HHS Public Access

Author manuscript

J Adolesc Health. Author manuscript; available in PMC 2021 November 01.

Published in final edited form as:

J Adolesc Health. 2020 November ; 67(5): 662–670. doi:10.1016/j.jadohealth.2020.08.001.

Social (un)distancing: Teammate interactions, athletic identity, and mental health of student-athletes during the COVID-19 pandemic

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Abstract

Background: Physical distancing measures to combat the spread of the novel Coronavirus have presented challenges for the mental health and well-being of college students. As campus activities ceased, student-athletes abruptly became isolated from teammates and were no longer able to participate in sport activities that are often central to their identity as an athlete. However, student-athletes who have supportive social connections with teammates during this pandemic may maintain their athletic identity to a greater extent and report better mental health.

Purpose: The current study examined how student-athletes' mental health was associated with teammate social support, connectedness, and changes to athletic identity from pre- to during-COVID-19.

Method: A sample of 234 student-athletes completed surveys prior to COVID-19 physical distancing (February, 2020), with 135 (63% female) participating in a follow-up in the month following school closures (April, 2020). Path models estimated effects of teammate social support and connectedness (during COVID-19), as well as changes in athletic identity on indices of mental health.

Results: Considering all path models tested, student-athletes who received more social support and reported more connectedness with teammates reported less dissolution of their athletic identity and – in most models – reported better mental health and well-being. Indirect effects indicated that student-athletes' change in athletic identity mediated the effects of teammate social support on psychological well-being and depression symptoms.

Conclusions: In addition to advancing theory on how small groups relate to mental health, these findings demonstrate the value in remaining socially connected with peers and maintaining role identities during the COVID-19 pandemic.

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In the wake of SARS-CoV-2, the virus that causes coronavirus disease (COVID-19), the pandemic of 2020 resulted in many changes to society. Although the 'new normal' is continually evolving, one aspect of human life is now highly salient: Social isolation can detrimentally affect mental health and well-being. Of course, social isolation is more generally a substantial concern in contemporary society, and theorists position belongingness as a fundamental human need [1]. Although these issues were recognized long before the COVID-19 pandemic [2], the consequences of isolation have been especially evident during physical distancing measures that are necessary to curtail the spread of the virus [3–5]. As evidence regarding mental health impacts of COVID-19 is in a nascent state [6], researchers have called attention toward the serious risks for mental health during both acute and chronic time spans of isolation [7,8].

Mental health consequences relate particularly to college students who are in a developmental stage in which depressive symptoms become more prevalent [9]. In March of 2020, colleges and universities closed campuses and moved courses to online formats. There is thus a critical need to study mental health during the COVID-19 pandemic, and to identify factors that are associated with adaptive responses to social isolation [8]. Impacts on mental health may be considered with respect to symptoms of mental health problems including depression (i.e., incessant sadness, feelings of worthlessness, and a lack of interest [10]). Mental health also entails positive elements, and it is critical to recognize the role of interpersonal relationships for enabling students to thrive and perform their societal roles effectively [11].

Within college settings, intercollegiate student-athletes are a unique population. Student-athletes already experience heightened risk of certain mental health problems alongside decreased willingness to seek help [12]. Student-athletes also have a lot to 'lose' in relation to how cancelled competitive seasons threaten their athletic careers, and distancing measures may reduce access to teammates who are a key source of social connectedness and support [13,14]. Nevertheless, physical distance might not equate to social isolation for student-athletes who manage to maintain connections with teammates. Taking a perspective that social distancing presents a challenge to athletes' group memberships and athletic identities, the current research was conducted to explore how the social interactions within small groups and shifts in athletic identities during the COVID-19 pandemic are associated with college student mental health.

Groups and Mental Health

Social connections with other people are critical for maintaining both mental and physical health. As an example, Holt-Lunstad and colleagues conducted a large-scale meta-analysis spanning numerous academic fields and revealed that people with many high-quality social connections live longer than others who are more solitary [15]. In addition to demonstrating the magnitude of the associations, the authors observed that the operationalizations of social connectedness used in studies tended to encompass: (a) the mere existence of connections with others (structure), and/or (b) the functional aspects of those connections [15]. Structural aspects refer to the existence or strength of connections with others, studied by examining constructs like the size of social networks, the number of group memberships, or the degree

of social participation [15,16]. Functional aspects, by contrast, refer to what individuals perceive their social connections ‘do’ and are commonly assessed through social support measures [17]. Social support involves the extent to which individuals are (or perceive they are) cared-for by others, valued, and part of a network of mutual assistance. Although there are many forms of social support, it is often distinguished into instrumental, informational, and emotional support [18].

