**Application of the Facial Feedback Hypothesis to Endurance Performance–**

**Does Frowning Modulate Perception of Effort?**

*Alister McCormick, Faculty of Sport & Health Sciences, University of St Mark & St John, Carla Meijen, School of Sport and Exercise Sciences, University of Kent, Benjamin Pageaux, Univ. Bourgogne-Franche Comté, France, and Samuele Marcora, School of Sport and Exercise Sciences, University of Kent.*

**Objectives**: People frown during strenuous exercise. Research on the facial feedback hypothesis raises the intriguing possibility that frowning may modulate (i.e., amplify or soften) perception of effort during endurance performance and therefore play a causal role in endurance performance. This study examined whether intentionally frowning throughout a cycling time-to-exhaustion test increased perception of effort and, consequently, reduced time to exhaustion. This study also examined the effects of frowning on affective states experienced during performance and after exhaustion.

**Design**: A randomised, controlled, crossover experimental design was used to compare (within-subjects) the effects of frowning with control conditions.

**Methods**: Ten recreational endurance athletes performed cycling time-to-exhaustion tests in three conditions. In a frowning condition, participants frowned throughout the time-to-exhaustion test. In a matched-workload control condition, participants pressed their thumb against the ergometer handlebar throughout the test. Electromyography biofeedback was used to deliver these interventions. There was also a no-intervention control condition. Perception of effort and exercise-related affect were measured throughout the time-to-exhaustion test, and positive and negative affective states were measured before and after the test.

**Results:** Intentionally frowning did not affect perception of effort, affective states experienced while cycling or after exhaustion, or time to exhaustion.

**Conclusions**: Frowning may not modulate perception of effort or affective responses during endurance exercise to exhaustion. Although additional research using different methods would allow firmer conclusions to be drawn, these findings suggest that interventions that target the expression of a frown would be unlikely to offer an efficacious method of improving endurance performance.

Reference for this presentation

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