

Protecting Olympic Participants from COVID-19 — The Trialled and Tested Process

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The COVID-19 pandemic has created many challenges to ensure a safe environment for competitive sport. While modern medicine has already developed effective protocols for the treatment and prevention of the disease, there are serious concerns about hosting a sporting event of the scale of the Olympic Games, where more than 11,000 athletes from over 200 nations are expected to participate. Accordingly, there have been many calls to cancel the Tokyo Olympic Games, also known as Tokyo 2020, in both the international press and the scientific literature. A recent perspective published in the New England Journal of Medicine (NEJM) (1) highlights the complexity and risks of convening the Tokyo Olympic Games during the COVID-19 pandemic. Despite the many uncertainties (1), much has been learned over the past 18 months and many policies trialed and tested to protect athletes during sports participation.

A Sport and Exercise Medicine Perspective

To develop a rapid understanding of the perspectives from the international sports and exercise medicine community, an informal survey of the International Federation of Sports Medicine (FIMS) Executive Committee, Commissions, and Collaborating Centres of Sports Medicine agreed that the Tokyo Olympic Games could go ahead safely based on the plans addressing the pandemic developed by the International Olympic Committee (IOC) (Figure 1). This international network of 26 research laboratories and clinics has a mission to promote best practice principles in sport and exercise medicine, for athletes and active living (2). This contradiction between experts in epidemiology and sport and exercise medicine is understandable as the concerns of the authors (1) seemed to be based primarily on the Tokyo 2020 playbooks (3). The playbooks focus on operational procedures and cannot convey the extensive risk assessment and risk management procedures grounded in rigorous scientific evidence developed by the IOC in cooperation with the World Health Organization (WHO) and International Sports Federations (IFs) (4). Over 81% of our surveyed experts disagreed with the assertion that the IOC's playbooks are "not built on scientifically rigorous risk assessment, and they fail to consider the ways in which exposure occurs, the factors that contribute to exposure, and which participants may be at highest risk". The playbooks are constantly updated "living documents" (the 3rd edition was released after the NEJM perspective was published) and developed solely to facilitate a

safe environment for all participants (e.g., athletes, IFs, Olympic Family) at the Olympic and Paralympic Games and the local population in Japan. The playbooks were never intended to represent the scientific evidence that underpins the guidelines or to justify the Olympic Games proceeding or being cancelled.

A Network of Planning

The measures being implemented in Japan are built on the IOC's ever evolving health and safety best practices, the work of the National Olympic Committees' Chief Medical Officers, and the work, experience and guidelines of the Japanese government and health authorities. Strict processes are in place to protect the athletes and associated entourage, and the citizens of Japan. In addition to comprehensive COVID-19 testing, athletes, support staff and others may only be in their official hotel or village, on official transport vehicles, or at an official venue, and cannot venture out into the city or even to official venues other than the one in which they compete or work. Athletes are required to depart Tokyo at the latest two days after their sport competition has concluded. Thus, there will be no mixing of athletes and other accredited individuals with the general population of Japan, and many strategies are in place to reduce the risk of disease spread. Similar to prior host nations, holding the Olympic Games in Japan may have a positive impact on the health of the general population in Japan as major sporting events like the Olympic Games can promote the benefits of healthy and active lifestyles, contribute to the development of infrastructure and social facilities in the host country, and popularise sport and exercise (5). These details should not be ignored when considering whether the Tokyo Olympic Games should go ahead or not.

Collaboration by Global Experts

The authors of the NEJM perspective call for an emergency meeting with the WHO. The authors appear unaware that there has been continuous interaction between the IOC and the WHO since the start of the pandemic. The current risk reduction strategies are also based on the experience gained by the IOC and the IFs testing their own policies during their qualifying events during the COVID-19 pandemic. The IOC has established a very experienced IOC Medical and Scientific Commission

Games Group whose responsibilities include overseeing the daily provision of healthcare at the Olympic Games to athletes and their entourage and implementing real time solutions to reduce risk for all. These trialled and tested processes have served athletes and local populations well during previous Olympics Games, such as the Zika outbreak during the 2016 Rio Olympics (6). At regular intervals prior to nearly every recent Olympic Games, there have been concerns raised that major sporting events that bring together large groups of people from all corners of the world are a major public health risk. However, data from the Atlanta (1996), Sydney (2000), Athens (2004), Beijing (2008) and London (2012) Games do not uphold these concerns (7).

We believe the IOC has done its due diligence to protect all those involved in Tokyo 2020, and barring drastic changes in the current pandemic situation, the Olympic Games can be held safely and without undue risk to athletes or the citizens of Japan. Recognizing the many societal challenges and negative effects resulting from the COVID-19 pandemic, we should not underestimate the potential optimism and global impact of holding the Olympic Games.

Figure Legend:

Figure 1 – Survey Results from the International Federation of Sports Medicine Executive Committee, Commissions, and Collaborating Centres of Sports Medicine (n=33 respondents)

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REFERENCES

1. Sparrow AK, Brosseau LM, Harrison RJ, Osterholm MT. Protecting Olympic Participants from Covid-19 - The Urgent Need for a Risk-Management Approach. *N Engl J MED* 2021; May 25. doi: 10.1056/NEJMp2108567. Online ahead of print.
2. Collaborating Centers of Sports Medicine Worldwide (www.fims.org/about/ccsm/collaborating-centers-of-sports-medicine-worldwide/)
3. International Olympic Committee, International Paralympic Committee. The playbook: athletes and officials. June 2021 (<https://olympics.com/tokyo-2020/en/games/tokyo-2020-playbooks/>).
4. Adami PE, Cianca J, McCloskey B, Derman W, Steinacker JM, O'Connor F, Migliorini S, Budgett R, Yamasawa F, Lereim I, Bigard X, Troyanos C, Garrandes F, Bermon S. Infectious Diseases Outbreak Management Tool for endurance mass participation sporting events: an international effort to counteract the COVID-19 spread in the endurance sport setting. *Br J Sports Med.* 2021 Feb;55(3):181-182. doi: 10.1136/bjsports-2020-103091. Epub 2020 Aug 20. PMID: 32819919.
5. Lee YH, Kim JM. Olympic Health Legacy; Essentials for Lasting Development of Host City. *J Lifestyle Med.* 2013;3(1):9-18.
6. Attaran A. Zika virus and the 2016 Olympic Games. *Lancet Infect Dis.* 2016 Sep;16(9):1001-1003. doi: 10.1016/S1473-3099(16)30230-4. Epub 2016 Jul 23. PMID: 27460685; PMCID: PMC7128778.
7. MacAuley D. The health legacy of hosting major sporting events. *CMAJ.* 2015;187(17):1267. doi:10.1503/cmaj.151149.