Does Frowning Modulate Perception of Effort?

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Introduction

• People frown when they experience high effort.

• Could frowning be a determinant of perceived effort?
Introduction

• Research on the facial feedback hypothesis shows that facial expressions can amplify or soften elicited feeling states.

• If frowning influences perception of effort, then interventions that target frowning could be used to improve endurance performance.
Study Aims

• The facial feedback hypothesis and the psychobiological model of endurance performance were applied.

• We examined whether intentionally frowning during a cycling time-to-exhaustion test increased perception of effort and, consequently, reduced time to exhaustion.
  - Does frowning amplify perceived effort?

• We also examined the effects of frowning on affective states experienced while cycling and after exhaustion.
Methods

• Ten endurance athletes performed time-to-exhaustion tests in three conditions.

• In one condition, participants frowned throughout the time-to-exhaustion test. There were two control conditions.

• Electromyography biofeedback was used to deliver interventions.

• Perception of effort (RPE) and exercise-related affect (Feeling Scale) were measured throughout the time-to-exhaustion test.
Manipulation Checks

![Graphs showing EMG RMS (% max) for Corrugator supercilii and Thenar muscle across different cycling durations.](image)
Effects During Performance
Results Summary

• Time to exhaustion was similar in the frowning (609 ± 243s) and no-intervention conditions (603 ± 175s), and it was shorter in the thumb-press condition (558 ± 159s) ($p = .58$).

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

• The findings suggest that frowning may not modulate perception of effort during endurance performance.

• The results are not promising for frowning-based performance-enhancing interventions informed by the facial feedback hypothesis.

• Future research that examines the effects of inhibiting frowning could offer greater clarity.
Any Questions?

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