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“From Covid-19 to bubble events to booster vaccination:
Psychological effects of Covid-19 on elite athletes’ mental well-being and performance”
by
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Declaration by Author

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Abstract

Purpose: This study aims to investigate the experiences of athletes during the Covid-19 pandemic including bubble sports events and booster vaccinations. It also tries to discover the psychological factors that influence athletes' decisions regarding having a vaccination or not.

Design: Phenomenological study.

Methods: Nine elite athletes and a doctor filled out a short questionnaire made by the investigator to collect descriptive statistics. Then participants took part in an online interview (which followed the protocols of a transcendental study) where they were asked about their feelings, experiences and thoughts about covid vaccination, boosters, and bubble events during the pandemic. The interview transcripts were analysed based on the phenomenological method.

Results: From the analysis of the interviews with the elite athletes, it was found that although everyone agreed that bubble sport events were not a comfortable system, many agreed that it was the best solution at that time and they were happy to continue their sport and even had the opportunity to compete. Another important finding was regarding the booster vaccination. Majority of the participants explained that they took the vaccinations in order to be able to compete, however, some highlighted that the booster vaccination was not mandatory in all cases by the time they needed it so even if it was not a conscious decision they did not get it or if it was possible to go back in time they would have not asked for it.

Conclusion: The current research helped to understand both positive and negative feelings athletes had in vital situations throughout the pandemic. In addition, it gave an insight into their everyday life in that time and also due to the interviews it helped to gain a better knowledge about the influencing factors that can impact athletes' decisions. Furthermore, the discoveries made in this research provide a foundation for the forthcoming investigations concerning booster vaccinations and the underlying decision-making process involved.

Keywords: pandemic, phenomenological approach, vaccination, bubble system, elite athletes

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Introduction

More than three years ago, very interesting headlines were made and published all over the Internet: Every 100 years, a pandemic breaks out! In 1720 the plague, in 1820 cholera, in 1920 the Spanish flu and then in 2020 it was Covid-19. However, at that time people did not know what will happen in the following years and how the new pandemic will change their lives forever. We now know that a significant number of people have lost their jobs, the global economy has declined, and others have been stranded in different countries away from their loved ones. Unfortunately, similar to previous pandemics, as of today, June 07 , 2023, the number of lives lost due to Covid-19 stands at 6,941,095 (WHO, 2023).

Despite the rapid technological changes in the last decade or two, the world was not prepared for such changes in a very short time. Schools had to go online, however, no one was ready to do so only within a few weeks (Hassan et al., 2020). Teachers had to adapt and create content for the online format, while kids were forced to stare at a computer for half a day and pay attention to the learning material from home while being unable to have any kind of social interaction. Companies did not differ. Therefore where it was possible, people worked from home, however, in several cases, big companies did lay off their employees and the global economic situation was (maybe still is) near to the level of the year 2008. Eventually, this was among the factors that led to a decline in mental health among people in different countries (Bueno-Notivol et al., 2021).

The mental aspect not only played a key role in general life, but also in the sports world. Athletes experienced uncommon events that profoundly impacted them. Suddenly, they were compelled to halt their training, a circumstance typically reserved for two scenarios: either retirement from elite athlete lifestyle or injury. However, outside of these occurrences, it is unlikely for high-level athletes to cease their training. Athletes had to cope with the general life aspect of Covid-19 influence such as being far from their loved ones and

closed in their homes due to lockdowns. Furthermore, the competition calendar based on which they prepared their best possible shape was first postponed and then cancelled (including the Olympics). Not knowing when the matches are going to be, how or if they can stay in shape, and whether their sponsors keep their contracts with them, all these beyond general life challenges were found to be negatively affecting athletes' mental well-being (Haan et al., 2021).

Luckily after several competitions were postponed, the sports world found its solution to continue the season. Firstly, the NBA introduced the bubble system in which due to very strict regulations, athletes were able to restart their training and also competitions (Weston, 2021). Over the weeks and months, other leagues and federations followed this path and started to organise sports events in bubbles and eventually, the Tokyo Olympics were held in this system as well.

However, people knew the only long-term solution to stop spreading the virus and get back to normal life was vaccination against Covid-19. Therefore, competition began among countries all over the world to produce the first dose. In several countries, elite athletes or national-level athletes were among the first ones who could get the vaccination. It did not make the decisions easier regarding vacations for athletes. Several factors including social norms and worry about physical consequences on their bodies made athletes concerned regarding this big decision (Sobierajski et al., 2022).

Therefore, the purpose of the study is to better understand the decision-making process around vaccination and booster shots and to gain insights into the bubble events through the lived experiences of athletes during the pandemic as well.

Literature review

Covid-19, the Beginning of a Pandemic

The world has turned upside down in the last three years, and people's everyday life changed utterly. The perspective of a then-called normal life was modified within a second. The time needs to be returned to December 2019 to understand what happened. The today well-known "Coronavirus disease (Covid-19) is an infectious disease caused by the SARS-CoV-2 virus" (WHO, 2020). The so-called virus rapidly spread worldwide and impacted it for the worse from numerous aspects. It quickly became the centre of attention of everyone as it affected humans' health (both mentally and physically), companies' finances, and countries' economics (Jordà et al., 2021) ; hence quickly, worldwide people from different walks of life were involved. To better understand, the following part will explore some of the facts related to this period.

A phenomenon is referred to as "an object of human experience" (van Manen, 1990, p.163). The Covid-19 pandemic phenomenon is a highly researched topic by experts in different fields (Ioannidis, 2022). Based on information from the World Health Organisation (WHO) first patients with Covid-19 were in Wuhan City, China, in December 2019. Later it was found that 31 of the 33 positive samples that were analysed in China for SARS-CoV-2 nucleic acid were coming from the part of the Huanan Seafood Market where people were able to buy wild animals (Shi et al., 2020), including bats which are linked to several coronaviruses (De Wit et al., 2016). After the first few cases, the viruses escalated rapidly globally, and humans faced a crisis as thousands lost their lives. On the 11th of March 2020, the WHO declared it a pandemic (Ioannidis, 2022) which eventually led to a lockdown which at that time was not known to be only the first one. Cancelled events and localised lockdowns started in February 2020. By the middle of March 2020, national lockdowns had begun

leading to people being unable to return to their homes and families being torn (the effect of these actions will be discussed later). By the 15th of March 2020, 166.235 confirmed cases were globally registered and 6.136 deaths (WHO, 2020) which shocked people. Two months later, the countries slowly started to ease from the strict rules, and places gradually reopened. However, this process varied between continents and sometimes even between countries. While the government of some countries decided to go back to "normal" life slowly, others still strictly forbid all kinds of travelling to different countries. These differences have made this period controversial, and the attention it received from the different media sites did not help the situation. Although during the following lockdowns travelling was possible, it was linked to strict quarantine periods and numerous tests; however, these varied between countries (World Tourism Organisation, 2021).

A race began among countries to be the first to develop a vaccine against the virus. On December 8, 2020, the first vaccine was administered outside of a clinical trial (The Royal College of Nursing, 2020). By that time, more than half a million cases were registered to the WHO and 9.756 deaths; however, these numbers can be lower or excessive due to different reasons (e.g., reasons on the death certificate differed) (WHO, 2023). Those mentioned above were just a few of the many facts linked to this pandemic to see and comprehend this phenomenon's complexity.

Covid-19 and the Psychological Effects in the General Population

The facts mentioned earlier were just a few of the many linked to this pandemic and were shown to begin to see the phenomenon's complexity. However, to comprehend it on a deeper level, researchers started to investigate the effects of the occurrences related to the virus.

Instead of a smooth adaptation to this new lifestyle, people had to face rapid changes in a limited amount of time. At first, some of the events got cancelled where governments and organisations saw a higher risk of increasing the number of infected cases and later on, everyday life changed. Due to the lockdowns, schools, universities, companies and even countries closed their doors/borders, which required fast problem-solving skills to solve these issues as kids needed to learn and people had to continue to work. Hence the most common solution was to change as many things to an online version as possible. The adaptation, however, varied between countries, as studies showed that the developed and developing countries faced different concerns (Tadesse & Muluye, 2020). Studies found that teachers reported several disadvantages of online teaching, - such as many of them felt that they did not have the essential skills to use online platforms, there were issues with the Internet connection or even low response rates from children (Hassan et al., 2020; Farooq et al., 2020; Oyedotun, 2020) which was similar to pupils' perceptions for instance in Slovakia (Katić et al., 2021).

It was also found that during the pandemic, students' mental health decreased (Copeland et al., 2021; Elmer et al., 2020; Savage et al., 2021), which included, e.g. higher levels of distress and anxiety. Moreover, a study with German students showed a higher level of depression and more suicidal thoughts (Brailovskaia et al., 2021).

Although students had to face Covid-19 and online teaching, studies even found that children from a very young age could 'suffer' from the consequences. Therefore, scientists became interested the how the pandemic would influence smaller kids (who were not in a school system yet); a study showed that even from a young age, kids could interact with peers through online platforms (Luo et al., 2022).

Regarding adults, the pandemic also changed every aspect of their daily lives. However, it was different from the case with adolescents or younger generations. While some

people could keep their jobs and work online from their homes, others lost their jobs due to significant layoffs at companies worldwide in one of the most uncertain times of the century. In addition, some people worked in health care and continued their work in a familiar environment with an unusual virus. No matter in which category people tend to be, it influenced their mental well-being negatively. For instance, there were higher levels of depression (Bueno-Notivol et al., 2021; Mahmud et al., 2022) and suicide ideations (Killgore et al., 2020). On the other hand, it was also stated that resilience, spiritual well-being and having more social support could be a protective factor for adults when it comes to mental health (Wirkner et al., 2021) and also a higher level of tolerance uncertainties in adolescents (Janssen et al., 2020).

As for the elderly, the results varied a lot between countries. While in Sweden, older people showed similar outcomes to the previous years (Kivi et al., 2021), in France, people aged above 70 had a decrease in their mental health and showed a higher level of anxiety and depression (Ramiz et al., 2021). Furthermore, in Scotland, there was a slight increase in received social support (Okely et al., 2021). However, in Austria, a similar age group reported a higher loneliness level than in the years before (Stolz et al., 2021).

