

# **COVID Response for School Health Learning Collaborative**

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## **Session Seven: Return to Play after COVID**

Monday, March 1, 2021

3-4 PM CST

Via Zoom



- ✓ Mute your phone please!
- ✓ Please enter your name & email address in the chat box
- ✓ Questions are welcome during the discussion (put in the chat box)
- ✓ Sessions will be recorded with video, PowerPoint, and Q&A available at: [www.childrensomaha.org/back-to-school/](http://www.childrensomaha.org/back-to-school/)
- ✓ An evaluation will be provided via a link at the end of the presentation and via email



# COVID in Sport

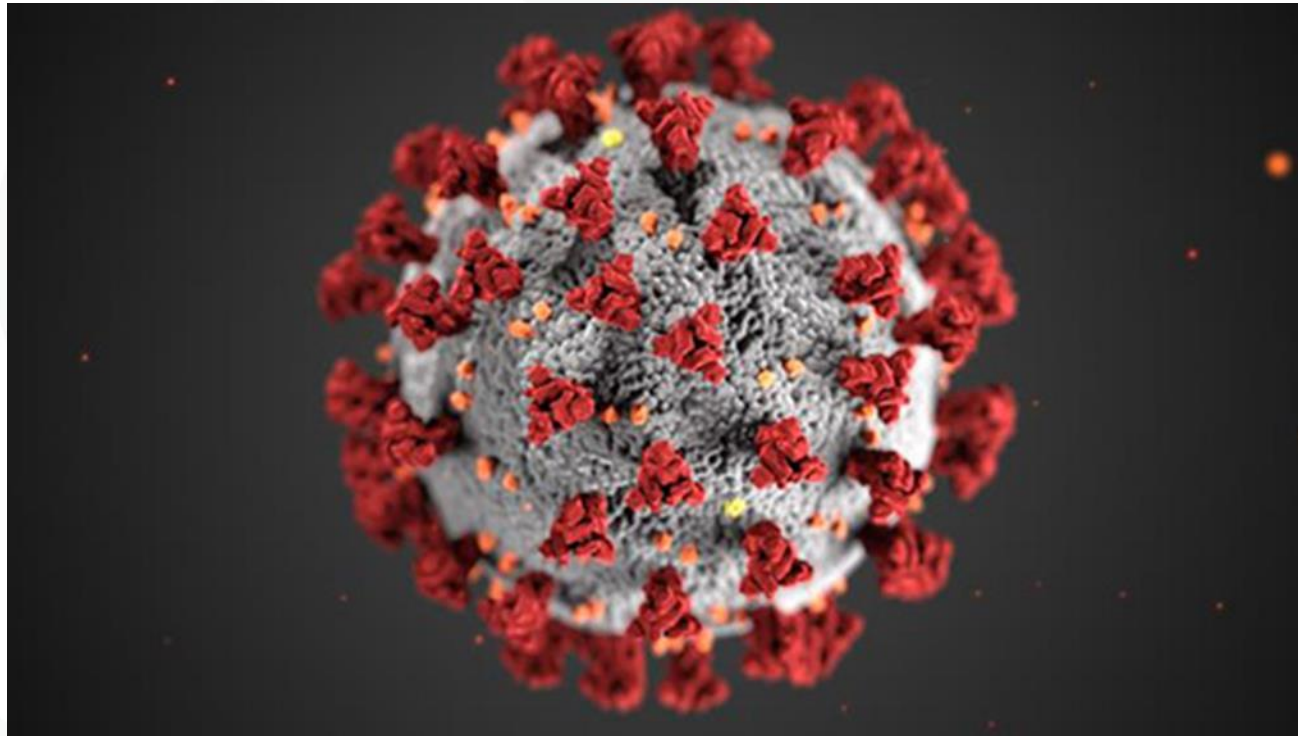
Natalie Ronshaugen, MD, FAAP, CAQSM

Sports Medicine Physician

Children's Hospital & Medical Center

# Disclosures

- none





# Objectives

- Understand how COVID affects a student's health and return to sport.
- Identify appropriate evaluations that should be completed for a post-COVID athlete, in order to safely return to sport.
- Discuss best practices for the role of the Automated External Defibrillator (AED) in regard to PE classes and athletics.

