NYU Grossman School of Medicine

DIVISION OF MEDICAL ETHICS
HIGH SCHOOL BIOETHICS PROJECT

Childhood Sports Participation

Overview

This module delves into the ethical dilemmas regarding whether or not children should participate in competitive sports at a young age, and how participation in sports may impact them in the future. Students will get to learn about the potential benefits and risks children face when they start playing, and possibly specializing in, competitive sports from a very early age and the common injuries young athletes face. The module contains personal reflections and case-based activities.

Within the module, there is one activity in which students will review and discuss personal narratives from college athletes detailing their experiences with college level sports and two activities in which students will analyze case-based scenarios regarding conflicts in sports.

Contents

Learning Outcomes

1. Understand the risks and benefits of participating in sports at a young age
2. Identify and analyze perspectives and conflicting values when it comes to youth participation in sports
3. Learn how to be safe while playing competitive sports

Procedures and Activities

This unit uses a student-centered and interactive approach to teaching. Activities are designed to allow for student participation. Activities are marked as an individual, partner or group activity.

1. Introduction to Topic

With obesity and diabetes rates continuing to increase in the young, it is essential that children engage in physical activity as a part of a healthy lifestyle. Taking part in organized sports is one way that children can remain active and create a healthy lifestyle for both their minds and bodies. Additionally, organized sports allow kids to have fun and make friends while enhancing their physical, mental, and social skills all at the same time. While it is clear that participation in sports has many benefits for children, there is growing evidence that points to the downsides of children specializing in and training aggressively for competitive sports at a very young age.

For many, the objective of engagement goes far beyond staying active, having fun, and developing friendships. Many children are "encouraged" to engage in highly competitive sports from an early age for reasons other than their health benefits; this level of engagement in sports may be driven by parents or coaches for community recognition, for example, or pride, or the promise of future gains like athletic scholarships to college or lucrative professional sports careers. While very few high school athletes turn professional (.03% to .05%), many suffer long-term consequences as a result of their participation in highly competitive sports as kids. Far too often, children get pushed into highly competitive sports at an early age and do not have much of a say in the decision. Studies have shown "that parents were the strongest influence on starting a sport, and coaches influenced the decision to train intensely and specialize in a sport" (Brenner). They are encouraged to play at a competitive level by the adults around them, and many end up suffering in the long run. But unlike when parents must make decisions to try a risky therapy for a child who is ill,

in sports, the child starts out healthy, and it is participation in sports that can end up causing injuries and problems that may impact the rest of their lives. Sports are meant to keep kids in shape both physically and mentally, but with the highly competitive sports environment we have in place for young kids today, it might be doing the exact opposite. Scientific evidence now shows that the wear and tear of competitive sports can cause lifelong damage if children start playing at too young an age and with too much intensity. Is it ethical, then, to aggressively push healthy children into playing highly competitive sports or specializing in a sport at a young age?

2. Overuse Injuries and Why They Occur

Overuse injuries are by far the most common type of injuries experienced by young athletes. According to the article, "Overuse Injuries and Burnout in Youth Sports," a position statement from the American Medical Society for Sports Medicine, "overuse injuries occur due to repetitive submaximal loading of the musculoskeletal system when rest is not adequate to allow for structural adaptation to take place." What this means is that when young muscles, bones, etc. are excessively being used they can start to deteriorate. With their bodies still developing and growing, the constant use of the same muscles, tendons, bones, joints, etc. that comes from specializing in one sport creates significant stress in those areas of the body, putting children at severe risk for overuse injuries and creating growth imbalances (AAOS). We see that in sports such as, baseball, gymnastics, cheerleading, and figure skating, the number of injuries caused by overusing certain muscles is increasing tenfold. For example, pitchers in baseball have a much higher chance of getting chronic arm injuries due to the repetitive pitching motion. Overuse injuries can add up over time, eventually resulting in greater injury and lasting problems later on in life. This then leads to the burnout problem.

What exactly is the burnout problem? "Burnout" occurs when a child who, from a very young age, specializes and plays only one sport year-round, and starts to lose interest in said sport. By doing the same activity over and over again while also overworking the same part of the body continuously, child athletes not only get tired of the same repetitive routine but are also more prone to severe injuries. Overuse injuries lead into burnout, and burnout leads to overuse injuries. This continuous cycle of overworking certain muscles, damaging those muscles, and then doing the same workout routine leads to future health problems in the youth.

Other injuries that young athletes face:

Strains and sprains: Many people are confused about the difference between a strain and a sprain, and as a result they use the two interchangeably as if they meant the same thing. Although a strain and a sprain both involve stretching and tearing, "a strain is a stretching or tearing of a muscle or tendon (the tissue that attaches the muscle to the bone)," and "a sprain is a stretching or tearing of the ligament, the soft tissue structures that hold joints together and restrict or constrain movements within the joints," according to the article "What's the Difference Between a Strain, a Sprain, and a Fracture?" published by the Lerner Children's Pavilion at the Hospital for Special Surgery. Both can happen anywhere and cause discomfort and limited mobility, but they are very common in sports in particular. Most of the time, sprains or strains develop because of overusing the muscle or the ligament. To treat a strain, the main goal is to provide comfort through rest, massages, stretching, etc., whereas treating a sprain depends on the injured ligament and how much support it needs to heal. Sprains can range from mild to severe, and braces may be used in order to stabilize and heal the injured ligaments (HSS).

Growth plate injuries: What is a growth plate injury? According to the Mayo Clinic, "a growth plate fracture affects the layer of growing tissue near the ends of a child's bones. Growth plates are the softest and weakest sections of the skeleton—sometimes even weaker than surrounding ligaments and tendons." Growth plate injuries are among the most common injuries in child athletes and usually occur in the finger, forearm, and lower leg bones. With the bones slowly starting to develop, the growth area of the bones can be subject to harm. When a growth plate is damaged, the bone has trouble growing properly and can lead to many problems coupled with pain in the future. Since growth plate fractures have the ability to affect bone growth, it is important that they are treated immediately and in the correct manner (Mayo Clinic). Improper treatment may lead to the fractured bone being crooked or shorter than it is supposed to be. Some symptoms of a growth plate injury include pain, swelling, inability to hold weight, and restricted mobility.

