Physical demands on the musculoskeletal systems of professional athletes during their careers far exceed the tolerance of their bodies to adapt and function well over extended periods of time. Each sport produces its own specific pattern of injuries and basketball is no exception. Foot and ankle problems are among the more commonly seen conditions affecting this population, and are classified as traumatic injuries or overuse syndromes secondary to biomechanical abnormalities. These problems can potentially alter a season or a career, and often follow players into their retirement.

Ankle trauma represents one of the more serious injuries faced by basketball players. The ankle is relatively unstable when plantarflexed or angled down, and is susceptible to sprains and strains when the athlete lands or makes contact with another player's foot. This can partially or completely tear the lateral (outside) ligaments, resulting in pain, swelling, bruising and instability. Fortunately, the availability of professional trainers usually provides immediate attention, treatment and comprehensive rehabilitation for these situations. It is important to note that when ligaments are injured, they cannot regenerate, but instead form scar tissue, which is never quite as strong as the original tissue. The end result may be a permanent widening of the ankle joint with chronic instability and pain. Treatment for this condition involves diligent rehabilitation efforts, the use of ankle braces, functional orthotics (supports) and possible surgical stabilization or repair.

Most of the injuries that occur during play, and carry forward into retirement, result from overuse syndromes. Very few of us are blessed with biomechanical perfection and our bodies must adapt for any physical abnormality. A good analogy to lower extremity function is to think of the wheel of a car. If it is out of balance, the tire wears unevenly. Similarly, a small biomechanical deformity, subjected to repetitively excessive demands, results in overuse injuries. 200 plus pound basketball players, active throughout grade school, high school, college and the NBA, have been subjected to extreme forces acting on their lower extremities. Some of the problems experienced over time include, plantar fascitis (arch pain), heel spurs, knee pain, shin splints, Achilles tendonitis and hallux limitus (reduced motion of the great toe joint).

Foot types fall into two basic categories, low arch and high arch, and every foot compensates for any deviation from "neutral" by either pronating (lowering the arch) or supinating (raising the arch). Generally, low-arched feet that excessively pronate tend to develop overuse syndromes of the lower limb, while high-arched feet are susceptible to problems with shock absorption. At heel contact, most feet normally flatten temporarily to naturally cushion impact and to adapt to the ground surface. However, if a player's foot pronates or flattens excessively in compensation, the course becomes set for the development of overuse injury.

Plantar fascitis and heel spurs are mechanical problems resulting from tension overload of the ligament (fascia) on the bottom arch of the foot. The symptoms of inflammation are usually worse in the morning or any time we get up after a period of non-weight bearing. This occurs because soft tissue has the opportunity to shorten slightly at rest and, when we stand, the foot flattens and elongates against a structure that is relatively tight, resulting in the "cold-start" symptom complex. All treatment is directed towards reducing the tension on the ligament and can only be achieved by supporting the foot to reduce demand and by lengthening the fascia itself. This is accomplished by mechanical therapy, consisting of tape support, orthotics and fascia-specific stretching. Heel spurs represent a long-term effect of chronic plantar fascitis, as the constant pull of the ligament on the bottom of the heel stimulates bone growth. The spur itself is usually not the primary problem and symptoms resolve with effective treatment of the underlying tight condition of the ligament.

In gait, heel strike initiates the cycle in which the foot first pronates (flattens) and then reverses itself and supinates to become rigid for propulsion. As pronation occurs, the leg internally rotates and creates torque in and around the knee. Abnormally severe or prolonged pronatory compensation for biomechanical abnormalities can lead to additional overuse syndromes such as patello-femoral dysfunction (runner's knee) and posterior tibial tendonitis or shin splints. The knee is not designed to accept much torque and excessive forces caused by abnormal pronation produce a rotational imbalance, altering the direction of the pull of the quadriceps muscles on the patella. This results in uneven tracking of the kneecap within its groove.
Achilles tendonitis is an inflammation of the tendon or tendon sheath and is usually symptomatic approximately 1-3 inches above its attachment to the back of the heel. This area has an extremely poor blood supply, making it vulnerable to injury and contributing to reduced healing potential. The athletic demands of basketball subject the tendon to explosive episodes of tension, and excessive flattening of the foot creates a twisting force through the tendon, which further reduces blood supply to the sheath. Partial tears manifest themselves in persistent swelling and tenderness around the affected area. The “RICE” treatment principles of Rest, Immobilization, Compression and Elevation, coupled with heel lifts, orthotics and therapeutic rehabilitation, usually reduce symptoms and allow healing to occur within 6 weeks. Severe or complete tears in the tendon may require prolonged cast immobilization or primary surgical repair.

Normal walking requires approximately 40–60 degrees of painless, unrestricted motion of the great toe (metatarsal-phalangeal) joint. Sports involving running and jumping demand even more range of available motion. Traumatic injury to the joint or biomechanical gait abnormalities create joint impingement and result in a condition known as hallux limitus. If the joint is repetitively stressed beyond its limits, the forces of compression produce a build up of abnormal bone spurs around the head of the first metatarsal, resulting in reduced and painful motion of the joint. Continued activity subjects the joint to accelerated deterioration, osteoarthritis and destruction of the cartilage surfaces. Mechanical therapy is geared towards reducing demand on the joint by stiffening the shoe. Surgical intervention, when indicated, may include bone spur removal, shortening and/or lowering of the first metatarsal, or joint fusion in cases of full thickness loss of cartilage.

The foot and ankle injuries seen among basketball players are also observed in the general population. However, the extreme physical demands of the sport, coupled with the size and weight of the athletes, serve to increase their susceptibility to these problems. Biomechanical factors combine with abnormal stresses to produce situations of mechanical disadvantage, leading to injuries during careers and symptoms that can linger into retirement. The practice of quality medicine requires that we address the underlying causes of a problem, rather than merely dealing with the expression of symptoms. Both active and retired players with a history of injuries or problems during their years of professional participation should seek out consultation with a podiatric or orthopedic foot and ankle sports medicine specialist. Many of these conditions are amenable to treatment and, often, the course of progression may be successfully managed and controlled.

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