## INDICATORS OF COVID-19 INFECTION

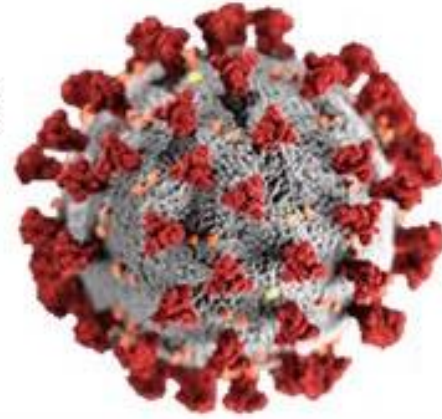
SHORTNESS OF BREATH



NEW, PERSISTENT DRY COUGH



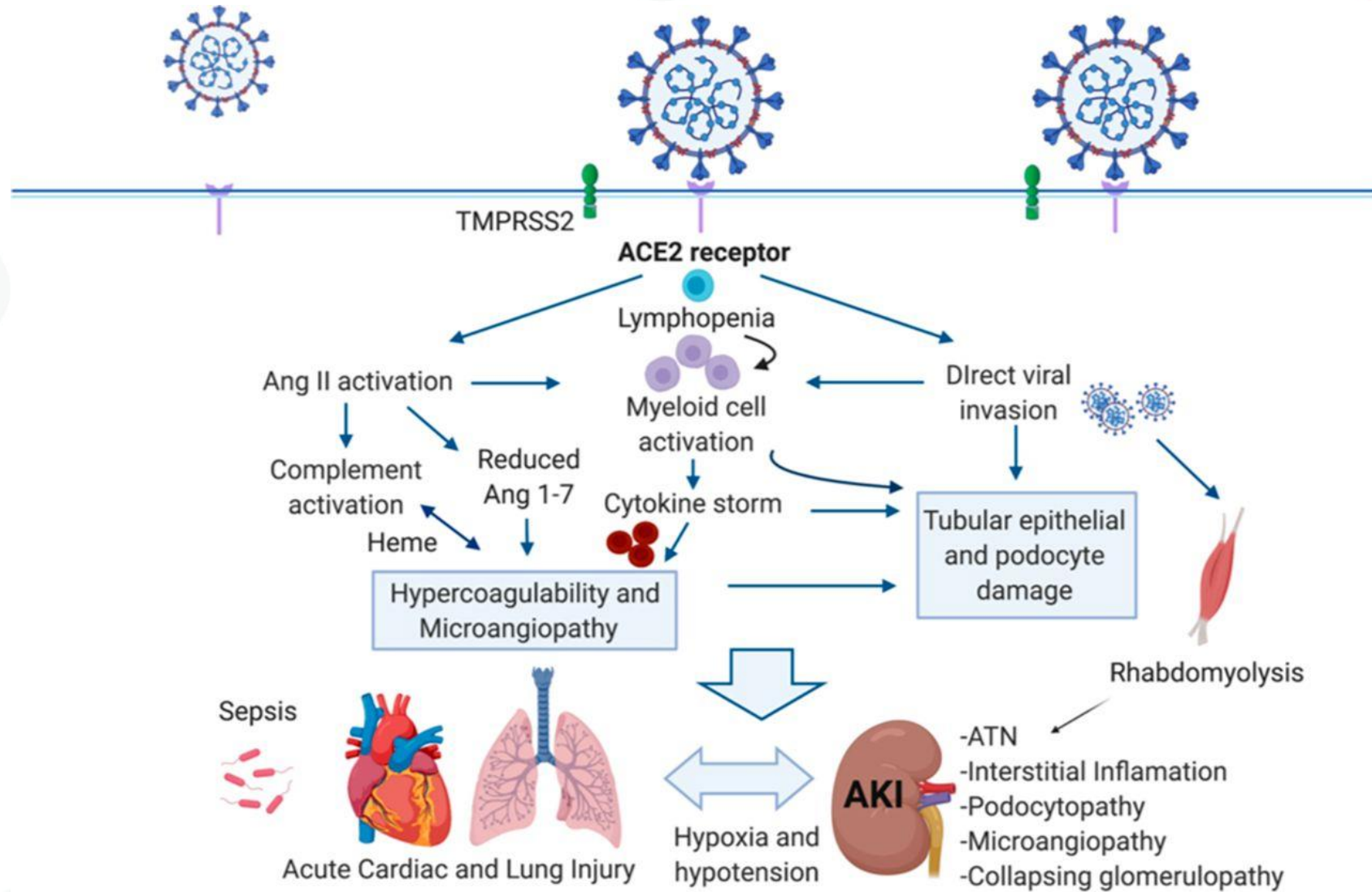
FEVER



GI SYMPTOMS SUCH AS DIARRHOEA  
& NAUSEA



LOSS OF TASTE AND SMELL

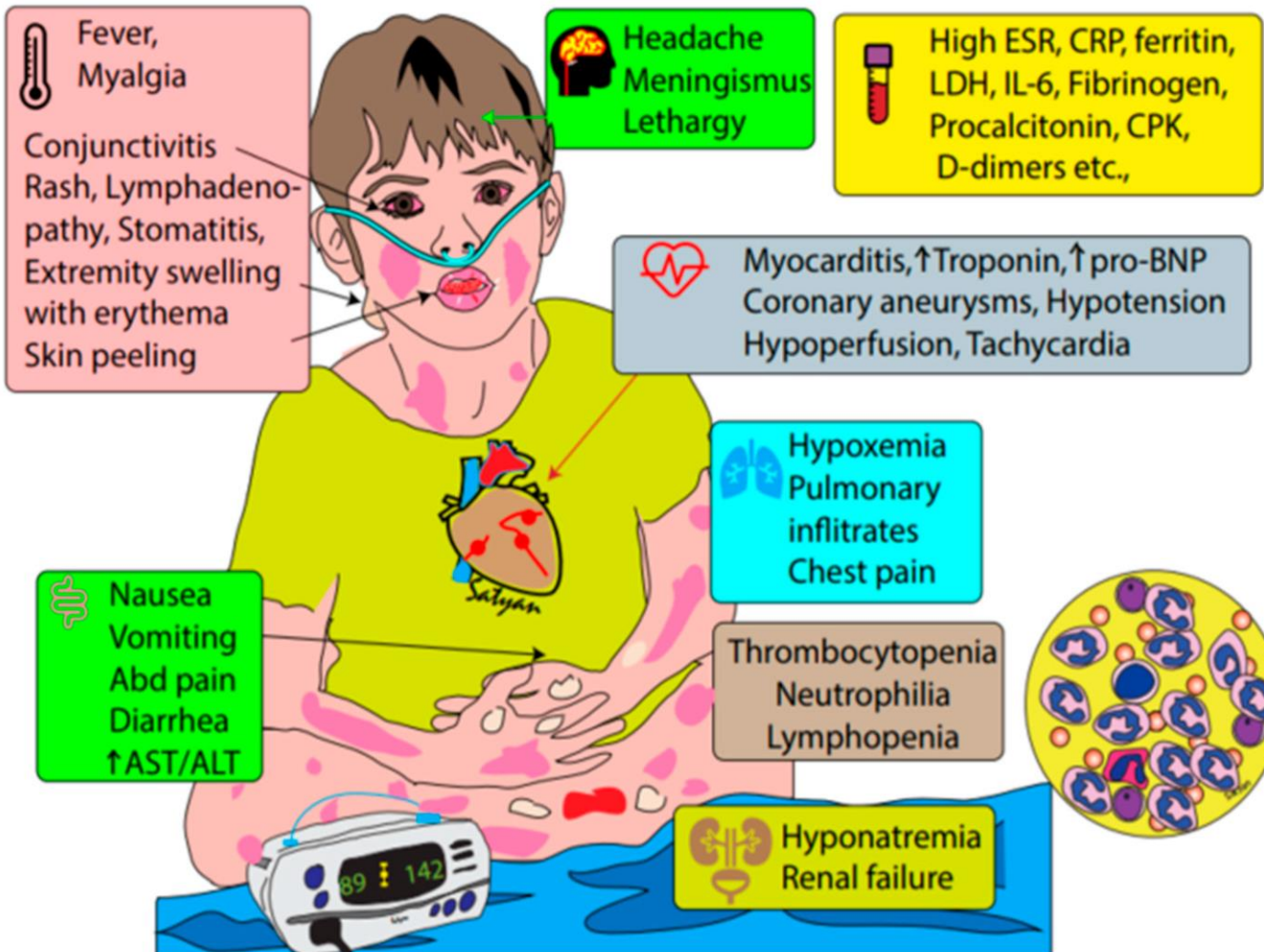






## Multisystem Inflammatory Syndrome in Children (MIS-C)

Lab evidence of current or past infection with SARS-CoV-2



## Multisystem Inflammatory Syndrome in Children (MIS-C)

# Cardiac work-up with MISC

- echocardiogram;
- electrocardiogram;
- cardiac enzyme or troponin testing (per the center's testing standards); and
- B-type natriuretic peptide (BNP) or NT-proBNP
- +/- Cardiac MRI

**Original Investigation**



July 27, 2020

# Outcomes of Cardiovascular Magnetic Resonance Imaging in Patients Recently Recovered From Coronavirus Disease 2019 (COVID-19)

Valentina O. Puntmann, MD, PhD<sup>1</sup>; M. Ludovica Carerj, MD<sup>1,2</sup>; Imke Wieters, MD<sup>3</sup>; [et al](#)

