

Running into Trouble: COVID-19 in Japan during the Tokyo Olympics

29 July 2021

Leah Grout, Jennifer Summers, Nick Wilson, Michael Baker



The 2020 Olympic Games were originally postponed due to the COVID-19 pandemic. The delayed event has now opened, with the opening ceremonies held on 23 July 2021 and competitions scheduled to take place through 9 August 2021. In this blog we look at the situation in Japan, as compared to NZ, and discuss lessons for nations considering hosting large events with international attendees during the COVID-19 pandemic.

Here we consider the many public health implications of the decision to hold the Olympic and Paralympic Games in the middle of a global pandemic. These impacts include direct effects on the host country and city, effects on the attending athletes and staff themselves, and the indirect effects on global health and equity. Lessons from this event are also discussed. These concerns have also been highlighted in leading medical journals¹⁻³ and by many commenters, particularly in Japan.^{4 5}

THE COVID-19 pandemic in Japan

In response to the COVID-19 pandemic, the Japanese Government initially requested that all elementary schools, junior high schools, high schools, and special needs schools close from 2 March 2020 onward.⁶ This measure was adopted by all prefectures, except Hokkaido.⁶ The Government then declared a state of emergency on 7 April 2020 for seven prefectures, including Tokyo, but then extended the state of emergency to all 47 prefectures on 16 April 2020.⁶ The Japanese Government also requested that citizens

reduce social interactions and refrain from leaving home, if possible.⁶ Likewise, non-essential businesses were asked to close, but there was no enforcement and businesses that remained open were not penalised for their failure to comply.⁷ While the lockdown guidelines were voluntary (unlike Aotearoa New Zealand [NZ] and Australia where mandatory lockdowns have been used for disease control),^{6,7} there was relatively high compliance, with the share of people in Tokyo leaving their homes decreasing by as much as 64% by late April 2020.⁶

Initially, Japan was relatively successful at controlling virus transmission and maintained low death rates.⁷ This was likely due in part to high public compliance with safety measures including mass masking, physical distancing, and communication.⁷ For example, the Japanese Government has urged the public to avoid the “Three Cs”: closed spaces, crowded places, and close-contact settings.⁸ The initial state of emergency was lifted on 25 May 2020, after the number of daily new cases in Tokyo decreased from a peak of 209 down to almost zero cases.⁶

Japan did not completely close its borders when the COVID-19 pandemic began,⁷ although it eventually closed its borders to travellers from over 150 countries,⁹ albeit with exemptions that included Olympic delegations. Currently, all travellers that enter Japan, including Japanese nationals and residents, are required to submit proof of a negative COVID-19 test within 72 hours prior to departure, are subject to a test upon arrival, and must either quarantine at home or at another designated facility (depending on the country or region that they have arrived from and the results of subsequent tests) and refrain from using public transport for 14 days.¹⁰ Japan’s quarantine requirements are not as strict as those used in NZ, which has relied on hotel quarantine for international arrivals during the pandemic (except for periods of “green zone” travel such as between NZ and Australia), with 14 days quarantine combined with polymerase chain reaction (PCR) testing and mask use in shared spaces.

The results of genome sequencing suggest that initially there were at least two distinct forms of the pandemic virus that causes COVID-19 (SARS-CoV-2) that were introduced into Japan.¹¹ The “first wave” (January to March 2020) was initially driven by the spread of the initial wild-type virus, introduced by travellers and returnees from China, while in March 2020 the spread of a different lineage of the virus was detected, which was likely imported by travellers from Europe, North America, or other countries.¹¹

In late June 2020, the number of cases began rising again, marking the start of the second wave (see Figure 1), which peaked in early August 2020.¹² The increase in cases led to the launch of the Health Ministry’s coronavirus contact tracing app on 19 June 2020.¹³ The development of centralised contact tracing methods progressed slowly in Japan, even compared to NZ, where contact tracing efforts were not centralised until May 2020.¹⁴ The second wave in Japan was likely precipitated by lingering domestic spread of the virus that had remained in the population after the first wave.¹⁵ New states of emergency were declared in a number of prefectures, and the Government requested that nightlife districts close and that restaurants and bars stop serving alcohol at 10:00pm.¹⁵

