

COVID-19 Medical Considerations for Sports Activities

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1. Summary

The purpose of this document is to outline the medical issues to be considered in relation to returning to sporting activities and their impact on return to play in the community. These measures are aimed at minimising the risk of developing COVID-19 complications amongst sports participants and to guide in the management of injuries and illness during the COVID-19 pandemic. This document is intended for healthcare professionals who support athletes and those that provide care to persons who are physically active. The focus of the document is relevant to all those who are physically active, as well as those who partake in organised sporting activity and the medical challenges they may encounter during COVID-19 pandemic.

2. Key Points

- 1 Exercise is important for mental and physical wellbeing and individuals should be encouraged to exercise provided they are well and asymptomatic
- When returning it is important to avoid sudden increases in training load as
 these can weaken an athlete's immune system, as well as increase the risk of musculoskeletal injury.
- Mental health may have been negatively affected during restrictions and exercise
 plays an important role in managing many this. All should remain vigilant for persons displaying any symptoms of mental health issues and refer appropriately.
- High risk groups should be identified when returning, and appropriate precautions
 taken. These groups do not have a higher risk of contracting the disease, but may develop a more severe illness.
- 5 Athletes are always advised not to train/exercise when unwell/ill.
- 6 Athletes who have contracted COVID-19 should abstain from sporting activity for a minimum of 10 days and until symptom free for 7 days.
- 7 A supervised graduated return to activities should be performed, once the minimal time has elapsed and symptom free.
- 8 Referral for specialist opinion prior to return to sport should be sought if the athlete has had a severe illness or has ongoing symptoms.
- 9 Where someone presents at a sporting event with suspected COVID-19 immediately separate them from other people and ask them to wear a face covering if possible.

Everyone should comply with the law and government guidance on use of face coverings for activities that take place indoors. Exceptions to use of face coverings

- 10 will apply during sporting activities if wearing a mask is not practical (swimming and many activities that require intense effort).Use of Personal Protective Equipment (PPE) in a sporting setting needs to consider the environment and the activity that is being carried out.
- 11 Athletes may encounter PCR-RNA testing as part of screening.

Due to the regular changing of restrictions at national and regional level, this guidance document should be read and interpreted in conjunction with the **Government's Framework of** <u>**Restrictions**</u>. Together with the measures outlined in this guidance document, the Government's Work Safely Protocol and other Return to Sport Protocols developed by National Governing Bodies should be adhered to by all participants.

Disclaimer:

Evidence-based recommendations for return to training and competition after COVID-19 infection are scarce and heterogeneous. Although the present document contains specific information that was considered current as of 2nd October, 2020, the contributing authors acknowledge that the COVID-19 infection return to activity/sport published evidence is expert opinion or consensus-based for use by healthcare practitioners. Evidence will continue to evolve, and the most current emerging research and/or public health authority regulations may add to or replace these guidelines. Therefore, this document is not intended to replace seeking help from your local healthcare practitioner.

3. Background

In December 2019 Novel coronavirus (COVID-19), which causes severe acute respiratory syndrome (SARS)-CoV-2, first emerged resulting in a global pandemic. The first diagnosed case in Ireland was confirmed on February 29th 2020. COVID-19 is an infectious respiratory disease, which is spread mainly by respiratory droplets. Public health measures, such as social distancing and strict hygiene etiquette, have been the primary focus of disease management to date to curtail the spread of the infection and reduce mortality.

Our knowledge of COVID-19 at this stage is evolving and most data is extrapolated from patients with more severe illness, primarily those that were hospitalised. We have to be mindful that this cohort is generally older and more likely to have significant co morbidities. It is apparent from the literature that the pathological sequalae from COVID-19 are multisystemic in a very small minority of healthy patients infected. Multiorgan involvement has been apparent since the emergence of COVID-19. The rapidity of disease progression is widely influenced by age, the presence of comorbidities resulting in pulmonary and extrapulmonary end organ injury.¹ For example, a Chinese study on the effect of SARS-CoV-2 virus on the cardiovascular system revealed that between 12% and 30% of patients admitted to hospital with SARS-CoV-2 had troponin levels elevated above the 99th percentile, suggesting some form of myocyte necrosis (heart damage).^{2,3} It is important to emphasise that such complications were apparent in patients considered ill enough to warrant hospitalisation; therefore, the prevalence of myocardial injury or raised troponin in athletes with asymptomatic infections or a relatively mild illness is unknown but likely to be low . Other physiological systems reportedly affected of relevance to athletes who become infected include pulmonary, renal, neurological, muscle, bone density, gastrointestinal, and hepatic systems. The challenge posed by psychological effects of the illness and post viral fatigue should also not be underestimated for the athletic population.

For the population as a whole, infection with COVID-19 will result in a mild self-limiting illness in 80% of cases and a number will have been infected without having noticeable symptoms. In addition, younger people are less likely to be hospitalised and to suffer significant illness. Some have symptoms that may fulfil the HPSC COVID-19 criteria (case definition) at different stages but were not tested at the time of their infection. The prevalence of the disease in Ireland is still unknown, but it is estimated to be between 5-10% of the population depending on geographical location. There appears to be a wide clinical range of presentations with a significant number likely asymptomatic. A cohort study of a cruise ship where all passengers and crew were tested revealed 59% of subjects tested positive. Of these 80% were asymptomatic.⁴ This suggests we may be dealing with higher numbers of post viral individuals who were asymptomatic when infected, but nonetheless may have had subclinical pathological complications.

