

Prevention of Overuse Injuries in Young Soccer Players

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With the increase in participation in soccer in the recent years, the frequency of injuries requiring medical attention has also increased. While the risk of injuries has always been part of any athletic activity, in the medical field we are now seen an alarming increase in a group of injuries that are not the result of trauma, but the result of repetitive stress followed by insufficient rest. These injuries are classified as overuse injuries. Overuse injuries are often difficult to diagnose because of the lack of acute trauma, and they are also often neglected by both parents and coaches until the pain or symptoms become intense.

It is important for youth soccer coaches to be familiar with common practices to prevent overuse injuries. To better understand how to prevent injuries, it is necessary to understand the main causes of overuse injuries. Overuse injuries have multifactorial causes, and the predisposing factors could be described as intrinsic (internal to the individual) or extrinsic (external to the individual).

Intrinsic factors are **growth** (due to vulnerability of growing tissue like bone and cartilage and changes in body weight, height and muscle mass), **anatomic malalignment** (common in the knee joint or patellofemoral complex of preadolescent and adolescent girls), **prior Injury**, **poor conditioning** and in some cases **menstrual dysfunctions** (irregular or absent menses). While coaches do not have much control over these intrinsic factors, they need to know they exist and they must consider that the bones, muscles and connective tissues of the young soccer players are not yet fully developed.

Coaches have a lot more control than over the extrinsic factors, which are key in preventing overuse injuries. Extrinsic factors include improper **training** (not age appropriate or overloading activities), **poor technique, improper surface for practice and competition, excessive pressure from peers, coaches and parents and inappropriate equipment** (wrong footwear, wrong size ball). High Volumes of repetitive practice may the young athlete susceptible to overuse even at sub maximal loading

Some of the most common structures affected by soccer overuse injuries are Tendons (Patellar Tendonitis), Bursa (Bursitis), Cartilage, Bone (stress fractures to tibia/foot), Musculotendinous component such as Osgood-Schlatter disease (at the insertion of the quadriceps on the tibia) or Sever's disease (insertion of Achilles tendon into the heel)

The American College of Sports Medicine has suggested that about 50% of overuse injuries in children can be prevented. Of the extrinsic factors, **the most common cause of overuse injuries is improper training**, therefore, I will list some suggestions to improve training conditions and prevent overuse injuries.

1. Use pre- season physical screenings: When planning for year around training, it is important to start with an individualized evaluation of the players physical abilities. It is also important that a health care professional, a certified strength and conditioning specialist or an athletic trainer provide screenings to determine if there may be risks of injuries. Physical screenings often include simple measurements such as height, weight and posterior flexibility, but they also include postural screenings, functional movement screenings and other standardized testing that have been documented to be good predictors of musculoskeletal deficiencies leading to injuries.
2. Organize practice without excess repetition. This is challenging as skill is better learned with repetition. However, quality is more important than quantity, and distribution of the loads could help, for example: Shooting is better practice with short bouts of repetitions followed by rest to reduce fatigue and improve ability to absorb energy. It is also better when practiced with change in sequences (Inside followed by laces, followed by opposite foot). In general, it is important to avoid excessive repetitions without recovery, so if the technical skill is failing due to fatigue, it is better to wait until full recovery has been obtained, before resuming it. In the younger players, it is also important to have a variety of activities available, including interesting, fun and age appropriate activities to enhance learning of skills.
3. Proper Warm up: Include activities that involve the muscles that will be used at practice. Spend at least 10 minutes prior to practice using general movements that involve dynamic flexibility, mild aerobic activities and in the case of players coming from an injury or having some pain, let them have a self controlled stretching routine and allow them to spend more time preparing their bodies for practice. In older players you may even suggest to have them come early and stretch and warm up.
4. Measure progression: Use a Gradual progression, from simple to complex. Also do not change the volume or intensity of training abruptly.
5. Adjust to changing surfaces. Besides considering the use of proper shoes, consider the type of activities that you choose on each surfaces. Running and playing on sand may be a fun activity, but do not expect to have the same intensity and duration than running or playing on grass.
6. Monitor the players other physical activities. Manage specialization in soccer. It is very important to consider the volume and intensity at which players are participating in other sports or physical activities. While I personally recommend that players do not specialize in any sports earlier than age 14, I have learned to accept that in our competitive American society this seems difficult to follow. The pressure of success and the adult oriented competitive environment at any early age, seem to work against the recommendations of the American Academy of Pediatrics that “ young athletes who specialize in just one sport may be denied the benefits of varied activity while facing additional physical, physiologic and psychological demands from intense training and competition”. But if perhaps there is something more dangerous than

specialization in soccer before age 14, is an uncontrolled management of “double specialization”. A significant number of players tend to participate in two or more sports, and while they will tell you ...”but soccer is my main sport” more than likely they train and play the “other” sports just as hard if not worse than their beloved soccer. This is why education and communication with parents and other coaches is important, as the health of the young player may be affected due to overtraining. My personal opinion is that overtraining or improper/non qualified training is more dangerous than specialization.

7. Rest. Rest should be scheduled and it should be given as much importance as training. 1 or 2 days of absolute rest each week is recommended. Also when planning year around training, breaks every 3-4 months with a change in activity are recommended.
8. Refer players to a physician, athletic trainer, or other health professional when symptoms are reported.

The Indiana Youth Soccer Association has strived to educate parents and coaches across the state regarding safety in soccer. One of their core values is “to promote a Fun, Safe and Healthy Environment”. I believed that these values are more than words and that coaches should move forward from being well meaning individuals to well informed individuals who facilitate that players could enjoy that fun, safe and healthy environment. Prevention of any injuries and specially controlling the factors that may cause overuses injuries should be part of their responsibilities towards their team and players.

For questions regarding specific program designs or more detailed suggestions, Luis can be contacted at the numbers above.

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