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Opinion Piece

In the frame, road map for Australian sport on an uncertain journey through COVID-19[☆]

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The SARS-CoV-2 virus first infected humans in November or December 2019.¹ SARS-CoV-2 causes the disease COVID-19.² With 118,000 cases and 4000 deaths globally, the World Health Organisation (WHO) declared a global pandemic on 11 March.³ Unfortunately by late April over 3 million confirmed COVID-19 cases and >220,000 deaths were reported worldwide.⁴ COVID-19 has disrupted the normal function of societies around the world, on a scale not seen before. At the time of writing there are international travel restrictions in place and many countries, including Australia, have restrictions on domestic travel between regions.

Australia enjoys the many benefits of a rich sporting culture. Sport is an integral component of the fabric of Australian society with 3 million children and 8.4 million adults participating in sporting activities and 8 million Australians attending live sporting events on an annual basis.⁵ Preventative measures taken in Australia and other countries have impacted significantly on all facets of society, including the ability to conduct and participate in sporting events. Community and high performance/professional sport gradually closed in Australia during mid-March 2020. The International Olympic Committee (IOC), International Paralympic Committee (IPC), Tokyo 2020 Organising Committee and Tokyo Metropolitan Government announced postponement of the Tokyo 2020 Olympic and Paralympic Games on 24 March 2020.^{6,7}

In mid-March 2020, Australian cases of COVID-19 were doubling every 3–4 days with all indicators suggesting that Australia was travelling on a similar transmission trajectory to many European countries. In late March 2020, however daily case numbers began to plateau in Australia and by early April 2020 case numbers had dramatically reduced.⁸ The significant change was a result of a combination of strict social distancing measures, restrictions on interstate travel, closed international borders, strict enforcement of isolation for infected individuals or those with high risk exposure, and an expansive testing and contact tracing programme. Australia has one of the highest per capita rates of testing for COVID-19 in the world.⁹ The daily number of new cases as a percentage of total case numbers (averaged over 3 days) decreased from 30% on 24

March 2020 to <1% by 14 April 2020. Australia was averaging < 20 new cases per day for the whole country at the end of April 2020, despite broadening scope of testing in the community. Importantly, there were < 40 COVID-19 cases requiring treatment in intensive care units at the end of April 2020, indicating that the Australian health system was coping well within its reserve.⁸

As transmission rates decreased in Australia, there was a corresponding rise in community expectation for a relaxation of the social distancing and travel restrictions. The economic hardship experienced by individuals and businesses as a result of public health interventions is a key driver for all parties to seek a safe pathway out of the COVID-19 restrictions. Sporting organisations in Australia have been severely impacted with many sports laying off staff, reducing salaries for remaining staff, and cancelling competitions, tours and tournaments.

The Australian Institute of Sport (AIS), began work in early April 2020 on the '**AIS Framework to reboot sport in a COVID-19 environment**' (the AIS Framework). One of the key principles underpinning the AIS Framework is that the resumption of sport and recreation activities should not compromise the health of individuals or the community. Education of all stakeholders in the sport sector, with the aim of improving health literacy around COVID-19, is central to the AIS Framework. It will be personal behaviours, not just extensive testing that will determine whether sport can resume without compromising the health and safety of the community. The AIS Framework is intended to assist sporting organisations and individuals, from high performance/professional sport organisations to individual recreational athletes, in the complex decisions involved in moving towards normalisation of sport function. One of the many challenges faced in constructing the AIS Framework was the paucity of research, particularly in athletic populations. The AIS Framework is based on the latest data being published out of heavily affected areas in China, Europe and United States, extrapolated into the sporting context by specialists in sport and exercise medicine, infectious diseases and public health.

The AIS Framework divides sporting activity into three levels (A, B, C). Level A encompasses the exercise permitted under Australia's lockdown restrictions, including exercise as a solo individual or with a maximum of one other person, maintaining at least 1.5 m between individuals, no indoor exercise and with no sharing of

[☆] Rapid response papers and have not undergone the full peer review process.
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exercise equipment. Level B permits individuals to come together in small groups of up to 10 people, provided they are currently well and have been free of symptoms for 14 days. Training is permitted indoors and some limited sharing of equipment (e.g. tennis balls, footballs, basketballs, skipping ropes and gym equipment) is permitted on the understanding that the equipment is appropriately cleaned in between training sessions. Deliberate contact is not permitted but incidental bumps are tolerated. The overriding principles at Level B is **'get in, train and get out'**, where athletes and staff spend as little time as possible in changerooms, bathrooms and communal areas. Level C activity permits a full return to contact activity including tackling, wrestling, combat sports and scrummaging. Return to full competition/match play is permitted at level C. Nonetheless, it must be noted that Level C is not 'business as usual', and it will be critical to maintain social distancing where possible, hygiene and risk mitigation strategies, and vigilance for potential cases. Given the diversity of sport activities, we sought the advice from representatives from major Australian sport governing bodies for activities recommended for their sport, that align with the high-level descriptors for Levels A, B and C.

