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American Association of Orthopaedic Surgeons

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Effects of COVID-19 on youth athletes: Higher depression and anxiety scores for single sport athletes and females, increased sleep and outdoor time for younger athletes

SAN DIEGO, Calif. (August 31, 2021)—When single sport youth athletes have their routine disrupted, as occurred during the COVID-19 pandemic, they may be at greater risk for depression, demonstrating the need for increased education and research in mental health for adolescent athletes. The results of a new survey, "Sidelined due to COVID-19: Youth Athletes Sleep More, Practice Less, and May Lose Interest in Playing Sports Due to Social Distancing Mandates," presented at the 2021 Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS) also found that females who played fewer years of sports were at greater risk for anxiety symptoms during the shutdown. There were a few positive effects of COVID-19 restrictions as well, including increased sleep quality and younger athletes spending more time outdoors.

Approximately 60 million children ages six to 18 participate in organized sports in the United States.[i] But COVID-19 social distancing guidelines shut down or severely curtailed some sports participation in spring 2020. Previous evidence has shown that isolation and quarantine may lead to increased depression and anxiety,[ii,iii] and young athletes may be at higher risk as sports participation has been shown to decrease anxiety and depression.[iv] However, the benefits of participating in sports may be diminished by the trend of early sports specialization (playing one sport more than eight months of the year), which can lead to burnout and negative impacts on physical and mental health.[v,vi]

"Mental health needs to be at the forefront for orthopaedic surgeons, primary care physicians, and any health professionals working with youth athletes," said Henry B. Ellis, MD, pediatric orthopaedic surgeon and associate director of clinical research – Frisco campus, Scottish Rite for Children in Dallas. "When athletes sustain an injury, they lose their ability to participate in sports. For some of those youth athletes, their identity is wrapped up in being a player for that particular sport (like a soccer player or a dancer). If they are out for a long period of time or have a sudden change in events, like they did during the pandemic, it can be challenging for them to cope."

The researchers set out to evaluate how young athletes are affected when their daily sports routine is altered, increasing the understanding of how sports participation impacts physical and mental well-being. Through an anonymous self-reported questionnaire, the survey included 60 questions in six areas: demographics; sport participation/training before and during COVID-19; changes in sport-related goals and aspirations; changes in sleep habits; and Patient-Reported Outcomes Measurement System (PROMIS®) Emotional Distress depression and PROMIS® anxiety.

The study targeted athletes ages 6 to 19 across the United States who participated in one or more sport. The data were collected from April 24, 2020, through May 12, 2020, when social distancing measures began to lift. A total of 575 survey responses met the inclusion criteria. The responses were grouped by age (group one, 6 to 9 years old; group two, 10 to 14 years old; group three, 15 to 19 years old) and depression and anxiety scores (none to slight, mild, and moderate/severe).

Most respondents had played sports for multiple years, reporting participation 42.1 weeks per year, and 83.1% were considered high-level athletes, meaning they competed at a level above recreational or school sports. Of all participants, 61.7% were single sport athletes, with more than 50% of elementary and middle school kids playing a single sport, indicating a high rate of early sports specialization. Most experts recommend avoiding sports specialization until at least age 14.

The survey results revealed:

- Prior to COVID-19, participants trained 9.75 hours per week on average. During the pandemic, training decreased significantly to 6.52 hours per week. Most participants continued to train while social distancing (86.2%) and maintained communication with their sports teams (76%).
- During the pandemic, 47.1% of participants spent more time outside. Groups one and two reported “more” or “a lot more” time spent outside (53.7% and 52.8%, respectively), while the majority of group three (64.6%) spent less or the same amount of time outside.
- The average hours of sleep per night significantly increased overall, from 7.86 hours pre-COVID to 9.12 hours during the pandemic. An increase in sleep was most reported by older athletes.
- Approximately one-fourth of respondents reported elevated depression scores during the pandemic — 28.3% identified as mild, moderate, or severe, while 22.2% reported some degree of anxiety. The analysis showed that elevated depression scores were significantly associated with increasing age, fewer years played, decreased hours of sleep, and sport specialization.
- Regarding goals and aspirations, 13.3% reported a change due to the pandemic, with the majority of those feeling they lost opportunities to compete at a higher level (52.8%) or lost interest in intense training (41.7%). Group three was most likely to report changes in sport-related goals and aspirations.
- Any change in sleep quality, whether worsened or improved during the pandemic, was associated with elevated anxiety scores. Females disproportionately were the largest group of the moderate/severe (73.6%) and mild (60.9%) groups reporting anxiety.

“We were really surprised by how many single sport athletes responded and their increase in depression scores,” said Dr. Ellis. “We had not seen that in our own practice, but we’ve since used these results to implement a stronger look at the mental health of athletes when they

have an injury, paying particular attention to single sport athletes. They may not have the adaptability when a disruption keeps them out of sports for a long period of time."

The survey results also pointed to the need to implement changes to reduce burnout in student athletes. An estimated 70% of kids quit organized sports in middle school, potentially due to intense practices, travel, and the overemphasis on winning.[vii,viii]

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2021 AAOS Annual Meeting Disclosure Statement

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With more than 39,000 members, the American Academy of Orthopaedic Surgeons is the world's largest medical association of musculoskeletal specialists. The AAOS is the trusted leader in advancing musculoskeletal health. It provides the highest quality, most comprehensive education to help orthopaedic surgeons and allied health professionals at every career level best treat patients in their daily practices. The AAOS is the source for information on bone and joint conditions, treatments, and related musculoskeletal health care issues, and it leads the health care discussion on advancing quality.

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