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Level V Evidence

Impact of the COVID-19 Pandemic on Sports Medicine Patient Care

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The COVID-19 pandemic has necessitated new practices in sports medicine patient care. Telehealth has been validated as a reliable tool for consultations and physical examinations and increases access to care in a cost-efficient manner. Social distancing and avoiding team members who have tested positive are the most effective ways to reduce spread. For screening, daily self-reported symptom checklists and fever monitoring help identify potentially infected athletes who should be instructed to isolate and seek care. Polymerase chain-reaction (PCR) testing for the virus via nasopharyngeal swab is not recommended for screening and should be reserved for symptomatic individuals with fever, cough, or shortness of breath. Face masks and personal protective equipment (PPE) may be beneficial in high-risk settings, but there is little evidence to support use in athletic populations. Median return to play after COVID-19 in elite athletes has been reported as 18 days (range: 12 to 30), with 27% not fully available at 28 days. Chest pain at diagnosis was the only symptom associated with time loss longer than 28 days. Finally, canceled competitions or time loss results in grief, stress, and frustration for athletes, as well as loss of a social support network and routine training regimens. Mental health support services may be indicated.

Introduction

Since March of 2020, the COVID-19 pandemic has continued to challenge previously established standards of healthcare processes. As programs sought to effectively adjust to alternative and safe modes of education and patient care, these unforeseen circumstances have further highlighted the need to reevaluate how institutions approach medical education, patient evaluation and care, and the socioeconomic and psychosocial implications for medical professionals and the general public alike. The pandemic has made an immeasurable impact on the changing landscape across all medical specialties, and sports medicine surgeons have faced unique challenges secondary to the innate reliance of the subspecialty on physical examination, operating room time and safety, and a need to make public health decisions on player safety and return to play.[1-3]

Along with these challenges, there remains uncertainty for both board-certified orthopaedic sports medicine surgeons and future trainees regarding how programs can adhere to a high level of fellowship training, quality of life, and patient care in the possible event of future restrictions on elective procedures and sports participation.[4] Furthermore, it is essential to acknowledge how patient outcomes may be affected by virtual visits, delays in surgical interventions, and the balance of sports restriction with psychosocial and physical health.[4] Although the COVID-19 pandemic continues to evolve, this article seeks to report on current evidence-based strategies and developments across several critical aspects of sports medicine training and patient care.

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The authors report the following potential conflicts of interest or sources of funding: M.K.M. reports board or committee membership in AAOS, the American Orthopaedic Association, American Orthopaedic Society for Sports Medicine, Arthroscopy Association of North America, the Ruth Jackson Orthopaedic Society, and The Forum; and editorial or governing board membership in the American Journal of Sports Medicine *Electronic Media,* Arthroscopy, Ortho Info. *Full ICMJE author disclosure forms are available for this article online, as supplementary material.*

Received October 31, 2022; accepted November 1, 2022.

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0749-8063/221433/$36.00

https://doi.org/10.1016/j.arthro.2022.11.003

Evolution of Telehealth and Virtual Physical Examinations

Although not as commonly used prior to the COVID-19 pandemic, delivery of orthopaedic care via telehealth and virtual examination platforms has drastically increased due to initial social-distancing measures and limitations on in-person evaluations.[5,6] The use of telemedicine allows for continuity of patient care with providers, while promoting the cost-effective, efficient, and convenient management of musculoskeletal and sports medicine injuries (Table 1).[6,7] In orthopaedic surgery, virtual examination platforms have been previously validated as accurate and reliable tools for assessing functional outcomes for clinical and research purposes compared to standard in-person evaluations.[8-11] In a series of randomized controlled trials, Buvik et al.[8,9] concluded that remote consultations are cost-effective for patients and cost less for providers than in-person visits when total consultations exceed 151 patients per year. These video-assisted consultations were no longer in duration compared to in-person visits and were evaluated by the orthopaedic surgeons as not being inferior to standard consultations and exams. Multiple other studies have corroborated the cost-savings benefits and reduced wait times associated with telehealth when substituted for traditional outpatient orthopaedic visits, while producing similar outcomes and high patient satisfaction.[12-15]