Repetitive motion injuries: According to the Columbia University Department of Rehabilitation and Regenerative Medicine, repetitive motion injuries (also called repetitive motion illnesses) are "temporary or permanent injuries to muscles, nerves, ligaments, and tendons caused by performing the same motion over and over again." One of the most common is carpal tunnel syndrome, and according to the ESPN Sports Training Room, "carpal tunnel syndrome is one of the most common nerve-entrapment problems in sports, hampering athletes such as cyclists and pitchers." When a repetitive motion injury occurs, it is important that the athlete takes a break

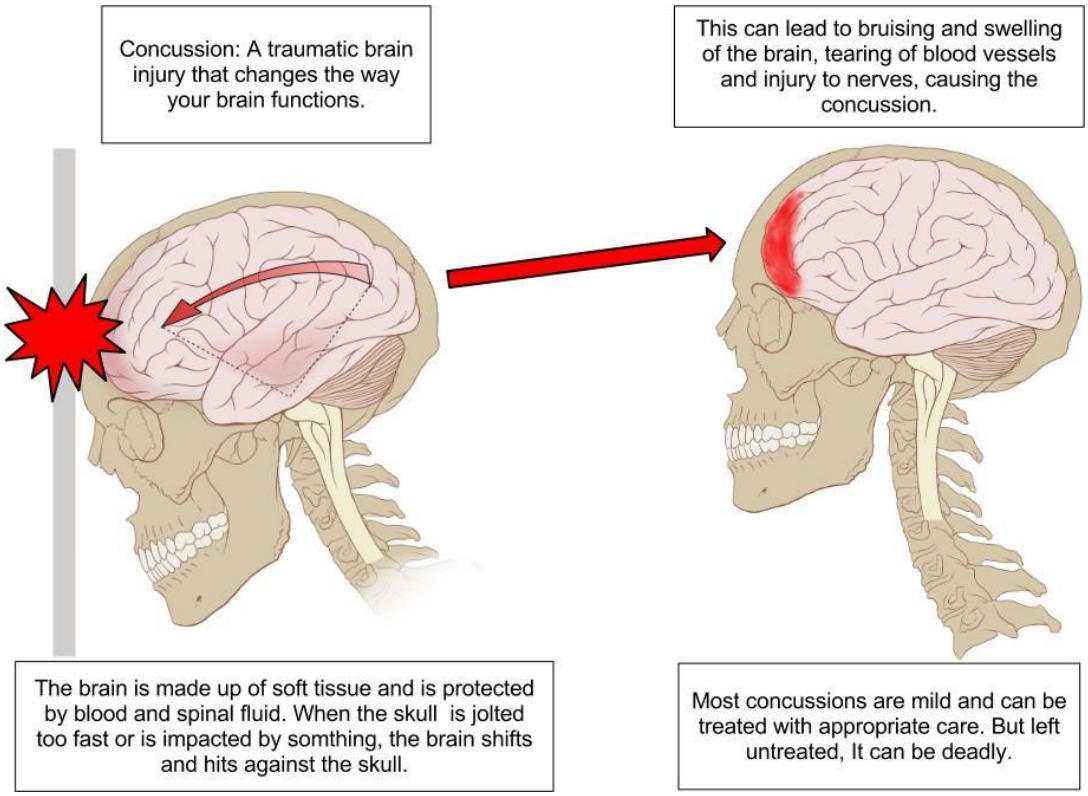
from the sport and follow a rehabilitation program to ensure that the injured muscles, nerves, ligaments, and tendons can return to their highest level of function. Rehabilitation programs for these injuries depend on the severity of the injury and are designed to meet the individual needs of the patient (Columbia University). Repetitive motion injuries can be painful, and if they aren't treated quickly and in the correct manner, complete loss of function in the injured area of the body may occur. The problem with repetitive motion injuries in young athletes is that the children don't know when to stop. Young athletes may have a fear of taking a break from their sports because they don't want to "fall behind" or be penalized by their coaches and parents. With this, when an athlete gets injured and cannot play, they start to get worried that they are going to lose all of their skills or even their spot on the team. To combat this worry, many athletes say that they are fully healed and go back to playing before they are supposed to and before their injury has had time to fully heal. By playing on a still damaged bone, ligament, etc., the athlete is damaging the injury even more than before, which may result in long term health impacts.

Heat-related illness: Medical professionals at the Cleveland Clinic define a heat illness as what happens when "your body is unable to dissipate heat effectively, the balance of salt and water in your body becomes unbalanced and your temperature rises. Sweating fails to keep you cool." In the article "Heat Exhaustion," the Mayo Clinic states that "causes of heat exhaustion include exposure to high temperatures, particularly when combined with high humidity, and strenuous physical activity." Because exercising creates excessive heat in your body, which leads to an increase in your body's core temperature, heat related illnesses are common among athletes (Cleveland Clinic) and very common among young athletes because "children sweat less, create more heat per body mass, and acclimatize slower to warm environments" (American Academy of Pediatrics). Therefore, when athletes are training in hot temperatures while also moving at high intensities, their bodies start to overheat because they cannot get rid of the heat quickly enough. This can result in heatstroke overheating isn't recognized. Heat-related illness is one of the leading causes of death among young athletes, and it is up to parents and coaches to help recognize and prevent athletes from being in conditions that could lead to a heat-related illness or death.

Concussions: The Centers for Disease Control and Prevention defines a concussion as "a type of traumatic brain injury—or TBI—caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth...creating chemical changes in the brain and sometimes stretching and damaging brain cells." Concussions are among the most prevalent injuries experienced by child

athletes, especially among those who play tackle football. The frequent head collisions that occur in football cause a lot of damage to the brain. According to the article "Keeping Kids at the Top of Their Game," "among the most dangerous sports is football, with 920,000 kids landing in the emergency room or doctor's office with concussion, ankle sprain, low-back injuries, and heat stroke." Concussions are serious injuries, and if they go undetected or untreated, they could result in long-term consequences such as chronic traumatic encephalopathy (CTE), which is common among football players. Symptoms of concussions include headaches, fatigue, blurred vision, dizziness, and more. Roughly 3.8 million sports-related concussions occur each year in the United States, so they are very common among young athletes (University of Michigan Health). Head injuries in youth sports should be evaluated and monitored by a health care professional who is trained in pediatric concussions so that children don't experience the hardships in the future that this injury can cause if not handled properly (University of Michigan Health).

What Happens to the Brain During a Concussion?



Source: Max Andrews (2012. https://commons.wikimedia.org/wiki/File:Concussion_Anatomy.png

Discussion Questions:

1. Considering concussions are one of the most potentially long-term damaging injuries in youth sports, how do you think we can better

prevent concussions given that youth sports will continue to be very competitive?

