



Improving Acute Exercise Prescription in Depression: Predictors of optimal intensity for improving depressive mood



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Rationale

A single session of exercise has been shown to reduce depressive mood in individuals with major depressive disorder (MDD) ¹. However, we have little information on what intensity of exercise to prescribe to different individuals in order to maximize this response.

Purpose

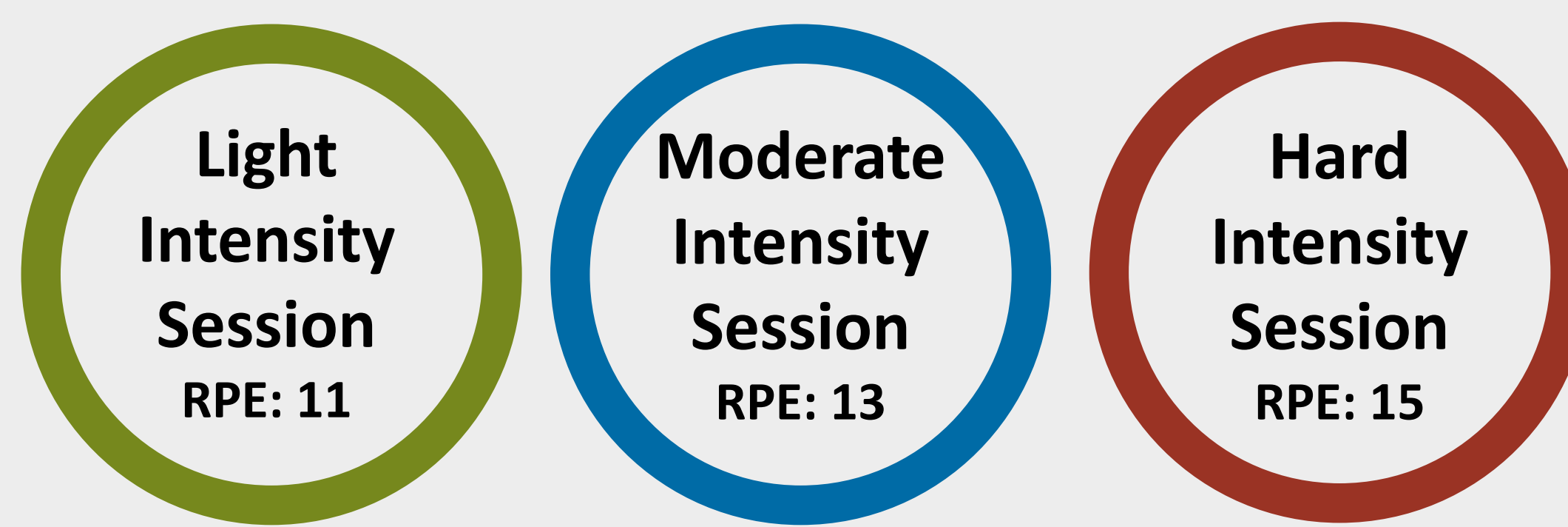
This study explores possible predictors of the optimal intensity of exercise to prescribe to individuals with MDD based on their individual factors.

Knowledge Gap

- There is variability in which exercise intensity results in the greatest decrease in depressive mood state in individuals with MDD. ²
- Person-level factors that influence which intensity may lead to the largest decrease are unknown.

Methods (contd.)

- Independent assessment of MDD
- Seven-day use of activity monitors
- Subjects (Ss) participated in three, 20-minute cycling sessions
- Intensity determined by Rating of Perceived of Exertion (RPE)
- One week between each session



Each individuals' most effective session was determined by the exercise intensity with greatest reductions in the Depression subscale of the Profile of Mood States.

Light = 10 Ss, Moderate = 9 Ss, Hard = 5 Ss

Analyses

- Kruskal Wallis tests used for non-parametric comparisons of intensities in each predictor
- Cohen's *d* used to estimate effect sizes of each intensity pair in all predictors (i.e. Light vs Hard, Moderate vs Hard, Light vs Moderate)

Conclusions

- While we found no significant differences, effect sizes suggest that personal factors may influence which intensity best reduces depressive mood state in individuals with MDD.
- Individuals that may benefit the most from light intensity exercise have less prolonged sedentary time, are younger, participate in more MVPA in bouts > 10 minutes, and have lower BMI.
- The opposite is true for those individuals that may best benefit from hard intensity.

Results

- All pairwise comparisons were non-significant.
- Although effect sizes were calculated for all possible comparisons, the largest effect sizes for each factor are shown in the graphs below.

