

Early Sport Specialization: Risks, Avoidance, and College Scholarships

Ean Deno^a, Logan Kritzeck^b, Samuel Romanski^c, and Brad Strand^d

^a Ean Deno is a graduate assistant the NDSU football program; ^bLogan Kritzeck is a graduate assistant of outdoor adventure as the Wellness Center at NDSU; ^cSamuel Romanski is a graduate assistant with the NDSU strength and conditioning program, ^dBrad Strand is a professor in the Department of Health, Nutrition, and Exercise Sciences at North Dakota State University.

Abstract

There is a growing trend in America of young athletes specializing in a singular sport at an early age. Youth athletes are enamored with the benefits of sport specialization, but often fail to consider the risks involved. The idea of receiving a scholarship after high school to play sports often outweighs the negative effects that specialization can have on a young athlete's body and mind. It is known that the effects of specialization can take a toll on the physical, psychological, and social well-being of athletes. Athletes who specialize in sports too soon in their career have issues such as, overuse injuries, loss of desire to compete (psychological burnout), and decreased performance. As athletes choose to focus on one sport their desire to compete has been show to diminish over time. Over training in one specialized sport has also been shown to have negative effects on an athlete's performance in that sport. Athletes who choose to specialize in sports decrease their chances of earning a college scholarship because of the negative effects that sports specialization has on them over time.

Sport specialization is defined as year-round training (greater than eight months per year), choosing a single main sport, and/or quitting all other sports to focus on one sport (Myer et al., 2015). Over the past two decades it is becoming increasingly more common for athletes to focus on a single sport year-round, often times in pursuit of a college scholarship. For example, in 2018, it was reported that 52 percent of youth aged 6 to 12 participated in team or individual sports. Conversely, data from 2008 reported that 27 percent of youth athletes specialized in one sport (Cole & Kashul, 2020).

Very few athletes make it to elite levels of competition after high school, so why are so many youth athletes taking risks by turning to specialization and away from multiple sports (Malina, 2010)? In fact, according to the National Collegiate Athletics Association (NCAA), only about 2% of high school students earn athletic scholarships for college. In 2017, 181,306 student-athletes received a sports scholarship, out of the 7.3 million high school student-athletes there were in the same year (Tabachnikov, 2021). However, even with statistics such as this, parents of young athletes and the athletes themselves continue to chase the chance of earning a college scholarship no matter the cost.

Sport specialization for youth athletes, defined as ages 5-18, is one of the more controversial topics surrounding youth sports. The benefits of specialization are well-known while the drawbacks seem to get brushed away and not talked about as frequently. Youth athletes burning out, becoming injured, dropping out of sport, and acquiring additional stress is being overshadowed by the glamour of college scholarships or even professional contracts (Brenner, 2016; Myer et al., 2015). Many parents of youth athletes are having to weigh these risks against the rewards when deciding if they want their child to participate in a variety of sports or want their child to become specialized in just a single sport. Increasingly, parents are having to make these decisions at younger ages for their children as it has become less common for athletes in middle or high school to participate in multiple sports (Brenner, 2016).

Research clearly shows that over time, sport specialization does not develop an athlete at an accelerated rate, but rather, exposes the athlete to greater risk of potential overuse injury than the alternative of playing multiple sports (Myer et al., 2015). Unfortunately, our society falsely encourages the idea that sport specialization leads to better athletic development in a chosen sport and provides a greater

chance for scholarship opportunities (LaPrade et al., 2016).

The decision that parents of youth athletes have to make is not an easy one. Peer pressure from other parents and the athlete themselves can cause parents to not consider the downfalls of specialization. This paper considers the risks associated with sport specialization and aims to give perspective to those trying to make the best decision for their young athlete.

