

Abstract

Sleep represents one of the fundamental aspects of human life and health, influencing many physiological functions including muscle hypertrophy. Sleep is regulated by various external and internal stimuli, such as the circadian rhythm, body temperature, gene expression, and the synthesis of hormones and neurotransmitters such as melatonin and adenosine. Muscle hypertrophy is a complex process of enlarging muscle fibers, which is associated with numerous metabolic processes and signaling pathways, including the IGF-1-PI3K-Akt-mTOR axis, and is regulated by hormones such as testosterone, GH, myostatin, and activin. Most of these hypertrophic factors are closely linked to quality and sufficient duration of sleep. Sleep deprivation negatively affects almost all processes involved in muscle hypertrophy and, in the long term, leads to muscle loss instead.

Key words:

Sleep, circadian rhythm, melatonin, muscle hypertrophy, Akt, mTOR, sleep deprivation