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RESEARCH ARTICLE

The Influences of COVID-19 Lockdown Measures on Physical Activity, Sedentary and Screen Time Behaviour of University Rugby Players in the Western Cape, South Africa

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ABSTRACT

The COVID-19 pandemic has brought on many challenges to everyday life. The pandemic caused many lifestyles changes with social distancing becoming essential to prevent the spread of the virus and ensuring the safety of individuals. The main concerns were the influence on physical activity levels. Lockdown measurements restricted access to equipment and facilities that affected rugby players' training needs. Universities turned to online learning requiring student-athletes to spend more screen time, leading to sedentary behaviour affecting overall performance and well-being. This study aimed to explore the influences of COVID-19 lockdown measures on physical activity levels, screen time usage, and sedentary lifestyle among rugby players at a university in the Western Cape. Ethics was obtained from the University of the Western Cape Humanities and Social Sciences Research Ethics Committee (HS21/5/20). An exploratory qualitative approach was followed. Online semi-structured interviews were conducted with ten rugby players (5 males, 5 females), purposefully selected from a historical disadvantaged institution in the Western Cape. Data collected were transcribed verbatim, and Atlas Ti V9 was used to conduct thematic analysis. Trustworthiness was ensured using member checks, building a coherent justification for themes, rich, thick description to give context to the study, and describing the behaviour and experiences of the participants to convey the findings in a way that was understandable. The main findings of this study are summarised in three themes (physical activity, sedentary behaviour and screen time use) and eight sub-themes that emerged from the data. The key findings showed that most participants struggled to remain physically active throughout the strict lockdown measures due to a lack of support from coaches and the closure of sports facilities. Participants were once that it caused a significant decrease in a player's level of physical activity leading to an increase in sedentary behaviour and screen time usage. The changing institutional landscape also caused players to spend more time online, contributing to the sedentary lifestyle. Support from coaches during pandemics or situations where social engagement is restricted is of the essence. This includes emotional support, exercise programs, and sourcing equipment for rugby players to remain physically active and fit.

Introduction

The first case of COVID-19 was reported in Wuhan, China, in December 2019. Since then, it has become a global pandemic affecting countries worldwide¹. Globally the pandemic caused many changes in the lifestyles of individuals with social distancing that became an essential factor in preventing the spread of the virus and ensuring the safety of individuals. The first case in South Africa was recorded on 6 March 2020, and a nationwide lockdown was implemented on 26 March 2020. Lockdown regulations were stringent and had visible effects on individuals, preventing them from participating in regular physical activity and sporting activities outside their homes^{2,3}. These conditions tend to cause people to be less active, have longer screen time, have irregular sleeping patterns and have poor diets leading to weight gain and loss of physical fitness².

Students at higher education institutions were impacted even more by these restrictions as the global landscape of education delivery was also dramatically reshaped⁴. Due to the large workloads that universities provide their students with, physical activity is essential in preserving normal functioning and movement throughout their lifespan⁵. It is vital when students need to balance their academic work and sports commitments. Although students participate in physical activity, it is challenging to exercise consistently. This was made worse by the COVID-19 pandemic⁶. Due to the COVID-19 pandemic, physical activity decreased among students who participated in regular moderate physical activity and regularly active students, while sedentary behaviour considerably increased⁷. Further, university students face many unknown challenges because of the nationwide lockdown, even more so for rugby players at universities that have to remain fit to return to competitions.

Sedentary behaviour and the effect on rugby players

Sedentary behaviour and physical activity are associated with one another but not interchangeable. Regular physical activity consisting of moderate intensity has been shown to mollify health risks associated with a prolonged period of sitting⁸. Sedentarism is a significant cause of health problems. An individual relates sedentary behaviour to expended energy, and it becomes an independent risk factor for heart disease⁹. In extreme cases, it is an independent risk factor for heart disease and other diseases such as cancers,

obesity, diabetes, renal disorders, mental health, and even premature death¹⁰.

