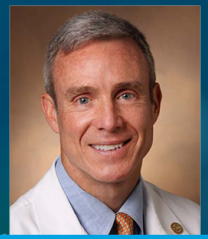
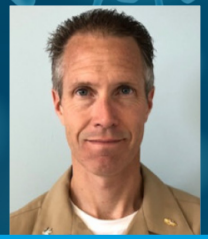
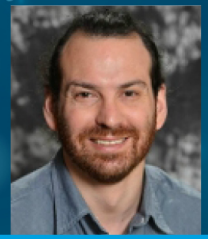
COVID-19 Webinar Series

CHEST®

Lessons About COVID-19 Survivorship: From Long COVID to Post-Intensive Care Syndrome

January 21, 2021

3 PM – 4 PM CT

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Athletes and COVID-19: "Return to Play" Recommendations

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Disclaimer

- The views expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, the Department of Defense, or the U.S. Government.

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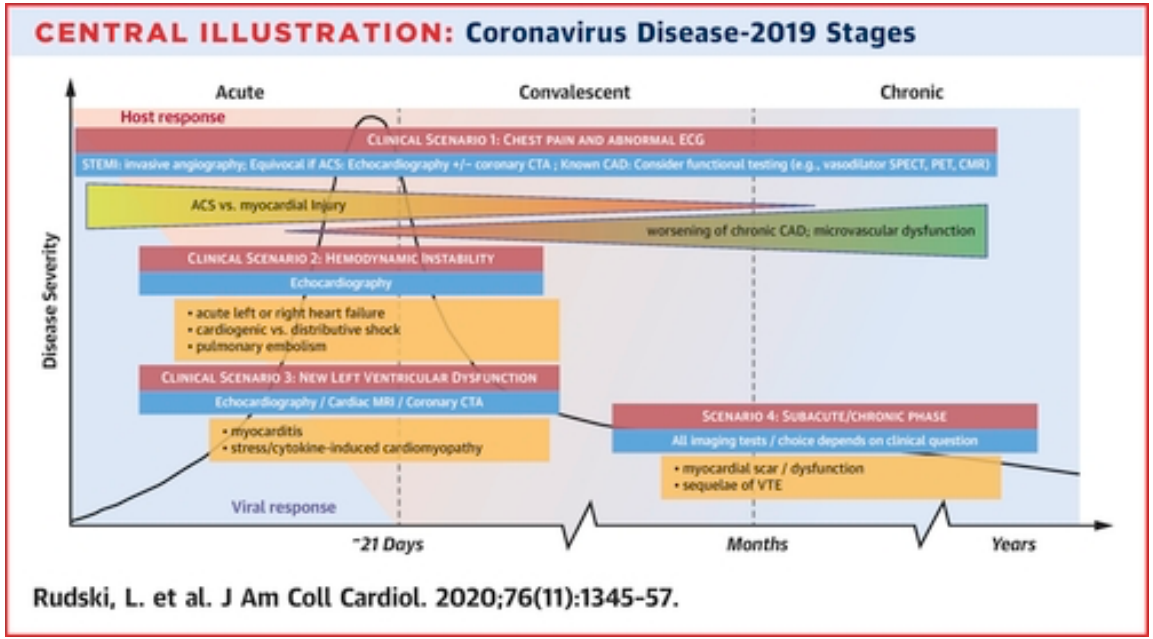
Faculty Disclosure

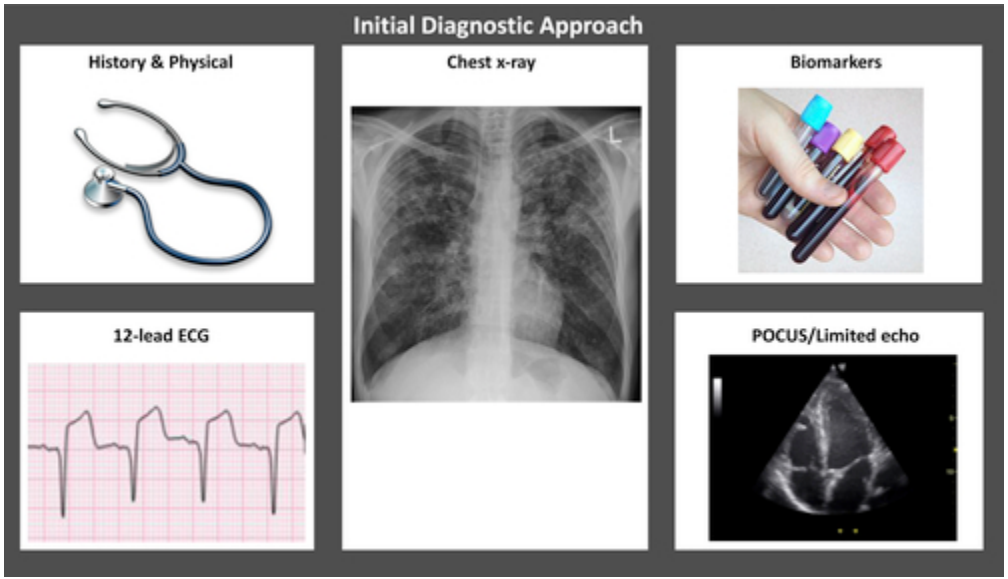
- Dr. Dylan E. Wessman has no relevant financial relationships with any commercial supporters.