Risks of Early Sport Specialization

There are numerous negative side effects to early sport specialization. As mentioned earlier, the perception is often that the earlier an individual is exposed to the sport of their choice, the better they will be over time (Myer et al., 2015). This pressure to specialize in sport at a young age is most likely brought on by a parent or coach looking to gain the “competitive edge.” Parents believe that early sport specialization will lead to a Division I scholarship, which is not the case for most individuals (Post et al., 2019). The heightened intensity and pressure experienced by the young athletes who are specializing in one sport leads to physical, psychological, and social risks, along with a lack of overall skill development, participation, and passion (Jayanthi et al., 2013).

Physical Risks

One of the most common threats to a young athlete’s career is the development of a chronic injury. Some reports show 50% of athletes who visit a pediatric sports medicine clinic are seeking treatment for chronic injuries (McLeod et al., 2011). When athletes are only participating in one sport their bodies are repeatedly going through the mechanics of that specific sport. This puts continual stress on body parts that are used the most for that sport and can result in chronic injuries due to overuse (McLeod et al., 2011).

The constant repetition of the same motion is the contributing factor leading to an overuse injury. An athlete will experience “wear and tear” on joint/muscle/ligament/tendon from using it repeatedly through the same sport over a period of time. For example, if a child starts specializing in baseball or softball at the age of 12 and plays every week for a whole year, his or her arm is going to be making the same repetitive motions without any sort of break. If they start this process at age 12 and continue until they are 18, they may not have much arm stamina left after high school because of the chronic injuries that have occurred due to overuse. Athletes who choose to diversify with multiple sports that emphasize different muscle groups are at a much lower risk for chronic

injuries compared to those athletes who specialize in one sport (Brenner, 2007).

Injuries tend to happen more frequently when an athlete’s body is growing faster than normal (Myer et al., 2015). Adolescents are particularly at risk because of how their body changes and grows as they go through puberty. Bones and muscles that are growing during this time can be especially at risk because they are unable to handle the stresses that specialization puts on them (Brenner, 2007). The overuse of growing body parts over time will result in chronic injuries and can have detrimental effects on an athlete later in life.

One of the reasons to not participate in early sport specialization is to avoid overuse injuries. One study that compared highly specialized athletes and multi-sport athletes from ages 7-18 years old found that highly specialized athletes have greater odds of having sustained a serious overuse injury than unspecialized younger athletes, even when accounting for hours per week (Jayanthi et al., 2013). Another study showed a strong relationship between single sport training and patellofemoral pain syndrome (Myer et al., 2015). Only performing one skill through the sport the athlete specializes in also puts them at risk when they are asked to perform a different movement that is outside their current scope of practice as an athlete (Merkel, 2013). By specializing in one sport, an athlete will be practicing that sport for more hours than anything else. It is apparent through research and rational thinking that early sport specialization leads to overuse injuries and fragility of an athlete, which is a reason enough to avoid the allowance of children specializing in sport.

Serious overuse injuries are defined by researchers as an injury that causes an athlete to take at least one month off from their sport. Athletes who participate in more hours of sport per week than their age in years (odds ratio 2.07) or whose ratio of organized sport to free play time was >2:1 hr/wk (odds ratio 1.87) have been shown to have an increased odd of serious overuse injury (Lansdown et al., 2020). The American Academy of Orthopedic Surgeons (2021) has pinpointed three main areas in an athlete’s body that are most effected by overuse injuries, those areas are knees, elbows, and shoulders. These three joints on an athlete’s body are used in almost all sports and an injury to them can have significant impact on the athlete’s career.

Knees. The knee remains one of the most common sites for overuse injuries among youth athletes (Lansdown et al., 2020). In surveys of 1,544 high school athletes, it was found that knee overuse injuries were more common in highly specialized athletes (McGuine et al, 2017). No specific sport, athletic movement, or training practice was linked to these

increased injuries. It is believed, however, that when athletes participate in a single sport year-round that the repetitive nature of their movements, especially in the knee, has led to increased likelihood of overuse injuries in that area (Myer et al., 2015).