It is important that as we go through varying cycles of restrictions are lifted, people continue or resume exercise. Athletes who perform at very vigorous intensity, place additional stress on the cardiorespiratory system. Hence in the sports medicine community there have been concerns expressed regarding people returning to sport after potential COVID-19 illness due to unknown prevalence and known multisystemic effects of hospitalised COVID-19 patients. A practical, pragmatic, and where it exists evidence-based approach is suggested below.

4. Role and Importance of exercise during COVID-19 pandemic

Exercise is important and individuals should be encouraged to exercise provided they are well and asymptomatic. There is evidence that moderate exercise performed for 20–30 minutes, 3–4 times per week may strengthen the immune system and reduce the risk of viral infection.⁵

Exercise or training needs to be adjusted based on public health advice and restrictions. Outdoor activities are always preferable as the risk of transmission is reduced.⁶ If training in a group one must be mindful that with more vigorous exercise the area of spread of respiratory droplets is greater and so a larger area should be allowed between participants where possible and in keeping with public health advice.⁶

Although regular moderate exercise is beneficial for the immune system, there are suggestions that regular, high intensity exercise, especially in unaccustomed individuals, can impair immunity and increase risk of a subclinical infection.⁷ A pragmatic approach for an athlete is not to exceed their usual training programme during this period of uncertainty. When returning it is important to avoid spikes in training load as these can cause periods of immunosuppression, as well as increased risk of musculoskeletal injury.



5. Mental Health

It is acknowledged that people's mental health may be negatively affected during the coronavirus outbreak. Change in daily routines, cocooning, social isolation can all have a negative effect on an individual's mental health. Athletes could be considered more prone due to these changes and this can result in low mood, amotivation and anxiety. The benefits of exercise on mental health are well documented, and so exercise of any form should be widely encouraged. In addition, healthcare practitioners, coaches and athletes should be alert to any persons who may be displaying symptoms and assist in seeking help if needed.

HSE Minding your mental health during the coronavirus outbreak

6. Recommendation for specific populations

a) At risk groups

The HSE have identified groups who are at high-risk of severe illness from COVID-19 infection, when the virus is circulating in their community. The HSE has advised that it does not believe that those in 'vulnerable' or 'high-risk' groups have a higher risk of contracting coronavirus, however these groups may be at higher risk of serious illness if an individual does contract coronavirus. Individuals in these groups should practice 'protective self-separation'. This means that you should avoid unnecessary face-to-face social interaction and avoid physical contact with others as far as possible. Individuals in the high risk groups who have been diagnosed with COVID-19 or who believe they may have been infected with COVID-19 should consider a medical review prior to commencing activity. Please refer to the link below from the HSE which outlines members of high risk groups.

HSE People at risk

b) Athletes with asthma

Respiratory illness and in particular exercise induced asthma are common in many athletes, notably endurance athletes. It is critical athletes optimise management of their asthma through a registered medical practitioner following Global Initiative For Asthma GINA guidelines. An athlete with well controlled asthma does not appear to be at higher risk of contracting COVID-19.⁸ It is important that this group continue to take care to avoid respiratory irritants such as air pollution or heavily chlorinated pools, and maximise necessary treatment.



c) People with a disability

The return of participants with a disability should be considered on a case by case basis depending on the nature of the activity, the environment, and if the participant has any underlying health conditions. It is important to note that not all people with disabilities will have an underlying health condition and should follow the general principles set out in this document. Further challenges that may be posed to reduce risk of contracting COVID-19 may need to be considered in those with disabilities. For example, cleaning protocols for equipment and the need to break social distancing (i.e. paracycling, running with a guide). Guidelines and advice are available through Cara (return to sport 2020).

c) Older adults

Covid-19 restrictions advocate older people (>70 years old) should restrict movement and stay at home as much as possible, and limit their social contacts. Social isolation strategies will likely reduce patients' walking and physical activity, and lead to an increase in sedentary behaviour. Impaired mobility in older adults has a negative impact on quality of life and a range of health and well-being outcomes. Increasing sedentariness risks impairing mobility. There is clear evidence from systematic reviews that exercise can improve mobility, prevent frailty, prevent falls and improve or maintain functional ability. It is strongly recommended that older persons at risk of fraility during the pandemic, particularly due to restrictions, are assisted in seeking althernative methods of maintaining physical activity. For effects on muscle strength, balance and frailty, reviews suggest exercising for 20-45 minutes, at least 3-4 times a week. Introduction to home exercise regimes may be useful in achieving this.



7. Recommendations for return to sport after confirmed or suspected COVID-19

It must be stressed that athletes are always advised not to train/exercise when unwell.

The concern is two-fold; that additional exertion can increase viral replication and further weaken an already compromised immune system making the infection more severe. Furthermore, if there is evidence of cardiac involvement a cautious approach to resumption of play is important. It must be noted as well if athletes train while ill there is a loss of desired training response and adaptations to such training.

