



Chest binding and maximal exercise performance; a randomised counterbalanced crossover trial

Claire Munsie^{1,3}, Brett Buist^{1,4}, Ben Kramer^{1,4}, Kai Schweizer^{1,2}, Grant Landers¹, Felicity Austin^{1,2,4}, Ashley Almarjawi⁴, Ben Quick⁴, Kemi Wright^{1,4,5} & Bonnie Furzer^{1,2,4,5}

1 - University of Western Australia, 2 - The Kids Research Institute, 3 - Curtin University, 4 - Thriving in Motion, 5 - University of New South Wales.



Clinical and community guidance frequently cautions against chest binding during exercise due to perceived health risks, yet evidence supporting physiological risk or acute effects on performance is lacking.

The aim of this study was to determine whether chest binding alters maximal aerobic and strength performance, respiratory function, range of motion (ROM), or perceptual responses to maximal exertion in binder-naive people.

Methods

A randomised counterbalanced crossover design evaluated acute responses to exercise performed in binder and non-binder conditions. The primary outcome was VO_2max , with secondary outcomes including maximal muscle strength (1RM bench press, lat pulldown), respiratory function (FEV1, maximal VT and VE), spine and shoulder flexion and perceptual ratings of comfort, dyspnoea, and exertion. Analyses examined within-participant differences across conditions and consistency of physiological and perceptual responses.

Results

21 participants (mean age 30.67 ± 5.41 years) completed all testing, with anthropometric diversity evident across chest girth, body composition, and binder size. No significant differences were found between conditions for VO_2max , 1RM bench press and lat pulldown strength, maximal VE and VT, FEV₁, or ROM, and all effect sizes were small ($d < 0.3$) with strong within-participant agreement for key physiological measures ($r = 0.89-0.95$, $p < 0.001$). Perceptual outcomes demonstrated no between-condition differences, with moderate to strong correlations across trials ($r < 0.5$).

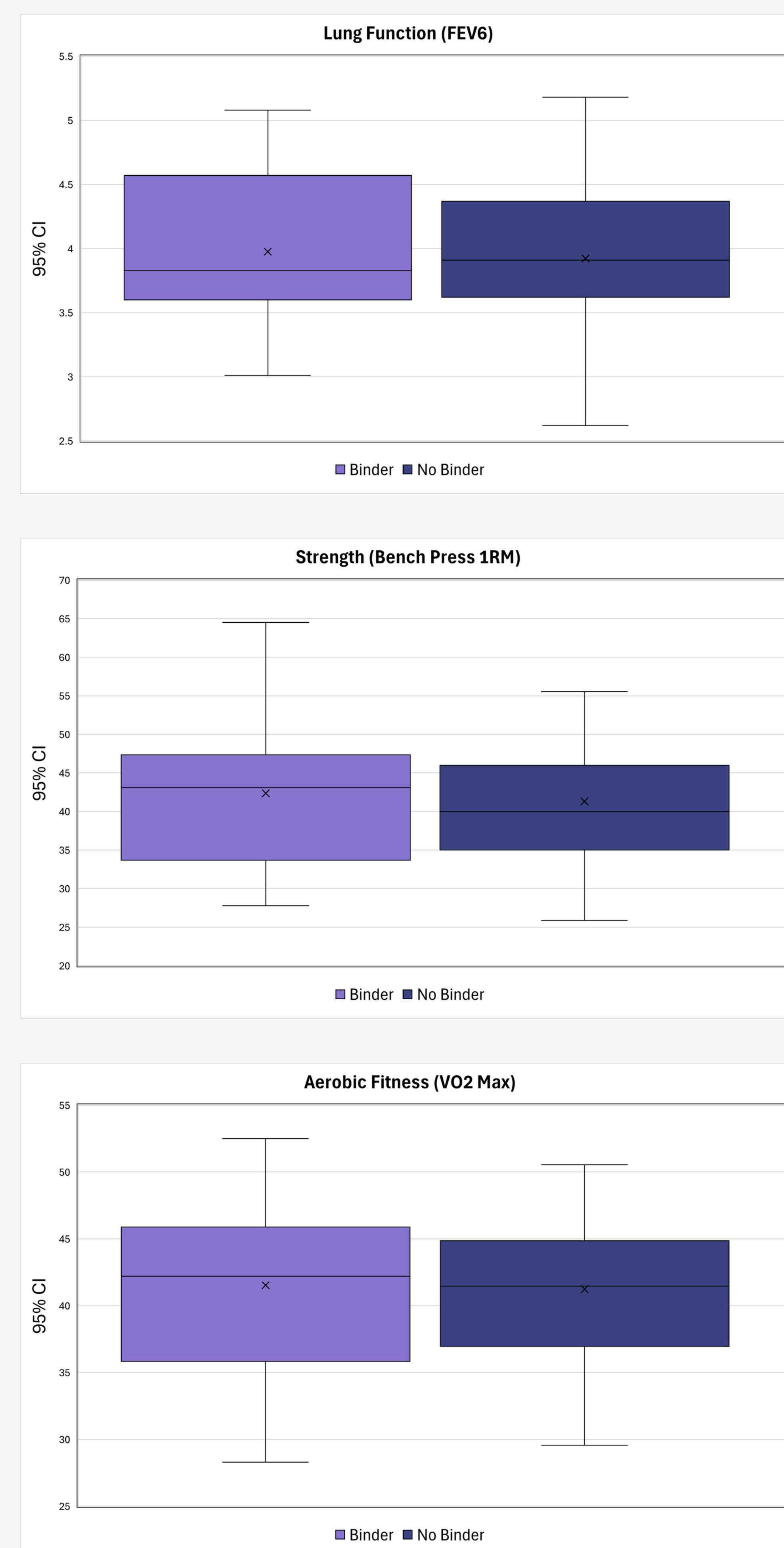


Figure 1. Plots of lung function (FEV6), muscle strength (bench press) + VO_2max

| Outcome | Variable | Mean diff (95%CI) | p | Cohens d |
|-----------------------|-------------------------|---------------------|------|----------|
| Lung Function | FEV6 (ml) | 0.06 (-0.08, 0.20) | .376 | .20 |
| ROM | Shoulder Flexion (deg) | -0.45 (-2.52, 1.62) | .653 | .10 |
| Muscle Strength (1RM) | Chest Press (kg) | 0.96 (-0.78, 2.70) | .263 | .25 |
| Muscle Strength (1RM) | Lat Pulldown (kg) | 0.64 (-0.95, 2.23) | .413 | .18 |
| Aerobic Fitness | VO_2max (ml.kg.min-1) | 0.15 (-1.07, 1.36) | .803 | .06 |
| Perception of Effort | RPE | 0.25 (-0.01, 0.06) | .125 | N/A |

Conclusions

1. Chest binding did not alter aerobic or strength performance, respiratory function, ROM or perceptions during rest &/or maximal exertion.
2. Given the lack of change in physiological function, chest binding, acutely, is unlikely to contribute to changes in risk profile associated with physical activity.
3. These findings challenge the precautionary advice currently given, indicating it provides an unnecessary barrier to exercise participation.

