



**CALIFORNIA STATE SCIENCE FAIR  
2010 PROJECT SUMMARY**

<b>Name(s)</b> <b>Michael H. Do</b>	<b>Project Number</b> <b>J1010</b>
<b>Project Title</b> <b>Harvesting Healthy Energy from Exercise</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective is to calculate the efficiency of converting human exercise kinetic energy into electricity. <b>Methods/Materials</b> A voltmeter, generator, and digital oscilloscope were used to determine the frequency of the electrical current. Various equations were used to determine input energy and output energy. Lastly, the efficiency was calculated. <b>Results</b> The average efficiency of all of the voltages was equal to about 25%, which was very close to what was hypothesized. Not only that, but the efficiency gradually increased from 11% to 35% as the voltages increased. This is possibly due to the nonlinear characteristics of the electrical generator at low and high voltages. There was a tendency that the voltages would saturate at the higher end of the frequencies. <b>Conclusions/Discussion</b> Using a generator to convert kinetic energy into electricity is more efficient at high speeds. Using an industrial generator with more efficient materials used would be more efficient and therefore result in a higher efficiency.	
<b>Summary Statement</b> Exploring the efficiency and feasibility of converting human biomechanical energy into electricity,	
<b>Help Received</b> Dad helped learn about project; Mom helped make board; Teacher helped write reports.	