TST/PSS 2022;1-2:37-42
DOI: 10.21846/TST.2022.1-2.4

7. évfolyam, 1-2. szám / Year 7, Issue 1-2
2022

Efficacy of Coronavirus disease (COVID-19) safety protocol at the 2021 Wrestling European Olympic Games Qualifier organized in Budapest

A koronavírus-járvány (COVID-19) biztonsági protokolljának hatékonysága a 2021-es olimpiai játékok európai kvalifikációs birkózóversenyén, Budapesten

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Absztrakt: Bevezetés és cél: A COVID-19 világjárvány számos nehézséget okoz a többnapos nemzetközi sportesemények szervezésében. Ennek oka - részben - a sportolók közötti szoros fizikai kapcsolat, amely köztudottan elősegíti a vírus terjedését, még az egyéni sportágakban, például a birkózásban is. Ezért a birkózóselejtezőn rendkívül fontos volt a betegség szűrésének bevezetése, és a fertőzött résztvevők kizárása (majd elkülönítése). Az orvosi csapat és a COVID-marsallok együtt dolgoztak egy szűrési protokoll kidolgozásán, és céljuk volt, hogy a verseny során teszteljék annak hatékonyságát. Anyag és módszerek: A versenyen 37 ország 281 versenyzője vett részt. A Magyarországra való belépés kritériuma a polimeráz láncreakció (PCR) negatív tesztje, járványügyi és tüneti negativitás volt 72 órán belül. Antigén gyorsteszteket (ART) és szükség esetén újratesztelést is végeztünk. Kiutazáskor negatív PCR-teszt, vagy a karanténidőszak lejárta után kiállított igazolás volt szükséges. Eredmények: Összesen 1287 PCR-tesztet és 1250 gyorstesztet végeztünk. Érkezéskor 21 PCR-pozitív (1,4%) személy volt, akiket karanténba helyeztek. Az induláskor 6 PCR-teszt volt pozitív (0,47%). Az akkreditációkor elvégzett ART tesztek közül egy volt pozitív. Következtetés: Az egészségügyi személyzet sikeres protokollt dolgozott ki a COVID-19 szűrésére és a résztvevők izolálására, amit az induláskor tapasztalt nagyon alacsony pozitivitás is jelez. Így ez a protokoll alkalmazható többnapos nemzetközi sportesemények szervezésénél.
Kulcsszavak: COVID-19, birkózás, Covid-protokoll, kontaktsportok szűrése

Abstract: Introduction and Aim: The pandemic Covid-19 imposes several difficulties to organize multi-day international sports events. This is - in part - due to the close physical contact among the athletes, known to promote the spread of virus, even in individual sports, such as wrestling. Thus, at the Wrestling Qualifier it was of utmost importance to introduce screening for the disease and exclude infected participants (and then isolate them). The medical team and the COVID Marshals worked together on developing a screening protocol and aimed to test the efficacy during this competition. Material and Methods: The event was attended by 281 competitors from 37 countries. The criteria to enter Hungary were a negative polymerase chain reaction (PCR) test, epidemiological and symptomatic negativity within 72 hours. We also performed Antigen rapid tests (ART, chromatographic immunoassay) and retesting if necessary. Upon departure a negative PCR test or a certificate issued after the end of the quarantine period was required. Results: In total, 1,287 PCR tests and 1,250 rapid tests were performed. At arrival, there were 21 PCR positive

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(1.4%) individuals, and they were quarantined. At the departure 6 PCR tests were positive (0.47%). One of the ARTs performed at the accreditation was positive. Conclusion: The medical staff has developed a successful protocol to screen for Covid-19 and isolate participants as indicated by the very low positivity for Covid-19 at departure. Thus such protocol can be used for organizing multi-day international sports events.
Keywords: COVID-19, Wrestling, Covid protocol, Contact sport Screening

Introduction

The Novel Coronavirus (COVID-19) and it's variants (alfa, delta, omicron), a contagious respiratory and vascular (blood vessel) disease, was discovered in December 2019 and caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which is a specific type of coronavirus (Sharma et al. 2021). The standard method of diagnosis is by reverse transcription polymerase chain reaction (PCR) from a nasopharyngeal swab (Chams at al. 2020). Antigen tests (Ag) should be used as rapid detection (15 min), but will be recorded only for orientation and results accordingly (Rai et al. 2021).

