GNYACSM Abstract

Perceived Feelings and Dyspnea During Maximal Exercise Testing with Different Masks: A Randomized Crossover Study

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ABSTRACT

The COVID-19 pandemic prompted the widespread use of facemasks. Concerns were raised about their comfort and functionality during exercise. Research on the subjective experiences of exercisers wearing masks during high levels of intensity is scarce. **PURPOSE:** To examine the sensational perceptions related to facemasks and maximal exercise testing. **METHODS**: The study utilized a randomized crossover design. Five participants completed a maximum Bruce protocol while wearing a surgical (SM), cloth (CM), N95 (N95), or no mask (NM). Their perceptual responses were collected at a pre-exercise (PRE), Respiratory Exchange Ratio of 1.0 ($RER_{1.0}$), and immediately post-exercise (IPE), using Feeling Scale (FS) and Dyspnea scale (CR10). A two-way repeated measures ANOVA for time by condition was employed, and Tukey post hoc pairwise comparisons were reported for significant within-subjects' effects. **RESULTS**: FS: There was a time ($F_{2,8}$ = 29.6, p < .001, η^2 = .84), condition ($F_{3,12}$ = 5.1, p = .017, η^2 = .00), and time*condition ($F_{6,24}$ = 3.4, p = .015, η^2 = .01) interaction. Time comparisons revealed that PRE (3.95) was significantly higher than $RER_{1.0}$ (-2.4) (t_4 = 4.7, p = .020) and IPE (-3.45) (-2.4) (t_4 = 6.6, p = .006). Condition comparisons showed that NM (-.33) was significantly higher than SM (-1.00) (t_4 = 4.5, p = .037). The time* condition effect at p < .005 showed that PRE-NM, PRE-SM, PRE-CM, and PRE-N95 were higher than IPE-NM, IPE-SM, and PE-CM, respectively. CR_{10}: There was a time ($F_{2,8}$ = 230.2, p < .001, η^2 = .90), condition ($F_{3,12}$ = 7.4, p = .005, η^2 = .02), and time*condition ($F_{6,24}$ = 4.5, p = .004, η^2 = .02) interaction. Time comparisons revealed that PRE (0.00) was lower than $RER_{1.0}$ (6.8) (t_4 = -15.6, p < .001) and IPE (8.2) (t_4 = -29.4, p < .001), respectively. Condition comparisons revealed that NM (4.3) was lower than SM (5.7) (t_4 = -5.3, p = .021), and SM (5.7) was higher than N95 (4.9) (t_4 = 4.7, p = .031). The time*condition effect at p < .005, showed that PRE-NM was lower than $RER_{1.0}$-NM, $RER_{1.0}$-SM, $RER_{1.0}$-CM, $RER_{1.0}$-N95, IPE-NM, IPE-SM, IPE-CM, and IPE-N95. PRE-SM, PRE-CM, and PRE-N95 were lower than all other time*conditions pairwise comparisons. **CONCLUSION**: Crossing the anaerobic threshold during a maximal exercise testing, wearing a mask can negatively impact perceived feeling and dyspnea, particularly with a surgical mask.