2. Do you think that parents and coaches should limit contact sports for children to prevent concussions even though that would mean that kids won't be exposed to advanced competition as much while young? Is the risk worth it?

3. Defining the Sociological Pressures of Starting Competitive Sports at a Very Young Age

The official definition of pressure is "the use of persuasion, influence, or intimidation to make someone do something" (Wikipedia.com). Today, people use the word pressure very loosely in sports, almost too loosely. According to Emma Vickers, "if an athlete is experiencing 'pressure,' it is more than likely because we perceive that there are expectations placed upon us." Considering that parents, coaches, and friends have huge impacts on children's lives, it comes as no shock that many young boys and girls feel compelled to do extremely well in the sports they play. According to one physician, we live in a "society that pretends to care about its children" ("Overuse Injuries in Young Athletes," Medical Ethics Roundtable, Hospital for Joint Diseases, New York, NY. 5 Apr 2016).

According to Lucy Nemerov, "at the high school level, the opportunity for college recruitment drives many parents to put an unnecessary amount of pressure on their child, resulting in a toxic environment for young athletes" (Nemerov). The excessive amount of pressure that parents and coaches place on young athletes to do well has turned what should be a fun activity for children into a massive competition. They don't care whether or not the child is enjoying what they are doing; they care about what will benefit them in the future. In decades past, it was common for children to come home from school and go straight to the field to play baseball, football, or any sport they pleased with their friends. Playing sports was an enjoyable way for kids to stay active and interact with their friends. Nowadays, playing sports has almost become an industry. With lucrative scholarships being offered by elite colleges, more parents are forcing their children into specialized sports. However, more children are becoming overwhelmed with this "sport scholarship pressure." The USA Today High School Sports article "How the pressure to be perfect affects kids, and what parents can do about it," by Asia Mape, noted that "adolescent depression, suicide, and anxiety are increasing at alarming rates," and it is the unrealistic expectations that are being placed on kids by parents that "are creating over-scheduled, depressed, and anxiety riddled young adults."

With only 3.3% to 11.3% of high school athletes competing at the collegiate level and only 1% of them receiving an athletic scholarship (Brenner), Instead of focusing on what will potentially get them into high-end colleges, maybe an alternative is to go back to when children played sports solely for the purpose of having fun.

Discussion Questions:

1. Reflect on your own relationship to sports. Does this narrative match your experience?
2. With all of the pressures from parents and coaches to do well, how can we lessen the effects of anxiety on young athletes? Is it just the pressure to do well causing the anxiety or are there other factors? If so, what are they?

4. Injury Prevention

Parents, coaches, and athletes can take steps to prevent injuries. Here are some of the top ways to prevent injuries in youth sports.

Proper equipment

Though there have been few, if any, good clinical studies examining whether the use of proper equipment has an impact on the incidence of youth sports injuries, it is generally accepted that the proper equipment is very important in reducing injuries by protecting vulnerable areas of the body that are prone to injuries, such as the skull, spine, neck, etc. However, even though we are protecting the body from a high impact on the outside, it doesn't necessarily mean that we are protecting the body from impacts on the inside. In the case of concussions caused in football, although players do wear helmets, it is actually the jerking around of the brain inside the skull that causes the damage. The helmet doesn't protect from internal collisions. This doesn't mean that players should not wear protective gear; actually, the contrary is true. All evidence suggests that wearing recommended protective gear rather than not doing so lessens the likelihood of getting a sports-related injury. For example, wearing a helmet lessens the risk of skull fractures, and protective padding and guard material does the same for other types of bone fractures and breaks. In recent years, more effective equipment has been crafted to try to reduce the number of injuries, such as BrainGuard's helmets for hockey, football, cycling, and baseball; the helmets were created by Robert Knight, a professor of psychology and neuroscience at the University of California, Berkeley (Sanders). According to Knight, BodyGuard's "helmet can reduce the rotational force by up to a half, but you don't eliminate it. This

is not a panacea; we are reducing the influence of blows to the head." However, he believes that the effective way to reduce traumatic head injuries is to "ban tackle football for kids under age 13" (Sanders). Even with new equipment being developed, there is still a social justice problem: Families of younger athletes may not be able to afford the newest models, so the children get hand-me-downs or used equipment instead. Also, parents with children just starting out in a new sport may not want to invest a lot of money in equipment, because the child might not like the sport. Therefore hand-me-down equipment, which is less protective than new equipment, is a cost-effective substitute. Nevertheless, proper equipment is crucial for protecting athletes against many types of high impact injuries. The best equipment cannot prevent injury 100% of the time, but it is still important that athletes' equipment fits properly so that they can avoid sports injuries to the extent possible.

Trained and qualified coaches

Having well-trained coaches is key to providing safety for young athletes. Today, though, many coaches serve on a volunteer basis. This means that they do not necessarily possess the credentials to properly coach young, developing athletes. Anecdotal evidence shows that it is remarkably easy become a coach of youth sports teams. As one father said, when his children were younger, he decided to volunteer as their sport's coach. The guidelines the athletic board gave to him were very nondescript. Essentially, he was able to walk right into the job without having any training or verifiable credentials. This is a major problem because the children are not getting the training and instruction that they should; the critical instruction in how to prevent injuries may not be something a volunteer coach knows how to provide.

Also, even qualified coaches may not act in the best interests of the athletes. High school coaches want their teams to win not only because everyone likes to win, but because a winning team can get the coach noticed and may be his or her ticket to college level coaching. Since high school coaches tend to have lower salaries than college level coaches, the prospect of a college level position can be very attractive. This incentive can make a high school coach push developing athletes to compete at a college level rather than a high school level, and pushing students too hard in to win can result in more injuries. Even well-qualified high school coaches may inadvertently hurt their athletes by trying to make their programs more like the college programs. This level of competition and intense training is not ideal for high school students' physique. The only way a coach can be the "ideal coach" is by understanding both the mechanics of the sport and the intensity level their players

are at. Then they can try to get their athletes to the next level instead of themselves.

