



## Research Article

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# Effects of COVID-19 Mandates on College Students' Exercise Experiences and Psychosocial Health

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## Abstract

Based on the World Health Organization and the Centers for Disease Control and Prevention, there has been a 25% increase in anxiety and depression worldwide, especially among young adults and women who were hit the worst, due to the Covid-19 pandemic. Exercise participation has several health benefits, including improved mental health and well-being during covid-19. Additionally, the highest levels of health and well-being are observed among those with the highest levels of autonomy. Given that autonomy and free will were significantly limited during the Covid-19 pandemic, the purpose of this study was to examine how covid-19 mandates influenced college students' exercise experiences and psychosocial health. The participants included 13 ethnically diverse undergraduate students (females = 10; males = 3; Asian = 5; Latino/Hispanic = 4; Caucasian = 3; Native American = 1) of varied educational backgrounds. This was a phronetic, qualitative study within two university (U) settings: one on the West Coast (WU) and the other in the South (SU). Based on the phronetic analysis, three themes emerged regarding the effects of lockdowns, heavy screen use, and mask mandates. In the first theme, most students, especially those with longer stay-at-home mandates (WU), expressed decrements in or complete cease of exercise participation. In the second theme, a few students found more time to socialize and reflect on their well-being. In the third theme, negative psychosocial experiences (especially in WU) were reported like depression, anxiety, and challenges in social relationships. Kinesiology experts and public health officials should reconsider covid-19 mitigation measures by respecting human agency.

**Keywords:** COVID-19 Mandates, Exercise Experiences, Psychosocial Health, Phronesis, Human Agency.

## INTRODUCTION

Based on the World Health Organization, there has been a 25% increase in anxiety and depression worldwide due to the Covid-19 pandemic, especially among young adults and women who were hit the worst.<sup>1</sup> Similarly, the latest report from the Centers for Disease Control and Prevention (CDC) shows that nearly 1 in 4 young adults, especially women, received mental health treatment in 2021 due to the Covid-19 pandemic.<sup>2</sup> Some reasons for the rapid and vast mental health decline, especially among young adults, women, and those with pre-existing mental health issues, include covid-19 related mandates, such as lockdowns and their associated employment constraints, financial pressures, and social isolation; heavy screen use due to reliance on online education; and exhaustion (notably among health workers).<sup>[1,3-7]</sup> Poor mental health is associated with decreased functioning and quality of life and increased risk of cardiovascular disease, diabetes, obesity morbidity, and self-harm (e.g., suicidal attempts).<sup>1,8-10</sup> It can also lead to increased risk of covid-19 infection, hospitalization rate, and mortality.<sup>11</sup> Most of the aforementioned studies on covid-19 and mental health are quantitative in nature without examining in-depth the links among covid-19 mandates, mental health, social relationships, and lifestyle (e.g., exercise experiences) among young college students. A couple of qualitative studies for college students or young adults showcased that covid-19 mandates linked to loneliness/isolation, anxiety/worry, uncertainty, academic-related stress, and increased eating-disordered symptoms among people with pre-existing eating disorders.<sup>[12,13]</sup>

Covid-19 mandates like lockdowns and social isolation have also disrupted regular exercise participation by leading to decreased exercise motivation and exercise behavior and increased obesity levels.<sup>[13-15]</sup> This can be detrimental because participation in exercise links to improved immune function, thus decreased

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covid-19 symptoms severity and progression.<sup>16,17</sup> The mental health benefits of exercise, such as decreased depression and stress, are well known,<sup>[18]</sup> including improved mental health and well-being during covid-19.<sup>[19]</sup> College students, especially freshmen and young females, already face many societal challenges that contribute to great temporal declines in exercise participation like social pressures to succeed academically and become financially independent.<sup>[20-22]</sup> Given that covid-19 has added another layer of challenges for them, it is timely and important to examine in depth how covid-19 mandates affected the exercise experiences and psychosocial health among college students who endured stay-at-home covid-19 mandates of varied duration (e.g., a few months vs. a whole year). This information would be important to policy makers in public health settings.

