

EFFECTS OF MINDFULNESS MEDITATION VERSUS SELF-HYPNOSIS VERSUS PRAYER VERSUS AN ATTENTION CONTROL ON COLD PRESSOR ARM WRAP PAIN-RELATED OUTCOMES: AN EXPERIMENTAL STUDY

Alexandra Ferreira-Valente^{1, 2*}, Melissa Day^{3,4}, José Pais-Ribeiro¹, Filipa Pimenta¹, Rui Costa¹, & Mark P. Jensen³

¹William James Center for Research, Ispa – University Institute, Portugal; ²Centre for Social Research and Intervention (Cis-IUL), Iscte-Lisbon University Institute, Lisbon, Portugal; ³Department of Rehabilitation Medicine, University of Washington, USA; ⁴University of Queensland, Australia



no. 188/18

AIMS

Assess the immediate effects of HYP, MM, and Christian prayer (CP), relative to a control condition (CN), on cold pressor outcomes.

Exploratory aim: Assess the potential moderators of the immediate effects of HYP, MM, and CP.

METHOD

Four-arm parallel randomized quantitative experimental mixed-design repeated-measures study

Problem(s) studied	Healthy participants; Experimentally-induced acute pain (CPAW: Cold Pressor Arm Wrap, 1.°C).
Conditions	Hypnosis; Mindfulness meditation; Christian prayer; Control.
Eligibility criteria	(a) 18 years old or older; (b) read, speak and understand Portuguese; (c) willing to be randomly assigned to all four conditions; (d) Not having the following: musculoskeletal problems, cancer, heart disease, stroke, epilepsy, diabetes, Raynaud syndrome; open wound, cut, or fracture in any of the upper limbs; alcohol/substance abuse; cognitive/physical impairment; severe psychopathology
Study type	Allocation randomized Parallel assignment Single blind
Co-Primary outcomes	Pain intensity (0-10 NRS), Pain tolerance (sec)
Secondary outcome	Heart Rate Variability (RMSSD, SDNN, pNN50, HF-FFT, HF-AR, LF/HF-FFT, LF/HF-AR)

METHOD

Participants

Final sample: 224 healthy adults
(CP: $n = 62$, MM: $n = 54$; HYP: $n = 51$; CN: $n = 51$)

Age, M (SD): 28.9 (11.8)*

Sex, Female, N (%): 157 (70)*

Religion, Christian, N (%): 73 (33)*

* effect sizes of the differences among the groups were (very) small

Trial Design

- ✓ Baseline Assessment (T0)
- ✓ Pre-test Assessment (T1), 1st CPAW cycle + 20min resting
- ✓ Audio-guided practice [1st audio (20 min)]
- ✓ Post-test Assessment (T2), 2nd CPAW cycle [2nd audio (5min)]

Interventions

- ✓ Audio-guided practice of SH, MM, or CP
- ✓ CN: Audio recording of text from a natural history textbook

RESULTS & CONCLUSION

Co-Primary outcomes

Pain intensity (0-10 NRS)

Interaction effects: n.s.

Main effect of time: $p < .001$, $\eta_p^2 = 0.07$ (medium), T2 < T1

Main effect of gender: $p < .001$, $\eta_p^2 = 0.08$ (medium), male < female

Main effect of group: n.s.

Exploratory examination of simple effects of time x group interaction:

T2: between group differences with small effects, HYP slightly better

T1-T2: small effects in the HYP and MM, very small effects in the CP

RESULTS & CONCLUSION

Co-Primary outcomes

Pain tolerance (sec)

Interaction effects: n.s.

Main effect of time: $p < .001$, $\eta_p^2 = 0.07$ (medium), T2 > T1

Main effect of gender: $p < .001$, $\eta_p^2 = 0.05$ (small), male > female

Main effect of group: n.s.

Exploratory examination of simple effects of time x group interaction:

T2: between group differences with small to medium effects, HYP better

T1-T2: medium effects in the HYP, small effects in the MM, and very small effect in the CP

Secondary outcomes

Interaction effects time X gender: $p = .013$, $\eta_p^2 = 0.13$ (medium). When probed: n.s.

Main effect of time: $p < .001$, $\eta_p^2 = 0.50$ (large). Main effects of time were significant except for LF/HF-AR

Main effect of gender: $p < .001$, $\eta_p^2 = 0.19$ (large)

SDNN, LF/HF-FFT, LF/HF-AR: male > female

Main effect of group: n.s.

Exploratory moderation analysis:

