

INFLUENCE OF DIFFERENT FACE MASKS ON BREATHING MECHANICS AT REST AND DURING EXERCISE

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Background: Due to the SARS-CoV-2 pandemic, surgical masks (SM), community masks (CM) or FFP2 respirator (FFP2) cover people at work or during public transport. Some users complain of higher strain and faster fatigue from wearing masks. This study investigated the influence of different face masks on the breathing mechanics and subjective stress at rest and under physical exercise.

Methods: 40 subjects, 20 male, 20 female, aged 19-65 years (mean: 47 years) were examined by bodyplethysmography without mask and with SM, CM and FFP2 at rest and immediately after exercise in a double-blinded and randomized study design. Subjective stress was recorded using the BORG scale.

Results: The bodyplethysmographic examinations showed a decrease in the dynamic lung-function parameters, an increase in respiratory resistance, work of breathing, and subjective stress (BORG) when wearing a mask. With increasing physical exertion, breathing cycle time increased with masks and the increase in minute ventilation and oxygen uptake was smaller with masks than without (SM)

Conclusions: Due to the higher breathing resistance of the three masks, the subjective stress and the breathing mechanics (deepened and slowed breathing) change in the sense of a physiological compensation at rest and under stress.