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Title: Influence of ASC correction on specific airway resistance using the body box

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Body: Pressure flow loops in the body box can be closed using ASC correction for temperature and humidity. Our normal procedure is to close loops once a months using a healthy subject and apply this ASC setting to all patients. The aim of our study was to compare this procedure to closure of the loops for each subject in different patient groups. Methods: measure specific airway resistance (sR, method total) with ASC setting obtained from the healthy subject and reanalyze the same measurement using automatic loop closure. The changes in ASC (%) and sR were analyzed in: healthy subjects (18), asthmatics (22), cystic fibrosis (50), obesity (20) and unselected patients (103). Results: closing loops increased ASC significantly in unselected patients, asthma, CF and obesity ($P<0.001$), but not in healthy subjects. Only in obesity SR significantly decreased ($P<0.001$). In individual patients considerable changes in SR could be observed (+25% to -55%). Temperature of exhalate was significantly higher for CF (31.7 ± 0.9) than for healthy (30.7 ± 1.0 , $P<0.03$) and unselected patients (30.2 ± 0.8 , $P<0.001$). Using alternative methods to determine sR (sReff,sR0.5,sRmid), sR increased significantly with increasing ASC ($P<0.05$).

	Healthy	Unselected	Asthma	CF	Obesity
FEV1%p	107±12	81±25	93±17	65±24	85±26
ΔASC	2.4±3.4	5.3±3.7	6.1±2.6	14.0±12	11.0±3.5
ΔSR	0.00±0.08	0.02±0.11	0.03±0.17	0.02±0.13	-0.17±0.16

Conclusions: closing loops does not affect mean sRtot, but sRtot changed considerably in individual patients. The small observed differences in exhaled breath temperatures are unlikely to explain the wide open loops observed in CF patients. For sReff, sR0.5 and sRmid, sR increased closing loops. Choices made for ASC and sR considerably affect the results.