Every youth sports coach, whether volunteer or certified, can benefit from additional training. That is why, in recent years, new training programs have been established to help instruct coaches on the importance of their roles youth coaches and how to properly treat players. One training program that many of the top youth sports organizations, as well as the U.S. Olympic and Paralympic Movement, require all of their coaches and players over 18 to complete is called SafeSport Training. The U.S. Center for Safe Sport is an organization "authorized by Congress to help abuse prevention, education, and accountability take root in every sport, on every court," and it is "dedicated solely to ending sexual, physical, and emotional abuse on behalf of athletes everywhere" (U.S. Center For SafeSport). Additionally, in 2017, the Protecting Young Victims from Sexual Abuse and Safe Sport Authorization Act "codified the U.S. Center for SafeSport, a 501(c)(3) nonprofit, as the nation's safe sport organization" and charged it with the role of "developing and enforcing policies, procedures, and training to prevent abuse and misconduct" (U.S. Center For SafeSport). So although there is still progress to be made in training youth sports coaches and making sure that they are qualified to coach youth athletes, SafeSport is a step in the right direction toward creating a safer sport culture for young athletes.

Proper hydration:

Some of the most common injuries are caused by dehydration, which is when a person's body loses more fluid than it takes in. Fluid loss in athletes is influenced by four factors: exercise intensity, sweating, temperature, and altitude (TrueSport). Young athletes are prone to dehydration because they heat up much faster than adults, thereby metabolizing more fluid when exercising. This can be a particularly big problem in extremely hot weather, since dehydration will occur more quickly than normal. According to TrueSport, "hydration is foundational, in that everything else an athlete does during training, competition, and recovery is at least somewhat dependent upon their fluid intake," and "a good rule of thumb for athletes is to divide their body weight in half and drink at least an ounce per pound of body weight throughout a typical day (e.g., someone weighing 160 pounds should drink 80 ounces of water a day)." Coaches must provide a lot of water breaks during the course of a practice to help athletes avoid heat-related sport's injuries.

Good Nutrition

Good nutrition is essential for an athlete to maintain the appropriate level of energy, mental focus, and body composition (muscle mass, etc.). Depending on what type of

sport one plays, an athlete must adjust their calorie intake to compensate for the energy they expend playing their sport. A normal person takes in about 2,000 calories a day, depending on their weight. However, because an athlete is much more active than a normal person, their intake calorie must increase to stay healthy. Carbohydrates are especially important for athletes. According to the British Nutrition Foundation, "for athletes, if their diet does not contain enough carbohydrates, it is likely that their performance and recovery will be impaired, as carbohydrate is the key fuel for the brain and for muscles during exercise." Carbohydrates provide fuel for physical activity by supplying the body with glucose, which is then stored in the muscles and liver as glycogen (British Nutrition Foundation). Glycogen is essential for athletes as it is a main source of energy for the body both at the start of exercise and during short bursts of exercise such as sprinting (British Nutrition Foundation). According to the Center for Young Women's Health, this is because "your body relies on glycogen to keep your blood sugar levels stable and thus maintain your energy." Another consequence of athletes not eating enough food, or enough of the right food, is that they can become malnourished. Eventually, this can lead to many chronic illnesses and a severe lack of energy.

Discussion Questions:

1. Are there other ways in which we can prevent serious youth sports injuries?
2. Should the focus be on prevention, or should we strive to "avoid" these types of injuries in young athletes altogether? Discuss the pros and cons of this. If a child or a school district cannot afford proper equipment, trained coaches, or good nutrition, what should be done? What are the options? Should a child be denied playing on a sports team because he or she does not have proper equipment? What comes first: the child's health or the value of participating in sports?

5. Long-Term Problems That Arise Due to Silence and Inaction

If left unnoticed or untreated, some injuries that occur during youth sports can have lasting consequences. These consequences are not always considered in the present moment, but should enter the conversation when considering whether participating in competitive youth sports does more harm than good.

Cardiac

The most common medical cause of sudden death in athletes is sudden cardiac death

(SCD), with an estimated 1 in 40,000 to 1 in 80,000 athletes per year (Wasfy). Because young athletes train their bodies to perform under harsh conditions, "child athletes have superior cardiac functional capacity compared with non-athletes" (American Academy of Pediatrics [AAP]). However, such intense workouts might take a toll on the heart. Studies have shown that with intense training the "myocardial function can be depressed," which can cause "transient decrease in left ventricular contractility after extremes of athletic competition" (AAP). While many signs show that the heart can be affected by overuse, it is not certain how badly the heart is affected, or might be affected, by overexercising.

