|  |
| --- |
| **Comparison of different oximetry devices during six-minute walk tests** |
| Marshall E1,3, Filiex A2, Schulte M3, Logie KM3, Gin J4, Horrigan M4 , Dowman L1,2,5 Churchward TJ1,3, Khor YH1,3,6 |
| *1Institute of Breathing and Sleep, Victoria, Australia*  *2Respiratory Research@Alfred, Monash University, Victoria, Australia*  *3Department of Respiratory and Sleep Medicine, Austin Health, Victoria, Australia*  *4Department of Cardiology, Austin Health, Melbourne, Victoria, Australia*  *5Department of Physiotherapy, Austin Health, Melbourne, Australia*  *6Department of Medicine, University of Melbourne, Victoria, Australia* |
| **Introduction/Aim:** Pulse oximetry is commonly used to assess the oxygenation status in patients with cardiac or respiratory diseases. Different devices are available for measuring pulse oximetry. This study aimed to compare the performance of three test oximetry devices (BioBeat Wristwatch, Nonin Wrist-ox2 3150 Oximeter, and Heart Sure Pulse Oximeter A320) against the existing clinical standard oximeter (Masimo Rad-5) during 6-minute walk tests (6MWTs).  **Methods:** This was a single-centre prospective study with 10 participants being recruited for each of the five groups: chronic obstructive pulmonary disease, interstitial lung disease, pulmonary hypertension, oxygen users, and other cardiac/respiratory diseases. All participants completed a 6MWT wearing the 4 oximetry devices. Oxygen saturation (SpO2) were recorded every 30 seconds during 6MWT. The percentage of missing SpO2 data for each test oximetry device was assessed. Participants were asked to rate their preference amongst the test oximetry devices.  **Results:** The study population primarily consisted of females (58%) with a mean age of 68 (SD 13) years. For nadir and mean SpO2 during the test (**Table**), compared to Masimo Rad-5, the Nonin WristOx had lower measurements (p=0.01) and the Biobeat had higher measurements (p<0.01), with no differences for the Heart Sure (p=0.60). Time spent at SpO2 ≤ 88% was higher for the Nonin WristOx (p<0.01) and lower for the Heart Sure (p<0.01) compared to that for the Masimo Rad-5. A substantial amount of SpO2 data was missing for the Biobeat (80%) due to device technical errors. Most participants (n=31) preferred using the Biobeat, followed by Heart Sure (n= 11).    **Conclusion:** The Heart sure has the most comparable performance for SpO2 measurements to the clinical standard oximeter. While the BioBeat is preferred by patients, it appears to be challenging for clinical use due to device technical errors.  **Grant Support:** Nil |

Key Words: Pulse Oximetry, 6MWT, Cardiopulmonary.