Elbow and Shoulder. Research has shown that elbow and shoulder overuse injuries are most common in youth baseball pitchers. Over 5 million children younger than eighth grade play organized baseball. Rates of young players reporting elbow pain during the season have been reported as greater than 50% (Lansdown et al., 2020). The high number of elbow injuries is not only concerning for baseball but for other sports those athletes may choose to play later on in life. Similar results have been found in shoulder injuries for youth athletes. Parallels between the increased number of games and tournaments youth baseball players are participating in and the number of elbow/shoulder injuries have also been drawn by researchers (Lansdown et al.). Athletes may not be exclusively playing baseball but because of the increased number of games their baseball teams are playing, they are increasing their chance for overuse injury.

Psychological Risks

Participating in multiple sports not only decreases the chance of chronic injuries, but also decreases stress levels and the chances of burning out (Brenner, 2016). Athletes tend to burnout when they are training for the same sport for many hours a week over a long period of time. Training for a single sport can create a sort of monotony that slowly eats away at the psyche of an athlete which can cause psychological issues. Critical evaluations and inconsistent feedback from coaches over the course of training can send mixed signals to athletes and make them question their reasons for specializing at a young age (Malina, 2010). This questioning impacts the mental health of young athletes and can cause feelings of resentment towards the sport entirely. Data show that athletes who specialized in a sport at an early age and end up dropping out at some point, do so because of injury or they are burned out from overtraining (DiFiori et al., 2014). Youth athletes will not want to continue playing sports as they grow older if they are not enjoying the experience. Creating a healthy mental state by balancing life and sport while learning how to handle stress can aid in burnout prevention (Martindale et al., 2005).

Encouraging young athletes to participate in multiple sports is a great way to prevent them from burning out. Participating in multiple sports allows the athlete to become well versed in a variety of activities (Brenner, 2007). Multi-sport athletes are able to polish

their athletic skills by using other sports to train their bodies in ways they would not have the ability to do if they specialized. If youth athletes participate in sports year-round, it is important to take time off from structured trainings or practices one to two days a week to allow their bodies to rest and recover (Brenner, 2007). As younger athletes become more aware of what their bodies can handle, it is important for coaches to focus on the wellness of their athletes and show them how to be in tune with their bodies so they know when they need a break (Small, 2002). It is important for youth athletes to take time away from an activity if their mental or physical health is being compromised. No level of competition or training will be beneficial to any athlete if they are suffering physically or mentally.

Coaches must monitor younger individuals who choose early sport specialization closely to ensure they are not experiencing psychological burnout. Due to the adult-style practices and the high pressure and intensity, the psychological risk of burnout, depression, and increased risk of injury may be a reason for withdrawal from sport in young athletes (Myer et al. 2015). In youth athletes especially, it is important that professionals, coaches, and parents focus on keeping athletes participating in sports. Continued participation in sports over time will develop the youth athlete physically and psychologically.

As we know, sports foster an environment for growth, not only physically, but mentally as well. Unfortunately, there are negative consequences caused by early sport specialization for younger athletes. Research shows that multi-sport athletes are impacted by anxiety and stress. It was interesting to discover that “when an individual focus’ on one sport that stress and anxiety is heightened, and anecdotal evidence suggests that will lead to burnout due to the emotional and physical stress” (Committee of Sports Medicine and Fitness, 2000). When an athlete focuses on one sport, they end up believing they need to be perfect. This again, initiates the higher anxiety and stress levels leading to burnout. Research “dictated that student-athletes who are highly specialized were more likely to develop perfectionistic concerns whereas moderate and low sport specialists did not have a relationship with perfectionistic concerns” (Hughes, 2017). It is challenging to remain psychologically comfortable while feeling like you need to be perfect. It is understandable that an individual would stop the sport due to the feelings of anxiety, stress, and depression. Finally, the factor that facilitates burnout in sport the most is “unrealistic parental expectations or exploitation of young athletes for extrinsic gain” (Committee of Sports Medicine and Fitness, 2000). Parents are unaware that their high

standards and living vicariously through their child is what is pushing their child away from athletics. It is important that parents and coaches implore young athletes to participate in multiple sports and to have fun to avoid psychological burnout, leading to quitting the sport entirely.

