The AlaxoStent: Improvement of NO-induced microrheological parameters and oxygen uptake during exercise?

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The aim of the study was to investigate the influence of the intranasal AlaxoStent (Alaxo GmbH) during exercise on NO synthesis, NO exhalation, RBC deformability and oxygen uptake.

The parameters were measured in healthy men before and after a 45 min training on a cycle ergometer. Intensity of the intervention corresponded to individual 2mmol, 3mmol and 4mmol lactate threshold with a duration of 15 min per threshold. Spirometric, microrheological and NO parameter were determined for oral, nasal and stent breathing. RBC deformability was measured by ektacytometry and maximum deformability (EImax) was calculated. RBC, plasma and exhaled NO were determined by chemiluminescence detection. Oxygen uptake and respiratory rate were determined via spirometry.

Exhaled NO significantly decreased after exercise with nasal and stent breathing, whereas plasma and RBC NO remained unaltered. RBC deformability improved at 2mmol lactate during oral breathing, whereas nasal and stent breathing showed no changes. EImax increased after 2mmol lactate with stent, but decreased at 3mmol and 4mmol lactate with nasal breathing, and remained unaffected in the oral breathing setting. Respiratory rate for same oxygen uptake was slightly improved with stent breathing compared to oral and nasal breathing.

The AlaxoStent economizes oxygen uptake during exercise without major effects on RBC deformability or NO synthesis.