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RESEARCH PAPER

Varsity Sports to Combat Smartphone Addiction among University Students

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ABSTRACT

This study compared high exercise group with low exercise group to assess the influence of physical activity on smartphone addiction in early adult university students as it was the primary aim of the study. The final sample size comprised of 330 participants from five universities, out of which 165 were university level student-athletes and 165 were university level non-athlete students. To analyze and investigate the relationships between relevant variables, this study employed cross-sectional design of study. The short version IPAQ, SAS, and demographic information were utilized to collect data. It was revealed by t-test analysis that the mean score of smartphone addiction for low exercising group was considerably greater than high exercising group. These findings indicated that exercise can lessen smartphone addiction as athletes demonstrated minor smartphone addiction tendencies compared to non-athletes. These findings also suggested a potential protective role of physical activity against smartphone addiction.

KEYWORDS: Athletes, Early Adults, Non-Athletes, Physical Activity, Smartphone Addiction, University Student

Introduction

Engagement in regular physical activity and exercise is believed to have a critical impact on healthy physical and psychological life of adults. Physical activity provides a protective barrier against various chronic diseases to the body (Lobet, Lambert, & Hermans, 2016). It has been observed that regular physical activity works as a risk reduction by at least 20%-30% of more than 25 chronic medical diseases (Warburton & Bredin, 2016). Notably, when objective measures of physical fitness were considered, the risk reduction of these diseases were ultimately reduced by 50% (Warburton, Nicol, & Bredin, 2006). However, physical inactivity might significantly impair an individual's well-being, while manifesting several negative consequences.

Prolonged periods of physical inactivity might contribute in the onset of various chronic health conditions such as diabetes, obesity and cardiovascular diseases (Blair, 2009). It may also lead to a decrease in density of bones and increase in muscle atrophy. This may ultimately elevate the risk of injuries and might also compromise the physical functioning of the body (Chambers, Moylan, & Reid, 2009). Whereas, beyond the confines of physical health, the mental health of an individual is also influenced negatively. Due to physical inactivity, the individuals may develop a heightened susceptibility to depression and anxiety (Weyerer, 1992). Additionally, repercussions of this kind of lifestyle may also include a decline in the cognitive abilities and quality of life.

Similarly, a study conducted to assess the sedentary behavior of university students found that average time to sit of the students was 7.96 hours per day. However,

heightened levels of anxiety, stress and depression were observed when there was an escalation in these sitting hours (E. Lee & Kim, 2019). However, this sedentary behavior has been seen to have a positive relation with Problematic Smartphone Use (PSP) (Liew, Stavropoulos, Adams, Burleigh, & Griffiths, 2018). Moreover, it was also observed that those participants who were addicted to technology were physically low active. This low level of physical activity was positively linked with addictions such as technology addiction, internet addiction, social media and smartphone addiction (Arikan, Acar, & Ustundag-Budak, 2022; Liu & Ma, 2019). Notably, smartphone addiction emerged as the most prominent addiction of them all.

For the earlier few decades, the invention of smartphones has led to a substantial transformation in the way individuals communicate, access information, and engage with various forms of media (Khang, Kim, & Kim, 2013). While smartphones have undeniably brought numerous benefits to our lives, however, in certain cases, their excessive use and the potential for addiction have raised concerns among researchers and mental health professionals (Azam, Ali, Mattiullah, & Perveen, 2020). Smartphone addiction is generally conceptualized as a tendency to neglect the real-life responsibilities and relationships. It can result in physical and emotional health issues, including social isolation and sleep disturbances (Goswami & Singh, 2016). Smartphone addiction is assumed to be rooted in complex interplay of psychological, social, and physical factors. Consequently, smartphone addiction may also cause social distress such as loneliness, decline in academic performance and sleeping disorders (Seo, Park, Kim, & Park, 2016).

