



# The Impact of COVID-19 Restrictions on Youth Athlete Mental Health: A Narrative Review

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## Abstract

**Purpose of Review** We discuss current research on the mental health effects of COVID-19 sports restrictions on youth athletes, highlighting the largest problems, as well as how organizations can help youth athletes by preparing for and responding to these problems.

**Recent Findings** Millions of children and adolescents worldwide participate in organized sports, which has significant physical and mental health benefits. In 2020, the COVID-19 pandemic triggered large-scale, public restrictions that forced the closure and cancelation of organized youth sports across the world. Sports cancelations not only removed these protective benefits, but also worsened the mental health of youth athletes who were no longer able to participate in their sports.

**Summary** Youth athletes are even more vulnerable than adults to the negative mental health effects of sports restrictions. The unexpected loss of sports from COVID-19 restrictions disrupted these youths' athletic identities and worsened youth athlete depression, anxiety, anger, sleep, and quality of life. Restrictions particularly affected certain high-risk subpopulations of youth athletes including females, high school upperclassmen, those from low socioeconomic backgrounds, and those from team sports. Sports organizations could limit the negative mental health impacts of future sports cancelations by implementing at-home training opportunities, remote check-ins with teammates, discussions about athletic identity with coaches and sports psychology professionals, and mindfulness skill-building.

**Keywords** COVID-19 · Athletes · Adolescent · Depression · Anxiety

## Introduction

COVID-19, the illness caused by the novel coronavirus SARS-COV-2, was first diagnosed in Wuhan, China, in December of 2019 [1]. On March 11th, 2020, the World Health Organization declared COVID-19 a worldwide pandemic, which triggered large-scale public restrictions to limit the spread of the illness [2]. These unexpected regulations had multiple public health consequences, including negative impacts on mental health. During initial COVID-19 restrictions, adults showed increased mental health distress

[3, 4], including elevated levels of depression and anxiety [5], while throughout the pandemic, one in four and one in five children experienced elevated levels of depression and anxiety, respectively, with prevalence rates two times higher than those pre-pandemic [6]. The mental health impacts of COVID-19 restrictions varied across different populations. Elite adult athletes were uniquely affected by the pandemic as COVID-19 social regulations forced professional sports organizations around the world to abruptly cancel competitions, thus impacting both the physical and mental health of elite adult athletes [7, 8].

COVID-19 lockdowns not only impacted adults, but also significantly affected youth athletes', athletes ages 17 and younger, physical and mental health. During the 2017–2018 US academic year, over seven million high school students participated in interscholastic sports [9]. Youth sports participation is known to improve physical health [10, 11], decrease levels of depression and anxiety [12, 13], and improve overall quality of life [14]. Children and adolescents lost these protective benefits when public health measures shut down most organized youth sports leagues, restricting millions of

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young athletes' access to organized sports. The abrupt loss of sports disrupted youth athletes' physical activity, socialization, and personal identity, which negatively affected their mental health [15, 16].

This review summarizes research on the impact that COVID-19 restrictions had on youth athletes' mental health. We will discuss the effects on youth athletes in general, as well as on specific athlete subpopulations with a higher risk of mental health complications from unexpected sports shutdowns. This review will also discuss the practical implications of this research, including how sports leaders can use this data to re-shape youth sports and limit the negative effects of future shutdowns or restrictions.

### **Mental Health Effects of COVID-19 Restrictions on Youth Athletes**

The COVID-19 pandemic caused numerous psychological and physiological impacts on children and adolescents worldwide. Early pandemic lockdowns caused social isolation stress, aggression, and an increase in adolescent suicide. Children also demonstrated increased rates of obesity during pandemic-related school closures, with greater rises in obesity among boys and non-Hispanic black children [17].

Youth athletes' mental health appears to be even more affected by COVID-19 restrictions than that of higher-level adult athletes. Clemente-Suarez et al. posited that youth athletes have fewer physical and psychological resources than adults to draw on when facing unexpected changes, increasing their vulnerability [17]. While adult athletes have more experience navigating unexpected challenges, youth athletes have not yet had adequate athletic and real-world experience to develop such emotional resilience. Researchers used both qualitative and quantitative methods to explore such effects on youth athletes.