The onset of lockdown regulations putting an immediate stop to sports practice, sporting events, work and other social activities led to the inability of teams to train together. Athletes had to start training independently, which is difficult if they are used to training as a team. A study conducted by¹¹ examined the significant impact of coronavirus disease 2019 (COVID-19) measures on elite and semi-elite South African athletes. Their study found that sedentary behaviour, including inactivity and poor eating habits, increased amongst sporting athletes. Readjusting back to everyday life would be difficult and, as a result, influence athletes' ability to return to their fitness levels before the COVID-19 pandemic.

Rugby players have found training, staying in shape, and following good nutritional habits challenging¹². Many players adopted sedentary lifestyles, and with university classes, they have to spend more time in front of their computer screens^{13,14}. An increased amount of time spent sitting behind a desk can harm an individual's body, including muscle degeneration that a rugby player cannot afford to have¹⁵. Deterioration of physical qualities and body mass due to sedentary behaviour could affect the return to training for some players¹⁶.

Physical activity and the effect of the COVID-19 pandemic on rugby players

The physical demands of rugby players require them to have a high level of upper and body strength and power¹⁷. Rugby players need all the physical qualities to produce an all-around performance on match days. Ammar et al.¹⁸ looked at the effects of COVID-19 home confinement on eating behaviour and physical activity. It was found that with games and matches being cancelled, rugby players at universities have become confined in their homes, which made regular physical activity routines more challenging. Due to the physical nature of rugby leagues and rugby, players need physical qualities such as aerobic endurance, power, strength, speed, and technical and tactical skills to compete at the highest level^{19,20}. Athletes rely on regular exercise to maintain their physical and mental health to achieve optimal performance and recovery.

Physical activity can refer to any bodily movement resulting in energy being used²¹. Physical exercise increases muscle strength and joint flexibility and

decreases fatigue²². Consistent physical activity is related to an increase in an individual's lifespan and physical and mental health benefits^{23,24,25,26}. Regular physical activity consisting of moderate-intensity has shown to mollify health risks associated with a prolonged period of sitting, as sedentary behaviour is a significant cause of health problems such as cancers, diabetes and mental health^{8,10}. Reduced exercise and training can lead to an increased risk of injuries because of weakened muscle tissues in the body. Inactivity for long periods can also impact an athlete's psychological well-being and affect performance²⁷. In addition, there is a concern that a period of prolonged rest after being competitive can cause detraining effects. Detraining is the partial or complete loss of performance adaptations and training-induced physiological adaptations²⁸. Short- or long-term detraining can lead to decreased performance, skill level and negative physiological adaptations^{29,30}. Many teams have designed home workouts for their athletes to minimise detraining and physical inactivity and maintain their athletes' health and well-being¹⁷.

Screen time used by students during lockdown

Screen time, such as watching television and using computers, has been related to obesity in children and young adults^{31, 32}. Some studies have shown that 2 hours a day on screen-based shows was related to a 48% increase in the risk of all-cause mortality, while 4 hours a day with roughly a 125% increase in cardiovascular diseases³³. Screen time greater than 2 hours a day was related to a higher possibility of depression, particularly in the female population³⁴. Many university institutions have taken the online learning route during the lockdown, requiring more screen time use by students. Boredom can also lead to more time playing video games or watching television. The combination of high screen time and no physical activity is closely linked with a lower health-related quality of life (HRQOL), discernibly in men³⁰.

The question raised was: How did the COVID-19 lockdown measures affect rugby players' physical activity levels, screen time usage and sedentary behaviour? Therefore, this paper will focus on student rugby players at a university in the Western Cape, South Africa. These individuals lived through the pandemic as students and athletes and can speak about their experiences and challenges during the nationwide lockdown. The study's main aim was to explore the influence of COVID-19

lockdown measures on physical activity levels, screen time usage, and sedentary lifestyle behaviour amongst rugby players at a university in the Western Cape.

Methods

Research Design

This study employed a qualitative method using the exploratory research design as it enhanced the richness and depth of the study. Interviews were conducted using a semi-structured interview guide to collect data from rugby players at a university in the Western Cape. The exploratory research design allowed the researchers to seek new information that had been previously overlooked. It further assisted in exploring the effects of lockdown on physical activity levels, screen time use and sedentary behaviours of rugby players.