Cardiovascular Complications of COVID-19



Rudski, L. et al. J Am Coll Cardiol. 2020;76(11):1345-57.

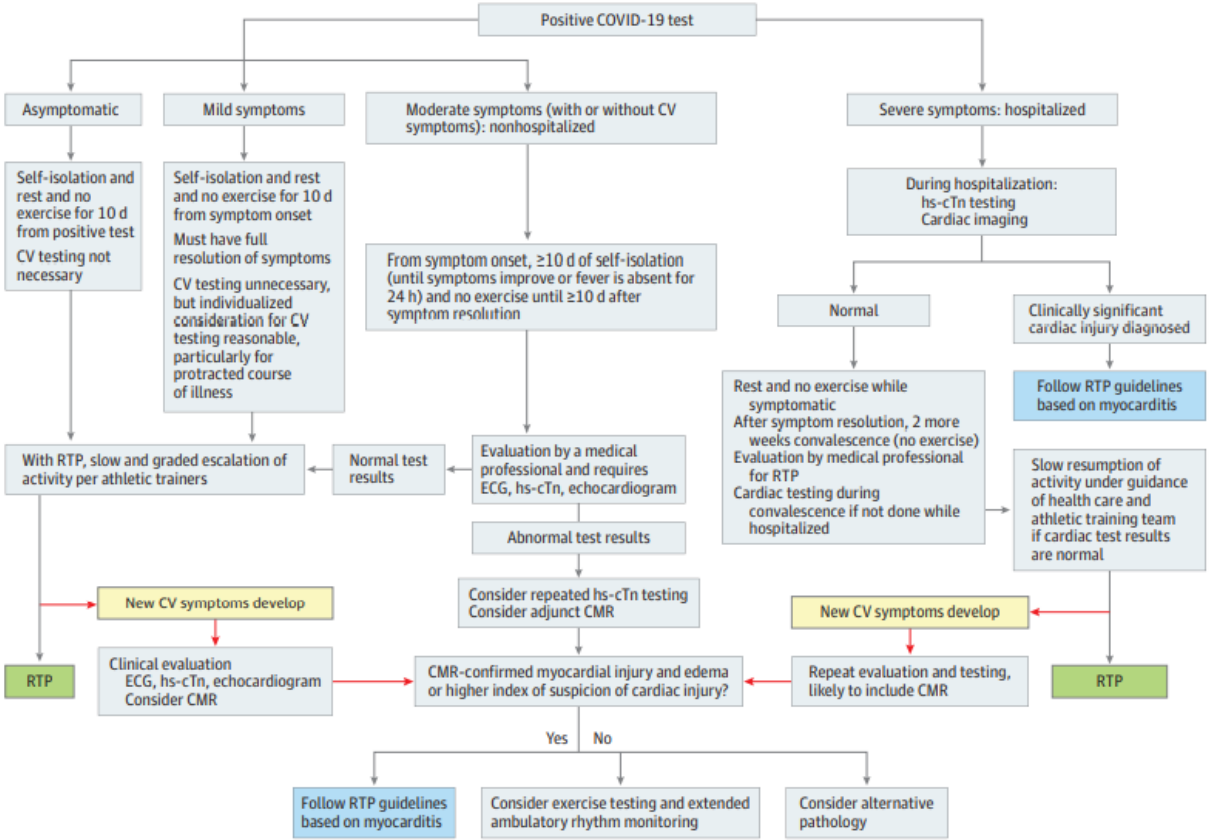
Cardiac Evaluation in COVID-19



Rudski L, et al. J Am Coll Cardiol 2020; 76: 1345–1357.

