

Essentials of Sports Injury Prevention & Rehabilitation

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Lecture - 39

Return to sports & long term injury prevention - Part 03

Welcome back, welcome to this final part of this NPTEL course on essentials of sports injury prevention and rehabilitation. And we are in the final part of the module on return to sports and long term injury prevention with me, Wing Commander Dr. Chandrasekara Guru. I am a Sports Medicine Specialist and an Assistant Professor in the field with the Armed Forces Medical Services. So, in the previous two parts we have discussed about the return to sports concerns, the decision making approach, the framework that one needs to follow, the start framework.

In the previous part discussed about the RTS that is return to sport and the incorporation of the re injury prevention programs into a RTS decision making process. Now, to the final part of this particular course, we have the final part that is RTS and what are the things that one need to consider beyond re-risk of injury. So, let us revise, we discussed various phases of sports rehabilitation, the concerns and the problem associated with improper return to sport, the importance of following a proper structured decision making process involving a multidisciplinary team which is more of a criteria based. And we discussed about the framework that is used globally in return to the sport decision making process including three different steps namely the tissue health assessment in the initial step, subsequently giving some stress to the tissue by means of tissue stress assessment.

And in the final step three, the various assessments of risk tolerance modifiers. So this approach is called the StARRT framework and we discussed a bit of the case scenario based approach of this framework as well. We also saw the reasons why RTS of decision making process changes with different individuals and the factors that should be considered when things are not going right during the rehabilitation program and RTS decision process. Subsequently, we also discussed about the including re-injury prevention program in the RTS phases in the rehabilitation phases including them as part of the assessment of using functional activities so that you monitor the injury prevention program during the process. We also discussed about the importance of addressing the biomechanical factors as well as the other internal and external factors that would have contributed to the injury and the importance of considering the injury prevention program as a long term continuum rather than a single one of inclusion of this part in the rehab program per se.

We also discussed the importance of having a multidisciplinary input in terms of framing a injury prevention program. So now we need to understand that return to sport is not only about decision making and avoiding injury risk. It is well beyond the re-injury risk. So why so? Because it is not only risk assessment and addressing the risk tolerance, it is more towards something beyond that. That is more of a holistic approach and a comprehensive approach which is athlete centric.

When I say athlete centric, it is not, we speak about return to sport after an injury, though injury is more of a physical injury, the approach towards return to sport is not restricted to only the physical injury. Of course, we would have assessed the tissue health as well as the tissue stresses which is more focused towards the physical injury per se. But beyond that, it is also about the mental and the psychological well-being of the athlete with the overall health as a main important center stage in your return to sport decision making process. So this considers holistically the physical injury as well as the mental state and the socioeconomic health of the athlete. So there are various factors that actually determine or help you out in or rather I would say force or influence a team in return to sport 's decision making process.

And these most of the time may not be directly related to the physical injury per se. They are mostly attributed to those factors which are not at all related to the injury in particular. So these factors are generally psychosocial factors. There is the athlete as we desire to compete and he has to compete in the next upcoming competition. It can also be the other way, loss of competitive standing.

So we know after an injury with the kind of rehab and the duration that I have spent, I may not be at par to compete in the upcoming competitions. That also can decide the factor or the decision making process. And the psychological impact of not getting, you know, return to sport. That again keeping the individual away from the competition or away from the routine regular training itself can have major psychological impact. So these factors are important to be considered as a sports medicine and sports science team which is responsible for returning the athlete back to sport.

The other important aspect is the financial loss. Financial stability is so important because of injury and the duration away from the sport can result in financial loss. Both for the individual, it can be also for the organization or the sponsor as such. There may even be a legal connotation to that. The other important thing is the timing of the season.

So we all have seen situations when our national teams are participating in international matches, the world cup. The timing of the season in which the individual gets injured or not being part of the team which is performing is very crucial. And that is an important consideration the team takes when, you know, clearing or not clearing an individual return to

sport. Off late you would have seen an example of a cricketer who is considered to be a major, you know, linking components between the batting and bowling in the cricket team. And during the half way through the tournament he got injured and you can imagine the kind of the factor, the psychological factor and the absence of him from the team itself would have had on the management.