The distinction between structural and functional aspects of social connections draws upon social support theory [18–20], but is also central to research focused generally on how group memberships impact health [21]. The unique properties of group environments may make belonging to them especially valuable for promoting well-being and protecting against depression [22,23]. For instance, emerging adults report less depression during key life transitions (e.g., entering college) when they belong to a greater number of groups [24]. Structural and functional aspects of groups are nevertheless important to distinguish because they have independent associations with health [15,25]. Whereas maintaining group memberships have positive effects on indices of mental health, such as depression [26,27], maintaining mental health during periods of adversity often requires people to draw support from their groups [28].

The role of social connections aligns with research regarding the contribution of sport group memberships to college student well-being. Team environments are closely linked to college athletes’ individual and social identities, and athletes report greater well-being when they become more embedded in sport teams and develop stronger team identities [29]. Elite athletes also commonly seek out teammate social support during key transitions in their careers [14]. Although it is difficult to identify situations that resemble the physical distancing and distress pertaining to COVID-19, studies with varying populations have shown that belonging to social groups as well as receiving social support is critical for coping with traumatic life experiences such as Hurricane Katrina [30] and distress related to serious health conditions [31,32]. We therefore anticipate that student-athletes’ mental health during COVID-19 is associated with the extent to which they maintain connections with teammates and perceive that teammates provide emotional social support.

Team Memberships and Athletic Identity

When examining the effects of COVID-19 on student-athletes’ well-being, it is also crucial to consider the salience of athletic identities. We anticipate that social connectedness and social support from teammates may relate to mental health outcomes partly due to their effect on one’s identity as an athlete. Athletic identity refers to the strength with which people identify with and embrace their role as an athlete [33]. Athletic identities are a valued component of one’s sense of self, but also pose risks. When athletes who possess strong athletic identities are faced with an abrupt career end (e.g., injury), they tend to dissociate from their athletic identity [34] and experience an accompanying sense of loss that increases the risk of depression [35]. Through this lens, abruptly ending collegiate sport activities may function as an identity threat.

Lakey and Cohen [20] notably highlighted how several perspectives on social support (i.e., cognitive and symbolic interactionism) position identity as a mechanism linking supportive behaviors to mental health. Supportive behaviors from other group members often act in ways that help individuals to live-out their role identities and develop positive self-evaluations. In other words, groups provide the setting to embrace role identities and gain support from other members. Applied to student-athletes, teammates may validate one's athletic identity when students are otherwise separated from the sport contexts that are crucial to maintain the identity.

It is important to acknowledge that small groups also entail social identities about what it means to be a group member. Social identity theory is used to explain how self-concept is defined partly by the groups to which we belong [36], and underpins the 'social cure' approach to studying health, which maintains that an ingroup social identity is a key reason why those with more group memberships tend to report greater wellbeing [22]. There is indeed a rich literature related to the value of sport team social identification [37]. It is nevertheless important to consider how groups contribute to individual-level role identity because there are circumstances where individual role identities have relatively greater bearing on behavior. This distinction was targeted in a meta-analysis revealing that people respond more strongly to threats to their individual identities compared with their collective identities [38]. Given the consequences of athletic identity loss [35], individual-level athletic identities are important considerations relative to the COVID-19 changes to sport.

The Current Study

Faced with a situation that pulls athletes from sport, it may be critical for athletes to maintain teammate connections and exchange social support. The current study examined how student-athlete mental health was associated with teammate social support, connectedness, and changes to athletic identity. We had collected initial survey responses regarding student-athletes' athletic identity for an unrelated study prior to COVID-19-related campus closures (Time 1; February 2020). Following-up with these student-athletes approximately one month into campus closures (Time 2; April 2020) presented an opportunity to evaluate how perceived teammate interactions and changes in athletic identity (from pre- to during-COVID-19) relate to indices of mental health, during a time when student-athletes were abruptly pulled away from their teams. Although athletes were physically distanced from their teams as a whole, individuals who have dense social media connections and who have access to others through video or voice calls experience less depression, while reporting higher life satisfaction and subjective well-being [39,40]. We accordingly focused on the connectedness and emotional social support that teammates maintained through virtual social interactions. Although social support can take many forms, we focused on perceptions of emotional support as this form is anticipated to be most closely linked to indices of mental health and well-being.