Research Setting

This study was conducted with male and female rugby players at a historically disadvantaged institution in the Western Cape. Among academic institutions in South Africa, it proved to be a competitive tertiary institution, playing a distinctive educational role in helping to build an equitable and dynamic nation. Rugby at this institution has grown to be a landmark sport, creating the image and profile of the institution. The team participates in the FNB Varsity Cup, an annual tournament in South Africa involving the top rugby playing institution. However, it also provides top players, coaches, and medical support staff to provincial and national rugby federations and teams.

Population and Sampling

The study population was 24792 students (female: 15359; male: 9613) at the university in the Western Cape, of which 19050 were undergraduates, and 5742 were postgraduate students at the time of data collection. The first team rugby players generally consists of 15 players and additional 5-15 players serving as reserves of the team. It is the same for male and female teams. At the time of the study, there were approximately 50 players to select from to participate in this study. In qualitative studies the selection of participants is contextual and based on the qualities that the participant contain³⁵. Purposive sampling was used to deliberately select the participants for this study. Purposive sampling allows the researcher to recruit knowledgeable and willing participants to provide the in-depth information and experiences the

researcher is seeking³⁶. It is a non-random sampling technique and does not require a set number of participants and is typically used in qualitative studies³⁵. Ten participants were purposively selected (5 males and 5 females). The male participants were selected from the Varsity Cup rugby team, with 30 players in the squad. The female participants were selected from the institution's female rugby team, consisting of 20 players. The inclusion criteria were that players had to be registered with the institution in 2021, rugby players who played in the Varsity Cup competition or a club league over the past two years and aged between 17 and 25 years. Participants were excluded if they did not meet the

criteria and were staff members, coaches, team officials or team managers.

The participants' profiles (Table 1) revealed that they were from different years of studies and enrolment, with most of them in their third and fourth years of studies. Three were first years that played rugby at club level (secondary school level) in 2020 and were selected into the university A teams in 2021. One participant graduated in 2020, but as a registered rugby player at the institution 2020, her input is most valuable to her lived experience through strict lockdown measures in South Africa. None of the participants revealed their age. However, they were under 25 years as per the inclusion criteria.

Table 1. Participant profile

Participant Codes	Gender	Year Studies
P01	Male	3rd year
P02	Male	2nd year
P03	Male	3rd year
P04	Male	1st year
P05	Female	4th year
P06	Male	1st year
P07	Female	Graduated (2020)
P08	Female	3rd year
P09	Female	1st year
P10	Female	4th year

Research instrument

An interview schedule is a set of pre-prepared questions structured and serves as a guide during an interview for data collection³⁷. A semi-structured interview schedule was used to gather critical information from individuals who have had personal experiences regarding the topic. It was effective as it allowed the researchers to collect open-ended qualitative data and explore the participants' thoughts, beliefs, and feelings about the subject³⁸. Additional probing questions were used to elaborate on a thought process. The addressed

questions were related to the influence of COVID-19 lockdown measures on physical activity levels, screen time usage and sedentary behaviour amongst rugby players.

Trustworthiness

Trustworthiness refers to the degree of confidence in data, interpretation and methods used to ensure the quality of a study³⁹. Three types of trustworthiness link with the interpretivism paradigm: disconfirming evidence, prolonged engagement in the field, and thick, rich description.

Credibility was ensured by employing member checks. Analysed data was presented back to participants to ensure the correctness of interpretation. This allowed the researchers and participants to look at the data from different perspectives, strengthening this study. Creswell's⁴⁰ multiple approaches were used to ensure transferability. This included examining evidence from the sources and using it to build a coherent justification for themes, using rich, thick descriptions to give context to the study, and describing the behaviour and experiences of the participants to convey the findings in a way that was understandable to an outsider⁴¹. Additionally, an audit trail of the research process was kept to ensure dependability and confirmability and reported transparently. Researchers were reflective in examining their assumptions and preconceptions and how they influenced the study to prevent any biasness towards the study⁴².

Data collection

Ethics approval was received from the Human and Social Science Research Ethics Committee (HSSREC) (HS21/5/20). Permission was requested from the Director of Sport and the respective rugby coaches to conduct interviews with the rugby players. Ten rugby players (5 males and 5 females) from a university in the Western Cape were recruited with the assistance of the rugby coaches. Participants were contacted via email to participate in the study. Participants were informed about the purpose of the study, and voluntary written consent to participate and record the interviews was obtained before interviews were conducted. Interviews were conducted online using Google Meets as the platform. The interviews took 15-20 minutes each. Data collected will only be used for research purposes, and pseudonyms were allocated to protect the anonymity of the participants.