Covid-19 and the Psychological Effects in Athletes

As briefly described above, Covid-19 had several severe effects on the everyday life of people. However, the sports community needed to face additional changes during that period. The sports world faced a massive challenge, from regular exercisers to elite athletes during the pandemic. This part will investigate how Covid-19 modified athletes' lives and what adaptations were needed to continue the training, maintain mental well-being, and prepare for or attend competitions.

From one day to another, facilities were forced to close, making it unable for athletes to attend training; therefore, they needed to try to stay in shape at home. Although, in the beginning, many creative solutions were recommended and shown mainly on social media sites, it was obvious that it would be challenging to keep up with the preparation in this form in the long term, especially before the Olympics (not only physically but mentally as well). Hence, big decisions were made regularly based on government announcements, which differed between countries (Ludvigsen et al., 2022).

One of the aspects of this research is mental health. There was an enormous uncertainty that athletes faced during the pandemic as they did not know how long it would take before they would be able to be back at the sports centres and train in their habitual setting; even their sponsorships and contracts were at risk (Haan et al., 2021; Wiltshire et al., 2022). Several competitions were cancelled or, in other cases, were postponed, including the Olympics, which were cancelled four months before the event (in history, it was only cancelled due to the world wars before the Covid-19 pandemic). The challenges they were facing were found to be negatively impacting athletes' mental well-being (Haan et al., 2021) despite their age (Vincent et al., 2022); however, for instance, in Italy, half of the youth participants reported distress while the numbers were lower at older ages (Di Cagno et al., 2020). Moreover, a lower level of motivation was associated with older players. The same review also highlighted that those athletes competing at the highest level had elevated anxiety levels (Ruffault et al., 2020).

On the other hand, resilience (Gupta & McCarthy, 2021) and emotional intelligence were critical factors for athletes coping better with stress and habitual changes (Vincent et al., 2022). As the players were unable to train appropriately and faced mental health issues during the lockdowns, performance became another factor contributing to the concerns that athletes and those involved in their lives already displayed. For example, a study with the NBA

players associated Covid-19 with changes in the ability to play at their peak (Wiltshire et al., 2022).

Another interesting area for instance, many athletes retired due to the pandemic without any transition process or being able to play one more time on the field in front of fans and spectators. In addition, some teams could not play the last season together and say goodbye to each other or (e.g., in the United States, college athletes) the senior players did not have a proper last season. However, for instance, in the United States in the college championships, these players got another chance and were allowed to have another 'last season' (NCAA, 2021), resulting in the following year's senior athletes needing to compete against 'alumni athletes, 'which was controversial. As can be seen, these changes not only affected the current senior year's athletes but also the ones who became seniors in the following year (NCAA, 2021). Therefore, players had to fight for the positions for example, in a team and maybe even scholarships could depend on it, however, there are no detailed descriptions or explanations around this topic at the universities' websites.

Covid-19 and Vaccination in the General Population

The whole pandemic period was and still is a controversial topic among people. However, vaccination further enhanced it in public life. As mentioned above, there was a competition to be the first to develop a vaccine against Covid-19. By the end of 2020, the first vaccination was used outside of trials. However, the decision did not get any easier as on the 'market', there were different types of vaccines. In addition, governments decided which types of vaccination they allowed people to travel in their country (VisaGuide.World, 2022).

Before jumping into details, it is important to declare the different variants that people could choose from. In the middle of the whole pandemic, Covid-19 vaccines were categorised into one of the following ones: whole virus vaccines (e.g., Sinopharm), protein-based

vaccines (e.g., Novavax), viral vector vaccines (e.g., AstraZeneca, Janssen) or nucleic acid vaccines (e.g., Moderna, Pfizer) (Ndwandwe & Wiysonge, 2021). For the vast majority of people in the whole world, these expressions did not say a lot since it was not part of their everyday life. However, within a second people wanted to comprehend the differences and why one of these four might be better than the other. On the other hand, some people were questioning the whole production process as in the usual context providing a new vaccine can take up to even a decade (Ndwandwe & Wiysonge, 2021) therefore, it is normal that people with or especially without a high level of knowledge in science might be concerned and even were questioning the safety and efficacy of the new products.

Hence it is vital to understand what contributing factors influenced people (either way) in the decision-making process. In a systematic review, it was found that people above 50 years old, the ones living with children, people with previous positive tests for Covid-19 and also the people who previously had influenza shots were less hesitant when asked about Covid-19 vaccination (Fajar et al., 2022). On the other side, single marital status and unemployment were factors in contrast to the previous findings. Fajar and his colleagues (2022) also revealed the association between a lower level of educational level and a higher risk of hesitancy. Another study included additional factors that need to be noted when we are talking about influencing factors. One of these is misinformation. It was explained that within misinformation, conspiracy was mentioned in 77 different studies (Zhao et al., 2022). This conspiracy-related information was found to be related to vaccine existence, development and promotion and also to politics (Zhao et al., 2022). In addition, there was evidence that some people believed that vaccines cause infertility and with the vaccines they would receive 5G-nanochips under their skin (Arshad et al., 2021). Beyond conspiracy, concerns related to vaccines safety and effectiveness were also found among other factors such as misinformation about the necessity of vaccines, natural immunity, Covid-19 denial and morality. In this study,

it was also highlighted that the main source of misinformation during the pandemic was social media sites. However, it remained inconsistent whether gender played a role in who believes more in misinformation (Zhao et al., 2022).

Beside political views and information that were read on social media sites, friends and family were also found to be influencing people's opinions about the vaccination (Magee et al., 2022). Furthermore, news from radio and tv channels was included as well (Arshad et al., 2021).

Taking into account all these factors that were explained and highlighted above, on the WHO's page it can be found that as of today (07.06.2023) 5.114.648.987 people are fully vaccinated all over the world (WHO, 2023). However, it needs to be noted that the rates among the regions differ and there are some countries and parts of the world the WHO does not have information about. Therefore, these numbers might be higher, but no official numbers can be known. Considering all these factors that were mentioned above in different studies, it can be seen that having a better understanding of the general population and the reasons behind their choices regarding vaccinations is hard due to its complexity.

Covid-19 and Vaccination in Elite Athletes

Before the vaccinations were used with athletes, physical and biological measurements were crucial for players' safety to make sure athletes do not suffer any physical consequences after having Covid-19. Throughout the pandemic, protocols have been developed and updated for athletes in the form of a return 'policy'. These guidelines were based on the severity of the illness as athletes were found to be at risk of myocarditis (which can be linked to sudden cardiac death) (Faghy et al., 2022), "exertional heat illness, rhabdomyolysis, and cardiorespiratory failure and musculoskeletal injury" (Vincent et al., 2022). For instance, athletes with positive Covid-19 tests without symptoms must avoid exercising for at least two

weeks. Mild and moderate symptoms could have even resulted in different cardiac tests (e.g., "clinical cardiovascular evaluation beside cardiac biomarkers and imaging") before returning to training (Driggin et al., 2020). In addition, in every case, starting to exercise again was suggested to be done under the supervision of medical experts (Driggin et al., 2020). Moreover, to avoid any muscular injuries while returning to the sport, it was highly recommended to do it gradually (Vincent et al., 2022).

Once vaccinations were tested and started to be used, athletes were among the first ones to receive it to represent their countries at competitions. However, medical doctors suggested different types of Covid-19 vaccination. Not to forget the relatives, social norms, media and, in the case of athletes, the physical consequences as factors that influenced this decision. Therefore, it is not surprising that athletes were concerned when they made a decision about the vaccination (Sobierajski et al., 2022).

Before introducing the different studies that were made in this area, it is essential to note here that this research field is still sparse and more longitudinal studies are needed in the future. One of the concerning factors for athletes was their training and the possibility of having fewer training days after vaccination. Therefore, experts were investigating the consequences of getting the Covid-19 vaccine or the virus. It was suggested that getting the vaccine is more predictable as it can be scheduled (e.g., to reduce training for 2-3 days, especially after the second dose (Hull et al., 2021)) and also takes fewer days away from the training compared to the infection by Covid-19 (Krzywański et al., 2022). Nonetheless, the training days athletes lost varied. It was associated with the different types of Covid-19 vaccination they got (Krzywański et al., 2022), which is still a higher number compared to influenza vaccinations which were found not to affect or result in lost days (Stenger et al., 2020). Another factor which impacted athletes' decisions was side effects. Different outcomes were shown when physiological consequences were measured regarding exercising after

receiving the vaccination. Although no effect was significant in the blood tests and by respiratory gas exchange, the heart rate was increased in healthy, physically active adults, which implicated further tests on elite athletes for safety reasons (Batatinha et al., 2022).

A study about vaccination with Polish athletes found that the environment athletes were in, tended to influence them. For instance, vaccinated athletes' coaches and teammates were more likely to be also vaccinated than those non-vaccinated ones (Sobierajski et al., 2022). This study also shared an interesting outcome that stated that the non-vaccinated relatives' rate was significantly higher among non-vaccinated athletes compared to vaccinated athletes, which strengthened the implication of the effect of social norms and peer pressure (Sobierajski et al., 2022).

Social media and the Internet were the channels where many conspiracy theories were spreading, and people, mainly adolescents, were found to use these sites as primary information resources regarding the pandemic. Therefore, it was implicated that doubting the whole pandemic could be linked to this factor (Sobierajski et al., 2022).

On the other hand, some athletes decided not to get vaccinated even though the consequences could result in being unable to travel or not attending competitions. The most famous case occurred in tennis at the Australian Open in 2022. Novak Djokovic is known for not being vaccinated against Covid-19, and as a consequence, he was deported from Australia (Burki, 2022) before the Grand Slam began. The local people highly supported this decision as from a survey; it was found that the vast majority supported this decision (Burki, 2022) which might be because the continent faced one of the strictest lockdowns during the pandemic, which had a severe impact on people (Butterworth et al., 2022).

