Safe Sports network
A Nonprofit Dedicated to Youth Sports Safety

Introduction

Since the onset of COVID-19, there has been a lot of unknowns regarding long term health effects from the Coronavirus disease. One of the growing areas of concern recently has been cardiac health. Currently, the prevalence and clinical implications of COVID-19 cardiac pathology in young athletes is unknown, but it has suspected correlations to myocarditis (inflammation of the heart) and other cardiac injury[1–4]. Myocarditis preceded by a viral infection is one of the leading causes of sudden cardiac death in sport[5]. Because of this, and many recent cases of myocarditis found in young athletes in recovery from COVID-19, special considerations should be taken to assist in identifying when a youth athlete is safe to Return to Play (RTP) after being COVID positive.

The Safe Sport Network has recommended the following guidelines as a safety precaution for any youth student-athlete returning to play after testing positive for COVID-19. The recommendations are consistent with those from the American College of Cardiology, American Academy of Pediatrics, the National Federation of State High School Associations and the American Medical Society for Sports Medicine, as well as guidelines for Graduated Return to Play (GRTP) as set forth in the British Journal of Sports medicine, and through consultation with the Safe Sports Network Medical Director.

Guidelines

- Student-athlete who has tested positive for COVID-19 shall remain in isolation for at least 10 days[6] and follow all instructions given to them by the State Health Department and School District.
- Once they are released by the State Health Department, all student-athletes with confirmed cases of COVID-19 should undergo an evaluation by their medical provider, prior to returning to physical activity[1–4].
    - Student-athletes must provide written medical clearance to their school's Athletic Trainer prior to beginning the Graduated Return to Play (GRTP)

- The clearing physician may determine further tests are necessary before returning to sport. If so, the following tests may be useful for any student-athlete who had mild, moderate or severe symptoms[1–4].
    - Troponin- This is a blood test to detect levels of troponin in the blood. When there is damage to heart muscle cells, troponin is released into the blood.
    - Electrocardiogram (ECG)- Test that records the electrical signal from you heart to check for different heart conditions
    - Echocardiogram (echo)- Test uses ultrasound to show how your heart muscle and valves are working and their shape and size
  - Further testing may be deemed necessary by a cardiologist to confirm suspicion of myocarditis[1–4]
    - Potential Cardiac Magnetic Resonance imaging- imaging that uses radio waves, magnets, and a computer to create detailed pictures of the heart anatomy and function
- The GRTP can be started after 10 days from diagnosis, as long as they have been symptom free for 7 days[1–3] and received clearance from their medical provider. The GRTP will take a minimum of 7 days to complete. The student-athlete may progress to the next phase after 24 hours and no return of symptoms, including excessive fatigue[4]. The supervising clinician should monitor heart rate, rate of perceived exertion, fatigue, breathing patterns and muscle soreness during each phase[4]. Student-Athletes with persistent return of symptoms should be referred to undergo more testing to exclude heart or lung disorders[6].
    - Phase 1:
        - **2 Days of Light Activity**
            - Less than 15 mins (<70% Max HR).
            - Activities can include walking, light jogging, stationary bike. NO STRENGTH TRAINING
            - Goal: Increase Heart Rate
    - Phase 2:
        - **1 Day Aerobic Exercise**
            - Less than 30 mins (<80% Max HR).
            - Activities can include simple movements, running drills. NO STRENGTH TRAINING
            - Goal: Gradually increase load and manage any post viral fatigue symptoms
    - Phase 3:
        - **1 Day Simple Sport Activities**
            - Less than 45 mins (<80% Max HR).
            - Can progress to more complex training activities.

        - Goal: Increase exercise coordination and skills/tactics
    - Phase 4:
        - **2 Days of Sport Specific Training**
            - Less than 60 Mins (<80% Max HR).
            - Can Progress intensity in sport specific training.
            - Goal: Restore confidence and assess functional skills
    - Phase 5:
        - **1 Day of normal training activities**
            - Full duration of at least one session.
            - Goal: Restore normal training progressions
    - Phase 6:
        - **Return to competition with no restrictions.**
- Children younger than 21 years of age are also at risk of developing Multisystem Inflammatory Syndrome (Mis-C) several weeks after infection and should be continually monitored for signs or symptoms even after RTP[1,3]. Signs and symptoms include[7]:
    - Persistent fever
    - Abdominal pain
    - Vomiting or diarrhea
    - Skin rash
    - Hypotension or shock

References

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3. Drezner JA, Heinz WM, Asif IM, et al. Cardiopulmonary Considerations for High School Student-Athletes During the COVID-19 Pandemic: NFHS-AMSSM Guidance Statement. *Sports Health Multidiscip Approach*. 2020;12(5):459-461. doi:10.1177/1941738120941490