For athletes suffering with flu-like symptoms, myocarditis has always been a potential complication of viral syndromes. Although the diagnosis is reliant on histological confirmation or the demonstration of myocardial oedema or late gadolinium enhancement (LGE) on cardiac MRI, emerging case reports appear to implicate myocarditis as an additional cause of cardiac damage from COVID-19. Key symptoms include chest pain that may be made worse by deep inspiration, increasing breathlessness and palpitations

The majority of young individuals with COVID-19 infection appear to develop relatively mild disease and recover almost completely over 5–7 days. In some of the more severe presentations COVID-19 appears to have a biphasic clinical course. A small minority may experience a further deterioration which occurs between days 7 and 9, predominantly due to an overwhelming host inflammatory response with individuals developing more severe lower respiratory tract manifestations and multi-system involvement thus requiring more intense medical care.

Return to sport scenarios¹¹

Recommendations must take account of the presence or absence of viral RNA (if tested), symptoms and evidence of multisystem involvement, as follows:

a) Positive PCR RNA test and asymptomatic athlete:

Athlete should abstain from all sporting activity for at least 10 days. Follow isolation and contract tracing advice by public health. This result would likely be from 1) close contact identified from a symptomatic participant 2) positive result in screening an athlete (refer to section 11: 'The role of testing in a sporting setting').

b) Positive PCR RNA test and mildly symptomatic athlete (or if clinically suspicious for COVID-19 and false negative suspected)^{*}:

Follow the isolation and contact tracing advice from public health.

They should rest for 10 days from onset of symptoms plus 7 days from symptom resolution. If they remain symptom free and progress well, return to normal activity may be considered after a further 7 days of gradual reintroduction to activity. Return to sporting activity should be in a graduated fashion.⁹

c) Positive PCR RNA test and athlete with significant illness:

If an athlete was hospitalised or had severe illness* due to confirmed or suspected COVID-19 it is recommended that prior to recommencing sport or exercise after prolonged abstinence they should undergo a comprehensive clinical assessment including detailed history and examination by a registered medical practitioner.

^ Based on a recent paper from Wilson et a¹⁹ consideration for further investigation for milder cases may be warranted if resources are available. The RTP pathway is intended for elite athletes (eg, premier league football, professional rugby, potential Olympiads). They also suggested that most of these athletes will have previous preparticipation medical evaluations that can be used for comparison.

When performing an assessment one must be cogniscent of the multisystemic effects of COVID-19 infection.

* What is a severe illness

- 1. Requires hospital admission
- 2. Develop known complications
- 3. Duration of symptoms > 2 weeks?
- 4. Exertional symptoms**

**If on returning to exercise after advised rest period and develop any symptoms such as chest pain, breathlessness, palpitations, exertional dizziness or syncope, ongoing significant fatigue then medical examination is warranted.

Post COVID-19 a more prolonged rest period and conservative return to play strategy is employed (eg, ≥10 days from onset of symptoms plus 7 days from symptom resolution)⁸

On returning to sporting activity, potential complications that must be excluded are cardiorespiratory illness, e.g., myocarditis and pro-thrombotic states, such as pulmonary embolism or DVT. These complications in the short term could potentially lead to sudden cardiac death in a sporting setting.

Initial consultation with the athletes' team doctor, general practitioner or admitting consultant is advised. After an assessment, they will determine whether onward referral to a specialist is warranted, who will then determine what tests are needed.

For example, if there is a concern regarding cardiac complications a referral to a cardiologist would be advisable and they will determine what investigations are needed. These may include ECG, ECHO, Cardiac MRI, exercise testing, biomarkers and serology. It is important to stress that ECG changes in myocarditis may be minimal and unlikely to be sufficient to exclude the diagnosis of myocarditis as a cause for the symptoms hence it is not advised this is performed in general practice unless onward interpretation from a specialist is available. Similarly, for potential lung complications, CT scan or pulmonary function tests (PFTs) may be required.

If other systems are considered involved these should be referred to the relevant speciality. These can be neurological, gastrointestinal, renal and mental health. Post-viral fatigue is known to occur following other viral infections and there are some case reports of an association with COVID-19. Investigations should be appropriate in these cases to exclude any other potential causes (diagnosis of exclusion).

It is important to note that presently the literature around post COVID-19 complications is based from studies of hospitalised patients, who are generally elderly and have co morbidities. Returning to sporting group/team: After 10 days the person is generally no longer considered infectious, provided they have not had fever for the last 5 days.