The first goal of this study was to assess direct associations between teammate interactions (i.e., connectedness and social support), athletic identity change, and mental health. Guided by findings that social connections and social support can enhance mental health [30,41], we anticipated that student-athletes who reported more connectedness with teammates and felt

socially supported by teammates would report increased well-being and lower depression (*Hypothesis One*). We similarly hypothesized that student-athletes who report more connectedness and social support from teammates would experience less dissolution of their athletic identity (*Hypothesis Two)*. Given individuals' adverse reactions to identity loss [33,42], we hypothesized that student-athletes who reported a decrease in their athletic identity would report lower well-being and more symptoms of depression (*Hypothesis Three*).

Our second goal was to examine whether these associations reflect indirect effects on student-athletes' mental health through identity-related processes. Interactions with other group members can directly confer support or connectedness, but may also be a psychological resource validating one's athletic identity [43]. We hypothesized that more connectedness and social support from teammates would relate to less dissolution of athletic identity and, by extension, reports of better mental health (*Hypothesis Four*).

Method

Participants and Procedures

Prior to COVID-19 (February of 2020), researchers recruited a convenience sample of 234 student-athletes via e-mail correspondences with university athletic directors. In April of 2020 – approximately one-month following campus closures and the abrupt cancellation of university sports – student-athletes were e-mailed an invitation to participate in a follow-up survey related to student-athlete well-being during COVID-19 (response rate = 57.69%). The resulting sample comprised 135 college student-athletes playing a variety of sports (e.g., volleyball, basketball) at universities across the northeastern United States (M_{age} = 19.84 years, SD = 1.38; 62.96% female). Participants competed within NCAA Division II and III levels (i.e., second and third tier collegiate level), as well as at the NAIA level (i.e., small-school athletic conferences). As such, this sample comprises athletes who are indeed considered 'elite', but often receive only partial or no athletic scholarships and may not have the same level of access to resources that NCAA Division I athletes may have (e.g., dedicated sport psychologists). Most participants (91.85%) reported living with parents and/or family during the pandemic: 51.85% reported returning home, while 40.00% reported already living with parents and/or family

Surveys were completed using online survey software (Qualtrics), which student-athletes accessed voluntarily during their own time. Participation was incentivized by offering $10 gift cards at each timepoint. All participants (regardless of responses) were e-mailed a debriefing letter containing an extensive list of resources including crisis hotlines, COVID-specific resources and information, and Center for Disease Control's recommendations for coping with pandemic distress. Procedures were approved by the lead author's Institutional Review Board.

Measures

During the Time 1 survey, student-athletes completed a measure of athletic identity, alongside demographic items as well as unrelated survey measures. During the Time 2

survey, student-athletes completed the same athletic identity scale, as well as surveys related to teammate interactions and indices of mental health. Details regarding scale properties, including items and confirmatory factor analysis, are available in the online supplement.

Athletic Identity.—Identification was assessed using the social subscale of the Athletic Identity Measurement Scale (AIMS) [44]. The three subscale items measure the extent to which an athlete views themselves as an athlete and maintains sport goals/friendships (e.g., "I consider myself an athlete") and are completed using a response scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Internal consistency was $\alpha = .74$ at pre-COVID-19 baseline and $\alpha = .69$ at follow-up. Residual change scores in athletic identity were extracted from a simple regression model in which during-COVID-19 scores were regressed on pre-COVID-19 scores [45]. We note that the AIMS scale was developed with two additional subscales: exclusivity and negative affectivity. These two subscales are not central to the aims of current study as the items predominately ask about anticipated responses to sport-specific events (e.g., how athletes anticipate feeling when they do poor in sport or if they were unable to participate in sport due to injury). In contrast, we focused on the social subscale for this study as an indicator of student-athletes' athletic identity as this subscale highlights positive aspects of one's self-perceptions as an athlete.[1]

Teammate Social Support.—Four items were adapted from the Inventory of Socially Supportive Behaviors [46] to comprise a measure of teammate social support during COVID-19.The scale focused on emotional support and asked: *Thinking about the last month, respond to the following items about how often one or more teammates have*: Checked-in to see how you were doing, Let you know that they are available if you need any help, Expressed interest in your well-being, and Expressed that they feel close to you. Response options ranged from 0 (*Never*) to 4 (*Always*). Internal reliability of this scale was strong in this current sample ($\alpha = .96$).

Teammate Social Connectedness.—Five items were created for the purpose of the current study to assess the extent that participants felt social connectedness with teammates. The scale asked: *Thinking about your teammates in the last month, please respond to the following items about the extent you have been in contact:* "I talk one-on-one with certain teammates via phone or text", "Our team keeps in touch using some form of a group chat or messaging", "We take part in the same types of training or practice as one another even if we are isolated", "I keep up with my teammates through social media (e.g., Instagram, Twitter)", and "We host team video chats with everyone invited". Response options ranged from 0 (*Never*) to 4 (*Always*). Internal reliability was $\alpha = .81$ in the current sample.

