MAHEC | MOUNTAIN AREA HEALTH EDUCATION CENTER

ECHO COVID-19: Return to Sport

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I have no personal disclosures

ECHO COVID-19: Return to Sport

Case

- 45 yo male with history of asthma, HTN, and tobacco abuse presenting 15 days following +COVID 19 test. His initial symptoms included fever, myalgias, shortness of breath, loss of smell and fatigue. He continues to have fatigue and loss of smell. He would like to know when he can return to using his elliptical and start hiking again.

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Background

- With COVID innumerable events have been canceled or modified, gyms and exercise facilities have closed, opened, reopened or operated in limited capacity
- A number of case reports and small series suggested that COVID-19 prominently affects the cardiovascular system by exacerbating heart failure in patients with preexisting cardiac conditions and troponin (cardiac enzyme) elevation in critically ill patients.
- There is an ongoing concern about COVID-19–associated cardiac pathology among athletes because myocarditis is an important cause of sudden cardiac death during exercise
- COVID-19 related damage to the lungs, heart, kidneys, and vascular system have implications for fluid balance, coagulopathy, and heat stroke during exercise

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By the Numbers

- Comparison to Common Flu 2019-2020
  - 38M cases (22K deaths; 0.05%)
- Worldwide: ~93M cases (~2M deaths; ~3% of all infected)
  - Death Rate: probability of dying if infected
    - High risk death in older age (22% fatality rate in ages >80, <1% in ages <50)
    - High risk death in those with Pre-Existing conditions
      - Cardiovascular: 13%
      - Diabetes: 9%
      - Respiratory Disease: 8%
      - HTN: 8%
      - Cancer: 7.5%
      - No Pre-Existing: <0.9%
- USA: 23.6M cases (~25%)
- NC: 641k

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Cardiac Background: Etiology

- The proposed pathophysiological mechanisms of cardiac injury include inflammatory plaque rupture and cardiac stress due to high cardiac output
- A small number of autopsy cases suggest myocardial inflammation as the underlying mechanism, and some severe cases of myocarditis have been reported (heart muscle inflammation)

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Evidence

- JAMA Published online July 27, 2020
  - **Objective:** To evaluate the presence of myocardial injury in unselected patients recently recovered from COVID-19 illness
  - **Patients:** 100 patients ages 45-54 between April and June recently recovered from severe acute respiratory syndrome from coronavirus infection (at least 2 weeks recovered)
    - 2/3 had minor-moderate symptoms
    - 1/3 required hospitalization
- Testing:
    - Symptom evaluation, Cardiac blood markers, Cardiac MRI
    - Avg time between diagnosis and testing 64-92 days (2-3 months)

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Results and Questions

- Results:
  - On day of exam ~1/3 had ongoing shortness of breath and fatigue
    - 78% had cardiovascular involvement as detected by standardized CMR, 71% had abnormal cardiac blood markers
    - Irrespective of preexisting conditions, the severity and overall course of the COVID-19 presentation, the time from the original diagnosis, or the presence of cardiac symptoms
- Questions:
  - What are the symptoms of COVID to be concerned for?
    - (new onset chest pain, shortness of breath, palpitations, exercise intolerance)
  - When is it safe to resume exercise after COVID?
    - (asymptomatic and graduated)
  - Which age groups are highest at risk and who should be tested?
    - (Preexisting conditions)
  - What tests should be performed to determine risk and clearance?
    - (TBD pending clinical presentation)

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Post-COVID 19 Infection Recommendations

- Gradual increase in activity
  - Objective evaluation of performance with an exercise-tolerance test is likely the most accurate but simulations of running drills, sports specific activities or jumping drills may be good estimates of ability to return to activity
- Needs provider evaluation
  - Determine general physical and psychological health of individual
  - Evaluate athlete for life threatening conditions
  - Evaluate athlete for conditions predisposing to illness or injury
    - Re: COVID
      - Determine need for further diagnostic testing
      - Advice on exercise volume and intensity
      - Participation in sport
      - Minimizing risk of contracting disease

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Case (Cont)

- *45 yo male with history of asthma, HTN, and tobacco abuse presenting 15 days following +COVID 19 test. His initial symptoms included fever, myalgias, shortness of breath, loss of smell and fatigue. He continues to have fatigue and loss of smell. He would like to know when he can return to using his elliptical and start hiking again.*
- **Vitals:**
  - **T: 98.6**
  - **P: 92**
  - **BP: 142/87**
- **Exam:**
  - **Constitutional: Alert, Oriented, Well appearing**
  - **CV: RRR no m/r/g**
  - **Pulm: CTA bilaterally without wheezing, rhonchi rales**

