Essentials of Sports Injury Prevention & Rehabilitation

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Lecture – 12

Common Injuries of Lower Limb

Good morning students, myself Dr. Atul Sharma. Now we are studying lecture 3, Essentials of Sports Engineering Prevention and Rehabilitation. Under this today we are going to study common injuries of upper limb. Before we proceed for the common injuries region wise. First, we study the common injuries which occurred at the ground and what they signifies.

So, as you all are aware that when we start playing on the ground, lots of people suffer from the abrasions, and abrasions are nothing but are just disruptions of our superficial skin and it occurs to almost all people not only in the sports ground, but at any place. We used to say, "Jarasa Chhil Gaya tha". After this injury lots of dust particles adhere to our skin, or the sebum which is oozing out from the abrasions. So, what one has to do when he suffered from the abrasions, he has to wash the affected body part with running tap water, so the dust particles get dislodged from the skin and the skin remains dust free, and it helps in the healing of the wound fast.

So, whenever you see a person or a sportsman who suffers from abrasions so nothing to worry, it is just a superficial wound which is heavily scratches, and you have to just wash it with the running tap water and that is all. Then comes the sprain. Sprain is nothing, it is a ligament injury and ligaments are the structures made up of collagen. They are thick rope like structure and they lie between two bones in the joint region. In sprain, you have quite commonly heard of I suffered from sprain, or in the local language whenever some joint pain occurs we used to say knee sprain, ankle sprain or shoulder sprain like that. We can divide sprain in various grading as per the imagery available, like from the MRI or ultrasound scan. In grade 1 the minimal amount of disruption of the fibres of that ligament occurs.

In grade 2, more than 50% or 50% of the fibres of ligament got disrupted and if there is a complete tear we say grade 3 or complete tear. In grade 2, we say partial tear, or grade 1 we say partial tear and these ligaments protect our joint from any unnatural movement. So, sprain are the injuries of ligament and ligaments are our passive support of that joint. Then comes strain, or strain and contusions. They are the same injuries, the only difference is in contusion the force is applied from the outside and in strain the force comes from our own body.

When muscle is unable to bear the excessive stress, some muscle fibres get disrupted, and strain occurs; and when some external force applied from outside and it damages the nearby blood vessels and the muscle fibres contusions occurs. In normal day to day language we say bruise. Bruise is nothing but it is contusion only. What are the symptoms of the sprain and strain? In sprain, strain and contusions, there is lots of pain and swelling. The sprain is grade 1 or very minimal or strain is minimal or the external force is minimal.

So, the swelling will be as minimal and if there is a partial tear initially pain must be there but it subsides very soon, and then later on it again reappears. In the partial tear or grade 2 tear, all symptoms like pain, swelling, difficulty in movement or reduction in the strength of that particular muscle or that joint. We will discuss in detail in our next lecture about the treatment part of the sprain, strain and the common injuries. Dislocation and subluxation: Dislocation is the complete disruption of the joint, and subluxation is partial disruption of the joint.

Like shoulder dislocation, the most common is anterior dislocation and lateral and posterior dislocation is quite uncommon. So, when dislocation occurs, the external force is applied and the active and passive structures of the joint get disrupted and that the joint structure gets disrupted. In the shoulder joint, the muscles are the active and the bony structure, glenoid cavity and the head of humerus, and various ligament and ligament capsules makes a passive structure. When external force is applied, the humerus comes out from the glenoid cavity and, if it comes out anteriorly and the joint movement got restricted so we say the joint got dislocated. And during subluxation some movement will be there and there is no complete disruption of the joint surfaces.

So, there is a small difference in subluxation small movement will be there and there will be no complete disruption of joint and the joint will not be completely immobilized. Dislocations and subluxations are self-diagnostic. Then comes fracture: Fractures are the discontinuity of the bone. When external force is applied over the shaft or the other bony part and it breaks out into the pieces, then we say it is a fracture of that bone.

And the common sign and symptoms of fractures Are swelling, pain there will be crepitations or when you feel or the affected part you can feel the discontinuity of the bone surface. So these are the common injuries when you play or you participate in sports, you commonly sees these injuries. Next comes the limb specific injuries. Rotator cuff, upper limbs injuries. Common injuries is rotator cuff, tennis elbow, golfer's elbow, wrist sprain.

Rotator cuff: Rotator cuff is the injury of your shoulder joint, and it is quite common in the sportsmen who lift heavy weights, do throwing activities. It is a type of overuse injury. As I told you in our previous lecture, it is made up of four muscles and its main function of rotator cuff is to retract head of humerus and prevent the major muscles tendon from the impingement.

Then comes the tennis elbow. Tennis elbow is also known as common extensor tendonitis, and golfer's elbow is common flexor tendonitis.

In common extensor tendonitis, the extension movement of our wrist joint gets painful and the pain comes just around the elbow. In golfer's elbow painful flexion movement of our wrist joint and pain occurs on the medial side of the elbow. Both of these injuries occurs when someone very tightly grips his or her racket or valgus force is applied. In wrist sprain pain again, it is a ligament injury and because of not properly activating your wrist and all of a sudden you start doing any kind of movement without proper warm-up, so this kind of wrist sprain occurs. In wrist sprain, same sign and symptom will be there. Pain might be there, very minimal swelling and difficulty in movement.

In lower limb hamstring, quadriceps and gastrocnemius muscle strain is quite common. Hamstring is the muscle of the back of our thigh.

Quadriceps is the front muscle of our thigh, and gastrocnemius is calf muscles. These muscles are very powerful muscles and most mostly used in each and every activity. These muscles generate lots of power and that is why they are more common for injuries. In hamstring injuries, you might have heard that your sportsman will come with complaints like “as soon as I start off or I shoot all of a sudden my muscle got strained” because the sudden burst of power was not hold by the muscle fibres of the hamstring and they got damaged. Sometimes it is minimal tear, it weans off in day or in a week and when the strain is quite severe and more than few fibres got disrupted that might be a swelling, or localized tenderness over the hamstring/quadriceps or gastrocnemius muscles that is calf muscles. Then comes the lower limb injury of anterior cruciate ligament, posterior cruciate ligament and meniscal tear.

They all three are part of our knee. Menisci are the cushions of knee joint, and the anterior and posterior cruciate ligaments hold the knee joint and they protect the knee from swaying out from their usual positions. When the powerful quadriceps and hamstring muscles get activated these are the two structures ACL and PCL. They hold the knee joint and they are very powerful ligaments. They generally get disrupted. ACL tear is quite common rather than PCL tear, and ACL tear usually occurs when acceleration is sudden acceleration is stopped or the ACL tear occurs.

Anterior Cruciate Ligament is injured when some athlete twists his leg or twist his knee or he is playing and suddenly he turns and the opponent blocks his leg then ACL injury occurs. After ACL and PCL injury, there is a massive swelling and it is mostly within half an hour swelling will appear, patient will be in excruciating pain and, he is he will not able to fold his or he is not able to fold his knee or extend his knee. In meniscal tear, swelling will appear after some time and patient is unable to extend his knee. So, treatment or primary management we will study in our next lecture. In ankle sprain the lateral or medial ligaments of the ankle got

disrupted because of sudden movement of the ankle and it might be associated with some bone injury or without bone injury.

Thank you. In our next lecture we will study the common causes of these injuries.