Well-Being.—Well-being was assessed using the 14-item Mental Health Continuum Short Form instrument [47]. Participants reported their subjective well-being during the preceding month on a scale from 1 (*Never*) to 6 (*Every day*), with items reflecting three dimensions: Psychological (6 items), Social (5 items), and Emotional (3 items). Studies evaluating this

[1]Confirmatory factor analysis—reported in the supplemental materials—indicated that a one-factor model (all AIMS items together) fit the data poorly, and model comparison revealed that a three-factor model (separate subscales) fit the data significantly better: $\chi^2(3) = 51.06$, $p < .001$.

measure with young adults have reported strong support for internal consistency and discriminant validity [48]. Internal consistency (α) for the three dimensions ranged from .91 to .93 in the present sample.

Depression Symptoms.—The 8-item short form depression scale from the Patient-Reported Outcomes Measurement Information System (PROMIS) was used to assess the frequency of depression symptoms (e.g., "I felt hopeless"). Although the PROMIS short form was designed with a seven-day period of symptoms, a one-month timespan is commonly used in depression measures and was selected to align with the well-being measure. Each item is scored from 1 (*Never*) to 5 (*Always*) and items are summed to create a score ranging from 8 to 40. Scores are transformed using item response theory (T-scores range from 37.1 to 81.1). T-scores <55 would translate as normal; 55–60 as mild; 60–70 as moderate, and ≥70 as severe depression (see: https://tinyurl.com/y7549m5c). Internal consistency of this scale was strong (α = .96).

COVID-Specific Worries.—As recommended by a global initiative to study the impact of COVID-19 (https://osf.io/3sn2k/), four items were used to assess participants' COVID-specific worries. On a scale ranging from 1 (*Does not apply at all*) to 5 (*Strongly applies*), participants reported the extent that each statement applied to them: "I am nervous when I think about current circumstances", "I am worried about my health", "I am worried about the health of my family members", "I feel stressed about leaving my house" [49]. Internal consistency was (α = .81).

Analyses

Given the response rate of the 234 participants who completed the initial pre-COVID-19 survey (i.e., 57.69%), we first examined whether follow-up responding differed by sex, age, and athletic identity. Missing responses were imputed using an expectation-maximization algorithm. The primary analyses entailed estimating the direct and indirect associations shown in Figure 1, which were estimated using path analysis (R package '*lavaan*' [50]). Independent variables (X) were teammate social support and teammate connectedness, the dependent variables (Y) were psychological, social, and emotional well-being and depression symptoms, and the mediator variable (M) was participants' residual change in athletic identity from pre- to during-COVID-19. Direct effects of X on Y controlled for M, while indirect effects estimated the effect of X on Y via the paths of X on M and M on Y that were not accounted for in the direct X on Y effect. Age, sex, and COVID-specific worries were held constant in all models.

Results

Examining the 234 participants who completed the pre-COVID-19 survey, follow-up participation in the during-COVID-19 survey did not differ by age ($t = -0.47$, $p = .635$), sex, ($\chi^2 = 0.63$, $p = .426$), or athletic identity ($t = -0.49$, $p = .627$). In total, only four items were skipped (i.e., four participants skipped one item each), but data were missing completely at random ($\chi^2(320) = 303.13$, $p = .743$).

Descriptive statistics and bivariate correlations are shown in Table 1. On average, the sample reported above the scale midpoints on teammate social support and connectedness as well as on indices of well-being. Participants reported relatively strong athletic identity on average at both pre- and during-COVID-19. The variability in residual change scores on athletic identity ranged from −1.73 to +1.84, which indicated that some student-athletes decreased in athletic identity strength during COVID-19, while others increased.[2] Descriptively, 42.96% of participants decreased identity strength, 28.15% were unchanged, and 28.89% increased. On average, depressions symptoms for this sample (M = 54.02) fell below the threshold for 'mild' depression (<55). However, 31 participants (22.96%) reported symptoms that would classify them as moderately depressed (60–70), and 6 participants (4.44%) were classified as severely depressed (>70). Research with college student samples [51] indicate a relatively lower value for the 50th percentile (< 51). The current sample thus reported depression symptoms that were at, or above, the normative value for college students. Lastly, the sample scored relatively high on COVID-specific worrying, with women tending to report greater worries than men. However, bivariate correlations indicated that COVID-specific worrying was not associated with indices of mental health and well-being.

