

CONCUSSION PROGRAM: GUIDELINES FOR POST-CONCUSSION REHAB

Stage of Rehabilitation	Physical Therapy Program	Recommended Exercises
<p>Stage 1</p> <p><u>Target Heart Rate</u> : 30-40% of maximum exertion *(Max HR- Rest. HR X .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 change; limit concentration activities; 10-15 minutes of light cardio exercise.</p>	<ul style="list-style-type: none"> -Very light aerobic conditioning -Sub-max isometric strengthening and gentle isotonic -ROM/ Stretching - low level balance activities 	<p>Stationary Bike; Seated Elliptical; UBE; Treadmill walking: (10-15 min)</p> <p>Quad sets; Ham sets; (UE) light hand weights; resistive band rowing; (LE) SLR's, Resistive bands ankle strengthening</p> <p>Cervical ROM exercise, 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% of maximum exertion * (Max HR- Rest. HR X .40)+Rest. HR</p> <p><u>Recommendations</u>: exercise in gym areas recommended; use various exercise equipment; allow some positional changes and head movement; low level concentration activities (counting repetitions); 20-30 minutes of cardio exercise. (stage 1 exercises included, as appropriate)</p>	<ul style="list-style-type: none"> -Light to Moderate aerobic conditioning -Light weight PRE's -stretching (active stretching initiated) -Moderate Balance activities; initiate activities with head position changes 	<p>Treadmill; Stationary Bike; Elliptical (upright or seated); UBE; (20-25 min)</p> <p>Light weight strength exercise (Nautilus style equipment); resistive band exercises (UE/LE); wall squats, lunges, step up/downs</p> <p>Any stage 1 stretching, active stretching as tolerated (Lunge walks, side to side groin stretching, walking hamstring stretch)</p> <p>Romberg exercises, VOR exercise (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% of maximum exertion *(Max HR- Rest. HR X .65)+ 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&2 exercises included, as appropriate)</p>	<ul style="list-style-type: none"> -Moderately aggressive aerobic exercise -All forms of strength exercise (80% max) -active stretching exercise -Impact activities running, plyometrics (no contact) -Challenging proprioceptive/ dynamic balance (integrated with strength and conditioning); challenging positional changes. 	<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 (Sport Performance Training)</p> <p><u>Target Heart Rate</u>: 80% of maximum exertion *(Max HR- Rest. HR X .80)+ Rest HR</p> <p><u>Recommendations</u>: continue to avoid contact activity, but resume aggressive training in all environments</p>	<ul style="list-style-type: none"> -Non-contact physical training -Aggressive strength exercise -Impact activities/ plyometrics -Sport Specific Performance Training 	<p>Program to be designed by Sport Performance Trainers</p> <p>Graded Treadmill testing Interval training Sport Specific drills/training</p>
<p>Stage 5 (Sport Performance Training)</p> <p><u>Target Heart Rate</u>: Full exertion</p> <p><u>Recommendations</u>: Initiate contact activities as appropriate to sport activity; full exertion activities for sport activities</p>	<ul style="list-style-type: none"> -Resume full physical training activities with contact -Continue Aggressive strength/ conditioning exercise -Sport specific Activities 	<p>Program to be designed by Sport Performance Trainers</p> <p>Practice and game intensity training Sport specific activities</p>

* Target Heart Rates calculated by Karvonen's equation : Max HR (220-Age) – Resting HR X Target Percentage + Resting HR