

Freeflowmetry – the proposal of the new method of evaluation of the respiratory function phenotype

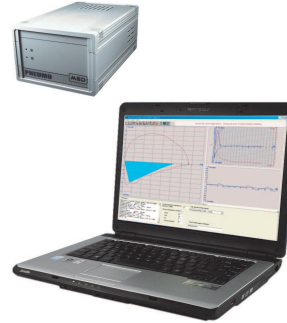
Zygmunt Podolec MD Department of Physiology and Mechanics of Breathing, Research and Development Centre MEDiNET, Cracow, Poland , e-mail: zpodolec@medinet.com.pl, www.medinet.com.pl

Introduction: Freeflowmetry is the new method of air flow and air volume measurement during forced and free breathing through the open or partially closed mouth or through the nose. Application of tight silicone mask connected with dPP® pneumotachograph allows adaptation of the natural resistance of the oral cavity in order to reduce the airway collapse.

Aim: The aim of the study was to compare the results of examination performed with dPP® pneumotachograph with mouthpiece, with the results of examination performed with silicone mask.

Method: The examinations were performed using PNEUMO® PC spirometer [abcMED, PL] in group of COPD patients [6 female and 4 male at age of 75±5 years] and in control group of [6 female and 2 male at age 73±6 years].

PNEUMO® PC spirometer



spirometric method:



dPP® pneumotachograph + mouthpiece

freeflowmetric method:



dPP® pneumotachograph + mask

Method of freeflowmetric measurements examination



Expiration through the open mouth



Expiration through the partially closed mouth



Expiration through the nose

Results:

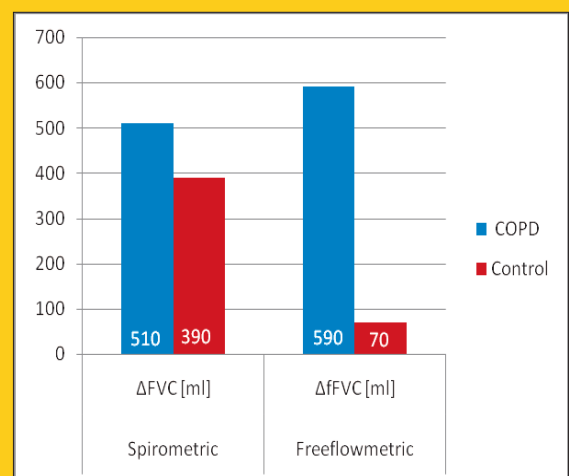
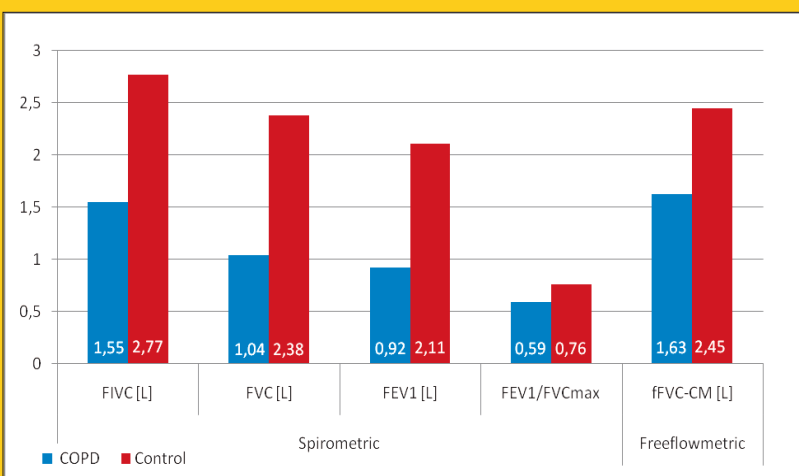
Method	Spirometric					Freeflowmetric	
	FIVC [L]	FVC [L]	Δ FVC [ml]	FEV1 [L]	FEV1/FVCmax	fFVC-CM [L]	Δ fFVC [ml]
COPD	1,55	1,04	510	0,92	0,59	1,63	590
Control	2,77	2,38	390	2,11	0,76	2,45	70
	NS	p<0,05	NS	p<0,05	NS	NS	p<0,05

Δ FVC = FIVC – FVC;

fFVC-CM – measurement of FVC through partially closed mouth; Δ fFVC = fFVC-CM – FVC

NS - no statistically significant difference

Influence of method of examination on results of spirometric and freeflowmetric parameters.



Conclusion: Freeflowmetric examination can contribute to the optimization and individual adaptation of treatment, determination of the phenotype of bronchial obstruction and/or airway collapse in common diseases such as COPD and asthma. Further studies are required for the comparison of freeflowmetric test results before and after physical exercise and before and after application of bronchodilator.