Since early 2020 all sports events - including the 2020 Tokyo Olympic Games - have been highly affected by the COVID-19 pandemic (Toresdahl & Asif, 2020). Athletes have an active lifestyle; thus, they are at a high risk of viral infections and transmitting infections to their teammates and competitors (Timpka, 2020. Even though athletes are younger and have fewer comorbidities than the general population and thus are at a lower risk for severe disease or death (Wu & McGoogan, 2020), there is a need to protect them from serious complications such as SARS-CoV-2-associated myocarditis (Raukar & Cooper, 2021). All sports tournaments have been suspended or cancelled due to COVID-19 since March 2020 (Toresdahl & Asif, 2020), when local and state governments restricted the sizes of gatherings. The International Olympic Committee announced that the 2020 Tokyo Olympic and Paralympic Games would be postponed, which was an important decision. Morimura et al. outline the difficulties and countermeasures for emergency and disaster medical care related to organizing the Tokyo Olympic Games (Morimura et al., 2021). It is evident that besides guidelines and policies to comply with social distancing requirements and governmental guidelines the proper sport-specific protocols are essential to hold sports events (Griffin et al., 2021).

Due to the coronavirus crisis many sports competitions were not completed (Merkely et al., 2020), and there has been a debate about whether they should be re-started or cancelled until further notice (Halabchi et al., 2020; Duarte Muñoz & Meyer, 2020; Hay, 2013; Corsini et al., 2020). Nevertheless, due to the COVID-19 pandemic around the world there are new considerations and requirements to host multi-day international sports events.

Wrestling is one of the founding sport event of the antique Hellenic and also of the Modern Olympic Games. As a contact sport, it is among the high-risk sports during the COVID-19 pandemic; this is the fact that highlights the danger of this disease in wrestling. Since February 2021, United World Wrestling (UWW) has conducted several world and continental wrestling competitions, including the European Olympic Qualifying Competitions. Organizing those competitions required well-defined, professional and practical COVID-19 screening protocols. Furthermore, those protocols had to be precise yet flexible enough to respond to unexpected or unforeseen events and conditions.

Material and Methods

The Wrestling European Qualification Tournament for Tokyo 2020 Olympic Games was organized during March 18-21, 2021, in all three disciplines (Freestyle, Women's Wrestling and Greco-Roman) in Budapest under the regulations of the International Wrestling Federation (UWW), but the accreditations began two days earlier. The criteria to enter Hungary were to have a negative PCR test (Mensch et al., 2018) and to have epidemiological and symptomatic negativity within 72 hours (Figure 1). The local medical team performed another PCR and an Antigen rapid test sampling for all athletes, coaches, and staff members at the accreditation. The PCR samples were

analysed by an accredited laboratory (Synlab Hungary Kft.), while the AG tests were read on-site by the so-called COVID Marshals who were responsible for participants to comply with all parts of the newly developed protocol. The result of the PCR test followed the sampling within 12 hours; thus, after the accreditation participants entered the so-called „bubble" under isolated conditions (Figure 1). The bubble included the training sites, all the venues and hotels (except the quarantine hotel). Entering the bubble a negative PCR test was required. Once someone left the bubble, a new negative PCR test was required to re-entry. The main point of the bubble was that only participants with negative test result could stay there, to avoid transmission. In total, 281 Senior competitors (Freestyle 94, Women's Wrestling 78, Greco-Roman 109) from 37 European countries participated in the event, who wrestled a total of 331 bouts. Upon departure, a negative PCR test or a certificate issued after the quarantine period was required. During the competition, 1287 PCR tests and 1250 antigen rapid tests were performed. Those competitors who had a positive PCR test with a negative history who produced a negative rapid test were re-sampled. The epidemiological supervision of the competition and the implementation of the quick decisions were carried out by a UWW-MC member and a medical commander assigned by the Medical Centre of the Hungarian Defense Forces.

