



EDITORIAL

Inhale and move, move; again, move!



It is well known that the benefits of respiratory rehabilitation (RR) are linked to increased exercise tolerance, improved symptoms and dyspnoea, reduced exacerbations, improved QoL and improved well-being.¹

Despite the undisputed utility, RR is underutilized, it is often an episodic and temporary component, optional and additive care, with great variability in programs and structures, sometimes expensive and inaccessible with insufficient funding. Among the cornerstones of rehabilitation we remember the physical training and the stimulus to physical activity (PA) that can be defined as any movement of the body produced by the musculoskeletal system that requires energy expenditure.²

It can be divided into occupational, domestic and leisure activities. In chronic obstructive pulmonary disease (COPD) a low level of PA reported by patients is closely related to the worsening of respiratory function, the frequency of hospitalizations and ultimately to mortality. The preventive cardiovascular effects, the anti-inflammatory effects, the motivational, psychological effects, the improvement of adherence to drugs are possible explanations of the possible protective effect of PA. Physical inactivity is, on the other hand, an independent risk factor for many chronic diseases.³

In addition, a reduced risk of hospitalization in COPD patients has been described if there is an improvement in the number of steps greater than 600.⁴

An improvement in stress tolerance is not always linked to the improvement of PA (number of steps, energy expenditure, etc.): the factors related to PA are many (physiological, motivational, climatic, social, familiar, geographical, linked to personal history in youth, linked to education, to the way in which PA is carried out, related to the available time during the day). The attitudes of chronic respiratory patients to PA can, in fact, be divided into: (a) I can not and I do not, (b) I can but I do not, (c) I can and I do.

Monitoring the PA takes advantage of qualitative tools such as direct observation, the use of diaries, questionnaires or specific scales and quantitative tools such as motion sensors (podometers and accelerometers) or activity monitors. Motion sensors are tools used to detect body movements that can objectively quantify the PA detected in a given period of

time. Pedometers are small, simple and inexpensive tools. However, they do not provide information on the type of PA performed, on the time spent at different levels of activities and on the intensity with which they are performed. The pedometer can for example underestimate the amount of PA in particular in patients with a very slow pace.⁵

A systematic review of the literature⁶ conducted with the aim of verifying the association between the use of the pedometer and the health outcomes, has evaluated how this intervention is able to significantly improve PA by decreasing the body mass index and blood pressure in healthy adults or with chronic conditions as in sedentary elderly patients. In this context, the use of technology combined with advanced communication systems (through the use of internet or data transmission at a distance) identifies the intervention in an area defined as “tele-rehabilitation”.^{7–10}

In light of this evidence, the combination of counseling/reinforcement activities aimed at increasing PA with the use of a pedometer is a promising “good clinical practice” as shown in the interesting work of Widyastuti et al.¹¹ The aforementioned work¹¹ stimulates the rethinking on which is the ideal setting for rehabilitation, in particular for maintenance programs. Home-based training programs have shown benefits in exercise tolerance, reduced dyspnea, reduced emotion, increased quality of life, reduced exacerbations, hospitalizations, days spent in hospital, increasing muscle strength, resistance to stress and the ability to perform activities of daily life. These programs were usually supervised, combined, outpatient, sometimes home-based, with reinforcement by phone calls, offered immediately after hospitalization, conducted by self-help associations, in community, in primary care settings, led by nurses and respiratory therapists.

The study by Widyastuti et al.¹¹ has some methodological weaknesses because it is not clear the additive and synergic components of drugs, the adherence to the prescribed drugs, the behavioral component, the phenotype of the studied patients. Furthermore, it is not clear that real activity performed by patients at home: for example, the defined “un-supervised” group actually received 6 home visits and 3 outpatient visits, the cost analysis appears to be rather approximate, the comparison of the steps count between

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the two groups starts with different times of pedometer use. The non-superiority of the group treated as an "outpatient" can be linked to a comparison with a mean value on the six-minute test which, on small numbers, can be confusing: in this regard, the same authors show the clear superiority of the "usual" group when comparing the number of patients who reach a significant minimum value.

