form of cohesion.

254 The current study contributes empirical evidence to the literature that a team-based
255 mindfulness meditation program, delivered through PDMS, can positively influence perceptions
256 of social cohesion within sport (Baltzell, Chipman, Hayden, & Bowman, 2015; Cleirigh &
257 Greaney, 2015). In particular, the current study showed that the intervention group receiving the
258 mindfulness meditation program had significantly higher perceptions of social cohesion (i.e.,
259 ATG-S, GI-S) compared to the control group post-intervention. The current study's findings can
260 be explained by Crace and Hardy's (1997) notion that mutual understanding is a cornerstone of
261 the team-building process. Additional PDMS research has reported athletes sharing personal
262 stories leads to feelings of closeness, understanding, and connectedness within a team setting,
263 outcomes that often complement social cohesion (Dunn & Holt, 2004; Holt & Dunn, 2006). The
264 results of the present study also support Tziner, Nicola, and Rizac's (2003) contention that
265 perceptions of social cohesion may evolve when collaborative interactions between team
266 members are emphasized through the use of task strategies (i.e., mindfulness meditation).

267 However, the intervention did not significantly impact two dimensions of task cohesion
268 (i.e., ATG-T, GI-T). These findings in regard to task cohesion are similar to previous research
269 conducted with PDMS-based interventions in that task cohesion was not enhanced (e.g., Dunn &
270 Holt, 2004; Pain & Harwood, 2009). For the current study, this could be due to the length of the

271 intervention (i.e., 8-weeks) and/or the nature of the mindfulness intervention and the “check-in”
272 portion of each session, which provided participants an opportunity to share their challenges or
273 breakthroughs regarding their mindfulness practice. In terms of the null finding concerning task
274 cohesion, Windsor et al. (2011), using a PDMS approach to team-building, measured cohesion
275 using the GEQ pre- and post-intervention and found no significant changes to either task and
276 social cohesion. Windsor et al. (2011) attributed their null findings to the length of their
277 intervention program, which was four weeks in duration. Yet, in terms of social cohesion, Carson
278 et al. (2004) found that a mindfulness-based relationship enhancement intervention was
279 efficacious in enriching relationship functioning, showing improvement in an individual’s
280 acceptance of their partner. Consequently, the results of our intervention are aligned with the
281 characteristics of team-building interventions in sport that use a combination of omnibus and
282 socially oriented approaches (Martin, Carron, & Burke, 2009).

283 Another possible explanation to why task cohesion was not influenced by the intervention
284 program may be related to the performance standards of the intervention team in the current
285 study. It is important to note that the intervention team was quite successful in the season prior to
286 partaking in the study (i.e., 11 wins, 3 loses, and 8 ties) as they qualified for the provincial
287 championship. As such, they set high expectation for themselves in the subsequent season, which
288 included the goal of qualifying for the national championship tournament. Unfortunately, this
289 goal was not met with the team not qualifying for playoffs and finishing with a losing record.
290 From the first author’s observation, the team seemed discouraged and frustrated towards the end
291 of the intervention regarding the team’s on-field performance. Thus, it is not surprising that task
292 cohesion for the intervention team was elevated at baseline (coming off a successful season full
293 of high expectations) as opposed to post-intervention (having an unsuccessful season that

294 included a losing record and not qualifying for the post-season). We attribute the reduced task
295 cohesion to this situational occurrence.

296 Considering the well-established cohesion-performance relationship (Carron, Colman, et
297 al., 2002), we know that as performance drops, so does cohesion (and vice versa). Carron,
298 Colman, et al. (2002) found a large effect for the cohesion-performance relationship based on
299 objective measures (e.g., percentage of possible points, wins/losses) and this effect is greater in
300 females. In the current study, we had two female teams that both had losing seasons (i.e.,
301 winning percentages below 50%). In fact, the descriptive statistics showed, for the most part, that
302 both the intervention and control groups had a reduction in cohesion from pre- to post-
303 intervention as their respective on-field results declined throughout the season and thus were
304 unable to achieve their goals. However, cohesion was better maintained or salvaged in the
305 experimental condition compared to the control condition. Therefore, it is surmised that these
306 less than desirable seasons were generally associated with lower perceptions of cohesion for both
307 the intervention and control conditions. However, the results of the current study are encouraging
308 in that a PDMS approach to team-building using a group-based meditation program can help
309 mitigate these effects for social cohesion. That is, given that performance can influence cohesion,
310 the sub-optimal level of performance in the intervention group further provides confidence in the
311 effectiveness of the intervention, as it was unlikely that performance was contributing much, if
312 anything, to the cohesiveness of the team. In this case, cohesion may have been facilitating better
313 resistance to the group disruption (e.g., Brawley, Carron, & Widmeyer, 1988) experienced from
314 a losing season in the intervention group. It is also, therefore, important to determine other
315 moderating influences that may have impacted the task cohesion and team performance
316 relationship that were unaccounted in the current study such as role involvement (Eys, Carron,

