

ASPETAR

CLINICAL GUIDELINE

Safe Return to Sport during the COVID-19 Pandemic

Publication Date: | 14 June 2020

Review Date: | 31 July 2020

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Aspetar Clinical Guideline: Safe Return to Sport during the COVID-19 Pandemic

Valid from: June 2020

Version History	Status	Date	Editor	Description
Version 1.0	Initial Version	June 2020	Guidelines Development Group	Aspetar version

Suggested citation style: **Aspetar Clinical Guidelines : Safe Return to Sport during the COVID-19 Pandemic (2020)**

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ABBREVIATIONS

ACE2 receptors : Angiotensin converting enzyme 2 receptors
 ACGPC : Aspetar Clinical Guidelines and Pathway Committee
 AHE : Athlete Health Evaluation
 ARDS : Acute Respiratory Distress Syndrome
 ASCR: Athlete health screening (periodic or preparticipation health evaluations, PHE)
 CBC : Complete blood count
 CDC : Communicable Disease Center
 CNS : Central nervous system
 COVID-19 The clinical disease state resulting from an infection with SARS-CoV-2
 CRP : C-reactive protein
 CT : Computerized tomography
 Ct : Cycle threshold – number of viral replication cycles required to produce a fluorescent signal
 CVA : Cerebrovascular accident
 DAD : Diffuse alveolar damage
 DVT : Deep vein thrombosis
 EF : Ejection fraction
 ELISA : Enzyme-linked immunosorbent assay
 GDG : Guidelines Development Group
 GLS : Global longitudinal strain
 hs-CRP : High sensitivity C-reactive protein
 hs-Tn : High sensitivity Troponin
 IgG : Immune globulin G
 IgM : Immune globulin M
 MERS Middle East Respiratory Syndrome
 MOPH : Ministry of Public Health
 MRI : Magnetic resonance imaging
 PCR test : Polymerase chain reaction test
 PE : Physical examination
 PHE : Pre-participation Health Evaluation
 PPE : Personal protective equipment
 QFA : Qatar Football Association
 QOC : Qatar Olympic Committee
 QSL : Qatar Stars League
 RTP : Return to play
 RTS : Return to sport
 SARS Severe Acute Respiratory Syndrome
 SARS-CoV-2 : severe acute respiratory syndrome coronavirus 2
 TED : Thromboembolic disease
 TIA : Transient Ischemic Attack
 TT : Transthoracic
 US : Ultrasonography
 WHO The World Health Organization

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1. OBJECTIVE AND PURPOSE OF THE GUIDELINE

The purpose of this guideline is to provide updated information regarding safe return to sports during the Coronavirus disease (COVID-19) pandemic. The objective is to limit/mitigate the risk of further spread of infection and reduce health problems associated with COVID-19 both in sports and the society in general. It is intended that the guideline will be used primarily by medical teams working with clubs and sports federations. However, the information also addresses coaches and athletes, referees, judges, support staff, administrators and athlete's families. We recommend that all sports organisations / teams appoint a COVID-19 Safety Officer, who will implement all the guideline.

2. SCOPE OF THE GUIDELINE

This guideline covers the following aspects:

- General information about COVID-19
- Risk limitation/mitigation during training and competitions
- Considerations for periodic health evaluations of athletes
- Re-conditioning after reduced activity during pandemic

Aspects of care not covered in this guideline are:

- Management of COVID-19
- Measures in relation to public (recreational) sports activities and school sports

Editorial Approach

This guideline document has been developed and issued by Aspetar Clinical Guidelines and Pathway Committee (ACGPC) Guidelines Development Group (GDG) for **Safe Return to Sport during the COVID-19 Pandemic**, through a process which aligns with international best practice in guideline development and localization. The guideline will be reviewed on a regular basis and updated to incorporate comments and feedback from stakeholders across Aspire Zone and other institutions like Qatar Football Association (QFA), Qatar Stars League (QSL) and Qatar Olympic Committee (QOC).

The editorial methodology, used to develop this guideline, has involved the following critical steps:

- Extensive literature search for well-reputed published evidence relating to the topic.
- Critical appraisal of the literature.
- Development of a draft summary guideline.
- Review of the summary guideline with a Guideline Development Group, comprised of practicing healthcare professionals, subject matter experts and patient representatives, from across Aspire Zone.

3. SOURCES OF EVIDENCE

The professional literature has been consulted. Search strategies were developed to allow efficient yet comprehensive analysis of relevant publications regarding the topic.

For each guideline, all retrieved publications have been individually reviewed by a member of the Editorial Team and assessed in terms of quality, utility, and relevance. Preference is given to publications that:

1. Are designed with rigorous scientific methodology.

2. Are published in higher-quality journals.
3. Address an aspect of specific importance to the guideline in question.

Recommendations made within this guideline are supported by evidence from the medical literature and where possible the most authoritative sources have been used in the development of this guideline.

4. ASPETAR CLINICAL GUIDELINE AND PATHWAY COMMITTEE AND GUIDELINE DEVELOPMENT GROUP MEMBERS

MEMBERS OF ASPETAR CLINICAL GUIDELINE AND PATHWAY COMMITTEE

The following table lists members of the Aspetar Clinical Guidelines & Pathways Committee (ACGPC), appointed by the Aspetar Director General. The ACGPC members have reviewed and provided their feedback and approval of the guideline document. Each member has completed a declaration of conflicts of interest, which has been reviewed and retained by the Aspetar Department of Medical Education.

MEMBERS	TITLE	ORGANIZATION
Paul Dijkstra (chair)	Sports Medicine Physician/ Director of Medical Education	Medical education
Sofie Eline Nelis (deputy chair)	Lead Medical Education Specialist	Medical education
Rachid Bouras	Senior Advisor Medical Affairs	NSMP
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Syed Sajid Ahmed	Head of Quality Management	Planning and Performance Department

The following table lists members of the Guideline Development Group (GDG) nominated by Aspetar Clinical Guidelines and Pathway Committee (ACGPC). The GDG members have reviewed and provided feedback on the draft guideline relating to the topic.

MEMBERS	TITLE	ORGANIZATION
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Moumen Tajdine	Sport Medicine Physician Clinical Director of Al Saliya Sport Club	National Sports Medicine Programme
Stephen Targett	Consultant sports and exercise medicine physician	Sports Medicine

5. RESPONSIBILITIES OF HEALTHCARE PROFESSIONALS

This guideline has been issued by ACGPC to define how clinical care should be provided in relation to return to sport during COVID-19 pandemic. It is based upon a comprehensive assessment of the evidence as well as its applicability to competitive level athletes in Qatar. Healthcare professionals are expected to take this guidance into account when exercising their clinical judgement in the care of athletes presenting to them.

The guidance does not override the Government (Ministry of Public Health) COVID-19 measures in place at a specific time (e.g. physical distancing, wearing of masks etc). The guidance does not override individual

professional responsibility to take decisions which are appropriate to the circumstances of the athlete concerned. Such decisions should be made in consultation with the athlete, their guardians or care givers and should consider the individual risks and benefits of any intervention that is contemplated in the athlete's care.

6. PREAMBLE

These guidelines provide minimum baseline of standards, for 'how' reintroduction of sport activity can occur in a cautious and methodical manner. It is based on the best current (June 2020) evidence to optimize athlete safety and to a certain extent community safety, regarding both COVID-19 related risks and injury and illness risks related to reconditioning and training load. Decisions regarding the timing of resumption (the 'when') of sporting activity must be made in close consultation with the Qatar Ministry of Public Health (MOPH). The priority must be to preserve athlete and public health, and to minimize the risk of community transmission ⁽¹⁾. It is important to remember that health guidelines are determined by the progression of the pandemic and may change rapidly.

This document does not constitute a guideline which guarantees the resumption of training and/or of official matches.

In addition to the medical and sports scientific guidelines, sports authorities should consider at least two other factors. Firstly, what will the implications be on the competitions itself of resuming competitive sport whilst the pandemic is still active? Secondly, what are the ethical and societal considerations of resuming sport during the pandemic?

Regarding possible consequences for competition, sports authorities should consider existing international information and protocols. Two clear questions have emerged from such documents and are essential to be answered for the successful resumption of a competition:

- (1) What are the consequences for training and competition in cases of persons testing positive for COVID-19?, and
- (2) what appropriate measures are to be taken. For example, would the entire team have to undergo quarantine again, and possibly also the team last played against, including match officials and event staff? What would this mean from a fairness perspective for upcoming matches, if one team could not train because of such a quarantine? What would the consequences be for the competition overall? This document cannot, and does not intend to, answer these questions ⁽²⁾.

Once the MOPH declared the rate of COVID-19 transmission low enough to allow a sports event, ethical and societal considerations in return to sport decision making include, but are not limited to:

- Does the professional or social importance of a competition (international, professional, community sport) warrant the risk to resume while public health COVID-19 restrictions are still in place?
- Does the COVID-19 testing plan for athletes and staff of a specific sports event fit in with the national and international testing profile and resources, and is it adequate to limit their risk of contracting COVID-19 during the event?
- Is there enough personal protective equipment (PPE) available for athletes, event staff and spectators in case authorities demand the use during training and competition?
- Should or can you restrict athletes from participating in an event if they travel to a location with active community transmission of COVID-19?

Even when no or very limited active transmission of COVID-19 is occurring in a specific region, easing of public health restrictions or allowing people to travel to the event may result in re-introduction of COVID-19 infections

into the community and “second wave” outbreaks. Until COVID-19 is either eradicated, a vaccine is developed, or a cure is found, eliminating the risk of severe or fatal infection is not possible. This should always be a primary consideration when planning an event ⁽³⁾.

REFERENCES

1. Hughes D, 2020. *In the frame, road map for Australian sport on an uncertain journey through COVID-19.*
2. European Club Association (ECA) 2020. *Resuming Professional Football in Europe.*
3. Finnoff J, 2020. *Sports Event Planning Considerations Post-COVID-19 United States Olympic & Paralympic Committee.*

7. GENERAL INFORMATION ABOUT COVID-19

7.1. INTRODUCTION

COVID-19 is the disease caused by a novel (new) strain of coronavirus, first reported in Wuhan, Hubei Province, China on 31 December 2019. The World Health Organization (WHO) declared the outbreak a Public Health Emergency of International Concern on 30 January 2020 and a Pandemic on 11 March 2020⁽¹⁾. According to the Qatari Ministry of Public Health (MOPH), updated clinical and epidemiological features of the emerging virus suggest that it very similar to many coronaviruses that are typically transmitted from animals to humans. However, this novel virus is reported to have been transmitted from human to human with a variable symptom profile ⁽²⁾. Most patients will experience only mild symptoms. However, severe complications include acute respiratory distress, pneumonia and death. Underlying health conditions that affect the cardiovascular, respiratory and immune systems confer an increased risk of severe illness and death. Even though the risk of severe illness is low in athletes, even mild illness might interrupt training and competition. It is not yet known whether infection with COVID-19 may lead to acute or chronic decreases in aerobic capacity or respiratory compromise in elite athletes. There are currently no therapeutics or vaccines proven to treat or prevent COVID-19.

7.2. SYMPTOMS

Infected athletes with COVID-19 are often asymptomatic but may have mild to severe symptoms that occur 2-14 days after exposure to the virus (5–6 days in average). Common symptoms are fever, cough and tiredness. Less common symptoms include aches and pains, sore throat, diarrhea, conjunctivitis, headache, loss of taste or smell, a rash on skin, or discoloration of fingers or toes. Uncommon but severe symptoms include shortness of breath or difficulty breathing, pain or pressure in the chest and speech or movement loss. Athletes should pay attention to emergency warning signs like trouble breathing, persistent pain or pressure in the chest, new confusion, inability to wake or stay awake, bluish lips or face and any other symptoms that are severe or concerning to the athletes ^(2,3,4).

If any athlete feels unwell or has fever or any of the above symptoms, he should contact his team physician (club or federation doctor) and/or primary care doctor and follow local public health guidelines in Qatar by calling 16000 (notify the operator that he may have COVID-19) ⁽²⁾.

7.3. TRANSMISSION

The World Health Organization (WHO) has provided extensive information regarding the modes of transmission of COVID-19 and is regularly updating relevant recommendations ⁽⁵⁾. Respiratory infections can be transmitted through droplets of different sizes: when the droplet particles are >5-10 µm in diameter they are referred to as respiratory *droplets*, and when they are <5µm in diameter, they are referred to as *droplet nuclei* ⁽⁶⁾. According to current evidence, the virus causing COVID-19 is primarily transmitted between people through respiratory droplets and contact routes, and not through droplet nuclei, except in specific circumstances ⁽⁷⁾.

According to WHO, “*droplet* transmission occurs when a person is in close contact (within 1 m) with someone who has respiratory symptoms (e.g., coughing or sneezing) and is therefore at risk of having his/her mucosae (mouth and nose) or conjunctiva (eyes) exposed to potentially infective respiratory droplets. Transmission may also occur through fomites in the immediate environment around the infected person” ⁽⁸⁾. Therefore, transmission of the virus causing COVID-19 can occur by direct contact with infected people and indirect contact with surfaces in the immediate environment or with objects used on the infected person (e.g., stethoscope or thermometer).

Droplet nuclei (airborne) transmission is different from droplet transmission as it refers to the presence of microbes within droplet nuclei, which are generally considered to be particles <5µm in diameter, can remain in the air for long periods of time and be transmitted to others over distances greater than 1 m. In the context of COVID-19, airborne transmission may be possible in specific circumstances and settings in which procedures or support treatments that generate aerosols are performed; i.e., endotracheal intubation, bronchoscopy, open suctioning, administration of nebulized treatment, manual ventilation before intubation, turning the patient to the prone position, disconnecting the patient from the ventilator, non-invasive positive-pressure ventilation, tracheostomy, and cardiopulmonary resuscitation.

There is some evidence that COVID-19 infection may lead to intestinal infection and be present in faeces. However, to date only one study has cultured the COVID-19 virus from a single stool specimen ⁽⁵⁾. There have been no reports of faecal–oral transmission of the COVID-19 virus to date.

7.4. PATHOPHYSIOLOGY

Pathophysiology and virulence mechanisms of all SARS-CoV-2, and all Coronavirus are linked to the function of the NSPs (Non-starch polysaccharides) which can block the innate immune response. Among the functions of the structural proteins, the envelope plays a crucial role in a virus pathogenicity as it promotes viral assembly and release. The spike glycoproteins of the CoV2 are composed of two subunits (S1 and S2). Homotrimers of S proteins compose the spikes on the viral surface, guiding the link to host receptors. In SARS-CoV-2, the S2 subunit, containing a fusion peptide, a transmembrane domain, and cytoplasmic domain, is highly conserved. Thus, it could be a target for antiviral (anti-S2) compounds ⁽¹⁰⁾.

The lungs are the organs most affected by COVID-19 because the virus accesses host cells via the enzyme angiotensin-converting enzymes 2 (ACE2), which is most abundant in Type II alveolar cells of the lungs. The spike glycoproteins polymer connects to ACE2 and the virus enters the host cell. The density of ACE2 in each tissue correlates with the severity of the disease in that tissue and some have suggested decreasing ACE2 activity might be protective, though another view is that increasing ACE2 using angiotensin II receptor blocker medications could be protective. As the alveolar disease progresses, respiratory failure might develop a death may follow ⁽¹⁰⁾. Autopsies of people who died of COVID-19 have found diffuse alveolar damage (DAD), and lymphocyte-containing inflammatory infiltrates within the lung.

SARS-CoV-2 may also cause respiratory failure through affecting the brainstem as other coronaviruses have been found to invade the central nervous system (CNS). While virus has been detected in cerebrospinal fluid of autopsies, the exact mechanism by which it invades the CNS remains unclear and may first involve invasion of peripheral nerves given the low levels of ACE2 in the brain.

The virus also affects gastrointestinal organs as ACE2 is abundantly expressed in the glandular cells of gastric, duodenal, and rectal epithelium as well as endothelial cells and enterocytes of the small intestine.

The virus can cause acute and chronic cardiovascular system decompensation. An acute cardiac injury was found in 12% of infected people admitted to the hospital in Wuhan, China. The acute myocardial injuries may also be related to ACE2 receptors in the heart. ACE2 receptors are highly expressed in the heart and are involved in heart function. ⁽¹¹⁾ A high incidence of thrombosis (31%) and venous thromboembolism (25%) have been found in ICU patients with COVID-19 infections and may be related to poor prognosis. Blood vessel dysfunction and clot formation (high D-dimer levels) are thought to play a significant role in mortality. Incidence of clots leading to pulmonary embolisms, and ischemic events within the brain have been noted as complications leading to death in patients infected with SARS-CoV-2. Infection appears to set off a chain of vasoconstrictive responses within the body, constriction of blood vessels within the pulmonary circulation has also been posited as a mechanism in which oxygenation decreases alongside the presentation of viral pneumonia ⁽¹²⁾.

Another common cause of death is complications related to the kidneys. Early reports show that up to 30% of hospitalized patients in China and New York have experienced renal complications, including some persons with no previous kidney problems.

7.5. PREVENTION

The aim of prevention is to control the pandemic spread by limiting transmission and reducing mortality, with the goal of reaching a state of low-level or no transmission. Different countries have implemented a certain number of measures in accordance with their epidemiology. The intensity of the prevention actions is subject to change in accordance with the evolution of the pandemic and the transmission scenario in each country.