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Post-COVID 19 Infection Recommendations: Assessment

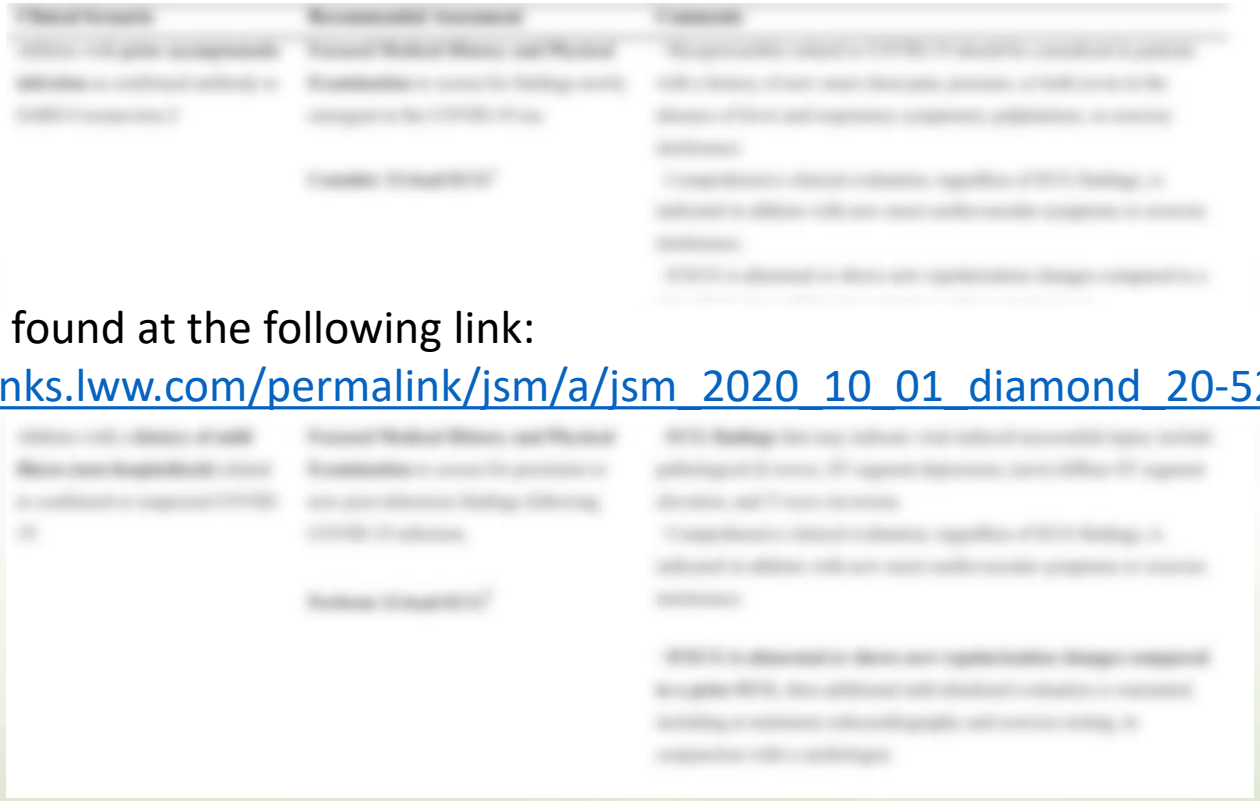

Image can be found at the following link:
https://cdn-links.lww.com/permalink/jsm/a/jsm_2020_10_01_diamond_20-523_sdc2.pdf

- **Moderate** symptoms of COVID-19 (≥4 days of fever >100.4°F, myalgia, chills, or lethargy or those who had a non-ICU hospital stay and no evidence of MIS-C), an **ECG and cardiology consult** is currently recommended

