An Intervention on Recovery: Mental Detachment and Elite Athletes' Sleep

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PSYC-349: Research Methods in Psychology

March 16, 2022

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Over the past few years, research focusing on the benefits of recovery and the strategies that improve recovery for elite athletes has been an increasingly important topic in the field of sports psychology. A big part of this recovery phase for athletes is sleep, more specifically, their quality and quantity of sleep. Recently, empirical studies have found that many elite athletes across all sports are reporting problematic sleep quantities (i.e. longer times to fall asleep, numerous nighttime awakenings) as well as unfavorable perceptions of sleep quality (i.e. morning vigor and perceived physical fatigue), resulting in sleep deprivation (Fullagar et al., 2014; Knufinke[1] et al., 2018). Although researchers suggest elite athletes to implement better sleep hygiene, few strategies for psychological practices have been provided to achieve this. One concept that is possible to bring about improvement may be mental detachment. In sports psychology, mental detachment is defined as withdrawing or distancing oneself from any sport-related activities, thoughts, or emotions, and is newly regarded as an alleviating tool for perceived fatigue and long-term physical and mental strain (Balk & de Jonge, 2020). However, there is limited research to propose that detachment actually improves performance or other areas of recovery, such as sleep. In addition, all of this research that yields practically applicable data have still not been experimented on. Hence, this study will begin to move away from solely subjective experiences of elite athletes in hopes of finding whether the beneficial effects of detachment can also improve elite athletes' sleep.

What is Detachment?

As put forward by Balk et al. (2017), the concept of detachment in the field of sports psychology is when an athlete is able to take a break from the physical, cognitive, and emotional demands of their sport. Interestingly, however, detachment was not originally derived from sports

psychologists, rather it was first termed in organizational studies, which applied the concept to businesses and the average workplace. Most of these studies found that when workers did not psychologically detach (cognitively and/or emotionally) from the stress of their job after leaving for the day, the workers showed more signs of physical and mental strain, as well as decrements in overall liveliness, or vigor (Sonnentag & Fritz, 2014). In contrast, if the workers did engage in psychological detachment practices, strain and liveliness were less likely to be affected by job stressors (Sonnentag & Fritz, 2014). On another note, the relevance of detachment could be further upheld by memory consolidation. Extensive evidence supports memory consolidation as a psychological phenomenon that mediates skill acquisition through inactivity, rather than the sustained practice of skill (Eccles & Kazmier, 2019). Further, substantial memory consolidation is known to happen during sleep, which lends further inquiry into the connection between detachment and sleep (Malhotra, 2017). So, following previous research of detachment in a business setting and memory consolidation, sports psychologists were curious to see if detachment would be present in professional athletes.

The Barriers and Gateways to Detachment

Nonetheless, researchers found a link between elite athletes' level of detachment and their corresponding feelings of fatigue and strain (Balk & de Jonge, 2020). More specifically, they had observed that the type of detachment (physical, cognitive, or emotional) implemented was an important predictor of recovery state from a specific sport demand (Balk et al., 2017). For instance, if an athlete is dealing with an emotional sport demand (i.e. pressures to perform), research suggests the athlete use emotional detachment so that their emotional state can properly recover. This rule is named the Triple-match principle, which emphasizes that athletes should use the detachment form that complements their current sport demand so that they can recover in their

corresponding physical or mental state (Balk et al., 2017). However, there is also evidence of certain paradoxical effects associated with physical fatigue and sport demands, which hinder athletes' ability to detach. Researchers term this phenomenon the Underrecovery Trap, where an overabundance of sport demands, or stressors, elevates athletes' fatigue, which in turn leaves them less likely to engage in detachment practices (Balk & de Jonge, 2020). In addition, it was also found that elite athletes' physical states seemed almost impossible to recover from the physical demands of a sport, even though physical detachment methods intervened (Balk et al., 2017). Sports psychologists assume that this phenomenon happens because of the incredibly intense nature of sport nowadays, implying that physical detachment may never prove to be a strong recovery tool (Balk et al., 2017). Therefore, physical detachment will not be targeted or measured throughout this study, so that the participants can focus mainly on mental detachment and their psychological health.