Several studies on youth athletes' mental health during COVID-19 used a qualitative, phenomenological approach. During Canada's initial COVID-19 lockdown, researchers interviewed 20 adolescent high school athletes [18•]. The majority of these athletes reported "anxiety," "fear," and "shock" following the cancelation of their sports. Many of these athletes also highlighted how losing sports reduced their social connectedness, further exacerbating their anxiety symptoms during COVID-19 lockdowns. Sports departments attempted to keep athletes engaged through social media, but these adolescents stated that social media was not a replacement for in-person connection. Elliott et al. used reflexive theme analysis on data from semi-structured interviews and focus groups with athletes between 15 and 18 years old, their parents, and their coaches to identify how sports cancelations impacted the youth athletes' mental health. Researchers saw four

themes emerge, in a spectrum of emotions that athletes experienced from initial distress to eventual recovery: "recognizing struggle," "reconnection," "re-engaging after restrictions," and "reimagining sport." Athletes consistently noted the negative impact sports cancelations had on their mental health. They cited feelings of "mourning," "severe mood changes," and "anger," all possible symptoms of depression or anxiety in adolescents. Athletes and parents reported that the primary cause of their mental health symptoms was the loss of physical activity and socializing created by sports cancelations. When sports did return later in the pandemic, athletes also noted how decreases in "fitness and skill" often led to "a decrease in confidence and self-efficacy" [19].

Other studies used quantitative approaches to evaluate the mental health effects of COVID-19 sports restrictions on youth athletes. One such study surveyed Spanish adolescent athletes using the Profile of Mood States Questionnaire at three time points during Spain's COVID-19 lockdown: the start of total lockdown (week 0), the transition to partial lockdown (week 6), and the end of lockdown (week 10) [20]. At the start of total lockdown, when youth athletes felt the loss of sports most acutely, the athletes had significantly higher mood disturbance, depressive symptoms, and confusion, compared to the transition and end time points during lockdown. In a similar study of 544 adolescent Spanish athletes during Spain's initial COVID-19 lockdown, athletes experienced significantly elevated anxiety symptoms, depressive symptoms, and social dysfunction on domains assessing dual careers (balance of sports, studies, and social life) and health (mental and physical) from the Holistic Monitoring Questionnaire and General Health Questionnaire [21••]. Bazett-Jones et al. also used similar approaches to compare youth athletes' mental health before and during COVID-19 lockdowns. They surveyed youth long-distance runners on various measures of mental and physical health 6 months before the COVID-19 pandemic as well as during COVID-19 lockdowns. Compared with their pre-COVID responses, youth runners demonstrated lower motivation to run during lockdowns, as well as different motives for running, including stress relief. Compared to their pre-COVID responses, runners also reported less enjoyment of running, increased anxiety symptoms, and lower food quality consumed [22••].

### **Mental Health Effects of COVID-19 Restrictions on High-Risk Youth Subpopulations**

While sports restrictions had widespread general impacts on youth athletes' mental health during the pandemic, they also particularly affected certain high-risk subpopulations

of youth athletes (Table 1). Female youth athletes, one such high-risk group, had a higher incidence of negative mental health outcomes during COVID restrictions than did male athletes. In one study, researchers used the Holistic Monitoring Questionnaire and General Health Questionnaire-12 to evaluate how severely COVID-19 restrictions impacted youth athletes' mental health and quality of life [21••]. Researchers used the questionnaire data to cluster respondents by how severely (mild, moderate, severe) COVID-19 restrictions affected their mental health. The study found that female athletes made up a significantly higher proportion of the severely impacted group than male athletes, 72% versus 28%, respectively, and therefore appeared at higher risk for mental health impacts of COVID-19 restrictions than their male peers. In a separate study of 13,000 adolescent American athletes during early COVID-19 restrictions in America, researchers evaluated athletes' anxiety, depression, physical activity, and quality of life, using the General Anxiety Disorder 7-Item Screener, Patient Health Questionnaire 9-Item Screener, Pediatric Functional Activity Brief Scale, and Pediatric Quality of Life Inventory 4.0 [23••]. Results showed that females reported a higher prevalence of anxiety and depressive symptoms than their male peers. Additional research showed that female youth athletes' anxiety was considerably higher during the pandemic than it was prior [24]. Studies of female youth athletes during the COVID-19 pandemic also demonstrated that female athletes had 3.2 and 2.4 times the odds of reporting anxiety and depressive symptoms than male peers respectively [25]. While there is little research evaluating why female youth athletes reported higher levels of anxiety and depression symptoms during COVID-19 restrictions, there has been research on this phenomenon in female adult athletes. Bowes et al. showed that female adult athletes have comparatively less financial stability and access to home training equipment than their male peers [26]. Additional studies of female athletes during the pandemic considered the effect of contextual body image, the concept that someone's body image may differ between the context of their sport and the real world, on female athletes' mental health. Researchers hypothesized that female athletes who are typically proud of their bodies within the context of their sport may have developed increased body image issues, disordered eating, and depressive symptoms when displaced from their sport and forced to confront socially acceptable body standards outside of athletics [27]. Further studies of female youth athletes should determine if

the underlying causes of their elevated anxious and depressive symptoms are different than the causes in female adult athletes. Such research may also help create support systems that protect female youth athletes from these harmful effects during future restrictions.

