

Essentials of Sports Injury Prevention & Rehabilitation

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Lecture - 26

Sport-Specific Rehabilitation, Principles and Techniques - II

Good morning friends, myself Dr. Atul, I am your faculty for prevention and rehabilitation. Today, we are going to discuss about the sports injuries. Till now, we have discussed the types of injuries: like acute and overuse injuries, and what are the common acute and chronic or the overuse injuries, and why we call them the sports injuries; because the overuse injuries are quite common in the sportsmen rather than the persons those who are not doing regular exercise. While the acute injuries keep occurring in the normal population also and the sportsmen also. But the mode of injury is a little bit different.

In the normal population, acute injuries occur due to some accident, while in the sportsmen they occur because of faulty techniques or some excessive trauma to that body part. So acute injuries generally occur as a common single episode, and overuse injuries are the collection of micro injuries that convert into the overuse injuries like tendinopathy, stress reactions, synovitis or callous formations. While the acute injuries a single episode like sportsman has to start his 100 meter sprint, and all of a sudden his hamstring got pulled or hamstring spasm. So it is an example of acute injuries; like a football player, he suddenly twisted his knee and he ruptured his ACL, or ball hit on him, he twisted, or on the badminton court he twisted his ankle and injured his deltoid ligament.

So all these injuries are acute injuries, and while the overuse injuries when the micro trauma increases the healing of or repair part so these injuries occur. So the examples of acute injuries are fracture, periosteal contusion, dislocation, tear, strain, tear, contusion, lacerations, abrasions and overuse, stress injuries, periostitis, apophysitis, osteophytes, synovitis, osteoarthritis, stability, tendinopathy, storms, callous etc. So these injuries are because of overuse and what are the prevention? how you can prevent these injuries: are by following the rules, do proper warm-up, wear protective gear, respect your fellow partner, timely replace your gears, shoes and include plyometric and proprioceptive exercise during your training schedules, maintain proper hydration, maintain proper nutrition, play intelligently, that is before competition your training should be like that so you can save yourself for the competition, do relaxation exercises and plan

your activities in advance, like if you are a boxer and you are fully aware and about your fellow boxer and you have seen so many other bouts of him so you can plan in advance how is his move or so that is one part. Second part when you are going to play abroad or some different time zone, if you are planning yourself or you plan your activity in such a manner so at the d-day you are not exhausted, there is no jet lag and you are properly well acclimatized for that time zone or well hydrated and well nutrition. Then the chances of injuries will be very less. So all these things you have to plan or you will plan for your athlete. So now, we are going to study the initial management. You might have heard or you all have heard about the various protocols; some say put warm, or some say massage or some say put something or something else this is ayurvedic medicine it will not hurt, so I am not saying ayurvedic medicines are not good, but initially what you have to do is give rest to the your body part as per initial dictum, apply ice so the swelling or the inflammation doesn't increase, then give a compression and elevate that injured part so the blood flow will not the loss of blood will not increase. So, these things you have to keep in mind, so initially you might have heard about the RICE then comes the PRICE.

PRICE means protection, then rest, apply ice, give a compression, and elevate the injured part. This principle fits for almost each and every injuries. If the individual suffered from a fracture, then you have to apply ice, give rest to that body part; that is provide a splint, then compress that body part, compression at the fracture side does not require too much, but splint so that fracture bones don't get be displaced, and then elevate so the swelling of that bone or loss of blood will not increase. So then comes the POLICE: That is protection, optimum loading, icing compression, and elevation. The basic difference in RICE, PRICE and POLICE is, in the POLICE there is a optimum loading, that is key. You do not have to wait till the time the fracture is not healed or the healing part is not completed. As soon as you give a optimum loading where the injured part doesn't get disturbed or doesn't get dislocated, the injured side is not badly affected by this loading, till then you can provide a optimum loading. But, it is difficult to judge for the optimum learning. It requires an experienced person, and the result of optimum loading is quite impressive; like nowadays as soon as TKR or THR (that is total knee replacement or total hip replacement), orthopedic surgeon ask them to stand on their feet on very first day and start bearing weight, but they don't allow them to completely flex their knee or flex their hip; so this is an one example of optimum loading. So now, we will discuss in detail about the overuse injuries; that is quite specific to the sportsman or the person who is doing regular exercises, they are quite common in these people. Those who are doing repetitive exercise or their habit of doing exercise regularly and these exercises are quite common in these populations so they are stress fractures, tendinopathies, instabilities, delayed onset muscle soreness, callus formation etc. etc. So first we discuss stress injuries to the bones: they are quite huge part of the sports injuries. These injuries occur when balance between the regular micro damage and remodeling is disturbed. So, micro damage means, when you take some activity or you do some activity some micro trauma occur on the body, but this is not too much that in a single instance a fracture can occur. It is a very minute or very minor trauma, and simultaneously body has a regenerative

