



Sports Shorts

GUIDELINES FOR PEDIATRICIANS

Overuse injuries in athletes

Overuse injuries are a result of progressive repetitive cyclic overloading of tissues. Repetitive microtrauma overwhelms the tissue's ability to repair itself and will lead to an overuse injury. Injury damage can progress from microdamage (pain) to macrodamage (swelling, redness, warmth). High velocity cyclic overloading can produce an "overuse" injury in seconds. An example would be a 100 meter sprinter who sprints for 10 seconds and then suffers a hamstring muscle pull. Low velocity cyclic overloading, combined with increasing training volumes, can lead to an overuse injury after weeks or months of continuous stress. An example would be a marathon runner with a one-year history of progressively worsening Achilles tendinitis. The body is unable to adequately adapt to the physiological stress placed on it.

Types of overuse injuries

1. Tendonopathies (tendinitis, tenosynovitis, tendinosis) such as achilles tendinitis, epicondylitis
2. Medial tibial stress syndrome (shin splints, periostitis)
3. Apophyseal injuries such as Sever's, Osgood-Schlatter's and Little league elbow
4. Stress fractures
5. Muscle soreness and strains
6. Bursitis

Factors contributing to overuse injuries

1. Repetitive cyclic overloading of tissue
2. Increased training volume (too much, too soon, too frequent, too hard)
3. Poor or improper mechanics or technique
4. Improper training techniques
5. Lack of rest to allow the body to adapt to training
6. Improper equipment such as wrong shoes, wrong racquet size

Signs and Symptoms

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| 1. Localized pain | 6. Loss of motion |
| 2. Swelling | 7. Loss of function |
| 3. Redness | 8. Localized tenderness |
| 4. Warmth | 9. Worsened with activity |
| 5. Weakness | |

General Treatment Principles

Most overuse injuries are treated successfully by adhering to the following principles:

1. The principle of P.R.I.C.E.

- P** = Protection – protect the injured extremity
R = Rest – relative rest: cross train or deep-water running
I = Ice – apply ice for 20-30 minutes every 2-3 hrs for first 3 days
C = Compression – apply an elastic wrap to reduce swelling
E = Elevation – raise extremity above the level of the heart

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2. Rehabilitation

1. Muscle strengthening
2. Improve balance and range of motion
3. Flexibility
4. Functional sports specific activities
5. Cross training sports activities

3. R.E.S.T. = Resume Exercise Below Soreness Threshold

1. Reduce Volume: 25 – 30%
2. Reduce Intensity: 10 – 20%
3. Reduce Frequency: 25 – 50%

4. Correct Biomechanical and Training Errors

1. Obtain a formal biomechanical analysis
2. Have your biomechanics and technique evaluated and corrected
3. Use orthotics or a brace if recommended
4. Use correct shoes
5. Use proper equipment – correct fit and well maintained
6. Strengthen muscle imbalances
7. Adhere to a regular stretching program
8. Review training program with an expert

Preventing overuse injuries

- | | |
|---|---|
| 1. Educate. Have athletes carefully monitor their training progression. | mechanical problems |
| 2. Recognize the early signs of an injury | 6. Educate on proper equipment and fit |
| 3. Address all injuries, even minor ones | 7. Avoid early specialization and year-round single sports competition |
| 4. Have athletes include a daily stretching and strengthening program | 8. Instruct on appropriate warm-up and cool-down periods with each training session |
| 5. Evaluate and correct bio- | |

Sports Shorts is provided by the Home and School Committee of the Ohio Chapter, American Academy of Pediatrics

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GUIDELINES FOR PARENTS, COACHES, ATHLETES

Overuse injuries in athletes

Physical activity is good for children. Organized sports help children build a sense of character, self-esteem, self-discipline and positive skills that will last into adulthood. But for all the advantages sports can bring, parents need to take caution because kids are at greater risk for injury than ever before.

While organized sports are much more competitive and kids are under a lot of pressure, parents should seek a balance. Some parents are told that for children to be competitive, they need to focus on a single sport starting at a young age. And they need to play and work at that sport year round. As a result, there is no rest and recovery for the parts of the body they are using. Kids are doing the same drills and repeating the same movements over and over again, making them susceptible to an abnormal amount of stress and load. Even worse, athletes are expected to play through the pain.

Overuse injuries on the rise

Overuse injuries have risen steadily over the past 10 years for young athletes ages 6 to 15. These injuries occur when tissue (muscle, tendon, growth plates, bone) exceeds capacity to absorb or accept stress and breaks down, causing pain. Previously, it would have taken years to reach this capacity, as in the case of an aging major league baseball pitcher with arthritis. But in pre-adolescent children, growth plates are especially vulnerable. They are spongy, cartilage like spots in the body where bone is still growing and developing. Children ages 6 to 18 have more than 200 in the body. At first pain starts only with the activity or just after, but later it begins to hurt with normal daily activities.

The most common overuse injuries occur in gymnastics, dance (in particular ballet, especially if they dance "en pointe"), baseball, softball, soccer and weight training. Training "too much, too hard, too soon, too frequent" is the most common cause of overuse injuries in athletes. Gymnasts who practice 15 to 20 hours a week are overloading the growth plates in their wrists. Little League pitchers who throw more than 100

pitches a week overstress their shoulders and elbows. Basketball players who are on several teams and work out four or five nights a week may be overloading their knees. Physically, these kids appear 'over the hill' by age 14 or 15.

These types of injuries sometimes require surgical repair, but because rest is required before rehabilitation can begin it can take months to return to activity. Unfortunately, too often, athletes don't rest or go through rehabilitation so they can get back in the game and re-injury occurs. If overuse injuries are severe enough, they can end a child's participation in a sport.

The typical signs and symptoms of overuse injuries include pain with movement, swelling, warmth, redness, weakness, difficulty performing a sport, and pain at rest.

How did this happen?

How did this happen? Many parents and coaches see successful athletes making huge salaries or getting college scholarships and they want the same for their kids. Some are living their sports dreams through their children. Most parents simply want to expose their children to the benefits of organized sports as well as regular fitness and exercise.

The problem is that each child is different and when you push one to keep up with another, that's when injuries occur.

Tips for preventing overuse injuries

1. Avoid over-training – carefully monitor your training progression; remember the 10% per week
2. Listen to your body and REST when needed; DO NOT try to make-up missed training session
3. Recognize the early signs of an injury
4. Address all injuries, even minor ones
5. Allow your body time to recover and heal
6. Include daily stretching into your program
7. Include a strengthening program in your training
8. Correct biomechanical problems
9. Warm-up and cool-down adequately with each training session
10. Avoid early sports specialization and year round single sports competition

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Guidelines for overuse injuries

1. Rest – complete rest or limited activities
2. Apply ice to area 20 – 30 minutes
3. Compression with an ace wrap
4. Elevation of the affected limb
5. Nonsteroidal Anti-inflammatory medication
6. Protective bracing may be helpful in certain conditions
7. A gradual progression back into sports participation

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