Burnout

Although burnout is a coined term in later athletics, athlete burnout is becoming prevalent among our youth (Gustafsson, et al., 2007). An environment that does not support the fulfillment of needs and influence can negatively affect well-being, and thus can result in a burnout for community members. Youth athletes with a high sport sense of community profile reported low in burnout indicators and experienced more energy, enthusiasm, involvement, and concentration. On the other hand, athletes with a low sport sense of community profile experienced less satisfaction, emotional connection, and belonging. As a result, they reacted with less energy, enthusiasm, and involvement when they were faced with difficulties related to sport demands (Luzio, et al., 2019).

Peer support was also shown to increase signs of physical exhaustion and loss of achievement in specific circumstances. Emotional connection with peers was positively linked to physical exhaustion six months later. These athletes might also be more vulnerable to pressure derived from sport, school, and relational hassles, resulting in physical exhaustion. The findings could also be explained by the possibility that too strong of a sense of belonging to the community could reduce athletes' autonomy, resulting in a feeling of inefficacy concerning sport performance and accomplishments (Luzio, et al., 2019).

Social Risks

A major influence for youth athletes joining a sport is for the social interaction with fellow peers. Participating with friends and being a member of a team are primary motivators for children to want to join a sport (Malina, 2009). Early sport specialization begins to take away the social aspect of sport for youth athletes. Year-round participation in a single sport tends to exclude child athletes from other sports and other childhood activities because of the time commitment it takes for specialization (Malina, 2009). "Given the time commitment to a single sport, the young athlete often faces potential for social isolation from age and sex peers, especially during adolescence, and altered social relationships with peers, parents and family" (Malina, 2009, p. S6).

Altering social relationships at a young age can shape the identity of a young athlete and isolate them away from their peers. Children start forming friendships with teammates from their school or local team because they will most likely be playing together until they graduate high school. When an athlete decides they want to specialize early, they will likely play on a variety of teams in a variety of cities. This results in the athlete having to travel often and play with an abundance of teammates. They do not have the time commitment it takes to create such a strong bond that they would have if they only played for one team with the same teammates year after year. Leaving childhood teammates to pursue sport specialization can impact a young athlete's ability to create and maintain social relationships with current and future peers.

Youth athletes who decide to specialize are also at risk of social manipulation (Malina, 2009). When athletes commit to specialization at a young age they begin to be regulated by adults, which can cause manipulation in a variety of ways (Malina, 2010). The manipulation starts because the athlete is a child and has to depend on adults – whether it is a coach, trainer, or sport official – to provide for them. This can lead the child to become over-dependent on people who are not familiar to them and alter their relationships with family or friends (Malina, 2010). The person who the athlete becomes over-dependent on can become controlling and manipulate the athlete into decisions that they might not have made without influence. Various forms of abuse can become a byproduct of the excessive dependence that young athletes are forced to have with unfamiliar adults (Malina, 2009). Parents should be encouraged to have faith that coaches and other sport officials around their children have their young athlete's best interest in mind, but not be naïve to the potential manipulation of their child.

Not all youth athletes are born with intrinsic motivation to satisfy the rationale for sport participation. The role of peers revolves around friendship, cooperation, and the reinforcement of rules/values among the peer group (Tome, et al., 2012). Peer connection influences motivation through competitive behaviors, collaborative behaviors, evaluative communications, and through their social relationships (Keegan, et al., 2010). Positive peer relationships have an important association with feelings of greater competence, overall physical activity levels, and low levels of worry in sport (Tome, et al.).

Playing sports involves a group experience and a shared sense of achievement. Collaborative learning among peers also influence motivation (Poellhuber, et al., 2008). Collaborative learning refers to attempts by peers to teach each other or practice together (Institute

for Writing and Rhetoric, 2020). Motivation levels were recorded to be higher when student athletes had the opportunity to give and receive help and advice. The ability to demonstrate competent skill ability to a peer or peer group improved self-efficacy and motivation to continue to learn and develop (Allender, et al., 2006).

