



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

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<b>Project Title</b> Lung Capacity: Is There a Difference in Athletes and Non-Athletes?	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of my experiment was to determine if athletes have a larger lung capacity than non-athletes. I hypothesized athletes, because of their consistent aerobic activity, would exhibit a significantly greater lung capacity. <b>Methods/Materials</b> I tested eighty sixth-grade students: 20 male athletes, 20 male non-athletes, 20 female athletes, and 20 female non-athletes. Each subject inhaled as much as they could and then exhaled into a balloon as much as they could. The experimenter then measured the diameter of the balloon to quantify the lung capacity of the subject. Each subject completed three trials, with adequate rest in between each trial. <b>Results</b> Both the male and female athletes blew the balloon up on the average over one inch larger than the non-athletes to validate my hypothesis. There was a seven percent increase in lung capacity for female athletes when compared to female non-athletes and a four percent increase for male athletes when compared to male non-athletes of the same age. Constant aerobic activity also affected the consistency of lung capacity as male and female athletes' measurements ranged 6.3 inches and 4.8 inches respectively while male and female non-athletes' scores ranged 9.5 inches and 16.0 inches respectively. <b>Conclusions/Discussion</b> My experiment proved a significant advantage to exercise for both genders. My averages show consistent aerobic activity leads to a larger lung capacity for both males and females, eleven to twelve years of age. A greater lung capacity leads to a more efficient respiratory system to distribute oxygen throughout the body, especially important while exercising.	
<b>Summary Statement</b> My experiment taught me that constant and consistent exercise will improve the efficiency of a vital organ, our lungs, and that all people, even young subjects, need to work this organ along with the rest of their body for a healthier life.	
<b>Help Received</b> Parents bought the balloons used in the experiment. The sixth grade teachers allowed me to test during P.E. times. My teacher taught me how to use Excel to analyze the data collected.	