Data Analysis

All interviews were transcribed verbatim and analysed thematically. Thematic analyses identify, analyse, organise, describe, and report themes within the data that has been collected⁴³. Braun and Clarke⁴³ outline six steps for applied thematic analysis. Data were transcribed verbatim. Researchers familiarised themselves with the transcribed data, reading through it to get a general sense of the meaning of the data. Transcripts were uploaded onto Atlas Ti, Version 9, software for data analyses. The software clusters similar ideas together to generate codes and organise them according to interest. Once data was coded, it was collated into themes reviewed and related to the code extracts. Themes and sub-themes were then named and defined. Once this process was completed, data was interpreted to answer the influence of lockdown on physical activity, screen time use and sedentary lifestyle behaviour amongst university rugby players⁴⁴.

Ethics

Ethics were obtained from the University of The Western Cape Human and Social Science Research Ethics Committee (HSSREC) to conduct this study (HS21/5/20). Written, voluntary, informed consent was obtained from participants to participate in the research and record the interviews. The anonymity of participants was protected by using codes to preserve their identity.

Findings

This study aimed to explore the influence of COVID-19 lockdown measures on physical activity levels, screen time usage and sedentary lifestyle among rugby players at a university in the Western Cape. The main findings of this study are summarised in three themes (physical activity, sedentary behaviour and screen time use) and eight sub-themes that emerged from the data and can be seen in Table 1.

Table 1: Themes and Sub-themes

Physical Activity	<ul style="list-style-type: none"> - Ability to remain physically active - Effect of lockdown on sports participation and physical activity - Social distance hindering exercise participation - Support structure
Sedentary behaviour	<ul style="list-style-type: none"> - Students finding themselves becoming more sedentary - Major challenges with not having access to certain facilities
Screen time usage	<ul style="list-style-type: none"> - Studying through the pandemic - The amount of time spent on an electronic device

Physical Activity

Participants were asked whether or not they could remain physically active during the pandemic before sports could return to play. Four sub-themes emerged from the responses gained from the participants: a) ability to remain physically active, b) effect of lockdown on sports participation, c) social distance hindering exercise participation, and d) support structure.

a) Ability to remain physically active

The majority of the respondents could remain physically active during the lockdown. While some were fortunate to stay on farms where they had sufficient space to continue their training, others could be creative in their home environments by using gym equipment or jogging in their yards when it was big enough. However, they remain that the training was not at the level they would want it to be due to some restrictions not practising together. Below are the responses of some participants:

Participant P01: *"...I was able, yes, I was definitely able. But like I said, not as able as I wanted to be, but I wasn't fully restricted from any physical activity"*.

Participant P09: *"Yes, I was able 'cause I used to do some workouts inside the house and do some jogging around the yard also. So it's basically keeping myself thinking that they will open everything, everything will be open soon until this year"*.

Several respondents found themselves unable to remain physically active throughout lockdown. For some, their environment was restricted, and they lacked the resources to exercise and train. The gyms they usually access were closed due to the lockdown restrictions, making it less possible to stay physically active.

Participant P04: *"...It was challenging because we didn't really get to remain physically active because you only had (uhm)*

access to a limited amount of stuff that you had at home because everything was closed". Participant P04: *"I didn't really maintain my fitness levels because it was never like when we started the season you never really know when we going to play or when the rugby is going to so the first three months you actually work out and train, and lockdown just got longer and longer and you lose that bit of motivation because you working hard but you don't know for what you are working for in that moment because all of us have short term goals"*.

From the responses, it was clear that while most participants managed to maintain some level of fitness and had the resources to continue doing so, others were not that fortunate. Lack of space, facilities and a conducive environment were the main reasons. In addition, the prolonged lockdown regulations and inability to practice their sport affected their ability to remain motivated to train. The result of not remaining physically active had a significant impact on sports participation.

b) Effect of lockdown on sports participation and physical activity

Without a doubt, the lockdown had detrimental effects on participants' sports participation. This meant that they could no longer play matches, see their teammates or even socialise. Below are the responses of two participants:

Participant P01: *"...It took a big toll on my sport regarding, (uhm), my skill and fitness level because obviously skill level I couldn't be training with the team as much as I would like and fitness level the same I was really limited to certain exercises so it took a big negative toll"*.