In November 2020, the number of infections rose again and by early 2021, Japan was in the midst of a third wave of the epidemic.¹² States of emergency were again declared, affecting over half of the country’s population.¹⁶ It was reported that efforts to control pandemic spread were hampered by lack of testing capacity and coordinated data.^{16,17} For example, as of 18 July 2021, Japan had only tested 131 people per 1000 population, while NZ had

performed 497 tests per 1000 population.¹⁸ A fourth wave, driven in part by the highly transmissible Alpha variant,¹⁹ then began in April 2021.⁹ Tokyo and Osaka were most affected by the surge in cases,^{9,19} and seven other prefectures also declared states of emergency. The national test positivity rate neared 6% in May 2021 and there were high levels of hospitalisations and deaths, putting a serious strain on the health system.¹⁹

In mid-July 2021, on the eve of the Olympic Games, concerns were raised that a fifth wave of COVID-19 cases was taking off in Japan (see Table 1), driven by the spread of the Delta variant along with a marked increase in pedestrian traffic in major downtown areas in and around Tokyo.²⁰⁻²²

Figure 1: Epidemic curves of weekly notified confirmed and probable cases in Japan and New Zealand up to 22 July 2021²³⁻²⁵

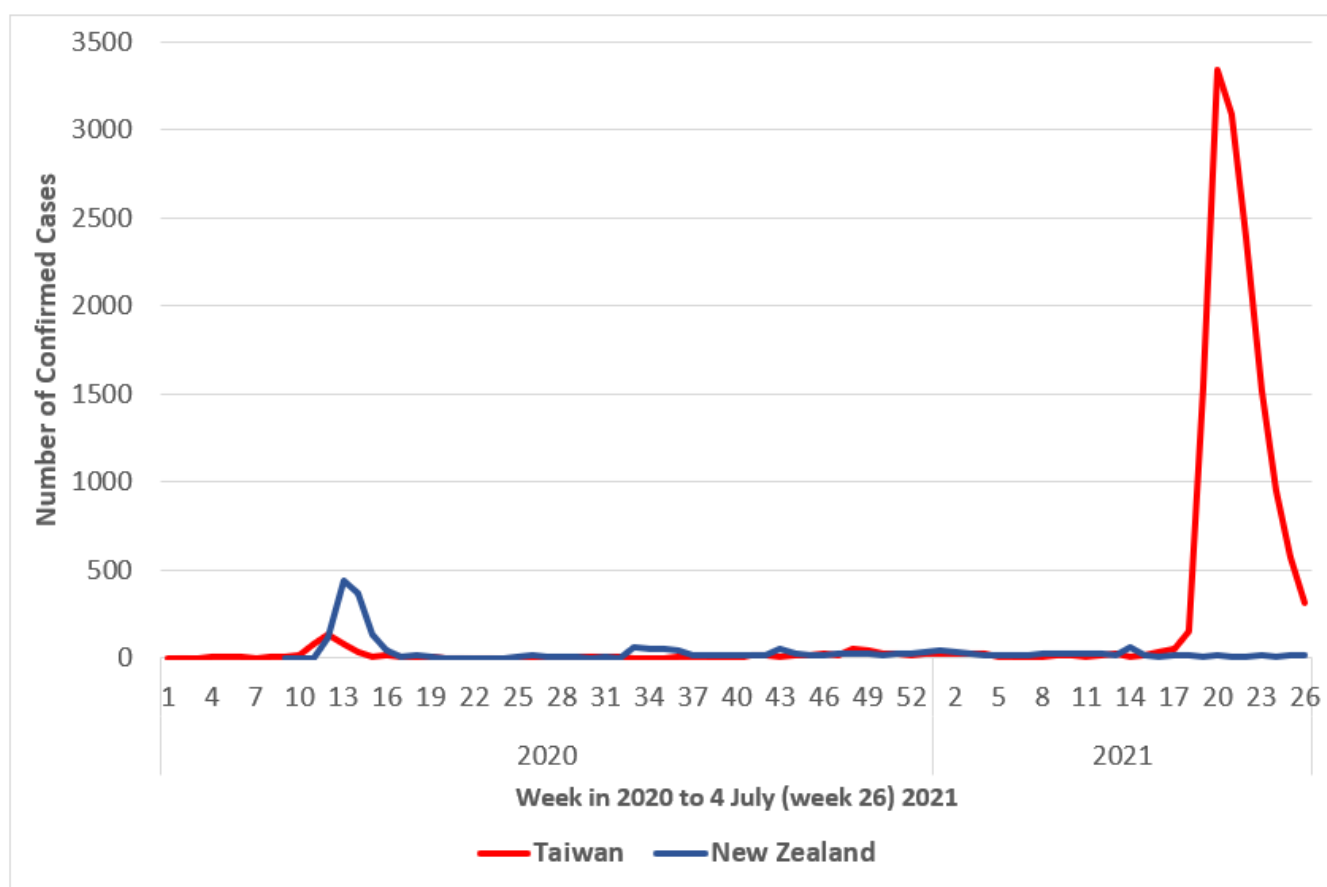


Table 1: Health impact of the COVID-19 pandemic (confirmed and probable cases) in Japan and New Zealand - data current to 22 July 2021

Country	Cumulative cases	Total deaths	Population (million)	Deaths per 1 million population	Reported cases per 1 million population	Case fatality proportion
New Zealand	2856 ²³	26 ²³	5.1 ²⁵	5.1	558	1.1%
Japan	858,503 ²³	15,052 ²³	125.6 ²⁴	119.9	6838	1.8%

As of 19 July 2021, almost 72 million vaccine doses had been administered in Japan, with over 28 million people or 22.5% of the total population fully vaccinated.²⁶ By comparison, as

