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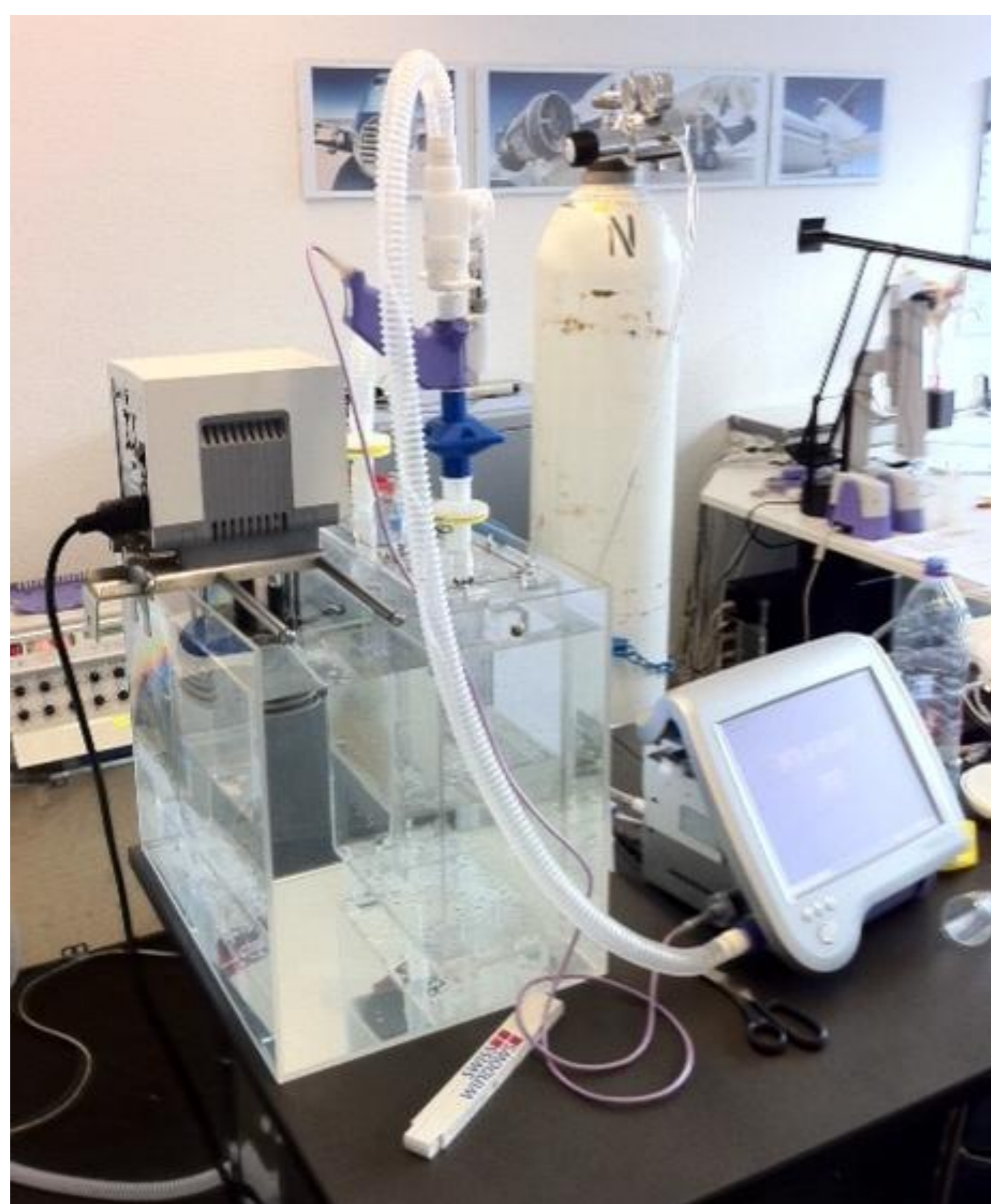
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## INTRODUCTION:

An extended version of the EasyOne Pro LAB (ndd, Switzerland) has been developed to include Multiple Breath Washout measurements for assessment of functional residual capacity (FRC) and indices of ventilation inhomogeneity such as the Lung Clearance index (LCI). Accuracy and validity of the sidestream ultrasonic flow sensor using SF<sub>6</sub> as tracer gas has been demonstrated previously. Before introducing nitrogen washout to facilitate routine use of MBW, re-evaluation of the device for using 100% oxygen instead of SF<sub>6</sub> is essential.