Participant P05: *"...it affected the whole stability of my training sessions, my gym sessions, and even my interactions with my*

teammates and stuff, so it was really tough because we couldn't actually like go out anywhere at all".

Playing a team sport motivates players to do better and allows for effective communication with a routine being set in place, such as training sessions on certain days and then playing on a weekend. Along with that, friendships are built between players and relationships with coaches. Due to the lockdown regulations, each individual's routine was disrupted. All citizens had to adapt to the "new" way of living, which included wearing the mask, being confined to their homes and social distancing¹². This took a toll on an individual's ability to play sports and stay motivated.

c) Social distance hindering exercise participation

For sports to return to play, COVID-19 protocols had to be adhered to. This meant 1.5m of social distancing, no physical contact and wearing a mask. Many of the respondents found this challenging to adhere to, especially those used to having training partners. Many individuals also found it challenging to train with a mask on as it made them feel uncomfortable, or when they were training, it would just fall. The constant adjusting of the mask to keep it on and training was a difficult task, taking away from their little training time⁴⁵.

Participant P01 : *"Look here, I'm really against social distancing, especially the fact that I play a physical sport so that that really took a toll on on my my personal fitness journey because the sport like I said the sport i play It it it involves a lot of physical contact and to take that away from the sport, it takes away a lot of the substance of the sport, so".*

Participant P05: *"I couldn't even see my own gymming best friend, buddy and train together, so it was really hard for me".*

Participant P02: *"It was first frustrating because uh, I mean, it's really, really hard to train hard with a mask on so i would normally get like scolded out everyday when i run because i run with it above but sometimes it goes down s".*

Participant P08: *"It hindered me a lot, really a lot 'cause like I say, when I wanted to go on jogs and so on, and you have to wear your mask and you know running with the mask and so on is not a plan".*

d) Support Structure

In terms of the support structure and the ability of players to remain physically active during the lockdown, participants were asked if they felt that they were given enough support from their coaches and teammates during the lockdown to remain physically active. Below are some of the responses:

Participant P09: *"Yes I was supported 'cause like they use to check up on us every almost like every Sundays and they also want feedback on what we're doing and how was it did we struggle with anything or do we have any injuries".*

Participant P07: *"they communicated with us what level we should be on".*

However, not all participants agreed to be supported by their coaches or teammates and felt that more engagement with their coaches or teammates, whether checking up on their mental well-being or just chatting, would have been more beneficial to their situation.

Participant P01: *"Well, since the first heavy lockdown till now I had two different coaching systems if I can put it like that. So if I have to be honest, the first system there wasn't really that much support. They only gave us probably 1 program to do on our own. They weren't that invested in the players, but the new coaching staff, the new system that was put in place, it really upgraded and and and they really put a lot of effort in making sure that we are getting fit outside of the system as well. Doing things on our own, so I feel like if you're referring to the first part of lockdown, then no i didn't have that much support but this year they changed that".*

Participant P04: *"we didn't get the support we wanted from our previous coaches".*

Participant P08: *"we were just like nobody knew what was happening So you didn't actually focus on that".*

Participant P10: *"my dad was also now a coach and all that so I mostly got my exercise or like my workouts uhm, he would tell me what to do. But yeah, from varsity side no, I didn't get that support though".*

Sedentary Behaviour

Following the ability to remain physically active is sedentary behaviour. Sedentary behaviour can be detrimental to an individual's health. With the pandemic being extended many times, we wanted to find out if this impacted whether or not the

participants found themselves becoming more sedentary in their day to day lives. Two sub-themes emerged from the responses gained from the participants: a) students finding themselves becoming more sedentary and b) major challenges with not having access to certain facilities.

a) Students finding themselves becoming more sedentary

Many participants felt that each time the lockdown got extended, they became less motivated to exercise. Many planned to be active and keep fit for the original 21 days of initial lockdown under the impression that after those 21 days, they were going to be able to train again, so they planned using short-term goals. When asked if they would say that they became sedentary or not, the following were the responses that were received from the participants:

Participant P08: "...yes, I was definitely a couch potato".

