

Electric Bike Challenge Research Project

Created by: Max Carter & Logan Dart

Aim: To test what position on an electric bike will create the least drag in the EV challenge race.

Hypothesis: That the 'top tube tuck position' will be most aerodynamic and therefore create the least drag.

Positions being tested:

- Normal riding position in the 'hoods'



- Normal riding position in the 'drops'



- Tuck position with hands in the 'drops'



- Tuck position with hands in the centre of the bars



- Tuck position while sitting on top tube of the bike



Variables you need to control:

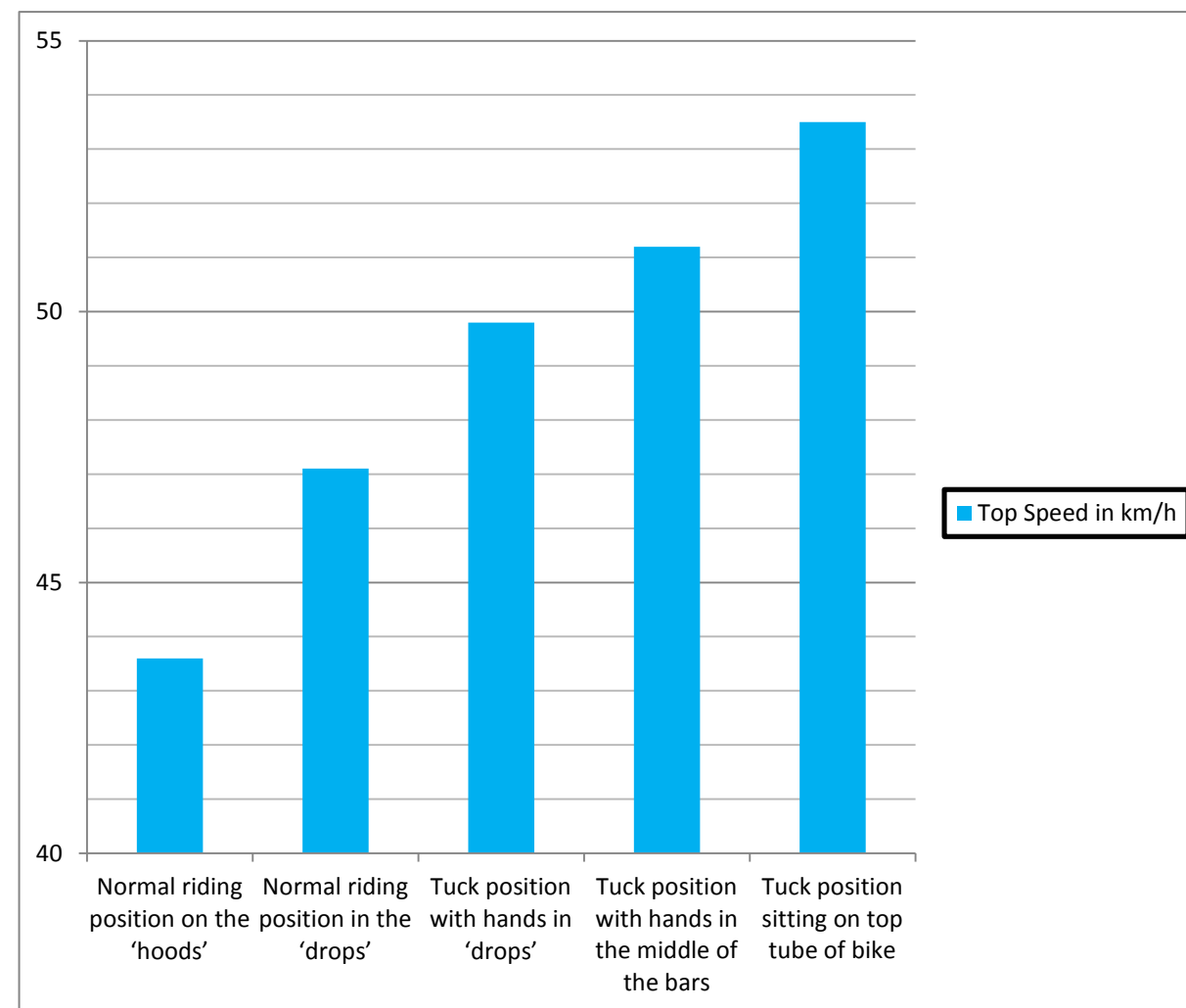
- Make sure you have the same tire pressures, bike and rider for each roll down the hill.
- Make sure the experiment is done on a day when there is no wind as the wind will affect the results.

Method:

1. Choose a hill with a constant gradient and reasonable length. Also the hill needs to have another hill on the other side.
2. Take the bike to the top of the hill and start rolling from a standing start.
3. As your rolling down the hill record your top speed.
4. Once you get to the bottom keep rolling up the hill on the other side and record the distance you rolled up the hill.
5. Each time choose a different position to test from the ones listed above.
6. Once you test all the positions repeat the experiment to check if your results are reliable.

Results:

Position on bike	Top Speed	Distance up hill
Normal riding position on the 'hoods'	43.6 km/h	x m
Normal riding position in the 'drops'	47.1 km/h	x + 9.23m
Tuck position with hands in 'drops'	49.8 km/h	x + 15.55m
Tuck position with hands in the middle of the bars	51.2km/h	x + 16.87m
Tuck position sitting on top tube of bike	53.5kmh	x + 18.95m



Conclusion: In conclusion the hypothesis of the experiment was supported by the results as the 'tuck position while sitting on the top tube' was most aerodynamic. The other tuck positions weren't far behind it in aerodynamics but the normal riding positions had far more drag.