Across four models examining social support (Table 2), teammate social support had a direct positive association with psychological and social well-being, controlling for change in athletic identity (*Hypothesis One*). Teammate social support was positively associated with residual change in athletic identity (*Hypothesis Two*): Greater support from teammates was associated with more positive change scores (i.e., identity maintenance or gain), whereas lower perceived social support related to more negative change scores (i.e., identity loss). Changes in athletic identity were positively associated with psychological and social well-being, and negatively associated with depression symptoms (*Hypothesis Three*). These paths indicate that student-athletes who experienced greater identity loss reported lower psychological and social well-being and more symptoms of depression.

From these four models featuring social support, two significant indirect effects (through changes in athletic identity) were revealed in relation to psychological well-being and depression symptoms (*Hypothesis Four*). Notably, student-athletes who experienced greater support reported less identity dissolution and, in turn, higher reports of psychological well-being and fewer symptoms of depression. In the case of psychological well-being, this reflected a significant proportion of the total effect – whereas the only significant coefficients associated with depression were identity change and the indirect effect.

In the remaining four path models (Table 2), teammate connectedness exhibited a positive direct association with all three indices of well-being – but this was not the case for depression (*Hypothesis One*). Moreover, teammate connectedness was positively associated with residual change in athletic identity (*Hypothesis Two*). Meanwhile, changes in identity were positively associated with psychological and social well-being and negatively associated with symptoms of depression (*Hypothesis Three*). Whereas models including connectedness and identity change did reveal significant associations with all four indices of mental health, no significant indirect effects were revealed (*Hypothesis Four*) – identity

[2]A spaghetti plot visualizing changes in identity strength is available in the online supplemental materials.

change did not account for a proportion of the association between connectedness and mental health indices.[3]

Discussion

In response to a recent call to action for mental health research conducted within populations whose lives are impacted by COVID-19 physical distancing [8], the current study examined the experiences of intercollegiate athletes. Focused on the month-long period of time directly following school closures related to the COVID-19 pandemic, we examined the role of social support and connectedness with teammates as well as athletic identity change in relation to indices of mental health. Both teammate social support and connectedness were associated with numerous indices of mental health. Recall that social support represents functional interactions with teammates, whereas connectedness reflects a form of structural links with others – which have unique and combined associations with health [15]. After accounting for identity change as well as age, sex, and COVID-specific worrying, both types of teammate interactions were independently associated with psychological, social, and emotional well-being. Teammate interactions were not significantly associated with depression, independently. Path models that included teammate interactions and identity change showed that these constructs were significantly associated with three dimensions of well-being along with depression. Notably, student-athletes who received more social support and reported more connectedness with teammates reported less dissolution of their athletic identity and – in most models – also reported greater well-being. Meanwhile, only two indirect effects were significant, which signal there were only specific instances where athletic identity change accounted for some of the association between teammate interactions and mental health. We will focus on unpacking these findings, with a goal of advancing theory and practice regarding how small groups may be leveraged to support mental health during the COVID-19 pandemic.

By tracking the degree to which participants maintained their athletic identity following COVID-19-related school closures, our findings demonstrate that social interactions are linked to changes in athletic identity and mental health outcomes. Life events that disrupt one's social interactions with a valued social group—in this case, campus closures due to COVID-19—can be challenging due to the potential experience of identity loss [52]. When comparing athletic identity scores from pre- and during-COVID-19, however, participants did not uniformly experience identity loss. In fact, some participants even reported stronger athletic identities at Time 2. We found that social connectedness and social support from teammates during COVID-19 were key factors in explaining the heterogeneity in student-athletes' identity change across time. The observed links between teammate interaction metrics (i.e., social support and connectedness) and identity change scores aligns with the idea that concrete positive interactions with other group members facilitates feelings of being a valued group member and thus reaffirms one's sense of belonging and role identification [53,54]. Tangible interactions with teammates may thus bolster one's sense of

[3]Although we focused on the social identity subscale of athletic identity, path models with all three athletic identity subscales are available in the supplemental materials. Interpretation of the presently reported results did not change.

identity during a time when people are perhaps vulnerable to identity dissolution (e.g., cancellation of sporting events) [52].

These findings signal that shifts in competitive circumstances – such as the ongoing pandemic – may have varying impacts on student-athletes' self-perceptions and, as a result, mental health. Consistent with social cure theorizing [22], which highlights the positive role of social identities, student-athletes who felt more supported by their teammates during COVID-19 tended to experience identity gains, and in turn, tended to report greater psychological well-being as well as lower depressive symptoms. These findings also align with research demonstrating that maintaining positive social group memberships following major life events can buffer against declines in well-being [52]. Despite the positive ways in which identities impact mental health, identifying strongly as an athlete may also place individuals at greater risk of identity loss. Whereas research has demonstrated how transitions that pull athletes away from their sport (i.e., major injury) can have deleterious effects on both identity and mental health [33,34], our results show that the degree of social interactions following such events might be a key protective factor of athletes' mental health and well-being.

