

## **PROJECT REVIEW**

### **“The Effects of Short-Term Use of Inhaled Salbutamol on Anaerobic and Aerobic Exercise Performance”**

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The purpose of this study is to determine the effects of short-term use of inhaled salbutamol on aerobic and anaerobic exercise performance.

To investigate the effects of inhaled salbutamol on athletic performance, 30 competitive athletes will volunteer to participate in this randomized, double-blind, cross-over study. Only subjects who have not previously been diagnosed with asthma will be recruited. All subjects will be screened for susceptibility to bronchospasm using a eucapnic voluntary hyperpnea (EVH) test and stratified based on this result. This project will consist of two randomized three week treatment blocks (salbutamol and placebo) separated by a three week washout period. Salbutamol treatment will consist of inhalation of 200 µg three times daily for 21 consecutive days. Prior to and at the end of each treatment block, subjects will be participating in a 2-day test battery. Day 1 will consist of tests of basic anthropometry, pulmonary function, VO<sub>2</sub>max, anaerobic performance (Wingate), and vertical jump. Day 2 will consist of a 20km cycling time-trial performance test. For both post time-trial tests, subjects will take the last inhalation of salbutamol or placebo 15 minutes prior to the start. Results will be compared between and within treatments, as well as between subjects with negative and positive EVH tests. The results of this study will determine whether the continued use of inhaled salbutamol over 3 weeks influences aerobic and anaerobic exercise performance in competitive athletes. Additionally, the results of this study will give insight into whether or not there are differing effects based on susceptibility to bronchospasm.

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### **Results and Conclusions**

The intention of this project was to address whether or not short term use of inhaled salbutamol (SAL) had an ergogenic effect on aerobic and anaerobic exercise performance. The results clearly indicate that in this group of subjects there is no performance enhancement when inhaled SAL was used in therapeutic doses over a period of about 3 weeks.

This is the first examination of the effects of continued use of inhaled SAL on performance in competitive athletes. The project utilized both sport specific tests of performance and traditional lab tests in a larger sample size ( $n=36$ ) than most ( $n=8-16$ ). In none of the tests was there an improved performance of SAL over placebo (PLA). This project fills a significant gap in our understanding of the effects of inhaled SAL and its use in a sporting population. As a result, it also raises more questions that will assist in directing future research efforts.

The demonstrated incidence of compromised lung function in this study is somewhat troubling. Although a small number of cyclists and triathletes were recruited for this project, there appears to be a significant portion of this athlete population competing with impaired airway function unbeknownst to them. One potential mechanism for elevated airway hyperresponsiveness in this population is the increased exposure to pollutants. Exploratory and longitudinal research is required to further elucidate the impact pollution may have in endurance athletes. Additionally, further research is required to determine if SAL may impact performance in polluted environments.

In conclusion, this project demonstrated a lack of an ergogenic effect of short term use of inhaled SAL on either aerobic or anaerobic exercise performance in trained cyclists.