[» Author Affiliations](#) | [Article Information](#)

*JAMA Cardiol.* 2020;5(11):1265-1273. doi:10.1001/jamacardio.2020.3557

**Table 1. Patient Characteristics, Cardiac Magnetic Resonance (CMR) Imaging Findings, and Blood Test Results on the Day of CMR Examination**

Table 1. Patient Characteristics, Cardiac Magnetic Resonance (CMR) Imaging Findings, and Blood Test Results on the Day of CMR Examination

Characteristic	COVID-19 (n = 100)	Healthy controls (n = 50)	Risk factor-matched controls (n = 57)	P value <sup>a</sup>
<b>Patient characteristics</b>				
Age, mean (SD), y	49 (14)	48 (16)	49 (13)	.91
Male, No. (%)	53 (53)	25 (50)	28 (49)	.88
BMI, median (IQR) <sup>b</sup>	25 (23-28)	23 (20-25) <sup>c</sup>	27 (23-29)	<.001
Hypertension, No. (%)	22 (22)	0 <sup>c</sup>	14 (25)	.003
Diabetes, No. (%)	18 (18)	0 <sup>c</sup>	12 (22)	.002
Hypercholesterolemia, No. (%)	22 (22)	0 <sup>c</sup>	13 (23)	.02
Known CAD, No. (%)	13 (13)	0 <sup>c</sup>	9 (16)	.02
Smoking, No. (%)	22 (22)	9 (18)	11 (19)	.54
COPD or asthma, No. (%)	21 (21)	0 <sup>c</sup>	13 (23)	.002
<b>Blood pressure, mean (SD), mm Hg</b>				
Systolic	129 (16)	122 (10) <sup>c</sup>	130 (15)	.006
Diastolic	80 (9)	75 (7) <sup>c</sup>	79 (12)	.03
Heart rate, mean (SD), beats per min	67 (10)	64 (10)	67 (12)	.17
SCORE, median (IQR), %	4 (2-6)	NA	4 (3-6)	.31





## RESEARCH LETTER

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# COVID-19 Myocardial Pathology Evaluation in Athletes With Cardiac Magnetic Resonance (COMPETE CMR)

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Daniel E. Clark, MD, MPH , Amar Parikh, MD, Jeffrey M. Dendy, MD , Alex B. Diamond, DO, MPH, Kristen George-Durrett, BS , Frank A. Fish, MD, James C. Slaughter, DrPH , Warne Fitch, MD, Sean G. Hughes, MD<sup>\*</sup>, and Jonathan H. Soslow, MD, MSCI <sup>\*</sup>