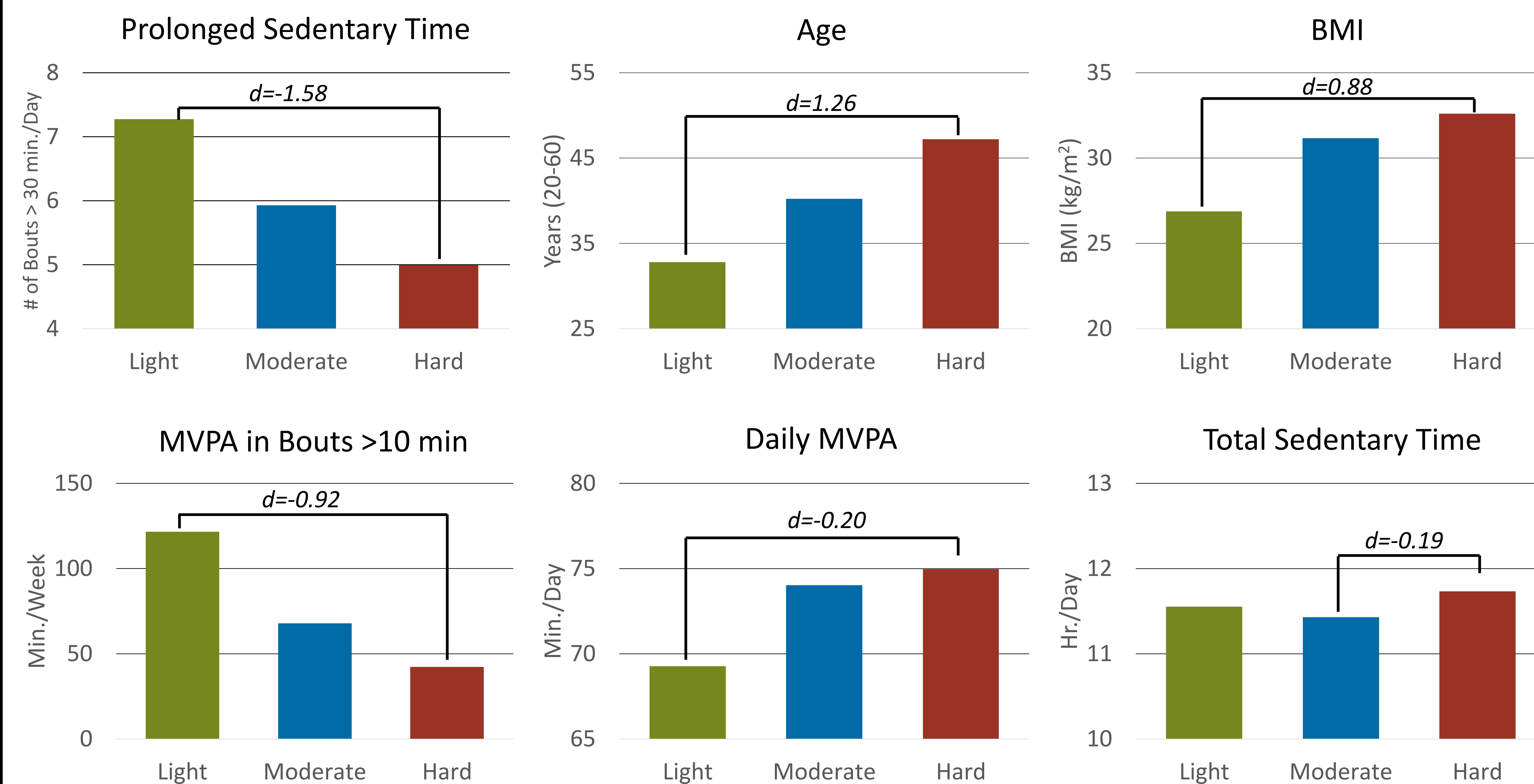


Figure 1. The graphs above show the characteristics of individuals who benefit the most from each exercise intensity.

Key References

1. Weinstein, A. A., Deuster, P. A., Francis, J. L., Beadling, C., & Kop, W. J. (2010). The Role of Depression in Short-Term Mood and Fatigue Responses to Acute Exercise. *International Journal of Behavioral Medicine*, 17(1), 51–57.
2. Meyer, J. D., Ellingson, L. D., Koltyn, K. F., Stegner, A. J., Kim, J.-S., & Cook, D. B. (2016). Psychobiological Responses to Preferred and Prescribed Intensity Exercise in Major Depressive Disorder. *Medicine & Science in Sports & Exercise*, 48(11), 2207–2215. <https://doi.org/10.1249/MSS.0000000000001022>

Methods

Key Participant Criteria



- Women
- Aged 20-60
- Current MDD
- No other psychological illnesses other than generalized anxiety

	N = 24	Unit	Mean ± SD
Age		Yr.	38.6 ± 13.7
BMI		Kg/m ²	29.7 ± 7.8
Daily MVPA*		Min.	72.2 ± 29.7
Change in POMS-D		N/A	-10.8 ± 6.8
MVPA in bouts > 10min		Min.	84.9 ± 86.6
Prolonged Sedentary Time**		Hr.	6.3 ± 1.9
Total Sedentary Hours per Day		Hr.	11.5 ± 1.5

(*) Moderate to Vigorous Physical Activity

(**) Time spent sitting or lying down for more than 30 minutes.