of 21 July 2021, 1.5 million vaccine doses had been administered in NZ, with over 600,000 people or around 12% of the total population fully vaccinated.²⁷ Japan's vaccination rollout began in February 2021 with the approval of the Pfizer/BioNTech vaccine, but has been criticised for beginning later than in some other high-income nations,⁷ although it began around the same time as NZ's vaccination programme.²⁷ Japan's vaccine rollout has also been challenged by low levels of trust; a survey of attitudes towards COVID-19 vaccination in 15 countries reported that the Japanese public had the lowest levels of trust towards COVID-19 vaccines.²⁸

Impact of the Olympic and Paralympic Games on attendees during the COVID-19 pandemic

A major concern for the organisers of mass sporting events is the health and wellbeing of those attending. For competitors in the Olympics there is a detailed playbook developed by the International Olympic Committee (IOC). Prior to the Tokyo Olympics, considerable concerns were expressed that these precautions were inadequate to protect competitors.²

The 2020 Summer Olympic and Paralympic Games were originally scheduled to take place in Tokyo, Japan from 24 July to 9 August 2020, and from 25 August to 6 September 2020, respectively.²⁹ These international multisport events were postponed in March 2020 due to the COVID-19 pandemic, but are currently taking place from 23 July to 8 August 2021, and from 24 August to 5 September 2021, respectively.²⁹

Infectious disease outbreaks have frequently been reported to be associated with large events with international attendees and participants, such as religious events or music festivals, although there is less evidence for a significant association for infectious respiratory illnesses arising from sporting events (see Table 2).^{29 30} During the most recent Olympic Games, the 2018 Winter Olympics in PyeongChang, a prospective observational study that monitored respiratory tract infection (RTI) cases reported in Team Finland using nasal swabs identified a number of different viruses among infected athletes and staff members, including human coronavirus (HCoV) 229E, HCoV NL63, HCoV OC43, influenza B, human rhinovirus, respiratory syncytial virus type A, and human metapneumovirus.^{29 31} The study suggested that viral infections spread readily within the same sport discipline or team.^{29 31}

