Cycling Injuries

BY GEORGE PUJALTE, M.D.

"A 36-year-old male comes to your clinic expressing a desire to take up biking as his main form of exercise. He inquires about cycling injuries, prevention measures, and usual management. What advice do you provide?"

Often, cycling injuries arise from attempting long distances too soon, poor riding technique, or from bicycle-cyclist incompatibility.

Patellofemoral joint problems in cyclists are caused by high gears which increase compressive forces on the joint as they slow down spin and lengthen contact times. Biomechanical malalignment leads to maltracking and can be compensated for by positioning cleats, changing rotation length, interposing aluminum wedges between toe clip flanges and the front face of pedals, or orthotics.

Patellar tendonosis, plica syndrome, and iliotibial band friction **syndrome**, are other cyclist knee problems. Physical therapy (PT) and non-steroidal anti-inflammatory medications (NSAIDs) usually help. Surgery is rarely required.

Achilles tendonosis can result from too much force during hillclimbing, inadequate warm-up, and biomechanical malalignment. Usually, ice massage, PT, and heel pads help.

Saddle soreness and ischial bursitis are also common complaints. NSAIDs, ice or heat massage, ultrasound, and cortisone injections may help. Saddles should be one to two inches wider than the interischial distance. Pressure on the pudendal nerve by the saddle can lead to transient numbress of the penis, or exacerbate chronic prostatitis. Improper saddle fit can also cause chafing and infections, preventable by a chamois lining in cycling shorts, or by zinc-based or topical antibiotic creams applied between the skin and shorts.



"Cyclist's palsy," an ulnar neuropathy characterized by numbness, tingling, and sometimes motor limitation, can result from riding on rough terrain, which increases pressure exerted by the hands on the handlebars. Carpal tunnel syndrome is also possible. Padded handlebars, cycling gloves, and frequent repositioning of the hands on the handlebars, can help prevent these.

Improper frame fit can cause neck pain, relieved by gentle neck stretches, although correcting the frame to prevent excessive forward leaning by the cyclist prevents this.

Preventing head injuries revolves around wearing a proper-fitting, safety-approved helmet.

Abrasions ("road rash") should be thoroughly scrubbed, as particulates can lead to infection. Topical antibiotics and daily cleansing may prevent infections and minimize scars.

PRIMARY CARE SPORTS MEDICINE

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SPORTS MEDICINE PHYSICAL THERAPY

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Matching Personality to Exercise **Recommendations**

BY MATTHEW SILVIS, M.D.

"A patient comes to the office complaining that she just can't seem to stick with an exercise program. She really doesn't like to run, but has been told by many people to run for exercise. How important is matching a patient's personality to exercise?"

The American College of Sports Medicine and the American Heart Association recommend that all healthy adults aged eighteen to sixty-five need thirty minutes, five days per week of moderate aerobic exercise or vigorous intensity aerobic exercise twenty minutes on three days each week. Despite the myriad well-known benefits of exercise, rates have remained stagnant with only 20 percent of adults achieving this goal. There is a relatively new concept of determining a person's "fitness personality" to improve exercise rates. Essentially, patients are more successful initiating and continuing an exercise program that matches their style or personality.

Providers should first assess a patient's ability when recommending exercise (e.g. recommending swimming for aerobic exercise would not be appropriate for an individual who cannot swim). Then, the patient should be directed to activities that best suit their personality. Elements of a good match are broken into seven dimensions:

- 1. Social: Do they prefer to exercise alone or with others?
- 2. Control: Do they prefer a high degree of control (step machine) or spontaneity (improvisational dance)?
- 3. Motivation: Are they motivated by internal goals (to lose weight or decrease blood pressure) or externally (running a race for charity)?
- 4. Aggression: Do they prefer aggressive (weight lifting) or non-aggressive (yoga) activities?
- 5. Competitive: Do they prefer competitive (handball, singles tennis), collaborative (volleyball, basketball), or individualist activities (ice skating, roller blading)?
- 6. Mental focus: How much concentration do they prefer during exercise?
- 7. Risk taking: Are they conservative or risk-takers?

Does compatibility lead to compliance? Research studies and personal experience favor this approach. Remember that each of us will weigh the importance of the seven dimensions differently. For help with this process, several free online fitness profile calculators are available that help match personality traits with forms of exercise likely to be most successful for patients.

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Sports Medicine THE PRIMARY CARE PROVIDE



Dear Health Care Provider.

My name is Matthew Silvis, M.D., and I am the medical director of Penn State Hershey Primary Care Sports Medicine. Welcome to the summer edition of our Primary Care Sports Medicine Newsletter, a biannual newsletter of seasonal sports topics. We hope you find the information useful and appreciate any feedback you have to enhance our efforts. We have selected a variety of topics for this issue. Our quest writer is William Hennrikus, M.D., professor of pediatric orthopaedics at Penn State Hershey.

