

## **Abstract**

This study aimed to investigate the impact of sleep pattern modification on sleep quality, circadian preference, mental strain, and body composition. Sleep pattern modification was implemented through a 14-day intervention involving three groups with varying levels of engagement. All participants received recommendations compiled into a sleep manual.

The primary objective was to examine the relationship between sleep pattern modification and changes in sleep quality, circadian preference, stress levels, and body composition, including body fat and skeletal muscle mass. Additionally, the study sought to determine whether the level of engagement in sleep pattern modification within each group influenced post-intervention sleep quality.

The study employed an online questionnaire battery comprising the PSQI, MEQ, and PSS-10 questionnaires, completed by  $N = 95$  physically active participants aged 18-53 years. Body composition measurements were obtained using an InBody device.

Repeated measures ANOVA analysis revealed a statistically significant improvement in sleep quality following the intervention as measured by the PSQI questionnaire ( $F(1, 77) = 144,31$ ,  $p < 0,001$ ,  $\eta^2_p = 0,66$ ). However, no significant interaction between the intervention and individual groups was found ( $F(2, 75) = 1,29$ ,  $p = 0,28$ ,  $\eta^2_p = 0,03$ ).

Pearson's correlation demonstrated a weak positive association between PSS-10 stress levels and PSQI sleep quality ( $r = 0,38$ ,  $p < 0,001$ ) and a strong negative correlation between body fat percentage (BFM) and skeletal muscle mass percentage (SMM) ( $r = -0,99$ ,  $p < 0,001$ ). No significant relationships were observed between body fat, stress, sleep quality, or circadian preference. Similarly, no significant relationships were found between sleep quality and skeletal muscle mass or circadian preference.

**Key words:** sleep; body weight; mental stress; sleep quality; circadian rhythm