Subjective preferences of varying menthol mouthwash concentrations

R. Best[12] & N. Berger[2]

[1]*WINTEC, New Zealand* [2]*Teesside University, United Kingdom*

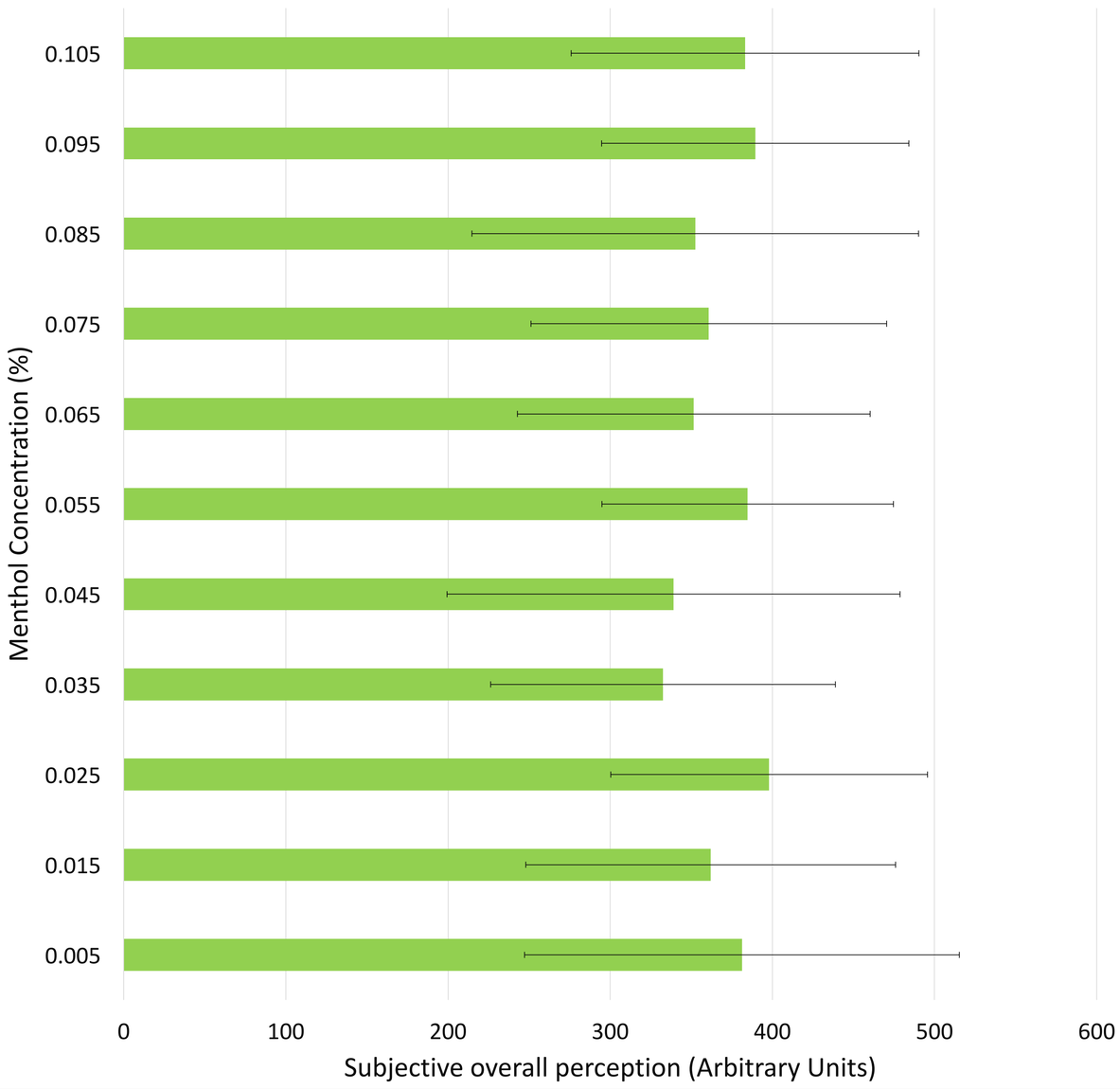
Introduction

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).

Methods

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. Water and coffee beans were available *ad libitum* to cleanse the palate in between swilling solutions. Data were analysed via a one way repeated measures ANOVA, with magnitude of the effect calculated ($\eta^2_{partial}$).

Results



Results

Mauchly's test indicated that sphericity had been violated, χ^2 (54) = 94.11, p = 0.001, therefore a Greenhouse-Geisser (ε = 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 $\eta^2_{partial}$ = 0.046.

Conclusions

Participant preference did not differ significantly between menthol concentrations/ strength (0.005-0.105%), suggesting that researchers investigating the effects of menthol mouth swilling are free to use the menthol concentration deemed most appropriate for investigation, or self-selected by athletes and users.

Practical Applications

Future Directions

Further research should investigate pairwise comparisons between menthol concentrations, and the factors which contribute to individual preference.

References

1. Stevens, C. J., & Best, R. (2017). Menthol: a fresh ergogenic aid for athletic performance. *Sports Medicine*, *47*(6), 1035-1042.
2. Mündel, T., & Jones, D. A. (2010). The effects of swilling an l (–)-menthol solution during exercise in the heat. *European journal of applied physiology*, *109*(1), 59-65.
3. Stevens, C. J., Thoseby, B., Sculley, D. V., Callister, R., Taylor, L., & Dascombe, B. J. (2016). Running performance and thermal sensation in the heat are improved with menthol mouth rinse but not ice slurry ingestion. *Scandinavian journal of medicine & science in sports*, *26*(10), 1209-1216.

Let us know what you think: @SimplyRussBest Russell.Best@wintec.ac.nz