If you'd like to receive this newsletter by email, please send your email address to my administrative assistant, Jeanne Laicha, at jlaicha@hmc.psu.edu. Please send any future topic ideas to Jeanne Laicha or myself at msilvis@hmc.psu.edu.

Sincerely,

Matthew Jutym

Matthew Silvis, M.D. ASSOCIATE PROFESSOR PENN STATE HERSHEY FAMILY AND COMMUNITY MEDICINE PENN STATE HERSHEY ORTHOPAEDICS AND REHABILITATION PENN STATE MILTON S. HERSHEY MEDICAL CENTER



Osgood Schlatter Disease

BY WILLIAM HENNRIKUS, M.D., PEDIATRIC ORTHOPAEDIC SURGEON, PENN STATE HERSHEY BONE AND JOINT INSTITUTE



Osgood Schlatter Disease (OSD) is a common cause of knee pain in young athletes. The term 'disease' is a bit of a misnomer. however. A more accurate descriptive term may be 'condition.'

OSD typically occurs in children active in sports that involve jumping, squatting, and kneeling, such as basketball or baseball (catcher). OSD most often affects males between the ages of ten and fifteen, and females between eight and thirteen.

Up to 50 percent of patients have bilateral symptoms. The pain usually resolves after

the child's growth spurt ends and the growth plates close. The patellar tendon of the knee connects the knee cap—patella—to the shin bone—tibia—at the cartilage growth plate—tibial tubercle. This growth plate is softer than bone and is susceptible to stress from overuse when the quadriceps muscle contracts when jumping or squatting. The pain stems from irritation of the growth plate at the anterior knee resulting from the pull of the patella tendon and quadriceps muscle causing a traction osteochondrosis of the tibial tuberosity.

The main symptoms of OSD include pain and enlargement at the tibial tubercle. Over time, a bump forms at the tibial tubercle due to repetitive contractions and calcium formation. The bump is often tender to touch. Radiographs often show soft tissue swelling, ossification, and enlargement of the tibial tubercle.

Treatment is designed to decrease pain and to decrease stress at the tendon attachment site to the tibial tubercle. Rest, ice, massage, non-steroidal anti-inflammatory medicine, and a patellar tendon strap placed between the bump and the knee cap can help to reduce the pain. A knee pad to protect the tibial tubercle from direct trauma can be used in sports such as football or wrestling. Stretching exercises for the hamstrings and quadriceps muscles may be helpful. In severe cases, young athletes may need to temporarily stop their sport or change position—for example, catcher to third base.

The condition resolves in most athletes when the athlete matures and the growth plates close. Most young athletes can continue to play with appropriate treatment and brief—a few days—rest during flare-up of symptoms. In a few recalcitrant cases, the calcified bump can be surgically excised after the growth plates have closed.

Consider urgent referral to a pediatric sports medicine specialist if the athlete cannot perform a straight leg raise or if displacement of the tibial tubercle is noted on radiographs. Consider elective referral, if the athlete demonstrates no improvement following three months of conservative care.

Keeping the Young Pitcher Healthy

BY ROBERT A. GALLO, M.D.

Late childhood and early adolescence is a period of tremendous development for the young elbow and shoulder. During these years, several growth plates emerge and fuse in a coordinated fashion to assume the anatomy required for optimal function. Youth baseball and softball can pose a significant threat to the health of this developing joint. Damage to cartilage (osteochondritis desiccans of the capitellum), growth plates (proximal humerus, medial epicondyle and olecranon apophyseal growth arrests), and ligaments (ulnar collateral ligament tears) are common injuries among juvenile pitchers and pose a potentially permanent impedance to normal elbow and shoulder function (figure 1).





Figure 1 – Olecranon apophyseal nonunion (a) treated successfully with screw and tension-band wire (b).

Over the past decade, there has been an alarming increase in the rate of shoulder and elbow injuries and surgeries among adolescent pitchers. In a recent study, over 50 percent of young pitchers admitted to having shoulder or elbow pain over the course of two seasons. Among that group, 26 percent of those surveyed complained of elbow pain within the two-year period; a similar study

AGE (YRS) DAILY LIMITS 17-18 15-16 13-14 11-12 9-10 7-8 WEEKLY LIMITS 17-18 15-16

performed 25 years earlier reported only 17 percent of young pitchers ever had elbow symptoms and only 1 percent had limitations secondary to this pain.

pitchers.

Elbow and shoulder soreness or pain with throwing are important indicators of current or impending injury and should be taken seriously. Location and nature of the pain and any exacerbating or remitting factors are important to forming a differential diagnosis. Areas of maximal tenderness and deficits in range of motion and strength offer further insight into potential pathologies. Loss of internal rotation of the shoulder (compared to the contralateral limb) with the arm at shoulder level is a frequent finding among overhead athletes and has been associated with current and impending shoulder or elbow injury. Often, correction of this deficit in motion,

Thigh Contusions In Athletes

BY TANYA DEIHL, A.T.C., P.T.A.