# Myocarditis

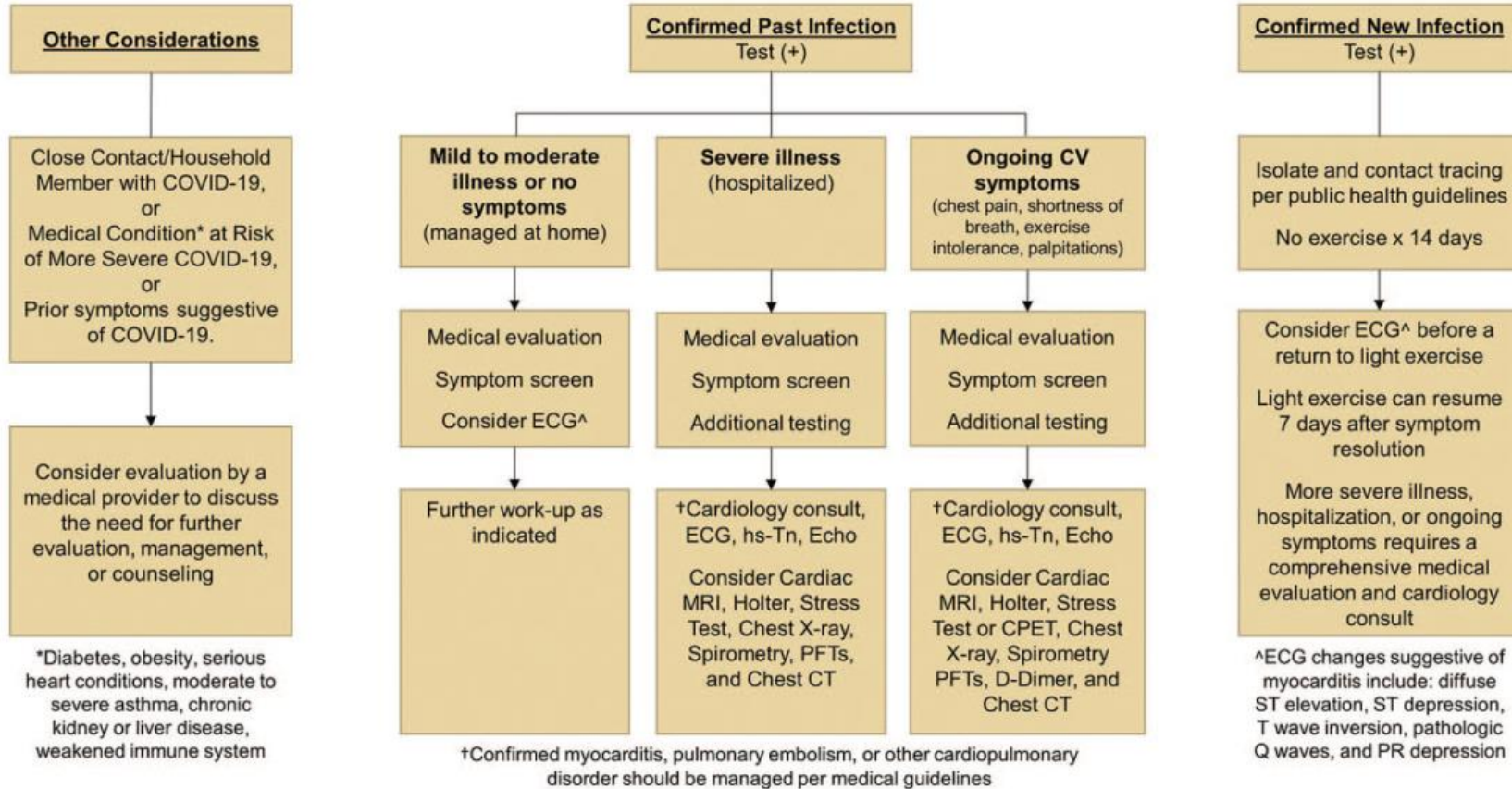
- Eduardo Rodriguez – Boston Red Sox
- Al Blades Jr – University of Miami
- Tommy Sweeney – Buffalo Bills
- Demi Washington – Vanderbilt