On the other hand, the consequences of smartphone addiction are complicated and may extend across various domains of life. It is becoming a risk factor for university students as it's led numerous negative effects on them. The students' academic performance may decline as a result of lack of concentration and more disturbances (Lepp, Barkley, & Karpinski, 2014). Additionally, there is evidence that smartphone addiction can adversely affect one's mental health, including heightened loneliness and depression (Primack et al., 2017). The universal nature of smartphone addiction has also raised concerns about its potential contribution to sedentary lifestyles and decreased physical activity (LeBlanc et al., 2013). Therefore, there is an immediate need to evaluate the connection between varying physical activity levels and smartphone addiction to fill this research gap.

However, due to the lack of proper research to assess and understand the association between smartphone addiction and low levels of physical activity, there has been a significant gap. Despite the fact that various studies have tried to find out the exact relationship between the two, but there is still scarcity of research in this regard. Additionally, to deeply comprehend the unique challenges that are faced by university students, specific studies should be carried out. This may help the concerned scholars and physical educationists to have a better understanding of the issue. Furthermore, by shedding light on the relation between smartphone addiction and physical activity levels, this study aims to provide important insights. These insights might also contribute in the development of a more balanced and healthier relationship between physical well-being and technology use among early adults.

Literature Review

Previous literature has indicated the growing concern of smartphone addiction among individuals. It has been observed that physical activity helps in the eradication of mental disorders including depression, stress and anxiety. Whereas, these disorders were seen to have a positive relation with smartphone addiction (Pearson & Hussain, 2016). A study conducted on South Korean adolescents indicated that high risk of smartphone addiction was associated with lower self-esteem and severe emotional problems. Furthermore, these addicted adolescents were also having severe

aggressiveness in their behavior that ultimately decreased their quality of communication (Lee et al., 2018). Smartphone addiction has also impacted the social life of the individuals. A study conducted on university students of Turkey highlighted that increased loneliness levels were observed in students having higher levels of smartphone addiction. Most of these students were having high levels of social phobia as well (Enez Darcin et al., 2016). However, physical activity might aid in this regard to eradicate this addiction as it is associated as the only factor that directly influences psychotic disorders. Furthermore, it was also observed that there were major differences in the psychological well-being of athletes, when they were compared to non-athletes.

In a similar vein, it was also observed that the most addicted population in this regard was the young adults. Similarly, they were also the ones with high prevalence levels of sleep disturbances and suicidal thoughts. A study conducted on Brazilian adults portrayed that the use of smartphone among participants averaged around 10.1 hours per day. From the sample, 47.8% of participants were had a mild addiction (Abdon et al., 2020). This prevalence underscored the urgency of investigating factors that contribute to addictive smartphone behaviors and their potential mitigations. Billieux, Schimmenti, Khazaal, Maurage, and Heeren (2015) introduced the concept of "cyber-athlete addiction," indicating that athletes might manifest similar addictive behaviors in their online activities as they do in their sports. It also explored the smartphone addiction among professional athletes and its potential impact on their performance, suggesting that athletes might be vulnerable to excessive smartphone addiction despite their rigorous training routines (Kwon, Kim, Cho, & Yang, 2013).

Another study conducted by S.-E. Kim, Kim, and Jee (2015), revealed that high-risk addiction related to smartphone, demonstrated low levels of physical activity, as measured by daily calorie consumption and total steps taken. Furthermore, their physical composition, including their amounts of muscle and fat, differed greatly. The amount of time spent using a smartphone among these parameters showed a proportional link with smartphone addiction. Similarly, loneliness and self-regulation were found to be the primary causes of smartphone addiction, which in turn resulted in family, personal conflicts, and poor academic performance (Mahapatra, 2019). In another study which was performed by Abbasi, Jagaveeran, Goh, and Tariq (2021) showed that smartphone games, social networking, and entertainment all contribute to smartphone addiction. While using a smartphone for academic purposes has a beneficial impact on academic achievement, gaming has the opposite effect. Importantly, exercising helps to counteract the detrimental impacts of gaming on academic achievement (H. Kim, 2013). These findings highlight physical activity as a safeguard against smartphone addiction and provide insightful information for parents and politicians in encouraging physical activity among young adults.