So much will also be the pressure on the team which is going to return that individual to sport to make a decision whether he would be able to return during the tournament itself or whether he will not be able to return to the tournament. So these are the factors which are not directly related to the injury, but then have a major role in deciding whether the individual has to come back to sport quickly or not. The other important aspect is the competitive level. So the competitive level again determines the pressure that is there, external pressure that is there on the decision making authority. So higher the competitive level more is going to be the pressure because of the nature of the event per se.

And the final important aspect is the fear of litigation, wherein with more and more sports becoming more commercialized and with lot of MOUs and agreements being signed between the athlete and the sponsor, between the sporting organization and the sponsor, between the athlete and the treating team and the sporting organization, lot of fear of litigation that revolves around in everyone's mind who is involved in the return to sport process per se. So these are the factors which one has to think about when we think about RTS beyond the risk of re-injury as well. So let's discuss a case scenario to understand these concepts.

So I am taking the same example. Ankita is a gymnast from Delhi. She used to get anxious before the competition as an athlete. Recently she had experienced a bit of a breakup in a romantic relationship. She competed in a national qualifier which was held in Chennai where she has never been before against fierce opponents. This time around her father who used to be always with her providing a lot of social support couldn't be there because of some official commitment. She was deeply worried and she thought how immense this particular important match is for her to qualify in this particular nationals.

And thinking that she was feeling so stressed out, she in fact had disturbances in her previous night's sleep and during the competition also she had sweating along both the palms, her heart rate was rising, her muscles were so tightened throughout the body. During the performance, probably she was not in the right frame of mind and the performance was not at her best, she became very nervous and landed on the outer aspect of her left ankle and left leg and ended up twisting it having a grade 2 ankle sprain on her left ankle. After acute management, she underwent about 4 weeks of rehab and she says that earlier also she had suffered an ankle injury of the same leg. Her father and her coach had big support during the period of rehab and she was very dedicated that she was regular in her rehab sessions. She asks when she will return to play.

Now let's analyze this, how will you plan her return to sport to prevent the re injury in this

particular case. So we have analyzed this case earlier, so we will just quickly recapitulate. She is a young athlete, female, competitive, trait anxiety features are present. She recently had a breakup in a relationship, so there is some life stress event. She felt the anxiety in her, she kind of started worrying about the importance and the magnitude of the match that she is facing and moreover to top it her father was not there to support her, so there was lack of social support as well.

So she started worrying, it resulted in sleep disturbance, some symptoms relating to somatic anxiety. Subsequently, she encountered a stressful situation of fierce opponents in an important crunch match and ended up in an injury. This is a recurrent injury where she had a history of previously having suffered a similar ankle sprain on the left leg. A rehab program lasted for 4 weeks, the support during the rehab program was good. In fact the behavioral response also shows that rehab adherence was very good and psychological readiness is also good that she asks you when she will return to play.

So now considering the re-injury prevention part, this is a case of ankle sprain, we know that ankle sprains are prone for recurrence and it is seen that with past injury the chances of injury increases 10 times in the first 6 months to 1 year period, and she has just undergone 4 weeks of rehabilitation. So during the rehab phase of phase 2 and 3, it is important to establish what is the reason for the mechanism of injury. So here in this case it is more of a landing technique, probably that is a biomechanical factor. So it is important from your point of view to address this biomechanical factor with the help of a coach and the biomechanist. The corrective exercises to address this muscle imbalance in case of any differences in the balance and the proprioception and asymmetry have to be incorporated as part of the rehab program and should be considered subsequently in the injury prevention program as well.

What are the other factors that would have contributed to injury? She had features of cognitive and somatic anxiety and lack of social support, so she thrives more on social support. So in such a scenario it is important that as part of the rehab program she should have also been exposed to a psychologist consultation wherein she should have been taught relaxation techniques including progressive muscle relaxation, breath control, social support by counseling her parents and a coach and also by giving her certain coping strategies in terms of imagery techniques can help her in overcoming these factors. Further, phase two and phase three we discussed about the landing technique and subsequently the other factors we discussed preventive imaginary techniques had to be incorporated. The second measure would mean balance and sensory motor exercises included in a properly constructed proprioception program. So we know from a good amount of evidence is there to say that ankle sprains the recurrence rate is reduced when you have a good neurosensory motor program incorporated in the injury prevention program.