## AIM:

The aim of the present study was to assess the accuracy of the EasyOne Pro for measuring FRC from nitrogen washout (FRC<sub>N<sub>2</sub></sub>) using a lung model.

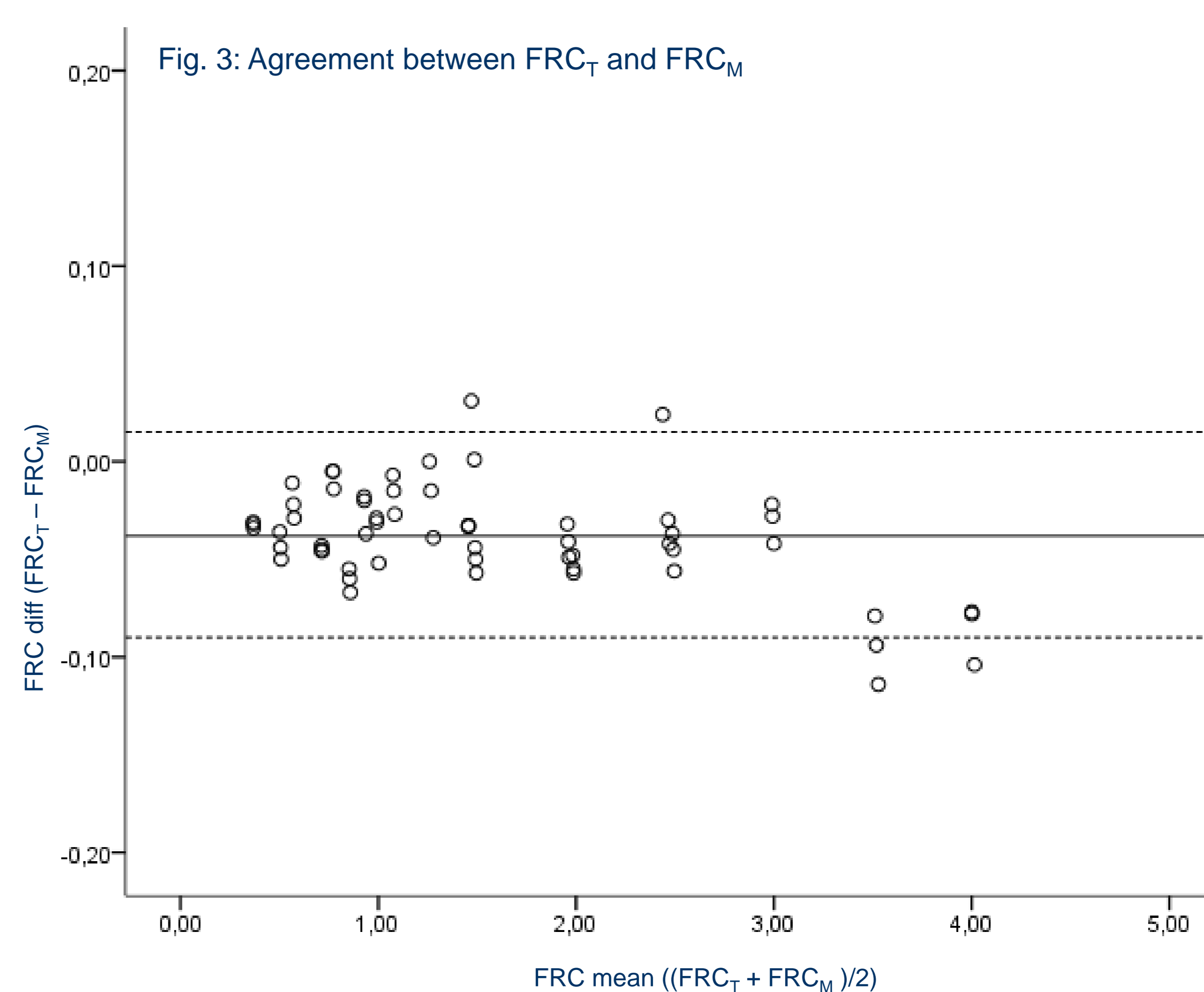
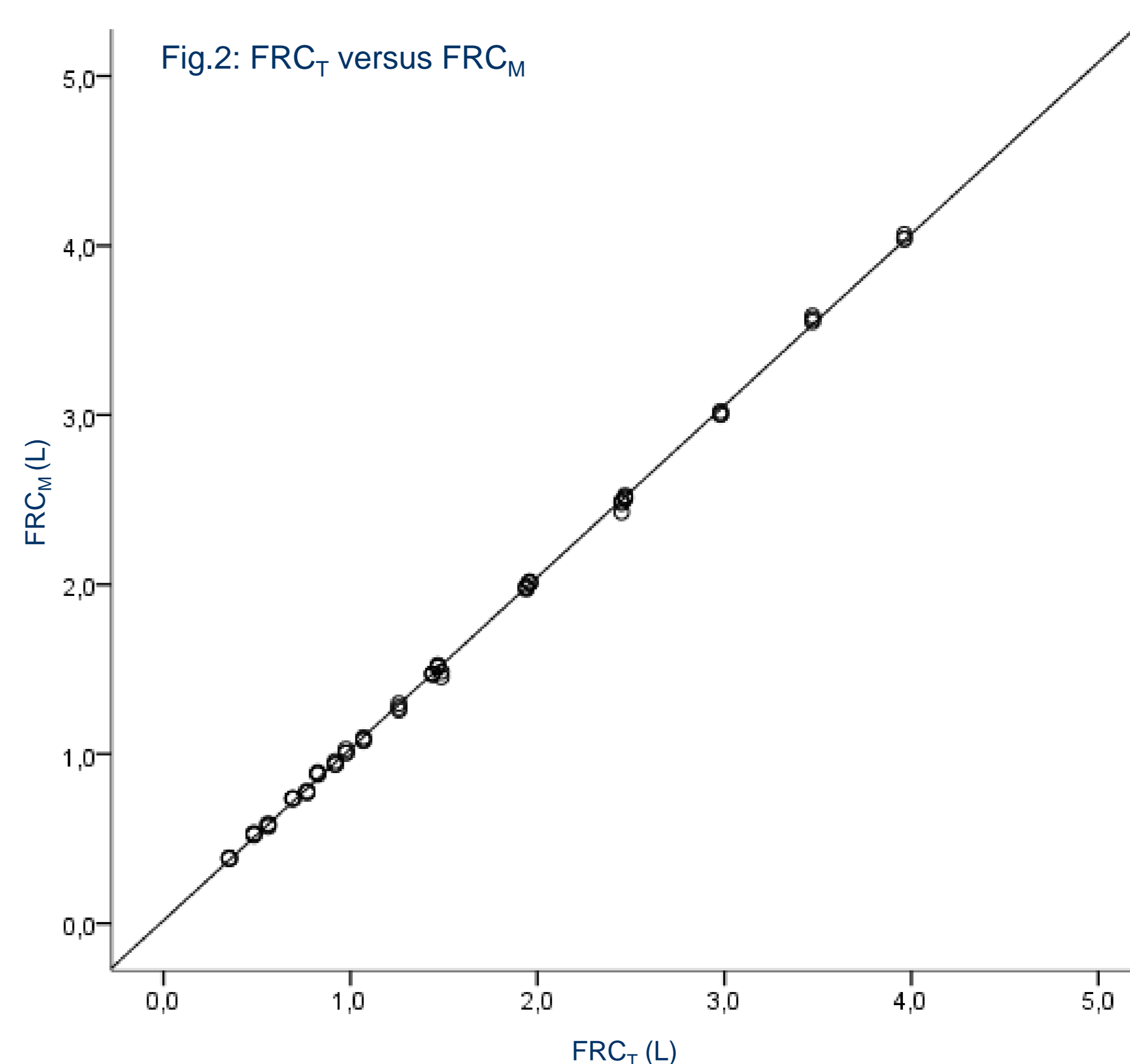


## METHODS:

The EasyOne Pro LAB is equipped with a sidestream ultrasonic flow and molar mass sensor, plus a CO<sub>2</sub> sensor. The lung model is a waterfilled plexi glas chamber (Soloplex AB, Sweden) that is driven by a mechanical ventilator (Evita, Dräger, Germany). 100% oxygen was used to perform N<sub>2</sub> washout. FRC tests were performed in triplicate using target FRC volumes between 350 and 4000mL. Respiratory rates were set between 10 and 20/min. Tidal volumes ranged between 300 and 800 mL.

## RESULTS:

N=20 sets including 59 single tests were analysed. Repeatability within the test sets was 0.8%. Mean difference (SD) between target FRC (FRC<sub>T</sub>) and measured FRC (FRC<sub>M</sub>) was -38 mL (30 mL), 95% CI -45;-31mL, r<sup>2</sup> 0.999. (see Figure 2 and 3)



## CONCLUSION:

The small difference observed is unlikely to be clinically relevant. Part of the differences may be attributable to visually reading the volumes off the lung model. We conclude that the EasyOne Pro Software accurately measures FRC<sub>N<sub>2</sub></sub>.