

**Opinion**

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# What are the Causes and Consequences of Sleep Restriction on the Health of Citizens and Professional Athletes?



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## Opinion

Adequate sleep in both quality and quantity is often viewed as a restorative process that influences the homeostatic regulation of the autonomic, neuroendocrine, and immune systems [1]. Athletes and coaches consider that adequate sleep is important for athletic performance and health. However, there are many situations in which sleep is disturbed prior to an athletic event. Indeed, sleep loss could be induced by a recent change in time zone, the anxiety of the athletes, early start of the event requiring early arousal, and travelling of athletes with disruption of sleep schedules [2]. Literature reports are consistent to affirm that cognitive and psychomotor performances, as well as wellness, are most affected by sleep deprivation than physical performance [3]. On the other hand, it has been well documented that sleep deprivation can have dangerous consequences for the brain, for almost all bodily organs and systems affecting thus its physiological and psychological functioning [4]. Against this background, it is well established that the overexpressed of the stress system mediators during sleep deprivation certainly play a role in white blood cells mobilization, which sensibly plays a fundamental role in the immune response to sleep loss [5].

In specialized scientific literature, it has been documented that the concomitant-synergistic interaction between sleep loss and acute physical exercise certainly cause an immunodeficiency among trained athletes [6]. Indeed, it has been shown that sleep loss is associated with changes in appetite control, insulin resistance, glucose homeostasis, endothelial function, sympathetic nervous system activation, and inflammatory and haemostatic pathways [7]. Consequently, one night of sleep deprivation triggers inflammatory reactions, and can even exhaust the immune system, especially among professional athletes [6-9].

Furthermore, repetitive short- and/or long-term sleep deprivation during a part of the night may be one factor increasing the immunological alterations of professional athletes (e.g.,

Taekwondo and NBA players) who experience psychological stress the eve of a competition [6,10]. Cogent associations between biochemical evidence related to muscle and cardiac injuries and the combined effect of sleep deprivation and acute physical exercise have been demonstrated [9]. Therefore, it has been well documented among trained athletes that a multitude of biochemical changes within the affected muscle areas such as increased inflammatory cytokines and reactive oxygen species may aggravate muscle injuries and thus increase the cardiac injury risk in response to the acute exercise, mainly, following one night of partial sleep deprivation [9].

Among the causes of sleep disorders observed in athletes, we are sounding alarm bells for the late-night social media use [10]. Indeed, the possibility to consult social media or to discuss performances (match, sports news...) depends on athletes' availability in this time of the day (late-night). Indeed, professional and elite athletes have a busy day (training, studies, personal affairs, etc.), for this reason, they do not find the time to discuss with friends about sports news and other topics, through social media, only during the late-night. In another side, this time of day (late-night) is the universally right moment to be isolated from the world (family, friends, children, etc.) in the personal corner (rooms, bed), and then find the opportunity (even if too late) to consult social media (Facebook, Twitter, Instagram, etc.).

In my opinion, it is crucial to examine, across the next steps in research, the association between the overuse (during the end of the night) of different social media (Twitter, Facebook, Instagram, etc.) and accidents (i.e., road traffic accidents or at work) the following days, among citizens (mostly among vulnerable populations such as teens and shift workers, depending on gender and age) (longitudinal study). It is also so important to reveal the effect of the overuse of social media (Twitter, Facebook, Instagram, etc.) and electronic devices (smartphone, tablet etc.) at the end of the night (late) on the cognitive and

physical performances, as well as on the sports injuries during the following days among students and professional athletes (depending on gender and age) (longitudinal study).

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