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5. Maron BJ, Doerer JJ, Haas TS, Tierney DM, Mueller FO. Sudden Deaths in Young Competitive Athletes: Analysis of 1866 Deaths in the United States, 1980–2006. *Circulation*. 2009;119(8):1085-1092. doi:10.1161/CIRCULATIONAHA.108.804617

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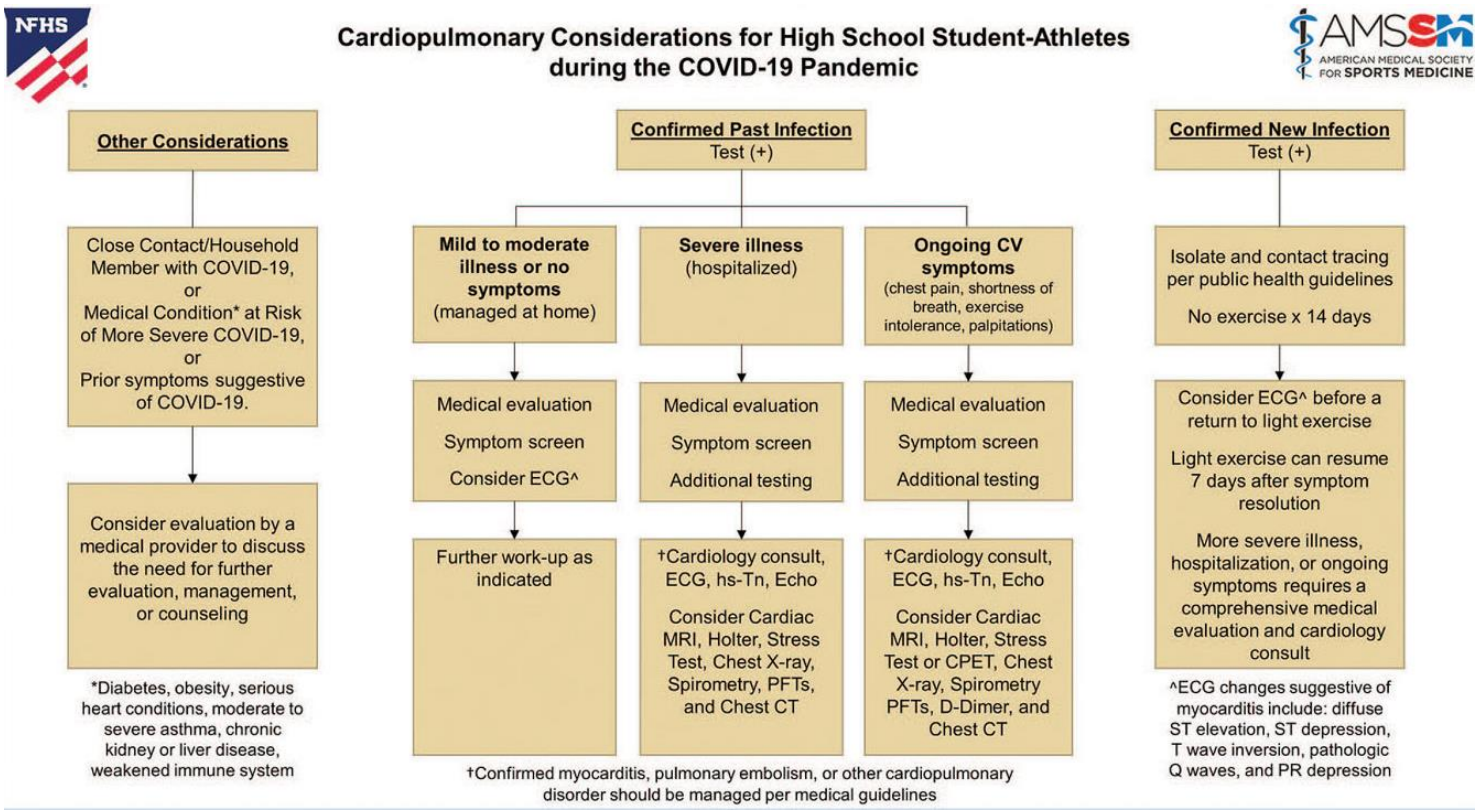
7. CDC. Multisystem Inflammatory Syndrome in Children (MIS-C). Centers for Disease Control and Prevention. Published February 11, 2020. Accessed November 11, 2020. https://www.cdc.gov/mis-c/

8. American Academy of Pediatrics. COVID-19 Interim Guidance: Return to Sports. Published December 17, 2020. Accessed January 12, 2021. https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/covid-19-interim-guidance-return-to-sports/

COVID-19 Clearance Form



Drezner JA, Heinz WM, Asif IM, et al. Cardiopulmonary considerations for high school student-athlete during the covid-19 pandemic: NFHS-AMSSM guidance statement. *Sports Health*. 2020.

