



**Central States  
Orthopedics**

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# SPORTS MEDICINE MONTHLY

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*Surgical & Non-Surgical Care. Sports Medicine. Physical Therapy.*

## OVERUSE INJURIES IN ADOLESCENT ATHLETES



Summer Break is less than a month away for most junior high and high school student athletes. While the academic season takes a summer vacation for a few months, most adolescent athletes don't take such a break from their respective sport at any time in the year. In fact, more athletes today are competing in one sport in year-around competition and/or are playing on multiple teams in one sport during the same season than ever

before. And, the overuse injuries are starting to pile up.

### **Baseball:**

\*5-fold injury risk increase for pitchers who pitch more than 8 months per year and more than 80 pitches per game.

\*Pitching often, despite arm fatigue, increased the risk for injury 36 times.

Risk Factors for Shoulder and Elbow Injuries in Adolescent Baseball Pitchers  
American Journal of Sports Medicine, Vol. 34, No. 6, 2006

### **Gymnastics/Cheer/Dance:**

\*45.1% of all cheerleader injuries in North Carolina high schools over a 3-year period involved athletes who continued participation in competitions and practices after their regular fall season had ended.

A Prospective Cohort Study of Injury Incidence and Risk Factors in North Carolina High School Competitive Cheerleaders.  
American Journal of Sports Medicine, Vol. 32, No. 2, 2004.

### **General:**

\*49.2% of all injuries in children ages 5-12 and 54.5% of all injuries in children ages 13-17 were classified as overuse.

Pediatric Sports Injuries: An Age Comparison of Children vs Adolescents  
American Journal of Sports Medicine, Vol. 41, No. 8, 2013

**Volume 5, Issue 10, May 2014**

## The Baseball Pitcher

Perhaps the most widely known position for the likelihood of an overuse injury, the adolescent baseball pitcher has received a tremendous amount of research and analysis over the years. Pitch counts, pitch types, and rest periods have all been recommended. With school ball in preseason from October to December, high school competition picking up from January to May, summer leagues and fall ball from June through September, it's no wonder our younger pitchers have arms and shoulders that are worn out, overused, and injured. In order to reduce to the likelihood of overuse injuries, consider the following recommendations from the research and the sports medicine experts in the field:



- The throwing athlete should ideally have a rest period of at least 3-4 months during the year where they are not in a throwing dominant sport, competition, or activity.
- Avoid pitching with any fatigue or pain in the arm.
- Avoid pitching more than 80 pitches per game and more than 2,500 pitches per competitive year.
- Pitchers who are taller or heavier, have an excessive warm-up (+30 pitches), regularly start, throw over 85mph, and/or frequently participate in showcases are much more likely to sustain an overuse injury.

For a full list of Recommended Pitch Counts, Pitch Types, and Rest Periods by age group, visit the Home Exercise Page of our website.

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### Central States Orthopedics Physicians

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## The Lumbar Spine

The lumbar spine is one of the most common sites for overuse injury in the adolescent athlete. While many baseball athletes complete a pre-season rotator cuff strengthening program and while many skill positions in football work on lower extremity explosiveness and speed in June and July, most athletes don't take the time to "pre-habilitate" their lumbar spine prior to their competitive season. And, with a majority of sport motions requiring significant amounts of repetitive rotation and extension, it is truly becoming more and more common for overuse lumbar spine injuries to show up in our patients. Consider the following information:



-In a study of 100 adolescent athletes (aged 12-18) who reported to a sports medicine clinic with complaints of lower back pain, close to half of all patients presented with an overuse injury (i.e. stress fracture, strains, etc...)

-In another study of 185 adolescents under the age of 19 years old who were diagnosed with a lumbar spine stress fracture, approximately 60% had continued to compete and subsequently waited to seek treatment until a point where their condition had progressed to a moderately severe or severe level.

-Vertebral fractures and subsequent slippages of one vertebra on another most frequently occur in sports like diving, gymnastics, wrestling, and weight lifting. In fact, one study listed female gymnasts as 4x more likely to sustain such an injury.

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**Volume 5, Issue 10, May 2014**

## Just One Sport???

For many kids today, sport specialization has become the norm. Twenty years ago, the average high school female athlete may have played volleyball, followed by basketball, and then maybe softball; more and more student athletes are picking one sport and sticking with it year around. While this is an asset in the building of one's skill and talent, year round single sport participation can also be tremendously destructive on the body.

-In comparing high school females in Kentucky, 357 multi-sports girls and 189 single sport girls were followed and overuse injuries were recorded. Participation in 1 single sport increased the risk of patellafemoral pain 1.5 times and specific conditions such as patellar tendonitis and Osgood Schlatter's Disease demonstrated a 4-fold increase.

-In another study, 50% of all adolescent athletic-related injuries are directly attributed to overuse

### **National Athletic Trainers' Association Position Statement:**

#### **Prevention of Pediatric Overuse Injuries, 2011**

"Young athletes who participate in a variety of sports tend to have fewer injuries and play longer, thereby maintaining a higher level of physical activity than those who specialize before puberty. In addition to the potential for...overuse injury, specialization in one sport may be associated with nutritional and sleep inadequacies, psychological or socialization issues, and ultimately burnout."

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