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Title: Accuracy of 2 types of pulse oximeters in cardio pulmonary exercise testing

Mrs. Jellien 427 Makonga-Braaksma J.Makonga@meandermc.nl , Mrs. Roelie 428 v Winkoop-Ruitenberg R.J.M.Ruitenberg@meandermc.nl and Dr. Pim 429 Dalinghaus W.H.Dalinghaus@meandermc.nl MD .¹ Longfunctie-afdeling, Meander Medisch Centrum, Amersfoort, Utrecht, Netherlands, 3818 ES ;² Longfunctie-afdeling, Meander Medisch Centrum, Amersfoort, Utrecht, Netherlands, 3818ES and³ Poli Longgeneeskunde, Meander Medisch Centrum, Amersfoort, Utrecht, Netherlands, 3818ES .

Body: Introduction: This research compares values of 2 pulse oximeters (the BCI-Autocorr ear clip and the NONIN-ONYXII 9550 finger clip) with SaO₂ (saturation in the arterial bloodgas, the gold standard) in resting and in maximal exercise. Both manufacturers claim a precision within 2 digits, BCI within 3 during motion. Hypothesis: There's no significant difference between a saturation measured by an ear clip or finger clip and SaO₂ at rest and at max. exercise. Methods: 21 patients (6 female), mean age = 74, (46-83 yr.) were referred by the pulmonologist for a cardio pulmonary exercise test with arterial bloodgas sampling based on dyspnea eci. At rest and max. exercise arterial bloodsamples were taken to measure SaO₂ (by Siemens Rapidlab 1265), at the same moment values from ear clip and finger clip were noted. Data were analyzed by paired t-test. P-values < 0.05 were considered significant. Results: Mean (SD) SaO₂ was 96.6% (1.5) at rest, and 94.9% (4.7) at max. exercise, measured by bloodgas. See table for results.

results: Difference (mean +/-SD)% compared to arterial bloodgas value

		mean (SD)	CI	p-value
Finger (Nonin)	rest	-0.4% (1.6)	-0.4 to 1.1	0.30
	max. exercise	0.1% (1.8)	0.4 to 2.4	0.01
Ear lobe (BCI)	rest	1.1% (1.5)	0.4 to 1.8	0.00
	max. exercise	0.1% (2.4)	-1.0 to 1.2	0.79

CI= Confidence interval

Conclusion: There is no significant difference between (BCI Autocorr) ear clip and SaO₂ in exercise, but there is in resting. There is no significant difference between (NONIN) finger clip and SaO₂ in resting, but there is in exercise. **Discussion:** As we continue gathering data, we hope to publish also on a desaturating population eg COPD. The effect of exercise on the physiology of fingertip and earlobe should also be considered.

