



# growth charts for lung function



## Specific Airway Resistance ( $sR_{aw}$ ) Quality Control Over-Read Sheet:

### Data collection:

Performed from age  $\geq 3$  yrs

For accurate measurements of  $sR_{aw}$  to be obtained it is essential that:

- Prior to commencing test, sufficient time (at least 60 seconds) is allowed for thermal stabilisation with the subject sitting in the plethysmograph.
- Subject must wear a nose-clip / nose must be occluded
- Cheeks are supported with hands.
- Subject is encouraged to perform regular, quiet tidal breathing (30-45 bpm).
  - Rapid deep breathing which can lead to hyperinflation and high peak flows should be discouraged
- Manual amendments to the pressure-flow loops should not be made.

Up to 5 trials of 10 or 5 breaths (dependent on software) should be recorded with the aim of obtaining 3 'technically acceptable' trials, as defined below.

### Quality Control Score:

A trial of  $sR_{aw}$  loops can be graded according to the following criteria (Y = 1, N = 0):

- |  |       |
|--|-------|
| 1. Respiratory rate is between 30-45 bpm   | Y / N |
| 2. Breaths are super-imposable (i.e. parallel slopes)                                    | Y / N |
| 3. Breaths are of similar size and shape   | Y / N |
| 4. Breaths are reasonably closed at zero flow  | Y / N |
| 5. There are no obvious distortions to the breath (e.g. glottic closure, cough, talking) | Y / N |
| 6. There is more than one acceptable trial available                                     | Y / N |

*See below for examples, and evidence on which these recommendations are based.*



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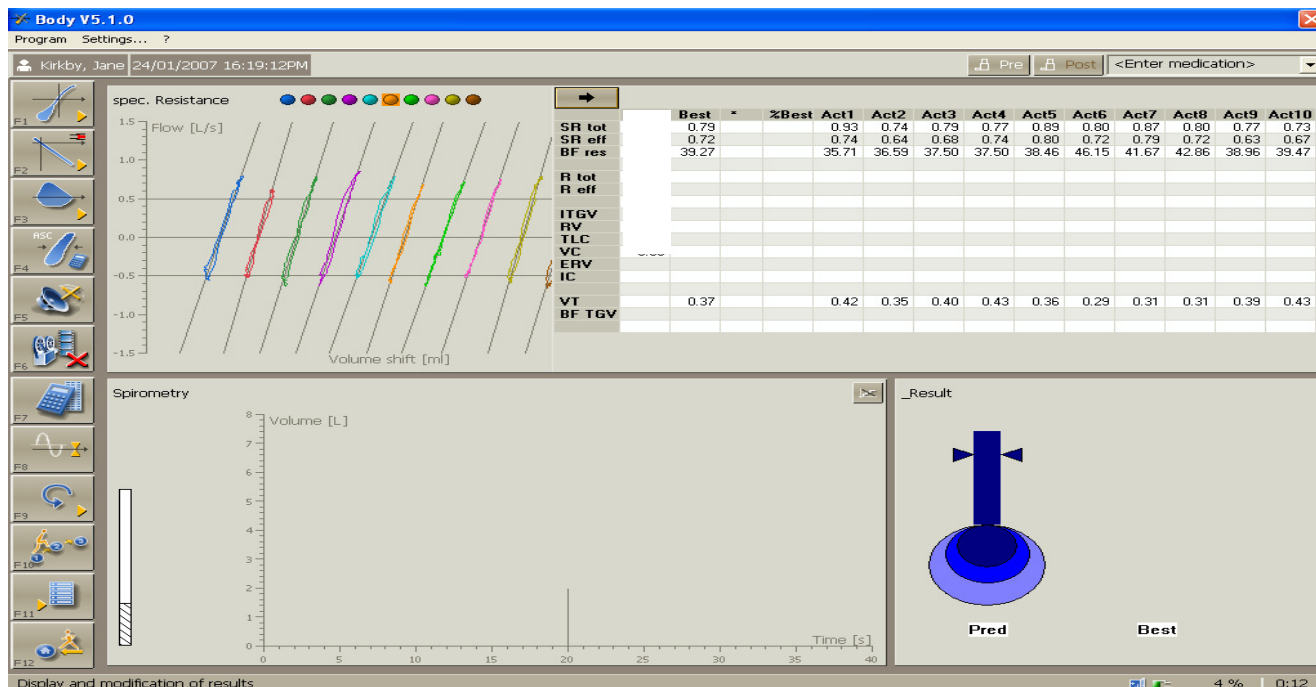