In general, the preventive measures can be divided into;

1. Personal protective measures
2. Environmental measures
3. Physical distancing measures, and
4. Travel limitations

Personal protective measures are implemented to avoid the spread of the virus between individuals. Avoiding close contacts, washing the hands often, avoiding touching eyes, nose, and mouth with unwashed hands, coughing in tissues or in the inside of the elbow are some examples of this kind of actions. Personal protective measures are not only implemented to protect the individual but also to protect the community from people who have been in contact with the virus; self-isolation in case of symptoms or the use of masks in contagious people are examples of this. Since the virus survives in the environment for different periods of time according to the surface, environmental measures like disinfecting material with appropriate products and procedures are essential.

Physical distancing measures apply to the individuals that may have been in contact with the virus (isolation) or can be implemented on symptomatic individuals at a national level or to a specific segment of the population. An example of this kind of actions is the limitation of gatherings or the cancellation of sport events.

Finally, traveling limitations can be implemented between different countries but also at local level between zones with a different infection risk.

7.6. TESTING

7.6.1. Testing: How, which, when and frequency of monitoring (serology)

There are two types of test available for COVID-19. At present in Qatar they are only available at CDC/ MOPH testing centres or hospitals.

- Reverse transcriptase polymerase chain reaction (RT-PCR) of a nasopharyngeal or other upper respiratory tract swab to look for viral RNA of the SARS-CoV-2, the agent responsible of the COVID-19 disease. This will become positive 1-2 days after the onset of symptoms. The results are usually available the same day. This technique, used to detect the presence of the virus in athletes, does not give any information on whether they have had the disease and recovered or not⁽¹³⁾.
- Serology (i.e. ELISA) tests to detect antibodies produced by the patient against SARS-CoV-2 virus. This typically becomes positive 2-3 weeks after the onset of symptoms but may be positive as early as after 4 days. The results could be available immediately (point-of-care rapid tests) or within some hours (quantitative ELISA for instance).

The testing strategy will depend upon the MOPH regulations, availability of tests, clinical situation and status of the pandemic and should be made in consultation with MOPH/CDC (it is important to regularly confirm current MOPH recommendations – this may vary over time and be different for elite athletes or for different sports).

It has been recommended by international bodies that all elite athletes who had previously tested positive should at a minimum have two consecutive negative PCR tests and confirmed IgM negative test prior to the resumption of vigorous training. These guidelines strongly advise that any previously positive athletes are referred to pre-participation health evaluation (see below of Athlete Health Evaluation Section 8.4) before resume any training. ‘Current guidelines should be sought from the MOPH at the time of Return to training.’

7.6.2. Collaboration with MOPH (What to do in case of positive test?)

All tests are currently being carried out by CDC on behalf of MOPH. In the case of a positive test, the athlete will be contacted by CDC (In the case where a positive test does not come from CDC, the club medical staff should contact CDC immediately on 16000 and inform them of the results and follow their advice). The athlete should immediately inform club medical staff and follow CDC instructions for treatment and/or isolation.

Club medical staff should immediately isolate any close contacts of the athlete who has tested positive and assist CDC with the track, trace, and testing process.

7.6.3. Interpretation of Results

Interpretation of test results requires some knowledge about the tests themselves.

- RT-PCR testing

Viral RNA becomes detectable as early as day 1 of symptoms and peaks within the first week of symptom onset (see graph). The cycle threshold (Ct – number of viral replication cycles required to produce a fluorescent signal) gives an indication of the amount of virus in the sample with lower Ct values indicating a higher viral load. A Ct of less than 40 is reported as positive.

A “positive” PCR test indicates presence of the viral RNA, not necessarily the presence of viable virus, and PCR test can be positive for six weeks after the first positive test. PCR positivity can last longer for saliva samples than nasopharyngeal samples.

The sensitivity and specificity of available PCR tests varies quite widely. It has been estimated that the sensitivity is 70%⁽¹⁴⁾. False negative PCR results are most likely to occur with false timing of sample collection but can also occur with poor sample collection technique. False positive results are uncommon – estimated specificity is 95% - the test can have cross-reactivity with SARS-CoV and possibly other coronaviruses.⁽¹³⁾

The context of the test also needs to be considered. If the pre-test probability of having COVID-19 is high (the patient has strong COVID-19 symptoms) then a negative PCR test is more likely to be a false negative than in someone with no symptoms or risk factors⁽¹⁴⁾.

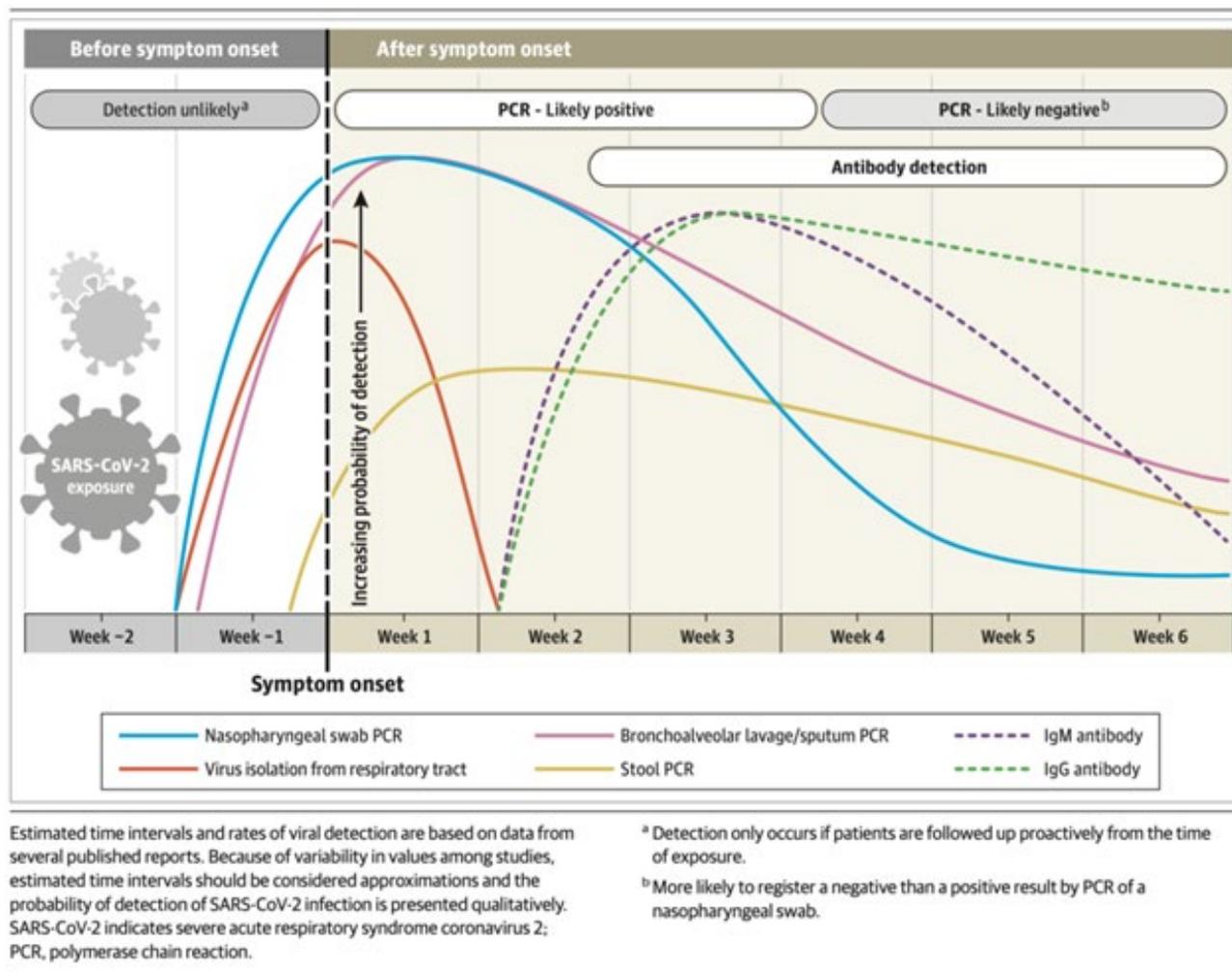
In summary – PCR tests are not 100% accurate. If the test is positive, it is likely to be correct. If the athlete has symptoms suggestive of COVID-19, even if the test is negative, then they should still self-isolate/ quarantine and repeat testing on subsequent days.

- Serology testing for antibodies to SARS-CoV-2

Serological testing for immune globulins (IgM and IgG antibodies) is more important when a patient presents late (more than 2 weeks after the onset of symptoms). Antibodies can be detected as early as 4 days after onset of symptoms, but higher levels will be present in the second and third week. IgM levels will decline and reach lower levels by week 5 and almost disappear by week 7.

The presence of antibodies does not necessarily imply immunity as not all detected antibodies are “neutralizing” (ie. will inactivate the SARS-CoV-2 virus) and the long-term persistence of antibodies and the duration of protection is not yet known. The details of diagnostic tests in relation to asymptomatic and symptomatic phases can be found in figure.

Figure 1. Estimated variation over time in diagnostic tests for detection of SARS-CoV-2 infection relative to symptom onset (Sethuraman N et al⁽¹⁶⁾).



7.7. MANAGEMENT

Most people with COVID-19 are either asymptomatic or have a relatively mild course of the disease. In a small percent of cases severe life-threatening complications can occur including pneumonia, acute respiratory distress, pulmonary embolus, myocarditis, arrhythmias and renal failure. At present there are no drugs with proven efficacy against the SARS-CoV-2 virus although there are clinical trials of several different medications underway. The management of an individual patient with moderate or severe disease is complex and beyond the scope of this document and will likely change over time as the results of clinical trials become available and more is understood about this disease. In Qatar, all patients with known or suspected COVID-19 should immediately contact CDC/MOPH by phoning 16000 and follow their directions. CDC/ MOPH will arrange for all COVID-19 cases to be quarantined and monitored and for those with more severe disease to be admitted to hospital for specialist care.

7.8. IMPACT ON SPORT OF COVID-19 PANDEMIC

The COVID-19 pandemic has triggered the first worldwide disruption to the sporting calendar, in varying degrees since World War II. Indeed, many sport events have been cancelled or postponed such as the 2020 Summer Olympics in Tokyo (rescheduled to 2021). This has had a major impact on not only the athletes and their fans, but also all those working in the sport industry. Since the distribution of COVID-19 and the evolution of the pandemic are different in each country, there were different decisions to cancel or postpone sport seasons,

competitions and sport events. In football, many countries decided to end their actual season, with the final table to be decided (for example) on a points-per-game basis. Others postponed the restart to between May and July 2020, to play behind closed doors where it left off in its season and while implementing strict rules like banning handshakes, spitting or talking at close proximity to each other as well as wearing masks for officials and staff members on the bench. The Bundesliga resumed on May 16th, 2020 becoming the first European league to restart following the coronavirus shutdown. In all other sports, seasons were often suspended and the staging of sporting events around the world has been affected from cancellation to rescheduling.

This forced pause of sport activity during the coronavirus pandemic can be considered a transition period like the off-season period with the difference that it lasted longer and was associated with confinement. Many sport authorities across the world worked on the stages of return to activity and the consequent prevention program which should be tailored to each situation. The return to normal activity will have to be progressive and programmed.

7.9. IMPACT (RISK ASSESSMENT) IN SPECIFIC SPORTS

The risks from the COVID-19 pandemic will vary from sport to sport. There are several different factors that need to be considered when looking at the impact of COVID-19 on sports ⁽¹⁵⁾ including:

- The sport itself - Low risk sports are those where social distancing is possible (e.g. shooting, archery, golf). The ability of support staff (coaches, officials and spectators) to maintain social distancing also needs to be considered. Contact sports should be considered higher risk (rugby, football, handball).
- Outdoor sports will be better ventilated than indoor sports although the distance required for social distancing (2 metres for those standing still) is greater in the slipstream of someone running (10 metres) or cycling (20 metres). The presence of wind will also increase the distance required for social distancing. Social distancing may also be easier for outdoor events.
- Demographics and any medical conditions of athletes, coaches, support staff and spectators. Those with co-morbidities or of older age are most likely to develop severe COVID-19.
- Venue facilities. These must be able to comply with WHO and any MOPH recommendations for sports and facilities during the COVID-19 pandemic, for example having processes in place to identify, assess and isolate symptomatic cases found at the venue until transfer, as per MOPH protocols.
- Event size - the size of the event will affect the risk. Physical distancing of spectators and support staff must be possible if they are to be present during the event.
- The local rate of spread of COVID-19. Resumption of full sporting activities will not be possible until the local spread of COVID-19 is under control

Sports should follow the MOPH recommendations on resumption of sporting activities based on the overarching plan for gradual lifting of activities and local regulations on measures for the prevention of the spread of COVID-19 such as social distancing or the wearing of masks should also be followed.

REFERENCES

1. <https://www.who.int/news-room/detail/27-04-2020-who-timeline---covid-19>
2. <https://covid19.MOPH.gov.qa/EN/FAQ/Pages/default.aspx>
3. https://www.who.int/health-topics/coronavirus#tab=tab_3
4. <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>
5. <https://www.who.int/news-room/commentaries/detail/modes-of-transmission-of-virus-causing-covid-19-implications-for-ipc-precaution-recommendations>

6. World Health Organization. *Infection prevention and control of epidemic- and pandemic-prone acute respiratory infections in health care*. Geneva: World Health Organization; 2014
7. World Health Organization. *Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19) 16-24 February 2020 [Internet]*. Geneva: World Health Organization; 2020
8. Ong SW, Tan YK, Chia PY, Lee TH, Ng OT, Wong MS, et al. Air, surface environmental, and personal protective equipment contamination by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from a symptomatic patient. *JAMA*. 2020 Mar 4
9. Patel, R. et al. (2020), "Report from the American Society for Microbiology COVID-19 International Summit, 23 March 2020: Value of Diagnostic Testing for SARS-CoV-2/COVID-19", *mBio*, Vol. 11/2
10. Zhang H, Penninger JM, Li Y, Zhong N, Slutsky AS (April 2020). "Angiotensin-converting enzyme 2 (ACE2) as a SARS-CoV-2 receptor: molecular mechanisms and potential therapeutic target". *Intensive Care Medicine*. **46** (4): 586–590
11. Letko M, Marzi A, Munster V (April 2020). "Functional assessment of cell entry and receptor usage for SARS-CoV-2 and other lineage B betacoronaviruses". *Nature Microbiology*. **5** (4): 562–569.
12. Klok FA, Kruip MJ, van der Meer NJ, Arbous MS, Gommers DA, Kant KM, et al. (April 2020). "Incidence of thrombotic complications in critically ill ICU patients with COVID-19". *Thrombosis Research*.
13. Hadaya, J., M. Schumm and E. Livingston (2020), "Testing Individuals for Coronavirus Disease 2019 (COVID-19).", *JAMA*, 2020.5388
14. Watson J, Whiting PF, Brush JE. Interpreting a covid-19 test result. *BMJ*. 2020;369:m1808. Published 2020 May 12. doi:10.1136/bmj.m1808
15. World Health Organisation. *Considerations for sports federations/ sports event organisers when planning mass gatherings in the context of COVID-19, interim guidance 14 April 2020*
16. Sethuraman N., Jeremiah S.S., Akihide Ryo A., *Interpreting Diagnostic Tests for SARS-CoV-2 JAMA*. Published online May 6, 2020. doi:10.1001/jama.2020.8259

8. ATHLETE HEALTH EVALUATION

Athletes who are returning to the training environment from isolation due to suspected or confirmed cases of COVID-19 or other COVID-19 related reasons must do so under the direction of a team physician/medical director, familiar with the emerging evidence related to post- COVID-19 pathology and following the most up to date return to training steps. This should include a thorough athlete health evaluation before re-engaging with the training environment.

8.1 RESPONSIBILITY OF TEAM PHYSICIAN

- Assess the health of athletes before the return to play
- Monitor the health of athletes since the return to play
- Assist club/federation administrators to take necessary precautions to guarantee safety of all individuals during training and competition
- Help to minimize the risk of contagion
- Implement surveillance to do early detection of potential cases
- Inform local authorities to trace contacts
- Actively contribute to educate all stakeholders on COVID-19 infection and preventive measures

8.2 SCHEDULING A MEDICAL ASSESSMENT BEFORE RETURNING TO TRAINING

All registered athletes should have a medical assessment by their Club/Federation doctor prior to returning to training.

This medical assessment should include:

- Focused medical history and examination to check for any symptoms or signs of COVID-19 (see Appendix 1 and 2).
- Checking for any close contact with any known or suspected COVID-19 cases.

Close contact is:

- Living in the same household
- Spending more than 2 hours in the same room
- Sitting within 2 rows on a flight, bus, or train for more than 2 hours
- Being face-to-face (less than 2 metres apart) for more than 15 minutes

All athletes with known COVID infection, even if asymptomatic or fully recovered, will require a post-COVID-19 specific health evaluation including a cardiology assessment prior to the resumption of vigorous exercise as per guidelines (see below 8.4.2.). Those with involvement of other systems may also require a review by the relevant specialist(s) before returning to sport.

This evaluation is different from the standard pre-season Annual Health Evaluation that will be carried out prior to the start of the 2020-2021 season or when appropriate.

Athletes with suspected COVID-19 infection (symptomatic or close contact of a known or suspected case) should not return to training and immediately contact the MOPH helpline by phoning 16000 and follow their instructions. If testing for COVID-19 is positive, once recovered the athlete should be referred for a health evaluation including a cardiology assessment.

Athletes without COVID-19 infection (asymptomatic athletes with a normal medical assessment) may gradually return to training under the supervision of team medical / fitness staff taking into consideration the current level of fitness and the need to acclimatise to heat and humidity UNLESS there is a current requirement by MOPH in Qatar to first undergo COVID-19 testing (check current MOPH recommendations – this may vary over time and be different for elite athletes or for different sports).

Medical staff should assist with the development of effective and ongoing education of all Club and Federation stakeholders (athletes, management and any support staff etc) about COVID-19 infection. Detailed planning of measures that will be undertaken to prevent the spread of infection is essential prior to and during the return to training. The need for a graduated return to training to consider athlete deconditioning and heat acclimatisation must also be communicated.

8.3 TESTING FOR COVID-19

See Section (General information about COVID-19) 7.6. for testing details.

8.4 PRE-PARTICIPATION HEALTH EVALUATION OF PREVIOUSLY COVID-19 POSITIVE ATHLETE AND CARDIAC ASSESSMENT OF ATHLETE DURING COVID-19 PANDEMIC

8.4.1 Pre-participation Health Evaluation (PHE) of athletes during COVID-19 pandemic

COVID-19 is a multi-organ disease causing a range of pathologies including cardiac injury, respiratory compromise, thromboembolic events, renal pathology, neurological and hepatic dysfunction. The possibility of multiple organ morbidity and potential subclinical or silent pathologies should be considered for COVID-19 positive athletes before they return to play. Therefore, despite the lack of appropriate evidence-based recommendations, expert opinions, medical societies and sports governing bodies recommend a health evaluation of those athletes who tested positive for COVID-19 before they resume competitive activities⁽¹⁻⁷⁾.

Assuming that sufficient and reliable testing is available, it may be reasonable for sporting organisations to try to identify players who are silent carriers through throat and nose swabs (nucleic acid tests for the presence of viral RNA) and to check for previous exposure to the virus through serological tests. This is particularly relevant for team sports where players would not be able to observe social distancing during training and games, especially if games resume before the SARS-CoV-2 virus pandemic has resolved⁽⁷⁾.

In line with other international expert recommendations⁽⁸⁾ we recommend, when possible, two consecutive negative PCRs and negative IgM before the athlete is considered recovered and can be referred for health evaluation to return to play. In absence of the two consecutive negative PCRs test and IgM it may be considered that asymptomatic athletes are recovered two weeks after the last positive PCR and in the absence of any indication of ongoing, active infection, in line with current evidence (9). Nevertheless, there may exist the risk of viral shedding among those athletes without confirmation of negative PCRs and Ig M or among the rest of the sports community (other athletes, coaches and staff) as well as health care workers who are involved in the screening of the athlete, especially when performing investigations associated with higher risk of transmission such as exercise test^(10,11).

The postCOVID19 pre-participation health evaluation should be a thorough assessment in search of potential involvement of major organs and may be subject to change as further data are obtained in concert with

improved COVID-19 case identification⁽¹²⁾. It should also reflect the functional needs of the specific competitive activity in accordance with their dynamic and static component according with the Mitchel classification (13)(i.e. an athlete competing in a low dynamic and low static sport such as shooting may not require a cardiopulmonary exercise test before return to play).

For athletes with symptoms, it is recommended to wait at least two weeks after the disappearance of symptoms before being referred for health evaluation before RTP. In agreement with current expert opinions^(1-3,7,12,14-16) these guidelines recommend the following pre-participation health evaluation for athletes after COVID-19 disease:

- a. History and physical examination
 - Vital signs: Temperature, heart rate, respiratory rate, blood pressure and Oxygen Saturation together with anthropometric parameters
 - Complete physical examination with specific evaluation of lungs, cardiovascular system (cardio-pulmonary auscultation), skin, musculoskeletal, and general neurologic examination including cranial nerves, taste, and smell senses, osteo-tendinous reflex, etc.
- b. Blood
 - Complete blood count (CBC)
 - Coagulation Panel
 - Inflammation biomarkers: Creatine-kinase; high sensitivity c-reactive protein (hs-CRP), ferritin.
 - Liver Panel
 - Kidney panel

c. Cardiovascular assessment

Detailed cardiovascular assessment tailored to the specific clinical profile of the athletes is described below in section D.2. In all cases a resting 12 leads ECG and Echocardiography will be included with additional investigations as required (appendix 4 for details).

d. Functional testing

Screening for respiratory disease post COVID-19 is not recommended for those who were not hospitalized AND whose symptoms settle in less than 14 days from onset.

Patients whose symptoms (extreme fatigue, post exercise cough, dyspnea) last 1 or more days or who required admission to hospital with a history of pneumonia (i.e. moderate disease) will require further investigations to exclude pulmonary disease (such as cardio-pulmonary exercise test -CPET).

It should be borne in mind that spirometry to screen for respiratory disease is not recommended in asymptomatic athletes due to the low sensitivity and risk of aerosolization from spirometry^(17,18).

e. Imaging

Athletes with history of SARS-COV-2 that have been hospitalised may require a chest X-ray, being recommend a chest-CT scan in those with moderate or severe disease. Previous history of thromboembolic disease (TED) may also require additional investigations such as angio-CT and/or venous Doppler.

f. Mental Health : Standard general psychological evaluation may be considered (see also section 10.7.).

During the COVID-19 pandemic, asymptomatic athletes without a history of COVID-19 and with all COVID-19 tests negative (PCRs, IG M and IgG), can gradually resume training if a medical assessment by their team doctor is normal⁽⁷⁾.

Appropriate management of the post-COVID19 pre-participation process should include collaborative discussion between sports physician, medical consultant, and team physician. Referral to specialists could be warranted and should be promptly booked.

8.4.2 Cardiac Assessment of athletes during COVID-19 pandemic

Evidence-based recommendations for cardiac assessment guidelines before return-to-play after COVID19 infection are currently limited. Aspetar recommendations are based on the consensus expert opinion clinical

framework of the American College of Cardiology's Sports & Exercise Cardiology Council⁽¹²⁾ adapted to the specific situation in Qatar.

Asymptomatic athletes with a negative COVID-19 test do not require any additional cardiac assessment to return to play, they should monitor their symptoms regularly and maintain appropriate hygiene and social distance.

Athletes who have ever had a positive test for COVID-19 should undergo cardiac assessment as part of their health evaluation before return to play. Current recommendations are based on the clinical presentation of the COVID-19 infection and the presence of comorbidities.

- Asymptomatic athletes without comorbidity: It is recommended that athletes with a positive PCR for COVID-19 refrain from training for two weeks. Cardiac assessment will be completed after two consecutive negative PCR and negative IgM tests when possible, otherwise after two weeks from the date of the last positive PCR ⁽⁹⁾ and in the absence of any indication of ongoing, active infection. The assessment will include:
 - History & Physical Examination (PE)
 - 12 leads ECG
 - TT Echocardiography (include GLS and 3D volumes and EF if available)

Outcomes:

- An asymptomatic athlete without significant changes from previous cardiac screening will resume sport activity progressively. It is advisable to train with a HR monitor and monitor for symptoms.
 - An asymptomatic athlete with new changes on PE, ECG or echocardiography will continue cardiac work up as advisable, it may include exercise test, 24hs Holter monitoring and Cardiac MRI (CMR).
- Asymptomatic athletes with one of the following comorbidities will be treated as a symptomatic athlete and will require additional cardiovascular investigations. These comorbidities include:
 - Diabetes Mellitus
 - Arterial Hypertension
 - Presence of Myocardial fibrosis (previous myocarditis)
 - Valve disease (at least moderate stage)
 - History of arrhythmias
 - Previous thromboembolic disease (TED)
 - Other relevant CV conditions

- Symptomatic athletes with mild symptoms that do not require hospitalization: Exercise is not recommended during the symptomatic period. In addition, an additional resting period of two weeks is recommended after the resolution of symptoms. It is recommended that cardiovascular assessment be completed after two consecutive negative PCR and negative IgM tests when possible or at least two weeks from the date of the last positive⁽⁹⁾ PCR and in the absence of any indication of ongoing, active infection.

- Cardiovascular assessment of mildly symptomatic athletes and for those asymptomatic with comorbidities will include:
 - History & Physical Examination
 - 12 leads ECG
 - Laboratory investigations: high sensitivity-RCP & high sensitivity troponin (hs-Tn)
 - TT Echocardiography (include GLS and 3D volumes+3D EF if available)
 - Exercise test (ramp protocol) limited by symptoms

Additional tests will be guided by symptoms or comorbidity.

Outcomes:

- No significant changes from previous cardiac screening and no abnormal findings in laboratory test and or exercise test: The athlete will resume sport activity progressively. It is advisable to train with a HR monitor and monitor for symptoms.
 - New changes from previous cardiac screening, elevated biological markers, or inducible arrhythmias on exercise test: CMR to be completed, additional investigations may be clinically indicated.
- Symptomatic athletes with moderate disease (pneumonia i.e. that require hospitalization but do not require ICU admission). Should rest from exercise during the symptomatic phase and for at least two weeks after the complete resolution of symptoms. It is recommended that cardiovascular assessment be completed after two consecutive negative PCR and negative IgM tests when possible or at least two weeks from the date of the last positive(9) PCR and in the absence of any indication of ongoing, active infection.

Cardiovascular assessment before RTP will be done only on cases without any evidence of cardiac involvement during the acute phase of the disease (hsTn >99th percentile and/or abnormal cardiac study during the hospitalization, no evidence of TED). Cardiovascular assessment will include:

- History & Physical Examination
- 12 leads ECG
- Laboratory investigations: hs-CRP & hs-Tn
- TT Echocardiography (include GLS, 3D volumes and 3D EF if available)
- 24 hours Holter monitoring
- Exercise test (ramp protocol) limited by symptoms

Outcomes:

- No significant changes from previous cardiac screening or new abnormal findings in complementary investigations: Athlete will resume training progressively using HR monitor and monitoring symptoms.
- New changes from previous cardiac screening, abnormal biomarkers, or new arrhythmias: CMR.

CMR will be always indicated in athletes without medical report from hospitalization when information about possible cardiac involvement during hospitalization is unknown.

Athletes with evidence of cardiac involvement during hospitalization and those who require ICU admission will be managed according to current recommendations for sports participation in athletes with myocarditis⁽¹⁹⁾. General consensus exists that athletes with myocarditis should be restricted from exercise programmes for a period of 3–6 months, according to the clinical severity and duration of the illness, LV function at onset, and extent of inflammation on the CMR. This period is considered appropriate to ensure clinical and biological resolution of the disease. A complete cardiac work up will be performed prior to return to play.

Individuals with myocardial involvement have an increased risk for recurrence and silent clinical progression of the disease, therefore, athletes with previous myocarditis should undergo a periodical re-assessment, particularly within the first two years.

8.5 HOW TO AVOID PROBLEMATIC CONSEQUENCES (PULMONARY EMBOLISM, DVT, EARLY FIBROSIS ETC.) AND FOLLOW UP OF ATHLETE AFTER COVID-19

Once athletes resume training, ongoing monitoring for symptoms and education about practices to prevent the of spread of infection will be required.

Even if athletes can resume training, team medical staff should:

- Continue to closely monitor athletes (and all management, support staff) for the development of symptoms
 - Remind all to comply with the MOPH/ CDC guidelines on hand hygiene and social distancing
 - Remind all to report early any symptoms or contact with known or suspected cases.

Club/Federation Doctors should continue to keep a record of all injuries and illnesses given the concerns about the possibility of an increased injury rate following return to sport after a period of deconditioning.

Due to the nature of COVID-19, the respiratory, cardiovascular, nervous, and musculoskeletal symptoms may be affected. Symptoms to pay attention to are those that might indicate:

- Cardiac involvement – myocarditis, arrhythmias
- Thrombosis – PE, TIA, stroke (CVA) or DVT
- Pulmonary involvement – pneumonia

8.6 LIMITATIONS OF THE PRE-PARTICIPATION HEALTH EVALUATION

- Clinical uncertainty about the prevalence and magnitude of postinfectious complications
- Quickly evolving scientific knowledge on the infection
- The lack of data on the long-term effects on the athlete's health and performance
- The need to rely on other key stake holders

REFERENCES

1. Hughes D. *In the frame, road map for Australian sport on an uncertain journey through COVID-19.* *J Sci Med Sport [Internet]. 2020 May 5; Available from: <http://www.sciencedirect.com/science/article/pii/S1440244020305260>*
2. Dores H, Cardim N. *Return to play after COVID-19: a sport cardiologist's view.* *Br J Sports Med [Internet]. 2020 May 7;bjsports-2020-102482. Available from: <http://bjsm.bmj.com/content/early/2020/05/07/bjsports-2020-102482.abstract>*
3. Nieß A, Bloch W, Friedmann-Bette B, Grim C, Halle M, Hirschmüller A, et al. *Position Stand: Return to Sport in the Current Coronavirus Pandemic (SARS-CoV-2/COVID-19).* *Dtsch Z Sportmed [Internet]. 2020 May 1;75(5):E1–4. Available from: <https://www.germanjournalsportsmedicine.com/archiv/archive-2020/issue-5/position-stand-return-to-sport-in-the-current-coronavirus-pandemic-sars-cov-2-covid-19/>*
4. Baggish AL, Drezner JA, Kim JH, Martinez MW, Prutkin JM. *The resurgence of sport in the wake of COVID-19: cardiac considerations in competitive athletes | BJSM blog - social media's leading SEM voice [Internet]. British Journal of Sports Medicine. [cited 2020 Apr 28]. Available from: <https://blogs.bmj.com/bjasm/2020/04/24/the-resurgence-of-sport-in-the-wake-of-covid-19-cardiac-considerations-in-competitive-athletes/>*
5. Schellhorn P, Klingel K, Burgstahler C. *Return to sports after COVID-19 infection: Do we have to worry about myocarditis? Eur Heart J [Internet]. 2020 May 20 [cited 2020 May 21];(ehaa448). Available from: <https://doi.org/10.1093/eurheartj/ehaa448>*
6. Lindsay S, Massey A, Cooper R, Carmody S, Somauroo J. *Cardiac considerations for return to play in professional footballers: The Somauroo Model | BJSM blog - social media's leading SEM voice [Internet]. BJSM blog - social media's leading SEM voice. 2020 [cited 2020 May 25]. Available from: <https://blogs.bmj.com/bjasm/2020/05/23/cardiac-considerations-for-return-to-play-in-professional-footballers-the-somauroo-model/>*

7. Bhatia RT, Marwaha S, Malhotra A, Iqbal Z, Hughes C, Börjesson M, et al. Exercise in the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) era: A Question and Answer session with the experts Endorsed by the section of Sports Cardiology & Exercise of the European Association of Preventive Cardiology (EAPC). *Eur J Prev Cardiol* [Internet]. 2020 Jun 1 [cited 2020 Jun 1];204748732093059. Available from: <http://journals.sagepub.com/doi/10.1177/2047487320930596>
8. Grupo de Trabajo sobre COVID-19. Real Federación Española de Fútbol. Recomendaciones para evitar los riesgos sobre la salud en la vuelta la competición en el fútbol [Internet]. www.rfef.es. 2020 [cited 2020 May 31]. Available from: https://cdn1.sefutbol.com/sites/default/files/pdf/recomendaciones_para_evitar_los_riegos_sobra_la_salud_en_la_vuelta_a_la_competicion_en_el_futbol.pdf
9. National Centre for Infectious Diseases S, Chapter of Infectious Disease A of M Singapore. Position Statement from the National Centre for Infectious Diseases and the Chapter of Infectious Disease Physicians, Academy of Medicine, Singapore [Internet]. 2020 [cited 2020 Jun 2]. Available from: [https://www.ams.edu.sg/view-pdf.aspx?file=media%5C5556_fi_331.pdf&ofile=Period+of+Infectivity+Position+Statement+\(final\)+23-5-20+\(logos\).pdf](https://www.ams.edu.sg/view-pdf.aspx?file=media%5C5556_fi_331.pdf&ofile=Period+of+Infectivity+Position+Statement+(final)+23-5-20+(logos).pdf)
10. Wood DA, Mahmud E, Thourani VH, Sathananthan J, Virani A, Poppas A, et al. Safe Reintroduction of Cardiovascular Services during the COVID-19 Pandemic: Guidance from North American Society Leadership. *Ann Thorac Surg* [Internet]. 2020 May [cited 2020 Jun 2];S0003497520306883. Available from: <https://linkinghub.elsevier.com/retrieve/pii/S0003497520306883>
11. Wood DA, Mahmud E, Thourani VH, Sathananthan J, Virani A, Poppas A, et al. Safe Reintroduction of Cardiovascular Services during the COVID-19 Pandemic: Guidance from North American Society Leadership. *J Am Coll Cardiol* [Internet]. 2020 May 4;20. Available from: <http://www.sciencedirect.com/science/article/pii/S0735109720351652>
12. Phelan D, Kim JH, Chung EH. A Game Plan for the Resumption of Sport and Exercise After Coronavirus Disease 2019 (COVID-19) Infection. *JAMA Cardiol* [Internet]. 2020 May 13 [cited 2020 May 14]; Available from: <https://doi.org/10.1001/jamacardio.2020.2136>
13. Mitchell JH, Haskell WL, Raven PB. Classification of sports. *J Am Coll Cardiol* [Internet]. 1994 Oct 1;24(4):864–6. Available from: <http://www.sciencedirect.com/science/article/pii/0735109794908419>
14. Sociedad Española de Medicina del Deporte, Consejo General de Colegios Oficiales de Médicos. Guía de reincorporación a la práctica deportiva en el deporte de competición [Internet]. www.femede.es. 2020 [cited 2020 May 30]. Available from: http://www.femede.es/documentos/Guia_reincorporacion_deporte-05.pdf
15. Commissione Medico Scientifica Federale. Indicazioni per la RIPRESA degli Allenamenti delle Squadre di Calcio Professionistiche e degli Arbitri [Internet]. www.figc.it. 2020 [cited 2020 May 30]. Available from: <https://www.figc.it/media/121365/protocollo-lega-rivisto-finale.pdf>
16. Federazione Medico Sportiva Italiana. Il Protocollo FMSI per la ripresa delle discipline sportive professionistiche [Internet]. www.fmsi.it. 2020 [cited 2020 Apr 23]. Available from: https://www.fmsi.it/images/pdf/archivio_news/CS_Raccomandazioni_FMSI_2020.04.04-2.pdf
17. Bignamini E, Cazzato S, Cutrera R, Ferrante G, La Grutta S, Licari A, et al. Italian pediatric respiratory society recommendations on pediatric pulmonary function testing during COVID-19 pandemic. *Ital J Pediatr* [Internet]. 2020 May 24;46(1):68. Available from: <https://doi.org/10.1186/s13052-020-00829-0>
18. Pulmonary Function Laboratories: Advice Regarding COVID-19 [Internet]. [cited 2020 Jun 2]. Available from: <https://www.thoracic.org/professionals/clinical-resources/disease-related-resources/pulmonary-function-laboratories.php>
19. Pelliccia A, Solberg EE, Papadakis M, Adami PE, Biffi A, Caselli S, et al. Recommendations for participation in competitive and leisure time sport in athletes with cardiomyopathies, myocarditis, and pericarditis: position statement of the Sport Cardiology Section of the European Association of Preventive Cardiology (EAPC). *Eur Heart J* [Internet]. 2018 Dec 14 [cited 2020 May 28];40(1):19–33. Available from: <https://doi.org/10.1093/eurheartj/ehy730>
20. Beas-Jimenez J de D, Fernández del Alba Sánchez M del C, Vaz Pardal M del C, Jiménez López L. Protocolo del Centro Andaluz de Medicina del Deporte, para el cribado de la infección por SARS-CoV-2 en deportistas. *Rev Andal Med Deporte*. 13(2):In press.
21. Asociación Española de Médicos de Baloncesto. Medidas de tratamiento y vuelta al entrenamiento [Internet]. [www.aemeb.com](http://aemeb.com). 2020 [cited 2020 May 30]. Available from: http://aemeb.com/wp-content/uploads/2020/05/Tratamiento-y-vuelta-entrenamiento_AEMB.pdf