Physical activity is determined by the patient's physiology, environment and attitudes, is strongly correlated with the behavior of the subject and with the cultural, social, climatic and emotional barriers that may be present in everyday life: what is needed is to reduce these limitations.

The future of research and clinical activity will have to be oriented towards the recognition, application and accessibility of RR programs, identifying the correct setting for the correct patient.

The availability of different settings, programs, intensity, supervision, technology used in a synergic, appropriate and reasoned way to the single pathology, to the individual patient, to the individual patient's historical moment is surely the winning card to offer the best service with the lowest costs and maximum customization.

In short, what we hope is increasingly a "participatory medicine" so that our patients are always less passengers and more and more responsible drivers for their health. The great challenge is the maximum adherence to drugs and physical activity. Stress your patients every day saying: Inhale for moving!

References

1. Rochester CL, Vogiatzis I, Holland AE, Lareau SC, Marciniuk DD, Puhan MA, et al. on behalf of the ATS/ERS Task Force on Policy in Pulmonary Rehabilitation An Official American Thoracic Society/European Respiratory Society Policy Statement: Enhancing Implementation, Use, and Delivery of Pulmonary Rehabilitation. *Am J Respir Crit Care Med*. 2015;192:1373–86.
2. Physical Activity Guidelines for Americans. Office of Disease Prevention & Health Promotion, US Department of Health and Human Services; October 2008. <http://www.health.gov/paguidelines> [accessed 11.01.13].
3. O'Donovan G, Blazeovich AJ, Boreham C, Cooper AR, Crank H, Ekelund U, et al. The ABC of Physical Activity for Health: a consensus statement from the British Association of Sport and Exercise Sciences. *J Sports Sci*. 2010;28:573–91.
4. Demeyer H, Burtin C, Hornikx M, Camillo CA, Van Remoortel H, Langer D, et al. The minimal important difference in physical activity in patients with COPD. *PLOS ONE*. 2016. <http://dx.doi.org/10.1371/journal.pone.0154587>. April 28.
5. Le Masurier GC, Tudor-Locke C. Comparison of pedometer and accelerometer accuracy under controlled conditions. *Med Sci Sports Exerc*. 2003;35:867–71.
6. Bravata DM, Smith-Spangler C, Sundaram V, Gienger AL, Lin N, Lewis R, et al. Using pedometers to increase physical activity and improve health: a systematic review. *JAMA*. 2007;298:2296–304.
7. Hospes G, Bossenbroek L, Ten Hacken NH, van Hengel P, de Greef MH. Enhancement of daily physical activity increases physical fitness of outclinic COPD patients: results of an exercise counseling program. *Patient Educ Couns*. 2009;75:274–8.
8. Wewel AR, Gellermann I, Schwertfeger I, Morfeld M, Magnussen H, Jörres RA. Intervention by phone calls raises domiciliary activity and exercise capacity in patients with severe COPD. *Respir Med*. 2008;102:20–6.
9. Moy ML, Janney AW, Nguyen HQ, Matthes KR, Cohen M, Garshick E, et al. Use of pedometer and Internet-mediated walking program in patients with chronic obstructive pulmonary disease. *J Rehabil Res Dev*. 2010;47:485–96.
10. Moy ML, Weston NA, Wilson EJ, Hess ML, Richardson CR. A pilot study of an Internet walking program and pedometer in COPD. *Respir Med*. 2012;106:1342–50.
11. Widyastuti K, Makhabah DN, Rima Setijadi A, Sutanto YS, Suradi, Ambrosino N. Benefits and costs of home pedometer assisted physical activity in patients with COPD. A preliminary randomized controlled trial. *Pulmonology*. 2018 [in press].

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