



# PHYSICAL ACTIVITY IS IMPORTANT IN PATIENTS WITH COPD



## Activity-related breathlessness is a characteristic feature of Chronic Obstructive Pulmonary Disease (COPD)



Over 80% of patients with COPD report breathlessness, which may be moderate-to-severe in around half of patients<sup>1</sup>

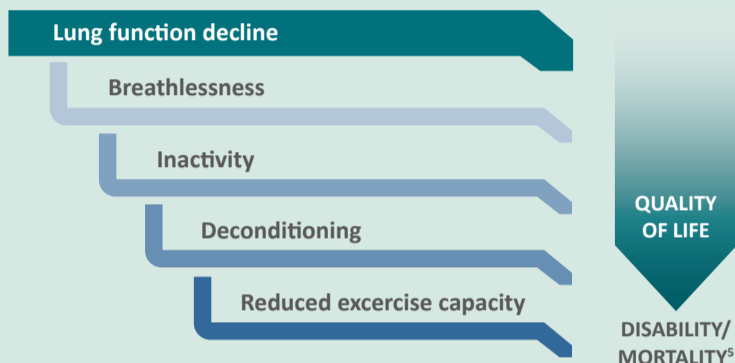


Breathlessness during physical activity is experienced by the majority of patients living with COPD<sup>2</sup>



Breathlessness begins early - patients with GOLD stage 1 and 2 COPD exhibit signs of breathlessness on exertion<sup>3</sup>

## Breathlessness can lead to a downward spiral of increased inactivity and reduces quality of life<sup>4</sup>



### Increased levels of physical inactivity are associated with:



Worsening of airway obstruction<sup>5</sup>



Increased likelihood of hospitalization (including readmission)<sup>6,7</sup>



Poorer health-related quality of life<sup>8</sup>



Increased mortality<sup>9</sup>

## Improving physical activity levels is key to improving both the pulmonary and systemic manifestations of COPD



The GOLD 2019 Strategy recommends regular physical activity for patients with all severities of COPD, as part of pulmonary rehabilitation<sup>10</sup>



Approaches to improve physical activity include both pharmacological and non-pharmacological interventions<sup>11</sup>



Benefits of physical activity include:

- ✓ Increased inspiratory capacity<sup>12</sup>
- ✓ Improved quality of life<sup>8</sup>
- ✓ Reduced breathlessness<sup>8</sup>
- ✓ Reduced hospitalizations<sup>7</sup>
- ✓ Increased exercise tolerance<sup>13</sup>
- ✓ Reduced all-cause mortality<sup>14</sup>

## Tiotropium/Olodaterol (T/O) trials have focused on major components of COPD, including hyperinflation, breathlessness and exercise capacity



## Clinical evidence on exercise tolerance of Tiotropium/Olodaterol (T/O)

### OTIVATO<sup>®</sup>

T/O reduces breathlessness before, during and after activity compared with Tiotropium (T) after 6 weeks of treatment (8,5% \*p<0,05)<sup>15</sup>



### MORACTO<sup>®</sup> 1+2

T/O increases cycling endurance time compared with placebo after 6 weeks of treatment (17% \*p<0,0001)<sup>16</sup>



### PHYSACTO<sup>®</sup>

T/O ± physical activity increased exercise endurance time vs. placebo after 8 weeks of treatment as a primary endpoint (46% \*p<0,001)<sup>17</sup>



### TORRACTO<sup>®</sup>

Endurance time during cycling test increased with T/O vs. placebo after 12 weeks of treatment (14% \*p<0,021)<sup>18</sup>



