

Impact on health Outcomes associated with changing the clock one hour during fall time and spring transitions in the southern hemisphere

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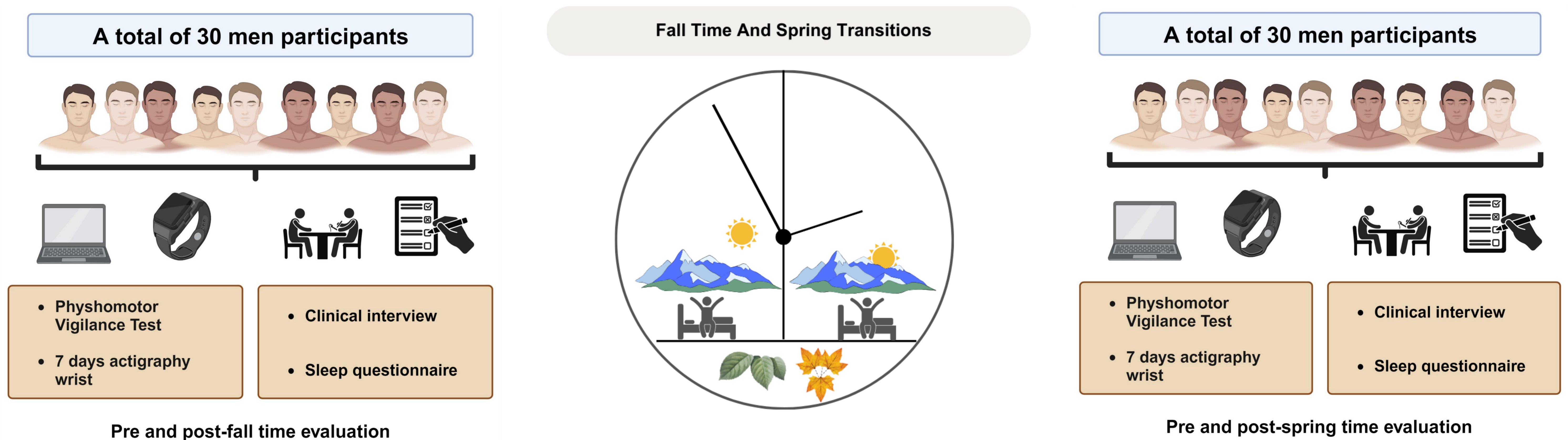
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Abstract

Changing the time is potentially harmful, interfering with normal daytime activities (1). However, studies aimed to determine this association are scant. The purpose of this study was to determine the effects of changing one hour of the clock across one year (fall time transition and spring transitions) of healthy young men located in the south hemisphere (SH).