This part of the literature suggests that athletes were influenced by several constructs connected to getting vaccinated, including physiological consequences, training and performance, social norms, peer pressure, media information, travelling and attending

competitions (Sobierajski et al., 2022) from which the majority has only been researched for the short-term.

Covid-19 and Booster Vaccination in the General Population and Athletes

First-generation vaccinations against Covid-19 were found to be the most effective tools to control the spread of the virus (Meng et al., 2022). Therefore, is it no surprise that people might felt this whole period will end soon but as time passed new variants of the virus emerged which seemed to react differently to vaccinations. For example, in a study, it was measured that against a new variant of the virus - the so-called Omicron-, for instance, Pfizer-BioNTech vaccination was more than 20% less effective (from 93% to 70%) compared to previous variants (Collie et al., 2022). Another study highlighted that five months after receiving a Janssen dose the effectiveness was at 59,4% (Lin et al., 2022). In addition, the antibodies that were produced in people' bodies were gradually decreasing over time hence the idea of booster vaccinations became serious and people all over the world started to work on this issue (Meng et al., 2022).

With booster vaccination, it was found that for instance, Pfizer-BioNTech booster vaccines (third dose) were more likely to be effective against Omicron variation (Thompson et al., 2022). When it comes to booster vaccination there are plenty of factors that need to be considered based on previous studies. Meng and his colleagues (2022) collected and listed “sex, age, underlying chronic illness, and immunosuppressant treatment” among those influencing factors. As it can be seen age is one of them, as Meng and his colleagues (2022) explained that based on different studies antibody production differs in different countries however, it was found that in older generations due to antibody response rate should revaccinate sooner (after the second dose) or should receive a higher level of dose to protect their immune system (Müller et al., 2021). In Israel, for instance, participants of a study who

were 60 years old or older, it was found that among the ones who received a third dose of BioNTech vaccination the number of confirmed cases was less than in the group who only got the first two doses (Milo et al., 2021).

A study with Danish people even showed that among the 95% who either received already the vaccination or soon will get it, 90% are willing to receive a booster vaccination once it is available in contrast to the 7% who are not willing to take an additional dose (Sønderskov et al., 2022). In addition by using questionnaires, it was also found that age is an influencing factor as older people tend to have a more positive association with boosters. In a systematic review, it was highlighted that having Covid-19 before decreases the intention while being employed increase the intention for booster vaccination (Abdulaziz et al., 2022) which underpins previous findings regarding employment status and the hesitancy about first-round vaccinations (Fajar et al., 2022). Additionally, it was explained that psychological factors (e.g., low confidence in vaccine safety) negatively influence the intention of taking the booster dose among other factors such as “low convenience in terms of accessibility to vaccination services and high embrace of vaccine conspiracy beliefs” (Abdulaziz et al., 2022). Another interesting finding from the study was that while the intention to take the third vaccine was 79% of 48 studies, the actual uptake was only 31% which also differed based on regions in the world (Abdulaziz et al., 2022).

Another systematic review looked for factors that might (negatively) influence people to take the third vaccine. Findings across the studies shared different outcomes however, as it was previously mentioned, age was a consistent factor here as well (Limbu & Huhmann, 2023). It suggests that older people who are in a higher risk group of getting Covid-19 or having more negative consequences of the virus are more likely to get the booster vaccination compared to young adults (Limbu & Huhmann, 2023).

As for the elite athletes it was already described earlier which factors influenced them to receive the first doses, however, there are no published data yet about the influencing factors to receive the booster dose nor about the decision-making process behind it.

Covid-19 and Bubble Events

NBA was a major league which continued the season in the 'Disney' bubble (Weston, 2021). Bubble sports events and seasonal competitions were created to continue (or to start) the championships. Although the main rules were identical in all bubble events, some differences probably occurred. The basic idea was that individual and team athletes moved into a hotel with their staff (it usually meant the people who would travel with them to competitions). Once in the hotel, they could not leave that place until the competition or season was over (depending on the rules of the events or leagues). Besides the hotel, athletes were only allowed to go to the location(s) where the matches were taking place. However, these two places were equipped with everything the teams or individuals needed. All the people in the bubble system went under daily or weekly Covid-19 testing, which helped prevent the virus's spread. Several national and international competitions were held in this system in different countries, including the NBA, the football World Cup and the Tokyo Olympics. Furthermore, in 2021 the Volleyball Nations League (VNL) followed the same path and organised five weeks long bubble event for both men and women teams where 248 matches were played (Nishino et al., 2021). Similar rules were used including wearing FFP2 or surgical mask or keeping the distance (1.5 meters). It was only one week shorter compared to the International Swimming League (ISL) event that was between the 16th of October and the 22nd of November in 2020 (Fülöp et al., 2022). Due to the regulations athletes or other team members were only allowed into the bubble if they produced two negative PCR tests, altogether a total of 1421 people were in the ISL bubble (Fülöp et al., 2022). Although

spectators were not allowed to step into these locations, members of the media companies (with limited numbers) were part of the team.

Everything had two sides; therefore, the bubble concept had its advantages and disadvantages then. As for the benefits, this idea made it possible for the sports community to get back on track with the competitions in the least dangerous form due to all the safety measures. Even though spectators were not allowed into the events, due to the media sections, live streaming or videos were possible to be made therefore, people could enjoy their favourite teams' games. In addition, an estimated 695 million dollars were lost by the NBA in 2020 due to the cancelled games, however, the bubble games saved 1,5 billion dollars in losses in the following year (Weston, 2021). Moreover, it helped experts to investigate the home-court advantage (Price & Yan, 2022). On the other hand, these events meant that athletes were far away from their loved ones (for shorter or longer times) and even in the bubble, players needed to keep social distance. Not to mention the Olympic Games was reported to cost 2,7 billion dollars more due to the postponement (Ozanian, 2020). In addition, during the games, no spectators were allowed; hence the atmosphere was completely different during the games (Majumdar, 2021).

Purpose of the Study

Based on the findings from previous studies it can be seen that beyond the general life factors that are influencing people regarding their decision-making process about vaccination, elite athletes tend to have additional sources that need to be considered to have a better understanding of their choices. Although studies started to investigate the factors that impact the general population in their initiation and decision regarding booster vaccinations, there is no published information yet about the additional factors in the elite sports world. In addition, there is a small amount of information that we know so far about how athletes perceived the bubble system over the years. Therefore, this study aims to gain more detailed knowledge

about the decision-making process of taking the booster vaccination among elite athletes. Furthermore, to investigate athletes 'perspectives on bubble sports events through their lived experiences.

Methods

Phenomenological approach

A phenomenological approach is a philosophical approach that seeks to describe the subjective experiences of human consciousness. It was initially developed by a German philosopher Edmund Husserl to investigate the essential structures of conscious experience (Davidsen, 2013). Phenomenology involves bracketing or setting aside preconceptions and assumptions about the world and focusing instead on consciousness's raw, immediate experiences. It emphasizes the importance of studying experience as it is lived by individuals rather than trying to reduce it to objective measurements or categories (Davidsen, 2013). According to Davidsen (2013), phenomenology is always directed toward experiences in the world, which are always perceived from a particular perspective. Phenomenologists seek to uncover the structures of this intentional consciousness, including how it relates to the world, structures our perceptions, and influences cultural and historical factors.

The method was used to discover elite athletes' subjective perspectives on Covid-19 as a phenomenon. Using this approach allowed the study to gain an in-depth understanding of the meanings behind the participants' responses during the interviews. In addition, the phenomenological method also helped to explore the individual experiences that play a crucial role in comprehending how the unique context of people's lives subjectively influenced the outcomes.

Participants

Recruitment of participants was based on different criteria, which depended on the category they would fit in (athletes or doctors). Firstly, medical doctors were required to have worked with elite athletes during Covid-19. In this study, by elite athletes, we meant players who had been competing in their sport at least at a national championship level during the pandemic. It was essential as it also allowed gaining information from a medical aspect. An additional criterion for medical doctors was language proficiency; in this case, they were asked to speak English at least at an intermediate level to express their thoughts and experiences during the interview. The other participant group was athletes. Athletes were recruited based on four different criteria. Firstly, athletes needed to be aged between 20 and 40 so it meant that in the pandemic during sport events they were competing as adults. Secondly, they needed to compete at least at a national championship level (or higher) through the pandemic. It was defined because, with these athletes, there was a higher probability of fitting for the following criteria (bubble events). In addition, it was also a criterion that they took part in a competition that was organised in a bubble system. Lastly, athletes had to speak English minimum at an intermediate level to comprehend the questions from the questionnaire and interview and express themselves deeper. Posts about the study were shared on different social media sites. Additionally, emails were sent to federations and clubs in numerous countries to increase the chances of finding future candidates. Both posts and emails included all the criteria mentioned above for both groups. Furthermore, it stated the aim of research alongside the information about the tasks athletes and doctors would be asked to do throughout their participation in the study. Over the weeks, numerous possible candidates were reached out to, and many showed interest; however, eventually, ten participants (nine athletes and one medical doctor) met all the criteria necessary to take place in this study.

Data collection

This phenomenological study in which a short questionnaire was included to gain demographic data and some general information about the participants.

Demographic questions

The researcher made the questionnaire used in this study to collect general information about the players (see Appendix 10) and doctors (see Appendix 11) included in the study. Both surveys started with an adult information sheet and an informed consent form that needed to be read and accepted before filling out any questions. The first questionnaire was focused on athletes and could be divided into three parts based on the information the questions were referring to. There were questions regarding demographic data (e.g., "Please specify your age", "Please specify your gender"). Also, about athletes' sports (for instance, "Please specify the country you represent" or the level they are competing at). Lastly, there were questions about the number of vaccinations they received. One of the questions was related to education, as in the literature, there were suggestions for possible associations between the educational level of someone and the willingness to get the vaccination. The other questionnaire was developed for medical doctors, which also can be divided into three parts. The first part is the same as for the players, demographic information. It was followed by questions regarding their work (e.g., "Please specify the country you work in ", "Please specify your medical specialisation"). The last question in this survey was also intended to determine the number of Covid-19 vaccination the medical doctors have received.