Practical Implications

The findings from this study can be immediately integrated into efforts to support student-athletes and have implications beyond the current pandemic. On college campuses in the United States, efforts to promote student mental health are arguably more prolific than they have ever been, including increased routine screening (e.g., New York University's National College Depression Partnership), utilization of peer health education (e.g., BACCHUS Initiatives of NASPA's Certified Peer Educators), and involvement of partners on campus in strategic planning for mental health initiatives (e.g., the Jed Foundation's JED Campus). Certainly, key stakeholders from intercollegiate athletics are often part of these important efforts. However, uniquely within athletics, the national and campus Student-Athlete Advisory Committees (SAAC) consist of student-athletes who are instrumental in building a supportive community across teams (among other duties). Faculty Athletic Representatives (FARs) on campuses are actively encouraged to work with the SAAC to empower student-athletes to seek help when needed, care for themselves and their peers, and disseminate information and resources to teams.

Highlighting and publicizing the findings of the current study with athletics administrators (locally and nationally), FARs, SAACs, student-athletes, and coaching and training staffs, can facilitate timely strategies to protect student-athletes' mental health. For example, efforts can be put in place to incorporate and/or protect time during team activities (virtually or otherwise) for supporting and/or checking in on teammates, as well as exploring and implementing best practices for promoting social support and connectedness among teammates. Moreover, efforts should be made within university athletic departments to reinforce student-athletes' athletic identities despite the limited availability of sport-specific activities. Beyond this pandemic, future studies could examine the impact of promoting social connectedness during naturally occurring events that result in physical distancing

(e.g., end of a season, breaks between quarters/semesters, no longer attending practices and competitions following an injury).

Strengths and Limitations

The current research addressed a pressing need to identify strategies that facilitate mental health and well-being during the distressing time of COVID-19 [8]. Indeed, the implications of the present findings are timely and highly translational. An additional strength of this study was capturing intraindividual *changes* in athletic identity by contrasting pre-COVID-19 and during-COVID-19 athletic identity scores. Despite these strengths, we acknowledge several limitations of the current study. Although changes in student-athletes' athletic identity were assessed, the design of this study would have been stronger if pre-COVID-19 measures of other study variables, such as teammate interactions and mental health indices, were readily available. The ability to follow-up with participants from a survey that was initiated prior to the unforeseen COVID-19 pandemic is a notable strength, but we note that the effect sizes of associations reported herein should be considered cautiously in light of the relatively small sample. Relatedly, although participation in the COVID-19 follow-up survey was not predicted by athletic identity, we concede that the follow-up response rate was relatively low. Student-athletes' who were particularly distressed during this pandemic may have been more likely to opt-out of participation, though we have no available evidence to support this possibility. Despite noting that the social dynamics within sport teams resemble small peer groups that many young adults belong to (e.g., student clubs), the findings may not generalize beyond groups of student-athletes. Even among student-athletes, additional studies are needed to test whether these effects generalize to the Division I level, whether effects hold across fall, winter, and spring sports, and the extent that these findings apply to lower-level youth or recreational sport or other sport settings outside of the United States. Although we controlled for COVID-specific worries, our analyses would have been more precise had we integrated additional measures to account for other characteristics of participants' interpersonal relationships, group memberships, and social support (e.g., size of social network, number of groups belonged to, romantic relationships). Although we had hoped to collect data on racial and ethnic identity, our Institutional Review Board requested we not collect this for concerns about re-identifying individual responses in the event data were ever breached; consequently, we were unable to evaluate ways in which COVID-19 may have impacted different racial/ethnic groups in different ways. Finally, the current design lacked critical aspects for determining causal effects and, while our path models were theoretically guided, evidence for directionality was limited. Nevertheless, the findings are positioned to be hypothesis-generating for future research on this pressing issue.