So it is important to consider 10 to 20 minutes of balance board training about five sessions per week over 10 to 12 weeks to improve the neurosensory motor response. Also it is seen in case of ankle injuries, ankle taping during whenever the practice sessions are during competition during the first one year has also helped in preventing the injuries. So in this case you do a return to sport kind of decision making approach with the incorporation of long term prevention, you assess the tissue health of the individual and examination findings need to be normal. Subsequently the tissue stress should be satisfactory when you have the functional test in terms of single leg balancing or star excursion test. Then also check for the biomechanical corrections, check the landing technique and clear based on the correct performance of the landing technique. Thereafter using ankle strap or ankle support or by means of a tape or a binder can be used for improving the proprioceptive support and protection.

It is also important to assess psychological readiness. In this case she herself is more willing to get back to sport, so she is psychologically ready as well to return to sport. So the risk tolerance part in this case which are the crucial factors that would determine whether you take a decision for return to sport or not. She is a national level gymnast, so obviously the competitive level is high and she is injured during a qualifier. So the current situation is already there. The pressure is also going to be immense, because she has to see the pressure from her side internally as well as from the external because of the requirement to compete and qualify for the upcoming competition even though there is no financial or litigation in this aspect. So the decision would involve assessing without any bias in step one and step two considering the outcome based parameters in the functional and the sport specific battery of tests and satisfactorily the athlete should clear this. Third would be to have psychological support by giving all those interventions that are deemed necessary biomechanical correction, and which is you know jointly assessed by the biomechanics and the coach and it is found to be corrected based on the you know corrective measures that have been instituted and collective decision by the entire team for return to sport has to be taken.

So as part of the long term injury prevention program, we will have to include an injury prevention program after the individual returns to sport so this should be made part of the macrocycle and strengthen conditioning sessions. The balance board training which is part of the neurosensory coordination needs to be included in these sessions. The exercises which are deemed fit for addressing the muscle imbalance the asymmetry part of it the range of motion changes between the sides need to be continued. Moreover the ankle support has to be used not only during competition but also during practice sessions as well so that the risk of the injury is reduced. It should be a multidisciplinary approach where there should be a continuum of services offered by the sports psychologist addressing the personality related and anxiety related problems social support from the parents, the coach and the sponsor has to be there.

Training programs should incorporate this injury prevention program by the coach and the

trainer, the strength & conditioning coach. The administration also has to support her in terms of the financial and the duration of the rehab, the return to sport decision so they should be part of your return to sport decision making process, so that they are in sync with the long term implementation of the return to sport decision making, as well as the long term injury prevention aspect of it. So the other factors here which I need to discuss are the pressure, the internal due to the recent life stress event as well as the personality related factors; the external pressure from the parents and the coach. The career progression is again an important factor, the opponent, needs to undergo certain interventions to address this personal factors will be: the desire to compete, when I will return to play is what she asked, so that's the desire to compete. Decision against the return to sport in such a mental state will also lower self esteem. So it is important to consider these factors. So this is a simple case scenario that I had discussed. Imagine a situation international level athlete with an upcoming qualifier for the Olympics and the pressure is from the federation, from the fans from the sporting organization and more so with the decision making team is kind of obligated by virtue of being employed by the sporting organization and the kind of litigation that could be involved in with respect to the sponsors as well. So this is a very dynamic scenario, and the decision making is not only limited to purely the physical injury but also the other factors which one need to understand that these are complicated and difficult as and more as and more it can become.

So what is the secret recipe for this return to sport successfully, and to have a injury prevention program also incorporated it can be made by as simple as proper communication in terms of an informed consent, and between the athlete as well as the other involved stakeholders and always when your approach is athlete centric considering the safety and both physical and mental well being of the athlete it will not be wrong. Clarity of roles between the involved team members is also very essential to have a reduction in the conflicts in the decision making process. More so the decision that you make also should be in compliance with the sports policy, and the rules that govern that particular sports and these programs is not a one time affair; it needs to be continuously monitored and assessed and reimplemented and changed accordingly as per the requirement. So that is I would say the secret for a successful early return to sport. So to conclude this module on return to sport and long term injury prevention the rehabilitation phases needs to be considered to address the injury as well as the factors.

The injury prevention program should also address these factors and risk assessment, and the tolerance assessment framework should be more of a team based approach with a structured decision making process. Communication and involving all the stakeholders is the key in return to sport decision making process, and this particular process is beyond the physical injury it also involves various other intangible factors that needs to be considered when you take a considered decision of return to sports. So those of you who are interested in further in depth learning about the topic, I would direct you to these following resources. Thank you.