

Olympic Games in COVID-19 times: lessons learned with special focus on the upcoming FIFA World Cup Qatar 2022

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The COVID-19 pandemic has impacted the global international sports calendar, causing the first-ever postponement of the 2020 Tokyo Summer Olympic Games (OG) and Paralympic Games (PG) until 2021.¹ Several scientists and sports organisations were strongly opposed to the organisation of these OG and PG.^{2,3} Variable vaccination rates, waning immunity and the emergence of more transmissible and potentially lethal COVID-19 strains have created additional challenges to hosting large-scale international sporting events.⁴

Contrary to the 2020 Tokyo Games, which were held without fans, another mega event, the FIFA World Cup 2022, will be held in Qatar (21 November–18 December) with over 1.7 million expected visitors (fans, staff, players and media).⁵

FIFA WORLD CUP 2022 CHALLENGES

We believe the organisation and public health prevention policies adopted during the Tokyo OG/PG were appropriate, with some understandable gaps and lessons learnt related to big events to be revised and optimised. Comparisons between public health policies implemented in Japan and those contemplated for the FIFA World Cup 2022 in Qatar are summarised in [table 1](#). In contrast

to the fan-free Japan OG, which hosted around 118 000 visitors over 29 days (ie, around 0.5% of the country's population), in the FIFA World Cup 2022, Qatar is expected to welcome foreign fans equivalent to more than half of the country's total population.⁵

Rigorous infection control policies to limit transmission of COVID-19 at the FIFA World Cup 2022 is a priority currently under development by public health experts with a review of past experiences in Qatar. More than a year has passed since the Amir Cup (December 2020) in Qatar with around 20 000 spectators attending.^{6,7} Qatar also successfully held 77 matches throughout the Asian Football Cup in December 2020 with a smaller number of fans. This was done within a tight bubble system for players and their respective delegations that set a standard for the safe restoration of professional football globally.^{1,6,7} Undoubtedly, accommodating a tournament with such a huge number of fans like the FIFA World Cup 2022 will necessitate more robust security measures to protect players, spectators and residents.^{6,7}

NEW VARIANTS OF CONCERN

In November 2021, the WHO reported 'Omicron' (ie, variant B.1.1.529) as a new strain to the COVID-19.⁸ Omicron has the capability to increase transmissibility, grant resistance to treatments and partially evade infection or vaccine-induced immunity.¹ Further gene mutations associated with the emergence of new variants are expected to affect virus characteristics and capabilities such as transmissibility, sickness severity and immune evasion, creating major uncertainty about the pandemic.¹ Using the Omicron strain as an example, the virus evolved in such a way that it became more contagious and less severe than previous

versions.⁸ In this context, the greater the number of people infected with a virus, the more likely it will mutate into new strains. Omicron, as well as the other COVID-19 variants, could mutate into a more dangerous, severe form, resulting in increased fatalities, imposing a significant case load on the world and decreasing the likelihood of the FIFA World Cup 2022 being successfully hosted. On the other hand, Omicron/other variants could evolve into a less severe form, allowing the FIFA World Cup 2022 to be safely held and filled with spectators.

RECOMMENDATIONS FOR FIFA WORLD CUP 2022

Given the experience gained from the Tokyo OC/PG, we suggest additional preventative measures be considered, including (1) a mandatory vaccination certificate showing second dose or booster dose within 6 months (number of doses depending on the vaccine durability effectiveness) and/or a recent COVID-19 infection certificate (within the last 6 months: protective adaptive immunity following natural infection of SARS-CoV-2 may persist for at least 6–8 months)⁹; (2) a mandatory COVID-19 immunoglobulin G antibody titre greater than 33.8 BAU/mL (which is suggestive of protective immunity against COVID-19) before boarding to Qatar¹⁰; (3) a COVID-19 passport for athletes, delegates and spectators that includes information about previous exposure to the virus, testing, results, and vaccination status¹; and (4) providing free COVID-19 rapid test centres for spectators around each stadium and directly pairing these results in the spectator COVID-19 passport and geolocalisation application prior to entering the premises.

Given the scarce evidence regarding the long-term persistence of immunity in either vaccinated or previously infected individuals, the aforementioned measures should provide further protective approaches in reducing the rate of COVID-19 infection during mass gathering. From now until the FIFA World Cup 2022, predictions remain uncertain in terms of the emergence of new variants rendering vaccines ineffective. However, the rapid spread of the less severe Omicron variant across the globe is bringing hope toward herd immunity. Taken together, we remain optimistic that the FIFA World Cup

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Table 1 Comparisons between public health policies implemented in Japan (OG and PG 2020, held in 2021) and expected public health policies in FIFA WC Qatar 2022

