Introduction: Night duty shifts have been identified as a good model of human circadian rhythm disruption. Shift work has often been associated with detrimental consequences in human physiology and health. Similar to people who experience jet lag, shift workers report sleep complaints when temporal relationships between light–dark cycles, sleepiness, and food intake are desynchronised. As a result, they may suffer from several health problems associated with disturbed physiological rhythms.
Objective: This study aimed to compare activity-rest, light exposure and temperature rhythms among regular workers and night shift workers who engage in high- or low-intensity activity.
Methods: This was a cross-sectional study of 20 women with a mean age of 44±3.45 years. Comparisons were conducted between regular day workers (n=10) and night shift workers engaging in low-intensity (n=4) and high-intensity work (n=6). Actigraphy was employed to assess rhythmic variables for 7 consecutive days. Circadian rhythms for variables in each group were calculated by fitting the data to a sinusoidal curve capturing a 24-hour period and obtaining its amplitude, acrophase and mesor. Acrophase grouping was calculated by the Rayleigh test for circular statistics. Student's independent t-test and one-way analysis of variance (ANOVA) with Tukey's post-hoc tests were used to assess significant differences among groups.
Results: We found significant differences in activity and temperature amplitudes. Regular workers had a lower temperature amplitude and higher activity amplitude than shift workers. Additionally, shift workers with high activity levels show a phase advance in activity and temperature when compared with shift workers with low-intensity work and regular workers. There were no light exposure differences among groups.
Conclusion: Our results suggest that light may not be the only factor associated with biological rhythm alterations observed in night shift workers. Rather, the amount of activity performed appears to affect their biological rhythms. Therefore, when considering shift work as a model for circadian rhythm disruption, it is essential to properly qualify and quantify activity intensity during duty.