A smartphone PVT application is successfully used to identify one's sleep schedule associated with better daytime alertness.

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Introduction

The recent development of smartphone applications has led to new, easy and innovative ways to keep track of various cognitive, motor and mood changes across daytime in individuals.

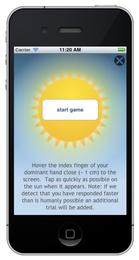
Objective

The goal of this study was to verify the usefulness of a new 3 minutes psychovigilance task (PVT) smartphone application in identifying the sleep schedule that leads to better daytime alertness in one individual.

Method

Sleep questionnaires and PVTs were completed during three consecutive months in a 40 years old healthy subject.

The 3 minute PVT was incorporated into a smartphone application and the PVT was performed four times a day between:
[1] 8:00AM-12:00PM
[2] 12:00PM-4:00PM
[3] 4:00PM-800PM
[4] 8:00PM-12:00AM.

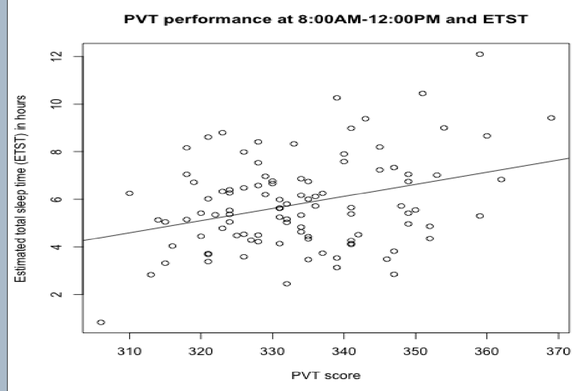


Pearson product moment correlations were computed between the PVT score (mean reciprocal reaction times (s) x 100) for each time window and estimated total sleep time (ETST), bedtime and rise time.

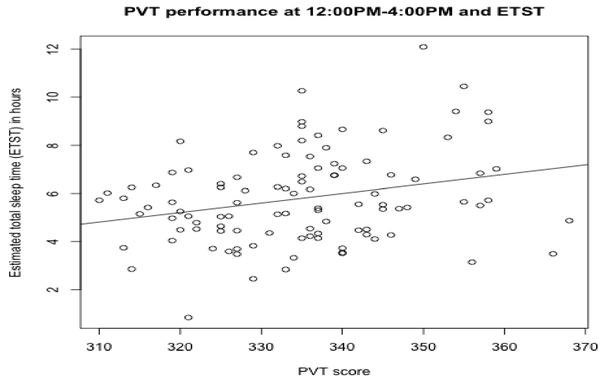
Results

Results showed significant correlations between the ETST and the 8:00AM-12:00PM PVT (r = .33, p < .05) and the ETST and 12:00PM-4:00PM PVT (r = .27, p < .05). There were also significant correlations between rise time and the 8:00AM -12:00PM PVT (r = .38, p < .05) and rise time and the 12:00PM-4:00PM PVT (r = .24, p < .05). There was a marginal significant correlation between the 4:00PM-8:00PM PVT and bedtime (r = .19, p = .05).

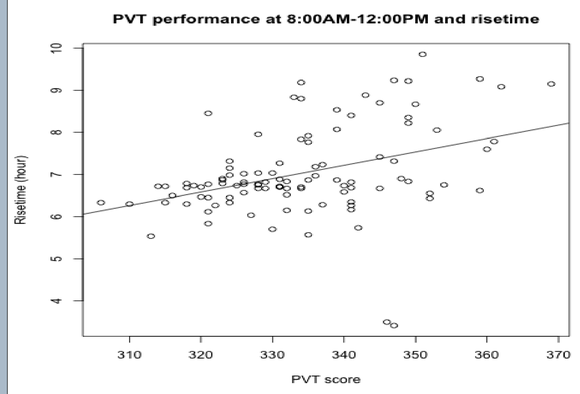
Significant correlation between the ETST and the 8:00AM-12:00PM PVT (r = .33, p < .05)



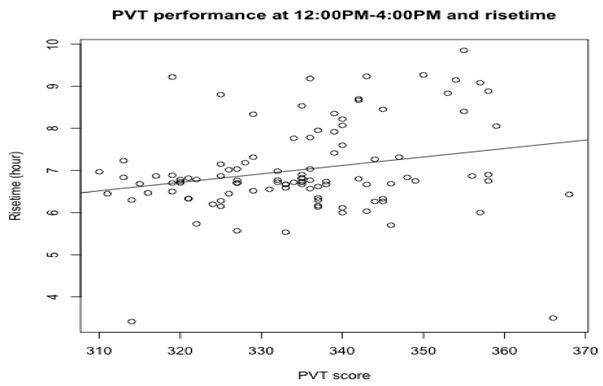
Significant correlation between the ETST and the 12:00PM-4:00PM PVT (r = .27, p < .05)



Significant correlation between rise time and the 8:00AM -12:00PM PVT (r = .38, p < .05)



Significant correlation between rise time and the 12:00PM-4:00PM PVT (r = .24, p < .05).



Conclusion and Discussion

These results confirm that longer sleep accompanied by later rise times has positive impacts on daytime alertness in an individual and suggest that morning alertness is most affected by changes in the preceding night's sleep schedule.

We propose that this type of application could be used as an easy way to identify one's better sleep schedule associated with improved daytime alertness and possibly better cognitive and physical performances.

For this subject, tiredness feeling disappeared approximately halfway between lowest and highest reaction time scores (results not presented here) pointing out the usefulness of using a short PVT smartphone application to better monitor daily alertness.

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