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| **Table S1.** Individual values for power output, speed, time-to-completion, and recalculation of time-to-completion. | | | | | | | | | | | |
| **ID** | **Condition** | **Rider Weight (kg)** |  | **Press-on-force (lbs)** | **Mean Power**  **(W)** | **Mean speed (km/h)** | **Time to completion (min)** |  | **Mean Speed/Watt**  **(km/h/W)** | **Recalculated**  **Mean Speed**  **(km/h)** | **Recalculated**  **time to completion**  **(min)** |
| 08 | HD | 57.2 |  | 3.20 | 173.84 | 31.56 | 57.03 |  | 0.183 | 31.87 | 56.48 |
|  | HC | 94.8 |  | 3.12 | 188.26 | 30.53 | 58.96 |  | 0.165 | 34.51 | 52.16 |
|  | KD | 54.0 |  | 3.15 | 148.87 | 29.54 | 60.94 |  | 0.200 | 27.29 | 65.96 |
| 12 | HD | 83.0 |  | 4.67 | 328.31 | 37.38 | 48.15 |  | 0.115 | 37.81 | 47.60 |
|  | HC | 83.9 |  | 4.67 | 355.31 | 39.45 | 45.63 |  | 0.112 | 40.92 | 43.99 |
|  | KD | 83.9 |  | 4.43 | 331.63 | 38.54 | 46.70 |  | 0.117 | 38.20 | 47.13 |
| 14 | HD | 57.6 |  | 3.38 | 162.66 | 30.33 | 59.35 |  | 0.188 | 30.55 | 58.92 |
|  | HC | 54.9 |  | 3.17 | 191.67 | 33.04 | 54.48 |  | 0.173 | 36.00 | 50.01 |
|  | KD | 54.9 |  | 3.24 | 159.31 | 30.19 | 59.62 |  | 0.192 | 29.92 | 60.16 |
| 17 | HD | 68.9 |  | 3.01 | 151.95 | 29.37 | 61.29 |  | 0.196 | 29.71 | 60.59 |
|  | HC | 68.0 |  | 3.07 | 144.29 | 28.38 | 63.41 |  | 0.199 | 28.21 | 63.81 |
|  | KD | 68.0 |  | 3.06 | 131.31 | 27.35 | 65.82 |  | 0.208 | 25.67 | 70.12 |
| 28 | HD | 68.9 |  | 2.87 | 123.60 | 25.55 | 70.46 |  | 0.210 | 25.98 | 69.30 |
|  | HC | 67.9 |  | 2.71 | 118.88 | 25.58 | 70.36 |  | 0.217 | 24.98 | 72.05 |
|  | KD | 68.0 |  | 2.75 | 88.87 | 21.60 | 83.33 |  | 0.2443 | 18.68 | 96.38 |
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| **Table S2.** Speed-per-watt comparisons. | | | | |
|  | **Power (W)** | **Formula** | **Speed/Watt (km/h/W)** | **Calculated time to completion (min)** |
| **High Carbohydrate** | 150 | y = 4.1121x-0.61 | 0.193485 | 62.02 |
| **Ketogenic** | 150 | y = 5.6561x-0.676 | 0.1912 | 62.76 |
| **Road model** | 150 | y = 4.0696x-0.601 | 0.200318 | 59.90 |

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| **Table S3.** Inferential statistics for different analysis options. | | | | |
| **Outcome and model** | ***Numerator DF*** | ***Denominator DF*** | ***F*** | ***p*** |
| **Time to completion** |  |  |  |  |
| **Linear mixed-effects model** | 2 | 34 | 6.06 | **0.006** |
| **RM-ANOVA** | 2 | 34 | 6.06 | **0.006** |
| **ANCOVA (Baseline)** | 1 | 33 | 533.29 | **<0.001** |
| **ANCOVA (Condition)** | 1 | 33 | 8.12 | **0.007** |
| **Carbohydrate oxidation** |  |  |  |  |
| **Linear mixed-effects model** |  |  |  |  |
| **Condition** | 2 | 69 | 118.18 | **<0.001** |
| **Time** | 4 | 69 | 6.86 | **<0.001** |
| **Condition x Time** | 8 | 69 | 1.18 | 0.326 |
| **RM-ANOVA** |  |  |  |  |
| **Condition** | 2 | 8 | 100.76 | **<0.001** |
| **Time** | 4 | 16 | 4.02 | **0.019** |
| **Condition x Time** | 8 | 32 | 1.54 | 0.184 |
| DF = degrees of freedom; RM-ANOVA = repeated measures analysis of variance;  ANCOVA = analysis of covariance; Baseline = Time from time trial in habitual condition | | | | |

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| **Table S4.** Estimated mean differences (EMD) for time to completion between conditions | | | | | | |
| **Comparison and model** | ***DF*** | ***t*** | ***EMD*** | ***95%CI*** | ***p*** |
| **Habitual – High Carbohydrate** |  |  |  |  |  |
| **Linear mixed-effects model** | 34 | 1.99 | 1.28 | -0.34, 2.90 | 0.109 |
| **RM-ANVOA** | 17 | 3.07 | 1.28 | 0.18, 2.39 | **0.021** |
| **ANCOVA** | - | - | - |  | - |
| **Habitual – Ketogenic** |  |  |  |  |  |
| **Linear mixed-effects model** | 34 | -1.48 | -0.95 | -2.57, 0.67 | 0.149 |
| **RM-ANOVA** | 17 | -1.37 | -0.95 | -2.79, 0.89 | 0.187 |
| **ANCOVA** | - | - | - | - | - |
| **High Carbohydrate - Ketogenic** |  |  |  |  |  |
| **Linear mixed-effects model** | 34 | -3.47 | -2.23 | -3.86, -0.61 | **0.004** |
| **RM-ANOVA** | 17 | -2.90 | -2.23 | -4.28, -0.19 | **0.021** |
| **ANCOVA** | 33 | 2.85 | -2.23 | -3.83, -0.64 | **0.007** |
| DF = degrees of freedom;  RM-ANOVA = repeated measures analysis of variance; ANCOVA = analysis of covariance; | | | | | | |