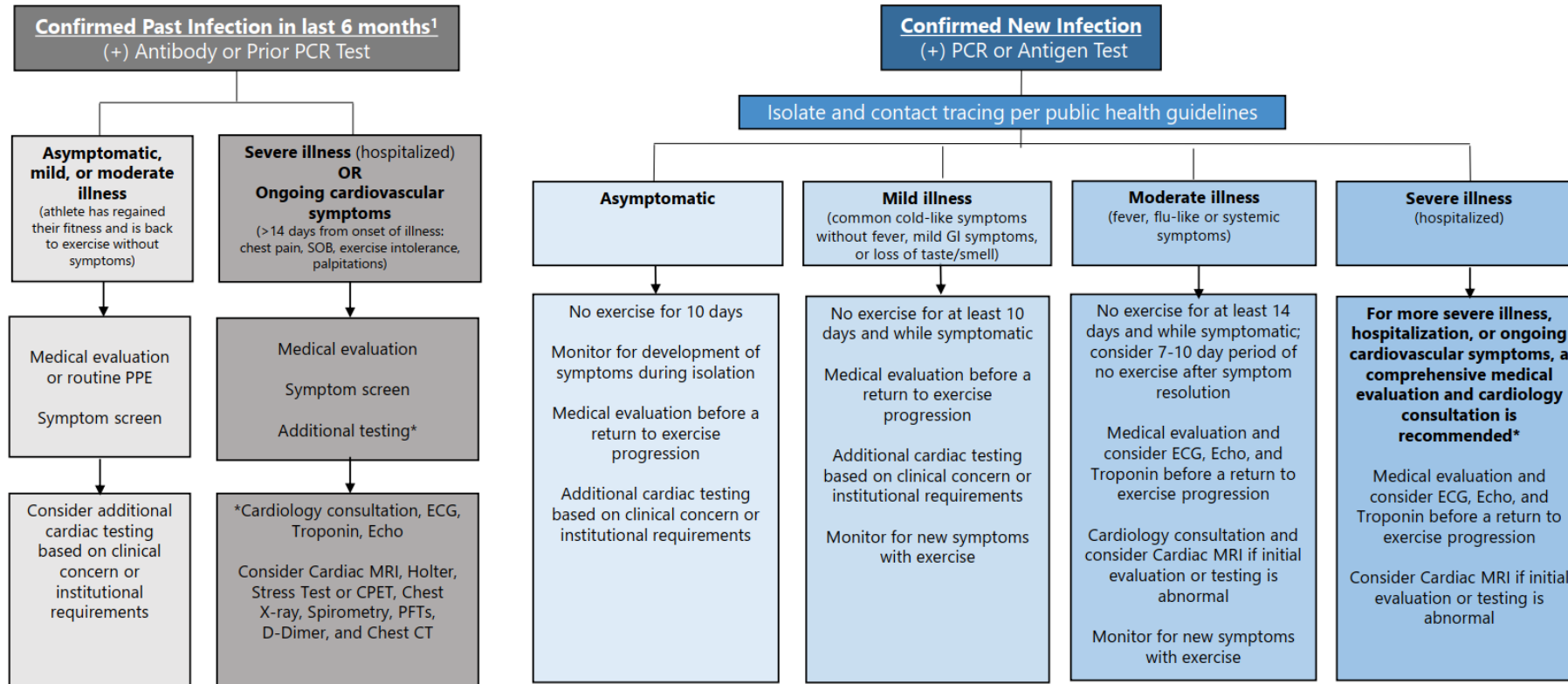


## Cardiopulmonary Considerations for High School Student-Athletes during the COVID-19 Pandemic



## Cardiac Considerations for College Student-Athletes during the COVID-19 Pandemic

\*Recommendations for cardiac testing are based on expert consensus with limited evidence



<sup>1</sup>Antibody testing alone should not determine cardiac work-up

- ECG should be compared to previous when available
- Troponin testing (hs-cTnI or cTnI) should be performed after 48 hours without exercise
- Confirmed myocarditis, pulmonary embolism, or other cardiopulmonary disorder should be managed per medical guidance



## CHILDREN'S HOSPITAL OMAHA PEDIATRIC RETURN TO PLAY (RTP) FOLLOWING COVID ALGORITHM (v2.0)\*

### What's the Nature of the Athlete?

#### RECREATIONAL ATHLETE

- Athletes can be any age, but are usually younger
- Activity tends to **NOT** require cardiovascular endurance
- Activity tends to devalue importance of training or practice
- Athletes can determine their own level of physical output

