To the Editor:

KLUG et al. [1] have reported observer variability within and between two experienced observers of a number of lung function measurements in preschool children. One of the methods assessed was the measurement of airway resistance by the interrupter technique ($R_{int}$). In their laboratory, $R_{int}$ measurements have high interobserver variability, although no systematic bias.

In our laboratory interobserver variability of $R_{int}$ measurements is measured with each new observer to ensure that it is acceptable [2]. Although our within-observer variability is similar to that reported by KLUG et al., the between observer variability is much lower, despite differences in experience. There is no systematic bias. KLUG et al. have shown a variance (2 SD of the differences between observers measurements) of 0.62 kPa.L$^{-1}$.s, where ours is 0.14–0.18 kPa.L$^{-1}$.s (table 1). Our 95% limits of agreement are therefore much narrower.

It is misleading to imply that interobserver repeatability for $R_{int}$ is generally poor. Technical aspects of measurement and different criteria for accepting measurements both affect repeatability. Each laboratory should have its own standards for intra- and interobserver repeatability and use these to power proposed studies.

Table 1. – Interobserver variability

<table>
<thead>
<tr>
<th>Observers</th>
<th>n</th>
<th>Mean±SD difference between observers</th>
<th>95% limits of agreement between observers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>48</td>
<td>-0.007±0.07</td>
<td>-0.15–0.14</td>
</tr>
<tr>
<td>Pair 2</td>
<td>19</td>
<td>-0.021±0.09</td>
<td>-0.25–0.23</td>
</tr>
<tr>
<td>KLUG et al [1]</td>
<td>22</td>
<td>0.02±0.31</td>
<td>-0.66–0.61</td>
</tr>
</tbody>
</table>

n: pairs of measurements. Mean age of children in pairs 1 & 2 = 3.9 yr, KLUG et al. = 4.8 yr.

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References


From the authors:

We wish to thank C.S. Pao and colleagues for their comments about our paper on the within-observer and between-observer variability of lung function measurements in young children [1]. In contrast to C.S. Pao and colleagues, we found that measurements of airway resistance by the interrupter technique ($R_{int}$) differed significantly between observers. We agree that the explanation of this discrepancy is probably that the technical and practical application of the $R_{int}$ technique differs between our laboratories. Measurement of $R_{int}$ has not yet been standardized and the outcome of measurements of $R_{int}$ may, therefore, differ between laboratories in several respects. In the current efforts to standardize $R_{int}$ measurements in children, the variability between observers clearly requires consideration. Hopefully, data on the advantages and limitations of different approaches to $R_{int}$ measurements will be available soon.

We agree with C.S. Pao and colleagues that each laboratory should examine the variability within and between observers, to improve the applicability of $R_{int}$ for clinical and research purposes.

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References


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