Table 2. Examples of infectious respiratory illnesses reported at past Olympic Games

Olympic Games	Condition	Reported cases
2002 Winter Olympics in Salt Lake City	Influenza	36 ³⁰
2010 Winter Olympics in Vancouver	Measles	82 ³²
2014 Winter Olympics in Sochi	RTIs	118 ³³
2016 Summer Olympics in Rio de Janeiro	RTIs	223 ³⁴
2018 Winter Olympics in PyeongChang	RTIs	107 ³⁵

While large RTI outbreaks at previous Olympic Games were relatively rare, and some Olympic Games have been successfully held during infectious disease outbreaks (ie, the 2010 Winter Games in Vancouver were held during the H1N1 influenza pandemic and the 2016 Summer Games in Rio de Janeiro were held during a Zika virus infection outbreak),²⁹ the current pandemic virus (SARS-CoV-2) is highly transmissible and has proved difficult to control under the best of circumstances.

A number of different restrictions have been put in place throughout Japan, as well as at specific Olympic venues (eg, stadiums, Athletes' Village) for COVID-19 prevention and control. Tokyo will remain in an official state of emergency throughout the Olympic Games, and bars and restaurants will not be allowed to serve alcohol and must close by 11:00pm.⁹ Olympic organisers have also decided not to allow any spectators (ie, both international and domestic) to attend events in Tokyo or surrounding areas.^{7,9} However, venues in some regions (eg, Miyagi, Shizuoka) will be allowed to host up to 50% of capacity up to 10,000 people.⁹

There are strict rules in place at Olympic venues for competitors and officials.^{7,36} Vaccination was not required for participation in the Games, but it has been reported that around 80% of the athletes and delegation members have been vaccinated.^{36,37} All participants arriving from outside of Japan must undergo predeparture testing, submit to testing on arrival in the airport, and quarantine for three days after arrival.³⁶ International participants are also prohibited from using public transport for 14 days after arrival.³⁶ All participants must wear a face mask at all times, except when eating, drinking, training, competing, or sleeping.³⁶ Physical distancing is also required at all venues.³⁶ Athletes are being screened daily with temperature taking and saliva testing.^{7,36,38} Those who return positive saliva tests then receive nasal PCR tests to confirm infection.³⁸ Athletes and staff who are considered close contacts of cases are required to isolate in their rooms in the Olympic village, with all of their meals delivered to the door, and have daily PCR testing.³⁸

Despite these measures, as of 26 July 2021, 148 cases of infection with SARS-CoV-2 had been reported among athletes, employees of the Olympics organising committee, national committees, contractors, and members of the media working at the Olympic Games,³⁹ and breakdowns in infection control protocols (eg, failure to mask or maintain physical distancing, illicit visits to local bars and nightspots) have been reported.^{37,40}

While many have argued for the cancellation of the Games on public health grounds, others have argued that economic and social impacts must also be considered. For example, the postponement of the 2020 Games cost Japan an estimated 4.52 trillion yen (US\$41.5 billion) based on operating expenses, facility maintenance, and the loss of tourism.²⁹ Additionally, for some athletes and coaches the postponement of the Olympics led to automatic retirement and loss of opportunity.⁴¹

Indirect effects of the Olympics on global public health

Staging the Olympics during a pandemic has multiple real and potential negative effects on global public health. One effect is that vaccines that are in short supply have been diverted into protecting athletes and other Olympic team members ahead of high priority groups such as health care workers and older and more vulnerable groups. There is limited vaccine supply in the world – only 14.1% of the world's population have been fully vaccinated (27.6% at least 1 dose).⁴² Selection events and training events leading up to the Olympics have also diverted resources away from battling the pandemic. The net effect of

vaccinating Olympic teams ahead of higher priority groups will almost certainly have resulted in avoidable COVID-19 cases, hospitalisations and deaths. These ethical issues have been highlighted in a number of articles.^{43 44}

Lessons for countries considering hosting large events with international attendees during a pandemic

