

Assessment of oxygenation after balloon pulmonary angioplasty for patients with inoperable chronic thromboembolic pulmonary hypertension

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To the editor,

In response to: *Assessment of oxygenation after balloon pulmonary angioplasty for patients with inoperable chronic thromboembolic pulmonary hypertension*

We read with interest the study by Matsuoka et al.(1) reporting on the effects of balloon pulmonary angioplasty (BPA) on tissue oxygenation. Despite an improvement in haemodynamics following BPA, the authors conclude that oxygenation, exercise-induced desaturation (EID) and exertional dyspnoea (ED) did not improve. However, further examination of the results, while accounting for exercise intensity, suggests that oxygenation and EID may have *improved* post-BPA.

In this study changes in EID were measured using the six minute walk test (6MWT); a self-paced measure of exercise capacity where the primary outcome is walk distance(6MWD)(2). We propose that the 6MWT is unsuitable for evaluating therapeutic changes in EID because workload is not fixed. Changes in EID, and similarly ED, should be measured using constant-load exercise where measurements can be made at an iso-timepoint(3) and a fixed absolute exercise intensity when evaluating interventional outcomes.

Therapeutic benefits assessed using the 6MWT translate into improvements in 6MWD, and thus an increase in exercising intensity. Indeed, the post-BPA *increase* in walk distance was 49 metres(1), translating into a faster walk speed (3.6 vs. 3.1km·hr⁻¹). Using standard

estimates for oxygen uptake during walking(4), participants would have been exercising at a greater intensity (9.5 vs. 8.7ml·kg⁻¹·min⁻¹) following BPA. Through examination of the *rate* of EID (i.e. distance walked to cause a 1% EID), participants covered more ground for a given desaturation post-BPA (46.2 vs. 38.4m·1%EID⁻¹). Whilst only an estimate from the mean reported data, this improvement in the rate of EID suggests *better* oxygenation on exertion following BPA.

References

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