Interview

Interviews were conducted with both groups (athletes and medical doctors) (see Appendix 12 and 13) to better understand their experiences throughout the pandemic. It is crucial to highlight that transcendental interviews require the interviewer to be as neutral as possible and not to influence the participants in any way (bracketing). Additionally, the investigator instead has to ask follow-up questions and gain more detailed responses instead of starting to analyse the answers. Therefore, the interviews in the recent study went the following ways. To begin with, the investigator read the introduction and participant rights to each candidate (for instance, "the interview will be recorded with different electrical devices") to highlight some of the points mentioned above (e.g., the interviewer was only interested in the participants' own experiences during the interview).

Interviews with athletes had a basic structure followed by the interview; however, additional follow-up questions were asked based on the responses from the participants. The first part of the interview focused on general experiences and feelings through the pandemic as an athlete and person (e.g., "Can you please describe your feelings and experiences regarding the restrictions during Covid-19?). Questions about competitions and bubble events followed it as it gave an insight into the obstacles these people faced at that time. An important element of the interview was regarding the information players at this level received and also to have a better understanding of the resources they used at such a critical time (e.g., "What is your opinion about all the information you heard or read about?"). As it was found in different pieces of literature, vaccination is a controversial topic regarding Covid-19; hence some of the questions were related to the decision-influencing factors. Lastly, the athletes were asked to highlight what went wrong and right with this pandemic, again based entirely on their experiences. Before the interviews were finished, all the players

had the chance to add additional information and thoughts regarding this topic if they felt something was not mentioned and should be.

Medical doctors had a different structure for the interview. During the first part, doctors were asked about the protocols required from the athletes during the pandemic and the medical tests done in different situations. These questions also helped to comprehend what athletes went through but from a different perspective. Bubble events played a significant role in returning to sport; hence this group was also asked about their thoughts and experiences regarding this new system. Another critical part of these interviews was related to vaccination again. Medical doctors were needed to respond to questions regarding the factors that could have influenced elite athletes (again from a medical perspective) in their decision-making process (for instance, "What do you think from a medical perspective can persuade an elite athlete to get the vaccination?").

Furthermore, participants could express their medical advice on cases where vaccination was not an option. Lastly, similar to the interview with athletes, doctors were surveyed about what went right or wrong from their perspective. In addition, they also had the chance to add something which was asked after the interview was finished.

All interviews were conducted online through Zoom or Teams, which the participant preferred and recorded by a dictaphone and phone.

Procedure

Following ethical approval by the Committee at the University of Thessaly, the researcher began to share the posts on different social media platforms and sent out emails to clubs and federations. Once a possible candidate reached out to the investigator and showed interest in participation, the researcher discussed the study procedure, answered the questions (if there were any) and eventually set a date for the interview. Participants then received an

email with a link to the questionnaire and an attachment of the informed consent form, which needed to be signed and sent back before the interview. The questionnaire was also required to be filled out before the interview, as participants could drop out at any point from the study with their codes created at the beginning of the survey. While the questionnaire took no more than 10 minutes to fill out, interview lengths were between 25 and 40 minutes. Both the survey and the interviews were done online.

Data analysis

Questionnaires were analysed to gain descriptive statistics from the participants, such as age, gender, the country they represent or work in and the number of vaccinations they received. The interviews were analysed based on a phenomenological method (Bevan, 2014). Once all the interviews were conducted, the researcher transcribed all of them. Then the transcripts were read multiple times for the investigator to familiarise herself with the context of the interviews. Some of the answers were related to the phenomenon directly, while other responses needed additional analysis. Through that analysis, similar responses and information were put into the same topics and similar topics were then grouped into the same clusters. Lastly, all the received outcomes were read and reviewed again (several times) to comprehend the structure of the phenomenon based on the participants' experiences.

Unfortunately, due to several reasons, only one medical doctor went through with the whole process; therefore, that part of the study eventually was not taken into consideration, and the analysis of the responses from the doctor was not used when writing up the results and discussion part.

Results

During the analysis of the interviews, the following topics emerged from the interview transcripts: Covid-19 in sports; feelings and experiences of Covid-19 from athletes' perspectives.

Although it was found that all the participants described this period challenging either from a personal or sport perspective (or both), it also had some advantages such as in many cases it was the very first time for athletes when they could take a break and do not feel guilty or pressured of not having trainings and just relax a bit. In addition, almost everyone highlighted at some point during the interview that they had time to do activities they have not had before which had a positive impact on their lived experiences. Due to this experience athletes learnt that taking a break might even be beneficial in long-term and taking care of their mental health just as important as their physical health. On the other hand, uncertainty, helplessness, fear of their loved ones' health, and their own career made the pandemic an unpleasant time of their lives. Furthermore, the information they received from different platforms made it harder for them cope or to move on from Covid-19.

The following part will describe the main findings in detail.

Covid-19 in Sport

Training and Delayed Season

Just like everyone else, athletes were also forced to stay in their homes during the pandemic and stop their "jobs". Not being able to train, especially in a year which was supposed to be the Olympics year, was experienced differently by elite athletes. There were two groups, one which mentioned mainly negative feelings when asked about the time training was not allowed in their usual environment. The other group explained that even though it was a challenging period for everyone, they enjoyed their time without the training.

P8: To be honest, I liked it...when we stopped swimming for the holidays, it is never like so relaxed. You are always thinking like in two weeks; I have to go back.

A typical response from the athletes was phrased around the fact that they could do things they usually would not have time for.

P1: ...observing all of the nature and stuff I had not had the chance to do before.

P4: ...you could kind of really rest and, like, take things, take time to do things that usually you did not have time to do.

P8: But I did so many things that I did not have the chance to do before, like....

However, interestingly the positive feelings turned into negative ones when participants could not train due to illness as they thought they would be behind, while in the first case, everyone was in the same boat. Hence, they felt they could not stay behind the others.

P1: Yeah, well, the second time, it affected me more because I knew that some people would train and I was not, so the fact that I was staying behind mess, messed me up...So yeah, I was not happy the second time. I was over.

Although they were not allowed to train in their familiar environment, not exercising while being completely healthy was not an option for these people. Hence, they were required to exercise to lower the risk of losing their shape. Participants shared their experiences and memories of overcoming these obstacles and all the creative and sometimes not legal ways of exercising. Almost everyone recalled doing online individual or team meetings where they trained together.

P3: And I also, we also did online kickboxing training, which was, looking back, the most stupid thing I ever did in my life. Shadowboxing in front of my laptop, but it was better than nothing.

P4: I remember our club organised some live trainings.

P5: So sometimes team meetings to know how the team is doing, how can we doing things like emotional things as a team...then some exercises as a team to feel like the team is near to you.

P7: And then on the afternoons, we have always had like an hour-like Zoom workout with swimmers all around the country.

Even though the clubs and teams tried to do their best in that situation, the online training could not keep the athletes' interest in the long term. Although athletes did not find it useful or even described it as silly, it was agreed that during the pandemic, it was still a good idea and widened the opportunities. Among the exercises that replaced the sport were walking, hiking, playing tennis and running. Some even mentioned that they tried to focus on their weaknesses in their sport and were focusing on improving those skills. For instance, a fencer mentioned that during this period, he focused on his mobility and flexibility, which plays a key role in fencing and during those weeks, he had more time to get better at that, which also remained a habit from the pandemic for him. At the same time, a kickboxer highlighted how she improved some basic skills thanks to those days in the lockdown.

Being creative and adapting the exercises to the current situation only solved some issues athletes faced during Covid-19. As some athletes explained, training without having a goal in mind or not knowing when the next competition will be is extremely tough. Pointing out that physical struggle was not the only challenge; the mental aspect was just as tough for them.

P10: I remember I like was struggling like physically and like just breathing, like I was struggling the first couple of weeks which I think kind of trailed into my performance as an athlete and like my mental well-being as an athlete because then I started doubting myself and aspects like that. So, for me, Covid was not just like a physical illness, like it really messed with my mental capacity as well.

Many participants also made a point about how hard this time was mentally, e.g., to stay motivated, not to overthink the things around them that they cannot control and the uncertainty around almost every aspect of their lives. Clearly, they found it just as essential to keep their mental game stable as their physical conditions in shape. Some explained that goal setting was vital in keeping them physically and mentally healthy. While one of the participants even mentioned having a daily mental session with a mental coach online. However, not being able to train was only a small piece of the cake as not only the training sessions were cancelled, but competitions, qualifications and eventually even the Olympics got postponed or, worse case, cancelled from the schedule. Being unable to go to training can be familiar to athletes as sometimes, due to illness or injury, they are forced to take a break. For instance, postponing the Olympics is far as common as it has only happened in dire circumstances, such as the World War.

P7: So yeah, like cancelling the Olympics is definitely huge. That is when we knew this virus was really serious because, honestly, they would never cancel the Olympics; it is just like something beyond everything for an athlete and for like a lot of people.

In the current study, it was revealed that the delayed seasons in most of the cases resulted in profound negative feelings such as frustration or anger, and someone even explained how she felt at that time; it was not even real. Despite the unpleasant feelings some had, there were cases where athletes explained that they were lucky as postponing sports events turned out better. For example, one got a better place in the championship and the other participant qualified for the Olympics.

Bubble System

To continue the championships and the international competitions, the sports community decided to hold these events in a unique environment, in the so-called bubble

system. As explained earlier, this system included many rules for the health and safety of everyone. Although it was the only solution then, players had very similar perceptions regarding the bubble sports events, which were not favourable. Even though they admitted that it was an excellent opportunity to compete and an environment where they could feel safe, for various reasons, they were unable to enjoy it, and the majority of them only highlighted the negative aspects of these events. Disadvantages included feeling lonely (due to social isolation), missing the spectators and family from the competitions, unpleasant amount of testing. When the participants were asked about the roles of bubble events in the future, everyone quickly responded that, hopefully, it would not be necessary.

P1: Yeah, well, for my experience, okay, I hated it... We could only walk from the hotel to the pool and from the pool to the hotel, without any fans and like our parents could not come, it was horrible... Personally, I think it was very bad.

