

# The 17<sup>th</sup> International Conference on Environmental Ergonomics ICEE2017



## BOOK OF ABSTRACTS

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### Subjective preferences of varying menthol mouthwash concentrations

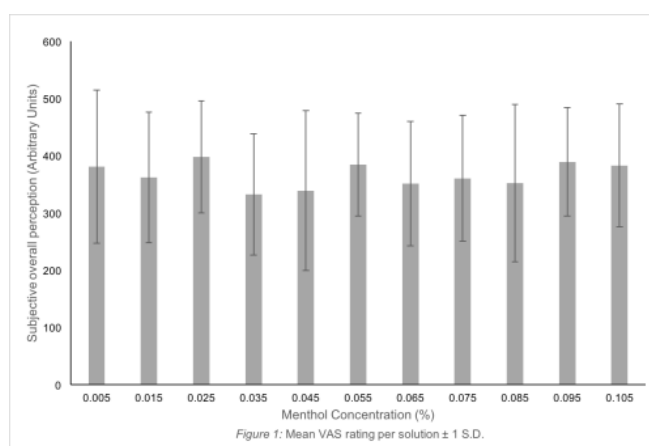
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Menthol is a widely used, naturally occurring monoterpene alcohol that elicits a feeling of coolness and freshness upon application to the oral cavity, or skin (Stevens & Best, 2016). Recently menthol has demonstrated improvements in time to exhaustion (Mündel & Jones, 2010) and time trial performance (Stevens et al., 2015), but no investigations have been conducted to ascertain the preferred concentration of menthol mouth swill(s).

Menthol crystals were dissolved in ethanol to a 5% concentration. The solution was diluted to experimental concentrations ( $n = 11$ ; 0.05-0.105% menthol at 0.05% increments). Participants ( $n = 21$ ) swilled each test solution (25ml) for 10 seconds, randomised via Latin square design. Solutions were expectorated and participants rated the qualities of each solution using 150mm visual analogue scales. Participants rated each solution for smell, taste, mouth feel, freshness and irritation to produce a total score, per concentration.

Data were analysed via a one way repeated measures ANOVA, with magnitude of the effect calculated ( $\eta^2_{\text{partial}}$ ). Mauchly's test indicated that sphericity had been violated,  $\chi^2(54) = 94.11$ ,  $p = 0.001$ , therefore a Greenhouse-Geisser ( $\epsilon = 0.470$ ) correction was applied. There were no significant main differences between menthol mouth swill concentrations,  $F(4.695, 93.903) =$



0.974,  $p = 0.435$ , but a small effect was observed  $\eta^2_{\text{partial}} = 0.046$ .

Participant preference did not differ significantly between menthol concentrations, suggesting that researchers investigating the effects of menthol mouth swilling during sports performance are free to use the menthol concentration deemed most appropriate for investigation, or self-selected by athletes. Further research should investigate pairwise comparisons between menthol concentrations, and the factors which contribute to individual preference.