Important: For medics working with athletes, making return to play decisions

Return to play decisions, in the context of respiratory illness have traditionally defaulted to 'neck check', i.e. athletes continue to exercise if their symptoms and clinical signs are confined to the upper airway (e.g., only coryzal symptoms). The scientific basis for this recommendation is weak. There are clinical concerns regarding the potential risk for athletes with current respiratory tract infections who exercise vigorously developing other complications from early return to such exercise. Such complications include the risk of myocarditis or myocardial damage, which could be highly relevant in the current outbreak.¹⁰ Published data from COVID-19 infection cohorts indicate a definite prevalence of myocardial damage however it must be noted that most of this data is from hospitalised patients.



b) Graduated Return to Play

In all cases when returning to exercise after a period of time off, exercise participation levels should be gradually increased in intensity and duration over a few weeks at a minimum. It may take a number of weeks/months for a person to safely reach their pre-incapacitation levels of exercise. Care should be taken to increase load gradually, and avoid spikes in load, which would put one at further risk of injury and illness. A useful guide to following graduated return to play is available below. Monitoring for progression readiness can be via rate of perceived exertion or heart rate relevant to previous similar sessions. The GRTP should be a minimum of 7 days as outlined below. It should not be commenced until that athlete has both completed at least 10 days rest and been 7 days symptom free. Inability to progress in a symptom free manner should be noted below.

- Signs and symptoms may include, but are not limited to: Elevated Morning heart rate

- Increased shortness of breath with exercise,
- Elevated Rate of Perceived Exertion (RPE), and
- Elevated heart rate at sub maximal exercise intensity.

Experience has noted some patients taking over 3 weeks to recover. If symptoms persist consideration for further investigation such as laboratory testing (CRP and troponin), 12 lead ECG, Echo, spirometry and referral to a cardiologist, or respiratory consultant if abnormal spirometry.



Table 1. Graduated Return To Play (post Covid-19) with permission Elliott et al 2020⁹

ACRONYMS: I-PRRS (INJURY - PSYCHOLOGICAL READINESS TO RETURN TO SPORT); RPE (RATED PERCEIVED EXERTION SCALE) NOTE: THIS GUIDANCE IS SPECIFIC TO SPORTS WITH AN AEROBIC COMPONENT

https://bjsm.bmj.com/content/early/2020/06/22/bjsports-2020-102637

Persistent minimal symptoms

It is noted that some symptoms may appear minimal (i.e. runny nose, occasional cough) and last longer. If appropriate time length (3 weeks) has passed and there are no exertional symptoms then it is believed safe to return to exercise. One may be cautious returning to group training however as there is still potential to spread infection, and PCR-RNA testing may be required. Guidance should be sought from public health/microbiology regarding testing protocols if necessary, under the relevant phase for return to team sporting activity.

8. Management of a Suspected Case of COVID-19 whilst at a sporting event.¹²

- 1. Ideally the designated COVID-19 compliance officer, staff member or volunteer should take charge of the management of any persons with COVID-19 symptoms.
- 2. Immediately separate any child or other person displaying or complaining of COVID-19 related symptoms from participants, staff and spectators.
- 3. Ask this person to wear a face covering if possible or if available provide them with a facemask.
- 4. The designated person managing the situation should try to maintain at least 2 metres from the person with symptoms and should wear a face covering and wash their hands regularly.
- 5. Provide the ill person with tissues and hand sanitizer and ensure that all tissues are disposed of in a waste bag that can be tied and marked as separate from other waste.
- 6. If they are well enough to go home, arrange for them to be transported home by a family member, as soon as possible and advise them to inform their general practitioner by phone of their symptoms.
- 7. If they are too unwell to go home or advice is required, contact 999 or 112 and inform them that the sick person is a COVID-19 suspect.
- 8. All persons who have been in close contact with the suspect case will need to be informed to restrict their movement for 14 days or until further information is available (i.e. a negative test result of the suspect case).
- 9. The person suspected of COVID-19 should have a medical assessment (GP or Hospital) and If the ill person has a positive test for COVID-19, a Public Health medical team will perform a risk assessment to determine the appropriate containment and mitigation measures, which includes the identification of close contacts as per national guidance.
- 10. National Interim Guidelines for Public Health management of contacts of cases of COVID-19.
- 11. Following a suspected case, all equipment should be disinfected and cleaned immediately. This is in addition to normal hygiene procedure.

9. Face Coverings¹³

- 1. Everyone should comply with the law and government guidance on use of cloth face coverings for activities that take place indoors.
- 2. Exceptions to use of face coverings will apply during sporting activities if wearing a mask is not practical (swimming and many activities that require intense effort)."
- 3. For indoor activities, cloth face coverings should be worn by all (eg coaches, officials, spectators) who are not active.
- 4. Face coverings are not recommended to be worn by children under 13 years.
- 5. Face coverings may also be challenging to wear while playing sport. Unless there is a safety concern however, children and adults older than 13 years should be allowed to wear a face covering if they wish to.
- People wearing face coverings should be reminded to not touch the face covering and to wash their hands frequently.
 Please refer to further guidance on hspc website for

<u>Use of Face Coverings by the General Public</u>

Efficacy of visors compared with masks in the prevention of transmission of COVID-19 in nonhealthcare settings.



10. Use of Personal Protective Equipment in the Sporting Setting¹⁹

At sporting events the competitors will, as far as is practicable have declared themselves well and be fit to be physically active. The level of PPE to be used may therefore different to a health care setting where Health Care Professionals (HPCs) are dealing with suspected cases of COVID-19. For competitors, use of personal protective equipment (PPE) is not always feasible during sporting activities where there is close contact, also PPE may not be as effective in the sporting environment (e.g. where a significant increase in respiratory effort and rate for a prolonged period of time causes a mask to become wet which may impair the effectiveness). So wearing of face masks by participants needs to be assessed by each individual sporting body.

