**Title**

Power Output Scientific Investigation

**Hypothesis**

Using the Procedure and Data Collection section of the scientific investigation, read through the procedural information. Based on your understanding of the procedure, develop your own hypotheses which describe your expected results. You should consider the following question: What is your power output when you climb the stairs? Record your hypotheses below:

**Data**

Use the data table below to record your data from this scientific investigation:

|  |  |  |
| --- | --- | --- |
| **Measurement or Calculation** | **Data Type** | **Quantity** |
| Your mass in pounds | Mass |  |
| Your mass in kilograms | Mass |  |
| Your weight in Newtons | Weight |  |
| Time it takes you to walk quickly up the stairs in seconds | Time |  |
| The height of one step in meters | Height |  |
| The number of steps | Number |  |
| The total height of the stairway in meters | Height |  |
| The work you did in Joules | Work |  |
| Your power in Watts | Power |  |

**Data Analysis**

Provide responses to the following questions. Make sure to completely answer each question and to show all of your work.

1. What would your power be if you ran up the stairs twice as fast (i.e. your time up the stairs was cut in half)?
   1. Did your power increase or decrease?
   2. By what factor?
2. Why did you use your weight as the force in the work equation?
3. Calculate what your power output would be if you climbed the same stairs in the same amount of time as you did in the lab, while also carrying a stack of books weighing 125 N?
4. If you were to walk up three flights of stairs, then walk back to your starting point, how much work have you done (in joules)?

**Conclusion**

Compose three to four sentences describing an overall conclusion based on your data. Were your hypotheses true or false, and how do you know? Use the data and notes that you collected from your experience to form your conclusion. Make sure that you include information that you gained from data analysis to support your conclusion.

**Experimental Sources of Error**

Provide responses to the following questions: Are there any sources of error? If so, what are they, and what could be done to minimize error?

line_physics.png

Once you have completed the Power Output Scientific Investigation Report, please submit your work to the dropbox.