

Sports Medicine Center Guidelines for Post-Concussion Rehab

Cheshire Medical Center / Dartmouth Hitchcock - Keene

Stage of Rehabilitation	Physical Therapy Program	Recommended Exercises
<p>Stage 1</p> <p><u>Target Heart Rate:</u> 30-40% of max HR $*(max\ HR - rest\ HR \times .30) + rest\ HR$</p> <p><u>Recommendations:</u> exercise in quiet area (treatment rooms recommended); no impact activities; balance and vestibular treatment by specialist (prn); limit head movement/position changes; limit concentration activities; 10-15 minutes of light cardio exercise.</p>	<p>- Very light aerobic conditioning</p> <p>- Sub-max isometric strengthening and gentle isotonic exercise</p> <p>- ROM/Stretching</p> <p>- Low level balance activities</p>	<p>Stationary bike; seated elliptical; UBE; treadmill walking (10-15min)</p> <p>Quad sets; ham sets; UE light hand weights; resistive band rowing; LE SLR's, Resistive band ankle strengthening.</p> <p>Cervical ROM exercises, Trap/LS stretching, Pec stretching, Hamstring stretching, Quad stretching, Calf stretching</p> <p>Romberg exercises (feet together, tandem stance, eyes open-closed); single leg balance</p>
<p>Stage 2</p> <p><u>Target Heart Rate:</u> 40-60% max HR $*(max\ HR - rest\ HR \times .40) + rest\ HR$</p> <p><u>Recommendations:</u> exercises in gym areas recommended; use various exercise equipment; allow some positional changes and head movement; low level concentration activities (counting repetitions); 20-30 min of cardio exercise. (stage 1 exercises included, as appropriate)</p>	<p>- Light to Moderate aerobic conditioning</p> <p>- Light weight PRE's</p> <p>- Stretching (active stretching initiated)</p> <p>- Moderate Balance activities; initiate activities with head position changes</p>	<p>Treadmill; Stationary Bike; Elliptical (upright or seated); UBE; (20-25min)</p> <p>Light weight strength exercises (Nautilus style equipment); resistive band exercises (UE/LE); wall squats, lunges, step up/downs</p> <p>Any stage 1 strengthening, active stretching as tolerated (lunge walks, side to side groin stretching, walking hamstring stretch)</p> <p>Romberg exercises, VOR exercises (walking with eyes focused with head turns); Swiss ball exercises; single leg balance exercises.</p>
<p>Stage 3</p> <p><u>Target Heart Rate:</u> 60-80% max HR $*(max\ HR - rest\ HR \times .60) + rest\ HR$</p> <p><u>Recommendations:</u> any environment ok for exercise (indoor, outdoor); integrate strength, conditioning, and balance proprioceptive exercise; can incorporate concentration challenges (counting exercises, MRS equipment/visual games); (stage 1 and 2 exercises as appropriate).</p>	<p>- Moderately aggressive aerobic exercise</p> <p>- All forms of strength exercise (80% max)</p> <p>- Active stretching exercises</p> <p>- Impact activities running, plyometrics (no contact)</p> <p>- Challenging proprioceptive/dynamic balance (integrated with strength and conditioning); challenging positional changes.</p>	<p>Treadmill (jogging); Stationary bike; Elliptical (upright or seated); UBE (25-30min)</p> <p>Resistive weight training including free weights; MRS/Functional squat; Dynamic Strength activities</p> <p>Active stretching (lunge walks, side to side groin stretching, walking hamstring stretch)</p> <p>Initiate agility drills (zig zag runs, side shuffle, ect..), jumping on tramp/blocks</p> <p>Higher level balance activities: ball toss on plyo floor, balance discs, trampoline; squats and lunges on BOSU ball</p>
<p>Stage 4</p> <p><u>Target Heart Rate:</u> 80% max HR $*(max\ HR - rest\ HR \times .80) + rest\ HR$</p> <p><u>Recommendations:</u> continue to avoid contact activity, but resume aggressive training in all environments.</p>	<p>- Non-contact physical training</p> <p>- Aggressive strength exercises</p> <p>- Impact activities/plyometrics</p> <p>- Sports Specific Performance Training</p>	<p>Program to be designed by ATC</p> <p>Graded Treadmill testing</p> <p>Interval Training</p> <p>Sports Specific drills/training</p>
<p>Stage 5</p> <p><u>Target Heart Rate:</u> Full exertion</p> <p><u>Recommendations:</u> Initiate contact activities as appropriate to sports activity; full exertion activities for sports activities</p>	<p>- Resume full physical training activities and contact</p> <p>- Continue Aggressive strength/conditioning exercise</p> <p>- Sports Specific Activities</p>	<p>Program to be designed by ATC</p> <p>Practice and game intensity training</p> <p>Sport specific activities</p>

- *Target HR calculated by Karvonen's equation : Max HR (220-Age)- Rest HR x Target Percentage + Rest HR
- Concussion Program Provided by University of Pittsburgh Medical Center Sports Medicine (3/27/08)