Figure 1: breathing frequency within 30-45bpm = Y; Superimposable = Y; similar size and shape = Y, closed at zero = Y, No distortion of breath = Y, came from set of 3 trials = Y. **QC score = 6/6.**



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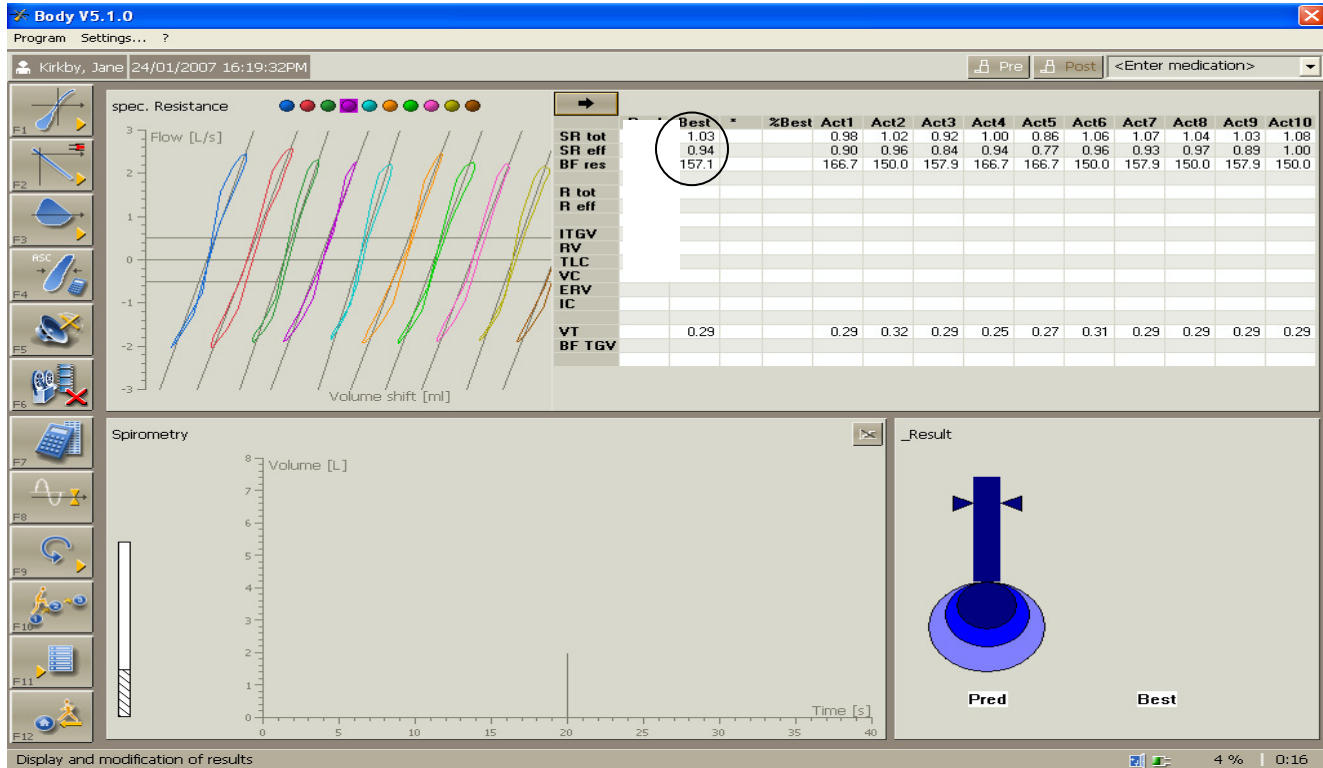


Figure 2: Breathing frequency within 30-45bpm = N; Superimposable = Y; similar size and shape = Y, closed at zero = Y, No distortion of breath = Y; came from set of 3 trials = Y. QC score 5/6



