

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

The following guidelines for return to sports following COVID-19 are based on expert opinion and limited evidence at the time of developing these guidelines. Our institutional guidelines follow core principles as outlined by 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. They should always be considered in the context of individual athlete's medical conditions and other factors associated with a safe return to play. It is highly recommended that athletes first consult their primary healthcare provider treating them for COVID-19 and get their clearance before application of the following principles.

Step 1. – Determine symptom severity

Asymptomatic

Mild symptoms of COVID-19:

- Non-specific and self-limited fatigue
- Loss of taste or smell
- Nausea, vomiting or diarrhea
- Cough and sore throat
- Headache (mild and self-resolving)
- Nasopharyngeal congestion

Moderate or severe symptoms and signs of COVID-19:

- Persistent Fever (Temperature $\geq 100.4^{\circ}\text{F}$) with chills
- Severe myalgia or lethargy
- Shortness of breath at rest or with exertion

- Chest Pain or tightness at rest or with exertion
- Hypoxia at rest or with exertion
- Pre-existing cardiovascular conditions
- Hospitalization due to COVID-19 related illness

Step 2. – Determine athlete age

- <15 years
- ≥ 15 years high school athlete
- Adult athlete (< 35 years)
- Masters Athlete (≥ 35 years)
- Seniors (≥ 65 years)

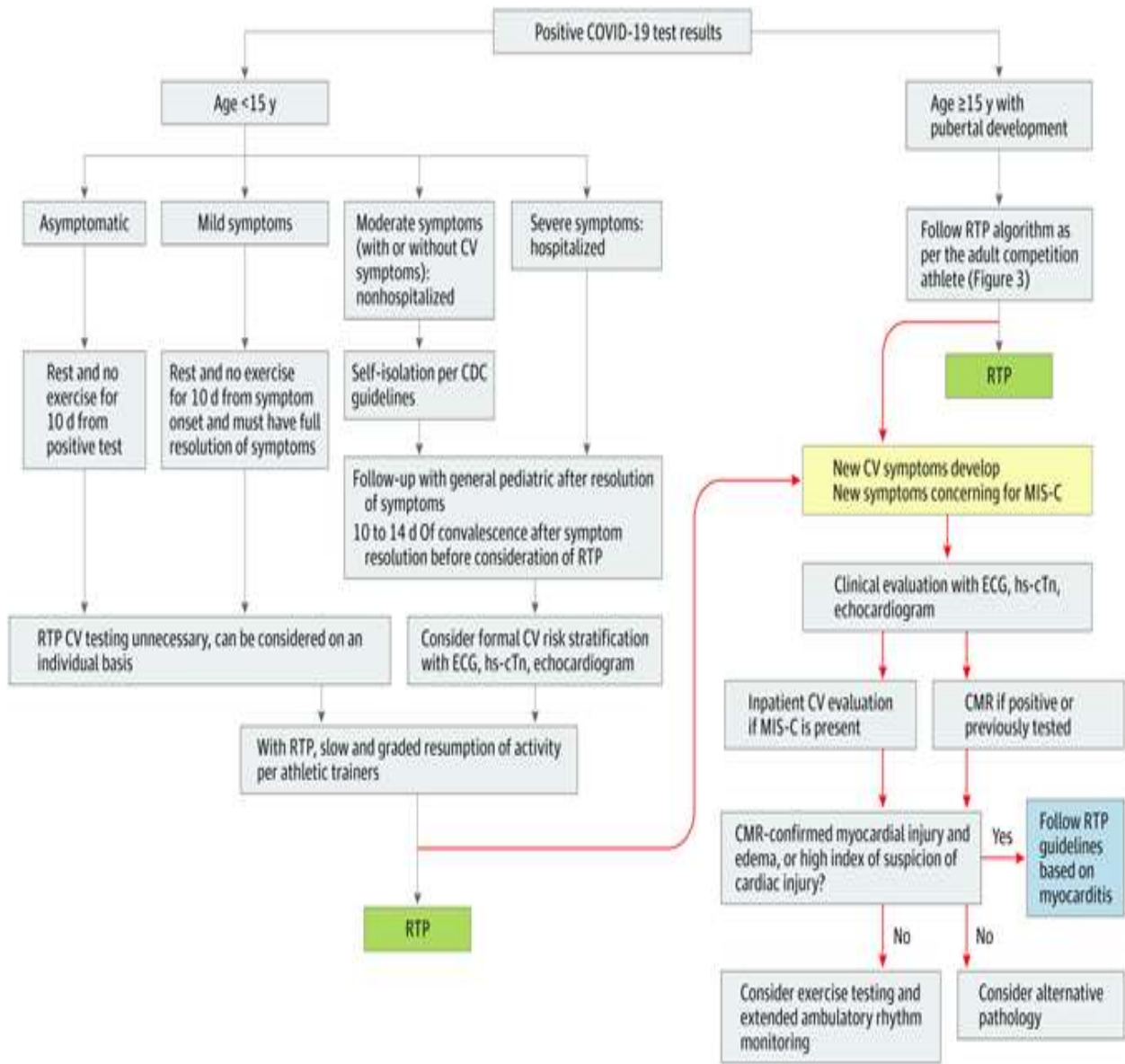
Step 3. – Determine date of symptom onset OR date of positive test

