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## UCT research explores precarious balance of sleep, light and sedentarism among gamers



UCT PhD candidate Chadley Kemp

Photo: Je'nine May

With frequent and long stints at their computers, the average gamer is a sedentary night owl, often compromising on sleep – especially quality sleep – and being exposed to too much blue light. The topic has been explored in University of Cape Town (UCT) PhD candidate Chadley Kemp's doctoral thesis.

Kemp's research into habitual gaming activities is supervised by Associate Professor Dale Rae, a sleep researcher and senior lecturer at the Health Through Physical Activity, Lifestyle and Sport Research Centre (HPALS) in the Faculty of Health Sciences.

This work is founded on Kemp's 2018 research underpinning a master's in medical science at UCT's former Department of Exercise Science and Sports Medicine in the Sports Science Institute of South Africa. This was upgraded to a PhD in 2020.

His research explores adult esports players' sleep, health status, light exposure patterns and physical activity.

"We know that sleep affects mental functioning in general, but we weren't sure about the extent to which this applied to esports players," said Kemp.

### **Framework for healthier gameplay**

Kemp's goal is to produce objective data that will guide the development of a framework aimed at promoting healthier gameplay standards and encouraging policy reform within the esports industry.

The tests they used to assess neurocognitive performance were intended to serve as proxies for certain aspects of esports performance because they tested specific mental skills important to gaming, he added.

"We gathered it would be a useful addition to compel gamers to adopt better sleep and lifestyle behaviour changes if it meant ... that their health would improve, and they would benefit from better in-game performance – and get an edge over their competitors!"

Kemp's focus is not on professional gamers, but what he calls "the missing middle" of the esports community: the amateur and semi-competitive gamers.

"This group doesn't have the same infrastructure and support as their professional counterparts," he explained. "But what makes them particularly interesting is the fact that they have to balance their gaming commitments with holding down a job, studies, or juggling family or household commitments."

### **Global attraction**

Esports are burgeoning across the globe – and not only among competitive gamers but audiences too. Writing in the [South African Journal of Sports Medicine](#), Kemp and his co-authors noted that globally competitive gaming attracts 532 million fans alone, according to statistics released in 2022.

However, his study wasn't motivated by an influx of gamers presenting themselves with sleep difficulties at Associate Professor Rae's sleep consultancy, [Sleep Science](#). Rather, it stemmed from a broader observation and concern within the local esports community about gamers and poor-quality and short-duration sleep, high levels of sedentarism, and excessive exposure to artificial or electronic night at night.

Based on these conversations and endorsed by anecdotal evidence from within the esports industry, Kemp said he and Rae were able to determine that sleep curtailment had seemingly become a "rite of passage" among gamers. Primarily, most gaming takes place at night because of gamers' daytime commitments.

As there wasn't much literature on the topic (much of it is focused on the implications of gaming in children and adolescents) and most studies were survey-based and didn't target esports players or those regularly engaged with gaming, there was significant knowledge gap that needed filling. As a demographic, Kemp is particularly interested in adult esports players because of the greater health risks posed by age and unhealthy lifestyle factors, such as smoking and alcohol consumption.

Because he needed a tool to measure sleep and physical activity concurrently, he validated the Actiwatch, a special research device, to do this. The device also measures light exposure. For his sample group, Kemp recruited eligible esports players and measured variables of interest. These were clinical measures (anthropometry, blood pressure, blood markers) and self-report data (questionnaires on sleep, chronotype, daytime sleepiness and gaming addiction) and their cognitive performance.

“We also included non-gamers in our study, so we could compare our gamers against people who were not gamers. In total, we had 59 male participants (31 gamers; 28 non-gamers). (The females volunteering to participate did not meet the study’s inclusion criteria.) For a week, these individuals wore the Actiwatch to track their sleep, physical activity, and light exposure.”

### **Key findings**

The key findings of his research make for interesting reading:

- Esports players have comparable sleep duration to non-gamers (control group) but tend to sleep later than others. They hit the middle of their sleep cycle around 04:08 compared to 03:01 for the control group.
- A much larger percentage of esports players (45.2%) showed night-oriented habits (or evening chronotypes), i.e., they are more active and alert at night. This is in contrast to only 7.1% of the control group showing similar evening tendencies.
- They nap more during the day, but their night sleep duration is similar to that of the control groups.
- There was no significant difference in risks related to heart diseases or metabolic diseases between the two groups, which Kemp speculates might be related to their young age. But most of the health markers were tentatively raised, which could point to worse cardiometabolic health in future.
- Esports players smoke more.
- Esports players performed better in brain-based tasks, showing better attention and accuracy, and making fewer mistakes.
- Esports players are less active than the control group. They sit more (11.2 vs 9.1 hours a day) and are less physically active, whether it’s moderate- or vigorous-intensity activity.
- Esports players have specific active and inactive hours. They are less active in the early morning and certain evening hours but are more active around midnight.
- Esports players are exposed to dimmer light for a more significant part of their day, and their exposure to bright light happens later at night.

This work is important for several reasons, said Kemp. A key takeaway from the research revolves around chronotypes.

“Esports players seem to have sleep patterns that align with being night owls and this may be influenced both by their natural tendencies and their gaming habits. It’s also possible

that a genetic disposition and exposure to artificial light from screens collectively contributes to these sleep patterns.

“The combined effect is thought to create a cycle where their preference for evening activities leads to more gaming, which in turn reinforces the night owl tendencies. This impacts on their sleep quality and quantity.”

He added: “Perhaps more obviously, gaming is a massively popular phenomenon that transcends age, sex, and geography. It’s a dominant form of entertainment and its competitive arm, esports, is progressing towards acceptance as a genuine form of sporting competition.”

From the neurocognitive side, it’s clear that gaming can sharpen several cognitive abilities, such as attention and problem-solving.

“However, the catch is, if you’re not getting enough sleep, these enhanced skills could take a hit,” said Kemp. “Gamers might see slower reactions, flawed decision-making, and even a drop in their in-game stamina. So, while gaming certainly has its merits and can even boost certain mental skills, it doesn’t come without health considerations. ”

Kemp’s research is aimed at ensuring that anyone engaged with gaming or esports does so in a healthy way.

“The purpose is to create a steppingstone towards health regulation in gaming and esports,” he said. “By creating awareness and providing evidence-based recommendations to prevent chronic health problems caused by unhealthy gaming behaviour, it supports individual decision making, governments, and policy makers. It’s valuable to anyone involved in or impacted by gaming.”

*Story by Helen Swingler, UCT News*

**ENDS**

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