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Title: Are 6MWD and FEV1 the most clinically relevant measures?

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Body: Six minute walk tests (6MWT) are used to assess exercise tolerance and widely used to assess the response to interventions. The six minute walk distance (6MWD) is used clinically to describe the patients' ability to tolerate exercise and is often used in comparison to FEV1. Although FEV1 and 6MWD performed concomitantly correlate, FEV1 in certain patient populations can remain stable over time whilst 6MWD can vary. Our aim was to determine if any additional lung function parameters and values obtained during a 6MWT could be used for clinical interpretation. A retrospective analysis of 312 patients who undertook full lung function, which comprised of spirometry, gas transfer and body plethysmography and a 6MWT, utilising pulse oximetry and Borg score. The correlation between 6MWD and FEV1 was r=0.487, p<0.001. Total lung gas transfer for carbon monoxide (TLCO) was the only lung function parameter that had a stronger correlation with 6MWD r=0.514, p=<0.001. Minimum 6MWT SpO2 had significant correlations (p<0.001) with TLCO r=0.607, KCO r=0.521, TLCO % pred r=0.619 and KCO % pred r=0.520. Post SpO2 had significant correlations (p<0.001) with KCO r=0.495 and TLCO % pred r=0.501. ΔSpO2 had significant correlations (p<0.001) with TLCO r=-0.545 and TLCO % pred r=-0.542. The Distance Saturation Product (DSP) had significant correlations (p<0.001) with FEV1 r=0.552, TLCO r=0.613, TLCO% Predicted r=0.514. In conclusion there are several lung function parameters that correlate better with 6MWT parameters than FEV1 and 6MWD. These correlations suggest that gas transfer plays an important role in 6MWT performance. The DSP had stronger correlations than 6MWD and has the potential to be a useful clinical outcome measure.