P4: ...I feel overall it was just a bit chaotic with the whole testing thing... I have mixed feelings about the bubble events, but at that time, I was just happy it was happening.

P6: I hated it.

P3: In the future, my first thing I am thinking about is like, why should we have that?

P7: Well, first of all, I really hope it is not going to happen again.

P9: I do not think the bubble is going to be back again.

Feelings and Experiences of Covid-19 from Athletes' Perspectives

In General

Feelings and experiences of Covid-19 were something that athletes described differently and even had mixed feelings about it themselves. The majority told the lived experiences from both positive and negative aspects; however, again, the negative side was referred to more compared to the advantages of this period. A common perspective from the

participants regarded the uncertainty the lockdown(s) brought. Not only from a personal viewpoint but as an athlete, this feeling determined their everyday life, which many explained to affect their mentality negatively. Among the repeated, unfavourable and overwhelming emotions were loneliness, fear, worry, and frustration; even the word hate was used multiple times when asked to describe their feelings regarding different situations from the pandemic. Nevertheless, as mentioned before, some of the people who took part in the study also revealed some positive aspects. For instance, having time to do something they would not have time for if it were not for the pandemic was a recurring response from almost every participant. It was an excellent insight to note that athletes do not have much free time to enjoy their hobbies outside their sport and also revealed that a positive mentality and openness could help people take the best out of the pandemic. In addition, some athletes who had the chance to stay in their homes enjoyed spending more time with their loved ones. In one particular case, the athlete even shared that thanks to the pandemic he/she was forced to slow down after 15 years which made him/her realise that he/she was burned out and overwhelmed with the sport. Since then, he/she has made it a priority to have mental breaks which positively influence performance.

P7: Even though I have my goals, and I love swimming. It's just you need breaks. And I learned during those times how much I need a mental break. Not physically, mentally, I need that stay away from the pool a little bit. And ever since that me, and my coach are making sure I do get my breaks.

As with almost everything Covid-19 also had two sides; therefore, athletes were to highlight what went right and wrong with the recent pandemic. Based on elite athletes' perspective, some of this period's benefits were improving mental toughness, being around loved ones, developing technology and bubble events. While on the other hand, here is a short list of the disadvantages that were taken from the interview transcripts: social media and information

they received, lack of compassion for people, kids' development and its long-term effects, and losing essential years from their careers.

P3: Having so many restrictions on the sport in general because like it is something so crucial when it comes to health.

P6: Maybe the social media and the fear that it caused...And I think it was overwhelming for mental health.

P8: I think the too much information went wrong. Like they got all the people scared and they weren't thinking clear.

P9: ...the pandemic just killed some dreams of athletes.

P4: Yeah, overall, like this technological aspect, I think was a big positive thing.

P10: And it just also sheds light on, like, how fragile life is and how it is important to make the most out of every day and with your friendships and family. And that's pretty much it, like just the importance to have compassion and be there for one another.

Restrictions

Regarding the restrictions, athletes experienced some parts the same way while having completely different views on other aspects. As it was mentioned above, negative feelings were linked to the time when participants were limited with parts of their lives.

P9: So, we just try to do our best every day and stay on track. And yeah, mentally it was really tough to keep training at home every day with no hope or anything.

Another outcome from the answers was why different lockdowns seemed in different ways. A typical response with which the majority of the people could resonate was that after the first lockdown, people had more information about that thing that was going on and, as a consequence, had opinions about it. While from the athlete's perspective, feelings changed due to the reason that maybe while during the first lockdown, none of the athletes was able to

train, from the second lockdown, some countries changed their rules to allow national-level athletes to start to train, which led to some athletes to compete and others not. Even though all of the athletes were national level, in some countries, only the adult-level athletes were allowed back into the training environment, which negatively affected some participants mentally.

Challenges

Challenges were another subtheme within feelings and experiences of Covid-19 from athletes' perspectives, as some of the answers did not feel part of the other themes. As will be seen, there are overlaps between the previous and current subthemes. However, after a thoughtful analysis, the researcher found highlighting these outcomes within a new subtheme necessary. With the interview questions, it was a conscious thought to ask the participants about their personal and sport-related challenges. However, after careful consideration of the responses, it was seen that, in most cases, it was impossible to separate these two. It shed light on the realisation that with elite athletes, sport can be a substantial part of their identity; thus, reviewing the answers in two categories was pointless in the recent study. Besides not being able to train, the postponed or cancelled competitions, the uncertainty of the sports world,

P5: ...I didn't know how to manage to do not train a week or do not train three days.

P6: ...I knew that I can't compete at the European Championships. But I had to wait one year, and that time as I mentioned I was thinking about quitting. So, it was hard because I didn't know what to do and how long it will take to get over this pandemic.

P7: And first time in my career and everyone's career, we had absolutely no idea what is going to happen. So, it was just like a giant question mark.

There were a few responses which could be categorised on a personal level. Such as the fear that their loved ones will get Covid-19 or conflicts with their family as a result of living

together for weeks in a small area, but after a short time, it was all again referring back to their sport.

(After) Having Covid-19

One-third of the participants revealed they did not have Covid until the interview was conducted. However, not having Covid does not mean that the participant did not know the protocol around that in every case. The opinions were divided on whether they received sufficient information about the protocol for Covid-19 regarding training and tests. Although usually, people would think this could be due to the fact that participants were from all over the world, surprisingly it was the case even when the participants were from the same country and were even part of the same federation. On one side, participants shared how satisfied they were with all the help and information they received while having Covid.

P3: But in that regards, my coach he was really aware and taking care of us that we really have to do the medical check before we entered a kickboxing gym.

P7: So, we had really good setup for this, like the national team members because our like team doctors are, were the ones who were like, I do not know, researching Covid and like leading the Covid hospitals in [CITY NAME] for like the whole country. So obviously, we were kind of in the best hands.

While others shared a different perspective highlighting the lack of information regarding this topic, the ones who got Covid-19 were open and honestly shared their experiences and struggles after returning to the training. One of the participants stated that having Covid-19 twice was a completely different experience because, for the first time, this person had respiratory issues while the second time had no symptoms at all and found out about getting Covid-19 by a random test. Another severe case was when one of the athletes had Covid-19 pneumonia and severe chest pain with headaches. However, due to a negative test, the athlete

kept training for another week as, unfortunately, it was thought these pains were due to the hard training in an endurance sport. Luckily none of the athletes suffered long-term consequences, which they would be aware of up until the interviews. All of the participants who had Covid-19 shared very similar experiences about returning to the training. They shared that numerous tests were done, which were followed by several weeks until they felt good again in their training environment. Furthermore, they gradually increased the intensity and duration of the training, which they were grateful for from now looking back.

P10: Like, I remember I was coming back in like stages and looking back now, I am glad I did. Because I know me, I would have just wanted to go 100%, but like, okay, put a cap on me, let's go. But I think that would have been really bad.

Vaccination

A controversial topic that divided the whole world was the vaccination for Covid-19. In the recent study, all of the athletes were vaccinated and explained the decisions making process and the factors that made them get the vaccination against Covid-19. In most cases, the participants shared similar viewpoints regarding the information they had, which the majority explained they did not feel was sufficient for them. Another interesting outcome was reflecting on the feelings athletes had about the decision-making process and the autonomy of their choice. Some initiated that they did not feel it was their choice to get the vaccination or not due to the different rules set by the federations and governments.

P1: So, I do not think I really had a choice, like whether I wanted it or not.

P6: It was mandatory for swimmers, for athletes to compete in World Cups, European Championships.

P7: Plus, the other thing is, it was kind of mandatory in the national team and in order to travel.

One of the participants even pointed out that if there would be another chance to start over, he/she would not retake the vaccination as it felt unnecessary for the age group in which this person was. However, just like the others, for the sake of competing, travelling, and for their loved ones, he/she decided to get it. Eventually, the vast majority agreed to not having major or any issues with the vaccination; however, from the results, it can be seen that in the future, it can be advised to give more comfort or the feeling of autonomy to athletes in big decisions like this one.

Booster vaccination, however, was only taken by some of the participants. As some highlighted, it was not a conscious decision but more like it was not mandatory by that time to compete, so eventually did not ask for it. Booster vaccination and the decision-making process behind that can be an excellent area to further investigate in the future.

Information and Social Media

The least controversial subtheme was generated from athletes' responses when they expressed their experiences and thoughts about the information they heard or read during the pandemic. All of the participants shared similar negative viewpoints. While it may not be enough information about the post-covid training protocol or the vaccination, athletes agreed that the information in general on this topic was all over, and everyone found it was too much. Another factor revealed from the analysis is that the information shared was heavily pointed one way. Social media was found to be toxic and not considered when it came to serious topics. However, one of the participants explained that even though it was up for debate whether social media news is fake, sometimes these platforms helped comprehend the occurrences more effortlessly by breaking them down and showing personal stories from people who were similar to this athlete's situation.

As a consequence of the news and information shared daily with people, athletes revealed that, in their opinions, it only made people scared, confused and overwhelmed by it.

P1: Yeah, I think I did not realise how much information we were taking in during that time, but now I realised that it was a lot.

P4: Yeah, very chaotic, very unclear, very misleading...So, it was I feel like very chaotic overall, like very strong opinions and then it is really hard to kind of find the information like the middle ground of where you stand.

P5: And I think the world was like worse than the news said.

P6: Maybe the social media and the fear that it caused...And I think it was overwhelming for mental health.

P8: ...then I was a little bit scared because I started to hear like everyone was dying...they put so many information that was not necessary. So, I had to be careful what I was reading.

Suggestions

In this last bit of the results, the researcher will list all the suggestions and tips the participants gave to other athletes for the future in case another pandemic happens.

→Be calm, patient and relaxed.

→Take it day by day.

→Don't get overwhelmed by unknown factors.

→Use this time for the good, and work on your deficiencies.

→Do things you wouldn't normally have time for.

→Be grateful for your life.

→Take care of your overall health (mental and physical).

→Spend time with your family.