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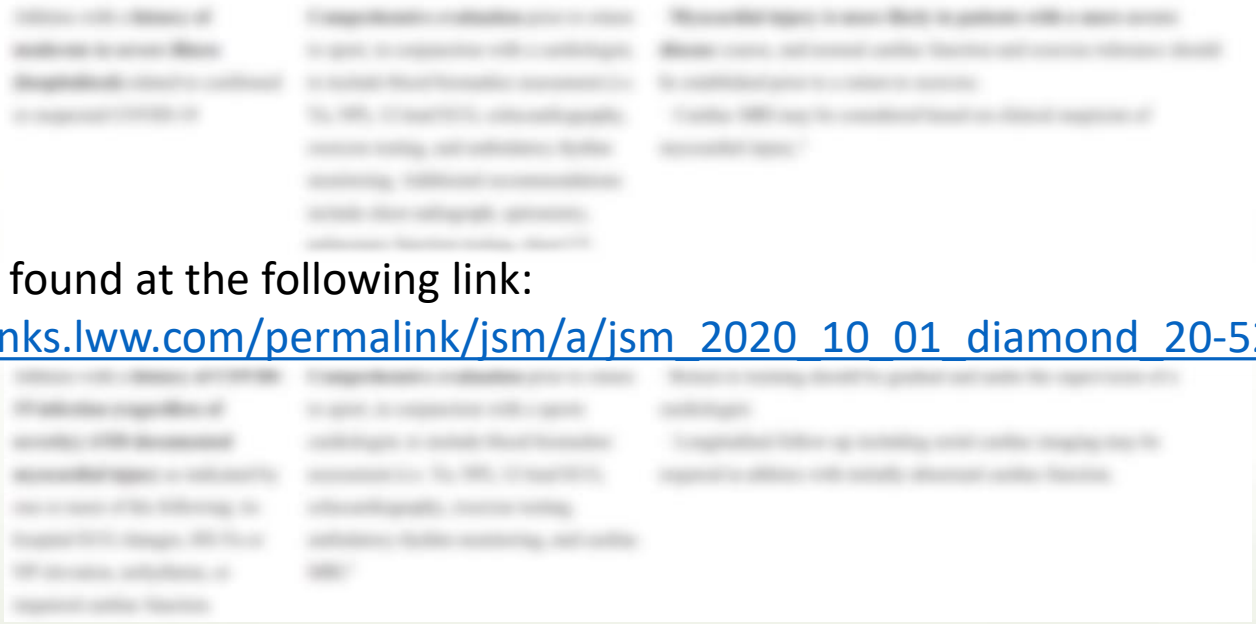
Post-COVID 19 Infection Recommendations: Assessment (Cont)



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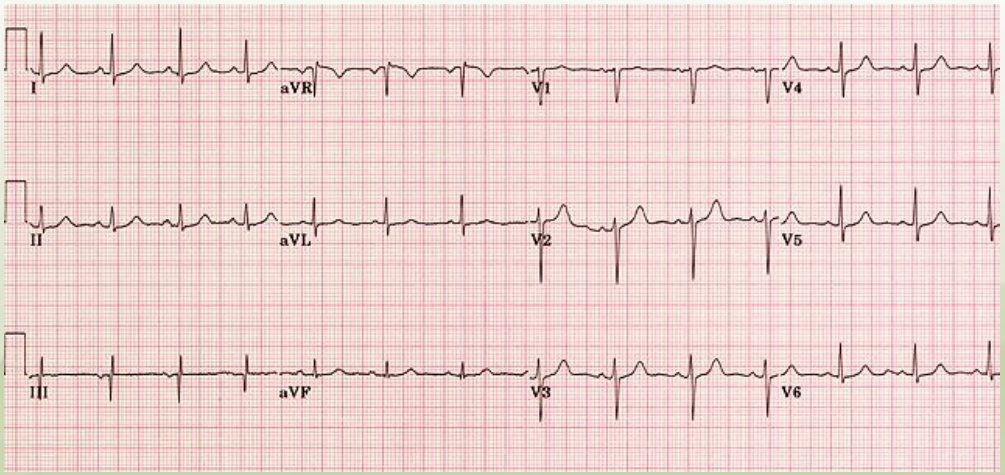

