



SIMPLE RETURN TO PLAY CONSIDERATIONS	STEP-WISE PROGRESSION	SUGGESTED ACTIVITIES	PCS/RECONDITIONING CONSIDERATIONS
<p>Athlete must be symptom free and cleared by MD to begin RTP progression</p>	<p>STEP 1: RECOVERY / SHUT-DOWN 72hrs of full physical and cognitive rest with s/s monitoring. Treatment centers on proper rest including sleep, nutrition, and proper hydration. Avoid busy, noisy, and visually conflicting activities/environments.</p>	<p>Out of school, no homework or instruction, limited exposure to busy / conflicting environments, such as mall, crowds, supermarkets, staircases, heights. No electronic devices, limit exposure to bright or excessive light.</p>	
<p>Athlete is asymptomatic at rest, throughout exertion, and 24hrs S/P before progressing</p> <p>Educational Session I:</p> <ul style="list-style-type: none"> 10min video segment 	<p>Step 2: Target HR 30-40% of Maximal Exertion</p> <p><u>X-Cise Rx:</u> 10-15 min light aerobic exercise in a quiet area, including stretching; Sub-max isometric and isotonic strengthening, and basic balance / vestibular activities. Restrict activities involving impact, head movement/positional changes.</p> <p><u>Cognitive Rx:</u> Step 1 suggestions as appropriate. Begin integrating home instruction with limited reading and higher-level concepts for 10-20min or sub-symptom level in a quiet environment. Carefully monitor for signs and symptoms of depression.</p>	<p>Recumbent or stationary bike, UBE, Treadmill PNF stretching for cervical, upper back, hamstring, calf, quads, and hips; Co-contractions, Contract/relax PNF stretching, Upper/lower body PNF exercises, Leg raises, hand weights, tubing/band exercises.</p> <p>Simple puzzles with large pieces, simple board games, auditory learning, limited homework, extended assignment deadlines, limited reading and math. Have athlete count reps and time exercises.</p>	
<p>Educational Session II</p> <ul style="list-style-type: none"> 10min video segment 10min reading material 	<p>Step 3: Target HR 40-60% Maximal Exertion Integrate various exercise equipment and activities in athletic/team environment while restricting exposure to contact/collision.</p> <p><u>X-Cise Rx:</u> 20-30 min aerobic exercise. Initiate impact activities, positional changes, head movement, and low-level concentration with light to moderate aerobic conditioning; Stretching; Light PREs; Light plyometric exercises; Intermediate balance/vestibular exercises</p> <p><u>Cognitive Rx:</u> Progress Step 1- 2 activities with limited return to school.</p>	<p>Stationary bike, treadmill, rowing, elliptical, UBE Step 1 activities, active lunges, side to side groin, walking hamstring stretching, high-knees; Nautilus circuit training, wall squats, tubing/band exercises, step-ups; Front-back / side to side line jumps Romberg series, ball exercises, BESS activities;VOR; walking with eyes fixed to target with head turns.</p> <p>No PE, band or chorus</p>	
<p>Educational Session III</p> <ul style="list-style-type: none"> 10min video 10min reading material 10 question quiz Equipment fitting 	<p>Step 4: Target HR 60-80% Maximal Exertion Moderate intensity conditioning exercise in athletic/team environment while restricting exposure to contact/collision. Integrate PREs, impact conditioning activities, balance/proprioception exercises.</p> <p><u>X-Cise Rx:</u> Stretching; PREs; Intermediate plyometric</p>	<p>Treadmill jogging, bike, elliptical, Rowing, UBE As in Stages 1-2 Resistive training using free-weights, ball squats, dynamic strength training Agility drills, small box drills, hopping drills, ball/stick handling drills, mini-tramp, balance ball Ball toss on mini tramp, wobble board, BOSU ball squats</p>	

	exercises; Dynamic proprioceptive/balance training that emphasize positional changes	and lunges	
	Cognitive Rx: Restricted Full Return to School	No PE, band, or chorus	
Educational Session IV: <ul style="list-style-type: none"> Technique training drills and exercises 	Step 5: Target HR 80% Maximal Exertion Integrate aggressive sports performance training activities in athletic/team environment without risk or contact/collision. <u>X-Cise Rx:</u> Non-contact sport/positional-specific training; Stretching; Advanced PREs; Advanced plyometric and balance activities <u>Cognitive Rx:</u> Unrestricted Academic Return	Graded exercise testing Sport/position specific drills to be individually designed Interval training. No PE	Technique training drills and exercises
Neuropsychological assessment.	Step 6: Full Exertion Integrate sport-specific contact/collision activities <u>X-Cise Rx:</u> Contact sport/position-specific training; High intensity stretching, PREs, impact activities <u>Cognitive Rx:</u> Full Return to School		
Concussion Management Team Consensus	Final Unrestricted academic and physical release		

Instructions

The Sports Medicine Concepts' Medically Supervised Concussion Return to Play Exercise Prescription Guideline (MSE) has been designed to demonstrate how an accepted step-wise exercise progression can be a multi-faceted tool that can be useful for return to play decision-making, post-concussion rehabilitation, and reconditioning. Sports medicine professionals begin by calculating an injured athlete's target heart rates calculated using Karvonen's equation: Maximum Heart Rate (220-age) – Resting Heart Rate x Target Percentage + Resting Heart Rate. The athlete's target heart rate is then used to establish the exercise intensity for each stage of the step-wise progression.

Athletes that are following a simple return to play protocol are advanced through each step of the step-wise progression when they are symptom free for a 24hr period following completion of each stage of exertion. If an athlete exhibits concussion-like signs and symptoms within 24hrs of an Exertional test, allow the athlete to rest until they are again symptom-free, then return to the last completed step the athlete was able to complete without the on-set of signs and symptoms.

References: Collins M, Learish S, Lovell M. Guidelines for post-concussion rehab. In The best approach to concussion management. (2010). ImPACT Applications. Pittsburgh, PA.

Willer B, Leddy J. Management of Concussion and Post-Concussion Syndrome. Neurology. 2006(8): 415-426.

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