

# Jordan University of Science and Technology

## The association between physical activity and sleep deficits and biomarkers in patients with multiple sclerosis [abstract]," Multiple Sclerosis Journal, vo

**Authors:** Aburub A, Khalil H, Al-Shorman A, Batayha

**Abstract:** Introduction: Sleep disorders are more common in multiple sclerosis (MS) patients than in normal population resulting in many other complications such as fatigue and depression. Additionally, physical activity levels are less in MS than normal people. No previous studies were conducted to investigate the impact of physical activity on sleep deficits in patients with MS. This study was conducted to assess sleep deficits and sleep biomarkers dysregulation and its relation to physical activity in people with MS. Design and Methods: We assessed 60 subjects with diagnosis of MS. The main parameters of this study were levels of physical activities which were estimated using the International Physical Activity Questionnaire and objectively using the Actigraph accelerometers, sleep characteristics objectively using Actisleep and subjectively by Pittsburg sleep quality index, and fatigue using current and modified fatigue impact scales. Morning serum melatonin and cortisol levels were assessed by mean of enzyme-linked immunosorbent assay (ELISA). The expanded disease severity scale assessed level of disease severity. Results: Results of this study showed negative correlations between vector magnitude counts per minutes (VMCPM), measured by Actigraph, and both wake after sleep onset (WASO) and average awakenings (AA), measured by Actisleep. Moreover, we found positive correlation between VMCPM and sleep efficiency. In addition, steps per minutes were negatively correlated with WASO and AA. Both melatonin and cortisol were negatively correlated with sedentary activity in patients with MS. Conclusions: Physical activity was found to be associated with sleep efficiency in patients with MS, which could be related to sleep biomarkers in this population. This finding provides the suggestion that exercise could help in improving quality of life as an add-on therapy for sleep deficits in MS patients. Further researches are needed to examine the effects of exercise and physical activ