Common Sports Injuries in Young Tennis Players

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Abstract

Tennis is a popular racquet sport played by boys, girls, men and women. Tennis players frequently begin playing in childhood and may continue playing into late adulthood. Preadolescent and adolescent players have open growth plates and a reduced muscle power, lower level of coordination and smaller stature compared with adult players. The physical characteristics of the young tennis player mean that unique demands are placed on the developing athlete which can, in turn, be associated with different types and patterns of injury.

The most common types of injury in tennis players of all ages are muscle sprains and ligament sprains secondary to overuse. These are a particular problem in the adolescent age group because, in general, this group begin playing with a lower level of physical conditioning. Fortunately, injuries in younger players are usually not longstanding and the overuse (chronic) problems seen in older players, such as patellar tendinosis and tennis elbow, are less common in younger players. Anatomically, lower extremity injuries are twice as common as those to the upper extremity or spine, with ankle injury being the most common.

Prevention of injury in young tennis players, or at least a reduction in the incidence, is possible. Some traumatic injuries, including contusions, abrasions, lacerations and fractures, may be unavoidable as a result of aggressive play, but others may be prevented by monitoring equipment and the court surface to ensure...
Tennis is by far the most popular of all of the racquet sports. Over the last 20 years the number of players has grown significantly – in the US, an estimated 2 million people play tennis on a recreational basis each year, and growing numbers participate competitively. Children may be given tennis racquets and participate in organised instruction at ages as young as 5 years. Indeed, with the increased popularity of professional tennis, a growing number of preadolescents and adolescents have been drawn to the tennis court.

The investigation of tennis-specific musculoskeletal demands has shown adaptive responses to the stresses of performing this sport. These adaptations have been described as being both beneficial and deleterious. Positive adaptive changes include improved motor control, muscular power and speed. Negative adaptive changes include reduced flexibility and motor imbalance. These negative changes have proven to be important factors in the injury process. Poor physical condition and poor technique may also be factors in injury patterns in the younger athlete.

Most tennis injuries in young athletes are caused by overuse (chronic) injury of the muscle-tendon-bone unit. These injuries typically present as inflammation and pain. Tendinitis, bursitis, plantar fasciitis, jumper’s knee (patellar tendinitis of the distal pole of the patella), tennis elbow (tendinitis of the extensor carpi radialis brevis) and rotator cuff strain are examples of overuse injury. Acute (traumatic) injuries are less common in this age group, and the least common injuries are those with tennis eponyms, other than tennis elbow, such as tennis toe (subungual haematoma, nail bed injury or interphalangeal joint strain), tennis leg (strain of the medial gastrocnemius muscle) and tennis shoulder (depressed and protracted rotation of the dominant scapula).[1]

A careful evaluation is needed to guide the treatment of these injuries. Factors including a player’s physical condition, previous injuries, skill level and intensity of training and the string tightness, grip, racquet, footwear and court surface used must be considered. Once accurate identification of an overuse-related injury is made, proper treatment and rehabilitation can begin. This article reviews common injuries in young tennis players and their evaluation, treatment and rehabilitation. Preventive physical conditioning, which is also discussed, has been shown to be an important part of reducing the incidence of injury in this age group.

1. Tennis-Specific Demands and Musculoskeletal Adaptations

The specific physical demands placed on the tennis player increase with extended playing time and with the increased skill required at higher levels.[2,3] Most of these are directed at anatomical areas which are important to tennis, including the shoulder, arms, back, trunk, hips and legs. Large demands are placed on the shoulder (glenohumeral, acromioclavicular and sternoclavicular joints) in terms of the range of motion, loads and velocity required (table I). The arm (elbow, forearm and wrist) experiences substantial rotational forces when hitting the ball which are increased by the extreme hand and grip positions of current playing styles. The back, trunk and hips are of vital importance in tennis. They act as a centre of rotation and transmit the forces generated in the legs to the shoulders and arms. The abdominal muscles and the intrinsic trunk muscles are most important in this respect. Finally, the sprinting, stopping and cutting motions specific to tennis place repeated rotational, shear and loading forces on each joint of the lower extremities which places the athlete at a safe field of play. The prime target of prevention in young tennis players should be overuse injuries. The principles of ’overload’ and staged involvement are of particular importance in this age group. A gradual, progressive increase in the intensity of tennis practice, the slow introduction of new court surfaces and a staged progression in the teaching of tennis skills can help to reduce the incidence of injury in young tennis players.