



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Holly B. Spurgeon	Project Number J0325
Project Title Who Has Short Legs? We Have Short Legs!	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective was to learn if the leg length of female gymnasts affects how long they can hold a standard handstand. My hypothesis was that female gymnasts with a 67-73 centimeter leg length and female gymnasts with an 84-90 centimeter leg length both do a standard handstand, then the gymnasts with the 67-73 centimeter leg length will be able to hold the handstand for approximately 4-7 seconds longer than the gymnasts with the 79-90 centimeter leg length.</p> <p>Methods/Materials The materials used for my project were 42 female gymnasts provided by Elite Gymnastics Academy, one tape measure, one stopwatch, and one mat. First, the gymnasts legs were measured in centimeters with a tape measure. Secondly, the gymnasts were instructed to perform a standard handstand. Last, the gymnasts were timed in seconds while they were in the handstand. The gymnasts were then categorized into groups determined by leg length; 55-60 cm., 61-66 cm., 67-72 centimeters, 73-78 cm., 79-84 cm., and 85-90 cm.</p> <p>Results After experimenting, I found that the average amount of time a gymnast with a leg length of 55-60 centimeters could hold a handstand is 1.9 seconds. The average for gymnasts with a 61-66 centimeter leg length is 5.3 seconds. Gymnasts with a 79-84 centimeter leg length average time was 6.3 seconds. Finally, the gymnasts whose leg length was 85-90 centimeters long had an average time of 2.4 seconds. It has been shown that the female gymnasts who had the second longest leg length group of 79-84 centimeters, could hold the handstand a considerable amount of time longer than any other groups of leg length.</p> <p>Conclusions/Discussion Based on research, data, and results, it can be concluded that female gymnasts with a leg length of 79-84 centimeters can hold a standard handstand longer than gymnasts with the shorter leg length of 67-73 centimeters. The hypothesis; girls who have the shorter leg length of 67-73 centimeters will be able to hold a basic handstand longer than the gymnasts with the longer leg length of 79-84 centimeters, was disproved. Overall, the experimental procedure was a success because now the stereotype that shorter-legged gymnasts are better at handstands, has been proven incorrect. This will help the gymnastics community to not have biased opinions on which "style" of gymnastics is better—the powerhouse, muscley build for the gymnasts, or the more graceful, artistic, ballerina type build for the gymnasts.</p>	
Summary Statement This project was conducted to see if leg length has any impact on handstand hold time in gymnastics.	
Help Received Mother helped time handstands; Experiments were performed at Elite Gymnastics Academy of San Diego under the supervision of owner, Paula McCalester.	