To address this vitality of mental detachment, past research was looked at when it managed to glimpse into the recovery experience of an athlete, and what recovery really means to them. Eccles and Kazmier (2019) had conducted interviews with a women's field hockey team in the UK, discovering that some athletes expressed that they felt little interest in their sport at times when they could not get away from the thoughts and feelings that were tied to their sport. Activities, such as community support programs and social events with the team, as well as environmental cues (i.e. images of the sport, social media), were revealed to be cognitively and emotionally triggering for athletes during recovery (Eccles & Kazmier, 2019). As a result, these athletes reported feeling exhausted and lethargic on days of practice and competition when they believed they did not acquire enough mental rest the night before (Eccles & Kazmier, 2019). Similarly, negative thoughts and cognitive behaviors, such as worrying, are additional predictors

of these diminished feelings of liveliness and well-being. Balk et al. (2021) revealed that worrying about one's sport exacerbates the effects of fatigue on athletes' ability to psychologically detach, and in turn, their overall quality of recovery.

Sleep Quality & Quantity in Elite Athletes

Today, much research on the necessity of sleep has already been addressed, yet there is a great number of people, especially in elite athletes, who do not attain the recommended quality and quantity of sleep. According to the study of Knufinke[2] et al. (2018), certain aspects of athletes' sleep quantity, which were wake after sleep onset (frequency and duration of nighttime awakenings) and sleep efficiency, reported values that incited some concern. From the results, wake after sleep onset in elite athletes turned out to be longer and more frequent than normal, and their sleep efficiency (88%) was slightly below the recommended percentage for their age group (92%) (Knufinke[2] et al., 2018). In an earlier study, researchers found similar results with a group of Dutch athletes, where a large sum of participants reported higher-than-normal sleep onset latencies (time taken to fall asleep) and wake after sleep onset in their daily diaries (Knufinke[1] et al., 2018). Taken together, this research suggests that elite athletes are subjugated to a higher likelihood of sleep disturbances and, as a result, sleep deprivation.

Multiple researchers have observed that the effects of sleep deprivation and disturbances can prove to be incredibly detrimental to the performance and health of an elite athlete. One such repercussion is the decrease in fundamental skills, such as reaction time, decision-making, skill acquisition, and fine motor coordination, which can be felt harder in certain sports positions like baseball pitchers and goalies (Malhotra, 2017). Relative to performance inside the weight room, suboptimal sleep can also reduce athletes' capacity to complete submaximal or high-repetitions weightlifting tasks (Fullagar et al., 2014). Now, these are just a few examples taken from the long

list of decrements associated with sleep deprivation and disturbances, which, in turn, highlight the risk-reward effects of sleep toward an athlete's performance.

Additionally, researchers were puzzled to why these elite athletes had been displaying these suboptimal sleep behaviors, when previous research shows that most athletes meet the 7-9 hours of sleep recommendation and are regularly exercising (Knufinke[1] et al., 2018; Knufinke[2] et al., 2018). One reason for this is the inconsistent and often packed training and competition schedules of elite athletes. Factors such as international travel and early and late practices/competitions manifest shorter total sleep durations, disrupted circadian rhythms, and less adherence to sleep hygiene practices (Knufinke[1] et al., 2018; Malhotra, 2017; Sargent et al., 2014). More importantly, anxiety amongst elite athletes also impedes sleep. A collective analysis of various studies on athletic performance and sleep made by Fullager et al. (2014) discovered that heightened anxiety preceding competition has a negative effect on sleep quality, duration, and efficiency, which gives the current study more purpose to examine the relation between sleep and detachment.