Guidelines for physical examinations of the shoulder, knee, and hip joints conducted over telehealth platforms have been discussed extensively along with their respective limitations.[10,12,13,16-19] Although it is impossible to replace the ability of experienced orthopaedic surgeons to perform diagnostic physical exam maneuvers, telehealth continues to present a promising tool in sports medicine to increase accessibility and efficiency of patient evaluation and care. Future studies should aim to determine the sensitivity, specificity, and diagnostic accuracy of remote physical examinations performed by a patient and interpreted by a clinician and compared to previously accepted values when performed in-office by experienced practitioners. As greater emphasis is been placed on value-based care, the socioeconomic savings for both patients and providers have made telehealth an attractive option for musculoskeletal care that is expected to be a mainstay in the field of orthopaedics well past the conclusion of the pandemic.[6,7,17]

Training, Sideline, and Return to Play Considerations

Although most collegiate and major league athletics have returned with full stadiums following suspension in March 2020, sports medicine physicians must still be mindful of best-practice COVID-19 prevention and testing measures in caring for their teams. Sports require close contact between athletes, coaching staff, and providers at all levels of competition and, thus, provide a unique vector for community transmission of coronavirus. Younger athletes with fewer comorbidities may be at a lower risk of severe complications than the general population; however, preventing the spread of COVID-19 across groups is crucial in protecting higher-risk individuals and alleviating strain on healthcare systems.[20] The role of the team physician has, thereby, evolved with new responsibilities to reduce the risk of athlete exposure, manage athletes with active COVID-19 symptoms, and coordinate return to play (RTP) protocols for those recovering from the disease. Multiple studies have reported on the clinical patterns of COVID-19 in athletic populations and provide valuable frameworks for optimal athlete recovery and care moving forward.[21-26]

In order to reduce COVID-19-related interruptions in training and the potential adverse effects on an athlete's aerobic capacity upon RTP, preventative measures against transmission should be a primary focus for team physicians, coaches, and athletes alike. Social distancing and avoiding team members that have tested positive for COVID-19 are likely the most effective ways to reduce the spread of infection, as the CDC's recommendation of distancing 6 feet from others has been supported in the athletic community.[27] In addition to avoiding mass gatherings and limiting face-to-face contact, optimal personal hygiene by athletes and staff through showering and handwashing are paramount to limiting transmission in sporting environments. The use of shared equipment (e.g., balls, weights, etc.) should be minimized, and systematic cleaning protocols with proper techniques and products should be implemented. Recommendations from team physicians have also advocated for training at outdoor or well-ventilated indoor facilities, and travel bans were initially established to reduce transmission between athletes.[23,24] For screening prevention, daily self-reported symptom checklists and fever monitoring may help identify potentially infected athletes who should then be instructed to isolate immediately and seek medical care. RNA detection polymerase chain reaction (PCR) testing

Table 1. Benefits of Telehealth in Orthopaedic Sports Medicine

Continuity of patient musculoskeletal care with physicians when in-person care is unavailable.
Socioeconomic savings and reduced wait times for patients
Reliable guidelines and online examination tools have been previously validated and published.
Increases access to orthopaedic sports medicine care for patients in remote communities

for the virus via nasopharyngeal swab is not recommended as a screening measure and should be reserved for symptomatic individuals presenting with fever, cough, or shortness of breath. Finally, although face masks and personal protective equipment (PPE) may be beneficial in high-risk settings, there is little evidence to support their use in athletic populations. Properly donning PPE during competition can be practically challenging in a sports setting. Medical providers are advised to conduct internal risk assessments and develop sports-specific masking protocols for their athletes, while all coaches, athletic trainers, and health staff should consider wearing face masks during practices and team events.[23,28]

