

COMPARISON OF DIFFERENT METHODS OF MEASUREMENT IN BODYPLETHYSMOGRAPHIC EXAMINATIONS WHILE WEARING DIFFERENT FACE MASKS FOR PROTECTION AGAINST SARS-COV-2

Eike-Maximilian Marek, Vera van Kampen, Birger Jettkant, Benjamin Kendzia, Bianca Strauß, Melanie Ulbrich, Susann Widmer, Anja Deckert, Hans Berresheim, Frank Hoffmeyer, Christian Eisenhower, Simon Weidhaas, Thomas Brüning, Jürgen Bünger

Institute for Prevention and Occupational Medicine of the German Social Accident Insurance, Institute of the Ruhr University Bochum (IPA)

Introduction: Most studies on face masks against SARS-CoV-2 were based on measurements when the face mask was worn under a silicone mask used for cardiopulmonary exercise test (CPET). However, current research suggests a methodological influence due to increased breathing resistance caused by the CPET mask. Therefore, the influence of the CPET mask on bodyplethysmographic measurements was investigated.

Methods: 16 subjects were bodyplethysmographically examined without and with three different face masks (surgical (SM), community (CM), FFP2). The masks were worn under a CPET mask or with a special mask adapter. Additional measurements using a Sheffield head were performed.

Results: Sheffield head tests showed an increasing breathing resistance with increasing flow rate depending on mask type (SM)

Conclusion: Sheffield head tests and bodyplethysmographic examinations showed a systematic influence of the CPET mask under resting conditions. Conclusions about the influence of face masks in CPET in which the face mask was worn under a silicone mask should therefore be considered critically or an alternative adapter system should be used.