#### WHAT TYPE OF SYMPTOMS DID COVID CAUSE?

1. NO SYMPTOMS/ASYMPTOMATIC
  - 10 days without cardiovascular exercise/isolation
  - No additional evaluation or cardiac work-up is necessary
  - Call CH Cardiology for further questions
2. MILD SYMPTOMS (Cold **WITH** <48hr fever & flu-like aches)
  - 10 days without cardiovascular exercise/isolation
  - No additional evaluation or cardiac work-up is necessary
  - Call CH cardiology for further questions
3. MODERATE SYMPTOMS (Cold **WITH** >48hrs fever/flu-like aches)
  - 14 days without cardiovascular exercise/isolation
  - Recommend PCP evaluation & clearance
    - No additional cardiac work-up is necessary
  - Monitor for new symptoms or cardiovascular issues
  - Call CH cardiology for further questions
4. SEVERE SYMPTOMS (Resp. Distress/ Hosp/ Cardiac Involvement)
  - Cardiology consult and clearance is required

#### COMPETITIVE ATHLETE

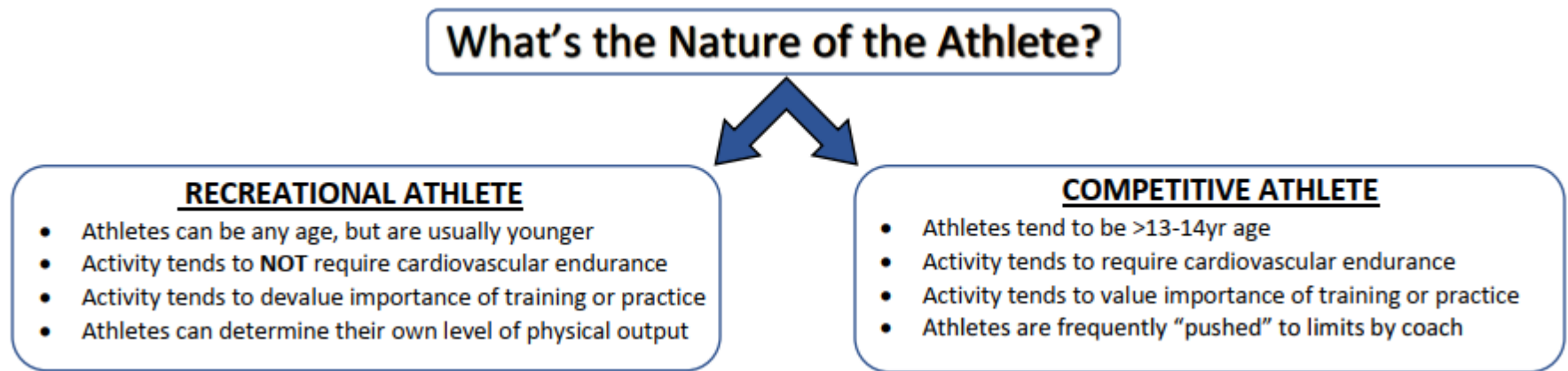
- Athletes tend to be >13-14yr age
- Activity tends to require cardiovascular endurance
- Activity tends to value importance of training or practice
- Athletes are frequently "pushed" to limits by coach

#### WHAT TYPE OF SYMPTOMS DID COVID CAUSE?

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  - Cardiology evaluation with ECG/Troponin/Echo and clearance
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\*Expert opinion based on guidelines adapted from ACC/Sports Medicine

## What's the Nature of the Athlete?



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graph TD; A[What's the Nature of the Athlete?] --> B[RECREATIONAL ATHLETE]; A --> C[COMPETITIVE ATHLETE];
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### RECREATIONAL ATHLETE

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# Recreational

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# Competitive

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# Return to Play Progression

## 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 7	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, JOGGING, 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



# Keyonte Johnson

Florida Gators Basketball

[Keyontae Johnson collapses on court, original video. - YouTube](#)

