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# Brief Mindfulness-Based Intervention Enhances Isometric Muscle Endurance During Submaximal Contraction

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## Résumé

**Introduction:** Recent studies have shown that Mindfulness, a mental training approach centered on present-moment awareness, may enhance physical activity and sports performance (Lucia Bühlmyer et al., 2017; Yang & Conroy, 2020). Similarly, "urge surfing," a mindfulness-based technique initially used to control addictive behaviors like alcohol consumption (Marlatt & Gordon, 1985), may also help sustain endurance effort by mitigating the desire to quit. Furthermore, maximal isometric force and isometric endurance contraction are important in sport and physical activity (i.e., climbing and wrestling). This study investigates the impact of an 8-minute urge surfing intervention on endurance time performance during an isometric elbow flexion exercise.

**Methods:** We conducted a preliminary study on 24 young adults to assess the reliability of the time to exhaustion (Tlim) at 20% of maximal isometric voluntary flexion of the elbow. The results demonstrated good relative (intraclass correlation, ICC) and absolute (Coefficient of variation, CV, and Standard error of measurement, SEM) reliability both within and between sessions ( $0.88 \leq CCI \leq 0.95$ ,  $8.2 \leq CV\% \leq 10.5$ , and  $10.1 \leq SEM\% \leq 12.2$ ).

In the main study, forty-three young adults were randomly assigned to three groups : Control (n = 14;  $24.5 \pm 3.3$  years), Placebo (n = 14;  $23.6 \pm 2.8$  years), and Mindfulness (n = 15,  $24.9 \pm 3$  years). Each group completed two separate laboratory sessions. In each session, maximal voluntary isometric flexion (MVC) and time to exhaustion (Tlim) at 20% MVC during elbow flexion were measured. The first session served as a control condition in each group without any intervention.

During the second session and before the Tlim exercise, the Mindfulness group received an 8-minute "urge surfing" intervention, the Placebo group listened to an 8-minute recording of nature sounds, and the Control group received no intervention.

**Results:** Two-way repeated measures ANOVA showed significant improvement in Tlim was observed in the Mindfulness group, increasing from  $292.57 \pm 98.96$  s to  $350.08 \pm 132.36$  s with a Delta% of 19.74% enhancement in the second session (mindfulness condition) compared to the first (control) session. In contrast, results in Tlim showed no significant difference

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\*Intervenant

between the first and the second sessions in both Control (Delta% = -2.91%,  $P > 0.5$ ) and Placebo (Delta% = -1.72%,  $P > 0.5$ ) groups.

**Discussion/Conclusion:** Although prior research has established the efficacy of mindfulness interventions across various sports and physical activity domains (Dueland, 2023), their application to endurance-related isometric tasks remains underexplored. The present findings demonstrate that even a single, brief urge surfing intervention can significantly enhance endurance performance during submaximal isometric muscle contractions, thereby contributing to the growing body of evidence supporting the utility of brief mindfulness-based strategies in sport and exercise science.

#### References:

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