The philosophical basis of this paper is based on Aristotle's concept of praxis that leads to the knowledge of phronesis or practical/moral wisdom and reasoning in making decisions regarding leading the good life.<sup>23</sup> In his *Nicomachean Ethics*, Aristotle explained that moral wisdom can be achieved via ever-changing, time and context-specific life experiences (praxis), in which case people can strengthen their autonomy and free will to make wise decisions about reaching well-being and eudaimonia (happiness).<sup>[23-25]</sup> Based on the process of phronesis, decisions regarding human action like participating or not in physical activity are based on one's value system, which is formed within one's history, cultural upbringing, and socio-political structures.<sup>[22, 26-31]</sup> For example, children who are encouraged to play and be active tend to sustain this behavior later in life.<sup>[26,32,33]</sup> Given that people's valued goals are normative in nature and not merely individualistic desires,<sup>[24, 33-35]</sup> the worth of leading healthy lifestyles can be highly appreciated across several societies nationally and internationally.<sup>[26, 33]</sup> Based on phronesis, the achievement of eudaimonia (happiness) and well-being (individual and societal) is based on one's degree of autonomy in decision making and action – the higher the autonomy the higher one's well-being;<sup>[24]</sup> yet covid-19 mandates have constrained people's freedom and autonomy. Therefore, it is imperative to understand how such disruption in society – due to covid-19 mandates and their varied duration (longer vs. shorter) – has affected young adults' exercise experiences and psychosocial health. Young college students in this qualitative study reflected upon those mandates and how they influenced their exercise behavior, social interactions, and mental health. It is important to note that the term "covid-19 mandates" was not included in the interview guide, but it emerged during the discussion with the participants – the participants were the ones who stressed those mandates and their effects upon their lives.

## METHODS

### *Design and Procedures*

This was a qualitative, phronetic study among 13 undergraduate students within two US universities (U), one in the south (blinded as Southern University [SU]) and the other one in the west coast (blinded as Western University [WU]). Both universities, states, and cities had a mandated lockdown in March 2020 as well as mandates for social distancing, online education, and mask use. However, in the SU the lockdown was lifted in the summer 2020, whereas in the WU the lockdown remained until summer 2021. In the SU, classes returned for the most part to in-person mode in the fall semester 2020; however, in the WU classes were entirely online during the whole 2020-2021 academic year. In the fall 2021, life did not return to normal immediately in the WU; rather, the process was slow with constant mask mandates and hybrid education (e.g., in person and synchronous online course delivery occurring at the same time).

All study authors conducted zoom-based semi-structured individual interviews with the study participants. Interviews took place between

late fall semester, 2020 and early spring semester, 2021 to collect the study's qualitative data. The Institutional Review Board of the authors' universities approved the study protocol prior to participants' signing the study's online consent form. The content of the individual-based interview questions included exercise experiences prior to and during the covid-19 pandemic, health issues and health-related influences of the pandemic, screen viewing, challenges in pursuing one's primary goals, types of classes (e.g., online, in person or hybrid), and demographic information, such as year of study, gender, ethnicity, education, and exercise reasons. See Table 1 for the content of the interview guide. The interview process was dialogical in nature to build trust and engage in in-depth discussions regarding the interview content. All interviews were recorded in zoom to facilitate data analysis. The first author drafted the initial interview guide and discussed it with the study co-authors for clarity and consistency with the study objectives. The final questions were then pilot tested with two participants, whose results were included in the study.

## Data analysis

Audiotapes of the interviews were transcribed verbatim and double-checked for transcription accuracy. Participants' actual names were replaced by pseudonyms for the purposes of reporting the study results. The first author entered the transcripts, post hoc reflections, and debriefing notes in the latest version of NVivo. The methodology used to analyze the study's qualitative data was based on hermeneutic-phronetic research, which encompasses several steps.<sup>[25, 36, 37]</sup> The first author read the transcripts and notes multiple times to systematically code the data. Based on the coded data, she developed themes and categories by examining each individual story and the whole data set in a recursive process. The other study authors independently reviewed the coded data to finalize the themes and categories via consensus discussion. Representative extracts were then selected based on the coded data, the entire data set, study purpose, and the literature. A key element in the analytical process of hermeneutic-phronetic phenomenology is the in-depth examination of a phenomenon. For this study, the authors were heavily involved with the studied subject matter via for example studying the literature, participating in democratic and informal discussions with each other and the participants (e.g., interviews), reflecting upon personal experiences during the pandemic, and using recursive analytical procedures to attempt to capture the participants' essence of their experiences. Importantly, this research is interpretive in nature by recognizing that different readers can give different meanings in the participants' shared stories; thus, it is dynamic and open to change.<sup>[37]</sup>

## RESULTS

### *Participant Characteristics*

The study population included 13 ethnically diverse undergraduate students (females = 10; males = 3; Asian = 5; Latino/Hispanic = 4; Caucasian = 3; Native American = 1), of varied educational backgrounds. Prior to the pandemic, all participants were physically active; however, following the covid-19 mandates most participants' exercise behavior decreased (see e.g., qualitative data below regarding negative exercise behavior changes and experiences). Participants expressed several reasons to be active, including improved mental health (e.g., "feel better", "elevates mood", "stress reliever"), physical health (e.g., "cardiovascular health and bone health", "become stronger"), physique and appearance ("be in shape" and "look good"), and athletic performance ("be a better athlete"). All students in the WU majored in Kinesiology, while the students in the SU majored in a variety of fields, including English, Integrated Biology, American Indian Studies, and Human Performance (Kinesiology).

## Emerging Themes

Based on the phonetic, qualitative data analysis, three interconnected themes emerged related to covid-19 mandates. The first theme, *exercise behavior changes and experiences due to lockdowns, social isolation, heavy screen use, and mask mandates* included: a) “decreased or ceased exercise”, especially among the students in the WU with the longer stay-at-home mandates, and b) “no change in exercise” for four students due to shorter mandates and participation in home-based exercises and outdoor activities. The second theme, *positive exercise experiences during and following the lockdowns*, included “more time to socialize and exercise at home” and “reflecting on exercise and body for well-being.” In the third theme, *negative psychosocial effects due to lockdowns, social isolation, heavy screen use, and mask mandates*, study participants discussed how covid-19 mandates negatively affected their mental health (increased depression, sadness, anxiety, and frustration), academic learning and education, and social relationships, especially for the students in the WU. Not only did the covid-19 mandates lead to decreased or ceased exercise participation, which is key to one’s health, but also, they had detrimental psychosocial effects for those students.

### Theme 1: Exercise behavior changes and experiences due to lockdowns, social isolation, heavy screen use, and mask mandates

#### Exercise decreased or ceased

Most students (9/13 = 69.23%; 7/9 were WU students) experienced decreased or complete cease of exercise participation and expressed negative exercise experiences due to covid-19 mandates. Cailyn (WU) remained active during the covid-19 pandemic, but her exercise intensity decreased due to gym closures and consequently lack of exercise equipment and structure. It was also difficult for her to stay motivated to exercise in social isolation without her typical exercise group.

“... before the pandemic, I would probably go to the gym on campus at least three times a week... even outside of campus yeah I was pretty active and I would say it did affect my physical ability transitioning into the pandemic just because lack of structure kind of affected my motivation to keep going and I had to figure things out on my own... exercise is a little more of a freestyle. I kind of just work out my body to the extent I feel it is good enough for that day or that week... but I still try to be active... exercise decreased in terms of the intensity of my workouts because, as of now, there's not much equipment to work with and I'm kind of just giving myself an easier time with my workouts... I play a lot of basketball during my free time, or I've done workouts like yoga, a lot of lighter workouts and easier things... but... I would actually want a harder or more intense workout. I would have to be a little more creative and try to find what I can do just to compensate for the resources you could get at a gym... in terms of how I would work out, it's just about how much discipline... how I would push myself to keep going... and it sucks because I think the aspect of not being able to work out with friends or work out with other people outside of your household that's the part of the pandemic that I wasn't really in favor of...”

Similarly, Dave (WU) would exercise a lot prior to the pandemic due to his construction work and going to the gym 3-4 days/week. However, following the lockdowns and gym closures he was not able to get the same workout without the gym equipment. It was also difficult for him to stay motivated while exercising on his own, and the increased screen time further led to his decreased physical activity.

“...so when the pandemic started, they closed the gyms down, and so I was kind of left scrambling for a little bit and trying to find the motivation to work out at home because I find that, at least for me at the beginning, it was a lot harder to find the motivation to work out at

home. There's like nobody there with you, you don't have the equipment, maybe, and so, for me it was hard to get into the rhythm; but once I made it a habit... like you know every day or every other day, that kind of started the ball rolling, and after that it's been fine. I still feel like I lacked a lot of the equipment, so I feel like my workouts aren't as good as they were before, but at least I'm doing something... I'm less active (now during the pandemic) just because even though I'm making more of a conscious effort to work out and having it be more structured, you still miss like even just walking to classes, walking up and down the campus... all that stuff, it might not seem like a lot but it adds up little by little... even though I'm working out, I feel like I got a better workout at the gym and... I'm still having to sit around for online classes three four hours at a time, every day... so I definitely feel I got more (exercise) before... eight hours that you're spending in front of a screen, at least you know, a couple of those hours can be spent like doing some other physical activity, so I definitely think it affects it.”

Julie (WU) also mentioned that increased screen time led to decreased exercise levels. She is a soccer player and, due to the shutdown and social distance protocols, she has not been able to compete, and this has increased her anxiety. She used to be “super-duper active, running and weightlifting all the time”, but following the lockdown and increasing academic demands, she is not active at the same level. She is still exercising five days per week, and she has a “nice little gym set up” in her garage. Andri's (WU) softball practice was also interrupted during the shutdown; thus, her main current activities are ultimate frisbee (once or twice per week), daily walking for 30 min/day, and going to the gym once every couple of weeks.

Fatma (WU) noticed a decrease in her exercise levels during the pandemic. She used to go to the gym three days/week for about 1.5 hrs/day. However, following the gym closures she relied on “home based exercises” and the use of “resistance bands.” She tries to exercise twice per week at home, which is hard because she has no company. She does not see the point of going to the gym and wearing a mask because exercising with a mask makes her “uncomfortable.” Prior to the pandemic, Hanka (WU) used to be very active by going to the gym six days per week, playing basketball and lifting weights. After the gym closures, she “picked up hiking” three times per week. Similarly, Megan's (SU) exercise levels decreased following the lockdowns and gym closures. Coupled with her eating disorder and financial issues, she is relying on “kettlebells, dumbbells, and yoga exercises at home” 2-4 times per week. She also goes for hiking and walking with a co-worker. She would have liked to have more variety in equipment and heavier weights to lift, but at this moment all she can use is her home-based equipment.

Two active students entirely stopped exercising due to lockdowns and social isolation. Jorge (WU) was very active; however, following the shutdowns and social isolation his life changed completely by not exercising and spending a lot of time in front of his computer:

“... my physical activity before the pandemic... I was like a player, I was playing basketball in the school; I was playing volleyball; I was playing soccer; any kind of sports like baseball too. When the pandemic started... everything changed... even like playing with my friends volleyball, they close, like shut down... so I feel like everything changed. And even before the pandemic started, I was getting to go to the gym like one or two times per week. And right now... I haven't been working out... I don't play any sports right now at all... also, I don't work out like anything, anywhere... when I was playing, I feel like I got a balance of my life, you know with the playing sports, education, do homework, study times... and then... I feel like... my experience, it's more like being in school or being in front of the computer... There's never been an outside or outdoors, doing something for you, for your mind.”

Kayce at SU used to be very active, but following the shutdown, social isolation, and increased screen time she lost motivation to be active and gained a lot of weight:

"...pretty much just became really lazy... I feel like I gained like 30 pounds, or something over... by just being at home. I lost motivation to work out or run or lift or anything... Probably because of the closing of the gyms, but um I mean, not everybody has access to maybe like open space to run or lift weights or anything... not being in that environment with maybe other people or equipment... it's hard to want to be physical... I know exercise is important, but I don't know it's just hard to motivate myself to even start because I've stopped for so long... when you look at a screen for a long period of time, it kind of makes you tired... I definitely get tired really easily and that really doesn't make me want to get any physical activity in."

### ***Exercise stayed the same***

Four students remained active during the pandemic because two of them had only one lockdown in March 2020 and everything opened again in the summer, 2020. Also, two students engaged in home-based and outdoor exercises during the lockdown period. Andri at WU walks her dog daily 3-5 miles, "does little HITT or weight-based YouTube videos" in her room four times per week, 30-40 minutes per time, and goes for hiking once every couple of weeks. Although she thinks that she "has more time now to exercise because she does not commute as much", she would love to swim but she cannot because the pools are closed. Kendal at SU participates in Taekwondo twice per week for about 45 minutes with her sister. Wearing a mask during exercise is required and at time during "heavier workouts... it's hard to breathe and you just kind... hold it... but you still have to keep it (mask) on... it's just like an inconvenience." She also walks three times per week. During the summer of 2020, Keirra (SU) would go to the gym with friends 5-6 days per week to perform weightlifting and aerobic exercises. Gyms did not close in her area after the first lockdown, so she was able to remain active in the summer. However, in the fall 2020, when the covid cases were high, she had to wear a mask to exercise in the gym, which did not bother her "that much." Keanu (WU) felt compelled to be active outdoors because staying inside his house all the time becomes boring:

"...as of right now I'm still active... I'm always trying to find a way to get myself active. I know being inside sucks... I wanted to just be physically active instead of just sitting around all day because that to me is kind of boring... currently I've been trying to get highly active like going from moderate to highly, so I can at least feel energized... instead of like let's say doing homework inside, why not just go outside for a run... around the neighborhood..."

### **Theme 2: Positive exercise experiences during and following the lockdowns**

#### ***More time to socialize and exercise at home***

Following the lockdowns, most students emphasized the communal exercise feel when the gyms opened again. Fatma (WU) enjoys the "positive gym atmosphere, where "you are free to roam around and socialize with others." Dave at WU said:

"...I really liked back when gyms were open again. That's sort of like a communal thing, even though you weren't really maybe talking to people every day and stuff like that. It was a positive experience to just be there with a bunch of like-minded people who all were pretty much interested in the same thing, which is like you know working out, getting better."

Andri at SU worries about catching the virus and typically she would not play frisbee with her friends: "if I wasn't in such a tight knit group, I don't think I would be playing because that requires being without a

mask and I don't like going anywhere without a mask." During the first lockdown, Andri (WU) expressed a positive experience, the social bonding with her mother: "... I had more time to like go on these walks with my mom, so... that was really nice... to bond over." Similarly, Fatma (WU) took advantage of the lockdown to stop driving to the gym which was "a little too far" and instead invest in the "convenience of home-based exercises by buying the appropriate equipment."

### ***Reflecting on exercise and body for well-being***

During the pandemic and lockdown, a few students found some time to pause, reflect on their body, calm down from competitive sports, and emphasize home-based exercise. Cailyn (WU) became more aware of her body and instead of focusing on physical appearance, she emphasized health and well-being:

"...I think through this time during the pandemic I realized to not be so harsh on myself and my body, because I started becoming more aware and just listening to my body, whatever I kind of feel like going through that day physically or whether I want to put myself through a harder workout. I kind of just had more control with what I wanted to do because it made me realize not to focus so much on my physical appearance... like certain things that I would nitpick about my body or certain things I would be bothered about... it just didn't bother me anymore... when this pandemic started, I would kind of just exercise for the sake of my personal being, my wellbeing and just trying to stay healthy and active... in terms of physical health, I'm at a much better state now than I was prior to the pandemic"

Similarly, when sports were interrupted, Hanka (WU) managed to calm down from the aggressive and competitive basketball setting:

"...I was playing basketball at the gym with the guys, the older and younger guys... the way they talk and the way they play is very like kind of ruthless... very like anger issues... they will like yell at each other. So, I felt like I started to become like that when I came home and talk to my friends. I was very aggressive, and I feel like after I stopped playing basketball honestly, I kind of mellowed down... It was a little bit negative in a way before because it's kind of detrimental to my overall being... So, I just kind of calmed down."

### **Theme 3: Negative psychosocial effects due to lockdowns, social isolation, heavy screen use, and mask mandates *Sadness, depression, anxiety, frustration***

Kendal's (SU) "diagnosed severe recurring depression" was manageable; however, it became "unmanageable and stressful" due to the pandemic. Similarly, Cailyn (WU) experienced "spurs of loneliness or sadness or even frustration" because of the "isolation component" linked to covid-19 mandates. Dave (WU) considers himself "pretty healthy"; however, he said: "...sometimes just being locked in doors with nowhere to go to starts to weigh on your mind a little bit." The lack of social interactions after being "cooped up" and the replacement of in-person interactions with online communications increased his anxiety and affected his "social and emotional intelligence." Keanu (WU) felt depressed because "we could not go outside anymore; we could not do the things that we used to do."

Andri (WU) mentioned that the lockdowns led to online education, and this added a lot of stress in her life, especially because two of her online teachers were "very unorganized" and "bombarded" them with online material. She emphasized that being active outdoors helped her with her high stress levels and mental health issues during this difficult time. Keirra (SU) said that the whole covid-19 situation has negatively affected her "mood and mindset." She feels that she "is not motivated to do anything." All she "wants to do is to sleep, though she has a lot of stuff to do." The online education was a horrible experience for her and her classmates by negatively affecting their health (e.g., Keirra was

experiencing migraines from all-day-long online education), learning, and emotions; they felt “gloomy and unmotivated”:

“... I talked to like a lot of other kids that are in the class with us and all of them were telling me like they couldn’t retain anything; they felt like they weren’t learning.... you’re just sitting there listening for an hour and then leaving like you wake up. Listen, and then go back to sleep. That’s what a lot of them were telling me. I feel like even now, like I don’t learn nearly as much as I would in a face-to-face class, because in a zoom I just space out like I just kind of stare at whatever... I really hope we go back to in person, but I know that’s not going to happen for a while... the difference between face to face and online is like huge... especially for high school students who are in these like harder (AP) classes and college like students... college is not easy.”

Keirra also said that one huge motivator for in-person classes is that students must:

“...get out of bed and show up... it’s just really easy to ditch a zoom call than it is to ditch an in-person class... usually, you can get kids to say something in a face-to-face class over zoom; it’s just like most the time your cameras are turned off, you’re muted. So, it’s way harder to get a lot more interaction.”

Megan (SU) is worried that she will not graduate from school in time to continue with her graduate education unless “they stop shutting everything down every couple of months.” The whole situation has affected Megan’s “academic performance” and she feels “super unmotivated.” She further stated:

“I hate having to sit in class with a mask on my face. I cannot focus. It’s hard. I wear glasses so my glasses fog up all the time, and it makes it incredibly hard to see. So, it’s definitely not the ideal situation.”

Andri at SU was worried about catching covid-19 and bringing it to her immunocompromised family members. She also said that the increased screen time has affected her

“...sleeping patterns... whatever it is blue light effects like the way you’re able to fall asleep, and I know when I don’t get a lot of sleep I usually tend to not feel as well, and it tends to bring out my depression a whole lot more.”

Kazi at SU is also afraid of catching covid because she “heard that it causes permanent organ damage.” At the same time, she feels that she is not free anymore to live her life the way she wants like volunteering and stop wearing a mask:

“...whenever I go out, I guess I couldn’t have fun. I couldn’t do like something I needed to do... like if I’m trying to think of something important... like I was supposed to volunteer for like a scholarship, but I mean you can’t actually do anything... I am kind of frowned upon to go out, or even like not wearing a mask. But, I mean, I get that when people say that masks don’t even work. It’s just weird. So, it pretty much everything’s kind of closed down and stuff.”

### **Challenges with social relationships**

Mostly study participants at WU (7/8) experienced challenges with their social relationships due to lockdowns, social isolation, and heavy screen use. Only one SU participant, Kendal, who has clinical depression, expressed such concerns. Andri was new to WU, and she did not have a significant network. Even though she had made a few friends right before “everything shut down”, she criticized online interactions vs in-person communication: “I have like a few people I do text like in my classes and things like that, but um yeah, it’s tough interacting with people like the same way I would if I was in person.” Fatma (WU) also mentioned that she missed personal interactions with classmates, friends, and professors because “school went online”,

which is especially challenging for “first year students.” She said that they had to “adapt” by “having movie nights and game nights via zoom.” Similarly, Dave (WU) mentioned: “...we started having scheduled weekly like zoom meetings where we would play... like online games and stuff like that, just to feel like we weren’t missing out on that connectedness that we had before.” Hanka (WU) also relied on “group chat discussions” to help her academically with her demanding class schedule. However, she said that this type of “online communication makes it harder, and it is not the same as face-to-face interactions.” She is a “very social person”, and, thankfully, she was able to see her family and make “a really good friend, that I could hang out a lot. So, that kind of filled that emptiness.”

Beyond “putting a pause on human interactions”, the whole covid-19 situation made Julie (WU) feel that she is unable to “explore the world... the life we have here on earth.” Jorge (WU) also mentioned that his whole social environment changed: “... when I go to job, I got to take all the precautions... everything changed, the environment on my job, the environment of the school, the environment even from the family.” Kendal (SU), who is diagnosed with depression, is not able to “talk and hang out with friends.” Her only escape is her walking with her husband and visiting new outdoor places. She also finds it harder to express herself emotionally via texts and emails.

“...I was able to, you know, talk, and hang out with my friends. But now I can’t do that anymore. And it’s just a little harder, I guess, to be emotional over like calling somebody or texting somebody. I think it’s just like easier to... tell someone how you’re feeling whenever they’re there in person than just text or something.”

### **DISCUSSION**

The purpose of this phonetic, qualitative study was to examine the effects of covid-19 mandates on college students’ exercise experiences and psychosocial health within two universities: one in the south (blinded as Southern University [SU]) and one in the West Coast (blinded as Western University [WU]). The WU had enforced considerably longer-lasting covid-19 mandates than the SU, thus any differences in the results based on this enforcement will be discussed here.

Based on theme 1, most students (9/13) and especially those from WU (7/9 students), whereby covid-19 stay-at-home mandates were more extensive and stricter than in the SU, had negative exercise experiences by decreasing or completely stopping their exercise participation. Although a few quantitative studies also found that stay-at-home covid-19 mandates led to decreased exercise participation and weight gain, <sup>[14, 15]</sup> uniquely in this study in-depth reasons for these negative changes in exercise behavior and experiences were identified. Such reasons included gym closures, lack of appropriate exercise equipment, interruption of contact sports, social distancing and isolation, heavy screen use, lack of structure, and mask mandates that made it uncomfortable and/or very difficult to exercise indoors. Four students’ exercise behavior did not change because two of them in the SU had only one lockdown in the spring 2020 and they performed indoor exercises at gyms or at home. The other two students in the WU managed to engage in outdoor activities to be able to remain active. In another study, longer stay-at-home covid-19 mandates resulted in greater weight gain among US adults, <sup>[15]</sup> reinforcing their negative effects not only on exercise behavior and experiences, but also on one’s health.

Given that several studies have shown that lockdowns and mask mandates did not make any meaningful difference in the spread of the virus and covid-related morbidity and mortality, it is important to reconsider mitigation measures for similar pandemics or viruses, especially among young, healthy adults and children who are at lower risk of covid-19 symptoms severity and mortality rate than older adults

and immunocompromised individuals. [38-43] Sweden did not shutdown society and their covid-19 intensive care (ICU) mortality rate (23%) during the first wave of the pandemic was lower than the mortality rate reported in other countries like North America (35%), Denmark (37%), and the French-Belgian-Swiss cohort (26-30%). [39] Based also on the ethical concepts of phronesis, people need to be allowed (have the autonomy) to freely make wise decisions about how to lead a good life based on their situation and experiences. For example, covid-19 infection provides a robust and long-lasting natural immunity, rendering previously infected people, especially healthy young adults, and children, at low risk of covid-19 serious re-infection, hospitalization, and death. [44-49]

The results of theme 2 reinforced the results of theme 1, in that most positive exercise experiences related to socialization occurred when the lockdown was over, and gyms opened again, or when students had a close group of friends to be active together like Andri at SU, who played frisbee with her friends. Only one student, Andri (WU), mentioned a positive social experience of the lockdowns, in that she had the time to “go for walks with her mother and bond over.” Similarly, the lockdown allowed Fatma (WU) to exercise at the convenience of her home because she did not have to drive to the gym, which was “a little too far.” Caitlyn (WU) increased her body awareness and instead of being too hard on her body and push too much, she was exercising only for her personal well-being and health. Similarly, Hanka (WU) had to stop the aggressive basketball games and managed to find peace and calm down. To summarize, students enjoyed the end of lockdowns and re-opening of the gyms; yet lockdowns allowed a few students to bond with family or reflect upon their views of exercise, their body, and their sport environment. This means that it is invaluable to take frequent breaks from one’s routine and busy lives; visit with family and friends; and emphasize the good life and well-being via autonomous lifestyle choices as reinforced in phronesis. [22,29]