Participant P05: "...I mean you living that you know that the sedentary lifestyle".

Participant P09: "During the lockdown period I was not active like I started giving up after the 21 days 'cause they said after 21 days though we'll go back to normal then afterwards we saw that nothing's happening".

Participant P01: "I would say that that in a nutshell, I got, I actually did get a bit unfit, but not to the point where I couldn't cope anymore in training sessions".

Participant P04: "...lockdown just got longer and longer and you lose that bit of motivation because you working hard but you don't know for what you are working for in that moment because all of us have short term goals, so say you wanna play there but you never know".

b) Major challenges with not having access to certain facilities.

Due to the COVID-19 lockdown measures implemented, all businesses except essential workers such as food grocers, pharmaceutical companies and frontline workers (doctors and nurses) had to stop working/close down. This resulted in the closure of gymnasiums and the immediate cessation of all sports activities³. Participants were asked the significant challenges they experienced due to not having access to

certain facilities such as gyms and sporting fields, and below are some of the responses:

Participant P01: "It impacted my rugby performance more than my actual daily routine because my daily routine was consisted more of (uhm), running and I could run in the road, but when it came to actual rugby training, lack of facilities and equipment, then that actually affected my performance in the sport that I play".

Participant P02: "if you don't gym heavy for a while you get you tend to lose weight".

Participant P05: "The major challenge was having to deal with my anxiety because I had anxiety because of the weight that I picked up".

Participant P07: "some of the fields are open there's a certain time and most of the times I can't really be on the field and because it's dangerous and (uhm) you know the gangsterism".

Participant P09: "With me it really impact my daily routine cause like I always used to go to the field. 'cause whenever I'm in the fields it feels like I feel like, (uhm) I become happy. It's not the same when I'm in the house trying to do some exercise, trying to run around like I see. I used to be when I'm on the field 'cause I'll see my teammates. They'll cheer me up, they'll do everything. It's not like whenever you are always in the houses just walls and you with your laptop. So it wasn't that nice for me. It affected me".

Screen time usage

Screen time can refer to any activity involving having a screen in front of an individual, whether a laptop, a phone, a television, or even an iPad⁵⁹. Due to the pandemic, higher institutions had to convert to online teaching, causing students to spend more time in front of their electronic devices. Davy et al.⁶⁰ also noted that students generally experienced more changes in their behaviour. They showed delays in their work and sleeping time, increased sitting and screen time, and decreased work hours and exercise time. Participants were therefore asked about their screen time usage during lockdown measures. Boredom and a decrease in motivation seemed to emerge as a result of the prolonged lockdown, and as a result, participants spent more time sleeping on their electronic devices. Participants noted this.

Participant P01: "Definitely, I felt like I had well, much more leisure time and free time

and actual academic time, so I spent much, much more time on my phone, on my PlayStation, computer, whatever the case may be as usual".

Participant P05: *"I would do 70% of sleeping, 20% of watching TV and 10% of actually like playing game".*

Participant P06: *"Yeah, because like I said, the motivation and stuff wasn't there so you keep yourself busy with social media and stuff like that so yeah".*

Participant P09: *"I was doing a short course, so that short course didn't give me too much work. I had I had to just write my assignments. Then when im done with my assignments, I only have exams on November. So there was no school work that much, so I was just chilling, watching TV and be on my phone".*

From the responses, it was evident that two specific sub-themes emerged and needed to be addressed: a) studying through the pandemic and b) the amount of time spent on an electronic device. These sub-themes will be addressed accordingly.

a) Studying through the pandemic

As a result of the respondents' responses, noting how their screen time usage increased during the lockdown and how their studies affected their screen time usage, participants were asked about their study experience. Respondents had conflicting views. For some, it was pretty easy to convert to the online platform, and they felt that they had more time to focus on their studies.