There are three main areas in which use of PPE needs to be considered in the sporting context

- 1. Management of an injury/illness by a coach or volunteer.
- 2. Management of an injury/illness/strapping by a health professional (pitch side & at facility).
- 3. Management of a major life-threatening injuries and aerosol generating procedures (AGPs).

Ensure that all PPE is CE marked with genuine certification. Gloves should meet EN455 standard and must also meet EN 374-4/5 standard.

Use of a skin care product suitable for hands and face, to be applied 20-30 minutes before PPE is expected to be worn, should be considered for those expecting to have to change PPE regularly. This is to help limit face and skin damage from copious hand sanitiser use

Management of an injury by coach or volunteer

If possible try and assess the injury maintaining social distance.¹⁴ Ask the player to refrain from spitting or deep clearing of their throat.

Where social distance needs to be encroached the coach/volunteer should sanitise their hands and put on a mask (ordinary surgical mask would suffice) and non-latex gloves. In acute injury setting as there may potentially be contact with blood and body fluids gloves are always recommended. The injured participant should be asked to wear a mask if appropriate. The coach should try and stay to the side of the injured player and out of the potential danger area i.e. in front of the players face. Any kit bags/first aid bags should be placed behind the injured player so they will not be accidentally contaminated by droplets.

First aiders should consider the type of kit bags used. Kit bags that are made of a plastic wipeable type surface are better for decontamination compared to non-wipeable ones. First aiders should also consider how kit bags are laid out, as once a first aider has touched a player with gloved hands, anything else they touch may potentially be contaminated. Fumbling around in a kit bag for tape or some other item, risks gross contamination of everything else in the bag.

Two options to consider are:

- 1. To have an assistant who places any required dressings, tape etc near the care giver.
- 2. To have small little zip lock type bags with a few essentials, gauze, tape, would pads etc, which would be disposed of after any player contact.

If the injury requires immobilisation, try and use splints or other inanimate objects (e.g. bags), where this is not possible the coach/volunteer should use their gloved hands. Where possible try and minimise the duration of the interaction with the injured participant and avoid face to face contact with the injured player/athlete.

Management of an injury/illness/strapping by a healthcare professional (HCP)

Strapping

When strapping participants HCPs should sanitise their hands and wear a mask for each strapping. Consider asking the player to sanitise the joint/area that is to be strapped. After each strapping the physiotherapist hands should be sanitised. The masks should be removed at the end of session and disposed of in a waste bag that can be tied and marked as separate from other waste. Possible COVID contaminated waste should double bagged and left for 72 hours before going in to the normal disposal process, any clinical waste, blood etc should continue to be processed as normal.

Ideally strapping should be performed outdoors - conditions permitting

Event-side care/field of play care

Doctors and physiotherapists should wear face masks and gloves for any on pitch or pitch side assessments/treatment.

Gloves should be changed after each interaction. The same mask can be worn for the period of the sporting event unless the HCP is concerned.

Care should be taken to ensure that the HCP is comfortable with the size and shape of the mask that they wear, for those not use to wearing them, they will often move around the face and lead to the HCP touching the mask multiple times.



Planned follow up injury/illness assessments (see Appendix 1):

Face to face reviews:

- 1. Limit as much as possible using the above strategies.
- 2. It is recommended that all other aspects of assessment and management are done remotely where possible, such that the interaction has a very specific purpose/focus which maybe only part of the overall assessment.
- 3. Try and ensure that players have a single point of contact (i.e. the same person treating them all the time).
- 4. Identify when reviews will take place (with clear clinical indications) and process for arranging appointments.
- 5. Consider minimising face to face contact to essential clinical tests or treatments. Aim that interactions are less than 15 minutes.
- 6. Physiotherapists/doctors should sanitise their hands and wear face masks, gloves and disposable plastic aprons for all injury/illness assessment.
- 7. The player/athlete should be asked to wear a mask.
- 8. PPE should be changed and disposed appropriately of after each consultation. Removing the PPE in the appropriate way is essential.
- It is important that we are hypervigilant in our hygiene practices at all times. Copious use of alcohol 70% gel on any exposed area and not just hands is key, in the absence of hot (or cold) soapy water.
- 10.Hand care must be considered with regular washing and use of appropriate emollient is advisable.
- 11. Only arrange to see players if you and they are well.

Doctor's and physiotherapists need to consider: phone consultations, remote prescribing and the potential limited availability of hospital services during this period.

The challenge is balancing risk minimisation with performance/health benefits. At all times please remember to abide by official advice from the public health authority.