Upperclassman athletes, students in their last 2 years of American high school, were another high-risk population. They reported higher Generalized Anxiety Disorder-7 and Patient Health Questionnaires-9 scores, as well as lower Pediatric Quality of Life Inventory 4.0 scores, compared to their younger peers [23••]. Only 7% of US high school athletes will play university-level sports [28], so upperclassman, especially high school seniors, are likely to view the unexpected cancelation of a senior season as psychologically similar to a career-ending injury, as opposed to a less-distressing planned retirement. On the other hand, high school freshmen, those in first year of American high school, reported less severe symptoms on the Generalized Anxiety Disorder-7 and Patient Health Questionnaire-9 during COVID-19 sport cancelations, and had the lowest rates of moderate to severe depression and anxiety among surveyed high school athletes [23••]. These lower rates were explained by younger high school athletes having years of remaining sports eligibility and viewing these lockdowns as a temporary loss of sports rather than a permanent one. Future studies should further explore how coaches and organizations can best support upperclassman in these circumstances to prevent these negative mental health outcomes.

Low socioeconomic status (SES) youth athletes also suffered disproportionately during COVID-19 sports restrictions, compared to those from higher SES demographics. Pons et al. found that low SES athletes made up a significantly greater proportion of athletes with severe mental health impacts from COVID-19 sports restrictions than those from higher SES backgrounds [20]. Similarly, McGuine et al. reported that athletes from US counties with the highest poverty levels demonstrated higher prevalence of anxiety and depression and lower quality of life ratings than athletes from counties with lower poverty levels [23••]. These results parallel findings for all youths, including non-athletes [29, 30]. While these studies did not statistically examine causal links, researchers hypothesized that this effect was mediated by low SES youth athletes' limited access to remote training resources during lockdowns, leading to disconnectedness from their sport, as well as decreased physical activity [21••, 23••]. Future studies should explore the connection between SES and mental health outcomes to aid organizations and teams in helping low SES athletes maintain their mental health during future unexpected restrictions.

Team sport athletes were particularly impacted by the pandemic. Studies prior to the pandemic reported that individual sport athletes had higher rates of mental illness than team sport athletes [31–33]. However, research

**Table 1** Risk factors for mental health complications in youth athletes during the COVID pandemic

Female gender
Upperclassman grade level
Low socioeconomic status
Team sport athletes

during COVID-19 sports restrictions found that team sport athletes had significantly worse symptom scores than individual athletes on several Profile of Mood States Questionnaire subscales, including tension, depression, total mood disturbance, anger, and confusion [21••]. The lower rates of mental illness among individual sport athletes during the early COVID-19 pandemic suggest individual sport may offer protection against mental illness during COVID-19 restrictions. This protective effect is due to individual athletes' ability to train and compete while still following all COVID-19 social distancing regulations, something most team sport athletes were not able to do. Individual sport athletes also experienced a less dramatic decrease in social interaction from sports cancelation than team sport athletes did, thus blunting some of the negative emotional impacts [23••]. Given these findings, team sport athletes are more likely to experience negative mental health outcomes than individual sport athletes if COVID-19 forces future restrictions on organized sports.

### Potential Interventions to Minimize the Mental Health Impacts of Sports Restrictions

Given indications that the SARS-COV2 virus will continue to circulate, youth sports will likely continue to face challenges created by the virus and could be interrupted by future threats. Finding practical interventions for youth athletes could reduce the significant mental health burden of future restrictions (Table 2). As mentioned, COVID-19 restrictions impacted the mental health of low SES athletes more than that of well-resourced peers [18•, 21••, 23••]. This effect is partially due to low SES athletes' limited access to home equipment and public training facilities. Low SES athletes' lack of home training infrastructure during social restrictions limits exercise and engagement with their sports, directly impacting their mental health. Less home training also makes it harder for athletes to return to their sports in appropriate condition when restrictions are lifted [21••, 23••]. This sub-par conditioning increases risk of injury and makes low SES athletes' transition back to competition more physically difficult, which we suspect would further worsen

these athletes' mental health. To address this issue, sports organizations should help low SES athletes gain access to training equipment, either at home or in safe, public settings, to ensure these athletes continue conditioning and avoid the serious mental health consequences of losing their sports.