Discussion

The purpose of the recent study was to better understand the experiences of the athletes from the Covid-19 pandemic through the bubble sports events until the booster vaccinations. It also tries to discover the psychological factors that influence athletes' decisions regarding having a vaccination or not.

Findings from the recent study strengthen the outcomes of previous research that had been conducted on the topic. Mental health was at the centre of the results, and it was found that Covid-19 influenced athletes' physical shape and mental well-being. Not knowing what will happen enormously affected athletes during the pandemic, as was found in studies earlier (Haan et al., 2021; Wiltshire et al., 2022). The recent study underpins those findings as participants highlighted that coping with uncertainty was mentally tough; some even pointed out that this had never happened in their careers before.

The challenges that athletes faced were found to affect their mental well-being negatively (Haan et al., 2021), and in the current study, athletes confirmed the same impact. Beyond the uncertainty this period brought, athletes had to face challenges such as being unable to train, then training without knowing when the next competition is, and the fear of getting Covid-19 or their loved ones getting it.

Regarding the bubbles, although it was explained that competing again was a great opportunity, the majority of the participants described the environment and the system negatively. Participants explained that having no fans, spectators, or family members at the events made the whole event different, which was also pointed out in early studies (Majumdar, 2021). Additional information regarding the topic was found as athletes talked about feeling safe in the bubbles, but sometimes it was lonely. Furthermore, an open-water swimmer highlighted that having no spectators influences particular sports more, which is a good starting point for future studies.

As many (mainly medical) papers already discussed the physical symptoms of having Covid-19, athletes in the recent study had similar experiences and symptoms. However, gaining a deeper understanding of the mental aspect of this experience was crucial to widening the existing knowledge in the area. Getting back to training was found to be mentally tough, but receiving good medical advice helped many athletes. Athletes who had Covid-19 mentioned that getting back to training in stages was something fundamental, highly advised, and required by the medical team supporting the previous studies (Vincent et al., 2022). Although the majority of the participants agreed, additional findings were gained as some shared that they rather listened to their bodies when returned to training and not (only) medical experts or they did not keep the gradual return at all as they did not want to fall behind the others. Furthermore, it was advised athletes to return under medical supervision (Driggin et al., 2020) however, it was found in this study that not everyone had the opportunity to do that.

Regarding vaccination, the family was found to be a highly influencing factor regarding people's opinion on vaccination (Magee et al., 2022), and in the current research participants' responses showed similar outcomes in both ways. Another previous study even highlighted how peers and coaches could influence athletes in their decision. A great example which underpins both of these was among the participants, as the athlete felt torn apart since his/her family and peers from the sports world were on different terms when it came to vaccination. In addition, in this case, questioning the lengths of the development of the vaccines additionally made the athlete insecure in the decision-making process which was found to negatively influence mental health.

Having positive previous Covid-19 tests was found to be controversial. In previous studies athletes, who had Covid-19 before tended to be less hesitant around vaccination, others had different views (Fajar et al., 2022). In the recent study, some thought that since

they could survive Covid-19 without vaccination, their bodies are strong enough to handle it again if needed therefore, it was not in full synchrony with the previous studies in this field (Fajar et al., 2022). However, it was found in the recent study that in the latter case, people tend to rely more on family and friends regarding their opinions about vaccination.

Sobierajski et al., (2022) found that athletes were concerned about receiving vaccination due to several reasons. Although the recent study did not find an explanation for that thought, many shed light that they did not feel it was any of their choices as it was the only chance to continue working and achieving their dreams.

As for the boosters, while many of the previous studies highlighted age and a factor in the middle, the recent study found different influential factors which probably was due to the target group being elite athletes. The research implicated that athletes in most cases took the booster vaccination to travel or to avoid additional tests at the competitions. However, since it was not mandatory by that time and/or was not communicated clearly towards athletes, not all of them got the boosters.

One interesting finding, however, was around openness. Although, athletes were more than happy to answer general questions related to vaccines (such as the type of vaccination or how many they have received). The majority still felt a bit unsure and out of comfort when asked for more details about the topic that underpins the controversy and complexity of the theme.

Lastly, information and social media were highlighted several times and found to be essential in the recent study. There were implications in previous studies that the Internet and social media could negatively influence people (Sobierajski et al., 2022), and this was the case in the current research as well. Information that athletes did read or heard was described as a factor that made people, in general, confused, scared and emotionally overwhelmed. In addition, as it was explained earlier the main source of misinformation was social media

(Arshad et al., 2021) that was underpinned by the recent study as athletes explained they barely used social media to gain information on serious topics. However, one participant highlighted that social media was the only place where scientific explanations were broken down therefore it was easier to comprehend it (the relevance of the information was also questionable in this case as well).

Limitations

In the recent study, the main limitation was the number of medical doctors who participated.

Elite athletes' sample size was also relatively small, which helped them gain more profound and detailed knowledge about athletes and their feelings and experiences throughout the pandemic. Nevertheless, with the help of more participants and possible follow-up interviews, a widened viewpoint can be generated with more consequences driven by the responses.

Additionally, being in a bubble system during the pandemic was only a privilege to some of the elite athletes; therefore, it genuinely decreased the number of athletes who could take part in the study.

Language proficiency was also considered a limitation in the current study as even though athletes were speaking a high level of English, it was not the native language for the majority of the participants, which could decrease their ability to express themselves in every part during the interview.

Due to safety concerns and also that athletes were in different countries, the data collection was in an online form. In-person interviews could have helped enrich the collected data as the process would have been more personal, and the investigator could see and

observe the participant's facial expressions in a better quality and body language while conducting the interviews.

Future Directions

As a relatively small amount of literature is available on the topic, many further studies should be conducted to gain more detailed information about Covid-19.

For future research, it would also be beneficial to consider involving different experts (e.g., physicians, doctors, managers, and directors) who were also included in elite athletes' life to receive a widened aspect of the pandemic in the sports world. Furthermore, additional research with non-vaccinated athletes can help to have a better understanding of the influencing factors regarding vaccination and also about the broad experiences and feelings those elite athletes had.

Based on this recent study, future studies should investigate particular sports, as the national and international federations had different rules and bubble events during the pandemic. In addition, all subthemes can be explored in more detail based on the countries athletes represented.

Applied implication and suggested guidelines for future pandemics

Based on the information that was gained from the interviews, there are some implications that might be helpful in case people would face another pandemic in the future. As for the bubble games, even though athletes felt safe and knew it was their only solution at that time to train and compete, in the future it could be beneficial to try to make it more comfortable for them. For example, mental health workers should be available so if needed athletes would be able to maintain their mental health. In addition, countries should issue the same rules in the bubble system therefore, athletes do not have to cope with that beyond already being in an extreme situation.

In the future, it would be also advantageous to inform athletes properly about the vaccination and the impacts of it on their bodies so they would not inform themselves or find information on non scientific platforms. Also, they would feel more comfortable injecting the vaccine if the decision was completely in their hands without any terms and conditions.

As for the booster vaccinations, again clear and direct communication would be necessary so athletes would understand the importance of it, as well the influence of it on their physical activity. Therefore, they would not be concerned or feel behind about having one or two days rest after taking the vaccination.

Conclusion

The current research helped to better understand the feelings and lived experiences elite athletes had in various vital situations that occurred throughout the pandemic.

Altogether, the findings of this research serve as a base for future studies regarding Covid-19 in elite sports.

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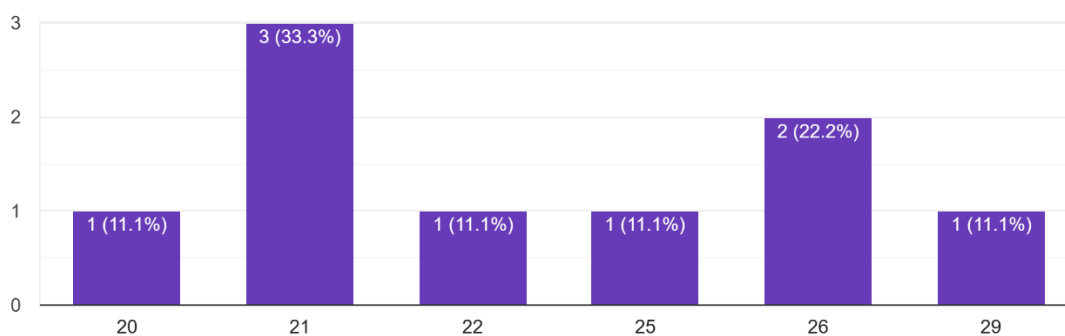
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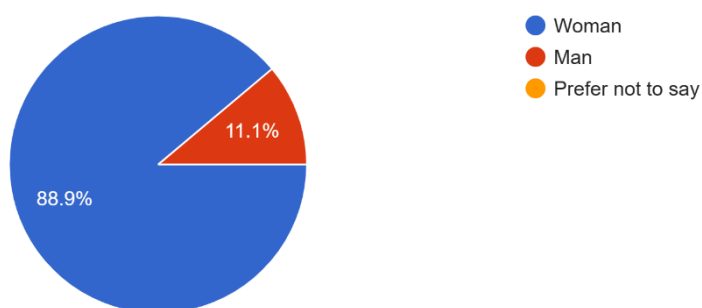
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Appendix

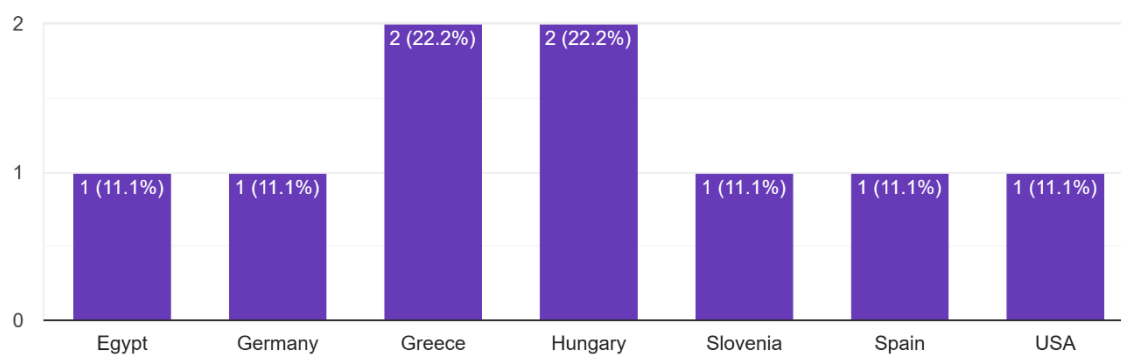
Appendix 1: Age of the subjects in years