MEDICAL PROVIDER ASSESSMENT:

Patient Name: _____ Date of Birth: _____

Date of Positive test: _____ School: _____

1. Has it been at least 10 days since positive test?

   Yes **NO**

2. Has the patient been afebrile for > 24 hours without use of antipyretics and symptom free ≥ 7 days?

   Yes **NO**

3. Does this patient have any ongoing COVID or cardiovascular symptoms?

   YES No

4. Does this student have a normal cardiorespiratory exam?

   Yes **NO**

5. Does this person have a normal EKG (if applicable)?

   Yes **NO** N/A

6. Is this student cleared to start the return to play protocol (on reverse page)?

   Yes **NO**

Any **BOLD** answer *should* warrant further evaluation prior to sports clearance.

Health Care Provider Printed Name: _____ Date: _____

Health Care Provider Signature: _____ Phone: _____ Fax: _____

COVID-19 GRADUATED RETURN TO PLAY FOR PERFORMANCE ATHLETES: GUIDANCE FOR MEDICAL PROFESSIONALS

INDICATORS OF COVID-19 INFECTION

- SHORTNESS OF BREATH
- NEW, PERSISTENT DRY COUGH
- FEVER
- GI SYMPTOMS SUCH AS DIARRHOEA & NAUSEA
- LOSS OF TASTE AND SMELL

THIS GUIDANCE IS AIMED AT ATHLETES WITH MILD TO MODERATE SYMPTOMS OF COVID-19. ATHLETES SHOULD FOLLOW LOCAL GOVERNMENT GUIDELINES OF COUNTRY OF RESIDENCE FOR MANAGEMENT OF SYMPTOMS INCLUDING ISOLATION AND TESTING PROCESSES. ATHLETES WHO HAVE MORE COMPLICATED INFECTIONS, OR REQUIRED HOSPITAL SUPPORT SHOULD HAVE A MEDICAL ASSESSMENT BEFORE COMMENCING GRTP. ASSESSMENT MAY INCLUDE:

- BLOOD TESTING FOR MARKERS OF INFLAMMATION (HS-TROP, BNP, CRP), CONSIDER RENAL & HAEMATOLOGY MONITORING
- CARDIAC MONITORING (ECG, ECHO, ETT, CARDIAC MRI)
- RESPIRATORY FUNCTION ASSESSMENT (SPIROMETRY)

10 DAYS REST FROM ONSET **&** AT-LEAST **7 DAYS** SYMPTOM FREE **&** OFF ALL TREATMENT, E.G. PARACETAMOL → **GRTP** GRADUATED RETURN TO PLAY PROTOCOL

GRADUATED RETURN TO PLAY PROTOCOL

UNDER MEDICAL SUPERVISION

	STAGE 1 10 DAYS MINIMUM	STAGE 2 2 DAYS MINIMUM	STAGE 3A 1 DAY MINIMUM	STAGE 3B 1 DAY MINIMUM	STAGE 4 2 DAYS MINIMUM	STAGE 5 EARLIEST DAY 17	STAGE 6
ACTIVITY DESCRIPTION	MINIMUM REST PERIOD	LIGHT ACTIVITY	FREQUENCY OF TRAINING INCREASES	DURATION OF TRAINING INCREASES	INTENSITY OF TRAINING INCREASES	RESUME NORMAL TRAINING PROGRESSIONS	RETURN TO COMPETITION IN SPORT SPECIFIC TIMELINES
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 PROGRESSIONS	
% HEART RATE MAX		<70%	<80%	<80%	<80%	RESUME NORMAL TRAINING PROGRESSIONS	
DURATION	10 DAYS	<15 MINS	<30 MINS	<45 MINS	<60 MINS	RESUME NORMAL TRAINING PROGRESSIONS	
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 PROGRESSIONS	
MONITORING	SUBJECTIVE SYMPTOMS, RESTING HR, I-PRRS	SUBJECTIVE SYMPTOMS, RESTING HR, I-PRRS, RPE	SUBJECTIVE SYMPTOMS, RESTING HR, I-PRRS, RPE	SUBJECTIVE SYMPTOMS, RESTING HR, I-PRRS, RPE	SUBJECTIVE SYMPTOMS, RESTING HR, I-PRRS, RPE	SUBJECTIVE SYMPTOMS, RESTING HR, I-PRRS, RPE	

ACRONYMS: I-PRRS (INJURY - PSYCHOLOGICAL READINESS TO RETURN TO SPORT); RPE (RATED PERCEIVED EXERTION SCALE)

NOTE: THIS GUIDANCE IS SPECIFIC TO SPORTS WITH AN AEROBIC COMPONENT

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