



**CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY**

Name(s) Rebecca M. McKinny	Project Number 36095
Project Title How a Prosthetic Moves	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective is to find a difference in motions between biological legs, and double amputees with a transtibial amputation (below the knee) who use a specific running blade. I planned to look at graphs of the motions and to compare them. The most consistent group would have more control of their legs.</p> <p>Methods/Materials Video Physics Motion Tracker App; Videos of Double Amputees who use Flex Foot Cheetah Legs (Running Blades); Videos of Biological legs while running</p> <p>Results I compared the graphs of the videos. I assumed that the more consistent the motions, the easier it was to move. I found that Amputees have slightly less consistency in their steps, and the most variation in the bottom of the leg. Biological Legs were more consistent.</p> <p>Conclusions/Discussion In conclusion, the prosthesis were less consistent and harder to move. The bottom of the prosthetic is the least in touch with the runner, and varies the most in its motions. A Biomedical/Biomechanical Engineer who knows this can try to develop better prostheses.</p>	
Summary Statement I tested the motions of runners with biological legs and compared those to the motions of double transtibial (below the knee) amputees.	
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