The Tom Donaldson Poster Prize – 1st

FACE MASKS WHILST EXERCISING TRIAL (MERIT): A CROSSOVER RANDOMISED CONTROLLED STUDY

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Background Physical exertion is a high-risk activity for emission of aerosols, but there is controversy around whether facemasks are safe and acceptable when exercising. We aimed to determine the safety and tolerability of healthy young adults wearing different types of facemask during moderate-to-high intensity exercise.

Methods Crossover randomised controlled study, comparing a surgical, cloth and FFP3 mask to no mask during 15 minutes of exercise separated by 5 minutes rest. In a non-inferiority analysis, the primary outcome was changes in oxygen saturations (non-inferiority margin=2%) and secondary outcomes included changes in heart rate (non-inferiority margin=7bpm).

Results 72 individuals aged 18-35 (mean 23.9 years) completed the study. Changes in oxygen saturations and heart rate did not exceed the pre-specified non-inferiority margin with any mask type compared to no mask. At the end of exercise the estimated average difference in oxygen saturations for the cloth mask was -0.07% (95%CI -0.39 to 0.25), for the surgical 0.28% (95%CI -0.04 to 0.60) and for the FFP3 -0.21% (95%CI -0.53 to 0.11). The corresponding estimated average difference in heart rate for the cloth mask was -1.20bpm (95%CI -4.56 to 2.15), for the surgical 0.36bpm (95%CI -3.01 to 3.73) and for the FFP3 0.52bpm (95%CI -2.85 to 3.89). The cloth mask was felt to be most difficult to exercise in by 56.3% of participants (n=40) and the FFP3 by 38% (n=27). Wearing a facemask caused additional symptoms such as breathlessness (n=13, 18%) and dizziness (n=7, 10%). 33 participants broadly supported facemask wearing during exercise, particularly indoors, 18 would agree to this if it were mandated and 22 were opposed.

Conclusions Exercising at moderate-to-high intensity wearing a facemask appears to be safe in healthy, young adults. There was most support for wearing a surgical facemask during indoor exercise if needed to reduce the spread of COVID-19.