



CALIFORNIA SCIENCE & ENGINEERING FAIR 2018 PROJECT SUMMARY

| | |
|---|------------------------------------|
| Name(s) Rohan R. Datir | Project Number 38572 |
| Project Title A Breathing Solution Which Does Not Cost Any Money, but Can Cure Millions of Humans Who Suffer from Respiratory Issues | |
| Abstract Objectives/Goals Respiratory illnesses and other such medical complications in humans account for a loss of \$58 billion annually, and nearly 7% of all deaths are accounted to respiratory illnesses, including but not limited to: COPD, Asthma, Pneumoconiosis, and Pulmonary Sarcoidosis. I hypothesize that the use of respiratory exercises in a specific order will dilute the symptoms of such medical complications, potentially saving \$58 billion annually and preventing 7% of deaths. Methods/Materials Data was collected from 25 subjects, 20 of which would be the Experimental Group (Group A: 14, Group B: 6), and 5 controls. Both Group A and B were given 4 respiratory exercises, but Group A conducted Sound Breath, Breath Retention, Bellows Breath, and Deer Seal in that specific order while Group B did the same exercises in no particular order. The Control Group was asked to not exercise. A spirometer measured the inhalation in Cubic Centimeters per Second (cc/sec). Results Group A and B expressed an increase of 80 cc/sec and 60 cc/sec respectively while C showed a decrease of 20 cc/sec. Also, a 116.22% mean change in cc/sec was observed in the Experimental Group while the Control Group showed a 2% mean decrease in cc/sec. The Mean Absolute Deviation (MAD) was 19.871 for Experimental and 6.1 for Control. Subsequent analysis found the statistical significance to be between 0.05 and 0.02, conclusively proving statistical significance. This proves the hypothesis correct. Conclusions/Discussion This study is the first of its kind to incorporate the use of respiratory exercises and its effects on the diaphragmatic strength with the order in which such respiratory exercises were conducted daily in addition to the calculations of their statistical significance. Respiratory exercises have the potential to save \$58 billion in the US and prevent 7% of annual deaths. In addition, such exercises can alleviate the symptoms of respiratory illnesses. Subsequent analysis of the results of this study have found there to be a 116.22% change of cc/sec in the Experimental Group as well as a 2% decrease in cc/sec of the Control Group. Furthermore, the MAD of this experiment data was 19.871 for the Experimental and 6.1 for the Control, leading to the statistical significance between 0.05 and 0.02, proving the data collected from this experiment statistically significant. These findings have great potential to change the world. | |
| Summary Statement This analysis, using 25 participants, has proven with statistical significance a 116.22% change in cc/sec of the Experimental Group while expressing a 2% decrease in cc/sec of the Control Group, potentially saving \$58 billion annually in th | |
| Help Received My STEM academy Director Dr. Kim Lawe (Ed. D.) & teachers provided guidance as needed. Dr. Prajakta Deshpande (M.D.) and Dr. Abhijit Deshpande (M.D.) reviewed my analysis. | |