Conclusion

Physical distancing remains a critical step towards combatting the COVID-19 pandemic, but social scientists have an urgent responsibility to identify strategies that ameliorate the mental health consequences of COVID-19-related physical distancing. In the current study of college student-athletes, we found evidence that teammate social interactions (i.e., social support and connectedness) may have protective effects on indices of mental health and well-being, though stronger causal models would be needed to clarify this association. Using

a longitudinal approach to assess changes in athletic identity from pre to during-COVID-19, we identified positive associations between teammate social interactions and identity maintenance and subsequently, that identity maintenance was positively associated with psychological and social well-being and was negatively associated with symptoms of depression. That is, student-athletes who experienced less identity dissolution following the abrupt cancellation of college sports reported greater indices of mental health and well-being. These findings have direct and timely implications that are highly relevant to stakeholders of collegiate athletics. For instance, with opportunities to quickly disseminate findings through trusted intercollegiate athlete-focused outlets and partners (e.g., the NCAA's Sports Science Institute, Division III's 360 Proof), the importance and value of having student-athletes initiate or maintain social support among teammates and promote connectedness can likely impact student-athlete well-being.

As the social world continues to evolve around the COVID-19 pandemic, social scientists must continue identifying and employing translational strategies to protect the mental health concerns related to physical distancing. The physical distancing measures in place are indeed critical to curtailing the spread of this harmful virus, especially until a vaccine is developed and widely available. At the time of this writing, it seems increasingly unlikely that collegiate sport will return in the fall of 2020, meaning there is a critical need for stakeholders to develop strategies for promoting social interactions and support amongst teammates. While long term physical distancing and cancellation of college sport may have potential mental health consequences for student-athletes, the current findings indicate that supportive social interactions among teammates may be a protective factor as the pandemic continues. That is, if collegiate sport programs can successfully implement protective strategies, necessary physical distancing measures can continue with lessened concern for the well-being of student-athletes. We conclude by highlighting that *physical* distancing measures do not necessitate *social* distancing as social support and connectedness may be key to preventing the COVID-19 pandemic from becoming a mental health pandemic.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements:

Research for this project was conducted with the financial support of the NCAA (PI: Graupensperger). Kilmer is also supported by a contract from the NCAA: "The NCAA Division III and NASPA Alcohol and Other Drug Collaborative". Any opinions, findings and conclusions are those of the author(s) and do not necessarily reflect the views of the National Collegiate Athletic Association. Graupensperger is supported by a training grant from the National Institute on Alcohol Abuse and Alcoholism (T32AA007455).

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Implications and Contributions

Findings from this study will extend theory pertaining to how social interactions within the bounds of small groups is associated with young adults' health and well-being. More imperatively, this study will provide timely evidence for stakeholders looking to implement approaches for protecting student-athletes' mental health during the COVID-19 pandemic.

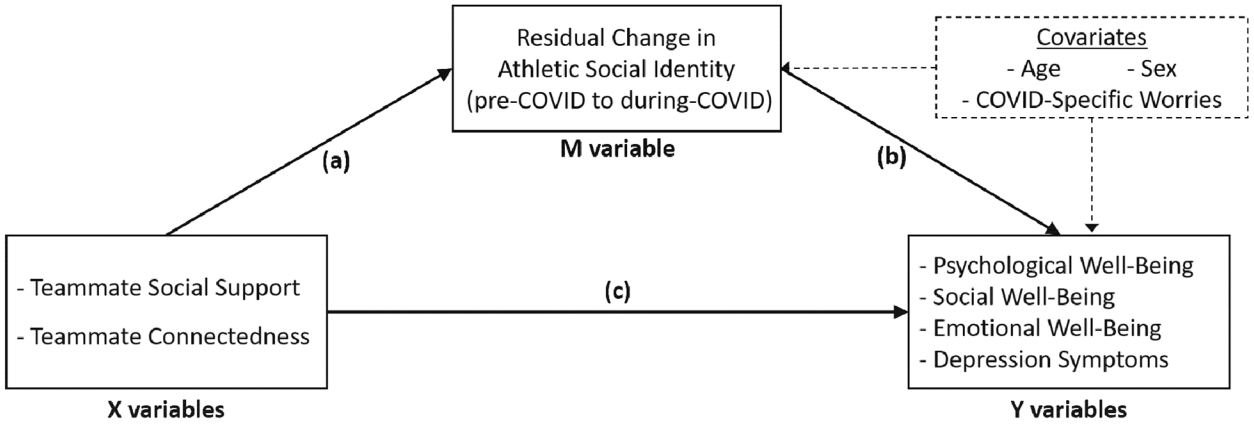

Figure 1.
Direct and indirect paths to be estimated in mediation models.

Table 1.

Bivariate correlation coefficients, descriptive statistics, estimates of skewness, and internal consistency.