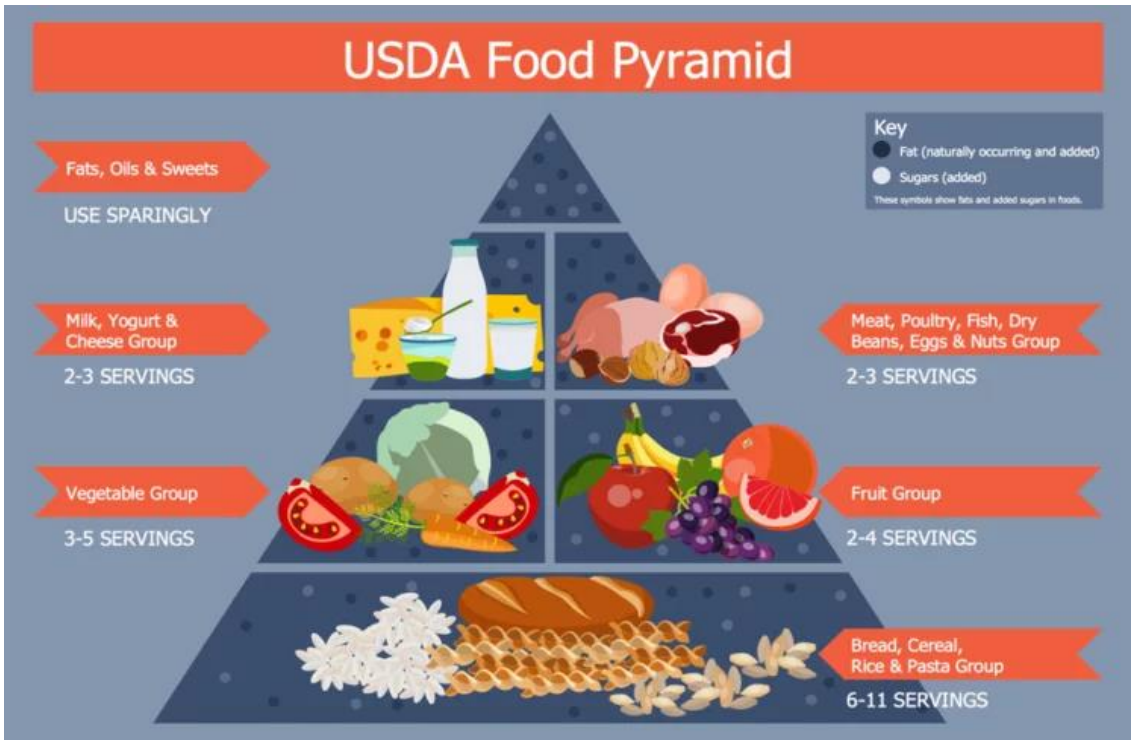
Musculoskeletal Injury

Many musculoskeletal injuries in youth sports stem from repetitive overuse, and "the risk for sport-related musculoskeletal injuries is modulated to some extent in adolescents by certain aspects related to growth and development (Patel)." Growth and development aspects include: height, weight, muscle and strength growth, bone structure, and more. Overusing muscles and bones or putting stress on them by working out can either build up muscle or bone or break it down. When bone or muscle has too much stress placed upon it, the "muscle tissue becomes atrophic, and bone mineral content decreases" (AAP). Because of this, there is a higher probability that "excessive stress overload applied to normal musculoskeletal tissues during repetitive physical activity can lead to overuse injuries and "failure of normal adaptation of the tissue" (Patel).

Nutrition

To drive home the fact that a well-balanced diet is essential for the adequate development of athletes, we have developed what is called a food pyramid. Young athletes need substantially more carbohydrates, which makes up the largest portion of the pyramid, for short bursts of high-intensity activity. However, athletes also need more proteins, fats, and lipids to replenish the ones that are used during exercise. Because young bodies are in the prime of their developmental years, having a balanced diet is very important to avoid becoming underweight. Too much weight loss can make athletes prone to major injuries such as bone deterioration or fractures. According to the article "Sports Specialization and Intensive Training in Young Athletes," by Joel S. Brenner, "there is support for closely monitoring nutritional intake in all youth athletes, especially those who participate in high-intensity and endurance sports, focusing particularly on caloric intake required to meet the demands of training as well as to maintain adequate growth and development."

Calcium and iron are also very important nutritional components and are especially important during the growing phase of children and adolescents (Brenner). Calcium is a mineral found in dairy products. It is stored in the bones and teeth to help keep them strong, and it is necessary for muscles and blood vessels to expand and contract and to send messages through the nervous system (MedlinePlus). Iron is a mineral that is a part of hemoglobin. It is needed to provide oxygen to muscles and is important for "cell growth, development, and normal body functions" (MedlinePlus). More iron is required during the growing years than at any other time in life.



Source: https://parentportfolio.com/food-pyramid-for-kids/

Sexual Maturation

Girls tend to get their periods at around 12 years of age, although some might get them later or earlier depending on the development of their bodies. According to Karina Kapczuk, "Genetic predisposition, training load, nutritional status and psychological stress determine athletes' pubertal timing." Female athletes who lose a substantial amount of body mass may experience delayed sexual maturation. In sports such as gymnastics that emphasize a small and lean appearance, youth athletes are "at risk of developing relative energy deficiency in sport associated with disordered eating or eating disorders" (Kapczuk). This energy deficiency plays a key role in "the pathogenesis of functional hypothalamic hypogonadism in female athletes," which is caused by metabolic and psychological stress (Kapczuk). As a result of a lack necessary factors for developmental growth, young female athletes develop with an abnormal menstrual cycle. Female athletes should begin secondary sexual

development by age 14 and menstruation by age 16, at the latest.

Psychosocial Development

Because of the pressures that young athletes face from their parents and coaches, there has been a marked increase in problems related to anxiety and stress. According to Audrey Young, a board-certified internal medicine physician in Seattle and a member of USA Climbing's medical committee, "Evidence suggests that as young people compete more intensely in sports, gains in mental wellness may be replaced by mental health challenges particular to competitive athletics." Prior to the Covid-19 pandemic, the number of young athletes competing at the national and international levels who suffer from anxiety and depression was up 20% to 45% (Young). When people become extremely anxious, large amounts of cortisol circulate in the bloodstream. Cortisol may temporarily impair one's ability to think clearly; for athletes, this means they might not perform to the best of their ability. Anxiety and depression can also significantly interfere with a young athlete's ability to train and compete, which eventually may lead to burnout. "By age 13, up to 70% of children have dropped out of organized sports" because they are burned out from being overworked and overtrained, and are suffering from depression (Young). It is important that parents and coaches check in on the mental health of their athletes regularly and provide them with techniques to help them manage stress that they might feel from juggling the pressures of school, sports, and other obligations they have.

Discussion Questions:

1. Knowing the long-term effects of sport injuries, is it justifiable for parents and coaches to push children into highly competitive sports?
2. Is it possible for children to know what is good for themselves in the long term? Discuss the ethical implications of putting children in potentially harmful situations that could affect their futures when they have no ability to understand future effects.

6. Personal Reflections on College Sports

In this activity, students will read stories about six students who were or are college athletes. They will then discuss how and why different decisions were made. Most of the student's stories have been adapted from the article "11 Student-Athletes on What They Learned from Playing College Sports," by Justin Block for *The Huffington Post.* Blair Socci's story can be found in her post on the

website *xoJane.* The first set of stories highlights students that were disappointed by their college experiences. The second set of stories features students who had positive experiences with college sports.

"I feel like it was worth it to be on the team, but I have to say, going through it really, really sucked."

Before Julian McWilliams, Sumorwuo Zaza, and Blair Socci became a part of their college sports programs, they enjoyed playing high school sports. Julian was an amazing baseball player, Sumorwuo was outstanding at football, and Blair was gold in volleyball. They all had dreams of going to college and eventually going into the big leagues. However, their dreams would vanish once college started.

After starting college sports, Julian, Zaza, and Socci all concluded that sports in college weren't the best. Actually, Sumorwuo said, "I feel like it was worth it to be on the team, but I have to say, going through it really, really sucked." Most of their complications came from bodily strains, long work hours, and setbacks.

Julian and Sumorwuo both noted that the amount of strain placed on their bodies was too much. Julian said that "they not only had me lifting more than others to put some more muscle on me, but they also put me on the 'football meal plan,' giving me multiple meals a day." Julian complained that with the "grueling schedule... I found myself sick a lot because of little sleep."

Sumorwuo mentioned how he was already at a disadvantage because of his numerous ACL injuries. In high school he tore his ACL during his senior year. "Basically, all the colleges [he] was interested in stopped talking to [him]." After he was recruited, however, he tore his ACL two more times, once in freshman year and once in sophomore year. From then on, everything became much worse. He mentioned that "on [his] third surgery, [he] had serious complications and had a pulmonary embolism and was in an induced coma for a day and the hospital for a week." Due to this major setback, his coach called him and said that his football career was over. It was a huge blow to the Dartmouth football star, but he also knew that if he didn't stop playing, he might be dead soon. Sumorwuo said, "I was just happy to be alive".