The very nature of the Olympic Games requires an enormous amount of international travel, as well as large gatherings of people. With the spread of highly infectious variants of COVID-19, the pandemic threat continues to evolve. For example, the Delta variant has a reproduction number almost twice that of the wild-type of the COVID-19 pandemic virus,⁴⁵ and recent evidence suggests that vaccines may be less effective against this variant.⁴⁶

Given the high risk, we recommend that nations and sporting bodies that are considering hosting large events with international attendees during the COVID-19 pandemic urgently reconsider:

1. **Cancel or postpone such events.** The pandemic continues to worsen in many countries and staging large events will present a risk to public safety, could place strains on the host nation's healthcare system, and will likely result in additional illness (including "long Covid") and deaths. It may not be safe to hold such events until there are very high levels of vaccination coverage in the countries involved, and even then a range of other precautions will still probably be needed.
2. **Take a zero tolerance or elimination approach to COVID-19.** One of the only ways to ensure safety at large events with international attendees, would be to impose strict infection prevention and control measures (eg, closed borders and 14-day quarantine for all attendees), as in the case of the Australian Open (see Appendix) or the America's Cup sailing competition held in NZ.

In summary, Japan is facing a fifth wave of COVID-19 cases, just as the Olympic Games are under way. Numerous cases of SARS-CoV-2 infection have already been reported among athletes and staff at the Games along with breakdowns in infection control measures. There are good public health reasons for large events with international attendees to be cancelled or postponed during pandemics.

APPENDIX

Other sporting events during the COVID-19 pandemic: The case of the Australian Open

Other large events with international attendees have been held during the pandemic, but not without issue. In early February 2021, the Australian Open tennis tournament went forward in Melbourne despite the COVID-19 pandemic,⁴⁷ although Australia had a much lower level of COVID-19 spread at the time of the Australian Open than Japan had at the start of the Olympic Games. The Australian Open drew around a thousand participants from over 100 countries,⁴⁸ and had been organised with strict rules, including players observing 14 days of quarantine, with allowances for daily practice, after arriving on 17 charter flights in Melbourne.^{47 48} However, the event was marked by close calls. For example, when some charter flights were later found to have had positive cases onboard, 72 participants were confined to their rooms for all 14 days without any opportunities to practice.^{47 48} Additionally, warm-up matches were cancelled in Melbourne Park, and up to 600 players

and support staff were required to isolate until they had been tested, after a hotel quarantine worker at the Grand Hyatt Hotel in Melbourne tested positive for COVID-19.⁴⁹ Stadium admissions for spectators were originally capped at 50% of normal capacity (30,000 spectators per day), but the tournament was later forced to take place without any fans following the announcement of a lockdown in Victoria due to a COVID-19 cluster.⁴⁷