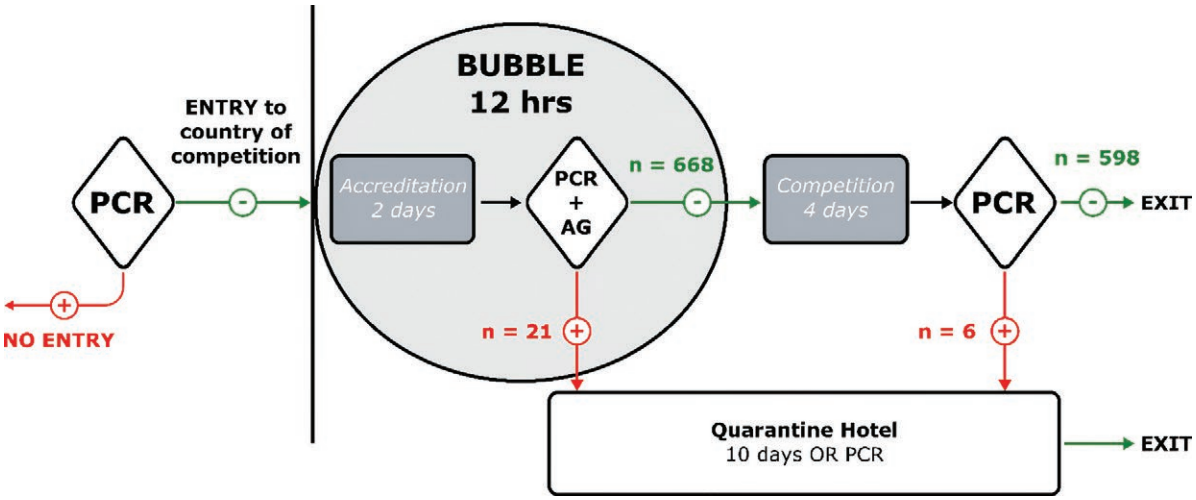

Figure 1. COVID-19 Screening Protocol for the wrestling European Olympic Qualifier, Budapest, Hungary 18-21 March, 2021

Results

In total, 1287 PCR tests and 1250 rapid tests were performed during the competitions. One symptomatic competitor whose other tests had been negative was transferred to hospital and was suspended from the competition. Only one of the antigen rapid tests performed at the accreditation stage proved to be positive. Of the PCR tests taken on arrival, 21 were positive and they were immediately identified and isolated in an external hotel (Table 1).

Wrestlers with positive PCR tests were studied individually. Five wrestlers were identified as having a certified recovery from the illness; decisions were made after a repeated test on the next day. None of the wrestlers were antibody protected or vaccinated. The rest of the individuals (coaches, judges and staff members) with positive PCR tests were quarantined.

On departure, 6 PCR tests were positive (Table 1). The PCR-positive participants were placed in a quarantined hotel. According to the National Public Health Center/National protocol Epidemiological Centre, asymptomatic individuals with a repeated negative PCR test were released after 4-6 days; others completed their 10-day quarantine period without a new test. The medical team provided 24 hours medical supervision at the hotel.

DOI: 10.21846/TST.2022.1-2.4

Table 1. Total number of PCR tests and total number of positive (+) PCR before and after the event

PCR tests total	n=1287	PCR test before	n=689	PCR test after	n=598
(+) PCR total	n=27	(+) PCR before	n=21	(+) PCR after	n=6
%	2.1		3.0		1.0

Discussion

Prevention of injuries and illnesses is considered as the main priority of the UWW, the international governing body of the Olympic style wrestling (Halloran, 2008; Shadgan et al., 2010). The Medical, Prevention and Anti-Doping Commission of the UWW is responsible for devising, monitoring and complying with Wrestling Medical Regulations in all official competitions. Direct supervision of the medical coverage of the wrestling competitions is also an essential duty of UWW-MC (Molnár et al., 2020).