Similarly, Blair found that college sports weren't the best for her either, mainly because an injury had put her out of the game. During her freshman year at UCLA, Blair proved herself to be one of the best volleyball players on the team. However,

the next year, she tore her meniscus. The pain in her knee was unbearable, and she soon found herself on the bench for the first time. She was devastated, but she knew that because of her injury she would never be good enough to play again. After her surgery, she told her coaches that she was quitting the game. It was a tough decision, but she knew that the other competitors were far better than she was.

All along, all three knew that the colleges they went to pushed them too hard. Once college ended, Julian went on to be a professional baseball player in New Mexico, Sumorwuo engaged himself in his studies, and Blair pursued passions that volleyball had kept her from. Their sports experiences resemble many other students' experiences: They love the sport, but the college experience was not right for them.

The Positives of Participation in College Sports

Unlike the three athletes highlighted above, student athletes Kim Bellware, Carly Ledbetter, Ali Watkins, and Paul Raushenbush felt their experiences in college sports were, overall, great.

Kim attended Valparaiso University, where she played for the Valpo women's soccer reserve team, the B-team behind the varsity team. She believes that playing for the reserve squad gave her the best of both worlds because "[she] got to still play soccer at a high level, but not being required to travel meant [she] could pursue a double major and work on the school newspaper." Although being on the reserve squad meant that Kim didn't receive an athletic scholarship, she had already received a full-ride academic scholarship to Valparaiso, which allowed her to spend time playing soccer. She said that even though she didn't get any money for playing soccer, being a college athlete left her with "a closet full of team-issued gear and the memory of spending [her] late teens/early 20s more fit and technically skilled in soccer than [she had] been in [her] life."

As illustrated by Kim, not all athletes receive athletic scholarships; some of the ones who do said in their interviews for The Huffington Post sports gave them better opportunities financially and sports scholarships were a big help in paying for college tuition. Two athletes lucky enough to receive an athletic scholarship are Carly Ledbetter and Ali Watkins. For Carly, playing volleyball earned her a full-ride athletic scholarship to Elon that paid for everything—"[her] education was paid for, along with [her] food and board." Ali attended Temple University, where she received a rowing scholarship after walking on to the team. Ali never considered playing sports prior to being recruited to join the Temple rowing team by a friend during her first year of college: "never in a million years did [she] ever think [she] would be an

NCAA scholarship athlete through college." At the end of their college careers, both Carly and Ali noted how amazing it was to have an athletic scholarship, with Carly saying "...how incredible it is to graduate debt-free" and Ali mentioning how receiving a scholarship is "probably one of the things [she is] most proud of in [her] entire college career."

Along the same lines, they all felt that in one way or another, the relationships that they formed "were what made it all worth it" (Kim Bellware). For Paul, he stated that although he loved politics, he also loved swimming because he had "an additional group of friends," while also playing the "sport [he] had loved since [he] was six" (Paul Raushenbush). Sports teams were like a family, they did everything together so they all had to stick together.

Ali mentioned that rowing her gave her 40 best friends that were like sisters to her and that she still treasures the relationships she formed with both her teammates and her coaches. She said "now that we're all graduated, rowing gives us something to come back to. There's always an annual reunion at the team's biggest spring race." Carly also thinks fondly of the relationships that she was able to form through college sports and recalled how being a college athlete made it so that "when [she] arrived at college [her] freshman year, [she] had 15 other best friends, a coaching staff that wanted [her] to succeed, trainers who cared about [her], and an academic support team that wanted [her] to strive for excellence." Although there were some differences in how they looked at their individual sports programs, they all seemed to like them in the end, which is true for a lot of other college athletes.

Discussion questions:

1. Why do you think Julian, Sumorwuo, and Blair disliked their experiences while Carly, Kim, Ali, and Paul loved theirs?
2. How did their decisions on school impact how they felt about the programs?
3. What could be done differently for student athletes to enjoy the college sports experience even more?

7. Case Study #1: When to Say No? What is a Doctor's Role?
Should the doctor intervene? Or should the doctor allow the parents to make the ultimate decision?

Claire is going into her freshman year of high school. All throughout middle school,

Claire was the star soccer player, and she hopes she can go into high school starting on varsity, just like both her older brothers and her dad did. However, Claire has gotten two concussions already, and her mother is worried about future head injuries. She decides to take Claire to a specialist to get her opinion on the matter. Claire's mother tells the specialist about her fear of future concussions but also explains the opposing view of Claire's father, who believes that sports allow for better social skills and help with self-esteem. The specialist is confronted with two options. Because the concussions happened a year or so earlier, she doesn't have a lot of concern right now, but she knows that Claire is at higher risk for another in the future. However, because the concern is currently so low, and the daughter and father are so passionate about her playing, the doctor doesn't have a big problem with her playing.

Because the mother's concern is great but that the father's concern is also valid, the doctor decides to let Claire and her mother go home and decide what they think is best for themselves. Claire and her mother, but the mother is very upset, because she left with the same concern she had coming in.

Discussion questions:

1. Given the circumstance, do you think the doctor handled the situation well?
2. What could the doctor have done to help the parents make the better decision?
3. Do you think the mother could have handled the situation better?
4. What information was missing to make a solid decision?
5. Knowing that the daughter has a higher risk of getting another concussion, should the doctor have taken a more precautionary course of action?

When and who should intervene when things have gone too far?

Kosta Karageorge's story is adapted from a true story, as reported by Tim Rohan in the *New York Times*.

From a very young age, Kosta had been extremely involved in football and wrestling. His two older brothers were one of the main reasons that he became passionate about these two sports. Headed down the same path as his brothers, Kosta

soon fell in love with sports. However, his competitive nature would drive him overboard. In the eighth grade, Kosta didn't make it into the state championship for wrestling. He blamed it on his strength and started to lift a lot more. Kosta became pathologically obsessed with fitness. He ate huge portions, worked out excessively, threw up occasionally, and even started to take steroids with his friend. The steroids had side effects, one of which made Kosta very angry. As the state championship match approached, Kosta got increasingly anxious that patches of his hair would start falling out. His parents questioned why this happened, but when they found out they didn't do much about it. At the state championship, Kosta lost two matches, which made him very angry and irrational. He walked home after the competition and sat in the basement, holding his father's gun. If it weren't for his friend walking in, Kostas might have killed himself. He had never been a violent kid, but something was just not right.