"Return to Play" (RTP) Algorithms

- Based on age, COVID-19 severity, and symptoms.
- Cardiac testing for athletes with moderate or severe COVID-19:
  - Troponin, electrocardiogram, and/or echocardiogram
  - Cardiac MRI reserved for suspected myocardial injury
- Three proposed RTP algorithms:
  - Athletes in competitive high school sports
  - Adult athletes in competitive sports
  - Recreational masters athletes



Kim JH, et al. JAMA Cardiol 2020. doi:10.1001/jamacardio.2020.5890.

Cardiac Troponin (cTn)

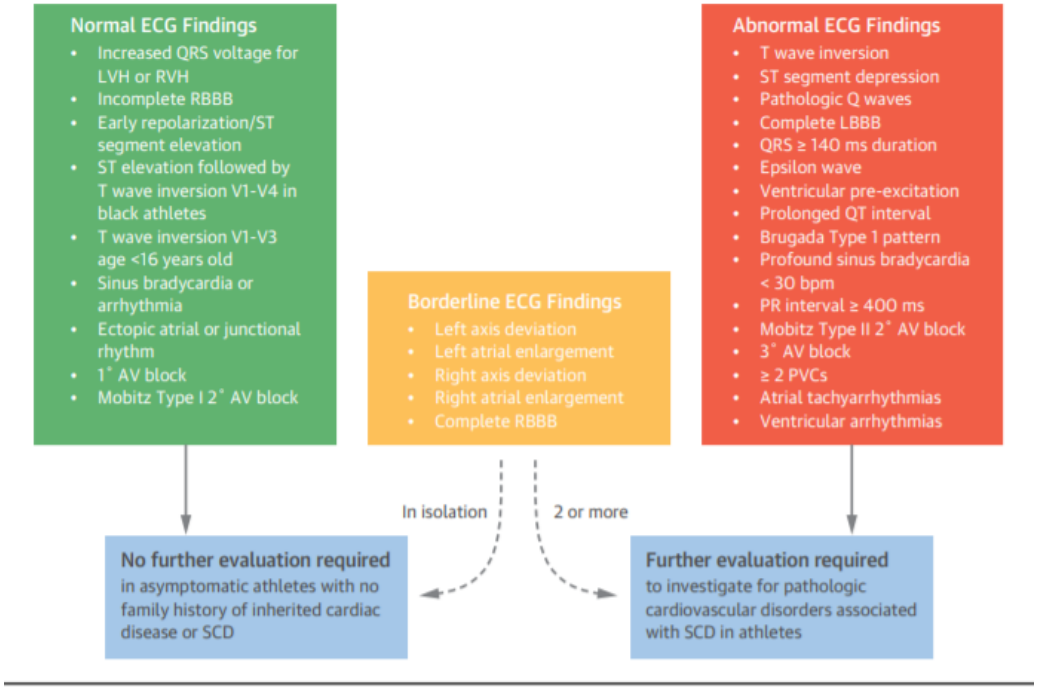
- Detect subclinical myocardial injury
- High-sensitivity cTn (hs-cTn) recommended
- No established reference range for athletes
- Can be released after prolonged or strenuous exercise
- Do not measure within 24-48 hours of exercise

Electrocardiogram (ECG)

- Common diagnostic tool
- Low sensitivity and specificity
- High prevalence of anomalies in athletes
- Abnormalities related to myocarditis:
  - Complex ectopy or ventricular arrhythmias
  - ST-segment and T-wave changes
  - Left bundle branch block
  - Atrioventricular block