The outbreak of the Novel Coronavirus (COVID-19) pandemic has affected all sporting events worldwide. Although the 2020 Tokyo Olympic Games were postponed to 2021, the COVID pandemic is still challenging the qualifying competitions. As a contact sport, wrestling is among the high-risk sports during the COVID-19 pandemic and the final qualifying competitions needed to be well-planned, organized, and supervised very carefully to avoid the spread of the virus and to unnecessarily suspend the virus infected participants.

Therefore establishing well-designed professional and practical COVID-19 screening protocols are necessary for the return to sports events and competitions in a safe way. Furthermore, those protocols had to be precise yet flexible enough to respond to unexpected or unforeseen events and conditions. We have shown that a screening protocol as described in this study can be considered a successful practical method for screening and early detection of infected participants necessary to prevent disease transmission.

In a recent study, Buldú et al. have shown that reducing the number of days between football matches can help to lower the rate of infection among football players at the end of the season (Buldú et al., 2020). Moreover, they analysed the consequences of reducing the number of days between taking PCR tests. They suggested that since antibody and antigen tests are not effective enough for early detection of the disease, they should be conducted accurately and carried out daily throughout the competitions. Our observation also supports the benefit of daily testing during the multi-day competitions for the early detection of infected individuals.

Conclusion

In conclusion, the medical staff have shown that the COVID-19 screening method and the protective bubble designed and carried out during the Wrestling European Qualification Tournament for Tokyo 2020 Olympic Games could efficiently protect our athletes. In relation to the ongoing, potentially threatening pandemic due to various COVID mutations (such as the currently rapidly spreading delta variant), this protocol is suggested to be used during international sports events, especially in case of contact sports.

Disclosure statement

No author has any financial interest or received any financial benefit from this research.

Conflicts of interest

The authors state no conflict of interest.

References

1. Buldú, J. M., Antequera, D. R. & Aguirre, J. (2020). The resumption of sports competitions after COVID-19 lockdown: The case of the Spanish football league. *Chaos, Solitons & Fractals*, *138*, 109964. https://doi.org/https://doi.org/10.1016/j.chaos.2020.109964
2. Chams N., Chams S., Badran R., Shams A., Araji A., Raad M., Mukhopadhyay S., Stroberg E., Duval E..J., Barton L. M. & Hajj Hussein I. (2020). COVID-19:

A Multidisciplinary Review. *Front Public Health.* 8:383. https://doi.org/10.3389/fpubh.2020.00383
3. Corsini, A., Bisciotti, G. N., Eirale, C. & Volpi, P. (2020). Football cannot restart soon during the COVID-19 emergency! A critical perspective from the Italian experience and a call for action. In *British Journal of Sports Medicine* (Vol. 54, Issue 20, pp. 1186–1187). https://doi.org/10.1136/bjsports-2020-102306
4. Duarte Muñoz, M. & Meyer, T. (2020). Infectious diseases and football – lessons not only from COVID-19. *Science and Medicine in Football*, *4*(2), 85–86. https://doi.org/10.1080/24733938.2020.1749422
5. Griffin, S. A., Mendham, A., Krustrup, P., Murray, A., Peirce, N., Larkin, J., Jaques, R., Cowie, C. M., Stokes, K. A. & Kemp, S. P. (2021). Team sport in a COVID-19 world. A catastrophe in waiting, or an opportunity for community sport to evolve and further enhance population health? In *British Journal of Sports Medicine* (Vol. 55, Issue 3, pp. 130–131). https://doi.org/10.1136/bjsports-2020-102963
6. Halabchi, F., Ahmadinejad, Z. & Selk-Ghaffari, M. (2020). COVID-19 Epidemic: Exercise or not to Exercise; that is the Question! *Asian Journal of Sports Medicine*, *11*(1), e102630. https://doi.org/10.5812/asjsm.102630
7. Halloran, L. (2008). Wrestling injuries. *Orthopedic Nursing*, *27*(3), 184–189. https://doi.org/10.1097/01.NOR.0000320548.20611.16
8. Hay, S. (2013). Football fever could be a dose of dengue. *Nature*, *503*(7477), 439. https://doi.org/10.1038/503439a
9. Mensch, K., Szarka, K., Mensch, H., Dobai, A., Magyar, Z., Pacurar, M., Vartolomei, A., Manuc, D. & Nagy, C. (2018). PCR Technique Assisting the Early Diagnosis of Human Papillomavirus A retrospective clinical study. *Revista de Chimie*, *69*, 2781–2787. https://doi.org/10.37358/RC.18.10.6624
10. Merkely, B., Szabó, A. J., Kosztin, A., Berényi, E., Sebestyén, A., Lengyel, C., Merkely, G., Karády, J., Várkonyi, I., Papp, C., Miseta, A., Betlehem, J., Burián, K., Csóka, I., Vásárhelyi, B., Ludwig, E., Prinz, G., Sinkó, J., Hankó, B. & Vokó, Z. (2020). Novel coronavirus epidemic in the Hungarian population, a cross-sectional nationwide survey to support the exit policy in Hungary. *GeroScience*, *42*(4), 1063–1074. https://doi.org/10.1007/s11357-020-00226-9
11. Molnár, S., Mensch, K. & Gáspár, K. (2020). Wrestling. In W. Krutsch, H. O. Mayr, V. Musahl, F. Della Villa, P. M. Tscholl & H. Jones (Eds.), *Injury and Health Risk Management in Sports: A Guide to Decision Making* (pp. 565–571). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-662-60752-7_86
12. Morimura, N., Mizobata, Y., Sugita, M., Takeda, S., Kiyozumi, T., Shoko, T., Inoue, Y., Otomo, Y., Sakurai, A., Koido, Y., Tanabe, S., Okumura, T., Yamasawa, F., Tanaka, H., Kinoshi, T., Kaku, K., Matsuda, K., Kitamura, N., Hayakawa, T. & Yukioka, T. (2021). Medicine at mass gatherings: current progress of preparedness of emergency medical services and disaster medical response during 2020 Tokyo Olympic and Paralympic Games from the perspective of the Academic Consortium (AC2020). *Acute Medicine & Surgery*, *8*(1), e626. https://doi.org/10.1002/ams2.626
13. Rai, P., Kumar, B.K., Deekshit, V.K., Karunasagar, I. & Karunasagar, I. (2021). Detection technologies and recent developments in the diagnosis of COVID-19 infection. *Appl Microbiol Biotechnol.* 105(2):441-455. https://doi.org/10.1007/s00253-020-11061-5
14. Raukar, N. P. & Cooper, L. T. (2021). Implications of SARS-CoV-2-Associated Myocarditis in the Medical Evaluation of Athletes. *Sports Health*, *13*(2), 145–148. https://doi.org/10.1177/1941738120974747
15. Shadgan, B., Feldman, B. J. & Jafari, S. (2010). Wrestling injuries during the 2008 Beijing Olympic Games. *The American Journal of Sports Medicine*, *38*(9), 1870–1876. https://doi.org/10.1177/0363546510369291
16. Sharma, A., Farouk, I.A. & Lal, S.K. (2021). COVID-19: A Review on the Novel Coronavirus Disease Evolution, Transmission, Detection, Control and Prevention. *Viruses*. 13(2):202. https://doi.org/10.3390/v13020202

DOI: 10.21846/TST.2022.1-2.4

17. Timpka, T. (2020). Sports Health during the SARS-Cov-2 Pandemic. In *Sports medicine (Auckland, N.Z.)* (Vol. 50, Issue 8, pp. 1413–1416). https://doi.org/10.1007/s40279-020-01288-7
18. Toresdahl, B. G. & Asif, I. M. (2020). Coronavirus Disease 2019 (COVID-19): Considerations for the Competitive Athlete. In *Sports health* (Vol. 12, Issue 3, pp. 221–224). https://doi.org/10.1177/1941738120918876
19. Wu, Z. & McGoogan, J. M. (2020). Characteristics of and Important Lessons from the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases from the Chinese Center for Disease Control and Prevention. *JAMA*, *323*(13), 1239–1242. https://doi.org/10.1001/jama.2020.2648