1. Müllerová H, Lu C, Li H, Tabberer M. Prevalence and burden of breathlessness in patients with chronic obstructive pulmonary disease managed in primary care. PLoS One. 2014;10(9):e85540.  
 2. Dobbels F, de Jong C, Drost E, Elberse J, Feridou C, Jacobs L, et al. The PROactive innovative conceptual framework on physical activity. Eur Respir J. 2014;44(5):1223-33.  
 3. O'Donnell DE, Maltais F, Porszasz J, Webb KA, Albers FC, Deng Q, et al. The continuum of physiological impairment during treadmill walking in patients with mild-to-moderate COPD: patient characterization phase of a randomized clinical trial. PLoS One. 2014;1(9):e96574.  
 4. Reardon JZ, Lareau SC, ZuWallack R. Functional status and quality of life in chronic obstructive pulmonary disease. Am J Med. 2006;119(Suppl 1):32-7. Review.  
 5. Waschki B, Kirsten AM, Holz O, Mueller KC, Schaper M, Sack AL, et al. Disease Progression and Changes in Physical Activity in Patients with Chronic Obstructive Pulmonary Disease. Am J Respir Crit Care Med. 2015;192(3):295-306.  
 6. Pitta F, Troosters T, Probst VS, Spruit MA, Decramer M, Gosselink R. Physical activity and hospitalization for exacerbation of COPD. Chest. 2006;129(3):536-44.  
 7. Garcia-Aymerich J, Lange P, Benet M, Schnohr P, Antó JM. Regular physical activity reduces hospital admission and mortality in chronic obstructive pulmonary disease: a population based cohort study. Thorax. 2006;61(9):772-8.  
 8. Esteban C, Quintana JM, Aburto M, Moraza J, Egorro M, Pérez-Izquierdo J, et al. Impact of changes in physical activity on health-related quality of life among patients with COPD. Eur Respir J. 2010;36(2):292-300.  
 9. Waschki B, Kirsten A, Holz O, Müller KC, Meyer T, Watz H, et al. Physical activity is the strongest predictor of all-cause mortality in patients with COPD: a prospective cohort study. Chest. 2011;140(2):331-342.  
 10. Global Initiative for Chronic Obstructive Lung Disease. Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease. 2019 Report [cited 2019 July 12]. Available from: <http://goldcopd.org>.

11. Watz H, Pitta F, Rochester C, Garcia-Aymerich J, ZuWallack R, Troosters T, et al. An official European Respiratory Society statement on physical activity in COPD. Eur Respir J. 2014;44:1521-1537.  
 12. Spielmanns M, Boeselt T, Nell C, Eckhoff J, Koczulla RA, Magnet FS, et al. Effect of Pulmonary Rehabilitation on Inspiratory Capacity During 6-min Walk Test in Patients With COPD: A PROSPECTIVE CONTROLLED STUDY. J Cardiopulm Rehabil Prev. 2018;38(4):264-268.  
 13. Garcia-Aymerich J, Serra I, Gómez FP, Farrero E, Balcells E, Rodríguez DA, et al. Physical activity and clinical and functional status in COPD. Chest. 2009;136(1):62-70.  
 14. Cheng SWM, McKeough Z, Allison J, Dennis S, Hamer M, Stamatakis E. Associations of total and type-specific physical activity with mortality in chronic obstructive pulmonary disease: a population-based cohort study. BMC Public Health. 2018;18(1):268.  
 15. Maltais F, Aumann JL, Kirsten AM, Nadreau É, Macesic H, Jin X, et al. Dual bronchodilation with tiotropium/olodaterol further reduces activity-related breathlessness versus tiotropium alone in COPD. Eur Respir J. 2019;28:53(3).  
 16. O'Donnell DE, Casaburi R, Frith P, Kirsten A, De Sousa D, Hamilton A, et al. Effects of combined tiotropium/olodaterol on inspiratory capacity and exercise endurance in COPD. Eur Respir J. 2017;19:49(4).  
 17. Troosters T, Maltais F, Leidy N, Lavoie KL, Sedeno M, Janssens W, et al. Effect of Bronchodilation, Exercise Training, and Behavior Modification on Symptoms and Physical Activity in Chronic Obstructive Pulmonary Disease. Am J Respir Crit Care Med. 2018;15:198(8):1021-1032.  
 18. Maltais F, O'Donnell D, Gáldiz Iturri JB, Kirsten AM, Singh D, Hamilton A, et al. Effect of 12 weeks of once-daily tiotropium/olodaterol on exercise endurance during constant work-rate cycling and endurance shuttle walking in chronic obstructive pulmonary disease. Ther Adv Respir Dis. 2018;12:1753465818755091.