

The Correlation between Screen Time, Anxiety, and Sleep Quality Towards Archery Performance of Central Java Student Athletes in 2023

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Abstract

In this digital era, excessive screen time usage will cause an issue. Archery requires a high level of concentration and a good state of mind in shooting. Screen time is one of the indicators that affects archers. This study aimed to identify the correlation between screen time, anxiety, and sleep quality towards archery performance. This study used cross-sectional correlation with survey test design. Thirty of the student's archery athletes were volunteers and signed informed consent to follow the study. The research instrument to measure data used: 1) the Questionnaire for Screen Time of Adolescents (QUEST), 2) the Sport Anxiety Scale (SAS), 3) the Pittsburgh Sleep Quality Index (PSQI), and 4) an archery scoring test. The result showed that no significant correlation between screen time ($p = 0.28$, $r = 0.204$ and sleep quality ($p = 0.26$, $r = -0.213$) on archery performance ($p > 0.05$). A significant correlation was found between anxiety and archery performance ($p = 0.04$, $r = -0.372$). The study concluded that the relation of when anxiety increased the performance of archery decreased. Both screen time and sleep quality were low correlations.

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INTRODUCTION

The digital era presents its own challenges for people to have a new lifestyle that cannot be separated from electronic devices. Screen time has been an important part of today's digital native's life who grow up surrounded by digital information and entertainment on gadget screens (Stiglic & Viner, 2019). Screen time is a term used for the amount of time spent on activities carried out in front of a screen, such as watching TV, playing on a smartphone or tablet (Owen et al., 2010). The duration of screen time is recorded in minutes per day. Technology has advanced significantly over the past few years, but screen time recommendations by the experts remain constant at two hours a day or less (Carter et al., 2016).

Engaging in screen-related activities can have both positive and negative effects on individuals. Screen-based media learning have the ability to improve the standard of education (Liu et al., 2022). Furthermore, research about video games has proven that playing games can have a positive correlation with increasing one's skill level of problem solving (Shute et al., 2015). Increasing literacy and communication skills can also be accomplished through watching TV or movies.

The accessibility of using an electronic device creates a negative impact that makes a person feel addicted for using it. Screen time has been associated with a number of physical health indicators, including body composition, physical fitness, academic performance, sleep issues, and arthritis (Hoare et al., 2016). In competitive sports, athletes might negatively affected by excessive screen time usage. Athletes that have high screen time could have high risk of anxiety as well (Gao et al., 2021). If the athletes feel anxious, it will cause them to lose concentration, which could lead to poor performance. Archery requires high level of concentration, distractions from excessive screen time usage will be a distraction.

Most research on the psychological aspects of sport focuses on anxiety (Frias, 2015). Anxiety is an emotional state that arises when

individuals are experiencing stress and is characterized by feelings of tension, worry and accompanied by physical responses such as a fast heartbeat, increased blood pressure and so on (Beaudreau & O'Hara, 2009). There is a prevalent theory in the study of sports psychology that higher anxiety levels is the cause of poor performance in many athletes (Zadkhosh & Hemayattalab, 2018). Archery is a calm, focused sport; therefore, athletes who suffer anxiety may not perform at their best physically or psychologically, which will affect their performance in the sport.

Enhancing performance in order to pursue a professional sports career is the top priority for student athletes today. Athletes may be difficult to accomplish their targets if they have poor sleep quality, since it may affect a number of performance-related factors, including aerobic and anaerobic thresholds, certain abilities, and neurocognitive function (Brauer et al., 2019). Efficient sleep is considered important for recovery, cognitive processing, and memory function (Young et al., 2008). In the other hand, lack of sleep is related to emotional instability and disrupting concentration (Kim et al., 2015). Archers need to have good physical and mental conditions, a good sleep quality is one aspect that can contribute to archery performance.

The problem found in the field is that athletes use to have high screen time usage. This condition must be addressed because it could be one of the indicators that can affect archery performance. According to the previous study, it is found that high amount of screen time usage has been associated with adolescents' poor physical health (Suraya et al., 2018).

The aim of this study is to identify the correlation between screen time, anxiety, and sleep quality towards archery performance.

Based on the results of this study, the archers and coaches should be able to fix their habits in order to make an improvement on archery performance. The researchers are interested in identifying the correlation between screen time, anxiety, and sleep quality towards

archery performance of Central Java archery student athlete.

METHODS

The study used cross sectional correlation with survey test design. The population of study was archery students athletes in Central Java. Based on criteria inclusion, there was thirty of archery student athletes as participant. They were volunteer and signed informed consent to fulfill the study. The participant was the student who attend in junior and high school, and stayed at training centre of central java at least of 7 days.

Data collected by google form to get information data of screen time, sleeping quality and anxiety. The performance data taken by scoring test.

The study instrument used: 1) Questionnaire For Screen Time Of Adolescents (QUEST), 2) Sport Anxiety Scale (SAS), 3) Pittsburgh Sleep Quality Index (PSQI), and 4) archery scoring test.