Thigh contusions, commonly referred to as quad contusion, "dead leg," and "charley horse," are the most common type of thigh injury in sports. A thigh contusion is caused by direct blunt trauma which usually causes the muscles to be crushed against the bone. This injury is highly prevalent in football and soccer athletes, but also occurs in softball, baseball, rugby, and basketball. Early signs and symptoms indicating injury to the musculature is acute pain, swelling, inability to fully extend or bend the knee, increased difficulty contracting the quadriceps muscle, bruising, tenderness to palpation of the quadriceps, and difficulty bearing weight on the involved leg. Thigh contusions are graded I, II, II in severity similar to the grading of strains and sprains. In addition, a thigh contusion can be intramuscular (injury to muscle and not surrounding sheath) or intermuscular (injury to muscle and the surrounding sheath). Intermuscular thigh contusions have a tendency to heal faster because the blood and fluid have more area to disperse over allowing for quicker re-absorption.

In the first forty-eight hours, treatment goals are primarily to limit swelling and bleeding with rest, ice, compression, and elevation. It may be necessary to place the athlete on crutches and slowly increase weight-bearing, as tolerated. The application of heat, massage, and

wrapping the thigh too tightly should be avoided in the acute stages of this injury. Complications with this injury should be avoided in the acute stage, which could lead to compartment syndrome of the thigh or myositis ossificans (bone forming within the musculature as a result of a hematoma).

Rehabilitation goals and return to sport varies depending on the severity of injury. It is important to start range-of-motion exercises and gentle static stretching of the quadriceps early once pain and swelling have stabilized. Common rehab exercises include quadricep sets, straight leg raises, step-ups, and mini squats. Once function starts to improve, more sport-specific activities should be added as part of the rehab process. For return to contact sports, the athlete should have at least 90 percent of normal knee range-of-motion and good functional strength. It may be necessary for the athlete to wear a thigh compression sleeve and wrap in addition to padding of the thigh area when participating in practices and games. Managing this injury properly from the acute stage gives the athlete the best hope of returning to sport quickly and safely. Allowing the athlete to return prematurely may cause further injury or affect the athlete's ability for optimal performance throughout the remaining season.

2006 USA BASEBALL GUIDELINES	2008 LITTLE LEAGUE BASEBALL REGULATIONS
N/A N/A 75/GAME 75/GAME 50/GAME N/A	105/DAY 95/DAY 95/DAY 85/DAY 75/DAY 50/DAY
N/A	26-50 PITCHES = 1 DAY REST 51-75 PITCHES = 2 DAYS REST 76-105 PITCHES = 3 DAYS REST
N/A	21-40 PITCHES = 1 DAY REST 41-60 PITCHES = 2 DAYS REST > 60 PITCHES = 3 DAYS REST

While many hypotheses have been proposed as the cause of this "epidemic," including poor pitching form, premature use of curveballs, and overuse, only overuse has been consistently linked to the development of upper extremity injuries in young pitchers. Compared to pitchers who were not injured, injured pitchers throw significantly more innings, more pitches, and more months throughout a year. In an attempt to lower injury rates, several of baseball's governing bodies have issued rules to limit the number of pitches thrown by young pitchers per week. The guidelines set forth by USA Baseball and Little League Baseball are outlined in table 1. No similar pitch-count restrictions have been recommended for softball

which has been assumed to be related to contracture of the posterior shoulder joint, can alleviate symptoms.

If a young pitcher experiences any elbow or shoulder soreness and requires ice or antiinflammatory medications such as ibuprofen or acetaminophen for comfort, he or she should avoid throwing until the pain is resolved. The young thrower should also begin a work-out program that emphasizes (a) "sleeper stretches" (shoulder internal rotation with scapula fixed and shoulder at ninety degrees of abduction) to stretch the posterior shoulder, and (b) strengthening exercises for the rotator cuff, periscapular, and core musculature (abdominal or groin). Any pitcher who continues to have soreness despite an adequate period of rest and rehabilitation should consult a sports medicine physician for further evaluation.

While often not directly involved in enforcing the rules, physicians can play a role in educating parents and coaches on the perils of overuse injuries to the developing throwing athlete. Parents need to also be aware of the "hidden throws" that do not factor into pitch counts. More specifically, throwers should limit excessive warm-up sessions and, if the athlete is a pitcher, avoid playing catcher due to the number of throws required during a game. Furthermore, all young pitchers should be encouraged to have a rest period from competition at least four months out of the year and limit the number of special showcases they attend.