

The Relation of Training Session Times and Depression Rates in College Athletes

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College athletes have been getting up for training sessions well before the sun begins to rise. For many athletes, 5 am or 6 am training sessions are a normal part of their routine, not including the potential for a second training session that day. The pressure to deliver peak performance, coupled with workload and lack of rest, can lead to overtraining, chronic fatigue, and depression (Weigand et al., 2013; Bolin, D.J.,2019). Disturbances in mood have been found in a variety of college sports populations at all divisions, however, when the training load was backed off and sleep increased, disturbances in mood decreased (Weigand et al., 2013; Bolin, D.J.,2019).

Sleep is a habitual thing we do every day, yet some consistently receive fewer hours than they should. Many student-athletes report four nights of insufficient sleep a week, even though experts agree that the world population needs a minimum of seven hours of sleep a night to maintain a healthy brain. (Grander, M., 2014). Studies have shown that cognitive performance of individuals starts to decline after being awake for more than 16 hours continuously and sleep deficits accumulate over time. (Worley, S., 2018). Many studies have shown similar results, including the effects of inadequate sleep can be a contributing factor when it comes to your alertness throughout the day. Inadequate sleep can take a toll on psychological well-being, significantly affecting our emotional and psychosocial interpretation of events and exacerbating our stress levels (Worley, S., 2018). Not only does sleep help aid in alertness it also is crucial for well-working memory, cognitive speed, stress, and emotional regulation.

Another aspect of sleep is what we call the circadian rhythm. The circadian rhythm is an internal biological clock that is responsible for the body's natural sleep-wake cycle and is an individual variation in the preferred timing of the sleep-wake schedule (Zou, H. et al., 2022). The concept of chronotypes comes from the circadian rhythm. Chronotype refers to the body's natural tendency to want to sleep and wake at certain times, as well as when the body feels most energetic (Zou, H. et al., 2022). There are three recognized chronotypes, morning, evening, and intermediate. They are as they sound, morning chronotypes work best in the morning while evening chronotypes work best in the later hours of the day. The intermediate chronotype has no preference and works well at both times of the day. In general, the morning chronotype is predominant during babyhood. The evening chronotype is more prevalent among young adults, while the morning chronotype has a greater proportion in the middle and old-age populations (Zou, H. et al., 2022). Many studies have shown that evening chronotypes have more negative emotions, poorer sleep quality, and a less adaptable emotional profile (Zou, H. et al. 2022, Bender, A. et al., 2019).

While the importance of sleep and chronotypes have been explored and found, the next phase for some researchers was to see how they impact mental health. Many different sleep disorders and sleep disturbances have been shown to significantly increase the potential for developing depression (Baldwin, D.S. & Mayers, A.G., 2006, Bolin, D.J. 2019). Not only do 60% of all college students suffer from poor sleep, but 40% of the student-athlete population has reported chronic sleep deprivation (Bolin, D.J., 2019). Training times, performance anxiety, academic demands, and sleep fragmentation are all causes of student-athlete sleep maintenance insomnia, which is seen in 77% of athletes (Bolin, D.J., 2019, Montero, A et al., 2022). The

evidence shows that the athletic population, based on sleep alone, is more predisposed to mental illness than their counterparts.

Athlete depression

College athletes often derive their identity from their sport, focusing a lot of their time on athletics in college. The most common time for depression onset is between the ages of 20 and 30 years, this correlates with the age at that college athletes are participating in their sport, as well as the age at which they are graduating and ending their sports career (Weignad, S. et al., 2013). Another important factor to consider is injury; 40%-50% of collegiate athletes sustain at least one athletic injury resulting in one or more episodes of time loss during their college years (Roiger, T. et al., 2015). When a student-athlete is injured, there is a normal emotional reaction that includes processing the medical information about the injury, as well as coping emotionally with the injury. Those emotional responses include sadness, isolation, irritation, lack of motivation, anger, frustration, changes in appetite, sleep disturbance, and disengagement (NCAA).

This study is to investigate if there is a relationship between training session times and depression rates among student-athletes. Athletes that have training sessions between the hours of 6 am-9 am will report higher levels of depression compared to those who have training sessions between 9:01 am- 10 pm. This study will help to bridge the gap between specific training session times and depression rates among college athletes.

