

Will Sports Injure My Child?

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These days it seems as though we are constantly hearing of physical injuries occurring with sport. Whether witnessing an injury live or hearing about it from others around us, the news often makes us take a step back and second guess whether the benefits of sport are worth the potential harm.

Sports-related injuries account for at least 25% of all childhood injuries.⁵ So wouldn't it be logical to just avoid sports all-together? After all, that would eliminate a whole quarter of the injuries experienced by our youth!

At this point I am confident that you likely disagree with the previous statement. And for good reason! There is an enormous wealth of physical and psychological benefits to sport, and so avoiding sports completely would be a massive disservice to our children.¹

So the big question is: How can we maximize the benefits while minimizing the risks? In order to answer this question, we must understand the most common risk factors associated with youth sports injuries. Those risk factors include age, sports specialization, and training volume.^{1,4,7}

Age

Let's begin by clarifying that children ARE NOT simply miniature adults. Pediatric athletes, or athletes under 18 years of age, are undergoing a significant process of physical development that is no longer present in the adult population.

Structurally, youth athletes have immature bones that are weaker than the tendons and ligaments that attach upon them. This is because developing bones have open growth plates and ossification centers, which basically means that the bones have not yet fully formed into a solid structure and are therefore more susceptible to injury. Common injuries and conditions associated with immature bones include traumatic and stress fractures as well as apophysitis conditions such as Osgood-Schlatter and Sever's Disease.

But the good news is that these developing bones often have a great blood supply, resulting in improved healing when injured. That is one reason why fractures and other bone-related injuries tend to heal much faster in children as compared to adults.

Sports Specialization

The second significant risk factor for injury among youth athletes includes early sports specialization.^{2,4} Sports specialization is the process of dedicating the entire year to playing and training for one single sport. On the surface this clearly seems like a fantastic idea. After all, if practice makes perfect then doesn't it make sense to practice as often as possible?

Unfortunately this is not the case for youth athletes that are still developing. Furthermore this is particularly true for those athletes that have not yet undergone puberty. In fact, this is such a critical issue that the American Academy of Pediatrics published a report in 2016 that officially stated "Participating in multiple sports, at least until puberty, decreases the chance of injuries, stress, and burnout in young athletes. For most sports, specializing in a sport **later** (i.e., late adolescence) may lead to a higher chance of the young athlete accomplishing his or her athletic goals."²

There is one factor in particular that accounts for the increased injury rates often associated with early sports specialization. Athletes that only focus on one sport or activity are more likely to develop various physical imbalances. Only performing the movements and activities associated with a single sport may lead to excessive stress and overdevelopment of certain muscles along with the underdevelopment of others. These muscular imbalances have the potential of placing inappropriate and excessive stress onto the already weakened bones and joints of developing athletes. In addition, repetitive utilization of the specific muscles and tendons further increases the risk of sustaining injuries to these structures.

Training Volume

The final risk factor that will be discussed within this article includes training volume. Volume in our case can be simplified to mean quantity and intensity. In other words, injury occurrence has been shown to be associated with the amount and intensity of training the athlete performs.^{1,4,7}

First, an overall excessive volume (amount or intensity) of training or sport participation within a given time period is associated with increased injury risk.^{1,4,7} That is because the athlete is simply unable to recover from this magnitude of training stress. Participating in physical activity prior to undergoing adequate recovery places an even greater stress onto the body and therefore increases susceptibility to further injury.

Unfortunately it is beyond the scope of this article to detail an ideal volume prescription, as that would be a very in-depth and individualized process. Nonetheless, there are certain key signs and symptoms that an athlete may demonstrate which can help indicate that his or her training volume is too high. Some of these signs and symptoms include: increased fatigue, worsening stress and anxiety, decreased joy and desire to train and participate in the sport, and finally a gradually worsening of physical performance and mental focus.^{1,7} Keep in mind that these are signs and symptoms indicating that overtraining is already in the process of occurring; however, the goal is to avoid overtraining in the first place.

In addition to overall excessive volume, injury risk is also associated with drastic changes in week-to-week training volume.⁷ This means that performing either significantly more, or significantly less, activity from one week to another both have the potential of increasing the occurrence of injuries.

What Can We Do?

Having a clear understanding of the previously mentioned risk factors for youth sports-related injuries is the first step in understanding how to minimize injury risk. Now we will review a list of powerful action steps that are recommended to help offset these injury risks and instead promote healthy participation in sport.