Fostering social connections with family, friends, and athletes' sports club, through physically distanced activities or social media, also mitigated the mental health impacts of sports restrictions on youth athletes [18•, 19]. While athletes noted that virtual communication was not a replacement for in-person social contact, these connections did still bolster athletes' mental health by allowing them to engage socially during restrictions, hold one another accountable to remote training regimens, and share emotional experiences about the pandemic and sports cancelations. Now that effects of the COVID-19 pandemic are lessening in severity, sports organizations can plan for future social regulations or public health threats. They can identify physical spaces to facilitate physically distanced, in-person meetings, invest in social media and teleconference technology to engage athletes, and can educate families on emotional support during unexpected sports disruptions [18•].

Preservation of athletic identity, how deeply someone embraces and defines themselves by their role as an athlete, can improve athletes' mental health outcomes during difficult periods [34]. When athletes experience an unexpected loss of sports, this identity becomes disrupted, thus increasing the risk of depression [35, 36]. The unexpected and prolonged cancelation of youth sports during the COVID-19 pandemic paralleled the process athletes go through during season or career-ending injuries. Youth athletes with greater teammate and organizational support experienced greater preservation of their athletic identity, greater psychological well-being, and fewer depressive symptoms [37]. Therefore, sports organizations can support athletes through future sports disruptions by designating time for in-person or virtual team meetings with coaches and sports psychology professionals focused on discussing and reinforcing youths' athletic identity. Similarly, organizations like the National Collegiate Athletic Association or Amateur Athletic Union can create training modules to teach coaches and youth sports leaders best practices for incorporating discussions about athletic identity into team activities. These interventions can help

**Table 2** Protective strategies for preventing pandemic-related mental health complications in youth athletes

Providing athletes at home or safe socially distanced training equipment and resources
Providing physically distanced, in-person meetings
Investing in social media and teleconference technology to engage athletes
Educating families on emotional support during unexpected sports disruptions
Designating time for in-person or virtual team meetings with coaches and sports psychology professionals to discuss and reinforce youths' athletic identity
Incorporation mindfulness training into organized practices and training sessions



support athletes' athletic identities and mental health during future disruptions to organized sports.

Mindfulness, a practice characterized by non-judgmental awareness and attention to present-moment thoughts and emotions [38], is increasingly used to address mental health challenges in youth populations [39]. Mindfulness has also been used to improve performance and recovery in both adult and youth athletes [40, 41]. Recent research looked at how mindfulness may protect against the mental health impacts of COVID-19 restrictions in elite adult athletes. In a study of high-level, European rugby athletes, about 60% of whom were transitional age youth, during the initial COVID-19 lockdown, and subsequent return to sports, mindfulness traits significantly predicted protection against both depression and anxiety [42]. Higher trait mindfulness also predicted athletes reporting fewer depressive and anxious symptoms after lockdown, compared to individuals with lower trait mindfulness. While this study did not look specifically at youth athletes, those ages 17 and younger, the majority of the participating athletes were transitional age youth, individuals less than 26 years old. Given this high proportion of transitional age youth, and that previous research already demonstrated a similar effect of mindfulness on youth sports performance [43] and mental health [39, 44], these are low harm interventions likely to help athletes under 18 years old as well. Accordingly, organizations could incorporate mindfulness into youth sports training, which may both enhance sports performance and improve youth athlete mental health, especially during unexpected sports disruptions.

## Conclusion

COVID-19 restrictions caused unexpected worldwide cancellations of organized sports and placed unique mental health stress on athletes. Youth athletes are at particularly high risk of negative mental health outcomes during these disruptions, as they often have lower emotional resilience than adult athletes and rely on sports' mental health protective benefits. COVID-19 sports cancellations led to worsened youth athlete depression, anxiety, anger, sleep, and quality of life, especially among females, high school upperclassman, those from low socioeconomic backgrounds, and those who play team sports. Research and expert opinions suggest that the mental health impacts could be mitigated by increasing athletes' access to at-home training resources, fostering their social connections with teammates, and protecting their athletic identities. Therefore, sports organizations can potentially limit the negative mental health outcomes during future sports restrictions by arranging remote training opportunities, remote social check-ins with teammates, and discussions about athletic identity with coaches and sports psychology

professionals. Studies also showed that transitional age professional athletes with higher trait mindfulness experienced less anxiety and depression during pandemic shutdowns. While further research on younger athletes is needed, mindfulness is a safe, evidence-based mental health treatment in non-athlete youth populations that may similarly improve mental health symptoms in youth athletes. Amidst the evolving pandemic, and with predictions of future COVID-19 variants, sports organizations should consider implementing these interventions to protect youth athletes' mental health during future unexpected sports cancellations.

## Compliance with Ethical Standards

**Conflict of Interest** The authors declare no competing interests.

**Human and Animal Rights and Informed Consent** This article does not contain any studies with human or animal subjects performed by any of the authors.

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