# Sustained Intermittent hypoxaemia as a component of COPD pathophysiology: which effect on skeletal muscle?

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**Introduction:** Chronic Obstructive Pulmonary Disease (COPD) is associated to systemic comorbidities including a skeletal muscle dysfunction. The etiology of COPD muscle dysfunction is multifactorial and involves episodic desaturations leading to a persistent hypoxaemia. Underlying mechanisms need to be clarified but interestingly, an impaired muscle regeneration was suggested.

**Methods:** To decipher the specific effect of episodic hypoxaemia on skeletal muscle we used a reductionist mice model exposed to Sustained Intermittent Hypoxaemia (SIH ; $FiO_2$ : 10%, 8h/day) in a device optimized (i) to avoid movement restriction, (ii) to ensure an homogenous distribution of gaseous flow. Moreover, we limited antioxidant excess by using a specific diet. Muscle structural changes and the expression of myogenic markers are currently investigated in fast and slow-twitch muscles at early and late timepoints.

**Results:** Our preliminary data on SIH mice showed a decreased expression of the gene encoding Myogenin (*Myog*) at 7 days with a return to control level at 35 days in the *gastrocnemius* muscle. A this timepoint, the Cross-Sectional Area (CSA) of the *soleus* muscle is slightly reduced in SIH mice.

**Conclusions:** We optimized a model allowing to study the specific effect of SIH on skeletal muscle while limiting confounding factors. In this model, our first results suggest an early and transient alteration of myogenic factor expression as well as a slight atrophy taken place over time. Further studies are now needed to assess the contribution of a regeneration defect to hypoxeamia-mediated muscle dysfunction and to investigate underlying molecular mechanisms.