

Cardiac Screening and Return to Play Guidelines for Athletes Following COVID-19 Infection

This protocol is designed to assist Athletic Trainers and other Healthcare Professionals in guiding an athlete back to full participation in sport in a safe manner after having tested positive for COVID-19. This gradual return to play protocol will aid in reducing the risk of emergency situations related to cardiovascular injury and/or impairment after infection.

With the known risk of cardiac, respiratory, and other complications related to COVID-19 infection, even with asymptomatic cases, it is best to follow a graduated return to activity while monitoring the physical and psychological symptoms of the patient. While we know there is an associated risk, the long-term cardiovascular and respiratory effects of COVID-19 are currently unclear, and the rate at which these impairments are present in COVID-19 patients is also unknown.

The following guidelines for return to athletics following COVID-19 infection are based on expert opinion and limited evidence at the time of development. Our institutional guidelines follow core principles as outlined by the American College of Cardiology, American Medical Society of Sports Medicine, NCAA, PIAA, and scientific articles as referenced at the end of this document. These guidelines have been adapted to best suit our local environment and the current state of COVID-19 spread, hospitalization rate, and other factors in our local community.

It is MANDATORY that any athlete that is returning from a COVID-19 infection first consults their primary healthcare provider and receives clearance to begin the following return to play protocol.

Disclaimer: This protocol acts as a general guide, but a physician may deviate from this outline when necessary, dependent on the patient's past medical history, signs and symptoms, activity level of their sport, and any other factors. These recommendations are subject to adjustments as new data becomes available.

Medical Evaluation Prior to Beginning Return to Play Protocol

Athletes who have tested positive for COVID-19 must have the Student-Athlete Medical Eligibility – Post COVID-19 Return to Sport forms (Appendix A) completed by a physician and returned to the School Nurse and/or Athletic Trainer before beginning stage 2 of the protocol (first day of activity).

Athletes with comorbidities – Athletes diagnosed with COVID-19 that have pre-existing medical conditions such as diabetes, cardiovascular disease, or renal disease should have a medical assessment by the appropriate specialist before beginning the Return to Play protocol. Documentation of this evaluation by a specialist is required for the school's Athletic Trainer or Primary Care Sports Medicine physician before activity will begin.

Gradual Return to Play Protocol Post COVID-19

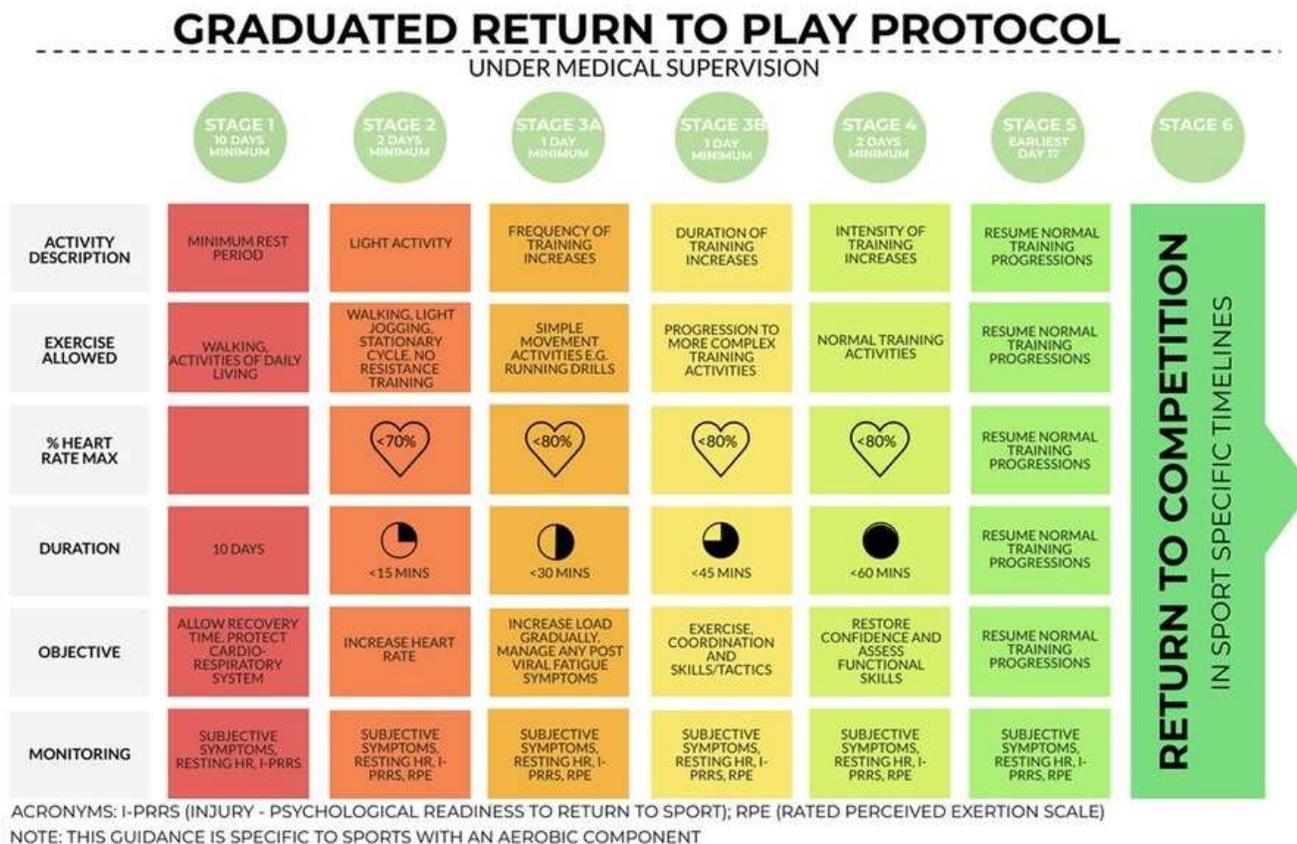
Athletes must complete the progression below without developing chest pain, chest tightness, palpitations, lightheadedness, extreme fatigue, pre-syncope or syncope. If an athlete experiences fatigue or symptoms during or following activity, they should stop all activity and return to the physician for additional evaluation. Collapse during activity should be considered a possible cardiac arrest due to arrhythmia triggered by myocardial scarring. Once an athlete has seen their physician and is cleared to continue activity, they should begin at the stage where they experienced symptoms or excessive fatigue.