***Author details:** All authors are with the Department of Public Health, University of Otago, Wellington

Lead image: Ryunosuke Kikuno on Unsplash

References

1. Shimizu K, Sridhar D, Taniguchi K, et al. Reconsider this summer's Olympic and Paralympic games. *BMJ* 2021;373:n962. doi: 10.1136/bmj.n962
2. Sparrow AK, Brosseau LM, Harrison RJ, et al. Protecting Olympic Participants from Covid-19 — The Urgent Need for a Risk-Management Approach. *N Engl J Med* 2021;385(1):e2. doi: 10.1056/NEJMp2108567
3. Dalton CB, Taylor J. Is a COVID-safe Tokyo Olympics and Paralympics really possible? *Med J Aust* 2021; <https://www.mja.com.au/journal/2021/covid-safe-tokyo-olympics-and-paralympics-really-possible> [Preprint, 25 May 2021]
4. McCurry J. Tokyo cornered into going ahead with Games, says Olympic official. *The Guardian* 2021 (4 June). Available from: <https://www.theguardian.com/world/2021/jun/04/tokyo-cornered-into-going-ahead-with-games-says-olympic-official>.
5. Kim C-r, Sieg L. Japan Olympic Committee board member blasts Tokyo Games organisers. *Reuters* 2021 (4 June). Available from: <https://www.reuters.com/lifestyle/sports/japan-olympic-committee-board-member-games-losing-meaning-too-late-cancel-2021-06-04/>.
6. Watanabe T, Yabu T. Japan's voluntary lockdown. *PLoS One* 2021;16(6):e0252468-e68. doi: 10.1371/journal.pone.0252468
7. Reality Check Team. Tokyo 2020: Does Japan have Covid under control? *BBC News* 2021 (20 July). Available from: <https://www.bbc.com/news/57556978>.
8. The Government of Japan. Avoiding the Three Cs: A Key to Preventing the Spread of COVID-19 2020. [updated 24 December 2020]. Available from: https://www.japan.go.jp/kizuna/2020/avoiding_the_three_cs.html accessed 22 July 2021.
9. Tokyo Olympics: Spectators largely barred as Covid emergency declared. *BBC News* 2021 (8 July). Available from: <https://www.bbc.com/news/world-asia-57760883>.
10. Ministry of Foreign Affairs of Japan. Consular Services: Border enforcement measures to prevent the spread of novel coronavirus (COVID-19) 2021. [updated 28 June 2021]. Available from: https://www.mofa.go.jp/ca/fna/page4e_001053.html accessed 21 July 2021.
11. Sekizuka T, Itokawa K, Hashino M, et al. A Genome Epidemiological Study of SARS-CoV-2 Introduction into Japan. *mSphere* 2020;5(6):e00786-20. doi: 10.1128/mSphere.00786-20
12. No end in sight for third wave a year after COVID-19 made its way to Japan. *The Japan Times* 2021 (16 January). Available from: <https://www.japantimes.co.jp/news/2021/01/16/national/coronavirus-third-wave-japan/>

13. Siripala T. Japan braces for looming 'second wave' amid dramatic spike in COVID-19 cases. *The Diplomat* 2020 (05 August). Available from: <https://thediplomat.com/2020/08/japan-braces-for-looming-second-wave-amid-dramatic-spike-in-covid-19-cases/>.
14. Verrall A. Rapid Audit of Contact Tracing for Covid-19 in New Zealand. University of Otago, Wellington, New Zealand, 2020.
15. Wada K. Rapid response to: Resurgence of covid-19 in Japan. *BMJ* 2020. Available from: <https://www.bmj.com/content/370/bmj.m3221/rr-2>.
16. Kuhn A. Struggling with third wave of infections, Japan extends state of emergency. *NPR* 2021 (2 February). Available from: <https://www.npr.org/sections/coronavirus-live-updates/2021/02/02/963176884/struggling-with-third-wave-of-infections-japan-extends-state-of-emergency>.
17. Park J-m, Swift R. Caught off-guard by scant testing, Japan battered by COVID winter. *Reuters* 2021 (15 January). Available from: <https://www.reuters.com/article/us-health-coronavirus-japan/caught-off-guard-by-scant-testing-japan-battered-by-covid-winter-idUSKBN29K0AM>.
18. Our World in Data. Total COVID-10 tests per 1,000 people 2021. Available from: <https://ourworldindata.org/grapher/full-list-cumulative-total-tests-per-thousand?country=NZL~JPN> accessed 22 July 2021.
19. Cohen J. Japan's Healthcare System Under Severe Strain, As 4th Wave of COVID-19 Poses Threat to Olympic Games. *Forbes* 2021 (24 May). Available from: <https://www.forbes.com/sites/joshuacohen/2021/05/24/japans-healthcare-system-under-severe-strain-as-4th-wave-of-covid-19-poses-threat-to-olympic-games/?sh=4efd7a4cc575>.
20. '5th wave' of COVID-19 cases feared in Tokyo and Osaka. *The Asahi Shimbun* 2021 (17 July). Available from: <https://www.asahi.com/ajw/articles/14397380>.
21. Siripala T. Will Japan's Rapid COVID-19 rebound set back the Tokyo Olympics. *The Diplomat* 2021 (19 July). Available from: <https://thediplomat.com/2021/07/will-japans-rapid-covid-19-rebound-set-back-the-tokyo-olympics/>.
22. Tokyo region sees signs of 5th COVID wave, cases at 6-month highs. *Kyodo News* 2021 (17 July). Available from: <https://english.kyodonews.net/news/2021/07/f7bb65337fb6-breaking-news-tokyo-reports-1410-new-coronavirus-cases-sat.html>.
23. Our World in Data. COVID-19: Daily new confirmed cases vs cumulative cases: Japan and New Zealand 2021. [updated 23 July 2021]. Available from: <https://ourworldindata.org/grapher/daily-new-confirmed-cases-of-covid-19-vs-cumulative-cases-positive-rate?yScale=linear&country=JPN~NZL> accessed 24 July 2021.
24. Statistics Bureau of Japan. Population Estimates: Monthly Report: Ministry of Internal Affairs and Communications; 2021. Available from: <https://www.stat.go.jp/english/data/jinsui/tsuki/index.html> accessed 27 July 2021.
25. Statistics New Zealand/Tatauranga Aotearoa. Estimated population of NZ Wellington, New Zealand 2021. Available from: <https://www.stats.govt.nz/indicators/population-of-nz> accessed 21 July 2021.
26. Johns Hopkins University & Medicine. Japan - COVID-19 Overview 2021. [updated 19 July 2021]. Available from: <https://coronavirus.jhu.edu/region/japan> accessed 21 July 2021.
27. Ministry of Health/Manatū Hauora. COVID-19: Vaccine data 2021. [updated 21 July 2021]. Available from: <https://www.health.govt.nz/our-work/diseases-and-conditions/covid-19-novel-coronavirus/covid-19-data-and-statistics/covid-19-vaccine-data> accessed 22 July 2021.