- 1.) Reduce the occurrence of overtraining that is commonly associated with early sports specialization as well as excessive training volume. Effective methods include ensuring a minimum of 7 hours of restful sleep per night⁶, avoiding excessive strenuous activity within 48-hour windows⁶, avoiding excessive week-to-week changes in training volume⁷, and by participating in a variety of physical activities, sports, or play².
- 2.) Maintain adequate hydration along with a well-rounded diet consisting of natural nutrient-dense foods while simultaneously avoiding highly processed foods.¹

When considering the fact that young developing athletes have naturally weakened bones, it is important to remember that certain nutrients, vitamins, and minerals such as calcium, magnesium, and vitamin D have the potential of improving and maintaining bone structure. On the other hand there are “bone robbing” chemicals, such as phosphoric acid often found in soda, that have actually been shown to potentially promote bone loss and/or reduced bone density.³

If you believe that your child’s diet may be negatively impacting his or her health, it is recommended that you consult with a licensed nutritionist or dietician specializing in pediatrics and sport.

- 3.) Place significant focus on prioritizing proper skill and technique with all sports and fitness-related activities. In many cases it is not the sport, skill, or activity itself that causes the injury, but rather THE WAY the sport, skill, or activity is performed by the athlete. Therefore, making sure the athlete understands the significance of maintaining focus and attention on these points throughout each training session or sporting event is an absolute requirement.

This recommendation includes developing safe methods of absorbing impact and falling. Yes, there are methods that reduce the stress placed upon joints, bones, and other body structures when falling, as well as when sustaining an impact such as when performing and absorbing a tackle in football. It is beyond the scope of this article to teach these techniques; however, it is recommended to discuss these important techniques with your coaches.

- 4.) Use age-appropriate methods to develop fitness. Obtaining adequate strength, endurance, and flexibility are particularly important for injury prevention at any age.¹ That is because a well-designed fitness routine has the potential to correct muscular imbalances and promote bone, muscle, tendon, ligament, and joint health.

It is a common misconception that strength training stunts growth by placing excessive stress on to developing bones.⁸ Yes, IMPROPER strength training may result in those unwanted side effects. But please understand that an age-appropriate strength training program overseen by a qualified specialist actually promotes bone mass and density as well as muscle, tendon, and joint health.^{1,8} As a result, stronger bones, muscles, and tendons are less likely to become injured.

Secondly, developing endurance in addition to strength reduces the likelihood that an athlete will sustain an injury due to fatigue.

Finally, developing adequate flexibility and controlled mobility will assist in avoiding excessive joint and bone stress that is commonly experienced with tight muscles.

Developing appropriate fitness may in fact be one of the most effective ways in promoting resilience to injury. But please remember that children are not miniature adults, and therefore cannot be trained in the same way as a fully developed athlete is. Therefore it is highly recommended to take the initiative to consult with a professional specializing in youth fitness and development. Appropriate specialists include select physicians, physical therapists, chiropractors, athletic trainers, and strength and conditioning coaches.

Conclusion

Sport by nature is a dynamic and unpredictable physical activity. Therefore there is no absolute way to prevent all injuries. There are however a number of known risk factors that do place youth athletes at greater risk of injury. Those risk factors include age (physical and mental maturity), premature sports specialization, and excessive training volume. Although there is an inherent risk with sport participation, this level of risk may be reduced when adhering to the recommended action steps presented within this article.

Citations

1. Baechle TR, Earle RW. Essentials of Strength Training and Conditioning. Human Kinetics; 2008.
2. Brenner JS. Sports Specialization and Intensive Training in Young Athletes. *Pediatrics*. 2016;138(3)
3. Calvo MS, Tucker KL. Is phosphorus intake that exceeds dietary requirements a risk factor in bone health?. *Ann N Y Acad Sci*. 2013;1301:29-35.
4. Cronin, KJ. (2012, Jan 4). Injury Risk Is Product of Athlete's Age, Degree of Sport Specialization, Training Intensity. Retrieved July 11, 2015, from <http://www.momsteam.com>
5. Grady M and Linton J. Medical Conditions Which Impact Youth Athletic Rehabilitation. Merkel DL, Molony JT. *Pediatric and Adolescent Sports Medicine: Management and Prevention of Injuries Unique to the Young Athlete*. APTA Sports Section Home Study Course. 2011:10-22.
6. Luke A, Lazaro RM, Bergeron MF, et al. Sports-related injuries in youth athletes: is overscheduling a risk factor? *Clin J Sport Med*. 2011;21:307-314.
7. Soligard T, Schweltnus M, Alonso JM, et al. How much is too much? (Part 1) International Olympic Committee consensus statement on load in sport and risk of injury. *Br J Sports Med*. 2016;50(17):1030-41.
8. Zatsiorsky VM, Kraemer WJ. *Science and Practice of Strength Training*. Human Kinetics; 2006.

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To cite this article, please use the following APA citation format:

Ketselman, E. (2018, July 23). *Will sports injure my child?* Retrieved from <http://www.youthsports.rutgers.edu>