Peer connection was also a deterrent in motivation in some cases. In studies with participants in close sport peer groups, youth athletes sometimes focused more on peer perceptions of themselves rather than on the sport task. Studies among classes and teams that have assigned clothes to wear, often show that the top priority of youth athletes is how they look and how their peer group thinks of them. Ill-fitting sport uniforms were major impediments to girls participating in school sport. These concerns over image and relationships with peers led to an increased interest in non-active leisure (Allender, et al., 2006).

In other research, too strong of a sense of belonging can reduce the importance and value of accomplishments. Motivation levels for sport specific development decreased when social connections of peer groups were at the highest (Luzio, et al., 2019). There is a balance to be found in creating a supportive culture among teammates and peers without losing focus of team activities.

Lack of Skill Development

Coaches, and parents must emphasize and expose young athletes to a wide range of motor skills and movements. This focus and encouragement on motor skill development is most easily done through encouraging multi-sport youth athletes. A study conducted of numerous scholarship athletes suggests that, “athletes may be choosing to specialize to obtain collegiate scholarships, however, athletes who played multiple sports actually received athletic scholarships more often compared to their specializing counterparts” (Dueppengiesser, 2019). This fact clearly indicates the reason most parents push their children to specialize is misguided. By playing multiple sports when young, “an athlete uses different skill sets and assures balance. This will help the individual develop strength, agility, and coordination in every plane” (Reinold, 2020). By playing multiple sports, an athlete can truly develop different skills that will be transferrable to the sport in which they may want to specialize in the future.

Decreased Performance

Performance can be affected by a multitude of factors, there is a misconception that even with injury risk, sport specialization is necessary to achieve athletic success, particularly in team sports (Lansdown

et al., 2020). The misconception that sports specialization is needed for athletes to find success is often brought on by parents who believe their child is the next best thing. Research indicates that very few college and professional athletes specialized in their sport at a young age (Buckley et al, 2017). Rugg et al. (2018) showed that of the 237 National Basketball Association (NBA) players selected in the first round over the previous seven years drafts, those who participated in multiple sports in high school played in a higher percentage of total games in the NBA. Further suggesting that even those at the top of their sport had greater results in professional sports when they did not specialize in their sport at an early age.

Feeley et al. (2015) raised a number of interesting points about the benefits and draw backs of specialization in different activities. Research shows that specialization in music can be to the benefit of children because of the dedicated time to practice the instrument or skill that they are utilizing. In music the instrument remains the same from when a musician is young to when they get older, making the skills more transferable. In sports, the evidence is less clear as to what specialization does for children. In sports such as golf, tennis, and gymnastics post pubertal size and strength is less important, leading to skills learned at a young age being more transferable. Feeley et al. went on to reference multiple studies showing that in a majority of other sports, specializing before the age of 12 was detrimental to athletes because skills trained prior to that age were less transferable.

Each sport has its own examples of athletes who succeeded when specializing in their sport at a young age. However, a vast majority of research has shown that specialization at a young age can lead to decreased performance in one way or another. A majority of evidence collected by researchers has shown that athletes who specialize in a sport may see a decrease in performance leading to fewer opportunities to earn a college scholarship.

Decreased Passion

As athletes choose to specialize in just one sport at a young age there is a multitude of risk factors that impact them both physically and mentally. One of the mental risk factors is a loss of passion for the sport that the athletes specialize in, which can be seen by, burnout and overdependence. These factors force the athlete away from the sport that they are playing, leading some to quit, ending their chances of earning a college scholarship.

Burnout is defined as a cognitive-affective syndrome comprising emotional and physical exhaustion, a reduced sense of accomplishment, and sport devaluation (Gustafsson et al, 2017). There is a multitude of factors that contribute to burnout but

research by Malina, (2010) found three key factors that consistently contribute to burnout in athletes. The factors that show up most consistently are; negative performance evaluations, inconsistent feedback from coaches and officials, and overtraining. Negative performance evaluations lead to burnout in athletes because the athlete continues to hear critical feedback rather than supportive coaching. The next factor that has been show to lead to burnout is inconsistent feedback, which gives mixed messages to the athlete on their performance. The final area research has found to have an impact on athletes is overtraining in athletes at a young age, making them not as excited to play the sport they are training for. There are many other factors that can lead to burnout in athletes but these three factors play a major role in a majority of cases.

