

Invited Review

Chrono-nutrition and sports performance

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ABSTRACT

This review focuses on the utilization of chrono-nutrition to improve sports performance. First, we introduce the topic of circadian rhythms, which regulate several physiological functions such as body temperature, blood pressure, sleep/wake cycle, and digestion/absorption/metabolism function. In addition, we introduce methods, such as questionnaires and biological sampling, for the evaluation of circadian rhythms in humans. Second, based on our previous reports, we will discuss postprandial metabolism, focusing on the timing of diet and functional food/beverage intake. Recently, circadian rhythms have been shown to be correlated with sports performances, suggesting an interaction between circadian rhythm and exercise/sports performance (chrono-exercise). Thus, several studies have focused on the relationship between circadian rhythms and physiological functions, including sports performance, and evidence of the effects of the timing of acute exercise and exercise training on exercise performance is now accumulating. Here, we also introduce evidence of a relationship between chronotype and sports performance as well as time-of-day variations in sports performance. Finally, we refer to how circadian rhythms and chrono-nutrition can be utilized to optimize sports performance.

Keywords: circadian rhythm, chrono-nutrition, precision nutrition