Why Differentiate Tri & TT Bike Positions

Tri:
Swim & Run
pre/post-Cycling

TT:
Rest & Recover
pre/post-Cycling
Bike Fit - X/Y

Bike Fit - BB/Components
Aero Bike Template

Triathlon Racing – Origins

1920’s - France
Le Trios Sports
Channel Mame; 12k Bike; 3k run

1970’s – USA
Mission Bay Triathlon
500-Yard Swim; 5-Mile Bike; 6-Mile Run
TT Racing – Origins

1890 – England

National Cyclists' Union Banned Open Road Competition

1890

Emergence of Staggered Start Races

Secret Locations and Start Times

Dress Conduct -- Black

Pursuit Handlebar

1980’s

Richard Byrne

Coach, RAAM Member, Inventor - Speedplay

Designed for Rest and Aerodynamics

Boone Lennon and Charley French

Ski Coach & Scott Engineer

Designed for Aerodynamics
Scott Aerobar

Patent # US 7127966 B2

Aerobar Market Entry

Greg LeMond
1989 Tour De France
58-Second Gain in TT
Yellow Jersey by 8-Seconds!
Tri-Specific Bike Fit

Maximum Aerodynamic Benefit with Minimum Metabolic and Biomechanical Cost

REST FROM SWIMMING
AND
PREPARE TO RUN!

Event-Specific Aerodynamics/Comfort (Sprint, Intermediate, Long, Ultra)

TT-Specific Bike Position

Maximum Aerodynamic Benefit with Minimum Metabolic and Biomechanical Cost

UCI Constraints

Cockpit setup to reduce drag coefficient

Effective STA for the greatest power production
Kelly Catlin

UCI Regulations
Graeme Obree
Pos #2

Bike Fit – Triathlon
Lindsey Corbin

REACH

TRI:
- Recover and Rest
- Forearm Support
- Shifter Access

TT:
- Aerodynamics
- Shifter Access
- Forearm Support
- UCI Regulations
Aero/Arm-Pad – Z

TRI:
Forearms Centered in Aero-Pads ≤ Shoulders
Adjust for Optimal Tidal-Flow
Physical & Metabolic Recovery

TT:
Forearms Centered in Aero-Pads ≤ Shoulders
Adjust for Optimal Tidal-Flow
Aerodynamics

Cockpit Differential

TRI
Within Functional Hip ROM
Individual & Event-Specific Comfort/Aerodynamics

TT
Within Functional Hip ROM
Individual & Event-Specific Aerodynamics/Comfort
Extensions Design

**TRI:**
Consistent with Natural Wrist Position

**TT:**
Consistent with Natural Wrist Position

**UCI Guidelines**

Saddle Height

**Tri:**
Individual Specific
Trending > Ext.
Measure Under Load

Deg = 25-35, 38, 40, 42???

**TT:**
Individual Specific
Trending < Ext.
Measure Under Load
Seat Tube Angle

Tri:
NR= 78-81(deg)
Research Driven

TT:
NR= 74-76(deg)
UCI Driven?

Saddle Length/Angle

Tri:
Specific to Individual and Differential Pressure Mapping?
Supported but not “Falling” 0-?-Degrees

TT:
Specific to Individual
24 – 30cm Length
<-3 – Degrees Incline
Center of Gravity

TRI:
Individual-Specific
Morphology, Core,
Flexibility, Experience...

TT:
Individual-Specific
Morphology, Core,
Flexibility, Experience...
UCI Guidelines!

Tri & TT Symmetry
**Governing Bodies**

**TRI**
USAT – 1982 (www.usat.com)  
ITU – 1989 (www.triathlon.com)  
WTC – 1990 (www.ironman.com)

**TT**
UCI – 1900 (www.uci.ch)  
USA Cycling – 1975 (www.usacycling.org)

---

**Article 1.3.013**

“The peak of the saddle shall be a minimum of 5 cm to the rear of a vertical plane passing through the bottom bracket spindle... in no circumstances shall the peak of the saddle extend in front of a vertical line passing through the bottom bracket spindle.

The peak of the saddle can be moved forward until the vertical line passing through the bottom bracket spindle where that is necessary for morphological reasons. By morphological reasons should be understood everything to do with the size and limb length of the rider.

Only one exemption for morphological reasons may be requested; either the peak of the saddle can be moved forward or the handlebar extensions can be moved forward, in accordance with Article 1.3.023”
**Article 1.3.022**

“In competitions other than those covered by article 1.3.023, only the traditional type of handlebars (see diagram «structure 1») may be used. The handlebars must be positioned in an area defined as follows: above, by the horizontal plane of the point of support of the saddle (B); below, by the horizontal line passing through the highest point of the two wheels (these being of equal diameter) (C); at the rear by the axis of the steerer tube (D) and at the front by a vertical line passing through the front wheel spindle with a 5 cm tolerance (see diagram «Structure (1A)»). The distance referred to in point (A) is not applicable to the bicycle of a rider who takes part in a sprint event on track (flying 200 m, flying lap, sprint, team sprint, keirin, 500 metres and 1 kilometre), but must not exceed 10 cm in relation to the vertical line passing through the front wheel spindle.”

**Article 1.3.104**

“The plane passing through the highest points at the front and rear of the saddle shall be horizontal. The length of the saddle shall be 24 cm minimum and 30 cm maximum.”

(3-Degrees or 1cm – Tip-to-Tail)
Article 1.3.203

"The height difference between the elbow support points and the highest and lowest points of the handlebar extension (including gear levers) must be less than 10 cm. The position of the tip of the saddle must be at least 5 cm behind the vertical plane passing through the bottom bracket axle. The distance between the vertical line passing through the bottom bracket axle and the extremity of the handlebar may not exceed 75 cm, with the other limits set in article 1.3.022 (B,C,D) remaining unchanged. Elbow or forearm rests are permitted.

For road time trial competitions, controls or levers fixed to the handlebar extension may not extend beyond the 75 cm limit.

For the track and road competitions covered by the first paragraph, the distance of 75 cm may be increased to 80 cm to the extent that this is required for morphological reasons.

For riders that are 190 cm tall or taller, the horizontal distance between the vertical lines passing through the bottom bracket axle and the extremity of the handlebar extensions including all accessories may be extended to 85 cm.

Only one exemption for morphological reasons may be requested; either the handlebar extension can be moved forward or the peak of the saddle can be moved forward, in accordance with Article 1.3.013."

UCI 1.3.023
References

References


