

Jordan University of Science and Technology

Sleep enhances learning of a functional motor task in young adults. Physical Therapy

Authors: Al-Sharman, Alham; Siengsukon, Catherine.

Abstract: BACKGROUND: Sleep has been demonstrated to enhance simple motor skill learning "offline" in young adults. "Offline learning" refers to either the stabilization or the enhancement of a memory through the passage of time without additional practice. It remains unclear whether a functional motor task will benefit from sleep to produce offline motor skill enhancement. Physical therapists often teach clients functional motor skills; therefore, it is important to understand how sleep affects learning of these skills. OBJECTIVE: The purpose of this study was to determine whether sleep enhances the learning of a functional motor task. DESIGN: A prospective, cross-sectional, repeated-measures design was used. METHODS: Young participants who were healthy (N=24) were randomly assigned to either a sleep group or a no-sleep group. The sleep group practiced a novel walking task in the evening and underwent retention testing the following morning, and the no-sleep group practiced the task in the morning and underwent retention testing in the evening. Outcome measures included time around the walking path and spatiotemporal gait parameters. RESULTS: Only participants who slept after practicing the novel walking task demonstrated a significant offline improvement in performance. Compared with the no-sleep group, participants in the sleep group demonstrated a significant decrease in the time around the walking path, an increase in tandem velocity, an increase in tandem step length, and a decline in tandem step time. LIMITATIONS: Time-of-day effect and inability to ensure a certain amount of sleep quantity and quality of participants were limitations of the study. CONCLUSIONS: This study is the first to provide evidence that sleep facilitates learning clinically relevant functional motor tasks. Sleep is an important factor that physical therapists should consider when teaching clients motor skills.