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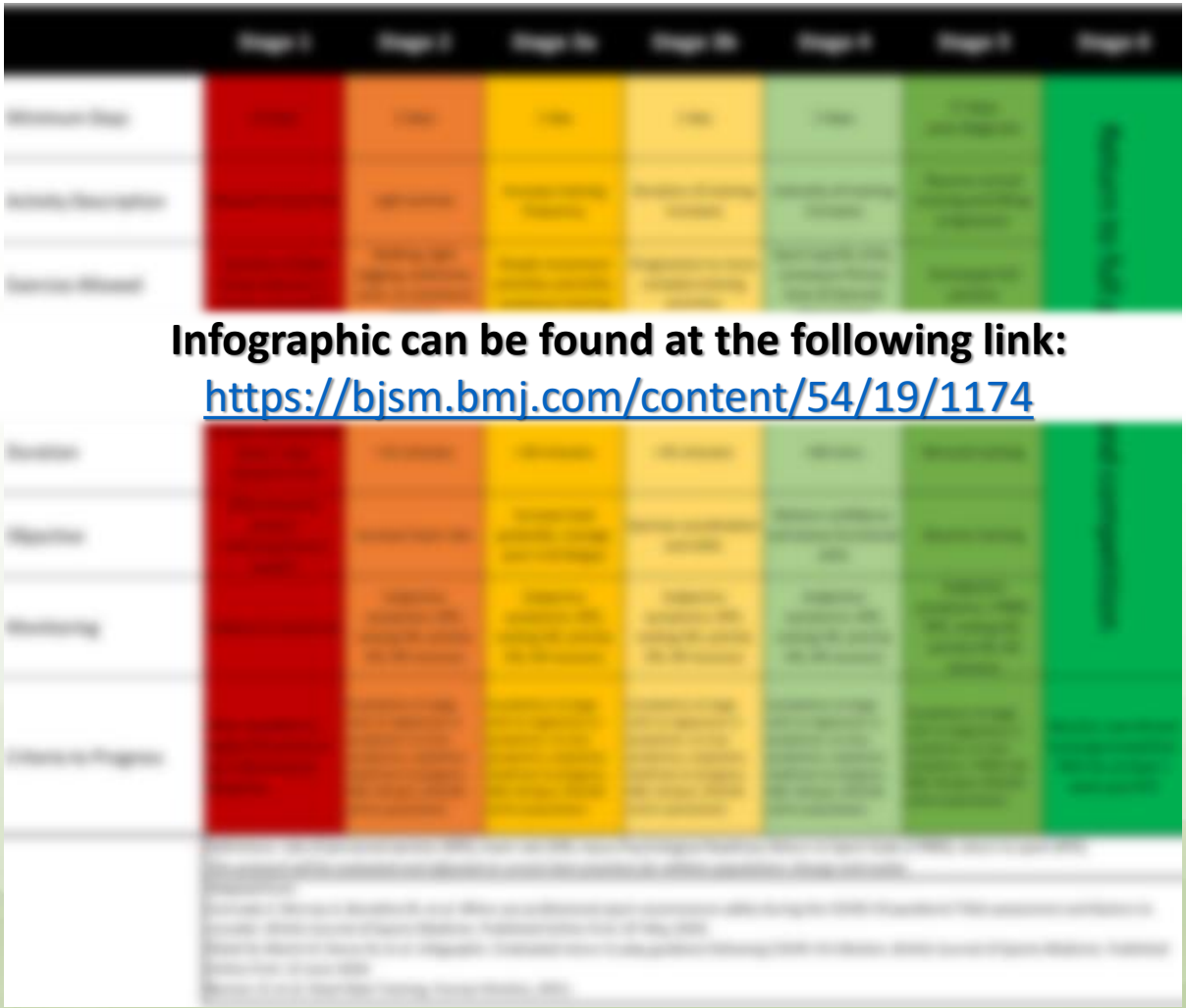
Post-COVID 19 Infection Recommendations: Graduated RTP

- Athletes should at minimum have 10 days of rest from initial positive test result, including 7 days of absence of symptoms



Infographic can be found at the following link:
https://bjsm.bmj.com/content/54/19/1174

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Post-COVID 19 Infection Recommendations: Graduated RTP (Cont)

Stage 1: Day 1 and Day 2 - (2 Days Minimum) - 15 minutes or less: Light activity (walking, jogging, stationary bike), intensity no greater than 70% of maximum heart rate. NO resistance training.
Stage 2: Day 3 - (1 Day Minimum) - 30 minutes or less: Add simple movement activities (eg. running drills) - intensity no greater than 80% of maximum heart rate.
Stage 3: Day 4 - (1 Day Minimum) - 45 minutes or less- Progress to more complex training - intensity no greater than 80% maximum heart rate. May add light resistance training.
Stage 4: Day 5 and Day 6 - (2 Days Minimum) - 60 minutes - Normal training activity - intensity no greater than 80% maximum heart rate.
Stage 5: Day 7 - Return to full activity/participation (ie, - Contests/competitions)

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Post-COVID 19 Infection Recommendations: Exercise Recs

- Keep Exercising
  - Exercise is Medicine
    - Exercise can be as effective as prescription drugs in the management of several chronic diseases
- General Guidelines
  - Exercise most days of the week (3-5x at a minimum)
  - Don’t forget to warm up and cool down
  - Studies suggest that near-daily moderate exercisers report about half the typical number of upper-respiratory tract infections
  - Increasing exercise frequency or intensity incorrectly may increase your risk for infection
    - You may be more vulnerable than no exercise at all
- Duration a bigger risk than intensity (>90 minutes)
  - Prolonged exercise depletes the fuel stores that your immune cells rely on
  - Multiple factors: stress, sleep, baseline fitness

References

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Supplementary Table 1, Supplemental Digital Content 1; https://cdn-links.lww.com/permalink/jsm/a/jsm_2020_10_01_diamond_20-523_sdc2.pdf

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https://www.worldometers.info/coronavirus/