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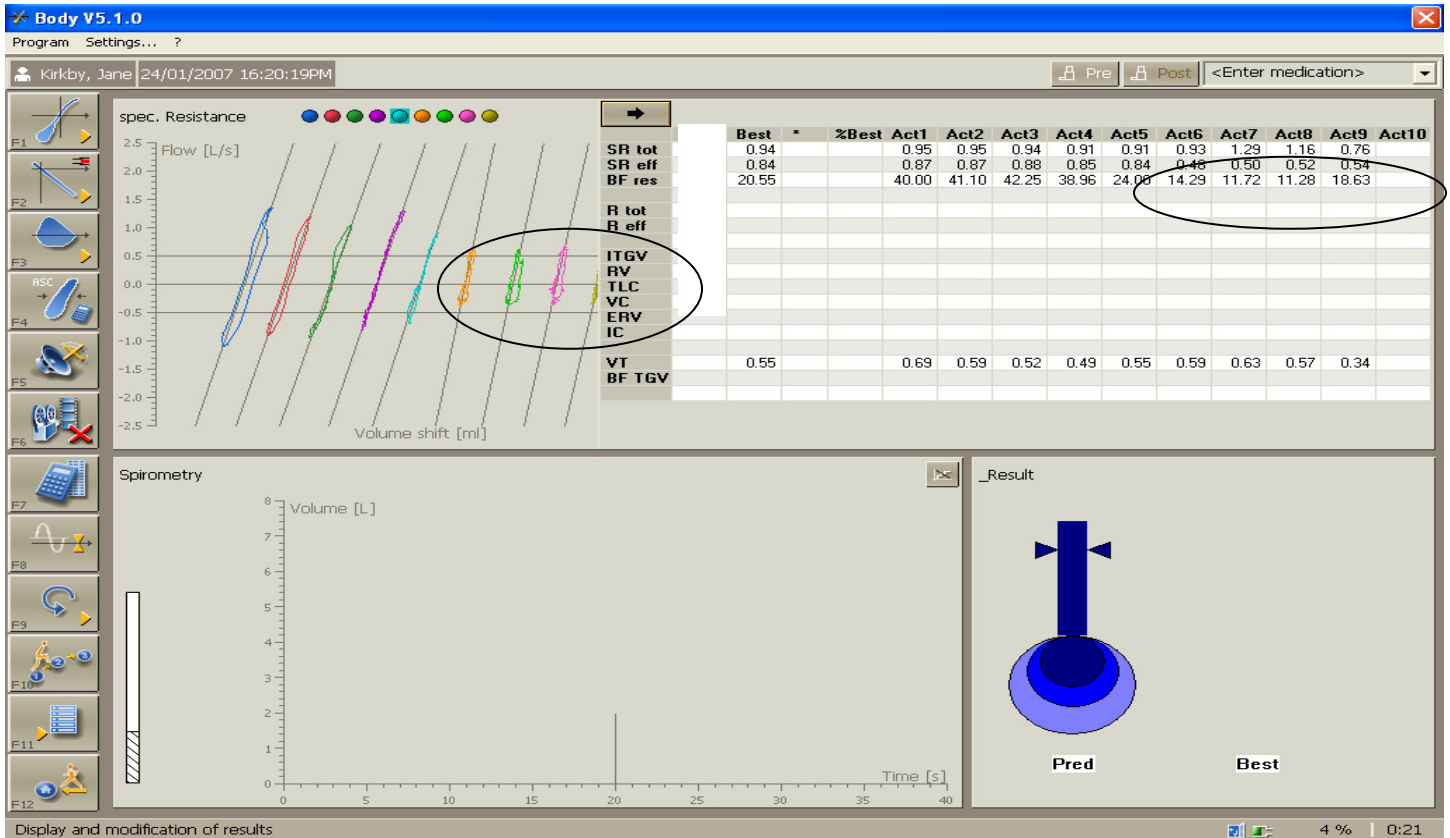


Figure 3: **Breathing frequency within 30-45bpm =N**; Superimposable = Y; **similar size and shape = N**, closed at zero =N, No distortion of breath = Y, came from set of 3 trials = Y. **QC score = 3/6.**



