



SARS-CoV2 Infection of Athletes in Brazilian Soccer Competitions: Lessons from Recent Events Worldwide and the Return of Fans to Stadiums



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Dear Editor,

Soccer activities in Brazil are in the eminency of returning with the public. The fans' return was the choice of 18 of the 20 clubs in the first division, even though high transmission rates are described between the athletes. Additionally, preventive measures are still not being taken considerably, both in relation to the athletes and the fans at stadium entrances. Although vaccination rates have been advancing, most low-income countries are still not with desirable vaccination rates for herd immunity. The absence of preventive measures and the returning of soccer activities are a concerning issue for returning. The paper by Ruiz-Lozano et al, highlights this finding, that both deaths and cases of deaths by Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have considerably increased during the European Soccer Championship.¹ However, preventive measures alone may be quite interesting to avoid SARS-CoV-2 transmission, which justifies the public's non-return. Considering only athletes, the paper by Krug et al,² described that some preventive measures taken were able to reduce the spread of SARS-CoV-2 (ice hockey athletes), and resulted in zero cases of SARS-CoV-2 infection in the athletes, considering a total time bigger than 500 practices and games and at least 15.858 athlete-hours. Krug et al, highlight that the transmission appears to be more likely in congested indoor areas involving adults than in the game space.² Therefore, we highlight the importance of a protocol that considers fewer opportunities for crowded

indoor areas (e.g., not using changing rooms in stadiums, but using bathrooms in hotel rooms that delegations have concentrated; transport in vehicles for small groups or even just with a driver; food in an individual environment, such as in the hotel room) should be a rule to be accomplished by athletes and organizers of these events. We highlight that if the transmission control with a few dozen athletes is difficult to control, we should increase transmission rates considering thousands of fans in the ten stadiums that host games in the Brazilian championship. Additionally, Krug et al reported that during the 18 weeks of follow-up of the ice hockey tournament, high stringency preventive measures protocols reduced to zero cases of SARS-CoV2 transmission. This finding supports how the need of preventive measures to avoid transmission.²

Especially in Brazil, this critical finding brought us to reflect regarding the need for strict preventive measures for sanitary safety of soccer championships that have gradually returned. In fact, a recent study revealed that the new infection rate of SARS-CoV2 in the state of São Paulo was 11.7% and 7.2% for athletes and staff, respectively, during soccer events, after the resuming of the championships.³ Brazil has recently held one of the main Latin American soccer championships, the Conmebol American Cup 2021, competing in around 10 nations. Some of them had a high incidence of SARS-CoV2 infection. Previously, Argentina and Colombia had declined to host the event because they were unable to fulfill their

commitments due to civil unrest and COVID-19 concerns. Although vaccination had improved considerably, less than 20% of the population was immunized with the complete vaccination scheme by the time of the event. As a result, the event registered 179 cases of SARS-CoV2 between athletes and staff.⁴ Unfortunately, we could not determine the correct number of athletes and staff during the event (officially, Conmebol did not release them). However, around 1.100 individuals³ attended the event, according to the Ministry of Health. Therefore, we must assume a high incidence considering the number of cases, unlike that published by Comembol, which considered the percentage of cases by the number of tests, which resulted in proximally 0.9% of cases in Conmebol American Cup 2021. In our understanding, the correct incidence was 16.3% and even more significant to the data of Gualano et al (11.7%).

The vaccination of athletes and delegations allied to a mandatory quarantine in isolation are necessary to reduce the risk of disease importation and community transmission in the locations that may host international events. This preventive measure also reduces the possibility of cross-contamination between the teams and the risk of exporting new strains from distinct countries or regions. Opposing this recommendation, especially quarantine, in the last 5 of September, a match between Brazil and Argentina by the World Cup qualifier was interrupted by Brazilian sanitary agents to remove from the field players who did not follow the quarantine procedure. This scenario reveals a significant issue for controlling the virus spread in sports events in Brazil, especially soccer.

Finally, it is essential to emphasize that Brazilian soccer and other sports events are likely to happen even though the country did not reach satisfactory vaccination coverage for herd immunity. Therefore, we should follow the strict social distancing protocols which were previously described.^{2,5} Additionally, to avoid mass gathering by the athletes and staff before and after the match, proper isolation of those who got polymerase chain reaction (PCR) positive testing and antibody testing might be of great use to understand and to follow the vaccination response and/or previous/ongoing SARS-CoV2 infection. These procedures have suggested that matches could occur with safer conditions and should be adopted by political and health authorities of the country.

Finally, about the fans, the few opportunities that fans have already released in games in Brazil, the organizers did not guarantee the use of distance measures in the stands or the use of masks, which makes us conclude that the ideal at this moment is not the return from fans to stadiums.

Vaccination comes with an essential aid to indoor and outdoor sports events with in-person attendance. However, we need high coverage of the complete vaccination scheme (70% or more). Additionally, rules for fewer opportunities for congested indoor areas may be a viable alternative. These preventive measures may be the key for the complete returning of the sports activities, including in-person attendance.

Authors' Contributions

All authors contributed equally to this research.

Conflict of Interest Disclosures

The authors declare that they have no conflict of interests.

Ethical Approval

Not applicable.

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