There will be many logistical challenges in sport and exercise medicine as sport reboots in a COVID-19 environment. One challenge will be that it is not possible to differentiate COVID-19 from any other 'garden variety' viral respiratory infection, based on clinical examination alone. As groups come back together for sporting purposes therefore, it is important to manage the expectations of athletes and coaches and other support staff. They will need to understand that any respiratory symptoms (even if mild) need to be reported. There will necessarily be a very low threshold for COVID-19 testing. This will inevitably involve isolation of the symptomatic individual while waiting for the test result. Athletes, coaches and other personnel need to understand that there will be more frequent disruptions to training as a result of the requirement for COVID-19 testing of symptomatic athletes/support staff. Coaches and training staff should exercise caution in avoiding training load spikes which may predispose athletes to injury.¹⁰

As a novel disease, evidence regarding medium to long-term sequelae of COVID-19 is scant. There is however growing research indicating that COVID-19 is a multi-organ disease causing a range of pathologies including cardiac injury, respiratory compromise, microthrombosis, large vessel stroke, renal pathology, neurological and hepatic dysfunction.^{11–18} Athletes who have suffered COVID-19 infection should not return to high intensity activities without a thorough medical assessment, taking into consideration the potential multi-organ pathologies.

The AIS Framework provides a process on **'how'** sporting organisations can move towards a resumption of sport in a graduated and cautious manner. Decisions regarding the timing of resumption (the **'when'**) of sporting activity must be made in close consultation with relevant Public Health Authorities. Such decisions will be based on the underlying transmission rates in the community, as represented by the effective reproduction number (R_t). An R_t of >1 indicates that numbers of cases in the population are likely to increase. Where the R_t is equivalent to 1, active case numbers are likely to remain stable. Where the R_t is <1 , the number of active cases will diminish.^{19,20} The R_t in Australia has been <1 since mid-April 2020. The Framework recommends that for transition to occur from one level to another, there needs to have been at least two incubation periods (i.e. four weeks) at the preceding level, with the R_t maintained <1 .

While there is a quiet optimism in Australia that the AIS Framework might provide a safe and considered path out of the COVID-19 restrictions and allow a graduated resumption of sporting activity, there is no sense of complacency. The AIS has consulted closely with Public Health Authorities and Chief Medical Officers (CMOs) representing each of the major sports. At all times there has been

an understanding that sport must proceed cautiously and must not become a source of community outbreak of COVID-19. Should such an outbreak occur, Public Health Authorities would have to intervene to contain the outbreak. There would be significant ramifications for the specific sporting organisation involved and potential consequences on the whole sport sector. Australia is currently enjoying low transmission rates, but public health and sporting authorities are aware of communities who are currently experiencing a 'second wave' of cases. The optimism in stepping forward with the AIS Framework is tempered by the knowledge that in a pandemic, small numbers can become big numbers very quickly.

The world has changed significantly since late December 2019, when the first cases of COVID-19 were reported in Wuhan. Nations have utilised a variety of approaches in managing this new and devastating disease. The balance between safety and the infringement upon personal liberties is viewed differently in different cultures. No one can confidently claim to know what the world will look like in four months from now. It remains unknown whether previous infection with SARS-CoV-2 confers immunity.²¹ There are many resources being channelled towards the development of a vaccine but the success of this is not a fait accompli. Eradication seems to be an unrealistic option for the world. The virus will not be defeated any time soon, so we must find a way of living with it. Like many countries around the world, Australia is seeking a pathway back towards normality. Resumption of sport and recreation activities can contribute physical, psychological and emotional benefits to societies emerging from the COVID-19 restrictions. The AIS Framework provides evidence-based protocols and decision-pathways to assist sporting organisations and individuals. The future path to the safe return to sporting activity remains uncertain. Each step towards resumption of sport will be welcome and will deliver tangible benefits to society. We must ensure however that the inevitable excitement at the prospect of resumption of sport does not cloud judgement or endanger our communities.

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