

Publication**The Obesity Factor: How Cardiorespiratory Fitness is Estimated More Accurately in People with Obesity****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 4479524**Author(s)** Königstein, Karsten; Klenk, Christopher; Rossmeissl, Anja; Baumann, Sandra; Infanger, Denis; Hafner, Benjamin; Hinrichs, Timo; Hanssen, Henner; Schmidt-Trucksäss, Arno**Author(s) at UniBasel** [Hinrichs, Timo](#) ; [Königstein, Karsten](#) ; [Klenk, Christopher](#) ; [Rossmeissl, Anja](#) ; [Baumann, Sandra](#) ; [Infanger, Denis](#) ; [Hafner, Benjamin](#) ; [Hanssen, Henner](#) ; [Schmidt-Trucksäss, Arno](#) ;**Year** 2018**Title** The Obesity Factor: How Cardiorespiratory Fitness is Estimated More Accurately in People with Obesity**Journal** Obesity (Silver Spring, Md.)**Volume** 26**Number** 2**Pages / Article-Number** 291-298

Cardiopulmonary exercise testing is clinically used to estimate cardiorespiratory fitness (CRF). The relation to total body mass (TBM) leads to an underestimation of CRF in people with obesity and to inappropriate prognostic and therapeutic decisions. This study aimed to determine body composition-derived bias in the estimation of CRF in people with obesity.; Two hundred eleven participants (58.8% women; mean BMI 35.7/m; 2; [s 6.94; 20.7-58.6]) were clinically examined, and body composition (InBody720; InBody Co., Ltd., Seoul, South Korea) and spirometrical peak oxygen consumption (VO₂ peak) were assessed. The impacts of TBM, lean body mass (LBM), and skeletal muscle mass (SMM) on CRF estimates were analyzed by the application of respective weight models. Linear regression and plotting of residuals against BMI were performed on the whole study population and two subgroups (BMI < 30 kg/m²; and BMI ≥ 30 kg/m²); For every weight model, Δmean VO₂ peak (expected -) was positive. LBM and SMM had a considerable impact on VO₂ peak demand (P = 0.001; ΔR² = 2.3%; adjusted R² = 56% and P = 0.001; ΔR² = 2.7%; adjusted R² = 56%), whereas TBM did not. Confounding of body composition on VO₂ peak did not differ in LBM and SMM.; TBM-adjusted overestimation of relative VO₂ demand is much higher in people with obesity than in those without. LBM or SMM adjustment may be superior alternatives, although small residual body composition-derived bias remains.

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