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Concussion assessment tools – a possible measure of sleepiness?

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Dear editor,

We read with interest Raikes et al.'s [1] study suggesting subjectively measured insomnia and daytime sleepiness increases risk of concussion in college athletes. This is a noteworthy preliminary study which highlights the apparent bi-directional link between concussion and sleep. Nevertheless, we observed that the authors of this study did not describe how concussion was measured, nor analyse whether subjective sleep complaints were associated with the severity of concussion. We feel this is a limitation of the study as potential mechanisms to explain their results are difficult to formulate.

A further limitation may lie with the concussions assessments themselves. There are numerous concussion assessment tools available, including the Sports Concussion Assessment Tool version 5 (SCAT5) [2], and the commercially available CogState®, and ImPACT®. These tools measure numerous variables, including: psychological wellbeing (eg, irritability, mood, and sleepiness); memory; and with the SCAT5, balance. Importantly, insomnia and daytime sleepiness also result in impairment of both psychological wellbeing, such as increased irritability and decreased mood; and memory [3], as well as impaired balance [4].

Raikes et al., [1] suggest that as concussions lead to increased incidence of insomnia and sleepiness, concussions may beget concussions in a feed-forward mechanism. As a possible alternative hypothesis of their findings, we suggest current concussion assessment tools may be identifying, in part, those suffering from sleep problems, and not necessarily a concussion per se. Raikes et al., [1] concede that further research is needed to elucidate their findings. We suggest any future research examine the relationship between the various components of concussion [5], utilizing appropriate concussion assessment tools as well as objectively measured sleep from both actigraphy and polysomnography identifying the association of sleep measures with concussion assessment tools. Doing so will hopefully increase the diagnostic utility of concussion measurement tools, resulting in increased safety and player welfare.

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