

GENETICS

# THE OPTIMAL CYCLING POSITION

24.02.2015

There are different strategies to improve the aerodynamics of road cycling. At 50 km/h about 90% is being spend to overcome aerodynamic drag of the riders silhouette. [Barry et al.](#) now sent a rider into a wind tunnel and discriminated basically 9 different positions that I am summarizing here in a cartoon including front area and estimated Watt count.

1/ Hands on hoods



frontal area  
0.49 m<sup>2</sup>

430 W

2/ Drops  
Convet.  
Racing



0.47 m<sup>2</sup>

417 W

3/ Drops  
crouched  
torso



0.46 m<sup>2</sup>

385 W

4/ Drops  
crouched  
torso  
eyes  
down



0.45 m<sup>2</sup>

403 W

5/ Brake hoods grip  
horizontal  
forearms



0.43 m<sup>2</sup>

372 W

6/ Short  
aerobars



0.42 m<sup>2</sup>

365 W

7/ Aerobars  
head lowered  
shoulders  
shrugged



0.39 m<sup>2</sup>

358 W

8/ Aerobars  
eyes  
looking  
down



0.44 m<sup>2</sup>

372 W

9/ Aerobars  
head  
tucked in  
shoulders



0.38 m<sup>2</sup>

363 W

Interestingly, the smallest front surface did not result in the lowest input power estimate (that includes also rolling resistance, wheel bearing, changes in potential energy and changes in kinetic energy. Position 6 - 9 use the short draft-legal triathlon style aerobars . They probably work by the reduction of the arms from the rider silhouette bringing them inside the line of the hips, where the area of high turbulence is narrowed down. Nevertheless, I think it costs also a lot of energy to hold position 9 at least for a longterm ride. Position 5 ( hoods grip by gripping brake hoods with horizontal forearms ) is probably the easiest and most convenient position.