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The Effect of Facial Coverings on Prediction of Aerobic Capacity During a Maximal Treadmill Test

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During the global COVID-19 pandemic, over 220 million people have been infected with over 4.5 million deaths reported worldwide. The effects of this virus have led to the development of several public health related mandates throughout the world. In the United States, this has included the requirement of wearing a facial mask while indoors while exercising. This has raised several concerns as to how it may influence exercise performance. **PURPOSE:** The purpose of this research study was to determine the effect that facial coverings had on estimated oxygen consumption during a maximal treadmill exercise test. **METHODS:** Twenty-nine individuals between 18-25 years of age (13 females, 16 males) were recruited for the study. Each subject underwent body composition assessment via Bod Pod. Body weight, fat mass, and fat-free mass were also measured during the Bod Pod assessment. Each subject performed 3 separate maximal Bruce protocol treadmill tests (1 test measuring VO₂ max using a metabolic cart, 1 test predicting VO₂ max wearing a facial covering and 1 test predicting VO₂ max without a facial covering. Heart rate and Rating of Perceived Exertion (RPE) were also collected during the treadmill test. **RESULTS:** Wearing a mask significantly decreased predicted VO₂ max in the mask wearing group compared to the standardized metabolic cart group (42.13 ± 6.9 vs. 46.88 ± 7.2 , $p < 0.04$). Furthermore, when we evaluate women vs. men, we find that this effect persists in men (40.6 ± 6.5 vs. 47.8 ± 6.1 $p < 0.001$) though there is no difference in females. **CONCLUSION:** Facial coverings contributed to a decrease in predicted aerobic capacity in men when performing a maximal effort treadmill test.