Athletic Trainers who are unsure if an athlete should begin the Gradual Return to Play Protocol because of suspected ongoing symptoms, comorbidities, or other reasons, should use their Team Physician as a resource. The Team Physician will have the authority to rule an athlete ineligible for the RTP protocol, until the necessary follow-up evaluations and documentation are obtained.

The following **7-Stage Return to Play Protocol** is not proven but is based on the best evidence currently available to provide a gradual increase in cardiac load during return to physical activity. Some athletes may require a longer time at each stage and if unable to progress, may require additional medical evaluation.

- **Stage 1:** (10 days minimum) Rest period
- **Stage 2:** (2 Days Minimum) Light Activity (Walking, Jogging, Stationary Bike) for 15 minutes or less at intensity no greater than 70% of maximum heart rate. NO resistance training.
- **Stage 3A:** (1 Day Minimum) Add simple movement activities (EG. running drills) for 30 minutes or less at intensity no greater than 80% of maximum heart rate
- **Stage 3B:** (1 Day Minimum) Progress to more complex training for 45 minutes or less at intensity no greater than 80% maximum heart rate. May add light resistance training.
- **Stage 4:** (2 Days Minimum) Normal Training Activity for 60 minutes or less at intensity no greater than 80% maximum heart rate
- **Stage 5:** (1 Day Minimum) Return to Full Training Sessions without restrictions or limitations on intensity or duration.
- **Stage 6:** Medically ready for Full Participation in ALL Sports Activities (Minimum duration 7-days)

Before completing any activity, the Athletic Trainer should document the athlete's resting heart rate, subjective symptom scale, and complete the Injury-Psychological Readiness to Return to Sport Questionnaire (Appendix C). Once activity is completed, Athletic Trainers should also document the athlete's highest Rate of Perceived Exertion (Appendix B).



Appendix B
Rate of Perceived Exertion Scale

Modified Scale	Ordinal Scale ¹	Percent Effort	Perceived Work Load	Talk Test
	6	20%	Very, very light	At Rest
	7	30%		
	8	40%		
1	9	50%	Very light	Gentle walking or "strolling"
2	10	55%		
3	11	60%	Fairly light	Steady pace, not breathless
	12	65%		
4	13	70%	Moderately hard	Brisk walking, able to carry on a conversation
	14	75%		
5	15	80%	Hard	Very brisk walking, must take a breath between 4-5 words
6	16	85%		
7	17	90%	Very hard	Unable to talk and keep pace
8	18	95%		
9	19	100%	Very, very hard	
10	20	Exhaustion		

Resources

1. Elliott N, Martin R, Heron N, Elliott J, Grimstead D, Biswas A. Infographic. Graduated return to play guidance following COVID-19 infection. *Br J Sports Med*. 2020;54(19):1174-1175. doi:10.1136/bjsports-2020-102637
2. P. Schellhorn, K. Klingel, C. Burgstahler **Return to sports after COVID-19 infection**. *Eur Heart J* (2020 May 20)
3. Wilson MG, Hull JH, Rogers J, *et al*. *Br J Sports Med* 2020;**54**:1157-1161.
4. Resocialization of Collegiate Sport: Developing Standards for Practice and Competition (Original Release: July 16, 2020 and Updated: August 14, 2020).
5. Kim JH, Levine BD, Phelan D, *et al*. Coronavirus Disease 2019 and the Athletic Heart: Emerging Perspectives on Pathology, Risks, and Return to Play. *JAMA Cardiol*. Published online October 26, 2020. Doi:10.1001/jamacardio.2020.5890. <https://jamanetwork.com/journals/jamacardiology/fullarticle/2772399>
6. Dermot Phelan, Jonathan H. Kim, Michael D. Elliott, Meagan M. Wasfy, Paul Cremer, Amer M. Johri, Michael S. Emery, Partho P. Sengupta, Sanjay Sharma, Matthew W. Martinez, and Andre La Gerche Screening of Potential Cardiac Involvement in Competitive Athletes Recovering From COVID-19: An Expert Consensus Statement. *J Am Coll Cardiol Cardiovasc Imaging*. • 2020 Dec, 13 (12) 2635–2652. https://www.jacc.org/doi/10.1016/j.jcmg.2020.10.005?_ga=2.174623846.530097730.1608642475521991485.1608642475&