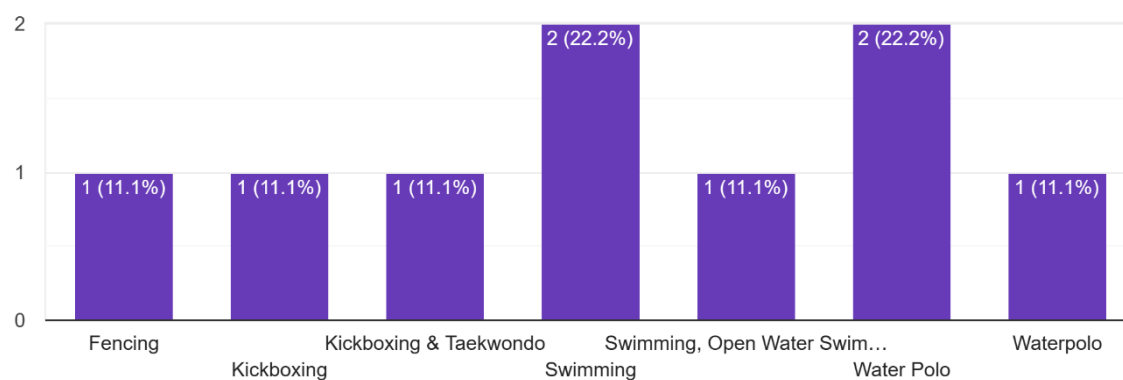
Appendix 2: Gender of the subjects



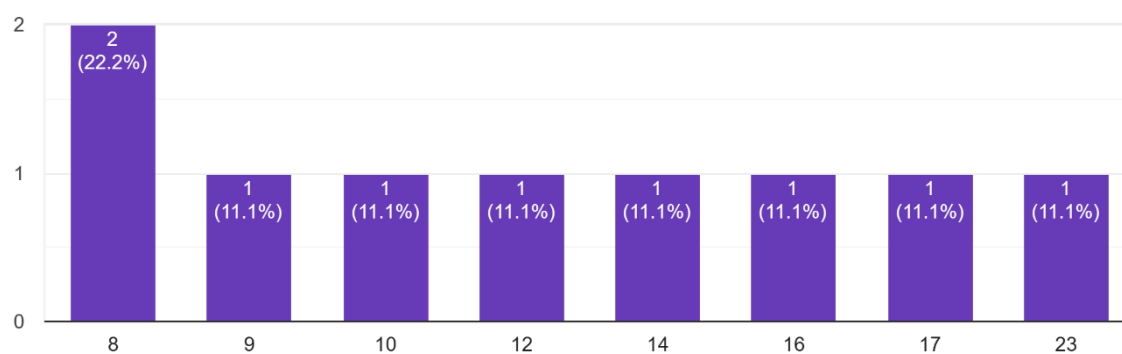
Appendix 3: Countries the subjects represent



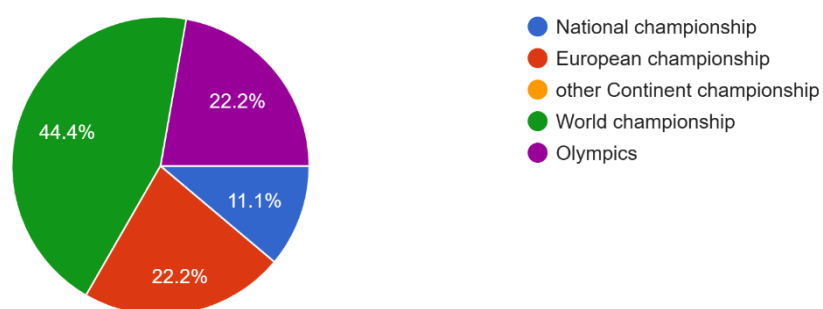
Appendix 4: Sports the subjects compete in



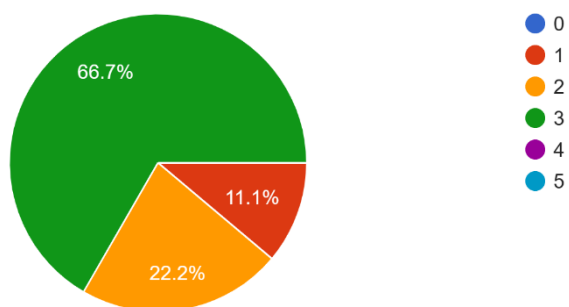
Appendix 5: Subjects doing their sport in years



Appendix 6: Subjects highest level of competitions



Appendix 7: Subjects number of Covid-19 vaccination received





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Research participants needed

I am a final year sport and exercise psychology master's student at the
University of Thessaly and Leipzig University
and

I am investigating athletes' experiences with Covid-19.

Who can participate?

- Athlete who competed at least at a national championship level during Covid-19
- Aged between 20 and 40
- Speaks English at least at an intermediate level
- Took part in a sport competition that was organised in a bubble system

What will you be asked to do?

Fill out a short questionnaire

Participate in an interview

If you are interested in participating, please contact Zsafia Zrubecz at

Αφαίρεση προσωπικών δεδομένων (Υπηρεσία Βιβλιοθήκης &
Πληροφόρησης Πανεπιστημίου Θεσσαλίας)



UNIVERSITÄT
LEIPZIG

Research participants needed

I am a final year sport and exercise psychology master's student at the
University of Thessaly and Leipzig University
and

I am investigating medical doctors' experiences with elite athletes
during Covid-19.

Who can participate?

- Medical doctors
- Worked with elite athletes during Covid-19
 - (athletes who competed at a national championship level during Covid-19)
- Speaks English at least at an intermediate level

What will you be asked to do?

Fill out a short questionnaire

Participate in an interview

If you are interested in participating, please contact Zsafia Zrubecz at

Αφαίρεση προσωπικών δεδομένων (Υπηρεσία Βιβλιοθήκης &
Πληροφόρησης Πανεπιστημίου Θεσσαλίας)

Appendix 10: Questionnaire questions – athletes

1. Create your code (your surname and your birth year e.g. Zrubecz1998). You ^{*} will be able to withdraw at any part of the study by sending your code to the investigator.

Your answer _____

2. Please specify your age. Use numerical digits e.g. 22 ^{*}

Your answer _____

3. Please specify your gender. ^{*}

- ☐ Woman
- ☐ Man
- ☐ Prefer not to say

4. Please select your highest level of education.

- ☐ Primary school
- ☐ High school
- ☐ College
- ☐ University - Undergraduate degree
- ☐ University - Postgraduate degree
- ☐ University - Phd, doctorate degree

5. Please specify the country you represent. *

Your answer

6. Please specify your sport. *

Your answer

7. How many years have you been doing your sport? Use numerical digits e.g. 8 *

Your answer

8. Which is the highest level are you competing at? *

- ☐ Olympics
- ☐ World championship
- ☐ other Continent championship
- ☐ European championship
- ☐ National championship

9. How many Covid-19 vaccination have you received? *

- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5

Appendix 11: Questionnaire questions – doctors

1. Create your code (your surname and your birth year e.g. Zrubecz1998). You ^{*} will be able to withdraw at any part of the study by sending your code to the investigator.

Your answer _____

2. Please specify your age. Use numerical digits e.g. 22 ^{*}

Your answer _____

3. Please specify your gender. ^{*}

☐ Woman

☐ Man

☐ Prefer not to say

4. Please specify the country you work in. ^{*}

Your answer _____

5. Please specify your medical specialization. ^{*}

Your answer _____

6. How many years have you been working with elite athletes? Use numerical digits e.g. 8 *

Your answer _____

7. How many Covid-19 vaccination have you received? *

☐ 0

☐ 1

☐ 2

☐ 3

☐ 4

☐ 5

Appendix 12: Interview guide – athletes

Introduction & Participant Rights

- Firstly, thank you for agreeing to be interviewed. I am interviewing participants as it gives me the opportunity to ask you questions about the research topic but also because it gives you an opportunity to express your in-depth experiences.
- The purpose of the interview is to gain a detailed understanding of your experiences with Covid-19 as an athlete.
- The interview will be recorded using a dictaphone and phone, as this is the best way to gather and collect accurate information and allows me to concentrate on asking questions and listening to responses.
- Anything you say is entirely confidential which means that anything you say will not in any way be used in combination with your name. I may use quotes when writing up the findings, however, these will remain strictly anonymous, and your identity will be protected.
- There are no right or wrong answers to the questions you will be asked. Your answers should be based entirely on your own experiences rather than answers you think sound right or that I would like to hear. If at any point you don't understand a question, or you need clarification please do not hesitate to ask
- There is no time limit on the interview so please do not feel pressured by time. If at any point during the interview you would like a break just ask.
- Do you have any questions before we start?

Before we start can you please provide me your code that you used in the questionnaire (surname and birthyear):

1. Can you please describe your feelings and experiences regarding Covid-19?
2. Can you please describe your feelings and experiences regarding the restrictions during Covid-19?
3. Can you please tell me the challenges you faced during the pandemic from a personal aspect?
4. Can you please tell me the challenges you faced during the pandemic on a professional basis?
5. How did you feel about not being able to train?
 - a. How did you solve to stay in shape or to train?
6. How did you feel about the delayed season?
7. What was your thoughts on the bubble sport events/competitions? Which level was the event at?
8. What are your thoughts on the bubble sport events/competitions in the future? How do you see bubble sport events role in the future?
9. Have you got Covid-19? If yes, how many times, how was it, how easy or hard was to get back on track?
10. Are you sufficiently informed what you have to do after you get Covid-19? For instance, intensity, duration of the training, etc.?
11. Are you sufficiently informed about the vaccine against Covid-19?
12. What is your opinion about all the information you heard or read about? Can you please describe your feelings and thoughts about it?
13. What were your thoughts about the information that you heard or read on social media during and after the pandemic? Can you tell me the sites that you were checking?
14. Are you vaccinated? If yes, how many times?
15. What factors did influence you in your decision to vaccinate?
16. If you are not vaccinated, what factors did influence you in your decision?
17. In the future if there is another pandemic what would you suggest to other athletes based on your own experiences?
18. Based on your experience with this pandemic, what would you highlight that went right?
 - a. Is there any habit that you still carry on from the pandemic?
19. Based on your experience with this pandemic, what would you highlight that went wrong?