Step 4. Determine time to end isolation

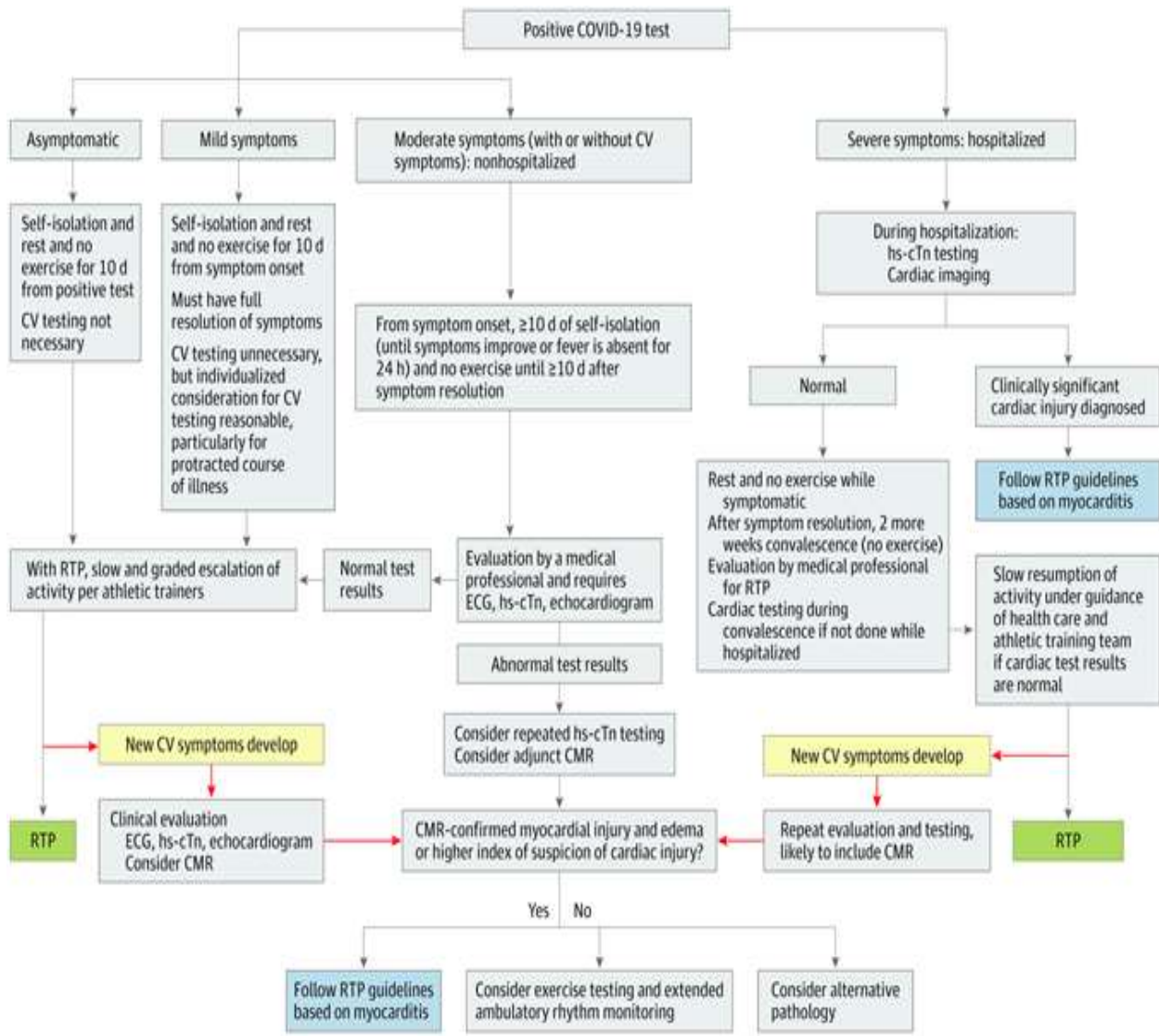
- Asymptomatic Patients – 10 days after their first positive test for SARS-CoV-2.
- Symptomatic Patients:
 - At least 10 days have passed since symptom onset.
 - At least 24 hours have passed since resolution of fever without the use of fever-reducing medications.
 - Other symptoms have improved

Based on above information, refer to the CV screening and return to play (RTP) algorithm on following pages.