When he went off to Ohio State, Kosta realized he was not nearly as good as the other wrestlers. He tried to be as good as they were and pushed himself beyond all reasonable boundaries. Over the course of all his years in wrestling, Kosta experienced a total of 15 documented concussions. However, because of his athletic nature and his drive toward "manliness," Kosta never did anything to help heal his concussions. As time progressed, other athletes took the spotlight, leaving Kosta in the shadows. When he realized he wouldn't go far in wrestling, he decided that his last chance of becoming pro would be to go into football. He didn't do well in that, either. So, the night before the big Michigan–Ohio State game, Kosta, his girlfriend, and his friend went to a party. Kosta was acting strange at the party, and when he got home that night he seemed almost depressed. Later, Kosta started to break down. The next morning he walked out of his apartment wearing a black hoodie and black pants, holding something in his hoodie pocket. In the next coming days, a woman and her nephew found Kosta's body in a green dumpster with a bullet in his forehead.

After Kosta was officially reported dead, his parents called for an autopsy report and shipped his brain off to a facility to be studied. It was revealed that due to his many concussions, Kosta had what was known as C.T.E. (chronic traumatic encephalopathy), a severe, progressive brain disease that is associated with repeated concussions and can cause mood changes. This explained why he might kill himself. His former teammates said that he would complain about his head hurting or that he was hearing a buzzing noise, but he would never go to the doctor because he didn't want to miss a practice. They said he was being manly. However, his coaches knew that he had gotten some concussions; they also knew that he went to the on-campus

doctor to get them checked out. The doctor did not report him because Kosta did not authorize him to share any information about his condition. Knowing all this, how do you think the doctors, the coaches, and the other athletes should have handled his situation before it got out of hand? Were the parents to blame? Was it the pressure of to become the best at his sport that drove him over the edge? If the risk of playing a high impact sport involves life-threatening concussions, why would one still play the sport?

8. Preventing Injury: What Can You Do?

Here are some suggestions for preventing serious injury from playing sports.

Remember **RICE** right after an injury.

Rest: When the doctor says that an athlete needs some time off from the sport to take care of an injury, the athlete should take it. Even though many athletes and parents will argue against this, rest is the best and quickest way for injuries to heal. If an injury has occurred and the athlete doesn't wait the allotted time for the injury to heal, the injury could get worse. This could then result in the athlete being out action longer. Doctors normally prescribe the minimum amount of time to rest and recover; don't make it longer by damaging your injury even more.

Ice: Ice helps relieve swelling from an injury. After a sprain, a strain, or any type of traumatic impact, ice will help soothe the pain from inflammation. However, many think that ice is a treatment for injuries, but that is not true. Ice is meant to numb the pain of inflammation, not treat it. Many types of injuries use ice as an aid, such as overuse injuries, fresh bruises, sprains, strains, bumps, or anything that produces acute discomfort.

Compression: Compression helps by keeping oxygen in the part of the body where it is needed most. When we work out, the oxygenated blood turns into lactic acid. Lactic acid is what produces the infamous soreness and fatigue after high-intensity exercise. By applying pressure to an area that is already injured, it makes it harder for oxygen to turn into lactic acid. This means that when injured tissue is immediately compressed, it may heal more quickly.

Elevation: Elevation is a way of reducing swelling by using gravity by directing blood away from the injured area.

Who Is Responsible?

Everyone is responsible for preventing sports-related injuries. Parents are responsible for making sure that their kids are doing what they love to do, not what they *think* they want to do. It is thought that enabling children to pursue their own passions, and not forcing them into activities, is what makes them excel. Coaches also have a lot of responsibility in youth sports, and they must be on the lookout for athletes who are too exhausted to play or not conditioned well enough to stay healthy in the game. Too many coaches over-practice, overfeed, and over-schedule their athletes, and the old mentality of just "pushing through the pain" is not healthy or relevant anymore. Although coaches may have the best intentions for their athletes, most of the time they are not educated sufficiently to protect them. Recognizing when a player is not fully committed to a sport or is greatly depleted is key to giving the athlete a better future. Many might see a sports scholarship as "the holy grail for colleges" (Holland & Schoen), but that is not the case at all. Getting into college on a sports scholarship is hard, and going pro is even harder. Young kids should focus on what they love to do and what will keep them healthy, whether sports related or not.

9. Conclusion: Putting It All Together

After grasping the full spectrum of risks that can arise from having children play high-impact sports competitively from an early age, we must ask ourselves: Is the benefit worth the risk?. Obviously, there is no black and white answer to this question. What is good for one child, who may show incredible talent and ability in a given sport from an early age, may not be good for another (or even for the general population of children who have "average" ability). In general, children should be encouraged to be active from an early age. There is great benefit in having kids learn healthy habits early, including the need to move and exercise. However, it is not clear that there is any benefit for a very young child to play sports competitively. At early ages, the greatest benefit of engaging in sports seems to be social interaction, learning how to play well with others, having fun, and staying active. Fun should be the goal of sports at this age.

Since there is greater risk for longer term damage from overuse injuries and other sports-related injuries sustained very early in life, the risks of forcing young children to focus on a given competitive sport can be considerable. If the hope is that the child will get a scholarship to college later in life, these risks seem to outweigh the benefits. Unless a child shows unusual talents early on and actually enjoys a specialized sport (such as skiing or gymnastics), there is little evidence to point to the child having a greater chance of becoming good enough to get a college scholarship later in life. Also reducing the likelihood that a student will get into a competitive college on a sports scholarship is that the competition at this level is very intense. The likelihood that a child will go on to become a professional athlete and earn a living from their sport is extremely low.

So, is pursuing a sport competitively as a child a bad thing? Of course not. Some kids genuinely like the sports that they play and are genuinely good at them. Children who participate in specialized sports (swimming, gymnastics, skiing, etc.) benefit from starting early in life, when their flexibility is high, fear is low, and it is often easier to learn. Additionally, playing sports in school and focusing as you get older on getting a scholarship can be a great goal. College costs are high, and for some kids this is a great path to a good education.

But for all the benefits, there must be general protections in place to ensure safety of children who engage in sports. Additionally, children should enjoy what they are doing and not feel pressed to do something that they don't want to do. Forcing them to play a sport based on a parent or coach's desire to win is not beneficial. It will be harmful to the child in the long run and could strain relationships within a family. There may be other sports that the child is good at and that they would enjoy more (or other activities—like music, art, etc.). However, because sports participation will always be attractive to many children and parents, it is essential that everyone—children, parents, coaches—make sure that proper safety precautions are always followed.

