Essentials of Sports Injury Prevention & Rehabilitation

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Lecture - 27
Sport-Specific Rehabilitation, Principles and Techniques - III

Good morning friends, myself Dr. Atul, I am your faculty for injury rehabilitation and prevention. So, till now we have discussed about the types of injuries: that is acute and chronic, acute overuse injuries. Acute: single episode is required for that injury, and overuse multiple episodes or multiple exposure after doing some activity for quite a long time, then these injuries appear. So, we have discussed acute injuries and overuse injuries, and how we can prevent these injuries. Now we are going to discuss about the modifiable factors.

There are some factors modifying the load applied to the bone, and other factors which are influencing the ability of bone to resist load without damage accumulation. So, what are these factors? They are energy availability, calcium and vitamin D and training history. So, energy availability: if a person is well fed and well hydrated, the chances of bone injury is quite less. The injury is quite common in the persons who are not well, the energy deficit is there; that energy deficit affects the remodeling part of the bones, and it will lead to injury. Calcium and vitamin D are an important part of the remodeling of bone, or if a person who is deficient in both these things, both these calcium and vitamins, is prone for the stress reactions. Training history: a person who is having a past history of training. So he has a habit of doing exercise, or a habit of playing sports, or a habit of running a little bit; then the chances of injury of overuse will be less or chances of injury or bone damage will be less. His bone is well acclimatized to absorb that stress. So training prevents that; training prepares the body for the damage and remodeling of the body. So how we diagnose these injuries? First up and foremost: by history. When we take history of our athlete, they always say or they just say I have just started, or I have just increased my training load or after a long break I have just started and I have doing this much, this much, this much of training which he not supposed to do, and at that much of intensity. So then this is the topmost criteria.

Then comes the localized pain, when we palpate on the bony parts, it gives a clear cut guidance. The third part is when he narrates his history: the time he says when he started doing some activity that time pain increases, and after some time that pain again reduces or wean off; and so it is typical to the stress injuries; but in the chronic compartment syndrome as he start

doing exercise, pain increases and he has to stop that exercise in between. We can ask for various investigations like X-ray, MRI, CT scan, but with advancement of all these bony stress reactions can be easily detected by the MRI. It generally does not appear on the plain X-ray film. It clear cut will be seen on the MRI. What is the initial management of these stress reactions? It is: first of all reassure your patient that you will be absolutely normal and you will be able to do your routine activities, and you will be back on the sports arena after recovery of these injuries. So the reassurance part is very much required for the athletes. Then, the activity modifications, and identify that modifiable risk factors with the help of biomechanics, gait lab or recording compared to video records of that athletes and assessment.

There are various softwares that are available which are absolutely free, and you have to put your video on that and these videos will be assessed by that AI guided software; and they will tell you which part you have to which activity or which body part you have to do strengthening. So the initial management is activity modifications; like if a runner comes to you and he is complaining of a stress reaction, you can ask him to do cycling, you can ask him to do swimming to maintain his VO2 max or aerobic capacity; and simultaneously if the lower limb is affected, you can ask him to do upper body activities. So, these are the activity modifications. Then, return to activity or run: it starts with the beginning and progressing, initial running with the you have to once there is a pain free range of motion, pain free daily activities of life; then you ask him to do walking for a longer duration as per his capacities. Like, if a person who recovered after initial management of RICE and PRICE protocol, say after 2 weeks, then you ask him and he is pain free in his daily activity or routine daily activity. Then you ask him to walk at a normal speed for say 10-15 minutes or 30 minutes, and his duration is pain free; then you can ask him to do consecutive 2 or 3 days; then you ask him to increase the intensity, that is his walking speed. Then if he is consecutively pain free, you ask him for the next 7 days 7 minutes or 8 minutes of walking, or 9 minutes of walking, and 1 minute of slight jog. So you can ask him to do 3 episodes of this, so you have to modify his activity so his bone remodeling will properly occur and he can start doing his sports activity. While you are doing this, if you found on his biomechanical assessment that there is some fault in his running technique, then you can ask him to do changes in running technique. When you change some running technique, that different running technique might give some different sort of overuse of those muscles, so you have to be very careful when you are changing one technique to another technique. That technique might be relieving you from this injury, but it should not happen that the new technique gives you a different injury. So, when you give advice to change some training activity, you should be very careful that the change in technique is not giving him a different set of injuries. The last: you have to design your running program in such a manner that consecutive pain free running should be there for at least 3 days to 5 days, and then you use the per week 10% increment, and your running mileage or running speed. These things you have to keep in mind. Now, we are going to study rehabilitation principles. When you are doing your rehabilitation, or as you are a coach or you are planning rehabilitation; though it is a specialized

portion; it should be under proper guidance with the help of a doctor and physiotherapist. This course is just to enlighten you so one of your athlete or you yourself is suffering, so you take appropriate steps or basically do not do those things which commonly injured or a layman is doing. So, rehabilitation of any injury depends on the type and site of injury; that is, for fracture it is different, for tendinopathy it is different, for ACL complete tear it is different, partial tear it is different or if stress reactions that rehabilitation is totally different. Like, rehabilitation for MTSS person is different or ACL injury patient rehabilitation will be different. So, you should be very careful when you cannot treat the single method to all injuries. So, be very careful when you are planning some sort of rehabilitation. This is just a guide on how to progress rehabilitation, so your athlete or you yourself should be aware. So, early mobilization: the basic part is early mobilization, provide a protective splint or brace, and then the range of motion exercises; that is initially free of pain passive range of motion exercises, and once there is free range in free range of motion then we have to shift from passive to active. Passive means somebody is doing the range of motion for your joint, and when you yourself is doing that range like flexion and extension at the knee, that is active. When one of your brother or your sister is moving your leg and your muscles are not getting involved, then it is called a passive range of motion. When you achieve your full range of motion passively without pain, then we start doing active range of motion exercises with resistance or without resistance. Without resistance in the beginning, and with resistance as the conditions allow. So, now friends, thank you very much. Rest, we will study in the next lecture. Thank you.