317 Beauchamp, & Bray, 2005), collective efficacy (Paskevich, Brawley, Dorsch, & Widmeyer,
318 1999), and team conflict (Paradis, Carron, & Martin, 2014a). For example, Paradis, Carron, and
319 Martin (2014b) found that task and social conflict were significantly negatively related to all four
320 dimensions of cohesion. Likewise, Leo, Gonzalez-Ponce, Sanchez-Miguel, Ivarsson, and Garcia-
321 Calvo (2015) found that perceptions of cohesion and conflict fluctuated with performance and in
322 turn predicted the different levels of collective efficacy over time among professional soccer
323 players. The influence of such variables warrants further study and should be considered for
324 inclusion in future team-building research. Inclusion of team-building activities that focus on
325 role involvement and collective efficacy have shown to also be effective in improving
326 perceptions of cohesion (Martin et al., 2009).

327 The results of the current study also raise interesting insights into the dynamic nature of
328 cohesion, which has been widely advanced in theoretical and conceptual writings (Carron & Eys,
329 2012). Despite being largely untested empirically, Dunlop, Falk, and Beauchamp (2013)
330 assessed the dynamic nature of cohesion and found that social cohesion changed more over time
331 while task cohesion remained more stagnant; thus, supporting the current study's findings. Sport
332 provides an ideal environment where interactions and relationships are encouraged (Eys, Bruner,
333 & Martin, 2018). Those looking to develop and enhance social relationships in their teams
334 should keep this in mind when implementing a team-building program to promote cohesion
335 (Martin, Bruner, Eys, & Spink, 2014).

336 Although the results of the current study contribute to the literature in terms of the
337 usefulness of a team-based mindfulness program, delivered using a PDMS approach, as an
338 effective team-building tool to increase social cohesion, there is a need for continued research in
339 this area. First, it is recommended that researchers implement a team-based mindfulness

340 meditation training program using a variety of sports and with male athletes to increase
341 generalizability. Second, given that there was no significant increase in task cohesion, it would
342 be useful for researchers to conduct a qualitative study (e.g., semi-structured interviews, focus
343 groups) to determine how a losing team performance over a season impacts perceptions of
344 cohesion. Third, only one group variable—cohesion—was examined in the current study. It
345 would be worthwhile to consider other group dynamics constructs, such as peer friendships,
346 communication, and collective efficacy, when using a team-based mindfulness meditation
347 training program. Fourth, it should be noted that there were differences between the intervention
348 and control groups in terms of winning percentages that may have impacted perceptions whereby
349 the intervention group had a higher winning percentage than the control group. Nonetheless, both
350 groups had losing seasons (i.e., winning percentages below 50%). Regardless of the winning
351 percentage, losing in sport is related to negative emotions in athletes including increases in stress
352 and humiliation (Compton & Compton, 2014). Although the differences in winning percentages
353 may have influenced perceptions of cohesion, future research should move beyond winning
354 percentages as an explanation of the cohesion-performance relationship. As Jones, Mellalieu, and
355 James (2004) pointed out a more comprehensive measure of successful (or unsuccessful)
356 performances are performance indicators. In the sport of soccer, examples of performance
357 indicators may include turnovers won as a percentage of the total turnovers made by both teams
358 or time in possession of the ball. Therefore, researchers are encouraged to examine the influence
359 of these performance indicators on cohesion. Lastly, future researchers should design a study
360 with the addition of an attentional-control group. Allowing the attentional-control group to be a
361 part of PDMS (minus the mindfulness meditation) would prove valuable in determining further
362 the intervention's effectiveness.

363 The current study also offers applied implications for coaches and sport psychology
364 consultants. Using PDMS to deliver a mindfulness meditation training can be used as a team-
365 building intervention to foster perceptions of social cohesion. This gives coaches and sport
366 psychology consultants another tool to use in their practice to improve the social relationships
367 between teammates. Enhancing social cohesion remains an essential target outcome of team-
368 building (Martin et al., 2009) given the well-established social cohesion-performance
369 relationship (Carron, Colman, et al., 2002).