Buckley (2017) reported that of professional athletes surveyed, 61.7% indicated that they believed specialization helped them play at a higher level, but only 22.3% would want their own child to specialize. The reason for so many athletes feeling that specialization is not right for their children may be because of the overdependence that sports specialization can cause. The lives of young elite athletes tend to be highly regulated. This may foster overdependence on others and in many cases loss of control of what is happening in life (Malina, 2010). Athletes that get labeled as ‘elite athletes’ at a young age may lose the opportunities to have control over the path that their life takes because of how focused they are on their sport. In an article about Michael Jackson, the performer, there is a quote that sums up this early specialization, there is a theory that applies to any child star, that the age at which you become famous is the age at which some part of you becomes forever, and irreparably, arrested (Brown, 2009). Youth athletes that get labeled as stars too early in their career may fall into this irreparable sense of being arrested by their stardom.

Commitment to a single sport at a relatively early age immerses a youngster in a complex world regulated by adults (Malina, 2010). The complex world that young athletes get forced into by sports specialization at a young age may cause them to lose a love for the sport that they play. Researchers from multiple studies has shown that sports are the lure for education (scholarships) but if athletes lose the passion for the game their race to a scholarship ends up short. This short coming leads to athletes that are lacking in life skills and with a missing piece that once made them whole.

Application

The relevance of early sport specialization is becoming more and more prevalent in our society. The desire for the illustrious Division I scholarship, fear of falling behind, and parental pressure is enforcing the wrong notion that early sport specialization is essential for success in athletics. We must show the positives behind playing multiple sports, while also presenting them with the facts above as to why they should avoid specializing in one sport at a young age. By playing multiple sports and avoiding sport specialization, an athlete “ becomes a better leader and improves their teamwork skills from cross-training, reduces risk of burnout in one sport, gains a variety of experiences from involvement with different sports and teams, reduces risk of overuse injuries in one sport and exposure to a variety of coaching styles” (Gardner & Charles, 2020). There is analytical leverage that shows the negatives of sport specialization and displays the positives of playing multiple sports that will encourage resolution to the issue of early sport specialization. The fact that “sport specialization training can begin as early as the age of 5 or 6” is astonishingly wrong to do for kids who are developing (Hecimovich, 2004). This is exactly why leaders must apply research about early sport specialization in sport and use their platform to advise and educate youth athletes to continue to develop through multiple activities and avoiding sport specialization.

Conclusion

In summary, there are many reasons to avoid early sport specialization like overuse injuries, lack of all-around physical development, and psychological burnout in sport. Research has shown that by playing multiple sports, “positive youth development occurs and enhances life skills and develops potential” (Holt et al., 2020). It is important professionals, coaches and parents become knowledgeable about the negatives of early sport specialization so they can educate individuals struggling with this issue. Through continuing research and education, we will be able to implore youth athletes to participate in multiple sports and avoid youth sport specialization.

For a majority of youth athletes, joining sports is an enjoyable experience that offers many physical, mental, and social benefits (Malina, 2009). “Current evidence supports the contention that children should be encouraged to take part in a variety of sports...to best attain the physical, psychological, and social benefits of sport” (LaPrade et al., 2016, p. 4). As athletes begin to turn away from a diverse sport background to prioritize specialization, many aspects of those health benefits gained from participating in multiple sports become undervalued. Chronic injury, burnout, and social isolation are key side effects of

specialization that can pose risks to a child's overall health and development. It is important for parents and athletes to consider the physical, mental, and social risks associated with sport specialization before deciding to focus solely on one sport.