APPENDIX 1

CLUB / FEDERATION DOCTOR INITIAL MEDICAL DAILY QUESTIONNAIRE

Name:		Date:
COVID-19 PERSONAL HISTORY		
Did you suffer from COVID-19: Confirmed ___ / Possible ___	Did you require medical management: Phone ___ / Health Centre ___ / Hospital ___ / ICU ___	Where did you receive medical attention? Name of the centre: _____
Who did provide you medical attention: Name of the Doctor: _____	Do you have a full medical discharge report: Yes ___ / NO ___	Discharge date: _____
Confirmed by diagnostic test: Yes ___ / NO ___	PCR: Yes ___ / No ___ Result: _____	Rapid (point-of-care, prick test) test: Yes ___ / No ___ Result: _____
Serologic Antibody test: Yes ___ / No ___ Result: _____		
What symptoms did you have? Fever: Yes ___ / No ___; Cough: Yes ___ / No ___; Dyspnoea: Yes ___ / No ___; Running nose: Yes ___ / No ___ Sore throat: Yes ___ / No ___; Headache: Yes ___ / No ___ Fatigue: Yes ___ / No ___; Dizziness: Yes ___ / No ___; Muscle Ache: Yes ___ / No ___ Anosmia: Yes ___ / No ___; Dysgeusia: Yes ___ / No ___; Eye itching: Yes ___ / No ___; Redness of eye: Yes ___ / No ___; Diarrhoea: Yes ___ / No ___; Vomiting: Yes ___ / No ___; Palpitations: Yes ___ / No ___; Mood swings: Yes ___ / No ___; Distal skin lesions: Yes ___ / No ___; Other: _____		
Received Treatment: _____		
Any further tests (PCR, Blood) after discharge ; Yes ___ / No ___	PCR: Yes ___ / No ___ Result: _____	Rapid (point-of-care, prick test) test: Yes ___ / No ___ Result: _____
Serologic Antibody test: Yes ___ / No ___ Result: _____	Did you do quarantine after discharge ? Yes ___ / No ___	Quarantine starting date: _____ Quarantine finishing date: _____
Personal History of Medical Conditions: _____		
Epidemiologic history		
Recent contact with:	Known COVID-19 case:	
	Suspected COVID-19 case:	
If recent contact; Did you quarantine? Yes ___ / No ___	Quarantine starting date: _____	Quarantine finishing date: _____
Vital signs:		
Temperature: ___ Degrees	BP: ___ / ___ mm Hg	HR: ___ bpm
Current Symptoms		
Fever: Yes ___ / No ___	Cough: Yes ___ / No ___	Dyspnoea: Yes ___ / No ___
Running nose: Yes ___ / No ___	Sore throat: Yes ___ / No ___	Headache: Yes ___ / No ___
Fatigue: Yes ___ / No ___	Dizziness: Yes ___ / No ___	Muscle Ache: Yes ___ / No ___
Anosmia: Yes ___ / No ___	Dysgeusia: Yes ___ / No ___	Eye itching: Yes ___ / No ___
Redness of eye: Yes ___ / No ___	Diarrhoea: Yes ___ / No ___	Vomiting: Yes ___ / No ___
Palpitations: Yes ___ / No ___	Mood swings: Yes ___ / No ___	Distal skin lesions: Yes ___ / No ___
Other: _____		
Remarks:		

Adapted from Beas-Jimenez JdD, et al. 2020. Protocolo del Centro Andaluz de Medicina del Deporte, para el cribado de la infección por SARS-CoV-2 en deportistas⁽²⁰⁾.

APPENDIX 2

CLUB / FEDERATION DOCTOR DAYLY MEDICAL DAILY QUESTIONNAIRE

Name:		Date:
Epidemiologic history		
Recent contact with:	Known COVID-19 case:	
	Suspected COVID-19 case:	
If recent contact; Did you quarantine? Yes ___/No ___	Quarantine starting date: _____	Quarantine finishing date: _____
Vital signs:		
Temperature: ___ Degrees	BP: ___/___ mm Hg	HR: ___ bpm
Current Symptoms		
Fever: Yes ___/ No ___	Cough: Yes ___/ No ___	Dyspnoea: Yes ___/ No ___
Running nose: Yes ___/ No ___	Sore throat: Yes ___/ No ___	Headache: Yes ___/ No ___
Fatigue: Yes ___/ No ___	Dizziness: Yes ___/ No ___	Muscle Ache: Yes ___/ No ___
Anosmia: Yes ___/ No ___	Dysgeusia: Yes ___/ No ___	Eye itching: Yes ___/ No ___
Redness of eye: Yes ___/ No ___	Diarrhoea: Yes ___/ No ___	Vomiting: Yes ___/ No ___
Palpitations: Yes ___/ No ___	Mood swings: Yes ___/No ___	Distal skin lesions: Yes ___/ No ___
Other: _____		
Remarks:		

APPENDIX 3 RETURN TO PLAY MEDICAL MANAGEMENT RECOMMENDATION (AFTER TESTS AND MEDICAL EVALUATION)

RT-PCR	IgM	IgG	Clinical Significance	Assessment		Management Plan	
INFECTION FREE							
-	-	-	NEGATIVE	Caution: Potential window phase Repeat PCR	Free RTP	Monitor for symptoms	Eligible
ONGOING INFECTION							
+	-	-	Window phase (Infective individual)	COVID-19 Infection. Very early asymptomatic phase	Shall not train	14 days Quarantine as per MOPH regulations	Not eligible
+	+	-	Early phase (Infective individual)	Acute-early phase of COVID-19 infection. Potential beginning of respiratory symptoms	Shall not train	MOPH treatment Club doctor stays in touch	Not eligible
-	+	-	Early phase with False negative PCR (Infective individual)	Early phase of COVID-19 infection. Potential beginning of respiratory symptoms Repeat PCR	Shall not train	MOPH treatment Club doctor stays in touch	Not eligible
+	+	+	Active infection (Infective Individual)	Ongoing COVID-19 Infection and symptomatic disease	Shall not train	MOPH treatment Club doctor stays in touch	Not eligible
+	-	+	Late phase or recovery phase or relapse (Infective individual)	Final COVID-19 infection phase	Shall not train	14 days Quarantine from test day as per MOPH regulations Club doctor stays in touch	Not eligible
-	+	+	Recovery phase w/out potential False negative PCR (Still potential infective individual)	Disease in progress Repeat PCR	Shall not train	14 days Quarantine Club doctor stays in touch	Not eligible
PAST INFECTION							
-	-	+	Past infection (Not infective individual)	Cured	RTP after medical evaluation	Refer to Athlete's Screening -ASCR-(Aspetar)	Not eligible until ASCR is completed

Table: Adapted from recommendations of the Spanish Association of Basketball Physicians, Spanish Football Federation and Italian Football Federation^(8,15,21).

APPENDIX 4

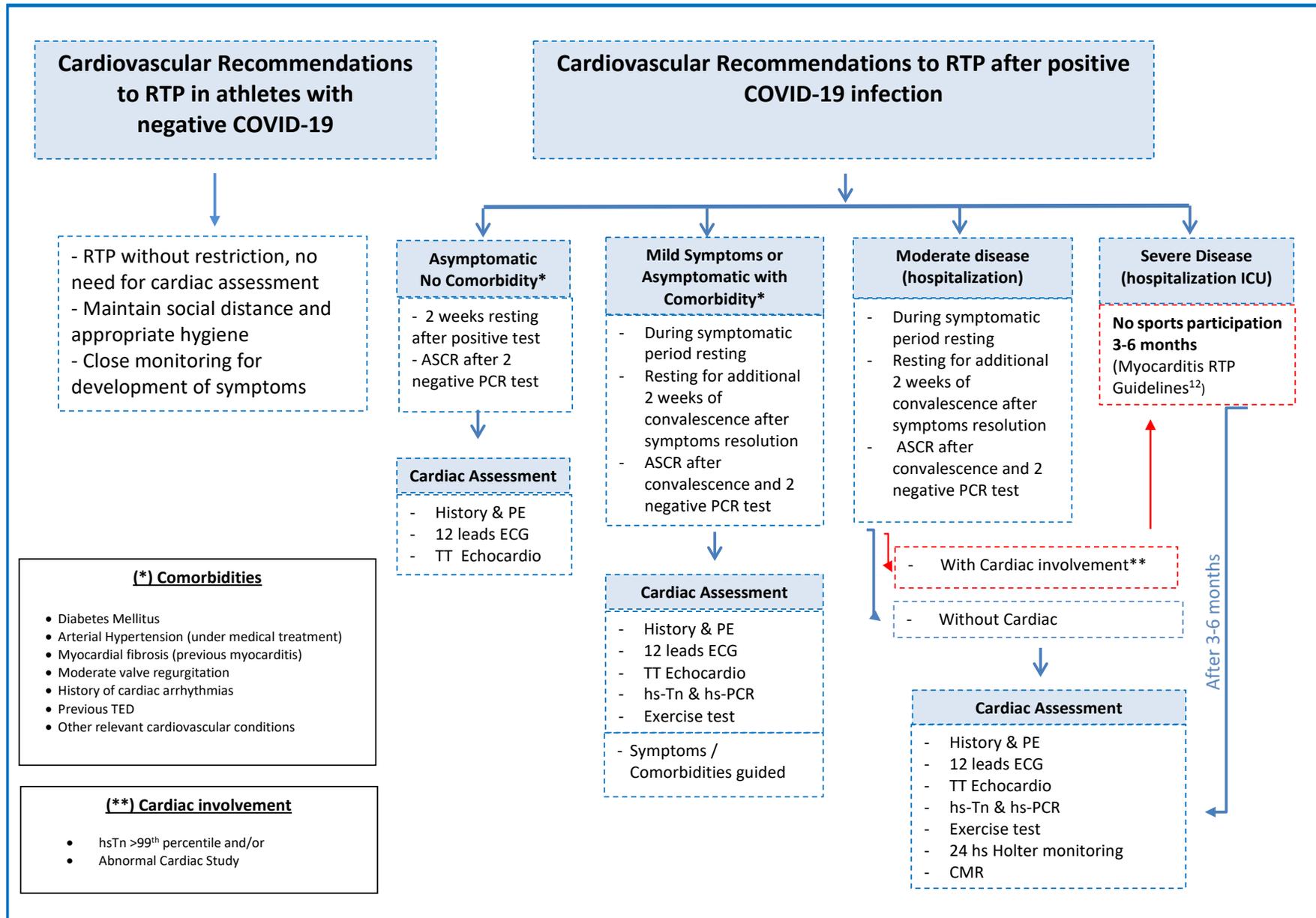


Figure: Cardiovascular Recommendations to RTP during COVID-19 pandemic. (Abbreviations: RTP return to play, TED thromboembolic disease, hs-TN high sensitivity troponin, hs-RCP high sensitivity reactive C protein, ASCR athlete screening, PCRs polymerase chain reaction, PE physical examination, ECG electrocardiogram, TT transthoracic, CMR cardiac magnetic resonance).

9. RISK LIMITATION/MITIGATION DURING TRAINING AND COMPETITION

9.1. INTRODUCTION

The resumption of sport during COVID-19 is a complex process. Sports authorities, medical and technical staff and athletes should follow a careful stepwise process to ensure the safety of athletes and other personnel and the wider community ⁽¹⁾. The following principles need to be considered to limit risk of COVID-19 infection or complications:

- Risk assessment and return to sport arrangements must be compliant with the latest MOPH regulations and guidelines as these may change over time with the status of the pandemic.
- Resumption of formal training should not occur until appropriate measures, specific to the sport and the training environment, have been implemented ^(1,2) and have been clearly communicated to athletes and all staff involved at the venue.

9.2. RESUMPTION OF SPORT

Qatar MOPH has produced a plan for gradual lifting of COVID-19 restrictions in Qatar with a four-phase plan for return to sport ⁽³⁾.

Phase 1: Only outdoor activities allowed. Professional sport. From 1:1 to 1:5 (coach : player) for team sports, during training to allow safe social distancing.

Phase 2: Only outdoor activities allowed. Professional sport, less than 10 people may participate.

Phase 3: Team training up to 40 people allowed. Professional or amateur sport. Team competitions are allowed but no spectators.

Phase 4: Local and international sports competitions with spectators allowed. Age group sport (children and teens) allowed.

The Australian Institute of Sport (AIS) has recommended a stepwise process for the resumption of sport consisting of three levels (Levels A, B, C) of activities and associated hygiene measures ⁽¹⁾ with sport-specific examples for elite and recreational athletes. The timing of progression between these levels may be affected by any evidence of COVID-19 transmission.

Level A: Activities by one or two athletes while maintaining social distancing.

Level B: Indoor or outdoor activities for up to 10 athletes with adequate spacing.

Level C: Full sports activity including full contact allowed. Consider training in smaller groups for larger team sports.

These three AIS levels do not exactly match the four MOPH phases. In this document, AIS guidelines were adapted and modified according to MOPH Guidelines for practical reasons.

Four general principles should be considered when planning return to training and sport:

- The approach to training should be “get in, train, get out” to minimize unnecessary contact in changing rooms, bathrooms, and communal areas ⁽¹⁾.
- Prior to resumption of training, sporting organizations should have agreed on and implemented protocols for the management of illness when it occurs in athletes and other personnel.

- Special considerations should be made for COVID-19 vulnerable persons such as para-athletes, people with high-risk medical conditions and older adults ⁽¹⁾.
- Clubs and individuals should apply a graded return to training plan to mitigate injury risk, understanding that a sudden increase in training load may predispose to injury.

Education

Education of athletes and other personnel about COVID-19 risk mitigation strategies is crucial when resuming sport. Structured educational strategies should be implemented to improve knowledge about COVID-19^(1,2,4,5,6).

Education measures include:

- All medical staff should know the COVID-19 prevention measures, and the latest MOPH guidelines.
- Education material should be freely available to athletes and other personnel to promote required behaviors to prevent the spread of COVID-19.
- Sporting bodies (clubs, federations) should ensure that athletes and all other personnel follow current MOPH guidelines to reduce the risk of COVID-19 spread, such as downloading any relevant tracking apps (e.g. ETHERAZ).

Assessment of training environment

The training environment includes training areas and equipment (gym, equipment, weights), medical and physiotherapy areas, and the training venue (accommodation, transport, catering, and communal areas)^(5,6). These assessments will be sport and venue specific and will depend on MOPH regulations in place at the time. Things to be considered are:

- **Limiting Attendance:** Only essential staff, officials and athletes allowed in the venue.
- **Meetings:** Coaches should avoid face to face meetings where possible and instead use phone, social media, or online video conferencing.
- **Social Distancing:** All athletes, coaches, staff, managers, officials, and spectators (when allowed) should practice social distancing of 1.5 m wherever possible, especially in communal areas in line with MOPH Guidelines. Greater distances may be required when engaging in sports activity (depending upon factors such as the type of sporting activity or wind conditions).
- **Spread Out Scheduling of Practice and Games:** There should be enough time between practices and games to allow one group to vacate the premises before the next group enters.
- **Cleaning:** Enhanced cleaning protocols for shared sporting equipment like gymnastics apparatus, balls, training equipment (e.g. skipping ropes, weights, mats), shared facilities (bathrooms, changing rooms, recovery areas, swimming pools), medical and physical therapy beds and equipment. Cleaning protocols should also be put in place to limit coronavirus transmission in public places. It is advised that touch points (e.g. handrails and gates) are included in the enhanced cleaning protocols
- **Check Temperature:** Athletes and spectators should take their own temperature before leaving the house and they should stay at home with any temperature above 37.5 according to WHO guidelines for contagious diseases. The sports clubs and federations should assign a staff member to use a non-contact forehead thermometer to take the temperature of all athletes and staff before they enter the field/facility. Any reading of 37.5 or higher should result in a denial of entry.