28. Institute of Global Health Innovation. Global attitudes towards a COVID-19 vaccine. London 2021. Available from: https://www.imperial.ac.uk/media/imperial-college/institute-of-global-health-innovation/GlobalVaccineInsights_ICL-YouGov-Covid-19-Behaviour-Tracker_20210520_v2.pdf, accessed 20 July 2021.
29. Hoang VT, Al-Tawfiq JA, Gautret P. The Tokyo Olympic Games and the Risk of COVID-19. *Curr Trop Med Rep* 2020;1-7. doi: 10.1007/s40475-020-00217-y
30. Gautret P, Steffen R. Communicable diseases as health risks at mass gatherings other than Hajj: what is the evidence? *Int J Infect Dis* 2016;47(C):46-52. doi: 10.1016/j.ijid.2016.03.007
31. Valtonen M, Waris M, Vuorinen T, et al. Common cold in Team Finland during 2018 Winter Olympic Games (PyeongChang): epidemiology, diagnosis including molecular point-of-care testing (POCT) and treatment. *Br J Sports Med* 2019;53(17):1093-98. doi: 10.1136/bjsports-2018-100487
32. Gardy JL, Naus M, Amlani A, et al. Whole-Genome Sequencing of Measles Virus Genotypes H1 and D8 During Outbreaks of Infection Following the 2010 Olympic Winter Games Reveals Viral Transmission Routes. *J Infect Dis* 2015;212(10):1574-78. doi: 10.1093/infdis/jiv271
33. Soligard T, Steffen K, Palmer-Green D, et al. Sports injuries and illnesses in the Sochi 2014 Olympic Winter Games. *Br J Sports Med* 2015;49(7):441-47. doi: 10.1136/bjsports-2014-094538
34. Soligard T, Steffen K, Palmer D, et al. Sports injury and illness incidence in the Rio de Janeiro 2016 Olympic Summer Games: A prospective study of 11274 athletes from 207 countries. *Br J Sports Med* 2017;51(17):1265-71. doi: 10.1136/bjsports-2017-097956
35. Kim D-S, Lee Y-H, Bae KS, et al. PyeongChang 2018 Winter Olympic Games and athletes' usage of 'polyclinic' medical services. *BMJ Open Sport Exerc Med* 2019;5(1):e000548-e48. doi: 10.1136/bmjsem-2019-000548
36. Winsor M. What are the COVID rules at the Olympics, from spectators to vaccinations? *ABC News* 2021 (11 July). Available from: <https://abcnews.go.com/Sports/covid-19-rules-tokyo-olympics-spectators-banned-vaccination/story?id=78225985>.
37. Sturmer J, Asada Y. The Tokyo Olympics will take place in a coronavirus bubble, but weak points are already on display. *ABC News* 2021 (21 July). Available from: <https://www.abc.net.au/news/2021-07-21/olympics-arrivals-were-not-always-coronavirus-safe/100304564>.
38. Tokyo Olympics: First Covid cases in athletes' village as Team GB athletes cleared to resume training. *BBC Sport* 2021 (19 July). Available from: <https://www.bbc.com/sport/olympics/57844406>.
39. The Tokyo Organising Committee of the Olympic and Paralympic Games. Covid-19 Positive Case List (From 1 July Onwards). 2021. Available from: <https://gtimg.tokyo2020.org/image/upload/production/q2rvovu7ese7eqd9iw.pdf>, accessed 27 July 2021.
40. Morgan L. IOC sends warning over COVID-19 rule breaches after maskless marchers spotted at Opening Ceremont. *Inside the Games* 2021 (24 July). Available from: <https://www.insidethegames.biz/articles/1110686/ioc-warn-covid19-breaches-masks-ceremony>.
41. Taku K, Arai H. Impact of COVID-19 on Athletes and Coaches, and Their Values in Japan: Repercussions of Postponing the Tokyo 2020 Olympic and Paralympic Games. *J Loss Trauma* 2020;25(8):623-30. doi: 10.1080/15325024.2020.1777762
42. Our World in Data. Coronavirus (COVID-19) Vaccinations 2021. [updated 29 July 2021].

