



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

<b>Name(s)</b> <b>Deborah E. Scatterday</b>	<b>Project Number</b> <b>J1020</b>
<b>Project Title</b> <b>Physical Activity and the Human Diving Reflex</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> In performing my investigation, I hypothesized that exercise blunts the bradycardic response of the diving reflex, thus slowing the heart rate further. I desired to explore the impact of physical activity on the human diving reflex. I sought to confirm the usefulness and the validity of the diving reflex, and to study how our awareness of this innate survival mechanism could actually protect us. I also wanted to answer common questions about physical activity and our hearts ability to respond to a change in environment, such as, submersion in water.</p> <p><b>Methods/Materials</b> I gathered my materials which were 3 buckets of water, 8 towels, and a stopwatch, and a group of 8 teenage female subjects. I took their pulse at rest, then after their head being submerged in water. Then I took their pulse after five minutes of physical activity, and again after a second submersion after the physical activity. By variable was the heart rate after physical activity, my control was the heart rate at rest.</p> <p><b>Results</b> The heart rate at rest for the individuals I tested was 80 beats per minute. After the first submersion it was 58 beats per minute. This was a 27.5% decrease. After physical activity, the average heart rate was 107 beats per minute, and after the second submersion, the average heart rate was 89 beats per minute. This is a 16.8% decrease.</p> <p><b>Conclusions/Discussion</b> My investigation did not support my hypothesis, though the results of my experiment were normal human reactions because in both trails, the heart rate did drop after submersion in the head in water- the parasympathetic system responding. I think my experiment is important because it confirmed that the diving reflex does significantly slow down the heart rate after the heads submersion. It is crucial for us to be aware of our body's response to certain situations and how our actions impact them.</p>	
<b>Summary Statement</b> My project tested the effect of physical activity on the human diving reflex, our bodies reaction to submersion in water.	
<b>Help Received</b> My parents, as doctors, aided in supervising my investigation and providing useful background information.	