Non-contact forehead thermometers are now commonly available in Aspetar, sports clubs and federations.

- **Hygiene/Hand Washing/Touching Face/Laundering:** Athletes and coaches should practice proper hygiene, washing hands frequently with soap and water for at least 20 seconds or using an alcohol-based hand sanitizer (with at least 60% alcohol), abstain from touching their face (mouth, eyes, or nose), and cover their cough or sneeze ^(3,5) with a tissue and discard it immediately in closed trash.
- **Healthy Practices:** All athletes and coaches should practice healthy habits including adequate hydration to keep mucous membranes moist, consume a varied, vitamin-rich diet with enough vegetables and fruits, and get adequate sleep.
- **Handshakes/Celebrations:** While social distancing practices are in place, athletes and coaches should refrain from any physical contact such as handshakes, high fives, fist/elbow bumps, chest bumps, group celebrations, etc.
- **Equipment**
 - Athlete’s personal equipment should be spaced to uphold social distancing guidelines.
 - Practice caution with the equipment. Sanitize all handheld implements prior to and after use e.g. shots, javelins, discus etc.
 - Although there is no specific evidence that equipment can spread COVID-19, we know that contamination with respiratory droplets from an infected person can potentially survive on hard surfaces for up to three days ⁽²⁾.
 - The use of shared team equipment should be limited whenever possible and should be sanitized after and before each use.
 - Avoid sharing of drink bottles or towels.
- **Rest Rooms:** The numbers of people allowed into rest rooms should be restricted to maintain social distancing recommendations.
- **Personal Protective Equipment (PPE):** All coaches, staff, independent contractors and athletes should wear PPE such as facemasks and gloves if indicated by current MOPH guidelines.
- **Water dispensers and bottles:** Water dispensers should be closed with tape and signage stating that they are not to be used until further notice. Water and sports drinks should be provided by sports facilities. Athletes and coaches should bring their own water bottles during all team activities to help to reduce transmission risk. Water bottles should be cleaned and sanitized everyday.
- **Education material:** Conspicuous signage at sports facilities warning of the risks of coronavirus and steps to be taken to reduce such risks (available on the Aspetar webpage).
- **“Get in, train and get out”** strategies to limit time and person-to-person contact on site should be implemented:
 - Arrive dressed and ready to train.
 - Minimize use of changing rooms, bathrooms, and communal areas.
 - Where possible, athletes should shower at home/hotel instead of at training venues.
 - Athletes and other personnel should eat off site.
 - Between training efforts, keep at least 1.5m apart (e.g. in the gym, pool, between sets or efforts), according to current MOPH guidelines.
 - Any tasks that can be done at home/hotel, should be done at home/hotel (e.g. recovery sessions, online meetings).
- **End of training**
 - Once training has finished athletes should leave the club promptly.
 - Everyone leaving the premises should wash their hands as soon as possible.

- Ensure equipment is cleaned thoroughly after use.
- If an athlete becomes unwell after training, he should first contact his doctor and then inform his club. The club will then follow advice provided to them by the MOPH.
- Team members should remind other members of the guidelines, in a gentle way, when they witness poor practices.

9.3. GENERAL CONSIDERATIONS

<p>Phase 1: Professional Trainings (1:1 – 1:5)</p> <p>Solo training or in pairs with 2m distance and Non-Contact</p> <p>Outdoors only</p>	<p>Phase 2: Professional trainings in small groups (<10 people), 1 athlete per 4m²</p> <p>Sharing of equipment (passing football, hitting tennis ball)</p> <p>Non-Contact</p> <p>If possible outdoor only</p>	<p>Phase 3: Team trainings (<40 people), team competitions (no spectators), mostly friendly matches</p>	<p>Phase 4: Local and international competitions / matches (with spectators)</p> <p>Note: Consider age group regulations separately in accordance with local health authority regulations</p>
<p>When MOPH limits restrictions for public</p> <ol style="list-style-type: none"> Individual training sessions are allowed using your own equipment. Coaching occurs by distance. No coaches or other athletes present during training. Rigorous, frequent cleaning protocol of living space and athletic equipment with disinfectant wearing appropriate personal protective equipment (PPE) (gloves, face mask, etc.) to prevent contact with contaminated surfaces (particularly when living with people with greater community exposure) and protect against toxicities associated with cleaning products. 	<p>When public health authority eases the restrictions but continue to prohibit group activities</p> <ol style="list-style-type: none"> Small groups training. Coaching occurs physically. Coaches or other athletes present during training but avoid crowded area. Rigorous, frequent cleaning protocol of living space and athletic equipment with disinfectant wearing appropriate personal protective equipment (PPE) (i.e., gloves, face mask, etc.) to prevent contact with contaminated surfaces and protect against toxicities associated with cleaning products. If a ball 	<p>When public health authority allows bigger group activities (< 40 people), but public training facilities remain closed.</p> <ol style="list-style-type: none"> Criteria for participation in group training sessions (includes athletes, coaches and staff). Group training criteria should include: no signs or symptoms of COVID-19 in the past 14 days; live in a training location for 14 days prior to starting group training; and no close contact with anyone who is sick within the previous 14 days. Additionally, two negative COVID-19 tests separated by 24 hours or serology tests demonstrating prior infection, but no current infection could be alternatives to return to group training. In this phase, participants should use their own equipment and avoid 	<p>This is when health authority allows public training facilities to open with no limitations on the activities with direct contact (such as wrestling) or indirect contact (such as athletics and basketball) can resume without limitations.</p> <p>Personal protective equipment (PPE), such as masks and gloves, are recommended in each of the first four phases.</p>

<p>d. Only leave your home for essential work or training and follow infection prevention measures when in public until further notice from health authority.</p>	<p>is being used, make sure only one player is using a specific region of the field/court and/or basket at a time. The court in that area needs to be cleaned before another player uses the ball in that space to prevent indirect transmission from the ball/equipment. Follow infection prevention measures when in public.</p>	<p>touching each other with their hands.</p>	
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9.4. SPORT SPECIFIC CONSIDERATIONS AND RECOMMENDATIONS

Adapted from Australian Institute of Sport (FRAMEWORK FOR REBOOTING SPORT IN A COVID-19 ENVIRONMENT) and modified according to MOPH Guidelines.

9.4.1. Team sports

Sports	<p>Phase 1: Professional trainings (1:1 – 1:5)</p> <p>Solo training or in pairs with 2m distance and non-contact</p> <p>Outdoor only</p>	<p>Phase2: Professional trainings in small groups (<10 people), 1 athlete per 4m²,</p> <p>Sharing of equipment (passing ball etc.)</p> <p>Non-Contact</p> <p>Outdoor Only</p>	<p>Phase 3: Team trainings (<40 people), Team competitions – friendly matches (no spectators)</p>	<p>Phase 4: Local and international competitions (with spectators)</p> <p>Note: Age group sports (children and teens) not allowed to resume sport until this Phase.</p>
Football	<p>Running / aerobic / agility training (solo), resistance training (solo), technical training (solo). Outdoors only.</p>	<p>Non-contact skills training passing, shooting, headers - small groups not more than 10 athletes / staff in total.</p> <p>Outdoor only.</p>	<p>Full training and friendly matches.</p>	<p>Full RTP / RTS and matches.</p>

Handball	Running / aerobic / agility training (solo), resistance training (solo), skills training (solo). Outdoor only.	Skill drills passing shooting defending - no contact drills - small groups no more than 10 athletes/staff in total.	Full training and friendly matches.	Full RTP / RTS and matches.
Basketball	Running / aerobic / agility training (solo), resistance training (solo), skills training (solo). No ball handling drills with others. Outdoor.	Noncontact skills using basketball, passing, shooting, defending, screens and team structure (offense and defense)- small groups not more than 10 athletes/staff in total.	Full training and friendly matches.	Full RTP / RTS and matches.
Volleyball	Running / aerobic / agility training (solo), resistance training (solo), skills training (solo). No ball handling drills with others. If possible outdoor.	Small group (not more than 10 athletes / staff in total) - skill sessions only. No matches.	Full training and friendly matches.	Full RTP / RTS and matches.
Rugby	Running / aerobic / agility training (solo), resistance training (solo), skills training (solo) Including kicking, Passing, ball skills (against wall) to self. Outdoors only	Skill drills using a ball, kicking and passing. No tackling. Small group (not more than 10 athletes/staff in total) sessions.	Full training and friendly matches.	Full RTP / RTS and matches.

9.4.2. Contact/non-contact sports

9.4.2.1. Contact Sports

The exposure of athletes to contact with teammates and opponents during training and competition, is significant and the risk of the COVID-19 transmission is relatively high (e.g. judo, boxing). Respecting the prevention measures to avoid COVID-19 transmission is highly recommended (Adapted from Australian Institute of Sport (FRAMEWORK FOR REBOOTING SPORT IN A COVID-19 ENVIRONMENT) and modified according to MOPH Guidelines).

	Phase 1: Professional trainings (1:1 – 1:5) Mostly outdoors (if possible). Solo training or in pairs with 2m distance and non-Contact	Phase 2: Professional trainings in small groups (<10 people), 1 athlete per 4m ² , Non-Contact	Phase 3: Team trainings (<40 people), Team competitions (no spectators)	Phase 4: Local and international competitions (with spectators) Note: Age group sports (children and teens) not allowed to resume sport until this Phase.
Boxing	Running / aerobic / agility training (solo), resistance training (solo), technical training (solo). Mostly outdoor. Bag work if access to own equipment, without anyone else present.	Shadow sparring allowed. Non-contact technical work with coach, including using bag, speedball, pads, paddles, shields. No contact or sparring.	Full training.	Full RTP / RTS and matches.
Judo	Running / aerobic / agility training (solo), resistance training (solo). Mostly outdoor. Technical training (solo) — e.g. mirror work.	No contact/bouts. Non-contact shadow training. Non-contact technical work with coach.	Full training.	Full RTP / RTS and competitions.
Karate	Running / aerobic /a gility training (solo), resistance training (solo). Mostly outdoor. Technical training (solo) — e.g. mirror work.	No contact/bouts. Shadow sparring. Non-contact technical work with coach, including using pads, paddles.	Full training.	Full RTP / RTS and competitions.

Taekwondo	Running / aerobic / agility training (solo), resistance training (solo). Mostly outdoor. Technical training (solo).	Non-contact technical work with coach, including using pads, paddles, shields. No physical contact or grappling. No kicking of chest guards.	Full training.	Full RTP / RTS and competitions.
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9.4.2.2. Non-Contact Sports

Athletes are less exposed to contact with teammates and opponents during training and competition. In some non-contact sports, the contact between athletes remain possible especially during competition (e.g. gymnastics, rowing). Respecting the prevention measures of COVID-19 transmission remain recommended in non-contact sports (Adapted from Australian Institute of Sport (FRAMEWORK FOR REBOOTING SPORT IN A COVID-19 ENVIRONMENT) and modified according to MOPH Guidelines).

	Phase 1: Professional trainings (1:1 – 1:5) Outdoors only Solo training or in pairs with 2m distance and Non-Contact	Phase 2: Professional trainings in small groups (<10 people), 1 athlete per 4m ² , Sharing of equipment (passing football, hitting tennis ball), Non-Contact Outdoor only	Phase 3: Team trainings (<40 people), Team competitions (no spectators), friendly matches.	Phase 4: Local and international competitions (with spectators) Note: Age group sports (children and teens) not allowed to resume sport until this Phase.
Archery	Outdoor range and solo only.	Full training indoor or outdoor range, with limited numbers / appropriate distancing between athletes.	Full training.	Full RTP / RTS and competitions.
Athletics	Outdoor training sessions on own, with coach, or with 1 training partner (no sharing of equipment e.g. javelin, discus, high-jump mats, pole vault, shot put, hammer, starting blocks).	Full training. Avoid running in slipstream of others.	Full training.	Full RTP / RTS and competitions. Competition - Multi event rooms remain a risk and time spent here should be minimized with adequate space / separation. Similarly, call rooms pre-event will need to be restructured.

Cycling	Solo outdoor cycling or trainer, resistance training (solo).	Avoid cycling in slipstream of others — maintain 10m from cyclist in front. Avoid packs of greater than two (including motorcycle derby).	Full training.	Full RTP / RTS and competitions
Equestrian	Solo / pairs training only.	Full training and competition.		
Fencing	Running / aerobic / agility training (solo), resistance training (solo), skills training (solo). No bouts with others. Mostly outdoor. Solo footwork practice (steps, lunges, fleshes). Point-work: using cushion/board to practice fine motor skills of point work with sword.	Full training and competition. Ensure no shared masks. No shaking hands post bout.	Full training.	Full RTP / RTS and competitions.
Golf	Solo or pairs only (if permitted by Government). Maintain at least 1.5m between athletes.	Full training. Maintain at least 1.5m between athletes.		Full RTP / RTS and competitions
Gymnastics	Resistance training, skills training solo and outside of gym only. Rhythmic — skills at home. Trampoline — off apparatus skills, drills at home only.	Small groups only — 1 gymnast per apparatus (including rhythmic and trampoline). Disinfecting high touch surfaces as per the manufacturer's guidelines.	Full training.	Full RTP / RTS and competitions.
Rowing	Ergometer if access to own at home. Cycling (solo), running (solo), resistance training (solo). On-water single.	Group resistance training sessions and outdoor group ergometer training placed >1.5m apart (not more than 10 athletes/staff in total). Groups of single sculls.	Full training.	Full RTP / RTS and competitions.
Sailing	Solo or double handlers (if allowed by Government regulations) only.	Full training.		Full RTP / RTS and competitions.
Shooting	Aerobic / resistance training (solo). Outdoor only. Technical skills (solo) — e.g. standing/holding and dry firing. Mental skills	Continuation of athlete-led preparation at home. Coach-led training including live fire in small groups at authorized venues (i.e. clubs/ranges).	Full training.	Full RTP / RTS and competitions.

	training — e.g. concentration/reaction time, visualization, arousal control). Live fire on home ranges only (no club range access).			
Squash	Running / aerobic / agility training (solo), resistance training (solo). Outdoor only. Skills training (solo) e.g. serving only, hitting with ball machine.	Full training on court singles.	Full training.	Full RTP / RTS and competitions.
Swimming	In-water training (solo) in own pool or open-water.	Use of pool with limited numbers, 1 athlete per lane.	Full training.	Full RTP / RTS and competitions.
Diving	On-land training only (solo).	Full training, with 1 athlete per board/platform (or 2 if synchro training).	Full training.	Full RTP / RTS and competitions
Table Tennis Tennis Badminton Paddle Tennis	Running / aerobic / agility training (solo), resistance training (solo), Mostly outdoor. Skills training (solo) at home or outdoor (no indoor sporting facility access allowed).	Full training on court, singles or doubles. Maintain 2 m distance.	Full training.	Full RTP / RTS and competitions
Triathlon	Solo or in pairs only. Consider remote programming. In pool water training if access to own pool (consider using swim tether) or open-water only. Consider use of wind trainer and treadmill for those in quarantine (who are medically well).	Avoid cycling in slipstream of others — maintain 10m from cyclist in front Avoid packs of greater than two. Avoid packs of greater than 2 running. Maintain social distancing while running. Use of pool with limited numbers, 1 athlete per lane, consider one lane between athletes.	Full training.	Full RTP / RTS and competitions.
Weightlifting	Resistance training, technical work at home (no indoor	Full training with limited numbers to avoid congestion.	Full training.	Full RTP / RTS and competitions.

	sporting facility/gym access allowed).			
Para-sport ⁽⁷⁾	<p>Para-athletes require individualized consideration and assessment through all phases of a return to sport. Some para-athletes will have medical conditions that will require detailed planning and consultation with their regular treating medical team prior to a return to formal training/competition, or progression through phases 1,2,3 and 4. Specific para-athlete equipment (e.g. wheelchairs, prostheses) will require regular cleaning (for all levels).</p> <p>For more sport specific guidelines for phases 1,2,3 and 4, refer to the relevant sport heading in this document. For more information, refer to the 'AIS Framework for Rebooting Sport in a COVID-19 Environment' document.</p>			Full RTP / RTS and competitions.

9.4.3. Outdoor individual non-contact sports

9.3.3. Athletics and others ^(8,9,10)

- Training groups should be controlled and managed to ensure social distancing is always maintained.
- Athletes should enter the area of training one by one and as directed.
- Facility entrances/gates should remain open, perhaps tied back to prevent repeated use of handles.
- Rubbish bins should be removed, and all items should be taken home afterwards.
- No spectators present during this phase of reopening or limited to officials and family.

9.4.3.1. Running/Jumping/Throwing

- Physical distancing should be observed throughout the period of training.

