medical **products** research

INSPIRATION IN RESPIRATORY THERAPY

TPEP® 4

Medical device for the removal of airways secretions, for personalized specific exercises of respiratory rehabilitation, and for treatment of the lower and upper airways through nebuliser therapy and nasal washing.

TPEP® 4

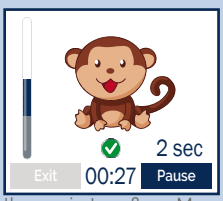
Chronic mucus hypersecretion is common in many respiratory diseases including COPD, cystic fibrosis and bronchiectasis, with a negative impact on both lung function and survival.

TPEP® 4 was designed with the idea of integrating, in a single device, diverse physiological functions and instruments that have proven effective in the field of respiratory physiotherapy, in particular, airways clearance.

Modularity	to guarantee a personalized treatment based on the patient's real needs.
Ease of use	with a single control knob and a colour display.
Visual feedback	for a correct and thus effective execution of the rehabilitative exercises.
Targets to be achieved during therapy	that can be set by the health personnel according to the patient's characteristics and state of health.
Recording	of the treatments carried out and elaboration of a final report.

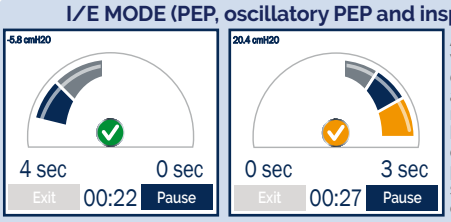
Operating modes

TPEP®



TPEP® (Temporary Positive Expiratory Pressure) patented technology is now a validated technique in the field of respiratory rehabilitation, and it has recently been introduced into the European guidelines for the bronchiectasis treatment. It is based on the temporary maintenance in the airways of a slight expiratory positive pressure (1 cmH2O), associated with a vibration of 42 Hz. The use of a very low PEP aims to combat the collapse of the peripheral airways, in complete safety, avoiding any risk of barotrauma and without penalizing the expiratory flow. Moreover, the pressure drop in the final phase of exhalation promotes the acceleration of the expiratory flow, exploiting the elastic recoil of the lung.

I/E MODE (PEP, oscillatory PEP and inspiratory resistance)



A specific valve, equipped with a system of resistors with different calibrated holes, allows to choose the resistances to be overcome both in the inspiratory and expiratory phases, in order to promote the drainage of secretions and the increase of lung volumes associated with greater ventilation homogeneity. The user is guided to perform the treatment correctly by the intuitive animation on the display. The pressure target thresholds, adjustable up to 20 cmH 2 O, can be set by the health operator to provide stimulation to the patient and facilitate them in correctly performing the therapy.

NEBULISER

Combined with rehabilitation treatment and airways clearance, it allows the pharmacological drug to reach and treat the deepest zones of the airways.
The ampoule Nebula Spacer with volumetric mouth mask provides a rapid nebulisation of the drug to deposit controlled micronized particles in the bronchi, optimising the amount of drug inhaled and minimising the dispersion and external contamination thanks to the integrated double Venturi and reservoir effect.

NASAL WASH

The micronized nasal wash Rinowash allows the treatment of the upper airways and provides physiologic and therapeutic irrigation of the nasal cavities. Rinowash produces a jet of micronized solution which ensures the particles deposition in the upper airways and favours the hydration, fluidification and mucus removal.

Clinical evidences

Comparison of effectiveness of temporary positive expiratory pressure versus oscillatory positive expiratory pressure in severe COPD patients
A. Nicolini, V. Mascardi, B. Grechi, M-Ferrari-Bravo, P. Banfi, C. Barlascini
The clinical respiratory journal, 2018, 12.3: 1274-1282

European Respiratory Society guidelines for the management of adult bronchiectasis
E. Polverino, P.C. Goeminne, M.J. McDonnell, S. Aliberti, S.E. Marshall, M.R. Loebinger ,M. Murris, R. Cantón, A. Torres, K. Dimakou, A. De Soyza, A.T. Hill, C.S. Haworth, M. Vendrell, F.C. Ringshausen, D. Subotic, R. Wilson, J. Vilaró, B. Stallberg, T. Welte, G. Rohde, F. Blasi, S. Elborn, M. Almagro, A. Timothy, T. Ruddy, T. Tonia, D. Rigau, J.D. Chalmers
European Respiratory Journal, 2017, 50.3: 1700629

Comparing airways clearance techniques in chronic obstructive pulmonary disease and bronchiectasis: positive expiratory pressure or temporary positive expiratory pressure? A retrospective study
F. D'Abrosca, B. Garabellia, G. Savio, A. Barison, L. Appendini, L.V.F. Oliveira, P. Baiardi, B. Balbi
Brazilian journal of physical therapy, 2017, 21.1: 15-23

Effectiveness of temporary positive expiratory pressure (T-PEP) at home and at hospital in patients with severe chronic obstructive pulmonary disease
V. Mascardi, B. Grecchi, C. Barlascini, P. Banfi, A. Nicolini
Journal of thoracic disease, 2016, 8.10: 289

Short-term effects of three slow expiratory airway clearance techniques in patients with bronchiectasis: a randomised crossover trial.
B. Herrero-Cortina, J. Vilaró, D. Martí, A. Torres, M. San Miguel-Pagola, V. Alcaraz, E. Polverino
Physiotherapy, 2016, 102.4: 357-364

Comparison of intermittent positive pressure breathing and temporary positive expiratory pressure in patients with severe chronic obstructive pulmonary disease.
A. Nicolini, E. Mollar, B. Grecchi, N. Landucci
Archivos de Bronconeumologia (English Edition), 2014, 50.1: 18-24

Efficacy of temporary positive expiratory pressure (TPEP) in patients with chronic mucus hypersecretion. THE UNIKO PROJECT: a multicentre randomised trial.
E. Venturelli, E. Crisafulli, A. DeBiase, D. Righi, D. Berrighi, P.P. Cavicchioli, G. Vagheggini, F. Dabrosca, B. Balbi, M. Paneroni, L. Bianchi, M. Vitacca, V. Galimberti, M. Zaurino, G. Schiavoni, A. Iattoni, N. Ambrosino, E. M. Clini
Clinical rehabilitation, 2013, 27.4: 336-34

Technical data

CE 1936

Power Supply:	AC 230 V – 50 Hz
Electrical Absorption:	150 VA
Electrical protection class:	II
Applied part type:	BF
IP protection grade:	IP21
Fuse:	250V T1A
Dimension and weight:	20.5 x 22 x 15 cm - 3 Kg
Noise level:	<60 dBA (1m distance with nebulisation kit, frontal position)
Max pressure of the compressor:	2,3 bar
Operating flow of the compressor:	10 l/min
Storage volume of ampoule:	8 ml
Nebulisation flow with ampoule:	0,3 ml/min
MMD (*) of drug particles with ampoule:	1,9 µm
Storage volume of Rinowash:	15 ml
Nebulisation flow with Rinowash:	2 ml/min
MMD (*) of drug particles with Rinowash:	18 µm

(*) The reported MMAD value was measured with API AEROSIZER MACH 2 and it is referred to the use of a solution with physical characteristics similar to the physiological one (0,9% NaCl). Thus, it can change according to the used drug.

Medical Products Research Srl states that TPEP® 4 is compliant with the Directive DM 93/42/EEC, class IIa.
The safety of the device is verified in accordance with the issued international standards.

Information intended for healthcare professionals

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Rev. 1