

# Improvement of FEV1 percentage values in COPD attributed to respiratory exercises at home. Report of a case.

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ABSTRACT

A 73-year-old male patient, Peruvian, of Japanese ancestry, with a diagnosis of Chronic obstructive pulmonary disease (COPD), and a history of having smoked 47 packs a year, which, after a follow-up of 6,7 years, shows a steady improvement in the values of forced expiratory volume in the first percentage second (FEV1%). The improvement is attributed to daily breathing exercises performed by the patient at home, in addition to the use of medication for COPD.

**Key words:** Chronic obstructive pulmonary disease. Physical activity. Pulmonary function. Pulmonary rehabilitation at home.

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INTRODUCTION

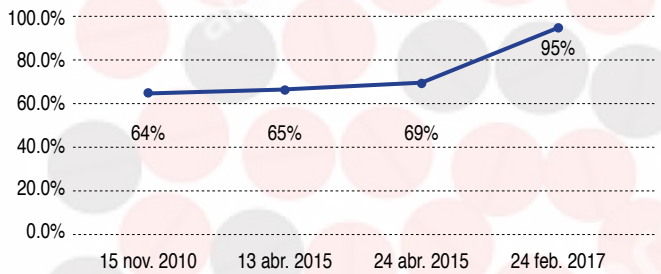
The chronic obstructive pulmonary disease is an entity that has become very important in recent years because it is one of the leading causes of death worldwide<sup>1</sup>, due to the high costs of health services it causes and because it is highly incapacitating for those who suffer from it<sup>2</sup>, and Peru is no indifferent to this pathology and its complications<sup>3</sup>. One of the aspects that is related to the disease deterioration is the reduction of the forced expiratory volume in the first percentage second (FEV1%), which is associated with exacerbations and mortality<sup>4,5,6</sup>. The change in FEV1% is higher in smokers than in healthy people, however, in these ones there is also a progressive decrease in that value<sup>7</sup>.

CLINICAL CASE

A 73-year-old male patient, Peruvian, of 100% Japanese ancestry, married and whose occupation has always been the agriculture. He has been diagnosed with COPD since 2005 and is regularly treated in the department of Pneumology in the Clinica Internacional. He has a cough and shortness of breath only when he makes great efforts. He does not mention other symptoms, such as expectoration or thoracic pain. In the history, he declares to have smoked from 15 to 62 years old, on average 20 tobacco cigarettes per day, making a total of 47 packs a year; he does not mention another important exposure, except living and having always worked very close to the Jorge Chávez International Airport, in the Constitutional Province of El Callao. In addition, he has history of hypertension, diabetes mellitus 2, hypercholesterolemia, benign prostate hypertrophy, osteoporosis and atrophy of one of the kidneys; all of these entities remained controlled until the last assessment. On physical examination, his vital signs were: temperature 36.1 °C, blood pressure 132/68 mmHg, heart rate 58 bpm, saturation by pulse oximetry 98%, respiratory rate 15 bpm, weight 61 kg, and height 166 cm. In thorax and lungs, an increase of the anteroposterior diameter was observed; on auscultation, vesicular murmur was

globally reduced; and, on percussion, it was found hyperresonant. The rest of the physical examination was normal. In the complementary analyses, he presented total eosinophil values in 410 cells / µl, the rest of the analytical assess that included hemogram, liver and lipid profile, urine, glucose, urea, creatinine and electrolytes were within the normal ranges.

In the assessment by pulmonary function tests, the favorable evolution of the FEV1% values sustained over time was highlighted (see Figure 1). The follow-up of FEV1% values was made in a period of 6.3 years. Likewise, the patient reports very few symptoms and an exacerbation in the year prior to the last visit that required ambulatory treatment with oral antibiotics and corticosteroids for 3 and 5 days, respectively. The patient attributed his favorable health status to his breathing exercises from Monday to Saturday, when he gets up for 20 to 30 minutes. The exercises were recommended and explained by the pneumologist and he has made them since 2009. The exercise routine consisted of performing the largest possible thoracic amplexation, followed by a slow, prolonged and firm exhalation. The patient has regularly used LABA / ICS maintenance medication since 2005.



**Figure 1.** FEV1% values of our case. All the values are taken after bronchodilator use (400 µg of salbutamol), the spirometry taken had to meet the ATS / ERS quality criteria. All percentage values were calculated by using the parameters of GLI-2012. The first evaluation showed a value of FEV1 / FVC of 0.68 after use of B2 agonist.

DISCUSSION

The importance of pulmonary rehabilitation is understood and widely recommended in specialized services that treat patients with COPD<sup>8,9</sup>. However, its use is far below what it should be, even in developed countries.<sup>10</sup> There are many causes why patients do not complete rehabilitation programs<sup>11,12</sup>. It is important, therefore, to motivate the patient and, thus, prevent desertions. In this case, the patient always reported good adherence to breathing exercises, to his periodic controls and to the constant use of maintenance medication.

The rehabilitation programs not only focus on the exercises, which are mainly aerobics and aimed at improving the quality of breathing, but they also educate patients, confront them with their fears (many of them no longer want to perform physical activities), provide them with constant professional support, help them to comprehensively improve their quality of life, and, above all, to let them to know that they are the protagonists in control of their disease<sup>13</sup>.

Home rehabilitation for patients with COPD<sup>14</sup> uses minimal resources and is a good alternative for patients who do not have access to pulmonary rehabilitation programs. The present case is one of the few cases in which there is evidence of improvement of objective parameters, and even when in the vast majority we do not see such results, it is worth that, each day and in each patient evaluated, the best possible results are tried to be obtained.

HELP OR SOURCES OF FINANCE  
None.

CONFLICTS OF INTEREST  
The authors do not report conflicts of interest regarding the present manuscript.

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