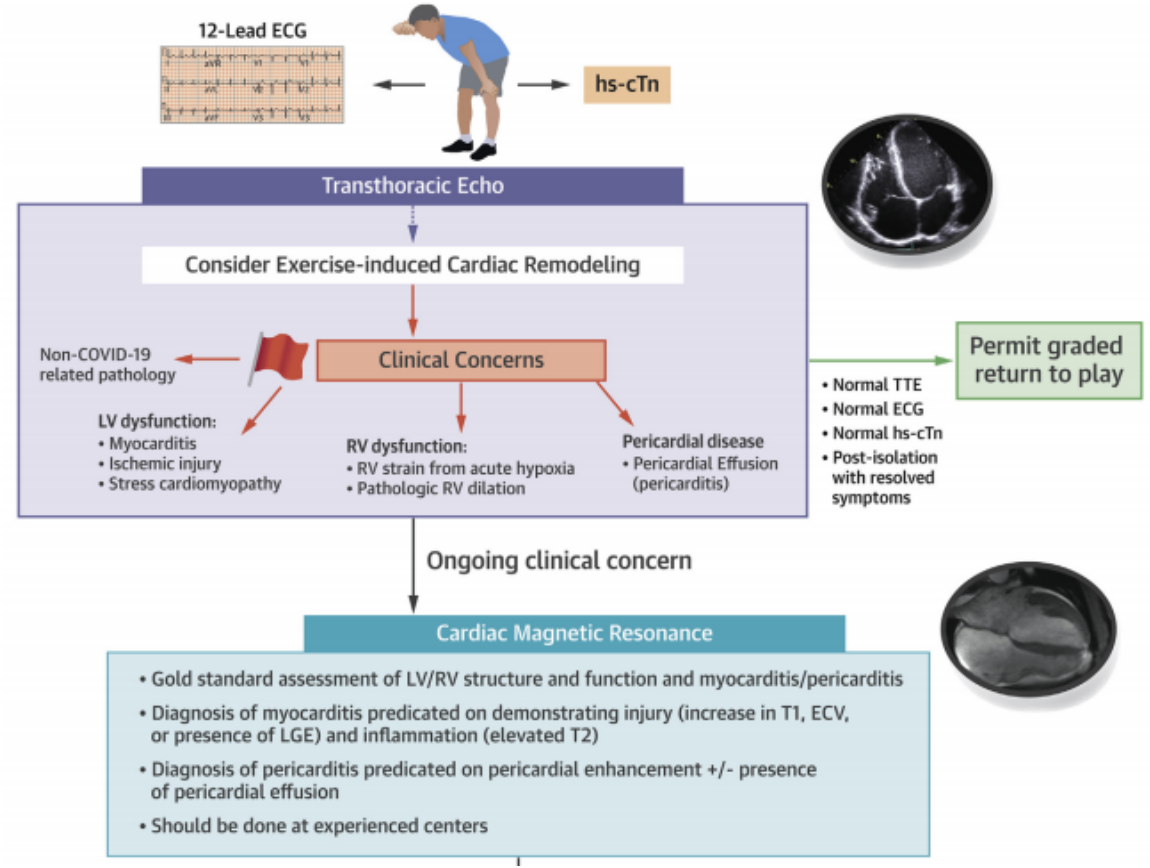
Phelan D, et al. J Am Coll Cardiol Cardiovasc Imaging 2020; 13: 2635–2652.

ECG Interpretation in Athletes



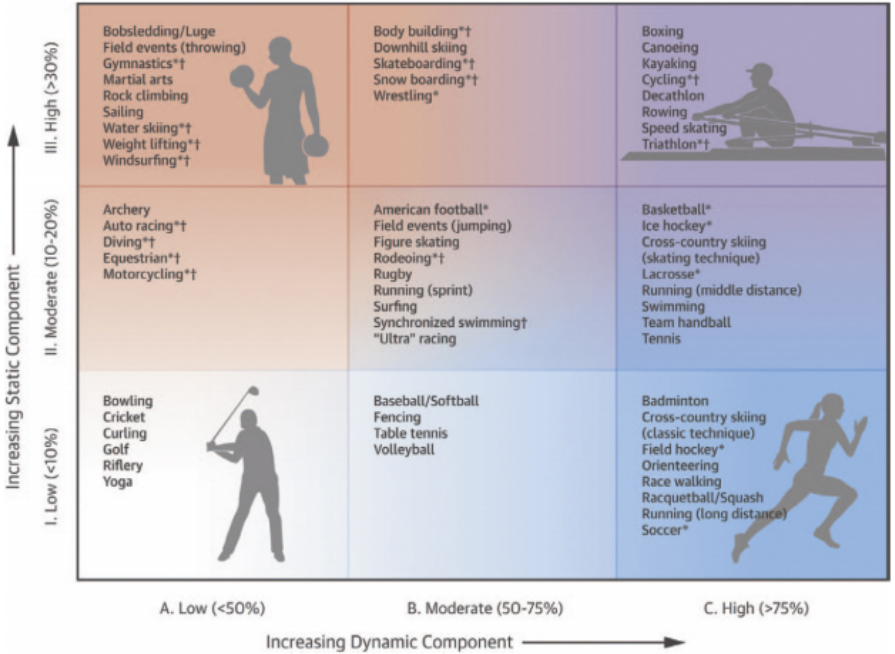
AV = atrioventriular block; LBBB = left bundle branch block; LVH = left ventricular hypertrophy; RBBB = right bundle branch block; RVH = right ventricular hypertrophy; PVC = premature ventricular contraction; SCD = sudden cardiac death.

