

Sports Medicine Monthly

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MANAGEMENT OF CONCUSSION: Athletic Rehabilitation

For the athlete who has been separated from their sport for some time, the opportunity to rejoin the huddle or return to the court is something hard to put into words. As a result, most athletes return to athletics with great zeal and enthusiasm. Problems can sometimes arise though because when athletes hear a physician or athletic trainer say 'two weeks' they think they should be ready to play in two weeks; regardless of whether they rested or went through a supervised rehab. Consequently, most athletes view a time table for recovery as a miraculous date rather than the graduation date it should be. Whereas a miracle rapidly changes a person, a graduation date is the culmination of sometimes weeks, months, or years of small changes. Rehab and return to play is no different, even with a concussion. It is the culmination of several efforts that make a substantial improvement in one's condition.



A progressive rehab is therefore vital. It is how we ensure a successful recovery while also minimizing the risk of secondary injury. Too much stress too quickly equals tissue overload, setback, and frustration. Too little stress correlates to no improvement at all. How do we balance the two? Consider the following example:

What would happen if the average individual started running 10 miles each day? Probably foot pain, low back pain, and maybe even a stress fracture. Now take the same individual and start them at 1 mile; gradually increasing the mileage as pain free. With time, this same person will run the 10 miles without concern. What's the difference? In one word, *Progression*. And, because all living tissues respond just like the tissue in this example, the rehabilitation for a concussed athlete back into athletics is no different; it just takes progression.

Exertional Provocative Activity



For the athlete returning to activity from a concussion, steady progression in exertional intensity is vital. Basically, as blood pressure increases, pressure on the brain increases. In addition, the faster you go and the more you do, the more your brain has to coordinate. For the concussed patient, too much exertion too fast is just like a fish jumping out of the water into a frying pan; the contrast is remarkable and the demands are life changing.

So how should we progress the athlete in their exertional activity? Consider the recommendations set by the 3rd International Conference on Concussion in Sport.

General Guidelines:

Starting with Stage 1, the athlete can only proceed to the next stage if they can complete the current stage without any recurrence of symptoms, balance deficiencies, or any complications with neuropsychological testing. If complications occur, the athlete is to stop and rest for a minimum of 24 hrs prior to resuming the progression at the previous level.

Stages of Rehabilitation:

Stage 1: *No Activity*

Goal: Recovery and relief of all symptoms

Stage 2: *Light Aerobic Exercise*

ex: walk, jog, bike, etc... up to 70% of one's estimated Max Heart Rate (MHR)

*MHR = 220 - Age

Goal: Increase heart rate



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Exercise: A Treatment Option for Concussion Recovery

From research and peer-reviewed studies, approximately 75-85% of our athletes who sustain a concussion will recover from all symptoms over a period of 7-21 days with rest.

However, for the remaining 15-25% who show limited improvement, the general hypothesis currently at the forefront of research is that even though rest is so successful for most, it is in fact a limitation of activity. By limiting activity, there is a subsequent reduction in pulse rate and thereby a subsequent reduction in the overall rate at which oxygenated, nutrient rich blood flows to the brain tissue. Therefore, under greatly protected circumstances and clinician observation, light aerobic exercise is beginning to be utilized as a treatment option for concussed patients. Provided that exercise did not cause a worsening of symptoms, patients in one study were asked to perform aerobic activity, typically on a stationary bike, for 15 min or less as tolerated, along with a set of other activities. Over 17 months of implementation, 16 children went through the rehabilitation program.



The Results:

Several symptoms were analyzed, appx. 15-21 total, and were ranked in severity by the patient on a Likert scale (0-5) . During the course of the program, symptom scores were totaled for the 16 patients seen and the results were averaged. Over a 4 week period, the average symptom score at initial assessment was 30, and the average score at discharge was 6.7.

Conclusions:

Although concussion management is far from being as nailed down as the treatment for the average ankle sprain, it is important to realize that there is so much more that we can do for the concussed athlete rather than just saying 'rest.' Concussion rehab is just that, a rehabilitation. We use a variety of tools, exercises, and interventions to ensure that the overall health and well being of our patients is greatly improved and enriched.

Exertional Provocative cont...

Stage 3: Sport-Specific Exercise

Goal: Add postural challenges to current exertion levels

Stage 4: Non-Contact Training

Goal: Maximal increases in coordination, exercise intensity, and cognitive load

Stage 5: Full-Contact Practice

Goal: Restore athlete's confidence and provide an opportunity for their coach to assess skill level

Stage 6: Return to Normal Game Play



As your athletes return to athletics from a concussion, progression is a vital part of a successful recovery. Likewise, it is not whether the athlete can complete the stage as much as it is can they do so without complications. Therefore, always keep in mind that the distinguishing factor on whether or not the athlete progresses or does not progress, regardless of the injury, is directly based on the feedback you gain from them. For ankle sprains, muscle strains, and especially concussions, open and non-judgmental lines of communication between the coach and the athlete are absolutely vital to the health and well-being of the athlete in recovery, but they are also import to the health of the team as a whole.

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