



CHILDREN'S HOSPITAL at DARTMOUTH-HITCHCOCK

UPDATED Return to Exercise Guidance after COVID-19 Infection

January 2022

This document provides **UPDATED** guidance for return to exercise in pediatric patients without significant cardiac disease who contract SARS-CoV-2 infection (COVID-19 disease or infection without symptoms). For the purpose of this document, “exercise” is considered to be physical education, organized sports, or moderate to vigorous play. It is important to note these guidelines are based on expert opinion and should not supersede best individual clinical judgement.

Background:

COVID-19 disease causes significant morbidity and mortality, particularly in older adults. While children are typically less severely affected than adults, COVID-19 is not always benign in this population. Cardiovascular complications may rarely include myocarditis and Multisystem Inflammatory Syndrome in Children (MIS-C). The risks and benefits of athletic participation in pediatric patients with a history of SARS-CoV-2 infection are continuously being evaluated. Fortunately, a growing body of evidence is reassuring that the incidence of myocarditis after SARS-CoV-2 infection is extremely rare.

Several guidelines to help patients return to exercise after SARS-CoV-2/COVID-19 infection have been published and revised since we first issued our guidance in March 2021. More information can be found in the references below.

All guidelines recommend that **all patients** who test positive for COVID-19 should be restricted from exercise until they complete their isolation period, which requires at least 5 full days from start of symptoms (10 days if more severe illness) or positive test if asymptomatic according to the CDC. In addition, some authorities recommend that they be asymptomatic for at least 48 hours. It is also generally – but not universally - agreed that all patients who test positive for COVID-19 should be screened for their risk of cardiovascular involvement post-infection, particularly for risk of myocarditis. The attached **algorithm** guides licensed clinicians on the risk stratification process.

The focus of the return to exercise risk stratification should be to identify cardiac symptoms consistent with myocarditis, which can include new or unexplained chest pain, palpitations, dizziness, syncope, or shortness of breath (out of proportion for upper respiratory tract infection).

Guidelines for return to exercise are based on the severity of COVID-19 infection. The American Academy of Pediatrics prioritizes fever ($T > 100.4^{\circ}\text{F}$) and systemic symptoms such as chills, GI symptoms, headache, lethargy, or myalgia. Loss of taste and/or smell, congestion, cough, and rhinorrhea are not considered systemic symptoms in this guideline and should not be included for the purpose of risk stratification. Categories therefore include:

1. Asymptomatic or Mild Symptoms:

- Children **without symptoms** should not exercise for the 5 day period following a positive test.
- Children with **mild symptoms** (fever for < 4 days or systemic symptoms lasting < 1 week) should not exercise until they complete isolation and are asymptomatic for at least 48 hours.

These children should be cleared for graded gradual return to play/exercise (RTP) with a screening questionnaire (see attached). This questionnaire can be performed by their primary care providers office or a licensed healthcare professional (e.g. ATC, RN) associated with a school or sports program and supervised by an accountable physician. This questionnaire need not be completed in person.

Depending on the screening, patients may need to see their PCP in person and/or be referred to Pediatric Cardiology based upon that evaluation.

2. Moderate: Those with moderate symptoms (fever for 4 or more days or systemic symptoms lasting 1 week or more) and those hospitalized (without intubation or evidence of MIS-C) should not exercise for a 10-day period following the resolution of symptoms. They should be cleared for RTP by their primary care provider including an in-person evaluation with electrocardiogram (ECG) and referred to Pediatric Cardiology if necessary, based upon that evaluation.

3. Severe: Children with severe presentations (hospitalization with intubation, ICU admission, or MIS-C) should be evaluated and cleared for individualized return to exercise by Pediatric Cardiology based on their clinical course. Those with MIS-C will likely be treated as though they have myocarditis and restricted from participation for 3-6 months.

Patients with a history of COVID-19 infection should gradually return to exercise as per the progression below, stopping participation if any symptoms develop. The most recent AAP interim guidance allows patients under the age of 12 to progress as tolerated without specific steps. Concerning symptoms such as new or unexplained chest pain, palpitations, dizziness, syncope, or unexpected shortness of breath should prompt a referral to Pediatric Cardiology. In caring for these patients, it is helpful to keep in mind that each week off from exercise results in loss of several weeks of conditioning; it should be anticipated that patients will experience symptoms of deconditioning when exercise is resumed.

References:

1. Gagel AC, et. al. "COVID-19, Myocarditis, and Cardiac MRI in Athletes: Distinguishing Signal from Noise." American College of Cardiology, **September 28, 2021.** <https://www.acc.org/latest-in-cardiology/articles/2021/09/28/18/07/covid-19-myocarditis-and-cardiac-mri-in-athletes>.
2. Drezner J, et al. "Cardiopulmonary Considerations for High School Student-Athletes During the COVID-19 Pandemic: Update to the NFHS-AMSSM Guidance Statement." National Federation of State High School Associations, **August 17, 2021.** <https://www.nfhs.org/media/4860120/updated-2021-nfhs-amssm-guidance-statement-on-cardiac-considerations-with-covid-19-final-8-17-21.pdf>
3. "COVID-19 Interim Guidance: Return to Sports." American Academy of Pediatrics, **December 1, 2021.** <https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/covid-19-interim-guidance-return-to-sports/>

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COVID19: GRADED RETURN-TO-PLAY/EXERCISE AFTER MEDICAL CLEARANCE

Once cleared to begin return to exercise, children and adolescents must complete the below progression without the development of chest pain/tightness, palpitations, lightheadedness, significant exertional dyspnea, pre-syncope, or syncope. If any of these symptoms develop, the patient should be referred to Pediatric Cardiology.

Calculating Max Heart Rate: 220 – Your Age = Predicted Max Heart Rate (beats/min)

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Timeframe	Day 1	Day 2	Day 3	Day 4	Day 5	
Activity Description	Light	Light but increased duration	Increased duration and intensity	Increased duration and intensity	Increased duration and intensity	
Examples of exercise allowed	Walking, elliptical, low intensity stationary bike No weightlifting	Jogging, running drills, increased intensity stationary bike No weightlifting	Sport-specific Drills Light weightlifting	Normal practice activities	Complete practice	Fully return to competition
Time	15-30 min	30 min	45 min	60 min	Entire practice	
% max heart rate	<70% ~ 140 bpm	<80% ~ 160 bpm	<80% ~ 160 bpm	<80% ~ 160 bpm	No limit	

Adapted from Elliott N, et al., infographic, British Journal of Sports Medicine, 2020

Reference:

1. Elliott N, Martin R, Heron N, Elliott J, Grimstead D, Biswas A (June 2020). Infographic. Graduated return to play guidance following COVID-19 infection. *British Journal of Sports Medicine*. <https://doi.org/10.1136/bjsports-2020-102637>.