

# Consequences of Single Sport Specialization in the Pediatric and Adolescent Athlete



Mia Smucny, MD<sup>a</sup>, Shital N. Parikh, MD<sup>b</sup>,  
Nirav K. Pandya, MD<sup>c,\*</sup>

## KEYWORDS

• Pediatric • Adolescent • Sports injuries • Specialization • Burnout • Youth • Overuse

## KEY POINTS

- An increasing number of youth are specializing in single sports at younger ages and engaging in repetitive, intensive activity.
- Early, single sport specialization has not been shown to improve future athletic performance, but has been shown to be detrimental both physically and emotionally.
- The adolescent growth spurt is a particularly vulnerable period of time for the youth athlete with repetitive microtrauma, placing the body at risk structurally.
- Identifying burnout is critical for the clinician taking care of youth athletes who specialize in a single sport.
- Long-term consequences extending into adulthood exist for the athlete who specializes at a young age.

## EPIDEMIOLOGY OF YOUTH SPORTS PARTICIPATION

Organized sports participation among young athletes has increased tremendously over the past several years. According to the National Council on Youth Sports, nearly 60 million youth between the ages of 6 to 18 participated in organized athletics in 2008 compared with 52 million in 2000.<sup>1</sup> This rise has occurred with a concurrent drop in school-based physical education, with only 29% of all high school students participating in daily classes.<sup>2</sup> This has created an environment in which sports activity is highly structured and

centered on the development of specific skills (eg, pitching, tumbling, dribbling) rather than a strong foundation centered around core physical principles, such as flexibility, endurance, and balance. This trend from unstructured free play to deliberate, adult activity has been well-documented in the media,<sup>3,4</sup> and has occurred simultaneously with youth sports becoming a profitable business entity.<sup>5,6</sup>

As a result, a culture has been created in which the definition of success in youth sports is defined not by laying the foundation for a healthy lifestyle, but rather the attainment of “elite” status. This

---

The authors have no conflicts of interest to disclose.

<sup>a</sup> Department of Orthopaedic Surgery, University of California San Francisco, 500 Parnassus Avenue, MU-320W, San Francisco, San Francisco, CA 94143, USA; <sup>b</sup> Department of Orthopaedic Surgery, Cincinnati Children's Hospital, 3333 Burnet Avenue, Cincinnati, OH 45229, USA; <sup>c</sup> Department of Orthopaedic Surgery, University of California San Francisco Benioff Children's Hospital Oakland, 747 52nd Street, Oakland, CA 94609, USA

\* Corresponding author. Department of Pediatric Orthopaedic Surgery, University of California San Francisco Benioff Children's Hospital Oakland, 747 52nd Street, Oakland, CA 94609.

E-mail address: [PandyaN@orthosurg.ucsf.edu](mailto:PandyaN@orthosurg.ucsf.edu)

Orthop Clin N Am 46 (2015) 249–258

<http://dx.doi.org/10.1016/j.ocl.2014.11.004>

0030-5898/15/\$ – see front matter © 2015 Elsevier Inc. All rights reserved.

push has been largely created by coaches and parents, many of whom measure their child's athletic participation by the attainment of collegiate scholarships and professional contracts. In 1993, Ericsson and colleagues<sup>7</sup> proposed that, to achieve expertise as a musician, one must practice 10,000 hours within that specialized field. This principle has been adopted by many parents as a justification for intensive, adult-style training for sports at increasingly younger ages. As a result, rather than playing a wide variety of sports at a moderate level of intensity during the early stages of physical development, there is increasing evidence that children are beginning to specialize at younger ages in 1 sport.<sup>8-11</sup> This trend is occurring even with multiple groups advocating delayed specialization.<sup>12-15</sup>

Single sport specialization can be defined as intensive, year-round training in a single sport at the exclusion of other sports.<sup>16,17</sup> This phenomenon is especially present in the media, whose attention is focused on athletic prodigies such as Tiger Woods, who are applauded for their dedication to a single sport as toddlers, rather than athletes, such as Steve Nash and Roger Federer, who have achieved similar levels of success while playing multiple sports in their youth.<sup>4</sup> Unfortunately, the desire to specialize is fallacious on multiple fronts.

First, the probability of achieving elite status is small for the vast majority of athletes. According to data published by the National Collegiate Athletic Association in 2013, the estimated probability of competing in collegiate athletics for high school athletes ranged from 3.3% to 6.8% for men's basketball, women's basketball, football, baseball, and men's soccer.<sup>18</sup> For that same group of sports, the estimated probability of competing at the professional level for high school athletes ranged from 0.03% to 0.5%.<sup>18</sup> When these data are coupled with the fact that the average athletic scholarship is approximately \$10,000,<sup>19</sup> there is clearly a disconnect between the realistic chances of playing at the next level and, if one does make it, the rather modest amount of money that will be obtained. However, the argument could be made by some that, although the proposed rewards of single sport specialization are difficult to obtain, there exists either no other means to achieve that goal and/or the negative effects of attempting to achieve that path are minimal. The literature suggests otherwise.

From a theoretic perspective, Abernathy et al<sup>20</sup> have suggested that diversified sport training in early and middle adolescence may better foster elite athletic potential than specialization owing to a more positive transfer of skills. Looking at

the youngest of cohorts, Fransen and colleagues<sup>21</sup> analyzed 735 boys aged 10 to 12 years of age and found that those who participated in various sports performed better on a standing broad jump and gross motor coordination than those who specialized in a single sport. Gullich and Emrich<sup>22,23</sup> examined athletic performance in Germany and found that the younger the age of recruitment of the athlete into specialized training programs, the earlier they left sports. Those athletes who progressed to higher levels of participation began playing sports at later ages.

At the collegiate level, DiFiori<sup>24</sup> examined a cohort of Division I athletes at their institution and found that 88% had participated in 2 to 3 sports as children, with the vast majority (70%) not specializing until the age of 12. In addition, the average age of specialization between collegiate athletes (15.4 years) and noncollegiate athletes (14.2 years) varied significantly.<sup>24</sup> Malina<sup>17</sup> also found that, among female collegiate athletes in the United States (particularly diving, tennis, golf, track and field, basketball, and volleyball), the majority had their first organized sporting experience in another sport. In addition, Vaeyens and colleagues<sup>25</sup> found that an early age of onset of high-volume, sport-specific training did not necessarily associate with success at the international level in adult sporting activity. Thus, the proposed benefits of single sport specialization are minimal.

In addition, there are multiple studies that document the overall negative effects of sports specialization in the context of limited future gain. Jayanthi and colleagues<sup>26</sup> examined more than 1200 athletes between the ages of 8 and 18, and found that athletes who spend more hours per week playing their sport than their age are 70% more likely to experience a severe injury. In addition, Holt and colleagues<sup>27</sup> found that youth athletes of higher socioeconomic status (and with private health insurance) suffered more serious overuse injuries, particularly because they were the group that demonstrated a trend toward more sports specialization and less free play. Combined with the risks of social isolation, overdependence, burnout, and manipulation,<sup>16,17,28</sup> the benefits of single sport specialization must be carefully considered within the context of the published risk, many of which are discussed in detail herein.

## ANATOMY AND PHYSIOLOGY OF THE PEDIATRIC ATHLETE

To more fully understand the potential consequences of single sport specialization on the

Download English Version:

<https://daneshyari.com/en/article/4082795>

Download Persian Version:

<https://daneshyari.com/article/4082795>

[Daneshyari.com](https://daneshyari.com)