Based on the results in theme 3, most students from both institutions – especially those with pre-existing mental health issues like Kendal and Andri at SU – expressed several negative mental health concerns related to lockdowns, social isolation, and heavy screen use like increased anxiety, depression, sadness, frustration, and sleep problems. Similar results have been reported elsewhere. [12,13] Uniquely in this study, several students fell behind in their academic learning and performance, and they were extremely unmotivated about their education due to the switch to online education and heavy screen use. Keirra (SU) was even getting migraines from the heavy screen use and all she wanted to do is “sleep all day long.” Megan (SU) was worried that she would not be able to finish in time to continue with her graduate education because of the lockdown. Also, wearing a mask was negatively affecting her academic learning and health. Although Kazi (SU) was afraid of catching covid-19, she wanted to live her life freely and stop wearing a mask – she heard that “masks don’t work.” Indeed, several studies have showcased that mask mandates did not slow the transmission of covid-19, nor did they influence mortality and hospitalization rates. [38,42] In a recent meta-analysis at the Johns Hopkins Institute, researchers emphasized that “lockdowns had little to no effect on covid-19 mortality.” [41p1] Given also that healthy children and young adults are at lower risk of covid-19 severity than older adults and immunocompromised people, [43, 47] such governmental mandates that significantly disrupt society and quality of life diminish one’s phronetic (wise and situation-specific) decisions and human agency (e.g., I should continue with my life without any major disruptions because I had the virus, thus I have strong natural immunity and/or I belong in a lower-risk population) and undermine trust in public health institutions and policies.

Beyond mental health issues, another unique finding in this study is the expressed challenges with social relationships, especially among students in the WU who underwent prolonged stay-at-home mandates. Based on theme 3, although several students had to rely on “zoom meetings and nights”, they did not enjoy such online communications and they preferred in-person interactions. Based on the study results, online communication is not the same as in-person interactions, thus the students felt that their whole world and environment changed. Relying on online communication did not allow them to express emotions and connect with others the same way as with in-person interactions. This again strengthens the argument that the solution to a covid-19 type of pandemic is not to eliminate human contact, which is shown to be more harmful than helpful in many aspects of life, including dealing with covid-19. [41]

To our knowledge, this is the first qualitative, phronetic study to examine in-depth the effects of covid-19 mandates on exercise experiences, mental health, and social interactions among an ethnically diverse college student body. Based on the study findings, public health officials and policy makers should take into consideration one’s free will (human agency – phronetic action) regarding how to lead the good life. Given the devastating public health effects of those mandates, it is imperative for public health institutions to reconsider mitigation measures for covid-19 and/or similar pandemics. It is important not to severely disrupt society by for example keeping schools and gyms open, avoiding public panic, and protecting the vulnerable. Disrupting the normal functioning of society adds extra stress in people’s lives, which can weaken immunity and increase vulnerability to covid-19. Instead of jeopardizing exercise participation, public health officials should reinforce it, especially during a pandemic like covid-19, because of its protective effects against covid-19 symptoms severity and progression. [16,17]

Most participants in this study were active; thus, they had a protective layer against the negative effects of covid-19 mandates. It is possible that the negative effects of covid-19 mandates have been even more devastating among inactive individuals or people of diminished physical functioning and social network like older adults or people with disabilities. It would be interesting to examine how such mandates affected the lives of vulnerable populations, who were at higher risk of covid-19 severity and mortality.

## CONCLUSION

In *conclusion*, this was the first qualitative, phronetic study to examine the effects of covid-19 mandates on exercise experiences, mental health, and social relationships among ethnically diverse college students within two different institutions: a) a western university (WU) with prolonged stay-at-home and mask mandates and b) a southern university (SU) with less societal restrictions following the first lockdown in March 2020. Based on the study findings, these mandates had detrimental effects on students’ lifestyle (e.g., exercise decreased or ceased), mental health (e.g., increased anxiety and depression), academic learning and performance, and social interactions (e.g., suffered in-person communication, social isolation, and lack of emotional expression and connection). As expected, these detrimental effects were more prevalent in the WU than in the SU. Given also that healthy college students are a low-risk population regarding covid-19 symptoms severity and death, it is important for public health officials to reconsider mitigation measures in potential future, similar pandemics by making well-studied recommendations and respecting people’s free will and phronetic action – wisdom in decision making for leading the good life.’

**Table 1:** Interview Guide

What is your major at (pertinent university)?
Do you currently exercise? If yes, in which activities do you participate, how frequently, and how intensely?
Why are you physically active?
How has the covid-19 pandemic affected your exercise participation?
What are your future goals regarding exercise?
Do you have any health problems? If yes, please describe.
How has covid-19 pandemic affected your emotions and health?
What do you think about online (or hybrid) education due to covid-19?
What is your screen viewing time (e.g., TV, social media, Internet, video games, etc)?
How has the pandemic influence your screen viewing experience?
What are your life priorities?
What are some major challenges in achieving your daily goals?
How do you deal with those challenges?

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