Before we finish the interview, is there anything you would like to share with me about what has just been discussed?

Thank you for helping me with this interview study.

Appendix 13: Interview guide – doctors

Introduction & Participant Rights

- Firstly, thank you for agreeing to be interviewed. I am interviewing participants as it gives me the opportunity to ask you questions about the research topic but also because it gives you an opportunity to express your in-depth experiences.
- The purpose of the interview is to gain a detailed understanding of your experiences with Covid-19 as a doctor who worked with athletes.
- The interview will be recorded using a dictaphone and phone, as this is the best way to gather and collect accurate information and allows me to concentrate on asking questions and listening to responses.
- Anything you say is entirely confidential which means that anything you say will not in any way be used in combination with your name. I may use quotes when writing up the findings, however, these will remain strictly anonymous, and your identity will be protected.
- There are no right or wrong answers to the questions you will be asked. Your answers should be based entirely on your own experiences rather than answers you think sound right or that I would like to hear. If at any point you don't understand a question, or you need clarification please do not hesitate to [ask](#)
- There is no time limit on the interview so please do not feel pressured by time. If at any point during the interview, you would like a break just [ask](#).
- Do you have any questions before we start?

Before we start can you please provide me the code that you used in the questionnaire (surname and birthyear):

1. Can you please let me know what drives you to work with elite athletes?
2. Can you please let me know what were the hazards of having Covid-19 for an athlete?
3. What were the protocols if an athlete got Covid-19?
4. What tests were done before someone could go back to training?
5. How long did it take usually for an athlete to get back to training and competitions?
6. What is your opinion about bubble events as a solution?
7. What are possible improvements for bubble events?
8. What do you think from a medical perspective can persuade an elite athlete to get the vaccination?
9. What do you think from a medical perspective can influence an elite athlete not to get the vaccination?
10. Can you please let me know in what cases a vaccination can be dangerous?
11. In your opinion what could be a solution for these athletes?
12. Based on your experience what would you suggest to other doctors in case another pandemic happens in the future?
13. Based on your experience with this pandemic what would you highlight that went right?
14. Based on your experience with this pandemic what would you highlight that went wrong?

Before we finish the interview, is there anything you would like to share with me about what has just been discussed?

Thank you for helping me with this interview study.

Appendix 14: Ethical approval



Internal Ethics Committee

Trikala: 12/10/2022
Protocol Number.:1976

Approval of research entitled: From Covid-19 pandemic through bubble events till booster vaccination:
Psychological effects of Covid-19 on elite athletes' mental well-being and performance

Scientist responsible – supervisor: Nikolaos Comoutos, PhD

Main researcher – student: Zsofia Boglarka Zrubecz

Institution & Department: University of Thessaly, Department of Physical Education and Sport Science

The proposed research relates to a: Postgraduate thesis

Contact phone: Αφαίρεση προσωπικών δεδομένων (Υπηρεσία Βιβλιοθήκης &
Contact email: Πληροφόρησης Πανεπιστημίου Θεσσαλίας)

The Internal Ethics Committee (IEC) of the Department of PE and Sport Science (DPESS), University of Thessaly, examined the proposal in its 1-3/12-10-2022 meeting and approves the implementation of the proposed research.

The Chair of the IEC – DPESS

Athanasios Tsiokanos, PhD

Appendix 15: Adult participation information sheet

From Covid-19 pandemic through bubble events till booster vaccination:
Psychological effects on elite athletes' mental well-being and performance

Adult Participant Information Sheet

Investigator Details: Zsófia Boglarka Zrubecz (zrubecz.zsofi@gmail.com)

Supervisor: Dr. Nikos Comoutos (nzourba@pe.uth.gr)

What is the purpose of the study?

This research study is exploring how the Covid-19 affected psychologically elite athletes' mental well-being and performance from the pandemic till the booster vaccination. It is important to gain a deeper and more detailed information about this period from athletes' perspective. A better understanding will contribute to the research evidence in this area and will enhance one's awareness of the importance of athletes' mental well-being and better understanding of their performance through this period.

Who is doing this research and why?

This study is a final year research project being conducted at the University of Thessaly. The investigator is Zsófia Boglarka Zrubecz, a final year Sport and Exercise Psychology student at the University of Thessaly. The study is being supervised by Nikos Comoutos, Professor of Sport and Exercise Psychology within the Department of Physical Education and Sport Science.

Are there any exclusion criteria?

In order to take part in this research study, participants need to be elite athletes competing high level in their own sport (National-, European-, other Continent Championships or the Olympic Games), speak English, are aged between 20 and 40 and either took or

not the Covid-19 vaccination (and boosters). Or the participants need to be doctors who have been working with elite athletes since the Covid-19 pandemic occurred.

What will I be asked to do?

The research requires you to read the study information, and if you are willing to participate, complete the consent form. You will then be asked to complete a short questionnaire online, which should take a maximum of 5 minutes to complete. Then you will be asked to participate in an online interview. All the steps will be done online.

Once I take part, can I change my mind?

Yes. After you have read this information and asked any questions you may have, I will ask you to complete a consent form, however if at any time, before, during or after the sessions you wish to withdraw from the study, please just let the researcher know. You can withdraw at any time, for any reason and you will not be asked to explain your reasons for withdrawing. However, once the results of the study have been collated and the project has been submitted, it will not be possible to withdraw your individual data from the research.

How long will it take?

The questionnaire should take 5 minutes to complete. The interview should be around 30 minutes. The interview will be conducted through Microsoft Teams, Zooms or Skype.

What personal information will be required from me?

I will collect some personal information about you, including your gender, your age, your surname and birth year in a form of a code, your sport, the level of that sport, and your personal thoughts and experiences about Covid-19. The code will be your surname and birth year.

Are there any risks in participating?

There are no anticipated risks of taking part in this research. If you would like to ask further questions about the study, please contact the researcher, or the supervisor Dr. Nikos Comoutos (nzourba@pe.uth.gr)

Will my taking part in this study be kept confidential?

Yes! Data collected in this research study will be stored confidentially and anonymously coded where possible.

Data Protection Privacy Notice:

University of Thessaly will be using information/data from you in order to undertake this study and will act as the data controller for this study. This means that the University is responsible for looking after your information and using it properly. University of Thessaly will keep identifiable information about you for 12 months after the study has finished. If you have any questions more generally regarding Data Protection at the University, then please do contact Dr. Nikos Comoutos (nzourba@pe.uth.gr)

What is the legal basis for processing the data? (GDPR):

Personal data will be processed on the public task basis. Individuals' rights to erasure and data portability do not apply if you are processing on the basis of public task. However, individuals do have a right to object.

How long will my personal information be retained?

Personal information will be kept until 01.06.2024.

What do I get for participating?

By participating in this research study, you will be contributing to a growing body of literature enhancing our understanding of the Covid-19 influence on elite athlete's mental well-being and performance.

I have some more questions; who should I contact?

If you have any further questions, do not hesitate to contact the student researcher or the supervisor on the following email address: nzourba@pe.uth.gr

What will happen to the results of the study?

The results of the study will be collected and outlined in the results section of a final year research project.

Dokumentum vége ■

Appendix 16: Informed consent form – interview



From Covid19 pandemic through bubble events till booster vaccination: Psychological effects on elite athletes' mental well-being and performance

Informed Consent - Interview

Please read the following carefully:

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the University of Thessaly Ethics Approvals Committee.

I have read and understood the information sheet and this consent form.

I have had an opportunity to ask questions about my participation.

I understand that taking part in the project will involve completing an interview.

I understand that I am under no obligation to take part in the study, have the right to withdraw from this study at any stage for any reason, and will not be required to explain my reasons for withdrawing.

I understand that all the personal information I provide will be processed in accordance with data protection legislation on the public task basis and will be treated in strict confidence unless (under the statutory obligations of the agencies which the researchers are working with), it is judged that confidentiality will have to be breached for the safety of the participant or others or for audit by regulatory authorities.

I understand that information I provide will be used for an undergraduate psychology research project.

I understand that personal information collected about me that can identify me, such as my name or where I live, will not be shared beyond the study team.

I understand that the semi-structured interview will be conducted online, through Microsoft Teams.

I voluntarily agree to take part in this study.

For our records, and to confirm your agreement with the above, please write your name below and sign it.

Name:

Signature:

Date:

Appendix 17: Informed consent form – questionnaire



From Covid-19 pandemic through bubble events till booster vaccination: Psychological effects on elite athletes' mental well-being and performance

Informed Consent - Questionnaire

Please read the following carefully:

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the University of Thessaly Ethics Approvals Committee.

I have read and understood the information sheet and this consent form.

I have had an opportunity to ask questions about my participation.

I understand that taking part in the project will involve completing a questionnaire.

I understand that I am under no obligation to take part in the study, have the right to withdraw from this study at any stage for any reason, and will not be required to explain my reasons for withdrawing.

I understand that all the personal information I provide will be processed in accordance with data protection legislation on the public task basis and will be treated in strict confidence unless (under the statutory obligations of the agencies which the researchers are working with), it is judged that confidentiality will have to be breached for the safety of the participant or others or for audit by regulatory authorities.

I understand that information I provide will be used for an undergraduate psychology research project.

I understand that personal information collected about me that can identify me, such as my name or where I live, will not be shared beyond the study team.

I understand that the questionnaire will take place online and it will be available through Google.

I voluntarily agree to take part in this study

For our records, and to confirm your agreement with the above, please tick the box below:

☐