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| **SpO2 measurements are higher in forehead probes compared to a finger probe during the six-minute walk test and when compared to resting arterial oxygen from blood gas samples.** |
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| **Introduction/Aim:** Distance, heart rate and SpO2 are used as objective measures of exercise tolerance in patients with chronic respiratory diseases during a six-minute walk test (6MWT). The aim of this investigation is to identify discrepancies in SpO2 readings across probes during a 6MWT, and when compared with resting arterial blood gas samples (ABG).**Method:** As part of their clinical evaluation, 53 subjects referred for a 6MWT were included in the study. Subjects were fitted with both a Bitmos sat801+ forehead probe (labelled H1a) and finger probe, to allow for simultaneous SpO2 recording.Further, the same pulse oximeters with the inclusion of a validating head probe (labelled H2), were fitted to a new group of 29 subjects referred for a resting ABG. The SpO2 recordings from all probes were compared to the arterial oxygen saturation (SaO2).Amidst data collection, the service agent withdrew probe H1a for inspection, and provided a new forehead probe (labelled H1b).**Results:** The H1a probe measured greater SpO2 values both pre and post 6MWT (p<0.001) compared to the finger probe, with a mean difference of 4.04% pre and 3.48% post 6MWT. The H1b probe measured greater SpO2 values pre and post 6MWT (p<0.001) compared to the finger probe, with a mean difference of 2.88% pre and 3.5% post 6MWT. The SpO2 recordings from H1a are significantly greater than SaO2 (p<0.001), with a mean difference of 4.86%. H1b SpO2 is greater than SaO2 (p<0.05) with a mean difference of 4.47%. No significant SpO2 differences were identified between SaO2 and the finger probe, or between H1b and H2. **Conclusion:** The statistically significant SpO2 differences found in this study raises concern as to clinical intervention arising from 6MWT results. More reliable measures such as ABG should be used in conjunction with pulse oximetry, where appropriate.**Key Words:** Six-minute walk test, Arterial blood gas, Pulse oximetry, Oxygen saturation**Nomination for New Investigator Award****Grant Support:**  |

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