

Development of the 'BreathEasy' contactless portable respiratory rate monitor (CPRM)

DAW, Will, KINGSHOTT, Ruth, SCOTT, Alison, SAATCHI, Reza
<<http://orcid.org/0000-0002-2266-0187>> and ELPHICK, Heather

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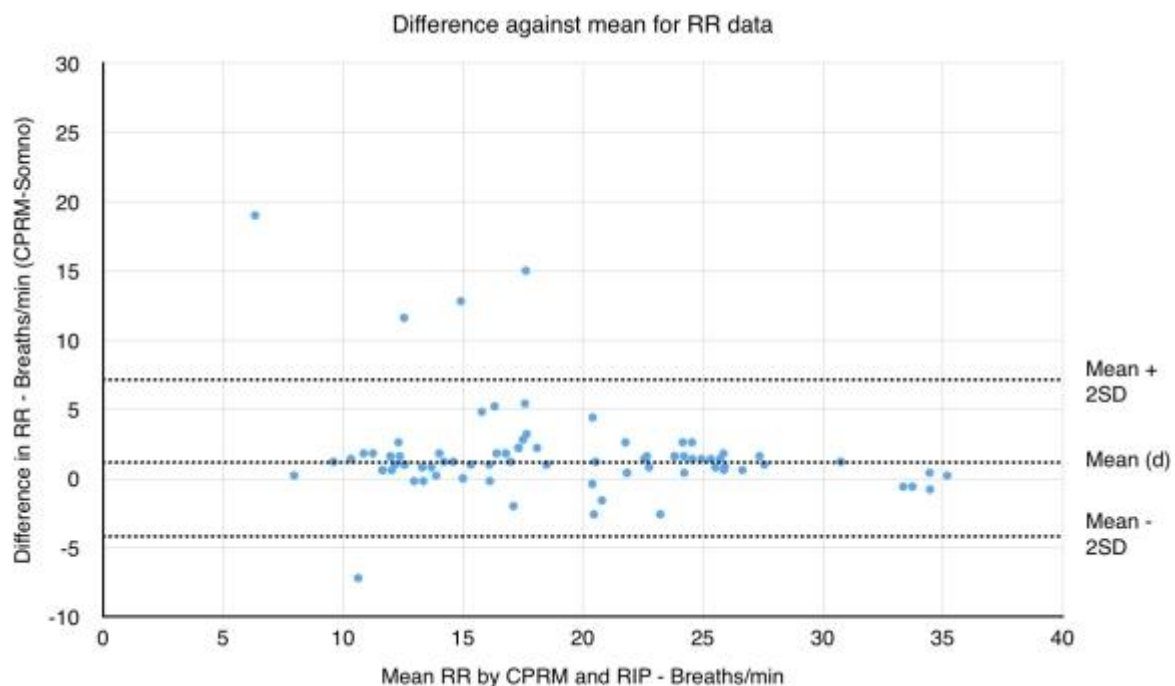
Will Daw (Sheffield, United Kingdom), Will Daw, Ruth Kingshott, Alison Scott, Reza Saatchi, Heather Elphick

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Abstract

Background: Respiratory rate (RR) is a vital physiological measurement used in the immediate assessment of acutely ill patients. It is used as a predictor of serious deterioration in a patient's clinical condition. Convenient electronic devices exist for measurement of pulse, blood pressure, oxygen saturation and temperature. Although devices which measure RR exist, none has entered everyday clinical practice. We have developed a contactless portable respiratory rate monitor (CPRM). We aimed to measure agreement with existing methods of RR measurement. **Method:** RR data were collected from 33 adult volunteers using respiratory impedance plethysmography (RIP) bands (established contact method), visual counting of chest movements (established non-contact method) and the CPRM (new method), simultaneously. Two to three data sets were collected for each volunteer. **Results:** Data showed good agreement between measurements from the CPRM and the gold standard RIP with limits of agreement -4.6 – 7.8.



Conclusion: A contactless device for accurately and quickly measuring RR will be an important tool in the assessment of unwell children. More testing is needed to explore reasons for outlying measurements and to

evaluate in the paediatric population. Further development and modification of the device and software are planned.