370 In summary, the current study was the first of its kind to explore the variables of cohesion
371 in the context of sport using PDMS to deliver a team-based mindfulness meditation training
372 program. Using a PDMS framework to deliver a team-based mindfulness meditation training
373 program can positively influence social cohesion. The current study's methodology provided
374 insight into the effectiveness of an 8-week team-based mindfulness meditation training program,
375 as 8-week programs have shown to be effective (Martin et al., 2009) and also allowed for the
376 adequate time for changes in cohesion to emerge (Dunlop et al., 2013; Windsor et al., 2011).
377 Further research pertaining to the delivery of a team-based mindfulness meditation training
378 program through PDMS to improve cohesion is warranted to confirm the findings from the
379 present study and to further advance the team-building literature in sport psychology.

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Table 1

Overview of the Team Mindfulness Meditation Training Program

Week	Mindfulness Meditation Skills
One	<ul style="list-style-type: none"> • What is Mindfulness? • Brief guided meditation (3 min) • Continue with importance of mindfulness in sport and evidence behind it • Conclude with guided meditation (10 min)
Two	<ul style="list-style-type: none"> • 5-minute meditation • Check-in • Belly Breathing – Discuss how it is both involuntary and under the students’ control, how it can reflect the students’ mood and also be used to change their mood. (Each exercise includes: Introduce, practice, feedback) • Guided meditation – Body scan
Three	<ul style="list-style-type: none"> • 5-minute meditation • Check-in • Dynamic Breathing (Chaotic Breathing) – Has its origins in yoga and is a powerful exercise for the students to use for immediate tension release and increased energy. • Guided meditation – Gathas (strengthen the students’ focus on their breath)
Four	<ul style="list-style-type: none"> • 5-minute meditation • Check-in

Five

- Walking meditation – The students can use it when they are too restless or anxious to sit still.
- Guided meditation – Labeling thoughts gives students more help in working with their thoughts, as this is often the greatest obstacle for them.

Six

- 5-minute meditation
- Check-in
- Guided Imagery – To calm the students, to change their mood, to take a vacation in their minds or prepare for a game.
- Guided meditation – Labeling feelings

Seven

- 5-minute meditation
- Check-in
- Mindful eating – A skill that students can use to enhance their pleasure in eating, as well as their ability to return their minds to the present moment.
- Guided meditation – Body scan

Eight

- 5-minute meditation
 - Check-in
 - Labeling thoughts and feelings
 - Guided meditation – Gathas
- 5-minute meditation
 - Check-in
 - Next steps for the students and developing their own meditation practice.
-

Table 2

Descriptive Statistics for Cohesion at Time 1 (Baseline) and Time 2 (Post-Intervention)

Variable	Time 1			Time 2		
	Intervention <i>M (SD)</i>	Control <i>M (SD)</i>	α	Intervention <i>M (SD)</i>	Control <i>M (SD)</i>	α
ATG-T ^a	7.94 (1.11)	7.62 (1.70)	.80	5.76 (1.98)	5.64 (1.73)	.82
ATG-S ^a	6.76 (1.48)	7.21 (1.70)	.85	7.51 (0.99)	6.20 (2.13)	.84
GI-T ^a	6.34 (1.01)	5.84 (1.24)	.82	4.91 (1.20)	4.25 (1.00)	.81
GI-S ^a	6.55 (1.37)	6.36 (1.06)	.81	6.35 (1.13)	5.02 (0.96)	.81

Note. ATG-T = Individual Attractions to the Group – Task; ATG-S = Individuals Attractions to the Group – Social; GI-T = Group Integration – Task; GI-S = Group Integration – Social.

^a Assessed on a 9-point scale ranging from 1 to 9 with higher scores representing stronger perceptions of cohesion.

Table 3

Bivariate Correlations for Cohesion at Time 1 (Baseline) and Time 2 (Post-Intervention)

Variable	1	2	3	4
			<u>Time 1</u>	
1. ATG-T	-	.46**	.65**	.62**
2. ATG-S		-	.13	.31
3. GI-T			-	.76**
4. GI-S				-
			<u>Time 2</u>	
1. ATG-T	-	.14	.49**	.56**
2. ATG-S		-	.19	.29
3. GI-T			-	.67**
4. GI-S				-

Note. ATG-T = Individual Attractions to the Group – Task; ATG-S = Individuals Attractions to the Group – Social; GI-T = Group Integration – Task; GI-S = Group Integration – Social.

**Significant at the .01 level.