Table 6: Multiple regression coefficients (β) of the lung function parameters (*Y*)* versus anthropometric variables (in asymptomatic subjects)(*x*)

Lung function parameters	Sex (males)	Age (years)	Height (cm)	BMI (%)	Weight (Kg)	Costant	N	R^2	RSE
FVC	-0.049[b]	0.018	0.026[c]	0.015[c]	[0.011]	-2.042[c]	328	0.57	0.15
FEV_1	-0.042[b]	0.038	0.023[c]	0.017[c]	[0.013]	-1.907[c]	409	0.59	0.13
$FEV_{0.75}$	-0.034[c]	0.023[b]	0.022[c]	0.015[b]	[0.008]	-1.729[c]	494	0.59	0.12
$FEV_{0.5}$	-0.031[c]	0.024[b]	0.017[c]	0.011[b]	[0.001]	-1.311[c]	564	0.55	0.11
MEF_{75}	0.059	0.108[b]	0.046[c]	0.024[c]	[-0.113]	-3.385[c]	328	0.41	0.39
MEF_{50}	0.002	[0.024]	0.033[c]	[0.015]	[-0574]	-2.269[c]	328	0.29	0.32
MEF_{25}	0.012	[-0.005]	0.018[c]	[0.075]	[-0.538]	-1.152[c]	328	0.19	0.22

a = $p < 0.05$; b= $p < 0.01$; c = $p < 0.001$;
BMI = body mass index;
β = Multiple Regression Coefficient;
FVC = forced vital capacity;
FEV_1= forced expiratory volume in one second;
$FEV_{0.75}$ = forced expiratory volume in 3/4 of a second;
$FEV_{0.5}$ = forced expiratory volume in half a second;
MEF_{75} = instantaneous expiratory flow when 25% of FVC has to be expired
MEF_{50} = instantaneous expiratory flow when 50% of FVC has to be expired
MEF_{25} = instantaneous expiratory flow when 75% of FVC has to be expired
[ ] brackets variables = excluded by log-likelihood ratio test because collinear or NS and not influent.
* *Reference values were computed as y' = Summ(BX)+constant; the 5thpercentiles of reference values "as normality limit" was computed by subtracting to y' the 1.64* Root MSE*

in this age group; in children over 3 years of age the cooperation increases and the success rate becomes comparable to that of other studies based on samples of the general population [7,8,12-14].

A lower success rate was reported in studies conducted on patients with respiratory diseases or in the case of very restrictive exclusion criteria [15]. Moreover, we obtained tests with at least 3 acceptable curves and with a variability among the requested manoeuvres lower than 10% in almost all of the cooperative children.

A critical problem observed in our sample concerns the early termination of many tests; it could be partly explained in relation to the psychomotor maturation of children in which there is an early realization of an equal pressure point at a point less close to the distal airways [4,24-26].

Nevertheless, in many cases early termination may be influenced by methodological or software issues as well[27,28]. A limit of our study is to be discussed in the incentive software used. The candle blowing incentive software produced by Jaeger is a good tool for early training or for encouraging peak flow manoeuvres, but it is less suitable when a full forced expiration is required [15,27]. This problem was addressed and partly limited by using an interactive procedure to perform the test: the children were requested to imitate and reproduce the operator's manoeuvres. Tests with an abrupt cessation of expiration need to be analyzed with caution. Due to lack of consensus on exclusion criteria[12,27,29], the choice of setting a cut-off of 25% of the PEF was done in order to balance the opposing requirements of having the best quality control and recording the largest quantity possible of useful information. Early termination should be quantified and pointed out in the lung function tests reports and, when it occurs, FEVt/FVC and MEFX parameters might not be registered.

With regard to quality control and acceptance criteria, in agreement with other authors [15], a realistic approach

Table 7: Mean and 5th percentile as limit of normal value in asymptomatic subjects

Parameter	N	Mean	5thntil
FEV_1/FVC	285	0.96	0.88
$FEV_{0.75}$/FVC	311	0.92	0.83
$FEV_{0.5}$/FVC	327	0.81	0.69

FEV_1/FVC = ratio of forced expiratory volume in one second and forced vital capacity;
$FEV_{0.75}$/FVC = ratio of forced expiratory volume in 3/4 of a second and forced vital capacity;
$FEV_{0.5}$/FVC = ratio of forced expiratory volume in half a second and forced vital capacity;