9.4.3.2. For endurance sessions ⁽¹¹⁾

- Athletes running single lane unless there is an empty space where they can leave 2m between them (side-to-side) or 10m leading or following the race - run.
- Athletes running with **10m** between them and the next runner, including when overtaking. This might, for example, mean overtaking in lane 3 to pass an athlete running in lane one on a track.
- Athletes starting intervals (20 sec) in approximate order of ability with the fastest athlete starting first to minimize overtaking.

9.5. CONSIDERATIONS FOR TRAVELING ATHLETES/ PLAYERS

When teams are travelling, they should travel with the minimum amount of staff, and staff OR athletes with morbidities that may put them at higher risk of complications from COVID 19 infection should consider not travelling - consult the most recent WHO advice ⁽¹²⁾. Teams should have up to date testing for current infection and/or past infection as local practice at their base allows, and with respect to the requirements of the Public Health regulations of the travel destination. Public Health Departments and governing bodies may require test results to be submitted, depending on local regulations at the destination, and the rules surrounding matches. There should be a 'virtual corridor' from the time the team or athlete leaves base. The team and staff will travel in a convoy to maintain social distancing, rather than the usual 'team bus'. If travel involves a flight, then the flight should be a charter (teams only) flight to minimize contact with anybody who may be harboring infection, and social distancing should be maintained on the flight. There should be tarmac transfer on arrival at the airport. If airport terminal access is via the normal 'public' route, then social distancing and strict personal hygiene precautions must be followed. Individual athletes on scheduled flights should wear appropriate face mask and gloves, and ensure they observe all advised personal hygiene rules. In the case of team travel, and before athletes and staff board, all seats must have hand sanitizer, tissues, and water placed on them and each seat should be allocated to an athlete or staff member, to avoid any confusion. This should be discussed with team management and planned as a routine part of travel arrangements (i.e. plane seating plan should be available). On arrival at the destination, there should be tarmac transfer again into a convoy of vehicles. Luggage and kit etc. will follow on. Kit personnel will

remain at airport to ensure this is done. On arrival at the hotel, athletes will maintain social distancing as they enter. Keys will be ready at the entrance, and each athlete will be given a tissue to use to push the relevant button as required in the elevator^(6,12,13). See also Mass Gathering Events, Section 11.

9.5.1. Hotel preparation and use

One floor, or section of one floor should be dedicated to the athletes and staff. The section of the hotel being used, or individual room for lone athletes should be specifically cleaned 24-48 hours before athletes' arrival. There should be minimal interaction between hotel staff and the travelling party. No room or section cleaning whilst athletes are in residence unless there are exceptional circumstances. Entry into hotel section or rooms should only be allowed in liaison with lone athlete or team liaison, e.g. meal delivery/towel renewal. Meals should be delivered to athletes' rooms. No team dining areas. For lone athletes, no meals in hotel restaurants. Use of hotel gym by team staff or athletes is not allowed unless exclusive use is guaranteed after deep cleaning of the facility 24-48 hours prior to arrival. There should be arrangements with the hotel for each piece of equipment to be cleaned after use.

9.5.2. Training

There may be a need to use the training facility/stadium. Arrangements must be made at the training facility/stadium for social distancing and for personal hygiene to be facilitated (see section 11 on mass gatherings). Athletes will leave the hotel prepared to train. Strapping to be done in athletes' rooms prior to leaving, with observation of protective measures for staff members and athletes. Leaving the hotel should be with similar precautions as on arrival with use of multiple vehicles to the training facility/stadium. Boots (as required) should be available at pitch side on arrival at the training facility/stadium. Treatment couches should be arranged as possible with social distancing, ideally pitch side if conditions allow. Staff should ensure they wear appropriate personal protection equipment (PPE) whilst at the training facility/stadium. Coaching staff should wear masks and gloves during training/practice and matches. After training, no showers at the stadium, athletes return to hotel to shower in rooms. If there needs to be any kit changes, this is done using social distancing, and dirty kit is left at the stadium or in secure skips for return to the hotel. Kit personnel should wear appropriate PPE.

9.5.3. Match/competition

Leaving for the match should be planned so that social distancing is observed with a convoy of vehicles as required. Staggered arrival for competition will be necessary and should be planned so that boots/bespoke kit requirements are available as required. The team/athlete should aim to arrive earlier than normal (normal arrival time 75-90 minutes prior to kick-off, or as is routine for lone athletes) to ensure that kit checks etc. by match officials are carried out in good time. Consultation with referee/federations prior to arrival for the match will ensure efficient timing for these checks⁽¹⁴⁾.

After the match/competition, flash interviews and anti-doping will be necessary keeping in mind social distancing. Showering will be necessary, and should be taken in a staggered, pre-arranged fashion, with social distancing rules observed. Athletes should be allowed to travel

when ready, and, as transport allows. The team physician will need to attend anti-doping with their athletes. No auto-zone.

9.5.4. Travelling home post-match/competition

Athletes will leave the stadium with social distancing in place and adhering to any other measures as required by the local public health system (MOPH in Qatar⁽⁴⁾).

If the team is leaving the country, tarmac transfer with social distancing is maintained, and the same routine employed as when travelling out. Once in the home country, social distancing is maintained until reaching base. The same rules as travelling out applies for lone athletes on scheduled flights, with social distancing and personal hygiene measures being observed.

This resource will be updated frequently according to new evidence-based information comes to light. The purpose is to provide a framework to think through the risks to help sports clubs and federations in the State of Qatar make informed decisions regarding limitation and/or mitigation of risk⁽⁴⁾.

REFERENCES

1. AIS, *Framework for rebooting sport in a COVID-19 environment* May 2020.
2. *Guide d'accompagnement de reprise des activités sportives, Post-confinement lié à l'épidémie Covid-19.* May 2020
3. Qatar Ministry of Public Health. <https://covid19.MOPH.gov.qa/EN/How-to-protect-yourself/Pages/default.aspx>
4. Ministry of Public Health Qatar: *MOPH Guidelines for Sports Events* (<https://www.MOPH.gov.qa/english/Pages/Coronavirus2019.aspx>)
5. Qatar Olympic Committee. <http://xn--iqbhee6kbhww.xn--wqbl6a/en/Sports/Pages/default.aspx>
- 6- World Health Organization. May 2020. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- 7- US Olympics and Paralympics, 2020. *Return to Training Considerations Post-COVID-19* [Teamusa.org](https://www.teamusa.org)
- 8- Canada, G. o., 2020. *Risk-informed decision-making for mass gatherings during COVID-19 pandemic.* <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/mass-gatherings-risk-assessment.html>
- 9- Ireland, A. A. o., 2020. Athletics Ireland. <https://www.athleticsireland.ie/news/coronavirus-covid-19-update/>
- 10- Solomon, J., 2020. *Aspen project play.* www.aspenprojectplay.org
- 11- B. Blocken , F. Malizia, T. van Druenen , T. Marchal *Towards aerodynamically equivalent COVID19 1.5 m social distancing for walking and running* *Urban Physics, Wind Engineering & Sports*, Apr 15,2020;1-12
- 12- WHO, 2020. *Considerations for sports federations/sports event organizers when planning mass gatherings in the context of COVID 19.* https://apps.who.int/iris/bitstream/handle/10665/331764/WHO-2019-nCoV_Mass_Gatherings_Sports-2020.1-eng.pdf
- 13- World Health Organisation: *Key planning recommendations for Mass Gatherings in the context of the current COVID-19 outbreak*
- 14- Task Force Sports Medicine/Special Game Operation in Professional football, *Deutscher Fussball-Bund & Deutscher Fussball League – 16 April 2020*

10. CONDITIONING CONSIDERATIONS AFTER PROLONGED DETRAINING

10.1. INTRODUCTION

The outbreak of the COVID-19 pandemic has affected the lifestyle of everybody around the World. Athletes, like the general public, have been living restricted lives and have been instructed to self-isolation and/or quarantine if affected by COVID-19 for a prolonged period. For many athletes, this period would have been the longest time away from structured training routines within their sporting environments they have ever experienced; even longer and more unusual than what may be experienced with a challenging injury.

While most have been able to perform individualized training sessions at home, it is unlikely that such training activities and exercise regimes were able to replicate match/competitions demands for their sports. Therefore, it is important to recognize the limitations of training from home, identify the risks of returning to training and competitions, and develop an appropriate 'return to play' strategy.

A safe plan for a progressive return to play needs to take into account the duration of the isolation/quarantine, the health status (if affected or not by COVID-19), the complexity of the sport and the overall content and training load of the exercise regime maintained while in home-isolation.

While generic principles can be applied across sports to develop a return to training and return to play strategy, specific considerations are necessary for different sports due to the differences in performance demands and training content.

For the scope of these guidelines, sports have been clustered (see Table 1) according to their performance requirements to provide specific information to help health practitioners, coaching staff and athletes collaborate to develop appropriate plans.

Table 1 - Sports Cluster

Team Sports	Precision and Racquet Sports	Acrobatic and Combat Sports	Endurance Sports	Power Sports	Aquatic and Other Sports
					
Football (soccer) Handball Volleyball Hockey Rugby Baseball Softball Basketball Beach volleyball Beach handball Beach Soccer	Shooting Archery Golf Badminton Tennis Table Tennis Squash	Boxing Fencing Karate Taekwondo Wrestling Judo Trampoline Equestrian	Cycling Athletics (endurance events) Rowing Canoeing Triathlon	Weightlifting Climbing Athletics Throws/jumps/sprints	Diving Swimming Synchronized Swimming Water Polo Sailing

The strategies adopted by each country to safeguard public health during the COVID-19 pandemic have determined a prolonged period of reduced/no access to sporting facilities thus reducing regular training sessions and competitions.

This prolonged absence from sports-specific activities is unprecedented and something never experienced by this generation of athletes. Therefore, particular care and consideration should be given to how best facilitate the return to training/play at the athlete's optimal performance levels while reducing the risk of injury and illness during this time.

Thanks to video conferencing technology and computerized training programs, it is likely that many athletes have been capable of performing some training activities at home. However, limitations of training at home should be taken into consideration.

Absence from regular sports training is likely to produce various degrees of detraining and/or detraining of some specific physiological, psychological, or technical/tactical aspects which determine performance in any given sport.

Detraining is defined as *"the partial or complete loss of training-induced adaptations in response to cessation of training or a substantial decrease in training load"* ⁽¹⁾.

It is important to consider that each individual athlete will return to training activities in a condition dictated by the level of activity he/she was able to maintain, the volume, intensity and type of training performed, the nutritional habits developed while in isolation, and, most of all, if the athlete had contracted the Coronavirus with symptoms.

Therefore, it is advisable to follow an 'admission' process of gathering information necessary for an individualized return to training and return to play plan (See Figure 1).

Figure 1 A Framework for return to training

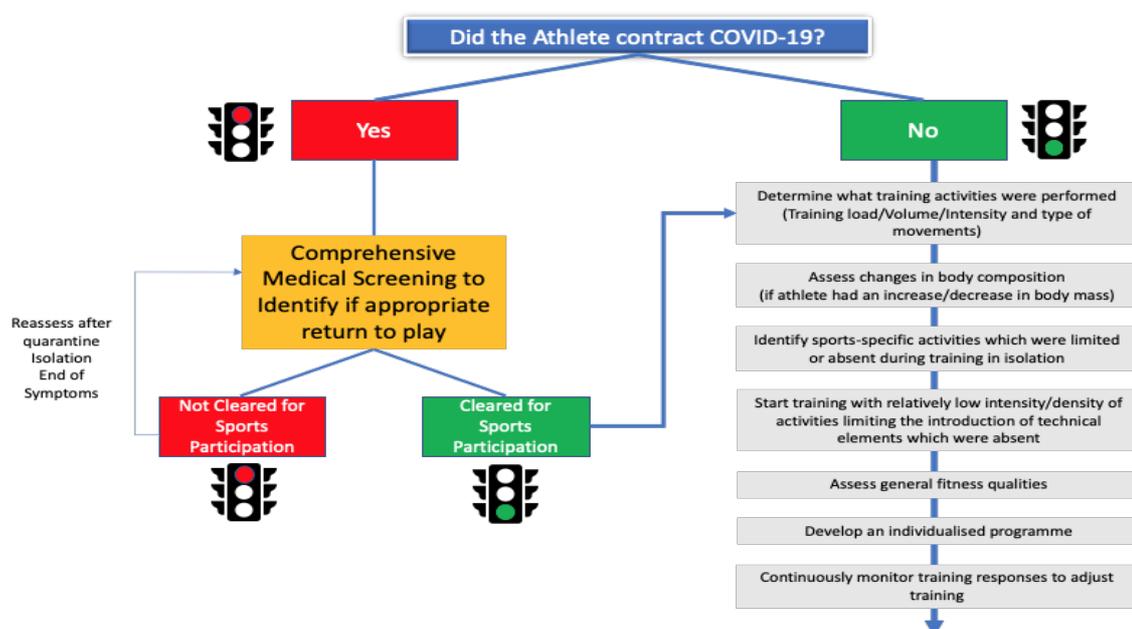


Table 2 - Home training opportunities and limitations by Sports Cluster

	TEAM SPORTS	PRECISION AND RACQUET SPORTS	ACROBATIC AND COMBAT SPORTS	ENDURANCE SPORTS	POWER SPORTS	AQUATIC AND OTHER SPORTS
						
TYPICAL HOME TRAINING	<ul style="list-style-type: none"> Individual Fitness training Limited repetitions of technical movements in individual situations 	<ul style="list-style-type: none"> Individual Fitness training Limited repetitions of technical movements 	<ul style="list-style-type: none"> Individual Fitness training Repetitions of technical movements Tactical combinations 	<ul style="list-style-type: none"> Individual Fitness training Specific training/competition simulations using ergometers 	<ul style="list-style-type: none"> Individual Fitness training Limited ability to perform technical training (e.g. weightlifting) 	<ul style="list-style-type: none"> Dry Land Training

LIMITATIONS OF HOME-BASED TRAINING

- No interactions with teammates
- No interactions with opponents (contrasts/one on one game situations etc.)
- Limited high-speed movements (e.g. shooting, sprinting, jumping/landing)
- Limited repeated technical/tactical activities
- No Repetitions of complex skills
- Limited performance of fast movements (e.g. tennis serve)
- Limited performance of repeated acceleration-deceleration activities on typical training surfaces
- No interaction with opponents
- No interactions with opponents
- Limited exposure to powerful take offs and landings
- No coaching assistance in the repetition of complex skills
- No access to specific apparatuses (e.g. rings/bars/vaulting in gymnastics)
- No falls/body hits
- Limited access to specific equipment
- No live interactions with opponents (limited online competitions)
- No access to specific tracks (e.g. indoor tracks/skating tracks)
- No access to technical venues (e.g. Skiing/skating/rowing lakes etc.)
- No access to technical equipment (e.g. kayaks)
- No access to technical equipment/venues
- No ability to perform technical skills (e.g. Shot Put/Javelin Throw/Sprinting on track etc.)
- No possibility of high-speed movements in a safe environment
- Restricted Water-based activities (depending on access to individual pools with potential tethered swimming)
- No access to water-based activities and technical equipment like boats

10.2. THE EFFECTS OF DETRAINING ON PHYSIOLOGICAL SYSTEMS AND MUSCLE AND TENDON TISSUES

While the effects of detraining due to the COVID-19 pandemic have not yet been studied, various reports in the scientific literature have analyzed the effects of complete or partial detraining on physiological systems and the musculoskeletal system (see Table 3). We can use the results from these studies to devise individualized programs for athletes returning to play and compete after a period COVID-19 quarantine / isolation.

The key for each coach-practitioner is to develop a structured process to review the training history for individual athletes during isolation and make sure that the training load and activities performed on return to training are appropriate to their current level of conditioning and planned with a slow progression of loading.

All physiological systems that improve with training have been shown to “reverse” when the training stimulus is removed. The extent of the decline will depend on many factors such as pre-existing fitness levels, training history, genetics, age, and specificity and characteristics of the training performed during isolation. Athletes who have had COVID-19 will be expected to have a greater reduction in physical conditioning related to the severity and duration of the symptoms. For these athletes, guidelines for return to training and competition should be based on a complete medical and physical assessment and adapted as required with regular monitoring.

Complete de-training (e.g. lack of activity) will markedly affect physiological systems. In elite athletes, cardiovascular, metabolic, and neuromuscular performance might decline between 2% and 4% per week. However, the maintenance of some training might be enough to mitigate these losses and retraining has been shown to recover performance parameters within 2-6 weeks. The musculoskeletal system is also affected by detraining depending on the magnitude of activity reduction with extreme cases of inactivity also affecting bone mineral density.

Table 3- The effect of detraining on body systems

 Neuromuscular	 Cardio-Respiratory	 Musculoskeletal
↓ EMG activity ↓ Mean Muscle Fiber Cross Sectional Area ↓ Flexibility ↓ Muscle Strength and Power	↓ Maximal Oxygen Uptake ↑ Mean Blood pressure ↑ Maximal Heart Rate ↑ Submaximal Heart Rate ↓ Maximal Cardiac Output ↓ Lactate Threshold ↓ Endurance Performance	↓ Up to 2.5% in Bone Mineral Density (extreme reduction in load/bed rest) ↓ Oxidative Enzymes Activity ↓ Glycogen Synthase Activity ↓ Mitochondrial ATP production ↓ Tendons qualities

In highly trained athletes, insufficient training induces a rapid decline in aerobic capacity, resulting in an increased heart rate for any given workload compared to when fully trained⁽¹⁾.