Participant P01: *"I found it a bit easier because my schedule wasn't as busy as it would normally be. So I found myself having much more time in my room to actually study".*

Participant P09: *"...It was hard at first but then i got used to it because there was nothing i could do. I had to finish my school work and everything else in order for me to finish with my qualification".*

For others, it was more difficult as some were not used to it, and others did not have Wi-Fi at home and struggled with obtaining data to access their school work.

Participant P08: *"It was actually quite strange because everything bounced to online".*

Participant P05: *"it was really tough honestly and we had no Wi-Fi, I struggled with data".*

Also, participants indicated that it took a lot of self-discipline and motivation to keep up with their school work.

Participant P03: *"It was a bit hard because you were at home, it's your comfort zone. So you like have to motivate yourself a bit more extra than you would have if you were on campus".*

Studying through the pandemic played a role in an individual's participation in physical activity. Online studying requires a person to sit for prolonged periods in front of the computer, making one tired and not want to exercise^{61,62}. Participants confirmed this.

Participant P09: *"Uh, with me I feel as if like it made me to exercise less 'cause most of the time I'm spending my time reading 'cause I had too much school work and there was nothing else".*

Studying during lockdown appeared to be challenging for participants. Converting to online education was not easy for some participants, and they struggled to stay motivated. It also affected their motivation to stay physically active.

b) The amount of time spent on an electronic device

In terms of screen time, participants were asked how long they thought they spent in front of either the television, their laptop playing games, or doing work during the lockdown.

Participant P01: *"Yeah so, I don't want to lie to you to give you an exact amount. Out of the 24 hours I would say six hours".*

Participant P02: *"I'll say like 5 to 6 hours being with something digital in my hand or in front of me".*

Participant P03: *"I'd have to say 4 hours in front of the TV".*

Participant P04: *"I'd say more than half a day because my screen time just, joh I am embarrassed about how much screen time I spent in front of the television or on my phone or just socialising on my phone".*

Participant P08: *"you could say I spend like 10 hours or so on my phone".*

Participant P10: *"once classes started I had to spend more time in front of the computer".*

Along with studying online, most participants found themselves glued to their phones due to boredom or to let time pass by. Some participants sat in front of

their laptops for prolonged periods due to having online classes and assignments to complete.

Discussion

This study sought to understand the influence that the COVID-19 lockdown had on rugby players' physical activity levels, screen time usage, and sedentary behaviour at a university in the Western Cape. The key findings were that most participants struggled to remain physically active throughout the lockdown. It was reported that players found it particularly difficult to remain physically active as many sporting facilities were closed due to the strict lockdown restrictions installed by the South African government. A similar report was shown by Ammar et al.¹⁸, where the implemented lockdown made it difficult for players to train and, as a result, caused a decrease in their ability to remain physically active. Some players were not as heavily affected by the lockdown as they had access to fields to train. For instance, the players that stayed on farms had fields on which they could train. Players who were not as privileged to have access to facilities and fields had to find alternatives to gym equipment, such as doing body-weight training, finding online workouts, and using what was available to them to remain physically active⁴⁵. This is similarly reported by Kaur et al.⁴⁶, where players who were used to doing their regular routines in a gym or at a fitness centre had to find other ways of keeping themselves fit. The closing of these facilities meant that players had to stay at home. Due to the inability to remain physically active during the lockdown, participants found a decline in their fitness and physical activity levels that affected their sports participation. Their routines were disrupted as they no longer trained or played matches. Major sports tournaments such as the 2020 Olympics and training for players had to be postponed due to the high risk of getting infected¹³. Participants reported that they found it challenging to adhere to the social distancing rules with the lockdown. They felt uncomfortable training with masks, and they missed the feeling of being physically in contact with their teammates⁴⁷. One participant reported that the social distancing took away the physical nature of rugby, which is the foundation upon which the game stands. Stokes et al.¹⁷ state that rugby is a collision sport, and athletes need specific physical qualities to perform at a high level. These physical qualities, especially contact skills, such as fundamental tackling in rugby,

were challenging to train due to the coronavirus disease and its strict rules.

Some players did not have the full support they wanted from their coaches during the lockdown. Coaches need to be involved and support their athletes' training and personal lives to still thrive in their training performances⁴⁸. Many of the athletes wanted their coaches to check in on them from time to time, and others would have liked for the coaches to provide them with workouts to keep them motivated.