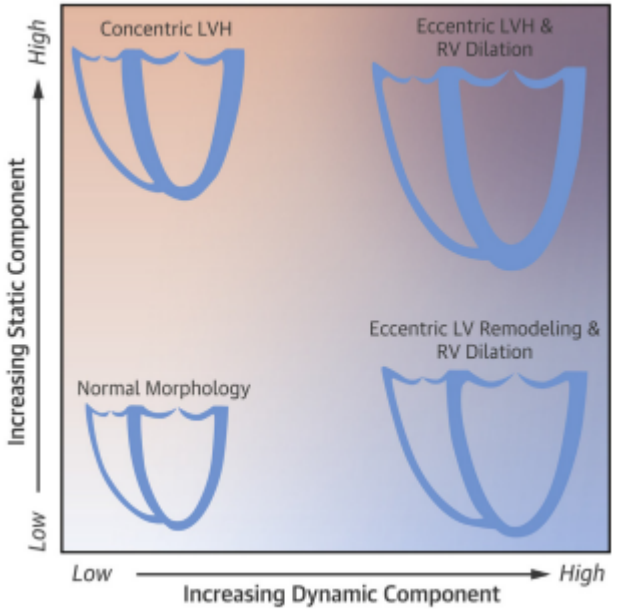
Sharma S, et al. J Am Coll Cardiol 2017; 69: 1057-1075.



Phelan D, et al. J Am Coll Cardiol Cardiovasc Imaging 2020; 13: 2635–2652.

Exercise-Induced Cardiac Remodeling (EICR)





Baggish AL, et al. J Am Soc Echocardiogr 2020; 33: 523-549.

Myocarditis Recommendations

- Athletes should not participate in competitive sports while active inflammation is present, regardless of age, gender, and left ventricular function *(Class III)*.

- Before returning to competitive sports, athletes should undergo resting echocardiogram, 24-hour Holter monitoring, and exercise ECG no less than 3 to 6 months after the initial illness *(Class I)*.

Maron B., et al. Circulation 2015; 132: e273-e280.

Myocarditis Recommendations

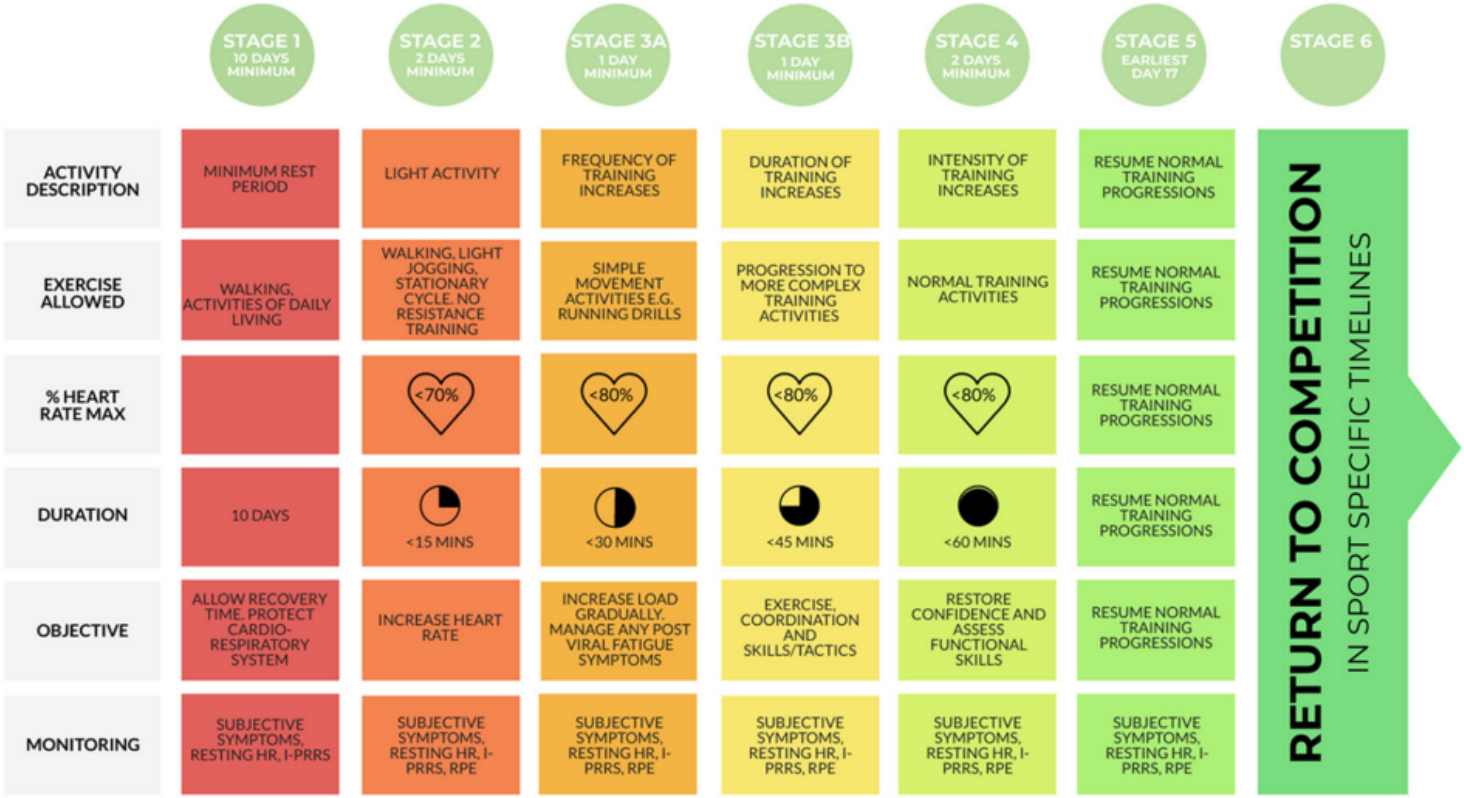
- It is reasonable for athletes resume training and competition when the following criteria are met *(Class IIa):*
  - Cardiac biomarkers have normalized.
  - Ventricular systolic function has normalized.
  - Clinically-relevant ectopy and arrhythmias are absent on Holter monitor and graded exercise ECG.