Mental Detachment & Sleep

In the present study, the presence of mental detachment practices in elite athletes' sleep hygiene and their corresponding accounts of objective and subjective sleep will be analyzed. Categories of detachment, cognitive and emotional, have been upheld in the literature as great predictors of mental strain and burnout, as well as beneficial recovery practices for elite athletes. During sleep, memory consolidation, or skill acquisition through absence from practice, has been found to occur and is needed most by athletes who wish to perform consistently. In addition, research has addressed problems concerning athletes' wake after sleep onset (WASO) times and frequencies and sleep onset latency, which decrease their performance. Through the idea of

memory consolidation and the immediacy of minimizing deficiencies in athletes' sleep, the current study will attempt an experiment on elite athletes, in order to obtain an objective view of the interaction between the two variables. The hypotheses are as follows:

Hypothesis 1: The group that undergoes mental detachment prior to bed will report healthier sleep quantities, which are (a) lower wake after sleep onset (WASO) durations, (b) shorter sleep onset latencies, and (c) higher sleep efficiency, than those of the control group.

Hypothesis 2: The subjective sleep quality reports of athletes with the mental detachment group will display higher GVA Scale and lower PSQI scores than those of the control group.

Method

Participants

Participants would be a purposive sample of athletes from various sports of the United States Olympic team, competing at the international level in their sport. A sample of 80 elite athletes that compete in the following sports: basketball, soccer, handball, volleyball, mountain biking, and road cycling. The reason for the specified selection was based off the study of Sargent et al. (2014), which cautioned future researchers to consider the standard training schedules of each sport, since some sports, such as swimming, triathlon, and rowing, are forced to train at certain times (early morning/late evening). The following list of sports have a better potential of having malleable schedules that could maintain internal and external validity. Athletes will be between the ages of 18-32 for ethical purposes and so that the difference in maturity between athletes is not too varied. Randomization of the sample will lie in participant sex so that the subject pool is large.

Procedure

In the pretest-posttest experimental design, one independent variable was manipulated where detachment was either present or absent amongst groups. Each group has 40 participants and is made up of two team-sports and one individual-sport squads in order to equalize them and to reduce the chance of any demand characteristics. Before the experiment is administered and athletes are in groups, athletes will complete a pretest that will assess them on their current sleep hygiene practices and subjective sleep quality and quantity with a questionnaire (PSQI), as well as a baseline actigraph of sleep quantities. This will determine if the groups' respective averages are equivalent to each other and if the groups need to be reorganized accordingly. After, athletes will gather for a meeting preceding training, where they will receive informational packets, a daily diary, and an actigraph wristband. These packets will advise athletes to adhere to the given sleep hygiene strategies and integrate into their own bedtime routine from now on. However, one group of squads will receive packets containing mental detachment strategies (cognitive and emotional) and the other will just be receiving the sleep hygiene strategies recommended by the National Sleep Foundation. Athletes will also be instructed to fill out the daily diary at two time periods, which are before bed (T1) and after waking up (T2). Additionally, the actigraph wristbands will be measuring the sleep-wake patterns of athletes throughout the day and night, so athletes will wear them all day excluding times when the athlete is in contact with water (i.e. showering).

The experiment will be conducted for a 14-day period over the course of the squads' respective preseasons in order to ensure that athletes are able to fully experience the recovery practices, since their schedules will be more open as compared to in-season (Eccles & Kazmier, 2019). Preseason testing may also decrease the likelihood of unintentionally giving the

participants any added pressure and stress, which may skew the effectiveness of detachment and/or increase attrition rates.

Measures and Analysis

As said before, the two levels of the manipulated independent variable will be the presence or absence of detachment recovery methods. The effect of detachment or no detachment will then be observed on the dependent variables, sleep quantity (WASO, sleep onset latency, and sleep efficiency) and subjective sleep quality. Data will be collected every morning and night continuously over the 14-day test period.