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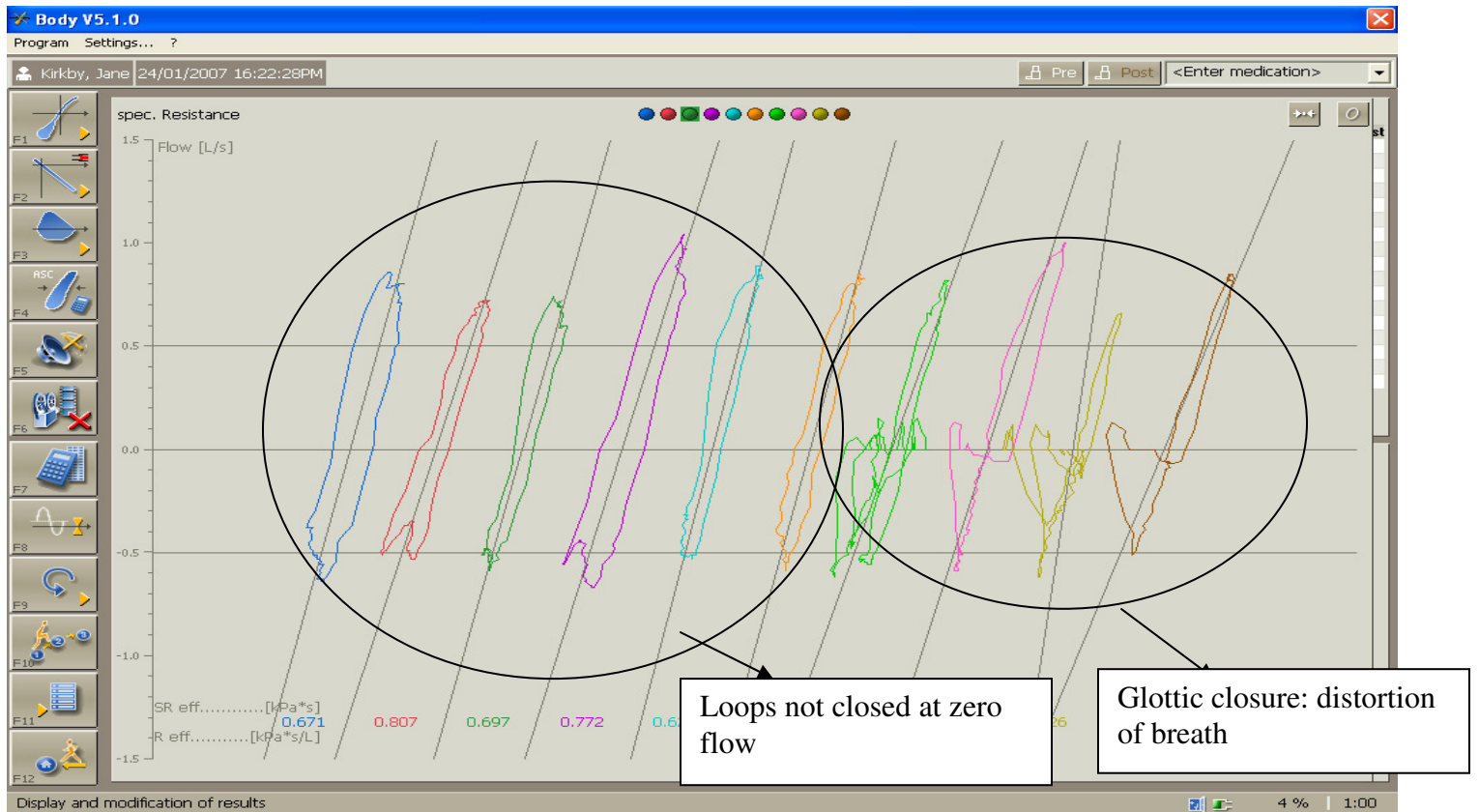


Figure 4: Breathing frequency within 30-45bpm =N (not reported); Super-impossible = N; similar size and shape = N, closed at zero = N, No distortion of breath = N, came from set of 3 trials = Y. **QC score = 1/6. Unacceptable data which should not be reported**

Nb We have yet to ascertain the influence of including/reporting results with low quality score, (i.e whether those with a score of 3 or less should 'fail') nor whether certain criteria require higher weighting. Such evidence can only emerge once a standardised QC score is applied prospectively to large sets of data in both healthy children and those with disease. This process is currently underway.