Key parameters	Japan OG/PG 2020	FIFA WC Qatar 2022
Participants	117 k in total (visitors) Except for a few thousand at outlying locations outside of Tokyo, no fans were allowed throughout the OG. Some PG sites allowed a few thousand schoolchildren to attend.	1.7 million nearly (visitors) anticipated=58.6% of the entire Qatar population Competition has been divided into eight playing locations. Stadiums average venue capacity: 47 500 seats The most distant venues are only 55 km apart.
Countries' demography (as per November 2021 statistics)	Population of Japan: 125.8 million Japan population density: 347 hab/km ² Tokyo (capital) population density: 6158 hab/km ²	Population of Qatar: 2.9 million Qatar population density: 185 hab/km ² Doha (capital) population density: 6.037 hab/km ²
Countries' surface area (km ²)	377 975	11 571
Local vaccine coverage at the beginning of the OG (23 July 2021)	25% fully vaccinated (two doses)	49% fully vaccinated (two doses)
Local vaccine coverage up to date of manuscript submission (November 2021)	76.0% fully vaccinated (two doses)	85.1% fully vaccinated (two doses)
Previous experience in holding big events during the COVID-19 pandemic	No	<ul style="list-style-type: none"> ▶ 2020 Amir Football Cup: hosted 20 k at the peak of the pandemic (December 2020). ▶ 2020 AFC (December 2020): 77 matches were successfully held throughout the event with some fans reported. <p>No vaccines were available during the period of the aforementioned two events. Before the aforementioned two events, social distance, temperature screening and mask-wearing were required before admission. The antigen test and monitoring findings were recorded using a geolocating cell phone app and an online booking system. While this was a pricey experiment for both organisers and viewers (the spectator was responsible for any required tests), these events mitigated the danger of COVID-19.</p> <ul style="list-style-type: none"> ▶ 2021 FIFA Arab Football Cup (November 2021): considered as a test for the FIFA WC-2022. For this event, less rigorous infection control policies were implemented, allowing fans to remove their masks inside the stadium as most of the fans were vaccinated. A mandatory negative rapid antigen test or up-to-date vaccination was required to get into the stadium. Those data were recorded in a geolocating cell phone app called 'Ehteraz'.
Duration of the whole event	29 days in total: 17 days for the OG and 12 for the PG	28 days
Number of sporting disciplines	49 in OG and 23 in PG	1
Eligible guests to participate in the event	70%–80% of the media representatives, as well as 85% of the residents at the Olympic Village had to be vaccinated.	Not divulged by the local authorities yet For the AFC 2020 and for the FIFA Arab Football Cup 2021: a quarantine of 1 week was required for any unvaccinated incomer to Doha.
Time to prepare for the event	There was much hesitancy regarding the likelihood of the Tokyo OG to happen Despite long-term preparation (16 July 2011, Japan was announced as host of the 2020 Summer OG, 9 years in advance), the final decision was made just a year before to postpone from 2020 to 2021.	2 December 2010: Qatar was announced to host the FIFA WC 2022 (12 years in advance). Qatar has been studying infection control policies to deal with mass event organisation since COVID-19 was announced as a pandemic (will be ~3 years prior to the FIFA WC 2022 start date).
Healthcare systems during the event	Good preparedness and no casualties have been reported especially as Japan succeeded to decrease the number of positive cases per million population from 183 corresponding to the number of positive cases at the closing ceremony of the PG (5 September 2021) to 1.18 (November 2021) after the surge of positive cases during the OG.	Qatar provides public health services mainly through the Primary Healthcare Corporation. The latter manages 28 health centres and is planning to adopt the FIFA WC mass-casualty incident plan in addition to other healthcare institutions such as Hamad Medical Corporation. The latter will be prepared for mass casualties and COVID-19 emergencies as needed.
Infection control before boarding to the organiser country	Two negative RT-PCR test results in the 96 hours leading up to arrival in Japan	Not divulged by the local authorities yet A similar approach to Tokyo's policy has been implemented at the AFC 2020 and FIFA Arab Football Cup 2021.
Infection control on arrival	Olympic guests were administered a rapid antigen saliva test on arrival while being required to remain at the airport until the test result was negative.	Not divulged by the local authorities yet A similar approach to Tokyo's policy has been implemented in AFC 2020 and in Arab Football Cup 2021.
Tracking travellers	All guests had to instal location-based contact tracing apps on their phones and restrict their movements within the country to 'designated bubbles'.	Location-based contact tracing apps have been implemented in Qatar since the beginning of the pandemic and will be maintained for the FIFA WC2022.
Daily infection control policies	People in the designated areas were subjected to two coronavirus rapid antigen tests a day. People were required to always wear face masks, except when sleeping, eating or competing.	Not divulged by the local authorities yet
Winning ceremony infection control	Many winning ceremonies for the OG and PG (over 200) Athletes who won gold, silver or bronze medals were forced to place their medals around their necks on the podium. Athletes who were done competing had to depart the country within 2 days of their final event	Only one winning ceremony at the final day
Security and tracking guest activities	Tokyo hotels were instructed to keep track of their guests' activities. It has been reported that hotel personnel were subsequently frustrated by their involvement in maintaining the bubble around Olympic delegations.	Qatar has a dedicated police team for 'stadium security', which has been specifically trained over more than 4 years for this event. Tracking of guests' activities is expected to be considered if needed.
Travelling back to own country, 'infection control'	RT-PCR negative test was required before boarding and going back to guests' respective countries to ensure that athletes and their supporting staff do not unintentionally bring a variation home.	Not divulged by the local authorities yet A similar approach to Tokyo's policy has been implemented in the AFC 2020 and in FIFA Arab Football Cup 2021.

AFC, Asian Football Cup; OG, Olympic Games; PG, Paralympic Games; RT-PCR, reverse transcription PCR; WC, World Cup.

2022 will be held safely and with full spectator attendance to witness the 'beautiful game'.

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