All players/athletes attending for assessment and/or treatment are expected to follow these guidelines:

- Wash your hands regularly.
- Cover your mouth and nose with a tissue or your sleve when you cough or sneeze.
- Dispose of used tissues and wash your hands.
- Avoid contact with people who are unwell.
- Stay at home if you are unwell.
- Clean and disinfect frequently used surfaces and objects.
- Follow Dept of Foreign Affairs travel advice.
- Minimal use of mobile phone and clean regularly
- Do not touch your eyes, nose or mouth if your hands are not clean
- Do not share objects that touch your mouth e.g. waterbottles

Management of a major life-threatening injuries

Health Care Professional

In persons who require CPR, the HCP must call for help and a defibrillator if one is nearby or ensure that help is called for. With their contact PPE in place (Gloves and surgical mask) place a light covering or surgical mask over the patient's mouth and nose, provide chest compressions only and follow the instructions of the defibrillator machine excluding the ventilation elements until the paramedics arrive. Do not give assisted ventilations. Others available on scene should put on the maximum level of PPE (level 3), gloves, FFP2 or 3 face mask, eye protection and full water repellent gown with sleeves before taking over CPR. Once they can take over compression, the first HCP can move away and don the higher level PPE if available. If a higher level of PPE is unavailable CPR should continue with chest compressions and defibrillation only until the paramedics arrive.

Lay Rescuer:15

If you decide you are able to act as a lay rescuer

- 1. Keep your hands away from your face and thoroughly clean your hands (soap and water or alcohol hand rubs) as soon as you finish attending to the person.
- 2. If you have access to a mask and gloves used them (you will still need to wash your hands when you take off the gloves)
- 3. Avoid any contact of your hands with the airway (for example putting your hands into the mouth. This is expected to reduce the risk to a large degree even if the person has COVID-19
- 4. If you feel able to give chest compressions and use the AED but want to avoid contact with the airway covering the mouth and nose with a cloth or a tissue may help to reduce the scatter of droplets from their airway.

Note. Although CPR is regarded as an Aerosol Generating Procedure (AGP) this is related to airway management as part of CPR. Use of an Automated External Defibrillator (AED) and performance of chest compression in the absence of airway management are not considered as AGPs associated with an increased risk of transmission of infection.

Aerosol Generating Procedures (AGP)

Aerosol generating procedures are described/defined as medical and patient care procedures that result in the production of airborne particles (aerosols) that create the potential for airborne transmission of infections that may otherwise only be transmissible by the droplet route. (NHS Scotland)

The following are some AGPs which may occur in the sporting setting;

- 1. Cardio-pulmonary resuscitation.
- 2. Endotracheal intubation and extubation.
- 3. Manual ventilation.
- 4. Open airway suctioning.
- 5. High flow oxygen therapy (not citied by all as an AGP)
- 6. Spirometry

For Aerosol generating procedures the following PPE should be worn; FFP3 Respirator mask, eye protection, gloves and water repellent long sleeved gown. FFP3 mask use needs individual fit testing.

Pitch side emergency care & personal protective equipment¹⁶

This table applies to all interactions in a sporting environment. Boxes shaded green indicate the required PPE

	Personal Protective Equipment Type						
SCENARIO	Gloves (Single use)	Fabric/ Cloth	Surgical Mask (fluid resistant) IIR	Filtering Face Piece Respirator FFP3	Apron	Fluid Resistant Long- armed gown/ overall	Goggles /Full Face Visor in addition to Personal Spectacles
Volunteer /Coach providing first aid where SD maybe breached		Any one of fabric or cloth or surgical mask are required					
Lay Rescuer CPR (Modified Chest compress- ions and Defib only)							
Pre event strapping of players/ athletes	lf appropriate				lf indoors		
Medical Personnel providing care where SD cannot be maintained					lf indoors		Eye protection can be considered
Medical Personnel CPR or manage- ment of Aerosol Generating Procedures				Must be fitted			

PPE appropriate for indoor health care facilities may not be as effective in an outdoor environment (eg wind and/or rain)

Adapted from Hodgson L, Phillips G, Gordon J, et al Pitch side emergency care & personal protective equipment: a framework for elite sport during the COVID-19 pandemic:¹⁶

11. The role of COVID-19 testing in a sports setting

It is acknowledged that some high profile sports are using testing as a means to aid return to sport, and athletes may be subjected to this at international events. Hence it was deemed necessary to educate NGB's/athletes on what these tests are and the role they can potentially play. NGB's can make an informed decision as to whether they wish to employ this as a tool. Some international sporting organisations and international federations have also employed testing as a screening tool, which may be encountered for upcoming competition internationally, and it is important that if being subjected to this that athletes and support staff have a grasp of what is involved.

There are 2 types of testing:

- 1) Reverse-Transcription Polymerase Chain Reaction (RT-PCR)
- 2) Serological testing for antibodies.

1. Reverse-Transcription Polymerase Chain Reaction (RT-PCR)

RT-PCR detects whether or not viral RNA is present in samples from a patient. It does this by capturing and amplifying regions of the virus' genetic material. The swab is taken from the nasopharyngeal area and/or back of the throat to look for viral RNA. This will become positive once there is evidence of the virus. This can often be 1-2 days before the onset of symptoms. The test can remain positive for a period of time but the evidence now suggests that once 10 days has passed since the onset of symptoms, the last 5 days of which are fever-free, the person is no longer infectious. In the case of a person who has been hospitalised for their illness, this period is 14 days rather than 10 days. A positive PCR test after that time is likely to reflect residual viral RNA but is not an indication that the person is infectious. In general re-testing is not indicated if the person is asymptomatic.

