

## Writing Conclusions

Read the following conclusions. Highlight the statements that belong in a good conclusion. Cross out statements that are inappropriate. Note what each conclusion is lacking.

1. This lab was really fun, I learned a lot. The hypothesis was supported. Heart rate does increase with pushups. There were no errors in the experiment.
2. The hypothesis that heart rate increases with pushups was correct. The heart rate increased with more pushups. The data may have been flawed because I took the reading in the neck rather than in the wrist, which isn't always as accurate.
3. The hypothesis that heart rate increases with pushups was supported by the data. The heart rate increased by approximately 10 with each increase of 10 pushups. The resting heart rate of 65 went up to 75 just by doing 10 pushups. I am in better shape than Jack because his heart rate was 10 beats higher than mine. Jack needs to work out harder. There might be errors because I might have miscalculated the averages.
4. My data doesn't support the hypothesis that increasing pushups increases heart rate. My heart rate was consistently at 70 beats/min. It went up or down 3 beats/min, but without any consistent pattern. I must be in pretty good shape; 10-20 pushups didn't affect me.
5. The hypothesis that heart rate increases with pushups was right. The heart rate increased an average of 10 beats/min with an increase of 10 additional pushups. The heart rate went up a little bit more (12 beats/min) from 20 to 30 pushups; the body must have to work harder when increasing the workload. When comparing my heart rate to Jack's I noticed that mine did not increase as much as Jack's. After doing 10 pushups my heart rate increased 8 beats/min from resting whereas Jack's increased 12 beats/min. This may indicate that I am in slightly better shape. The heart rate increases to supply added oxygen and nutrients to the working muscles. There are potential sources of errors in the data. We didn't not check to make sure our heart rates were completely back to resting before doing our trials so some results may be higher than they should be. Jack's heart rate may have also increased more than mine because he put more effort into his pushups; he brought his chest down to the floor, whereas I didn't. We could improve our experiment by making sure every subject did their pushups the same way, and that their heart rate returned to resting before doing the next test.
6. My data wasn't very consistent between trials. In trial #1 pop A boiled faster than pop B by 20 sec. In trial 2 pop B boiled faster by 10 seconds. The control pops (diet & regular) both boiled 25 seconds faster than A & B; therefore I cannot make a conclusion about my hypothesis or what pop A & B is. I need to repeat my experiment with these improvements in mind. One, I need to make sure that I use a room temperature beaker each time and start the hot plate at exactly the same temperature. Secondly, I should use a graduated cylinder to ensure that exactly 10 ml of pop is boiled. I would also record the time and temperature when I see the very first bubble rise from the bottom of the beaker.