

Buying Time: Which Aero Equipment Offers the Most Benefits? | Page 2 | Active.com

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5:37 AM

Aerodynamic Savings

Aero Equipment	From (Original)	To (New)	Drag Difference (G)	Time Saved In 40km ITT (Seconds*)
Speed Suit	Road bib and jersey	Nike Swift suit (Not standard skinsuit)	-289	134
Body Position and Aerobars	Upright, on bullhorns	Normal tuck on aerobars	-262	122
Aero Helmet	Road helmet	Aero TT helmet	-144	67
Body Position	Normal tuck	Tuned wind tunnel tuck	-121	56
Front Wheel at 10-Degree Yaw	3-5 spoke	Deep rim 12 spoke	-90	42
Shoe Covers	No shoe covers	Shoe covers	-65	30
Rear Wheel at 0-Degree Yaw	Any full disc	3-spoke	-63	29
Front Wheel at 0-Degree Yaw	24 spoke aluminum box-section rim wheel	5-spoke	-50	23
New Aero Bike Frame	Standard tubing TT bike	Aero tubing TT bike	-36	17
Aero Helmet	Decent aero helmet	Best aero helmet	-29	13

* For a rider who rides 40km in 48 minutes (50 km/hr). Calculated using $T=0.464 \times D$, (a simplified version of an equation formulated in 1999 by Chester Kyle, a pioneer in cycling aerodynamics since 1974), where T is the time savings in seconds and D is the drag difference in grams. Each savings in drag, expressed in grams from the above table, is multiplied by 0.464 to provide an estimate of the time savings, in seconds, over a 40km time trial. Sports aerodynamicist Len Brownlie, Ph.D. provided the data for this chart, which he has compiled over the past eight years during wind tunnel tests. Based out of Vancouver, British Columbia, Brownlie provides aerodynamic consulting for teams, individuals and manufacturers, including Nike's Project Swift. For more information visit www.aerosportsresearch.com.

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