Methods

Participants

The participants of this study will be anyone over the age of 18 and attending college currently and who participates in sports. They will be of any gender and no specific population

group or demographic group. No protected populations will be recruited. 53 student-athletes completed the survey, however, only 52 responses were used for analysis due to one response missing vital information about training times. The average age of participants was 19.98 ($SD = 1.48$), the average Mental Health score was 10.19 ($SD = 6.851$), and the average number of early morning training sessions was 2.88 ($SD = 2.05$). Ethnically wise 76.9% ($n = 40$) of participants were white, 5.8% ($n = 3$) were African American, 3.8% ($n = 2$) were Multiethnic, 1.9% ($n = 1$) were Asian and 1.95 ($n = 1$) were American Indian or Alaska native. As for the academic level of participants, 28.8% ($n = 15$) were Freshman, 19.2% ($n = 10$) were sophomores, 30.8% ($n = 16$) were juniors, 9.6% ($n = 5$) were seniors, 11.5% ($n = 6$) were fifth-year students. When collecting data, gender was not collected due to its irrelevance pertaining to the research question.

Materials

The material for this study was an online Google survey. The demographic section has three questions establishing age, gender, and year in college based on credit hours. The sleep and wake schedule section has two questions about sleep and wake times as they would normally appear for the participants throughout the weekdays. The training schedule has four questions relating to when training sessions begin, if the participant is in or out of season, the number of training sessions a participant has, and a list of statements regarding how they feel about training sessions as the last question in this section. Lastly, they will take a routine psychiatric mental health evaluation with 11 questions.

Procedure

This study was conducted through an online survey, where the link was emailed out to

the student body by professors. Students were asked demographic questions, questions regarding their training session times, self-reported mental state after different types of training sessions, and a mental health questionnaire. The mental health questionnaire requires the researcher to total the participants' responses and then compare them to the following scale: 0-4 minimal depression, 5-9 mild depression, 10-14 moderate depression, 15-19 moderately severe depression, 20+ severe depression. Results were gathered from the Google survey and then put into SPSS for analysis.

Results

A Pearson's correlation test was conducted to analyze the following relationships: age, how many days a person has early morning training sessions, training session times, depression, and if the participant is in season. There was a significant relationship observed between age and depression $r(52) = .330, p = .017$. The older an individual was, the higher their score was on the depression scale. Similarly, the relationship between the amount of early morning training sessions a person has and if they are in season is significant $r(52) = .453, p = .001$. The Greater number of early morning training sessions a person has the more likely they are to be in season. The third Pearson's correlation test ran showed a significant correlation between the amount of early morning training sessions and mental health scores, $r(52) = -.291, p = .036$. This relationship shows that the fewer early morning training sessions a person has the higher their mental health score. In contrast, there was not a significant relationship found between the times in which training sessions began and mental health scores, $r(52) = -.008, p = .956$. The time in which training sessions begin does not help to determine one's mental health score.

Discussion

The results provided disprove my hypothesis that athletes who have early morning training times would report higher rates of depression. The results showed that the amount of early morning training sessions help to decrease mental health scores in participants. Also, the time in which training sessions began did not have a significant impact on participants' mental health.

Strengths and weaknesses

The largest strength of my study was the mental health questionnaire that is used throughout routine psychiatric evals. The questionnaire has been used in past research and in medical practices which enhances its validity. The weaknesses of my study are in the form of training time questions, agreement statements, and sleep-wake questions. All these sections and questions were made by the researcher with no known validity. Other weaknesses are included in the form of demand characteristics. These characteristics in the form of stating the research hypothesis in the study could have led participants to answer either purposefully against or with the hypothesis.

Limitations

The limitations of this study include small sample sizes and convenience samples. Due to receiving less than 30 responses for both the early morning and non-early morning training groups, the results may have some validity issues and can be considered a type 2 error. A larger scale population needs to be collected to validate the findings stated in this study. The limited population of current college athletes and the limited setting of a small, liberal arts college should be taken into account. Future research can be done to see gender differences between training times and depression, why early morning training sessions decrease depression symptoms, and if sport impacts mental health scores.

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