Cognitive and Emotional Detachment

The degree of cognitive and emotional detachment to which an athlete engaged in prior to bed (T1) will be measured through the validated scales created in the study of de Jonge et al. (2012) that will be assessed within the athletes' daily diaries. Detachment will be assessed with six items using a five-point scale (Balk et al., 2017; Balk et al., 2021).

Sleep Quantity and Quality

Prior to the experiment, athletes will complete the 19-question Pittsburgh Sleep Quality Index (PSQI) for the purpose of establishing their baseline for subjective sleep quality and quantity. The scores are meant to be calculated towards a one-month testing period, but due to the shorter study, the calculations will have to be adjusted towards a ½-month period. Data on sleep quantity will be collected through the athletes' actigraph wristbands, which will measure wake after sleep onset (WASO) times (min), sleep onset latency times (min), and sleep efficiency (%). These are recorded at both time intervals (T2). Lastly, daily subjective sleep quality will also be measured using the Global Vigor and Affect Scale (GVA) that assesses eight items (e.g. alertness,

sleepiness, happiness, calmness). This assessment will be administered only upon waking up (T2).

Analysis will be conducted through the application of a One-tailed *t*-test in order to test statistical significance.

Discussion

If the results of the first hypothesis were to be significant, it would mean that detachment directly associates with the outcomes of sleep quantity. The intervention of detachment between an athlete's time awake and sleep onset can indeed be considered as an additional recommendation for current sleep hygiene practices. In addition, this finding would also build on previous support for the prevalence of Sonnentag and Fritz's (2012) stressor-detachment model in the sports psychology realm. This same implication does repeat itself if the second hypothesis, which states that sleep quality would improve with the addition of detachment methods, were to be supported also. Further, this could also mean that the absence of sport-related thoughts and feelings before bed can lead to more positive perception of one's sleep in the morning, and, in turn, their overall morning liveliness. However, if none of the two hypothesis are supported, it would only further endorse current sleep hygiene as practices that improve sleep quality and quantity in elite athletes. In addition, it could also be speculated from the study of Knufinke[1] et al. (2018) that the athletes' indifference to blue-light exposure from electronic devices is affecting the stagnation or less significance in the results. In the study, researchers elaborated that the calming and relaxing nature of watching a movie or scrolling through social media can maintain consistent sleep onset latencies (Knufinke[1] et al., 2018).

Limitations

Firstly, it might be important to consider the age difference in the sample, since the older athletes may have a slight advantage over younger ones when it comes down to cognitive and emotional regulation. In the Balk et al. (2021) study, control variables such as rumination showed to be less present in older athletes than younger athletes. From the same study, gender/sex, another control variable, also displayed levels of variance when results revealed that female athletes tended to worry more than male athletes (Balk et al., 2021). This means that the results of the current study could have been faulty due to the unspecified number of female and male athletes. On another note, problematic scheduling such as traveling and jet lag can be confounding with the current study. Based on the fact that these teams compete at an international level, it is nearly impossible to control this variable without interfering in elite athletes' preseason exhibitions, which can negatively affect their preparedness for in-season competition. However, the deficient effects to sleep from jet lag and traveling across time zones could only last for a few days, if moderated correctly (Malhotra, 2017). Research suggests that coaches and organizations plan for athletes to arrive at the destination a number of days before the competition date, usually matching the number of acclimatization days with the number of time zones crossed (Malhotra, 2017).

Theoretical & Practical Applications

In terms of memory consolidation, support for the current hypotheses could mean that future studies could attempt to understand if memory consolidation is an extension of mental detachment or if the two concepts are distinct from one another. In contrast, if the hypotheses turn out to be less statistically significant, problematic sleep in elite athletes may not be able to be tarnished solely through self-regulation of cognitions and emotions. Perhaps future research could delve into the idea of professional intervention, where sleep specialists or psychological therapists

can explore around the particular aspects of athletes' routines and behaviors that may cause their related sleep issues. The possibility of the emphasis on addressing or attacking the troubling sport-related thought or feeling may turn out to be more beneficial than primarily distancing oneself away from that thought or feeling.

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