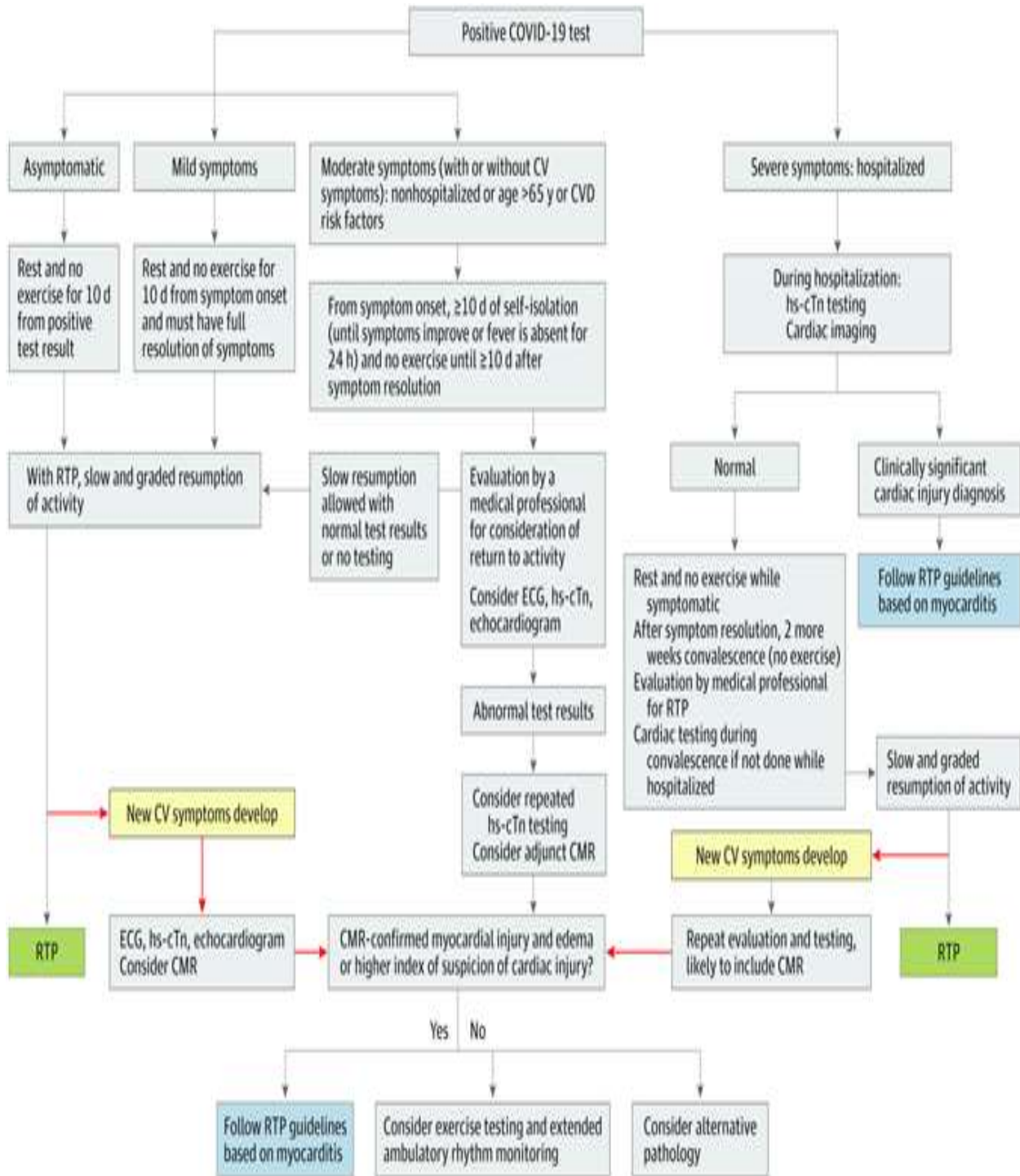
School Athlete



Adult Athlete



Masters Athlete



hs-cTN: Highly sensitive cardiac troponin

CMR: Cardiac MRI

Once the determination for return to play has been made, the following graduated return to play protocol may be used.