Material and Methods

Study Design

To analyze and investigate the relationships between relevant variables, this study employed cross-sectional design of study.

Sample Size and Cohort

For the objective of collecting data, the study employed convenience sampling technique, whereas, 5 universities were involved in this process. To generate the high exercise group, we collected data from athletes. Whereas, non-athlete students were chosen to form low or moderate level of physical activity group. Online sources were used to assess the total number of students studying in those universities. The Yamane Formula was employed on overall students to have a precise sample size determined

(Yamane, 1973). Consequently, the final sample size comprised of 330 participants from five universities, out of which 165 were university level student-athletes and 165 were university level non-athlete students all having an age range of 19 to 25.

Criteria for Selection and Exclusion:

Selection Criteria

For high exercising group: University-level student athletes (both male and female) within the early adult age range of 19-25 years. Only those athletes were made part of the study that were able to fulfill the criteria designed for the desired circumstances.

For low exercising group: University-level students (both male and female) within the early adult age range of 19-25 years and self-identified themselves as non-athletes, were included in the study. They also assured that they are not engaged in any organized sports.

Exclusion Criteria

For high exercising group: The study excluded those individuals, who were either non-student athletes or were suffering from certain significant health conditions that were influencing their performance. Additionally, those students who were not affiliated with any university sports team were also eliminated.

For low exercising group: Those individuals who did not meet the criteria of being university-level students were excluded.

Data Collection Tools

Various questions relevant to gathering participant information were involved in the demographic section of the questionnaire. Subsequently, IPAQ short version was used to assess levels of physical activity of participants for the past seven days and was developed by Craig et al. (2003). For the measurement of smartphone addiction, SAS was used which was developed by Kwon, Lee, et al. (2013).

Data Collection Procedure

Participants were approached from selected 5 universities for the process of data collection. The present nature of the study was comprehensively briefed to the participants before initiating the data collection procedure. Each participant was provided with a total of 20 minutes to fill the questionnaire. Participants were assured that ethical dimensions of the research were fulfilled. They were also guided about their withdrawal right ensuring voluntary participation. Furthermore, to maintain the confidentiality of every individual participant, the collected data was anonymized in aggregate form. Specific guidelines regarding each item of the questionnaire were also provided to the participants.

Data Analysis

To analyze the gathered data, independent sampled t-tests were employed using SPSS version 22. The level of significance in this regard was determined by setting the value of p at 0.05.

Results and Discussion

Table 1
Comparison of physical activity levels and smartphone addiction among athletes and non-athletes

	Athletes		Non-Athletes				
Variables	**M**	**SD**	**M**	**SD**	**T (328)**	**P**	**Cohen's d**
Physical activity level	2.25	.815	1.62	.719	7.382	.000	0.819
Smartphone addiction	1.33	.473	2.00	.620	-18.11	.000	1.215

Note. *p < .01; In both variables

These results revealed a statistically substantial distinction in levels of physical activity between athletes (M = 2.25, SD = 0.815) and non-athletes (M = 1.62, SD = 0.719), t (328) = 7.382, p < .001, indicating that athletes engaged in elevated levels of exercise than their non-athlete counterparts. With a large effect size (Cohen's d = 0.819) and a notably disparity in physical activity engagement between both groups, this significant difference was related with a significant difference in physical activity engagement.

Furthermore, smartphone addiction scores displayed a significant disparity between athletes (M = 1.33, SD = 0.473) and non-athletes (M = 2.00, SD = 0.620), t (328) = -18.11, p < .001. This negative t-score indicated that non-athletes exhibited higher smartphone addiction levels compared to athletes. The effect size for this variance was substantial (Cohen's d = 1.215), showed a considerable distinction in smartphone addiction tendencies between the two groups. (See Table 1.)