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Teammate Social Support											
2. Teammate Connectedness	.66**										
3. Pre-COVID Athletic Identity	.18*	.25**									
4. During-COVID Athletic Identity	.34**	.31**	.71**								
5. Athletic Identity Change Score	.29**	.20*	.00	.70*							
6. Emotional Well-Being	.18*	.26**	.20*	.27**	.19*						
7. Social Well-Being	.27**	.30**	.15	.27**	.23**	.77**					
8. Psychological Well-Being	.26**	.31**	.18*	.32**	.27**	.78**	.71**				
9. Depression Symptoms	−.01	−.16	−.05	−.20*	−.24**	−.65**	−.55**	−.55**			
10. COVID-Specific Worries	.12	.06	−.03	.04	.08	.02	−.01	−.03	.10		
11. Age	−.03	−.05	.06	−.03	−.11	−.02	.07	.07	−.11	−.13	
12. Sex (M = 1, F = 2)	.10	−.05	−.16	−.12	−.01	−.08	−.11	−.07	.32**	.25**	−.08
Mean	2.18	2.30	6.13	6.00	0.00	4.54	3.84	4.60	54.02	3.46	19.84
SD	1.18	0.93	0.86	0.89	0.62	1.22	1.39	1.11	10.36	0.99	1.38
Range	0 – 4	0 – 4	2 – 7	2.33 – 7	−1.73 – 1.84	1 – 6	1 – 6	1 – 6	37.1 – 81.1	1 – 5	18– 25
Skewness	−.29	−.07	−1.72	−.93	−.18	−.84	−.25	−.98	.01	−.51	-
Internal Consistency (α)	.94	.81	.74	69	-	.93	.91	.91	.96	.81	-

Note:

* $p < .05$,

** $p < .01$.

Table 2.

Direct and indirect effects of teammate social support, teammate connectedness, and change in athletic identity on well-being and depression symptoms.

	Y = Psychological Well-Being				Y = Social Well-Being				Y = Emotional Well-Being				Y = Depression Symptoms			
X = Teammate Social Support	***β***	***B***	**SE (*B*)**	***p***	***β***	***B***	**SE (*B*)**	***p***	***β***	***B***	**SE (*B*)**	***p***	***β***	***B***	**SE (*B*)**	***p***
X on M (a)	.29	0.15	0.04	<.001	.29	0.15	0.04	<.001	.29	0.15	0.04	<.001	.29	0.15	0.04	<.001
M on Y (b)	.23	0.40	0.15	.008	.17	0.39	0.19	.042	.14	0.28	0.17	.106	−.26	−4.29	1.37	.002
Direct Effect of X on Y (c)	.21	0.19	0.08	.015	.24	0.28	0.10	.005	.15	0.15	0.09	.091	.03	0.23	0.72	.755
Total Effect of X on Y	.27	0.26	0.08	<.001	.29	0.34	0.10	<.001	.19	0.20	0.09	.026	−.05	−0.43	0.72	.554
Indirect Mediation Effect	.07	0.06	0.03	.035	.05	0.06	0.03	.078	.04	0.04	0.03	.143	−.08	−0.65	0.28	.020
R^2 of M			.10				.10				.10				.10	
R^2 of Y			.13				.13				.06				.17	
X = Teammate Connectedness	***β***	***B***	**SE (*B*)**	***p***	***β***	***B***	**SE (*B*)**	***p***	***β***	***B***	**SE (*B*)**	***p***	***β***	***B***	**SE (*B*)**	***p***
X on M (a)	.19	0.12	0.06	.028	.19	0.12	0.06	.028	.19	0.12	0.06	.028	.19	0.13	0.06	.028
M on Y (b)	.23	0.42	0.15	.004	.19	0.43	0.18	.019	.14	0.28	0.17	.094	−.23	−3.84	1.33	.004
Direct Effect of X on Y (c)	.27	0.32	0.10	<.001	.26	0.40	0.12	<.001	.23	0.30	0.11	.006	−.11	−1.19	0.88	.178
Total Effect of X on Y	.31	0.37	0.10	<.001	.30	0.45	0.12	<.001	.26	0.34	0.11	.002	−.15	−1.67	0.89	.063
Indirect Mediation Effect	.04	0.05	0.03	.080	.04	0.05	0.03	.109	.03	0.03	0.03	.182	−.04	−0.48	0.27	.080
R^2 of M			.05				.05				.05				.05	
R^2 of Y			.16				.14				.09				.18	

Note: Indirect effects are through athletic identity residual change scores from pre-COVID to mid-COVID. In all models M = Athletic identity residual change scores from pre-COVID to mid-COVID. The effects of age, sex, and COVID-specific worries are held constant in all models. ***β*** = standardized coefficient; *B* = unstandardized coefficient; SE – standard error estimate.