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Human Kinetics
LETTER TO THE EDITOR

Response to Millet et al

Dear Editor,

We would like to thank Prof Gregoire Millet and colleagues for their commentary on our recently published case study describing our experience with sleep deprivation training (SDT),[1] a novel strategy aimed at reducing the negative effects of sleep deprivation on ultraendurance performance. We certainly agree with Millet and colleagues that athletes should not practice any strategy without experimental evidence that it can safely improve performance. However, we strongly disagree with their premature conclusion that SDT is ineffective and dangerous. Such a strong conclusion is not evidence-based because there is no previous research in animals or healthy humans on the effects of repeating for few weeks a schedule of a single sleepless night followed by 6 nights of regular sleep. The disastrous effects Millet and colleagues refer to are the effects of something very different from SDT; they are referring to the well-known negative effects of few consecutive days of total sleep deprivation or several days/weeks of chronic sleep restriction (eg, sleeping only 2 h per night).[2] According to the logic used by Millet and colleagues to strongly criticize SDT, we should also conclude that regular intense training sessions interspersed by adequate recovery do not improve sport performance because training intensely every day with no recovery leads to overtraining, or that intermittent fasting is bad for health because prolonged starvation causes death. Clearly this is not a valid approach.

We also have problems with the suggestion that reducing sleepiness with SDT would be dangerous because sleepiness protects athletes from overexertion by forcing them to slow down during multiday ultraendurance competitions. If we follow such a teleological argument to its logical conclusion, we should ban such competitions because surely sleepiness has evolved to motivate humans to sleep in a protected place, not run during the night (quite a dangerous activity given that our former predators had much better night vision). From a more scientific point of view, there are no reports that reducing sleepiness with caffeine, an ergogenic aid used by many ultraendurance athletes,[3] increases the risk of overexertion during competitions. On the contrary, evidence supports the use of caffeine to sustain pace during ultraendurance events, especially near the end of the race when sleep deprivation can cause hallucinations, poor decision making, and serious accidents.[4]

With regard to the point of trainability, we do not understand the logic of the point made by Millet and colleagues. They state that, because vulnerability to the detrimental effects of sleep deprivation is a trait moderately influenced by genetics,[5] it cannot be trained. However, there are many performance-related traits (eg, VO_2max) that, despite a strong genetic influence, can be significantly improved with appropriate training.[6]

On the basis of the experience described in our case study, we keep an open mind about the possibility that SDT may be well tolerated in the few weeks leading up to a race and, like caffeine, be effective in improving performance and safety during ultraendurance competitions. Therefore, we propose once again to conduct randomized controlled trials to investigate the effects of SDT in ultraendurance athletes and other populations (eg, soldiers) that perform in conditions of sleep deprivation. In science, strong conclusions like "SDT is a highway to hell in ultra-trail" should be based on strong evidence, not speculations based on faulty logic.

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