- Available from: <https://ourworldindata.org/covid-vaccinations> accessed 29 July 2021.
43. Keh A. Olympians enter a risky new event: Line jumping. *New York Times* 2021 (28 February). Available from: <https://www.nytimes.com/2021/02/28/sports/olympics/tokyo-olympics-vaccines.html>.
 44. Durkee A. Australia and France are the latest countries to prioritize Olympic athletes for Covid-19 vaccine. *Forbes* 2021 (27 April). Available from: <https://www.forbes.com/sites/alisondurkee/2021/04/27/australia-and-france-are-the-latest-countries-to-prioritize-olympic-athletes-for-covid-19-vaccine/?sh=70f961f377fe>.
 45. Johnson S. Here's what we know about the Indian Delta COVID-19 variant detected in Victoria's outbreak. *ABC News* 2021 (4 June). Available from: <https://www.abc.net.au/news/2021-06-04/what-do-we-know-about-delta-kappa-covid-variants/100190414>.
 46. Lacobucci G. Covid-19: Single vaccine dose is 33% effective against variant from India, data show. *BMJ* 2021;373:n1346. doi: 10.1136/bmj.n1346
 47. Robinson J. Australian Open to close doors to fans after new covid outbreak. *The Wall Street Journal* 2021 (12 February). Available from: <https://www.wsj.com/articles/australian-open-to-close-doors-to-fans-after-new-covid-outbreak-11613125887>.
 48. Watson A, Westcott B. After weeks of drama and setbacks, the Australian Open kicks off. *CNN* 2021 (8 February). Available from: <https://edition.cnn.com/2021/02/07/tennis/australian-open-coronavirus-sport-intl-hnk/index.html>.
 49. Australian Open lead-up events thrown into chaos after hotel worker tests positive for COVID-19. *ABC News* 2021 (4 February). Available from: <https://www.abc.net.au/news/2021-02-04/australian-open-lead-ups-thrown-into-chaos-covid-positive/13119702>.

Public Health Expert Briefing (ISSN 2816-1203)

Source URL:

<https://www.phcc.org.nz/briefing/running-trouble-covid-19-japan-during-tokyo-olympics>