- It is unresolved whether resolution of myocarditis-related LGE should be required to permit return to competitive sports.

Maron B., et al. Circulation 2015; 132: e273-e280.

GRADUATED RETURN TO PLAY PROTOCOL

UNDER MEDICAL SUPERVISION



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

Elliott N, et al. Br J Sports Med 2020; 54: 1174-1175.

Minimum of 7 days at each phase | **Drop back a phase if finding it difficult** | **Only move up when progression criteria are met**

Phase 1
Goal: preparation for return to exercise
Exercise: rest, breathing exercises, flexibility/ stretching, balance, gentle walking
Suggested Rating of Perceived Exertion (RPE): 6-8

Phase 2
Goal: low intensity activity such as walking and light yoga, and light household/ garden tasks
Exercise: graduated increases by 10-15 mins/ day
Suggested RPE: 6-11
Progression: 7 days and when can walk 30 minutes at RPE 11

Phase 3
Goal: moderate intensity aerobic and strength challenge
Exercise: an example would be 2 intervals of 5 minute aerobic exercise separated by 1 block of recovery. Add one interval per day as tolerated
Suggested RPE: 12-14
Progression: 7 days and when can achieve 30 minute session, and feel recovered after an hour

Phase 4
Goal: moderate intensity aerobic and strength challenge with co-ordination and functioning skills
Exercise: 2:1 days training: recovery
Suggested RPE: 12-14
Progression: 7 days and when fatigue levels are normal

Phase 5
Goal: baseline exercise
Exercise: return to regular exercise pattern
Suggested RPE: >15 as tolerated

Only exercise if: you feel recovered from the previous day, no new, or return of, symptoms
Spend at least a few minutes warming up and cooling down at the beginning and end of a session respectively

Any abnormal shortness of breath for a given activity level, or return of symptoms including temperature, lethargy or chest pain

↓

Seek medical advice

Monitor your mood. If you feel more anxious, down or low, speak to someone, and seek medical advice if you are concerned

Borg Rating of Perceived Exertion (RPE)

6	No exertion	14	
7	Extremely light	15	Hard (heavy)
8		16	
9	Very light	17	Very hard
10		18	
11	Light	19	Extremely hard
12		20	Maximal exertion
13	Somewhat hard		

Salman D, et al. BMJ 2021; 372: m4721.

Questions?

- Email: dylan.e.wessman.mil@mail.mil

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- DoD COVID-19 Practice Management Guide (Version 6.0): https://jts.amedd.army.mil/index.cfm/PI_CPGs/COVID-19
  - POST-COVID-19 CARDIOPULMONARY RETURN TO EXERCISE RECOMMENDATIONS