Recent work⁽²⁾ in semi-professional soccer players has shown a remarkable reduction in endurance capacity and repeated sprint ability after just two weeks. However, two weeks of retraining might bring these back to the previous levels. A two-week break from training has been shown to reduce repeated sprint ability more than endurance capacity in professional football players⁽³⁾. This suggests that the extent of reduction in aerobic capacity will depend both on initial performance levels and the extent of detraining period.

Endurance athletes' endurance capacity decreases with detraining but in well trained endurance athletes VO_2 max might be maintained with at least one short 35-minute high-intensity bout of exercise per week. Four weeks of detraining have been shown to produce significant reductions in aerobic capacity and power output in well trained cyclists⁽⁴⁾.

Strength and power are markedly reduced with periods of detraining and the extent of the reduction depends on the duration and level of inactivity and which muscles are involved. A loss of force and power-generating capacity between 2% and 60% has been reported^(1,5).

Detraining has marked effects on tendons. In the Achilles' tendon a decrease in tendon stiffness during detraining periods seems to be linked to alterations in the structure of the collagen fibers within the tendon⁽⁶⁾. After 4 weeks of detraining, the ankle muscle-tendon complex properties revert to pre-training values with lower performance⁽⁷⁾. There is less evidence about the effects of detraining on patellar tendon properties, however it is fair to assume that lack of high intensity training might also negatively affect patellar tendon properties⁽⁸⁾.

Considering the prolonged duration of training in isolation in Qatar (+2 months), it is possible that fitness will be significantly reduced in athletes who did not perform home-based training and/or were only able to train with limited resources/space. For such athletes, particular care will be necessary for return to training and competition.

10.3. PLANNING GRADED RETURN TO TRAINING AND COMPETITION

The return to full fitness and performance depends upon many factors, however in this situation the length and degree of detraining are two important parameters to consider when planning the content of training sessions on the resumption of training. In general, athletic populations returning to training have been shown to quickly return to original performance levels⁽⁹⁾.

Coaching staff should be careful when introducing high-intensity training activities. Plyometric/fast eccentric loading activities need to be carefully re-introduced especially if the athlete has not been exposed to such activities during isolation. If not introduced progressively these activities can lead to an increased risk of injury for muscles and tendons.

Finally, in the development of sports specific drills, it is essential to follow the risk-mitigation guidelines in this document to prevent the spread of infection.

Since the Qatar Stars League will be the first league to return to training and competition in Qatar, a schematic plan for return has been proposed to support football teams returning to activity.

10.3.1. FOOTBALL SPECIFIC PLANNING

Different Phases: Returning to training and play (According to 2019-2020 season during COVID-19 pandemic)

General Considerations

QSL players have not trained regularly since 15th March 2020
Differing training level exposure between QSL players during quarantine period

General recommendations

Plan training program carefully
Adopt adequate hydration and heat acclimatization protocols
Dedicate time for individual player injury prevention strategies
Individualized player nutrition plan
Monitor sleep quality

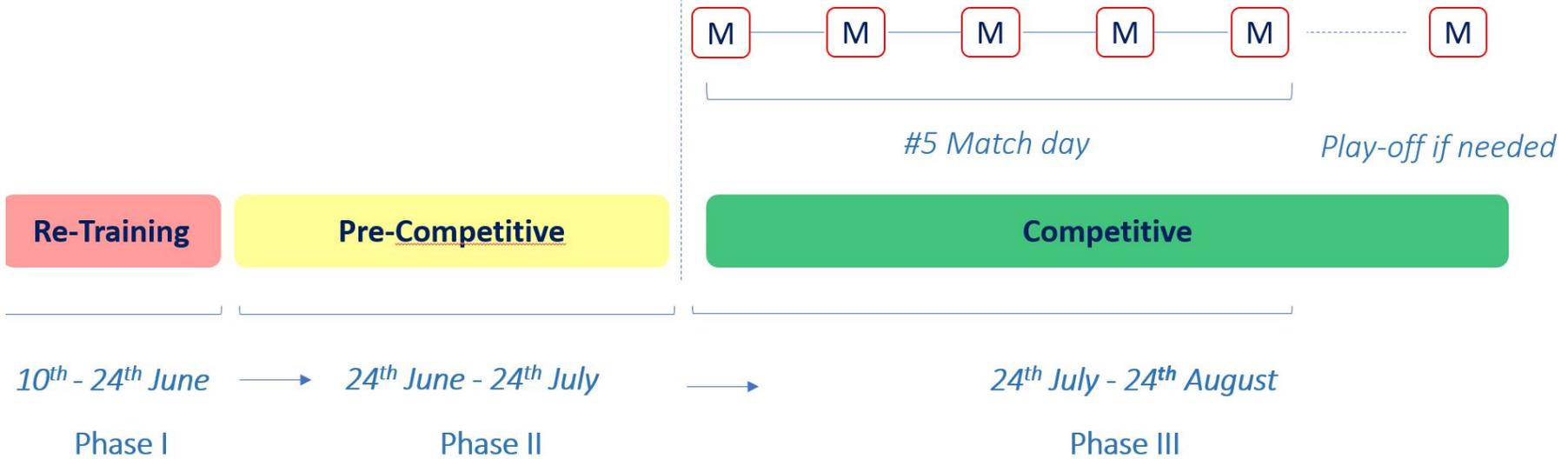
Consider detraining effects

Decreased muscle strength / power
Decreased aerobic/ anaerobic capacity
Decreased muscle elasticity
Possible increased percentage body fat / body weight



Return to Training

Return to Play



Different Phases: Return to Training and Play



Re-Training**- 14 days**

One session per day (maximum 45-60 minutes)

Attention to load distribution

Introduction of individual football-specific exercises

Focus on aerobic conditioning – avoid strength-specific explosive power training

All exercises should be performed at low to medium intensity

Pre Competitive**- 30 days**Part I (10 days) - Specific adaptation

Daily sessions (maximum 75 minutes)

Progressive introduction of group football-specific training exercises

Gradual increase of session training intensity with appropriate time for recovery

Position specific training activities

Part II (20 days) - Game adaptation

Daily sessions (max 75-90 minutes)

Introduction of high-speed movements (sprinting, changes of direction, kicking)

Introduction of match play drills (attention to space / numbers of players)

Friendly matches with attention to individual minutes played

Progressive increase in individual friendly match minutes played

Apply specific recovery protocols post matches and day after

Competitive**(+/- play offs if qualified)**

Maximum five substitutes per match

Three-minute cooling breaks at 30 and 75 minutes during matches

Increased number of players available on bench

10.4. ASSESSING AND MONITORING FITNESS LEVELS TO INDIVIDUALIZE TRAINING

It is advisable to perform an assessment of the training status of the athlete when training resumes. To reduce the risk of injuries in the first phase of return to training, maximal testing activities should be avoided, and any physical assessments performed using mostly submaximal effort.

Sports-specific testing, observations and assessment should be performed with protocols familiar to the athletes and progressively introduced as part of the warm-up and/or training activities to reduce the risk of injury. The approach should be like typical pre-season training resumption and the purpose should be to use the data from sports specific testing to determine personalized training interventions and progressions.

Once the athletes have been assessed for training history, details of detraining and fitness levels it is important to regularly monitor training activities and get athlete feedback in case training prescriptions require adjustment.

Training monitoring should include measurements of internal and external load and be compared to similar activities performed before COVID-19 restrictions with techniques and modalities appropriate for the sport ⁽¹⁰⁾. In sports where cardiorespiratory function is an important performance parameter, it is advisable to conduct regular assessments of cardiovascular responses to training in athletes directly affected by COVID-19 in order to monitor their ability to sustain typical training loads. Earlier reports in SARS patients ⁽¹¹⁾ suggests the possibility of cardiorespiratory impairments in such athletes and therefore monitoring for these is paramount.

In addition to addressing physical conditioning deficits, a comprehensive approach to training programming requires the assessment of cognitive, technical, and tactical skills relevant to the sport which may also have been affected in addition to physical conditioning. Therefore, the planning of return training should involve the whole coaching staff and should not only be focused on restoration of fitness qualities.

10.5. INJURY PREVENTION

Evidence from detraining studies lead us to hypothesize that athletes may be more susceptible to injury due to an alteration of the muscle and tendon-specific mechanical properties after a period of COVID-19 home isolation.

The only similar scenario reported in the scientific literature was after the National Football League (NFL) lockout in 2011 in the US, where there was a prolonged off-season (over three months) without access to training facilities. Following the return to training and competition there was a higher rate of Achilles tendon injuries, occurring predominantly during the first period of the training camp and the subsequent season ⁽¹²⁾. Teams must therefore closely monitor the physical status of athletes, to help determine the readiness to safely return to training and competition.

Returning to training is a risk for athletes if the load is too high for the athlete's level fitness and/or too different in terms of movement patterns and intensity⁽¹³⁾. During the home-based period, significant detraining in key sports skills is likely to have occurred as well as the development of habits (such as inadequate sleep and poor diet) which can negatively affect the readiness to return to sport.

A continuous assessment of the athletes' overall wellbeing as well as the routine assessment of pain perception with body maps can help the medical and coaching staff identify any potential problems and individually tailor the athlete's safe return to optimal training and competition fitness.

The use of a wellness questionnaire to monitor athletes over time can help identify issues that might require adjustments to the athletes' daily training load. The questionnaires are typically completed daily via cell phone or another electronic device and assess the player's perception of their current health status based on a few simple questions⁽¹⁴⁾. Athletes should also be routinely asked about any COVID-19 symptoms such as cough, shortness of breath, chest pain, difficulty breathing, fever, chills, abnormal muscle pain, headache, sore throat, runny nose, loss of taste or smell and gastrointestinal illness.

Pain charts with body maps in paper or electronic form can also be used to highlight areas of concern before an injury is manifested⁽¹⁵⁾.

The length of time to re-condition is dependent on the starting state of the athlete. If the deconditioning is over a longer period, it makes sense that the time to return to full training in a safe manner will be extended.

A team approach and transparent regular communication between athlete and coaching/medical staff is important to maintain a safe work environment for the athlete. Previous injury, athlete age and sex, other impairments, and demands of the sport and level of play need consideration when returning to training and competition.

10.6 NUTRITIONAL CONSIDERATIONS

On return to training, it is likely that some athletes present with marked changes in body mass as well as body composition. Where this is the case, it is advisable to assess the body composition of the athletes to determine the effects of the isolation and/or COVID-19 symptoms. Once the assessment is conducted, a nutritional plan should address such issues to return the athlete to the optimal body composition profile before training intensity is increased.

Appropriate nutritional plans should be implemented to guarantee adequate energy and protein intake to sustain training, promote muscle adaptations and also importantly to reduce the risks of upper respiratory tract infection (URTI) and/or temporary immunosuppression in particular in sports where extensive training activities are performed.

For training sessions lasting longer than 60 minutes and, in the heat, always ensure carbohydrate drinks are available and rehydration solutions are regularly consumed to reduce fatigue and heat stress.

Use a carbohydrate and protein drink after training sessions to promote recovery.

Any drinks consumption should be done with *individual* disposable or sanitized bottles to reduce any risks of cross contamination

Recent evidence suggests that some nutrients may reduce infection burden in athletes, in particular Vitamin D ⁽¹⁶⁾. Especially if the isolation period limited sunlight exposure, vitamin D supplements with appropriate and safe dosage could be beneficial to reduce infections symptoms and have positive effects on musculoskeletal structures.

Many supplements are advertised to 'boost' immune function despite the lack of evidence. It is advisable to avoid the use of supplements with no evidence behind it and focus on a proper diet to optimize body composition and provide appropriate energy requirements for training and recovery.

Avoid Fad or over restricted diets to try and "short cut" required changes in body weight or body composition. The advice of the sport dietician and the support of the medical team should be sought for managing body composition issues.

10.7. PSYCHOLOGICAL SUPPORT

Suspending seasons and cancelling competitions can cause significant grief, stress, anxiety, frustration, sadness and depression for an athlete but Return To Play (RTP) under the current circumstance might also generate significant fear of contagion and worries falling ill, that are completely normal as the zero risk does not exist ⁽¹⁷⁾.

Most athletes will be able to handle it and build on existing coping resources. However, we can expect that a minority of people will experience a negative response that could worsen and potential increased risk of mental health issues ^(17,18), sports injuries and performance drop ⁽¹⁹⁾. Sports medicine providers should anticipate the need for additional mental health support for athletes ⁽²⁰⁾.

10.7.1. POSSIBLE REACTIONS ATHLETES CAN EXPERIENCE

Stress, anxiety, and depression reactions can appear in a variety of physical, psychological, emotional and behavioral ways for any given individual and a summary is provided below ⁽³¹⁾:

Definition	Stress	Anxiety	Depression
What does it mean?	-Stress is a normal physiological response to an abnormal situation. -It enables our body to adapt to the array of positive and negative events that we experience, like injury,	-Fear is a response to a well-defined and very real threat however anxiety is a response to a vague & unknown threat or dangerous or unfortunate event. -Everyone experiences anxiety at their own	-Depression is a passing state of inertia, discouragement, and sadness. -Depression can appear in a variety of physical and psychological ways. -Its intensity varies from one person to other.

marriage, loss of employment, etc. -Stress comes and goes on its own, depending on what factors are involved.	individual degree and intensity. -How the anticipated event is perceived will influence the intensity of the anxiety experience
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Table 4: Potential reactions associated with the coronavirus (COVID-19) pandemic

10.7.2. CLINICAL PRESENTATION

Athletes with stress, anxiety and depression may present with the following symptoms and signs:

Physical	Psychological and emotional	Behavioural
-Headaches, neck tension, gastrointestinal problems, etc. -Sleep problems -Lower appetite -Lower energy, fatigue	-Virus-related worries and insecurity -Feelings of being overwhelmed by events, powerlessness -Self-verbalization that does not always reflect reality -Negative vision of things or daily events -Feelings of discouragement, insecurity, sadness, anger	-Difficulty in concentrating -Irritability, aggression -Crying -Withdrawal, insularity -Difficulty in taking decisions -Increased use of alcohol, drugs and/or medication

Table 5: Potential symptoms linked to stress, anxiety, and depression

10.7.3. DETERIORATING HEALTH STATUS IN THE CONTEXT OF A CORONAVIRUS (COVID-19) PANDEMIC

The below signs may mean that the athlete's personal resources no longer suffice to manage his worries daily, and he should seek help ^(17, 21,22, 23, 31).

Physical	Psychological and emotional	Behavioral
-Feelings of suffocation, rapid heartbeat, dizziness, nausea -Major sleep problems -Pronounced reduced appetite, associated with weight loss -Low energy and pronounced fatigue or exhaustion	-Anxiety and overwhelming fear -Feeling panicked when you hear talk of the virus -Negative pervasive thoughts -Loss of pleasure and interest in activities that you usually enjoy	-Difficulty in carrying out daily tasks -Avoiding anyone from outside the home because of fear of contagion -Obsessively monitoring coronavirus symptoms -Intense, frequent crying -Pronounced irritability and aggression, conflict with other members of the household

		-Inability to concentrate Alcohol, drug, and medication abuse
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Table 6: Signs and symptoms of deteriorating health status

10.7.4. SCREENING

If depression or general anxiety disorder are suspected, screening tools can be used by the medical team. The recommended tools for use in Qatar are the GAD-7 for anxiety and the PHQ-9 for depression ^(24,25).