As a result of the lockdown being extended for longer than expected, most players also adopted sedentary lifestyles. Due to the extended lockdown on several occasions, players lost the motivation to train, becoming more sedentary. According to Park et al.⁴⁹. A typical sedentary lifestyle includes limited or no physical activity, sitting down frequently, playing video games, and using cell phones for an extended period. Scientific studies have shown that too much sitting is harmful to an individual's health, independent of physical activity⁵⁰. Ekelund et al.⁵¹ stated that regular physical activity (60-75 min of moderate-to-vigorous physical activity per day) could protect athletes against the risk of death related to sitting and watching television for a long time. Athletes who exceed these physical activity levels should not concern themselves with any health issues. Despite athletes meeting the international recommendations on physical activity, university athletes might not reach the recommended physical activity level to prevent the detrimental effects of sedentary behaviour⁵¹.

With regards to studying through the pandemic, participants had different views. Some participants reported that they found it easier to study and have classes via the online learning platform. In contrast, other participants found it quite challenging to transition to online classes as they were not accustomed to it. They had issues with internet connectivity and having access to data which made it more frustrating for participants to do their schoolwork. Zalat, Hamed, and Bolbol⁵² found similar findings, where university students found it helpful to have online classes and speed up the online process. In addition to students not being accustomed to studying online also reported specific issues such as unstable internet connectivity and problems with data, and not having enough computers or laptops to do their online schooling^{53,52}. Furthermore, they found it challenging to do their school work online and focus

as most of them were in the comfort of their own homes⁵⁴.

According to the results under screen time usage, most participants had a considerable increase in their screen time usage. Participants reported that they had to sit in front of their computer or laptop screens for a long time due to doing tests, examinations, and assignments. Singh and Balhara⁵⁵ similarly reported that the prolonged sitting was due to educational institutions using Internet-based technology to have classes and engage with their students. This meant that students had to sit in front of their laptops significantly. However, there are no specific screen time recommendations for adolescents and university athletes mentioned by the World Health Organization or any governmental health guidelines⁵⁵. However, large amounts of screen time usage and low physical activity are linked with a large variety of physical and psychological disorders, which can negatively affect athletes' health and well-being⁵⁶. Continuous screen time viewing can result in digital eye strain such as dry eyes, itchy eyes, blurry vision, and headaches in terms of physical disorders. Watching or reading on screens for a long time can also cause an increase in the development of myopia. Psychological disorders, continuous viewing of screen time through gaming, social media, and online streaming services can be linked with behavioural addictions, including gaming disorders⁵⁵. Jones et al.⁵⁷ showed that elite athletes who use various devices in the evening could have more difficulty falling asleep. Sleep, a fundamental part of an athlete's recovery, training and competition performance, can be affected as electronic devices disturb their attention and mood⁵⁸.

Limitations and future directions

A limitation of this study is that the study focused on one particular sport at one university, including only ten participants. Many other sports could have been faring well, showing that the pandemic only caused difficulties in one specific sport. Future research

should explore different sports and more universities, their students and their various challenges throughout the pandemic to see the diverse effects of lockdown on the players. Findings highlighted that the support of coaches for players during lockdown was not sufficient. Coaches must show their support and care for their players to feel motivated to continue training hard and performing well throughout sessions.

Conclusion

The evidence shows that the lockdown imposed caused a significant decrease in a player's level of engagement in physical activity leading to an increase in sedentary behaviour and screen time usage. In terms of socio-demographics, students who stayed in a lower socioeconomic class were more likely not to train due to gangsterism and limited access to equipment than those who stayed in a middle socioeconomic class. It is also pertinent to understand the importance of having support from a coach to the players. Many students felt that the coaches did not support them during the lockdown period and became unmotivated, which led to them not engaging in any activity and adopting a sedentary lifestyle. In the future, coaches should make an effort to check up on their players to understand their players' limitations or concerns and then possibly provide them with the necessary equipment or tools to accommodate them. Coaches need to be aware of this and perhaps have equipment taken to them or loaned to them for the duration of the lockdown so that they can continue to keep their physical activity levels up and not fall into a sedentary lifestyle. It was found that students who stayed off-campus had no access to gymming equipment, thus becoming physically inactive.

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