Graduated Return to Play after COVID-19

	Stage 1	Stage 2	Stage 3A	Stage 3B	Stage 4	Stage 5	Stage 6
	10 days minimum	2 days minimum	1 day minimum	1 day minimum	2 days minimum	Earliest on Day 17	RETURN TO FULL SPORTS ACTIVITY
Exercise Description	Minimum Rest Period	Light Activity	Frequency of training increases	Duration of training increases	Intensity of training increases	Resume Normal Training Progression	
Exercise Allowed	Walking, Activities of daily living	Walking, light jogging, stationary Cycle, no resistance training	Simple movement activities e.g. running drills	Progression to more complex training activities	Normal training activities	Resume Normal Training Progression	
% Heart Rate Max		<70%	<80%	<80%	<80%	Resume Normal Training Progression	
Duration	10 days		< 30 mins.	< 45 mins.	< 60 mins.	Resume Normal Training Progression	

Objective	Allow recovery time, Protect cardio-respiratory system	Increase heart rate	Increase load gradually, manage any post viral fatigue symptoms	Exercise coordination and skills / tactics	Restore confidence and assess functional skills	Resume Normal Training Progression	
Monitoring	Subjective Symptom, resting Heart Rate, I-PRRS* scale, **RPE Scale	Subjective Symptom, resting Heart Rate, I-PRRS scale, RPE Scale	Subjective Symptom, resting Heart Rate, I-PRRS scale, RPE Scale	Subjective Symptom, resting Heart Rate, I-PRRS scale, RPE Scale	Subjective Symptom, resting Heart Rate, I-PRRS scale, RPE Scale	Subjective Symptom, resting Heart Rate, I-PRRS scale, RPE Scale	

* I-PRRS: Injury-Psychological Readiness to Return to Sport

** RPE: Rated Perceived Exertion Scale

➤ **KEY POINTS :**

- For athletes who are asymptomatic or have mild symptoms, Stage 1 starts from the date of positive diagnostic test or date of symptom onset. Hence, the minimum period before full return to sports would be at least 17 days from this date.
- For athletes who have moderate or severe symptoms, the Stage 1 begins **AFTER** medical clearance has been granted for graduated return to sports **AND** completion of isolation period.
- If any athlete develops cardiovascular symptoms during the RTP protocol, the RTP should be immediately stopped and athlete should be evaluated by their primary care physician, team physician and/or a cardiologist as indicated.

- If an athlete is diagnosed to have myopericarditis, the minimum period of restriction from strenuous and competitive sports is typically 3-6 months from onset **AND** full resolution of cardiac pathology as determined by a cardiologist.

References:

1. **Resocialization of Collegiate Sport: Developing Standards for Practice and Competition** (Original Release: July 16, 2020 & Updated: August 14, 2020

<http://www.ncaa.org/sport-science-institute/resocialization-collegiate-sport-developing-standards-practice-and-competition>

2. 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>

3. Elliott N, Martin R, Heron N, et al Infographic. **Graduated return to play guidance following COVID-19 infection** British Journal of Sports Medicine 2020;54:1174-1175.

<https://bjsm.bmj.com/content/54/19/1174.full>

4. 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=2.174623846.530097730.1608642475-521991485.1608642475&

5. American College of Cardiology Website link for COVID-19 and Return to Play

<https://www.acc.org/latest-in-cardiology/ten-points-to-remember/2020/10/28/17/29/coronavirus-disease-2019-and-the-athletic>

Suggested Evaluation and Referral Guideline:

Initial Evaluation

Athletic Trainer

Primary Physician / Healthcare Provider – Treating clinical provider for COVID-19

Sports Medicine Physician – If no primary physician.

- If deemed necessary, the requisite investigations (*12 lead EKG, transthoracic echocardiogram, highly sensitive cardiac troponin*) may be ordered by the primary healthcare provider or sports medicine physician for risk profiling.
- For patients who may need more advanced imaging e.g. stress echocardiogram or cardiac MRI, it should be determined through a cardiology evaluation and consult

Return to Play Clearance

- It's best practice to have a multidisciplinary approach for evaluation and graduated return to play protocol for athletes following COVID-19 infection.
- Asymptomatic patients or those with mild symptoms can be evaluated and cleared for return to athletics by their primary care provider or sports medicine physician based on above guidelines.
- Patients with moderate symptoms may need cardiology consult based on their risk profile, cardiac test results or other contributory medical history.
- Patients with history severe COVID-19 disease should be referred for cardiology consult and clearance