NB: Screening tools should always be used in conjunction with clinical judgment and as part of a comprehensive clinical assessment and undertake relevant investigations according to the clinical presentation

The **GAD-7** is freely available for use in multiple languages from the following website:
<https://www.phqscreeners.com/select-screener>

The **PHQ 9**-question tool is available in multiple languages online at:
<http://www.multiculturalmentalhealth.ca/en/clinical-tools/assessment/screening-for-common-mental-disorders/phq-in-different-languages/>

10.7.5. MANAGEMENT

According to the MOH guidelines, Generalised Anxiety Disorder (GAD) and Major Depressive Disorder (MDD) should be managed as follows ^(24,25):

5.1. Management of Generalized Anxiety Disorder (GAD)

	GAD-7 score	Care Steps	Interventions & management
Minimal anxiety	0 – 4	1- Self Care	-Encourage lifestyle changes
Mild anxiety	5 – 9	2- Primary Care	-Low intensity psychological interventions provision (Individual non-facilitated self-help, Individual guided self-help, Psychoeducational groups)
Moderate anxiety	10 – 14	3- Primary Care	-High-intensity psychological interventions (Cognitive and behavioural therapy, applied relaxation) and Pharmacological therapy,
Severe anxiety	15 – 21	4- Secondary Care	-Referral to Specialist Care in case (reluctance

			to treatment, severe anxiety and functional impairment, presence of risk of suicide or self-harm, Self-neglect, or Substance abuse)
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Table 7: Classification of anxiety based on the GAD-7 score and the management steps

5.2. Management of Major Depressive Disorder (MDD)

	PHQ-9 score	Care Steps	Interventions & management
Mild depression	5 - 9	1- Self Care	-Lifestyle improvement and psychoeducation. Self-help and support groups. -Low-intensity psychosocial interventions (e.g. Cognitive Behavioural Therapy, Group CBT, Behavioural Activation).
Moderate depression	10 - 14	2- Primary Care	-Lifestyle improvement and psychoeducation. -Behavioural Activation. -High intensity psychological intervention (e.g. CBT, Group CBT, IPT). -Pharmacological treatment.
Severe & complex depression	20 - 27	3- Secondary Care	-All activities provided in Step 1 & 2 -Other interventions (e.g. Electroconvulsive Therapy, Transcranial Magnetic Stimulation). -Referral to Specialist Care (risk of self-harm or self-neglect, an immediate risk to others, severe agitation, bipolar disorder history)

Table 8: Classification of depression based on the PHQ-9 score and the management steps

10.7.6. PRACTICAL RECOMMENDATIONS

If you have been affected by any of the issues mentioned above: stress, depression, anxiety or any other mental health issue, the below recommendations could be helpful ^(21,22,23,26,27,28,29,30):

6.1. Recommendations to the athletes:

1. Do not manage it on your own: do not bottle it up, talk to your physio and/or club doctor who may refer you to a General physician or to more specialist help/organizations
2. Take action to find help, this will make you feel more in control
3. Mental health issues treatment could be medical (medication) and non-medical (therapies): Talking therapies such as Cognitive Behavioral Therapy (CBT) are very effective for athletes with Mood disorders
4. Caring for Yourself and improve your lifestyle: find time to eat properly, avoid smoking and alcohol intake, get plenty of exercise and enough sleep
5. To face your stressors: focus on the positive aspects of your life and change what you can; learn to relax, get better
6. To cope with your fears: face your fear, sort out your worries and do not let them stop you; know Yourself and find out more about your fear and anxiety
7. Faith and Spirituality: if you are religious or spiritual rely on your faith
8. Have Assertiveness: training to better control your emotions and increase your self-esteem

6.2. Recommendations to the coach:

1. Integrate mental health into your training-make it Okay to talk and open up
2. Create a supportive environment to reduce social isolation and encourage the people to talk to each other
3. Be approachable: make yourself available for players to talk to you. If you are concerned about someone, ask them privately if they are Okay
4. Encourage players to build supportive relationships and connect with family and close friends
5. Get to know your players and teammates: try to understand their motivations, goals, and habits

6.3. Recommendations to the medical staff:

6. Ensure regular check-ins with athletes
7. Help athletes developing resilience, learn from their life experiences and rely on past success that gives confidence for a new challenge.
8. Facilitate consultation with a psychologist, virtual consultation should be encouraged whenever possible and feasible

REFERENCES

1. Mujika I, Padilla S. Detraining: loss of training-induced physiological and performance adaptations. Part I: short term insufficient training stimulus. *Sports Med.* 2000;30(2):79-87.
2. Chang Hwa Joo The effects of short-term detraining and retraining on physical fitness in elite soccer players *PLoS One.* 2018; 13(5): e0196212. Published online 2018 May 10.
3. Rodriguez-Fernandez, Alejandro, et al. Effects of short-term in-season break detraining on repeated-sprint ability and intermittent endurance according to initial performance of soccer player. *PLoS ONE*, vol. 13, no. 8, 2018, p. e0201111.
4. Sara Maldonado-Martín, Jesús Cámara, David V.B. James, Juan Ramón Fernández-López & Xabier Artetxe-Gezuraga (2017) Effects of long-term training cessation in young top-level road cyclists, *Journal of Sports Sciences*, 35:14, 1396-1401

5. McMaster, D.T., Gill, N., Cronin, J. et al. *The Development, Retention and Decay Rates of Strength and Power in Elite Rugby Union, Rugby League and American Football.* *Sports Med* 43, 367–384 (2013)
6. Kubo, K., Ikebukuro, T., Maki, A. et al. *Time course of changes in the human Achilles tendon properties and metabolism during training and detraining in vivo.* *Eur J Appl Physiol* 112, 2679–2691 (2012)
7. Kannas T. M., Amiridis I. G., Arabatzi F., Katis A., Kellis E. (2015). *Changes in specific jumping performance after detraining period.* *J. Sports Med. Phys. Fitness* 55, 1150–1156.
8. Frizziero A, Salamanna F, Della Bella E, et al. *The Role of Detraining in Tendon Mechanobiology.* *Front Aging Neurosci.* 2016;8:43. Published 2016 Feb 29.
9. Staron RS, Leonardi MJ, Karapondo DL, Malicky ES, Falkel JE, Hagerman FC, Hikida RS. *Strength and skeletal muscle adaptations in heavy-resistance-trained women after detraining and retraining.* *Journal of Applied Physiology (Bethesda, Md.: 1985)*, 01 Feb 1991, 70(2):631-640
10. Bourdon PC, Cardinale M, Murray A, Gatin P, Kellmann M, Varley MC, Gabbett TJ, Coutts AJ, Burgess DJ, Gregson W, Cable NT. *Monitoring Athlete Training Loads: Consensus Statement.* *Int J Sports Physiol Perform.* 2017 Apr;12(Suppl 2):S2161-S2170.
11. Ngai Jc, Ko Fw, Ng Ss, To K-W, Tong M, Hui Ds. *The long-term impact of severe acute respiratory syndrome on pulmonary function, exercise capacity and health status.* *Respirology.* 2010; 15: 543-550.
12. Myer GD, Faigenbaum AD, Cherny CE, Heidt RS, Hewett TE. *Did the NFL lockout expose the achilles heel of competitive sports?* *J Orthop Sports Phys Ther.* 2011;41(10):702–5.
13. Drew, M. K., & Finch, C. F. (2016). *The relationship between training load and injury, illness, and soreness: a systematic and literature review.* *Sports Med*, 46(6), 861-883.
14. Saw, A. E., Main, L. C., & Gatin, P. B. (2016). *Monitoring the athlete training response: subjective self-reported measures trump commonly used objective measures: a systematic review.* *Br J Sports Med*, 50(5), 281-291.
15. Caseiro M, Woznowski-Vu A, De Oliveira AS, Reis FJJ, Wideman TH. *From Paper to Digitalized Body Map: A Reliability Study of the Pain Area.* *Pain Pract.* 2019;19(6):602-608.
16. Martineau Ar, Jolliffe Da, Hooper Rl, Greenberg L, Aloia Jf, Bergman P, Dubnov-Raz G, Esposito S, Ganmaa D, Ginde Aa, Goodall Ec, Grant Cc, Griffiths Cj, Janssens W, Laaksi I, Manaseki-Holland S, Mauger D, Murdoch Dr, Neale R, Rees Jr, Simpson S Jr, Stelmach I, Kumar Gt, Urashima M, Camargo Ca Jr. *Vitamin D supplementation to prevent acute respiratory tract infections: systematic review and meta-analysis of individual participant data.* *BMJ.* 2017; 356: i6583.
17. Zhang, J., et al., *The differential psychological distress of populations affected by the COVID-19 pandemic.* *Brain Behav Immun*, 2020.
18. Ho et al., *Mental Health Strategies to Combat the Psychological Impact of COVID-19 Beyond Paranoia and Panic,* *Ann Acad Med Singapore.* 2020 Mar 16;49(3):155-160.
19. Reardon CL, Hainline B, Aron CM, et al. *Mental health in elite athletes: International Olympic Committee consensus statement (2019)* *Br J Sports Med* 2019; 53:667–699
20. Toresdahl BG, Asif IM. *Coronavirus disease 2019 (COVID-19): considerations for the competitive athlete.* In: *SAGE Publications Sage CA: Los Angeles, CA; 2020.*
21. Zhang, Weili Wu, Xin Zhao & Wei Zhang., *Recommended psychological crisis intervention response to the 2019 novel coronavirus pneumonia outbreak in China: a model of West China Hospital; Precision Clinical Medicine*, 00(00), 2020, 1–6.
22. RH, Clift BC, Boykoff J, et al. *Athletes as community; athletes in community: covid-19, sporting mega-events and athlete health protection,* *Br J Sports Med*, 2020 Vol 0 No 0.
23. Mehrafsafar, Amir Hossien et al. *“Addressing potential impact of COVID-19 pandemic on physical and mental health of elite athletes.”* *Brain, behavior, and immunity*, S0889-1591(20)30781-9. 6 May. 2020.

24. *Ministry of Public Health Qatar. National Clinical Guideline: The Diagnosis and Management of Generalised Anxiety Disorder in Adults (2020)*
25. *Ministry of Public Health Qatar. National Clinical Guideline: The Diagnosis and Management of Depression in Adults (2020)*
26. *Schinke R et al. Sport psychology services to high performance athletes during COVID-19. International Journal of Sport and Exercise Psychology. 2020, VOL 18 NO. 3: 269-272.*
27. *The Psychological Society of Ireland (PSI): Tadhg MacIntyre et al., 2020. Beyond the COVID-19 Pandemic: Tips for Players and Athletes COVID-RECOVER.*
28. <http://www.ncaa.org/sport-science-institute/topics/covid-19-and-mental-health>
29. <https://www.thepfa.com/wellbeing/mental-health-and-football>
30. <https://www.nami.org/Support-Education/NAMI-HelpLine/COVID-19-Information-and-Resources>
31. <https://www.quebec.ca/en/health/health-issues/a-z/2019-coronavirus/stress-anxiety-and-depression-associated-with-the-coronavirus-covid-19-disease/#c47202>

11. MASS GATHERING EVENTS: ORGANIZING MATCHES AND COMPETITIONS

11.1. INTRODUCTION

The final step in the graduated return to sport framework during the COVID-19 pandemic, is the organization of matches and competitions. This pandemic has created an unprecedented environment in which organizing events represents a logistical challenge. The health of athletes, officials and spectators is paramount. This section proposes recommendations to mitigate the risk of COVID-19 during such an event. It is important to acknowledge that it is not possible to completely avoid risk.

*This section assumes that a comprehensive risk assessment had been performed and that the decision to organize an event has already been taken in the context of a medically acceptable risk profile - **and most importantly, that it is compliant with local laws (of Qatar).***

The World Health Organisation (WHO) and MOPH have published key recommendations for planning mass gatherings in the context of COVID-19, including considerations for sports federations / sports event organizers in this situation, which are updated regularly as the demands of the COVID-19 pandemic evolves.^(1,2,3) This document therefore provides guidelines on COVID-19 related things to consider, with examples. Football-specific recommendations are also based on those recently published by the German Bundesliga Task Force in Sports Medicine / Special Game Operations in Professional Football, Deutscher Fussball-Bund & Deutscher Fussball League.⁽⁴⁾

The organization of events will follow a step-wise process. Events may initially be held without spectators, followed by progressively introducing spectators with social distancing and hygiene measures in accordance with Government guidelines and regulations. Similarly, team travel and accommodation arrangements to accommodate COVID-19, will change according to the latest Qatar Ministry of Public Health (MOPH) guidelines.

It is important to acknowledge that some of the recommendations should be adapted to the sport code in question and that resource limitations should be considered. We recommend that each event organizer and team management appoint a COVID-19 Safety Officer from their own ranks, who will keep abreast of the latest recommendations and ensure that those are implemented in the event organization plan and team arrangements.

11.2. KEY CONCEPTS DURING MAJOR MATCHES / TOURNAMENTS

The purpose of this document is to make recommendations for achieving a safe environment when hosting sporting events or competitions in Qatar. The objective of these recommendations is to achieve a safety bubble around athletes and support staff when needed, from the moment they depart their home or home country (where relevant), until they return home safely. Achieving this will require infection prevention and control measures during the three key areas:

- **Safe travel corridors**
- **Safe venues**
- **Safe hotels**

The key stakeholders in such an event include the following:

1. **Participants:**
Athletes and their support staff, including referees, are included in this group and is the primary focus of recommendations in this document.
2. **Officials and hosts:**
This is a very large group and includes all staff involved in delivering the event, such as international federation/confederation officials, local organizing committee staff, volunteers and TV production crews. Activities in this group which affect the safety of the players and their staff are considered in the recommendations in this document.
3. **Spectators:**
The largest stakeholder group at a match are the spectators, including those at the stadium, those in the fan zones and those at home. ***Infection prevention and control amongst this group is governed by the Ministry of Public Health (MOPH) and falls outside the remit of this document*⁽³⁾.**

It is important to note that any suspected or confirmed case of COVID-19 must be notified to the MOPH and result in the activation of the relevant protocols. For information regarding the management of suspected or confirmed cases during a major event or tournament in detail *please refer to section (Athlete Health Evaluation) in this document.*

Infection control

The single most important element to consider when hosting major events, is infection control practices – across all venues and all domains. The World Health Organization (WHO) has excellent resources addressing all aspects of infection control specific to this pandemic, which are updated regularly. Event organizers and COVID-19 Safety Officers should review the latest recommendations on prevention and infection control and implement them into the event plan of any sporting event. *The reader is also referred to section 10 (Risk limitation / mitigation during training) in this document.*

11.3. RECOMMENDATIONS

11.3.1. Safe travel corridors

While COVID-19 restrictions are in place, no staff in the higher risk categories (age, underlying illness) should travel with the team. MOPH guidelines or regulations may require testing of any athlete participating in an event or competition in Qatar. In the case of international athletes, this may be required prior to leaving their home country and/or on arrival in Qatar. Once in Qatar, event organizers, in collaboration with local authorities should provide safe travel corridors to limit exposure of athletes or teams to others. Examples of such regulations may include that players wear surgical masks in public and follow specific transport protocols. Players may have to be transported to and from training and match venues with minimal interaction with the public, officials and event staff. Social distancing and hygiene measures

may need to be implemented. For example, handshaking and autographs may be forbidden, there may be no mixed zone and flash interviews may be conducted with social distancing.

11.3.2. Safe venues

Please refer to section (Risk limitation / mitigation during training) in this document.

The team COVID-19 safety officer should provide individual prevention packages for each athlete, containing:

- Small personal packages of disposable tissues and plastic bags for tissue disposal
- Small laminated prevention card with key reporting information
- Medical mask
- Small packages of alcohol-based hand wipes
- Small package of disposable plastic drinking cups
- Thermometer (if not measured by health care staff)
- Hand sanitizer

Infection control – stadium / sports venues

In addition to the general infection control measures implemented in all venues, some specific considerations may be applicable at the stadium / sports venue according to the latest MOPH regulations. Examples of such regulations are that event organizers may have to apply strict access control, according to the appropriate accreditation, and perform body temperature and symptom checks on all persons entering the premises. Rooms should be left open whenever possible, to minimize touching the door handles. We recommend that the team chef or athletes themselves prepare the team's food and transport it pre-packaged to the stadium. While social distancing regulations are in place, spas and saunas should be avoided, use of fitness areas should only be allowed with disposable gloves and use of disinfectants before and after use, and face masks should be recommended as per the latest international and local guidelines from the MOPH.

Social distancing

Social distancing measures will have the most pronounced effect on the organization of the event, but it is one of the most important elements. After consulting the MOPH, a stadium / venue zoning plan should be developed to minimize the number of staff in the facility at any time, using a staggered approach to activities in all areas.⁽⁴⁾ TV crews and camera positions should be minimized. Preparation and set-up work on match day must be completed early, before the teams arrive at the stadium / venue. According to current MOPH COVID-19 restrictions, additional spaces may need to be provided to increase social distancing, especially between teams and other staff. Examples of this include additional doping control rooms. Where additional spaces are not possible, staggered use may need to be implemented, such as at arrival to the venue and staggered entry to the field-of-play (FOP). Event organizers may need to limit access to competition areas to critical staff only. Social distancing at pitch side should be customized by the Team COVID-19 Safety Officer, according to latest MOPH regulations.

Match protocol changes

Several established match protocols may need to change, to facilitate social distancing.

11.3.3. Safe hotels

Advanced planning

The Team COVID-19 safety officer should make early contact with the hotel to make special arrangements, and the support team should arrive early, to coordinate with the hotel (hygiene officer, chef and safety officer). COVID-19 safety arrangements must be planned by the Team COVID-19 Safety Officer and hotel management, according to latest MOPH regulations. Examples of such arrangements include that the hotel should provide a deep cleaning of all rooms used by the teams two days before arrival with no staff allowed in the rooms or on floors before the teams check in; supervisory staff should be kept as small as possible and staff should be trained in hygiene measures. All team staff should have adequate supplies of personal protective equipment. Contacts with hotel staff should be minimized. Consider using team staff to provide services instead of hotel staff.

Infection control in the hotel

Infection control measures are dependent on the latest MOPH regulations. Implementation by the Team COVID-19 Safety Officer may include that all team members maintain social distancing, hand disinfectant be provided in all areas: in the hallway, in front of and in the common rooms, in the medical room and in every bedroom. The COVID-19 Safety Officer may provide face masks for athletes and staff on the trip to wear outside of their own room, the dining room (if not taken in the rooms), the team office, the training area and the team bus – according to MOPH latest guidelines. Examples of other restrictions may include no cleaning of the rooms while the team is in the hotel and no cleaning staff in the hallway. Hotel management may need to ensure sufficient towels and hygiene articles, available in the rooms to avoid contact with the cleaning staff. Hotel staff should follow current MOPH testing and screening, and personal infection control measures. These may include wearing face masks and regularly disinfect their hands. They should be educated and trained in hygiene measures. Rooms should have sufficient ventilation, or air-conditioning, ideally set to approximately 21°C, humidity 50-60%. The COVID-19 Safety Officer will advise the team and staff on current best general safety practices, which may include not touching the elevator buttons, banisters or door handles by hand, but rather by using a tissue or their elbows. Team members should apply appropriate hygiene measures when using cell phones, tablets, play station or any electronics that belongs to others.

REFERENCES

1. *World Health Organization: Considerations for sports federations/sports event organizers when planning mass gatherings in the context of COVID-19 – interim guidance 14 April 2020*
2. *World Health Organization: Key planning recommendations for Mass Gatherings in the context of the current COVID-19 outbreak*
3. *Ministry of Public Health Qatar: MOPH Guidelines for Sports Events*
4. *Task Force Sports Medicine/Special Game Operation in Professional football, Deutscher Fussball-Bund & Deutscher Fussball League – 16 April 2020*