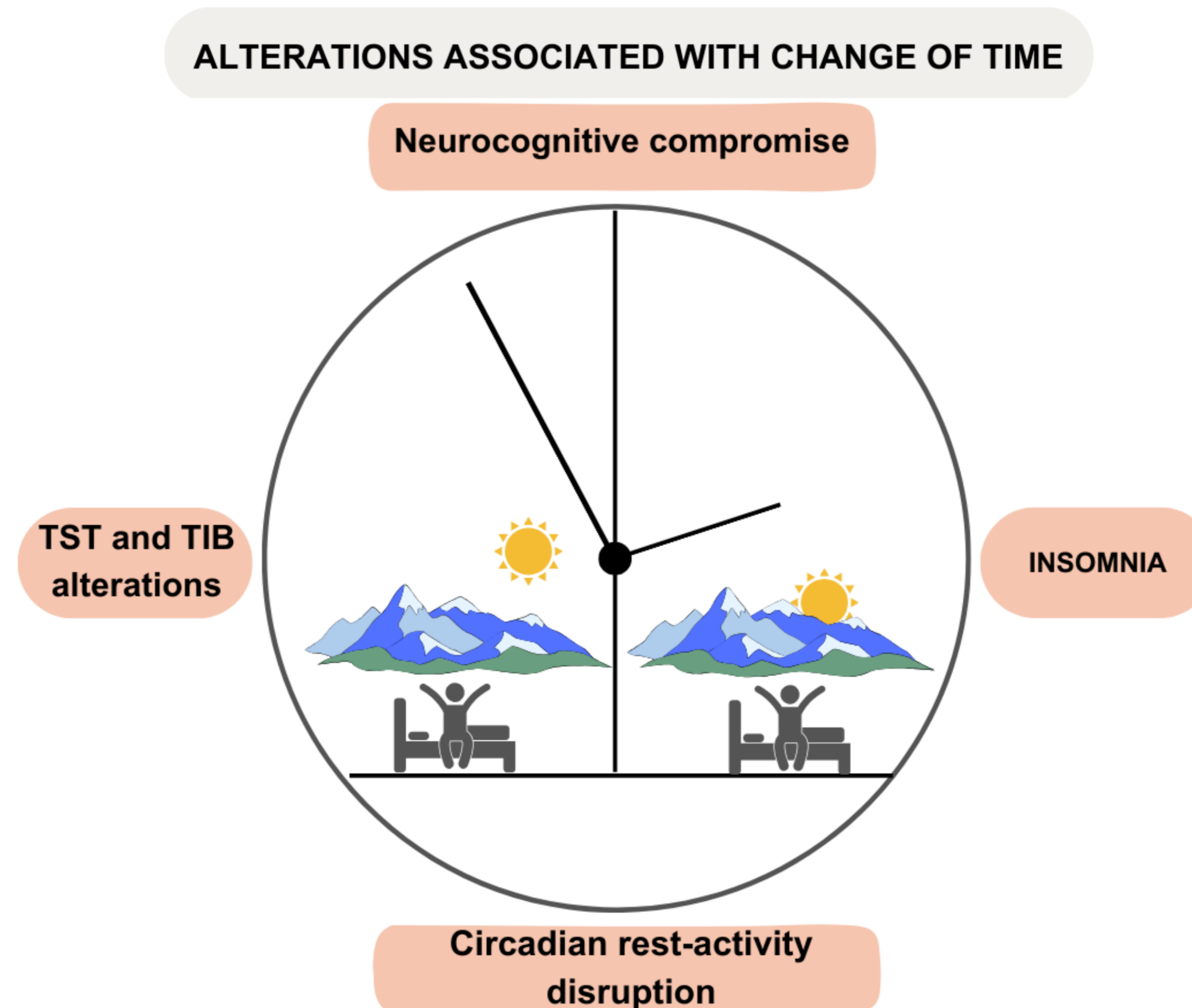
Method

We performed an observational, prospective study. 30 healthy university male students were evaluated during the fall time and spring transitions, two weeks before and for two weeks after respectively in each season. We performed overall sleep questionnaires (2), quality of life, 7-day wrist actigraphy(3), and psychomotor vigilance task (PVT) (4). We defined the change in one hour in the clock as primary exposure and the change in PVT- lapses ≥ 500 ms in response time as our primary outcome. Within participants, changes were evaluated by the Wilcoxon rank test with a P-value <0.05 .



Conclusion

In both post-fall time transition and post-spring transition a decrease in performance in neurocognitive tests was found in a cohort of healthy students who live in the southern hemisphere. Compared to pre-fall time, the post-fall time transition exhibited insomnia and a significant decrease in time in bed, sleep efficiency, and total sleep time in which, the latter presented an average below recommended (<7 hours).



References

1. Manfredini R, Fabbian F, Cappadona R, Modesti PA. Daylight saving time, circadian rhythms, and cardiovascular health. *Intern Emerg Med*. 2018;13(5):641-6.
2. Mollayeva T, Thurairajah P, Burton K, Mollayeva S, Shapiro CM, Colantonio A. The Pittsburgh sleep quality index as a screening tool for sleep dysfunction in clinical and non-clinical samples: A systematic review and meta-analysis. *Sleep Med Rev*. 2016;25:52-73.
3. Ancoli-Israel S, Cole R, Alessi C, Chambers M, Moorcroft W, Pollak CP. The role of actigraphy in the study of sleep and circadian rhythms. *Sleep*. 2003;26(3):342-92.
4. Khitrov MY, Laxminarayan S, Thorsley D, Ramakrishnan S, Rajaraman S, Wesensten NJ, et al. PC-PVT: a platform for psychomotor vigilance task testing, analysis, and prediction. *Behav Res Methods*. 2014;46(1):140-7

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