



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Danica A. Frye	Project Number S1105
Project Title Heart Fitness and Jump Height	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My original question was whether or not improving the fitness of one's heart would allow an Irish dancer to jump higher at the end of their dance, when they were tired. From there, I hypothesized that an increase in heart fitness would lead to an increase in the height of jumps after exercise.</p> <p>Methods/Materials I chose twelve girls who were all sixteen years old and at a similar level of Irish dance and heart fitness. At dance class, they measured their resting heart rates before dancing. Then, each girl did three jumps before dancing, then danced the same minute and a half long dance, and then did three jumps after dancing. They also measured their post-dancing working heart rates. Then every day they practiced the same minute and a half long dance twice in a row without stopping, as to increase their heart fitness. Once a week for the next two weeks they did three jumps, danced, and then did three more jumps, and I also recorded their resting and working heart rates</p> <p>Results From the analysis I discovered that my hypothesis was proved to be correct; an improvement in heart fitness leads to an increase in the heights of jumps after Irish dancing. Each girl who I tested did result in a slight improvement of their heart fitness, limited to the length of the testing period and the availability of the motion detector. Not only was there a decrease in their working heart rate, but there was also a small decrease in their resting heart rate. As the girls trained, the difference between their rates decreased slightly, implying that heart fitness had improved. And as this difference decreased, the heights of post-dancing jumps increased slightly as well.</p> <p>Conclusions/Discussion Building up one's heart fitness has a direct connection to other aspects of a sport. This was seen in my experiment, as the girls I tested could jump higher at the end of their dances as their heart fitness increased. After just one week of training, the girls jumped, on average, .0174 meters higher after they finished dancing than they could the week before. As their heart fitness improved by week three, the girls could jump an added .0208 meters after dancing. Since the girls I tested trained every day without fail, their heart fitness increased and they could jump higher after dancing. Therefore, the hypothesis which I formed proved to be true; as heart fitness increases, the height of jumps after Irish dancing will also increase.</p>	
Summary Statement My project is about the impact of improved heart fitness on the height of Irish dance jumps after a person has finished dancing and is fatigued.	
Help Received The girls who participated in the experiment; Nana helped me glue the board; science teacher loaned me the motion detector.	