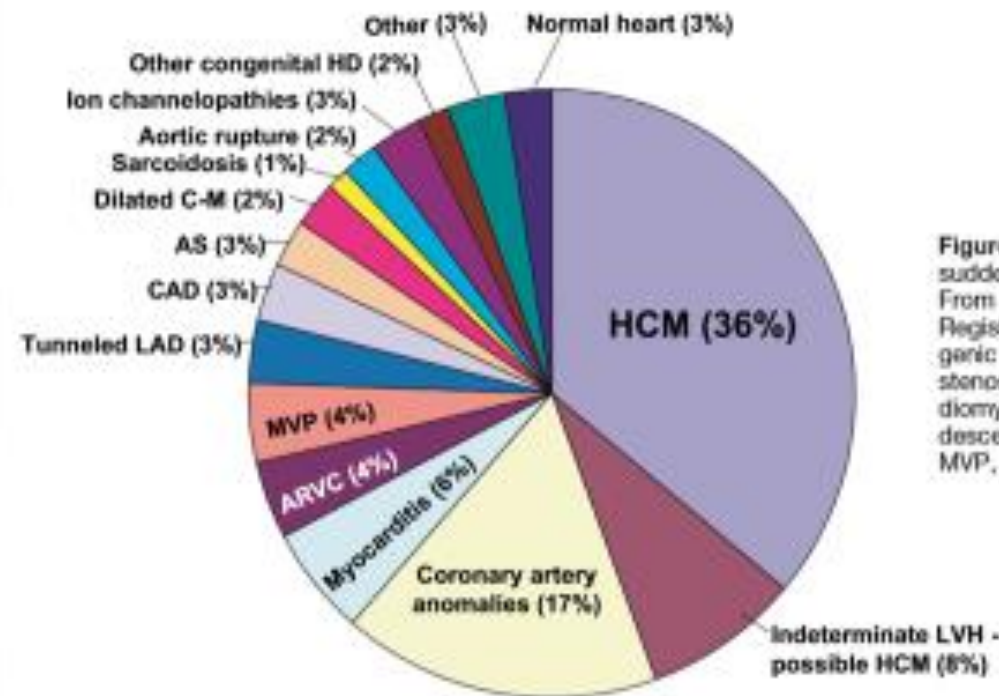


[https://gatorswire.usatoday.com/wp-content/uploads/sites/7/2020/01/usatsi\\_13957679.jpg?w=1024&h=576&crop=1](https://gatorswire.usatoday.com/wp-content/uploads/sites/7/2020/01/usatsi_13957679.jpg?w=1024&h=576&crop=1)

# Causes for Sudden Death in Young Athletes

Maron et al Preparticipation CV Screening for Competitive Athletes 1645

We know children.



**Figure.** Distribution of cardiovascular causes of sudden death in 1435 young competitive athletes. From the Minneapolis Heart Institute Foundation Registry, 1980 to 2005. ARVC indicates arrhythmogenic right ventricular cardiomyopathy; AS, aortic stenosis; CAD, coronary artery disease; C-M, cardiomyopathy; HD, heart disease; LAD, left anterior descending; LVH, left ventricular hypertrophy; and MVP, mitral valve prolapse.

(*Circulation*. 2007;115:1643-1655.)

# Anyonecansavealife.org



Calling 911 to alert the Emergency Medical System (EMS)



Early cardiopulmonary resuscitation (CPR)



Early use of an automated external defibrillator (AED)



Early transition to EMS





# “Long-Haulers”

- SOB
- Fatigue
- Sleeping disorders
- Fevers
- GI issues
- Anxiety
- Depression
- “Brain Fog”



# Masks

- Wear
  - Anytime not playing
  - +/- competition
  - Cover nose a mouth
- NOT Safe During:
  - Wrestling
  - Gymnastics
  - Cheer with stunting
  - Swimming

## Take home

- Athletes need to be screened before returning to sport
- Non-athletes with moderate or severe symptoms should be screened before returning to PE
- Have an AED and make sure people can use it.

# Questions?

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# Session Feedback



An evaluation will be emailed, or you can use the link below (also in chat box).

Your feedback helps us provide you with helpful and applicable content!

[7https://tinyurl.com/chmc-covid7](https://tinyurl.com/chmc-covid7)

*THANK YOU!*