

Abstract

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## **Effects of mouthpiece use on airway openings and lactate levels in healthy college males.**

Garner DP<sup>1</sup>, McDivitt E.

### **Author information**

<sup>1</sup>Department of Health, Exercise and Sport Science, The Citadel, Charleston, South Carolina, USA.

### **Abstract**

Research has described the use of mouthpieces not only in preventing oral-facial injuries, but linking use to improvements in muscular strength and endurance. However, the mechanisms by which these improvements occur have not been elucidated. The purpose of this study was to understand possible physiological explanations for improvements in exercise performance with the use of a mouthpiece. Specifically, this study focused on differences in lactate levels after 30 minutes of endurance exercise with and without a mouthpiece. In addition, computed tomography (CT) scans were taken of the cross-sectional area of the oropharynx in each participant (N = 10) with and without a mouthpiece. CT scans showed a significant difference in mean width (28.27 mm with the mouthpiece vs 25.93 mm without the mouthpiece, P = .029) and an increase in mean diameter with a mouthpiece (12.17 mm vs 11.21 mm, P = .096). Lactate levels were lowered with the mouthpiece at 1.86 mmol/L vs 2.72 mmol/L without mouthpiece. This research suggests that there is an improvement in endurance performance that may be linked to improved airway openings resulting from the use of a mouthpiece. Future studies should continue to clarify the possible mechanisms for these exercise outcomes as well as to understand the optimal mandibular advancement to elicit these exercise improvements.

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