Discussion

This study compared high exercise group with low exercise group to assess the influence of physical activity on smartphone addiction in early adult university students. The study also aimed to add to the growing body of research, the influence of technology on health-related behaviors by examining the impacts of excessive smartphone use on physical activity participation. The findings of the study highlighted a significant association in physical activity and smartphone addiction. Athletes demonstrated advanced stages of physical activity and minor smartphone addiction tendencies compared to non-athletes. These findings suggested a potential protective role of exercise against smartphone addiction and underscored the importance of considering athletic involvement when studying addictive behaviors in this demographic

The effects of physical activity on smartphone addiction are multifaceted. Engaging in physical activity offers an alternative means of coping with stress, reducing feelings of isolation, and promoting overall well-being. Such adaptive coping mechanisms may contribute to decreased reliance on smartphones as a source of relief, aligning with previous findings (Craft & Perna, 2004). Similarly Abbasi et al. (2021) indicated that physical activity can operate as a preventive measure against smartphone addiction, which will help policymakers and parents understand the significance of fostering and supporting physical activity among young adults. However, sports participation, in this regard, might be one such way to improve physical activity and fitness among early adults studying in universities (Vella, Cliff, Magee, & Okely, 2015). The concept of energy expenditure through the involvement in sports and physical exercise is well-documented (Allahverdi, 2022).

Engaging in these activities may also increase the body's metabolic rate, resulting in the burning of calories, which is crucial for weight management. Church et al. (2010) demonstrated that both structured exercise programs and participation in sports

significantly increased energy expenditure in young adults, leading to improved body composition. Concurrently, the status of physical activity and athletic participation for overall health and well-being has long been acknowledged, particularly among university-level students (Trottier et al., 2021). Distinct patterns emerge between athletes and non-athletes concerning smartphone addiction. Athletes' self-discipline and adherence to structured routines translate into reduced vulnerability to smartphone addiction (David, Roberts, & Christenson, 2018). The transfer of self-regulation skills from sports to other aspects of life becomes evident, aligning with studies emphasizing the link between self-discipline and reduced addictive behaviors (Stodden, 2008).

There is another alarming situation to be discussed that those early adults who do not take part in physical activities or sports participation may experience more smartphone addiction. A positive association has been observed between insufficient levels of physical activity and smartphone addiction. Furthermore, higher levels of irrational delays were exhibited by those students who lacked sufficient level of exercise and were also addicted to smartphone (Shi, Zhai, Li, Shi, & Fan, 2021). Similarly Chen et al. (2022) found that physical inactivity was positively related with smartphone addiction, it also revealed that the sufficient amount of physical activity may decrease the smartphone addiction as those students who were involved in sports or physical activities were found significantly low addicted than the others.

These findings contribute insights into the intricate association between smartphone addiction and physical activity levels. Confirming the main hypothesis, the study established those individuals who engaged in regular physical activity, particularly athletes, exhibiting lower levels of smartphone addiction. This resonates by earlier research indicating that physical exercise may serve as a preserving factor against addictive behaviors (Bélair, Kohen, Kingsbury, & Colman, 2018). In another study conducted by Azam et al. (2020) found strong evidence that engagement in sports or physical activity had a negative impact on smartphone addiction in adolescents and young students. It also concludes that increasing teenage participation in sports and physical activity/exercise might help in preventing smartphone addiction. Sports and fitness can be used by educational institutions as an intervention approach to combat smartphone addiction among the student body.

Conclusion

In conclusion, these findings advanced the field by separating the interplay between physical activity and smartphone addiction among individuals. Differentiating low exercising and high exercising group, the research highlights physical activity's potential as a buffer against smartphone addiction and underscores the distinctive attributes of high exercising group that contribute to their reduced susceptibility. Informed by these findings, interventions can be tailored to encourage balanced smartphone usage and reduce its addiction, ultimately enhancing the overall well-being of university students.

Recommendations

Youth should be encouraged to actively engage in sports as much as possible to prevent and avert smartphone addiction among them. Furthermore, this high level of exercise may also serve as a preventive measure against these malicious addictions.

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