Very few athletes who choose to specialize in one sport end up competing at elite levels of competition (Malina, 2010). This fact makes it that much more important for parents and athletes to consider the risks involved before deciding to specialize. Limited results on the long-term effectiveness of specialization in youth athletes will also make it hard to justify quitting multiple sports to become a single sport athlete (Malina, 2010).

At the end of the day, it is important to let kids be kids. Children should play sports for the fun of the game at an early age. Once a sport becomes an activity that an athlete *has* to do instead of something they *want* to do, the reasons why they began playing in the first place become insignificant. Youth athletes are children first, and sports should not be turned into something that is more of a chore than an enjoyment. Anyone would have difficulty arguing that the risks involved with sport specialization do not outweigh the minimal rewards that are highly sought after. It is most important that young athletes learn how to play freely and develop basic skills before worrying about specializing their skills.

In conclusion, athletes that choose to specialize in their sport have shown a higher likelihood of overuse injuries, decreased passion and performance, leading to fewer scholarship opportunities. Further research into this topic is needed to draw stronger connections between each of these three areas. From the research that is available at this time the conclusion can be drawn that sports specialization can cause an athlete to miss out on an opportunity to earn a college scholarship. If youth athletes want the best opportunity for earning a college scholarship, they should focus their efforts on being the best athlete possible by playing multiple sports. The allure of a college scholarship can be a driving factor for athletes to specialize in their sport but research backs that sports specialization is more detrimental to the athlete than it is beneficial. Young athletes should take the opportunities while they can to play as many sports as they possibly can to build their overall athleticism and athletic skill.

The landscape of youth sports has been rapidly changing over the past two decades with an increase in youth athletes participating in just one sport. Research has found that athletes participating in just one sport for a majority of the year have an increased risk of sustaining overuse injuries, most commonly in their knees, elbows, and shoulders. Overuse injuries to those areas of the body can affect athlete's chances of

receiving a scholarship because of missed playing time or decreased performance due to injury. If this trend continues in youth athletics there could be major impacts on the health and longevity of athlete's careers.

References

- American Academy of Orthopaedic Surgeons. (2021). Overuse injuries in children. *OrthoInfo*. Retrieved from <https://orthoinfo.aaos.org/en/diseasesconditions/overuse-injuries-in-children/>
- Brown, M. (2009 June 28). Michael Jackson, death by showbusiness. *Daily Telegraph*. Retrieved from <https://www.telegraph.co.uk/culture/music/michael-jackson/5659778/Michael-Jackson-death-by-showbusiness.html>
- Brenner, J.S. (2007). Overuse injuries, overtraining, and burnout in child and adolescent athletes. *Pediatrics*, *119* (6), 1242-1245.
- Brenner, J.S. (2016). Sports specialization and intensive training in young athletes. *Pediatrics*, *138* (3), 154-157.
- Buckley, P. S., Bishop, M., Kane P., et al. (2017). Early single-sport specialization: A survey of 3090 high school, collegiate, and professional athletes. *Orthopedic Journal of Sports Medicine*, *5*(7). doi: 10.1177/2325967117703944.
- Committee of Sports Medicine and Fitness. (2000). Intensive training and sports specialization in young athletes. *Pediatrics*, *106*, 154-157. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/10878168/>
- Cole, D., & Kashul, S. (2020). The benefits of playing multiple sports. *Sports Medicine Weekly*.
- Difiori, P., Benjamin, J., Brenner, L., Gregory, L., Jayanthi, L., Landry, L., & Luke, L. (2014). Overuse injuries and burnout in youth sports: A position statement from the American medical society for sports medicine. *British Journal of Sports Medicine*, *48*, 287-288.
- Feeley, B. T., Agel, J., & LaPrade, R. F. (2016). When is it too early for single sport specialization? *American Journal of Sports Medicine*. *44*, 234-241.
- Gardner, R., & Charles, K. (2020) (n.d.). Playing multiple sports offers many benefits. *High School Today*, 1-41.
- Gustafsson, H., DeFreese, J. D., & Madigan, D. J. (2017). Athlete burnout: Review and recommendations. *Current Opinion in Psychology*, *16*, 109-113.
- Hecimovich, M. (2004). Sport specialization in youth: A literature review. *Murdoch University Research Repository*, *41*, 32-44.

