



Concussion Rehabilitation Progressions ^{1,2}

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Objectives:

1. Increase activity and HR to determine if SXS return

2. Prepare athlete for return to competition

Program Target Exertion calculated by Karvonen's equation: $[(\text{Max. H.R.} - (220 - \text{Age}) - \text{Resting H.R.}) \times \text{Target \%}] + \text{Resting H.R.}$

Step 1	
Target HR:	25% Max HR
Recommendations:	10-15 minutes of cardio exercise, low stimulus environment no impact/contact activities balance and vestibular treatment (pm) limit head movement/position change limit concentration activities
Activity:	very light aerobic conditioning sub-max strengthening ROM/stretching very low-level balance activity
Step 2	
Target HR:	50%
Recommendations:	20-30 minutes of cardio exercise exercise in gym areas use various exercise equipment allow some positional changes and head movement low level concentration activities
Activity:	moderate aerobic conditioning light weight strength exercises stretching (active stretching initiated) low-level balance activity
Step 3	
Target HR:	75%
Recommendations:	any environment is okay for exercise (indoor/outdoor) integrate strength, conditioning, and balance/proprioception exercises incorporate concentration challenges
Activity:	moderately aggressive aerobic conditioning all forms of strength exercise (80% max) active stretching exercises impact activities, running, plyometrics (no contact) challenging proprio-balance activities
Step 4 Non-Contact Drills	
Recommendations:	continue to avoid contact activity resume aggressive training in all environments
Activity:	non-contact physical training aggressive strength exercises impact activities/plyometrics sport-specific training activities
Step 5 Return to Full Practice	
Recommendations:	Initiate contact activities as appropriate to sport activity full exertion for sport
Activity:	resume full physical training with contact continue aggressive strength/conditioning exercise sport-specific activity

¹ IMPACT

² Leach, S. (2008). New developments in sports related concussion: Physical therapy and rehabilitation 5 stage exertion protocol. Pittsburgh, PA. University of Pittsburgh Center for Sports Medicine