Literature detailing standardized RTP protocols in the setting of a pandemic is limited. However, recent studies have reported common patterns in the clinical presentation of athletes with COVID-19. Particularly at the elite and professional levels, early identification and management of infection in athletic populations that rely on uninterrupted training to optimize physical performance and career advancement is vital. In a 2022 study of 147 elite international athletes testing positive for COVID-19, Hull et al.[26] reported a generally mild, self-limited disease course most often characterized by symptoms of fatigue (57%), dry cough (50%), and headache (46%). The median time lost by athletes in this cohort was 18 (range: 12−30) days, with 27% not fully available for RTP over 28 days from the initial date of infection. Interestingly, chest pain at initial diagnosis was the only symptom associated with prolonged time loss from competition (>28 days) and increased the likelihood of delayed RTP nearly three-fold. Similar investigations have highlighted the value of identifying "symptom clusters" associated with prolonged RTP following COVID-19, with one citing excessive fatigue as a key symptom in more than 70% of athletes returning at >40 days postinfection.[29] In another 2022 study on COVID-19 in a cohort of elite international athletes, Krzywański et al.[25] found that male athletes over the age of 26 were more likely to present with symptomatic illness, while those presenting with asymptomatic cases were typically younger and female. Female orthopaedic patients also appear to be more negatively impacted by pandemic-related physiotherapy facility closures, reporting significantly more pain, anxiety, and delayed recovery during rehabilitation.[22] Therefore, identifying various demographic trends in the clinical presentation of athletes with COVID-19 may further aid in the early management of the disease and limit community transmission.

In addition to potentially prolonged recovery periods following COVID-19 infection, team physicians must assess for cardiorespiratory sequelae of the virus and how this may manifest in a deconditioned athlete upon RTP (Table 2). The cessation of routine exercise during this period may lead to a loss of fitness and detraining in athletes. It can negatively impact the overall function of the cardiovascular, respiratory, and musculoskeletal systems, resulting in an overall loss of up to 10% of fitness for each week of total inactivity.[30] Previous studies have advocated for these factors to be considered when designing RTP protocols and how they influence the risk of injury or suboptimal performance in athletes returning from medical isolation.[21]

Table 2. Return to Play (RTP) Following COVID-19 Diagnosis

Reduce COVID-19-related interruptions in training with proper social distancing, self-isolation, personal and equipment hygiene, and self-reported symptom checkers for athletes and staff.
Chest pain, excessive fatigue, and older male gender have all been identified as risk factors predisposing athletes to prolonged RTP and duration of symptoms.
Assess for cardiorespiratory sequelae of COVID-19 and how this may manifest in a deconditioned athlete upon RTP.
Coordinate necessary mental health support services for athletes with regular telehealth check-ins and sports psychology counseling during periods of isolation.

Eirale et al.[31] cited 3 relevant factors to assess in an athlete's return to training evaluation: 1) whether the player has contracted COVID-19 and if he/she has demonstrated any sequelae, 2) duration of detraining period and isolation, and 3) adequate precompetition period for aerobic and strength-retraining activities. Athletes should also undergo detailed cardiac examination upon gradual return to training following acute infection and may use self-assessment algorithms to monitor symptoms of chest pain, breathlessness, palpitations, dizziness, or syncope, all indicators to seek further medical attention.[23,32,33] Bhatia et al.[33] developed a pragmatic approach for self-assessment in elite athletes after a prolonged absence from sport, proposing an algorithm that balances the risk of COVID-19 cardiac sequelae with the potential limitations of more invasive testing procedures in an athletic population. This approach to screening assesses factors such as duration and severity of illness, hospitalization status, and presence of cardiac symptoms to determine whether further consultation from a sports medicine cardiology specialist may be indicated. Finally, COVID-19-related suspension of seasons and canceling competitions can be a source of significant grief, stress, and frustration for athletes. This psychological impact is further confounded by the loss of one's social support network and routine training regimens during periods of isolation. Sports medicine physicians must be prepared to coordinate necessary mental health support services for athletes with regular telehealth check-ins and opportunities for sports psychology counseling.[24] With the above factors in mind and understanding how each may uniquely impact an athlete's ability to return to their prior level of play, team physicians may

be better prepared to coordinate cross-specialty care and training protocols in athletic populations following COVID-19 infection.

Conclusion

Although the COVID-19 pandemic presented novel challenges in the delivery of orthopaedic sports medicine care, physicians have adapted and established new standards of patient care and medical education that are positioned to outlast the current public health crisis. Telehealth has been validated as a reliable tool for musculoskeletal consultations and physical examinations, while also increasing patient access to care in a cost-efficient manner. Additional guidelines for team care and return to play during COVID-19 have also been published in aims to reduce the spread and severity of the virus and its overall public health burden.

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