- Engage in practices and activities that are age appropriate. They should center on fun and learning, sportsmanship and rules, at the primary school age, introduce more technique at the middle school age, and become more competitive in upper/high school age in preparation for college-level play, when indicated.
- Always ensure that proper equipment is being used. When injuries arise, allow them to heal properly before re-entry into competitive sports.
- As they progress, make sure children understand proper ways of training

and the need to maintain good nutrition, sleep, and "listen to their bodies" and tell a coach or parent if something

doesn't feel right. An undetected injury could lead to long-term problems that can affect a child's life for a long time.

Being a part of a team is hugely satisfying and important socially. Playing sports, either competitively or for fun, can be an enriching part of a person's life. Sports, for some, can be safe havens for kids if they enjoy playing, they are good at it, and they have lots of social connections because of the sport. It can also open the door to a good education or a professional career for the very lucky few who are good enough. Specialization can, therefore, have benefits. But it is also true that school and college athletes should have a backup plan. If their whole plan is to make a career in their sport, they have to realize that the chances are very low. College athletes in particular should be required to keep up with academic work and graduate; they should also be encouraged to have other interests to fall back on if something happens. With the possibility of injury high, and the likelihood of professional success low, it is important that athletes and those who support them have the guidance that they need.

As you think about the issues raised in this module, consider how you view the risks and benefits of engaging in competitive sports at an early age. Do you believe the risks outweigh the benefits, or vice versa?

Competitive sports will always be with us. It is a part of our culture and history. But we can be smarter in ensuring that we don't cause injury and harm to those who compete by making poor choices and forcing kids to compete too early.

10. References and Additional Resources

American Academy of Pediatrics. Intensive training and sports specialization in young athletes. Pediatrics. 2000. 106:1

Balsam J. Overuse injuries in young athletes. Medical Ethics Roundtable Lecture: Hospital for Joint Diseases, New York. 5 Apr. 2016.

Bang to Rights. Economist. 5 Mar 2016. https://www.economist.com/science-and-technology/2016/03/05/bang-to-rights

Block J. 11 student-athletes on what they learned from playing college sports. Huffington Post. 8 Aug 2015. http://www.huffingtonpost.com/entry/11-student-athletes-on-what-they-learned-from-playing-college-sports_us_55cce90ae4b0cacb8d334e0f

Boston's Children's Hospital Center for Young Women's Health. Sports and nutrition: fueling your performance. 13 July 2015. Accessed 11 Sep 2021.

Brenner J. Sports specialization and intensive training in young athletes. Pediatrics. 2016. 138:3. http://pediatrics.aappublications.org/content/pediatrics/138/3/e20162148.full.pdf

Caplan A. Overuse injuries in young athletes. Medical Ethics Roundtable Lecture: Hospital for Joint Diseases, New York, NY. 5 Apr 2016

Cardone D. Overuse injuries in young athletes." Medical Ethics Roundtable Lecture: Hospital for Joint Diseases, New York, NY. 5 Apr 2016

DiFiori JP, et al. Overuse injuries and burnout in youth sports: A position statement from the American Medical Society for Sports Medicine. Clinical Journal of Sports Medicine. 2014. 24. https://www.amssm.org/Content/pdf%20files/2014_OverUse_Injuries-Burnout.pdf

Hartley S. Pressure...what pressure? Athletes in sport. Podium Sports Journal. 2 Feb 2011. http://www.podiumsportsjournal.com/2011/02/02/pressure%E2%80%A6what-pressure-athletes-in-sport/

Holland K, Schoen JW. Think athletic scholarships are a 'holy grail'? Think again. CNBC. 13 Oct 2014. http://www.cnbc.com/2014/10/13/think-athletic-scholarships-are-holy-grail-think-again.html%3E

Igel, Lee. Overuse injuries in young athletes. Medical Ethics Roundtable Lecture: Hospital for Joint Diseases, New York. 5 Apr. 2016.

Johns Hopkins Medicine Health Library. Sports Injuries and Children. Accessed 13 Sep 2021.

http://www.hopkinsmedicine.org/healthlibrary/conditions/adult/pediatrics/sports_injuries_and_children_90%2Cp02785/

Kelto A. How likely is it, really, that your athletic kid will turn pro? NPR. 4 Sep 2015. http://www.npr.org/sections/health-shots/2015/09/04/432795481/how-likely-is-it-really-that-your-athletic-kid-will-turn-pro

Mayo Clinic: Tween and Teen Health. Dehydration and Youth Sports: Curb the Risk. 7 Aug 2020. Accessed 10 Sep 2021. http://www.mayoclinic.org/healthy-lifestyle/tween-and-teen-health/in-depth/dehydration/art-20047470

Nationwide Children's Hospital. Kids sports injuries: The numbers are impressive. Accessed 11 Sep 2021. https://www.nationwidechildrens.org/specialties/sports-medicine/sports-medicine-articles/kids-sports-injuries-the-numbers-are-impressive

National Institute of Arthritis and Musculoskeletal and Skin Diseases, National Institutes of Health. "Preventing musculoskeletal sports injuries in youth: A guide for parents." June 2013. Accessed 8 Sep 2021. http://www.niams.nih.gov/health_info/sports_injuries/child_sports_injuries.asp%23most

Overuse injuries in young athletes. Medical Ethics Roundtable Lecture: Hospital for Joint Diseases, New York. 5 Apr. 2016.

Rohan T. A young athlete's world of pain, and where it led. New York Times. 22 June 2016. http://www.nytimes.com/2016/06/27/sports/kosta-karageorge-cte-concussions-suicide.html?_r=1

Socci, Blair. It happened to me: I worked my entire life to play Division I college volleyball and then quit when I got there. xoJane. 5 Dec. 2013. http://www.xojane.com/it-happened-to-me/i-worked-my-entire-life-to-play-division-i-college-volleyball-and-then-quit-when-i-got-there

Vickers E. Pressure in sport: How real is it? BelievePerform. 2014. Accessed 10 Sep 2021. http://believeperform.com/performance/pressure-in-sport-how-real-is-it/

Acknowledgments

This module was developed and written by Emma Tillyer, under the supervision of Carolyn Neuhaus. Sarah Anne Maruyama updated the content in September 2021, under the supervision of Lisa Kearns.