The Questionnaire For Screen Time Of Adolescents (QUEST) instrument was developed by Knebel et al. (2022) and used to measure the duration of adolescents' screen time in 5 aspects, namely studying, working or activities related to work or internships, watching videos, playing games, and using social media. If the average duration of screen time for a week is lower or equal to the average of all respondents in minutes/day then it is said to be sufficient, otherwise if it is above the average then the screen time is high (Knebel et al., 2022).

Sport Anxiety Scale (SAS) instrument was translated by Amir (2013) containing 22 questions about the measurement of athletes' anxiety using Likert scale answers with the maximum score of 88. The category of SAS instrument is divided into 4 levels, which are low (1-22), rather low (23-44), rather high (45-66), and high (67-88).

Pittsburgh Sleep Quality Index (PSQI) instrument was developed by Hita-Contreras et al. (2014) consisting of 19 questions. These 19

question items measure 7 components: (1) subjective sleep quality; (2) sleep latency; (3) sleep duration; (4) habitual sleep efficiency; (5) sleep disturbances; (6) use of sleep medication; and (7) daytime disfunction. The archery scoring test carried out according to the distance in each division. The category of this test is divided into 2, which are bad sleep quality for score above 5 and good sleep quality for score under 5.

The athlete shoots 6 arrows per end in 3 minutes. The result of the scoring test can be determined as the archery performance which using the average of the total score result.

The data analysis technique uses SPSS 25 computer program. This research uses product moment pearson test as a correlation test. Moreover, ANOVA test is used as well for the regression test.

RESULTS AND DISCUSSION

The average amount of screen time that Central Java archery student athletes use each day, as determined by the data analysis is 470 minutes. Athletes with the same or less screen time as the average of all respondents were classified as low screen time, consisting of 13 athletes (43.3%), while athletes with high screen time consisted of 17 athletes (56.7%). The results for the anxiety test fell into the rather low category consisted of 22 athletes (73.3%) and the rather high category consisted of 8 athletes (26.7%). The results for the sleep quality test are in the good sleep quality category with 5 athletes (16.7%) and the bad sleep quality category with 25 athletes (83.3%). The results for the scoring test are divided in 3 categories; in the high category with 5 athletes (16.7%), the medium category with 20 athletes (66.7%) and the low category with 5 athletes (16.7%).

Table 1. Normality Test Result

N	Statistic	Std deviation	Sig.
30	0.110	0.543	0.200

Based on the normality test above using Kolmogorov-Smirnov Test with a significance level of 5% or 0.05. The normality test result had

a significance value of 0.200 (> 0.05), meaning that the data is normally distributed.

Table 2. Linearity Test Results

Variables	Significance	Description
Screen Time	0.105	Linear
Anxiety	0.828	Linear
Sleep Quality	0.310	Linear

Based on the linearity test results table above using the ANOVA statistic technique shows that screen time (0.105), anxiety (0.828), and sleep quality (0.310) meaning that the three variables had a significance value greater than 0.05 so it could be concluded that the independent variables had a linear correlation to dependent variable.

Table 3. Hypothesis Test Results

Variables	Correlation	P Value
Screen Time	0.204	0.280
Anxiety	-0.372	0.043
Sleep Quality	-0.213	0.259

Based on the hypothesis test results table above using the correlation and regression tests with the significance value $p > 0.05$, the first hypothesis (p value=0.280) is not proven to have a significant correlation between screen time towards archery performance. This is contrary to Gundy M's (2016) statement that an athlete's focus may be distracted from their preparation by using gadgets for a long amount of time. The second hypothesis (p value=0.043) is proven to have a significant correlation between anxiety towards archery performance. The study's findings align with the findings of Warjito & Pudjijuniarto (2022), which stated that anxiety has an impact on archery performance. The regression test carried out in this study showed that anxiety had a 14% influence on archery performance. The third hypothesis (p value=0.259) is not proven to have a significant correlation between sleep quality towards archery performance. This is contrary to Oktarini et al. (2018) statement which states that there is a significant correlation between sleep quality and the performance of soccer athletes.

The performance of archery athletes can be determined based on archery accuracy to score the maximum total score (Kolayış & Mimaroglu, 2008). Consistency is one of the important factors to get the highest score (Munawar et al., 2014). Athletes can improved themselves by strengthening exercise using the support of theraband (Baskoro et al., 2023). The other factors that could affect archery accuracy come from other indicators such as screen time, anxiety and sleep quality. Based on this study results, anxiety has a negative significant correlation towards archery performance. The higher the level of anxiety they have, the lower the archery performance they get. Screen time and sleep quality could also affect their performance if they have high screen time and bad sleep quality. However, there was no significant correlation between screen time and sleep quality towards archery performance.

CONCLUSION

Based on the analysis results of this research, it can be concluded that: there is a significant correlation between anxiety towards archery performance, there is no significant correlation between screen time and sleep quality towards archery performance. This study could be considered to be part of the training program. This study also can be used as the basis for further research, especially to improve archery student athletes' performance. The limitation of this study is insufficient number of subjects. Therefore, for further research, the researcher provides suggestions for conducting a larger number of subjects and expanding further about the variables. Because there are various variables other than screen time and sleep quality that could affect an archer in improving archery performance.

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