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HOW HUMIDITY AFFECTS MY RUNNING

**ABSTRACT**

The purpose of this project was to find out which days running would be faster: on more humid, or less humid days. The hypothesis is faster run times would occur with less humidity. The GLOBE Program protocol for collecting humidity was used for several weeks. The collection point for the data was at the Smithville Park in Ohio. The data did not support the hypothesis on some days. When the day was the most humid, slowest run times did not occur. When the day was the least humid, run times were the fastest. Humidity was not taken in the shade. On one of the days, a Cross-Country meet was held right before data was taken. On the slowest run, the humidity was the third least humid. On the fastest run, the humidity was the least humid. The hypothesis was corroborated with the data only half the time. Other relevant research can be done in running the mile in a different spot/location. Humidity could also be taken in a different spot during different months, such as fall, spring, or summer. Winter would not be a good time of year to do this project because of many additional variables such as ice, snow, and extremely low temperatures.

**PURPOSE**

The purpose of this research was to figure out if I ran faster when the day was more or less humid out. I recently joined cross country so I decided I wanted to link my running into my research. During all of the cross country meets, I noticed that all the girls/boys on the middle school cross country team PRed (personal record) when the day was less humid or cold out. According to Llyn L. Escarcha and Ashanti F. Pangue’s project on The Relationship Between Cloud Cover to Temperature and Humidity, clouds can form even when the humidity is low, which can slightly effect the temperature. When my Coach DeRodes recruited me to Cross-Country, I was not particularly thrilled to do Cross-Country. When I started, I thought that Cross-Country was boring, but soon I grew a love for Cross-Country. I went to a couple practices before school started and I fell in love with running. Since then, I have become an excellent runner at least to me. My highest placing is 20th place.

**MY QUESTION**

Which days would I run faster, when it was more or less humid out?

**HYPOTHESIS**

My hypothesis is that when the day is less humid I will run faster.

**CONTROLS**

* 1 mile (the course stayed the same)
* Kestrel 4500 pocket weather tracker

**VARIABLE**

* The humidity (temperature and air pressure

**MATERIALS**

* Kestrel 4500 Pocket Weather Tracker
* Pencil
* Notebook
* Computer
* Timer
* 1-Mile Course

**METHODS**

PREPERATION:

1. My Cross-Country Coach (Coach DeRodes) measured out 1 mile with me
2. Calibrate the Kestrel 4500 Pocket Weather Tracker as instructed by my parents
3. Set the stopwatch
4. Take and record data before the run
5. Run (!)
6. Take and record data after the run

**RESULTS**

All temperatures are in degrees Celsius

Times are Eastern Standard Time

**DAY 1:** August 14, 2021, 1536, sunny

BEFORE:

Temperature: 28.6ºC

Humidity: 47.5%

Air Pressure: 28.78 in

Time: 9:23 (9.38) min

AFTER:

Temperature: 28ºC

Humidity: 49.2%

Average: 48.35%

**DAY 2** (8-15-21) 1547, Sunny

BEFORE:

Temperature: 28.5ºC

Humidity: 57.0%

Air Pressure : 28.86 in

Time: 9:34 (9.56) min

AFTER:

Temperature: 26.4ºC

Humidity: 60.3%

Average: 58.65%

**Day 3** (8-21-21) 1539, Sunny

BEFORE:

Temperature: 28.3ºC

Humidity: 44.8%

Air Pressure: 28.61 in

Time: 9:20 (9.33) min

AFTER:

Temperature: 29.6ºC

Humidity: 46.1%

Average: 45.45%

**Day 4** (8-22-21) 1535, Cloudy, Rained Earlier

BEFORE:

Temperature: 26.6ºC

Humidity: 85.1%

Air Pressure: 28.65 in

Time: 9:23 (9.38) min

AFTER:

Temperature: 27.2ºC

Humidity: 80.8%

Average: 82.95%

**Day 5** (8-28-21) 1535, Sunny

BEFORE:

Temperature: 31.3ºC

Humidity: 63.0%

Air Pressure: 28.85 in

Time: 9:32 (9.53) min

AFTER:

Temperature: 32.4ºC

Humidity: 61.2%

Average: 62.1%

**Day 6** (8-29-21) 1532

BEFORE:

Temperature: 26.0ºC

Humidity: 29.0%

Air Pressure: 28.73 in

Time: 8:32 (8.53) min

AFTER:

Temperature: 26.0ºC

Humidity: 83.3%

Average: 56.15%

**Day 7** (9-4-21) 1545 Had a cross country meet earlier, cloudy

Had a cross country meet earlier

cloudy

BEFORE:

Temperature: 25.9ºC

Humidity: 49.1%

Air Pressure: 28.64 in

Time: 10:32 (10.53) min

AFTER:

Temperature: 25.4ºC

Humidity: 43.3%

Average: 46.2%

**Day 8** (9-5-21) 1541, Sunny

BEFORE:

Temperature: 25.5ºC

Humidity: 56.3%

Air Pressure: 28.54 in

Time: 8:23 (8.38) min

AFTER:

Temperature: 25.7ºC

Humidity: 55.4%

Average: 55.85%

**Day 9** (9-12-21) 1536, Sunny

BEFORE:

Temperature: 30.5ºC

Humidity: 51.8%

Air Pressure: 28.73 in

Time: 8:07 (8.11) min

AFTER:

Temperature: 30.9ºC

Humidity: 51.8%

Average: 51.8%

**Day 10** (9-19-21) 1400, Partially Cloudy

BEFORE:

Temperature: 29.5ºC

Humidity: 49.0%

Air Pressure: 28.83 in

Time: 8:01 (8.02) min

AFTER:

Temperature: 31.1ºC

Humidity: 49.0%

Average: 49.0%

**Day 11** (9-20-21) 1535, Sunny

BEFORE:

Temperature: 30.3ºC

Humidity: 49.0%

Air Pressure: 28.81 in

Time: 8:10 (8.16) min

AFTER:

Temperature: 28:1ºC

Humidity: 53.0%

Average: 51.0%

**Day 12** (9-26-21) 1535, Sunny

BEFORE:

Temperature: 24.4ºC

Humidity: 37.5%

Air Pressure: 28.68 in

Time: 7:48 (7.80) min

AFTER:

Temperature: 24.5ºC

Humidity: 37.5%

Average: 37.5%

**GRAPH**

**CONCLUSION**

The data I collected does not support my hypothesis. When the humidity was lower, I ran my fastest time, but when the humidity was high, I did not run my slowest time. My observations showed there were a lot of sunny days and very few cloudy days. There was a steady pattern. I slowly got faster throughout my experiment. I did not account for my improvement when I began this experiment (although this did please Coach DeRodes!). Did you know that humidity is connect slightly with droughts? When the water rises up (evaporates) into the air and doesn’t form clouds, before the water can go into the ground is what causes droughts and the humidity.

**NEXT STEPS**

I think that this project should still be done during the summer months. I intend to continue Cross Country in 8th grade. Hopefully I will be able to achieve a PR (personal record) ☺. I think that If I were to do this again I would choose a different location.

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