Positive test result

A positive PCR result likely means that the person the sample was taken from is currently infected by the virus.

False positive* results in a PCR test are rare, and all positive results should be interpreted as indicating that the person has, or has recently had infection. RNA remains detectable for days to weeks after the infectious virus has been cleared, so the person may not still be infectious.

Negative test result

- A negative PCR result could mean
- 1. the person is not currently infected by this virus
- 2. the virus is not present at the site the sample was taken from
- 3. the sample taken was of poor quality
- 4. the sample was taken too early, or too late in the infection to detect replicating virus.
- 2,3,4: are examples of a false negative

*False positive- this is where the test result wrongly indicates that COVID is present.

** False negative- this is where the test result wrongly indicates that COVID is not present.

In summary, PCR tests are not 100% accurate. If the test is positive, it is likely to be correct, and that person is presumed infected or recently infected, as the test specificity is high. However, there are some cases of reported false positives which are inevitable in any clinical test. The PCR test can remain positive after intact virus has been cleared, as it takes longer to clear fragmented viral constituents. PCR tests do not identify live, viable, infectious viruses, just the presence of viral RNA. And this RNA is durable. It can stay in the body for weeks – possibly months – after all viruses have been killed by the immune system, giving "positive" results in people who are no longer infectious¹⁷.

However, we cannot fully rely on negative test results as there is a chance these are incorrect (false negative). If the athlete has symptoms of COVID-19 but the test result is "Not Detected", they should follow medical advice. Restrict movements until 48 hours symptom free. Continue to limit contact with household members to limit spread of viral symptoms. <u>Isolation advice</u>

If being used as a screening tool then one must be cognisant that a negative test could have been taken before viral RNA is present at detectable levels, and a negative test on one day is totally irrelevant if the athlete develops symptoms a day or two later. Athletes need to be aware that regardless of the result of a screening test, in the event of any symptoms occurring, even a day or two after a negative test, that they must self-isolate, refrain from training and follow all relevant public health advice. If using testing as a screening tool, so regular retesting is required in this scenario.

PCR tests work by repeatedly doubling the amount of genetic material in the original sample, until there is a detectable quantity of it. Each doubling is referred to as a "cycle"; and the number of cycles or doublings before there is a detectable quantity of genetic material is called the "cycle threshold" (CT or Ct). The larger the amount of viral RNA there is in the sample, the smaller the number of cycles that are required before it can be detected. And since the number of cycles is the CT value, the lower the CT value, the more virus there was in the original sample, and the more likely it is thought to be that the case was actually infectious, rather than still carrying leftover RNA, which is not clinically significant¹⁸.

2.Serological tests

Serology tests look for antibodies in blood. If antibodies are found, that means there has been a previous infection. This is usually a blood test or finger prick test (finger prick does not appear to be as accurate as blood test but are more convenient). This test looks for antibodies (also known as Immunoglobulins), which the body develops in response to presence of coronavirus. 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. In general antibodies develop 2-3 weeks after infection starts. This means serology tests may not detect current SARS-CoV-2 infections and should not be used to diagnose current COVID-19. At the same time a positive antibody test may mean current infection.

Positive serology test result

When antibodies are found (a positive test result), it means that a person was infected with COVID-19 and their body's immune system responded to the virus at some point in the past. However false positives* are a significant concern with antibody tests. The accuracy of these tests are critically determined by the prevalence** of the condition in the population at the time. (i.e the higher the prevalence, the more likely the +ve result is accurate). People develop antibodies when their body's immune system responds to an infection. These antibodies can be found in the blood of people previously infected whether or not they had signs or symptoms of illness. In some cases the body is able to fight the infection without producing antibodies, and this is more likely in those with less symptoms.

Negative serology test result

When a serology test does not find antibodies (that is, when the result is negative), there are several possible meanings.

Sometimes a negative serology result means that the person was not infected. However, it can also mean that infection occurred, but the body's immune response was not strong enough to make enough antibodies, or that there has not been enough time for antibodies to develop. Additionally, the test used may not have been sensitive enough to detect antibodies present.

*False positive- this is where the test result wrongly indicates that COVID is present.

** Prevalence- Number of cases of a disease in a given population at a certain time

The presence of antibodies does not necessarily imply immunity as not all detected antibodies are "neutralizing" (ie. will inactivate the COVID-19 virus) and the long-term persistence of antibodies and the duration of protection is not yet known. The expert advisory group maintain that the basic principles of good hygiene practice, hand washing, cough etiquette, social distancing is the cornerstone to management of athlete groups. We are aware that some international sporting bodies have recommended serial testing, and thus athletes and NGB's may have to comply with that. However, due to uncertainties around screening with RNA and serological testing it is advised against using this en masse, as a screening tool, in sporting groups at this present time.

Appendix 1

Considerations for the Non-Emergency Management of Player/Athlete Injuries

All medical and physiotherapy staff should give consideration to the key points outlined below in the remote management of players.