- Holt, N., Deal, C., & Pankow, K. (2020). Positive youth development through sport. *Wiley Online Library*.
- Hughes, J. N. (2017, Dec. 12). Athletes from football subdivision schools perception on sport specialization and its relationship with perfectionism. *JEWL Scholar*. Retrieved from <https://jewlscholar.mtsu.edu/handle/mtsu/5636>
- Jayanthi, N., Pickham, G., Dugas, L., Patrick, B., & LaBella, C. (2013). Sports specialization in young athletes. *Sports Health, 5*, 251-257.
- Lansdown, D. A., Rugg, C. M., Feeley, B. T., & Pandya, N. K. (2020). Single sport specialization in the skeletally immature athlete: Current concepts. *Journal of the American Academy of Orthopaedic Surgeons, 28*, 3752-e758.
- LaPrade, R. F., Agel, J., Baker, J., Brenner, J. S., Cordasco, F. A., Côté, J. ... Provencher, M. T. (2016). AOSSM early sport specialization consensus statement. *Orthopaedic Journal of Sports Medicine, 4* (4), 1-8.
- Malina, R. M. (2009). Children and adolescents in the sport culture: the overwhelming majority to the select few. *Journal of Exercise & Fitness, 7* (2), S1-S10.
- Malina, R. M. (2010). Early sport specialization: Roots, effectiveness, risks. *Current Sports Medicine Reports, 9*, 364-371.
- Martindale, R. J., Collins, D., & Daubney, J. (2005). Talent development: a guide for practice and research within sport. *Quest, 57* (4), 353-375.
- McGuine, T. A., Post, E. G., Hetzel, S. J., Brooks, M. A., Trigsted, S., & Bell, D. R. (2017). A prospective study on the effect of sport specialization on lower extremity injury rates in high school athletes. *American Journal of Sports Medicine, 45*, 2706-2712.
- McLeod, T. C. V., Decoster, L. C., Loud, K. J., Micheli, L. J., Parker, J. T., Sandrey, M. A., & White, C. (2011). National athletic trainers' association position statement: prevention of pediatric overuse injuries. *Journal of Athletic Training, 46* (2), 206-220.
- Merkel, D. L. (2013). Youth sport: Positive and negative impact on young children. *Open Access Journal of Sports Medicine, 4*, 151-160. doi: [10.2147/OAJSM.S33556](https://doi.org/10.2147/OAJSM.S33556)
- Myer, G. D., Jayanthi, N., Difiori, J. P., Faigenbaum, A. D., Kiefer, A. W., Logerstedt, D., & Micheli, L. J. (2015). Sport Specialization, Part I. *Sports Health: A Multidisciplinary Approach, 7*(5), 437-442. doi:10.1177/1941738115598747
- Post, E. G., Rosenthal, M. D., & Rauh, M. J. (2019). Attitudes and beliefs towards sport specialization, college scholarships, and financial investment among high school baseball parents. *Sports, 7*(12), 247. doi: [10.3390/sports7120247](https://doi.org/10.3390/sports7120247)
- Reinold, M. (2020). Early Sport Specialization: The Good, The Bad, And How To Fix It. *Champion Physical Therapy*.
- Rugg, C., Kador, A., Feeley, B. T., & Pandya, N. K. (2018). The effects of playing multiple high school sports on National Basketball Association players' propensity for injury and athletic performance. *American Journal of Sports Medicine, 46*, 402-408.
- Small, E. (2002). Chronic musculoskeletal pain in young athletes. *Pediatric Clinics, 49*, 655-662.
- Tabachnikov, D. (2021, March 24). Athletic scholarship statistics. *Scholarship Owl*. Retrieved from <https://scholarshipowl.com/blog/find-scholarships/athletic-scholarship-statistics/>