power or body has a remodeling power where the replenishment or the repair work of that injury is simultaneously going on, when this homeostasis of this repair and injury got disturbed, so these stress reactions or stress injuries occurs; and why this occurs: because of either intrinsic or extrinsic factors. Intrinsic factors are: malalignment of joints, limb length discrepancies, the age of that athlete, sex of the athlete, and the genetic predisposition, that is race of that athlete. The extrinsic factors are: surface on which they are playing, the training load, or the faulty sports gear; they are common factors which cause the injuries.

I will just give an example: A person who has flat feet, and running too much, that causes stress on his tibia, and because of that he suffered the medial tibial stress syndrome. Or, a person who is having genu valgus and putting too much pressure, or he is running. An athlete suffering from cubitus, having cubitus valgus of more than 17 or 20 degrees and practicing too much of overhead weight lifting, he is prone for the elbow pain or some elbow pain, like common extensor tendonitis, or common flexor tendonitis/trochanter pain. So, these are the examples of malalignment of joints. Limb length discrepancy put the other limb or the low limb on a stress and it might cause low back ache also or the any number of type of injuries like young persons or young athlete are more prone for the injuries, females are more prone as per their body structure they are more prone for the injuries, and extrinsic factors like if a person who just comes in the field of sports and or running and he is running on the hard surface all of a sudden and for a quite long distance, so he will be landing in the injury. Training errors like taking too much load too early, that is a part of training error. Faulty sports gear, like wearing tight shoes or using a tennis racket that is not your size. You are putting the grip of that tennis racket is quite small or quite less or quite large that also again gives you overuse injuries. In these injuries, the modifiable factors are the biomechanical, that we can change with the help of biomechanical assessment and with these changes, like a person who is having a flat foot and we put a medial arch after assessing him, so it might prevent the excessive load on the tibial portion and low limb musculature, and preventing stress reactions on the tibia. Training errors are again modifiable factors: surface, if the space is available then so you should start with the soft ground to hard ground, or if the surface or the space constraints are there then you start your training load accordingly so the changes the injuries can be minimized. Sports gear: you have to change your sports gear time to time, and you use your racket, or your gloves for boxing as per your actual size. You have to use your protective gear which fits you snugly, and it is not being loose enough which can hamper your vision or hamper your performance. So you have to choose your protective gears, your sports gear wisely, and perfectly. Then comes the muscle factors, muscles: here is a modifiable factor, why the muscle factor or musculoskeletal factor is most modified if you before starting running or before starting any rigorous activity, if you develop or if you condition your muscles, then chances of chronic injury will be less. If a person who want to start running before he started running if he develops his stabilizer pelvic muscles if he balances his scapular or shoulder muscles, then he develops his thigh and calf muscles and do proper proprioceptive of the ankle, then if we start running the chances of injuries will be very less.

Initially, he might have problem of delayed onset muscle soreness, but the more troublesome injuries like stress reaction or some sort of tear of the ligaments or tendon can be prevented. So, before taking some activity, it is always be better so your muscle strength will be good, if your muscle strength will be good your chances of injuries will be very less, so muscle factor is muscles strengthening is very much a modifiable factor in the overuse injuries. The other part like energy availability, calcium and vitamin D, we will cover in the next session. Thank you.