1. Assessment:

- I. Ensure there is clarity on the current health status and needs of each player/athlete.
- II. Identify what players require in terms of doctor assessments, rehab, or specific training needs.
- III. To optimise training, you may need to arrange a detailed clinical assessment for some players.

1. Management Plan:

Develop a clear plan that takes into account

- I. any pathology,
- II. desired adaptations,
- III. available resources
- IV. and any measures to monitor.

2. Resources:

Identify what resources are required to effectively implement the plan (e.g. bands, weights, specific rehab equipment and communication tools). Where appropriate you may consider providing players with videos of exercises.

3. Monitoring:

Agree with the player the process for monitoring and progressing rehab.

Consider the communication system? And how will you receive updates from players.

Identify outcome measures that are easy to apply and are reliable (symptoms, swelling, RPE etc.).

Use regular wellness monitoring data to provide picture of overall health status.

Provide clear information for players when to progress or regress specific exercises (e.g. pain, form, load, repetitions).

Consider best use of video-based review (e.g. videos of exercises/sessions and use of FaceTime/Skype/Zoom).

References

- 1. Zaim S, Chong JH, Sankaranarayanan V, Harky A. COVID-19 and Multiorgan Response. Curr Probl Cardiol. 2020:100618.
- 2. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet. 2020;395(10223):497-506.
- 3. Guo T, Fan Y, Chen M, Wu X, Zhang L, He T, et al. Cardiovascular Implications of Fatal Outcomes of Patients With Coronavirus Disease 2019 (COVID-19). JAMA Cardiol. 2020.
- 4. Ing AJ, Cocks C, Green JP. COVID-19: in the footsteps of Ernest Shackleton. Thorax. 2020
- 5. Nieman DC, Nehlsen-Cannarella SL, Markoff PA, et al. The effects of moderate exercise training on natural killer cells and acute upper respiratory tract infections. Int J Sports Med 1990; 11: 467–473.
- 6. Nishiura H, Oshitani H, Kobayashi T, Saito T, Sunagawa T, Matsui T, Wakita T, Suzuki M, MHLW COVID-19 Response Team. Closed environments facilitate secondary transmission of coronavirus disease 2019 (COVID-19).
- 7. Simpson RJ, Campbell JP, Gleeson M, Krüger K, Nieman DC, Pyne DB, et al. Can exercise affect immune function to increase susceptibility to infection? Exerc Immunol Rev. 2020;26:8-22.
- 8. https://www2.hse.ie/conditions/coronavirus/people-at-higher-risk.html
- Elliott N, Martin R, Heron N, et allnfographic. Graduated return to play guidance following COVID-19 infectionBritish Journal of Sports Medicine Published Online First: 22 June 2020. doi: 10.1136/bjsports-2020-102637
- 10. Hull JH, Loosemore M, Schwellnus M. Respiratory health in athletes: facing the COVID-19 challenge. Lancet Respir Med. 2020.
- 11. 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. 2020:2047487320930596.
- 12. "COVID-19 Interim recommendations for the return to sports activities for children and adolescents", in the following link can be used to develop an answer this question. https://www.hpsc.ie/az/respiratory/coronavirus/novelcoronavirus/guidance/sportandrecreation/COVID%2019%20 Return%20to%20Play%20Sports%20for%20children.pdf
- 13. Centres for Disease Control and Prevention. About Cloth Face Coverings | CDC https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/about-face-coverings.html
- 14. Derek K Chu, Elie A Akl, Stephanie Duda, Karla Solo, Sally Yaacoub, Holger J Schünemann, on behalf of the COVID-19 Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis www.thelancet.com Published online June1,2020 https://doi.org/10.1016/S0140-6736(20)31142-9
- 15. HSE Guidance on Cardio-Pulmonary Resuscitation (CPR) for lay rescuers in the context of COVID-19 https://www. hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/guidance/layrescuersguidance/
- 16. Hodgson L, Phillips G, Gordon J, et al Pitch side emergency care & personal protective equipment: a framework for elite sport during the COVID-19 pandemic: https://blogs.bmj.com/bjsm/2020/07/08/pitch-side-emergency-care-personal-protective-equipment/
- 17. Raffle Angela E, Pollock Allyson M, Harding-Edgar Louisa. Covid-19 mass testing programmes BMJ 2020; 370 :m3262

- Singanayagam A, Patel M, Charlett A, Lopez Bernal J, Saliba V, Ellis J, et al. Duration of infectiousness and correlation with RT-PCR cycle threshold values in cases of COVID-19, England, January to May 2020. Euro Surv 2020;25(32):2001483, DOI: 10.2807/1560-7917.ES.2020.25.32.2001483
- Wilson MG, Hull JH, Rogers J, Pollock N, Dodd M, Haines J, Harris S, Loosemore M, Malhotra A, Pieles G, Shah A, Taylor L, Vyas A, Haddad FS, Sharma S. Cardiorespiratory considerations for return-to-play in elite athletes after COVID-19 infection: a practical guide for sport and exercise medicine physicians. Br J Sports Med. 2020 Oct;54(19):1157-1161. doi: 10.1136/bjsports-2020-102710. Epub 2020 Sep 2.

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