
SPORTFIT LAB



SCIENTIFIC TRAINING

The Science of Triathlon

The Bike in Triathlon

Presented by Doug Baumgarten, USAC-certified Coach

Cycling in the Triathlon

Safety First

- Wear your helmet at all times for training AND racing
- Maintain your bike and repair when needed
 - Clean the bike weekly
 - Lube your chain and rings after every few rides
 - Check tire pressure before every ride
 - Carry a spare inner tube and learn how to change a flat
- Ride on safe roads (or trails)
 - Obey all traffic laws as if you were in a car
 - Be aware of your surroundings and ride defensively – you LOSE any dispute with a car/truck
 - Use hand signals to warn other bikers as well as cars
 - Bring ID, especially if riding alone



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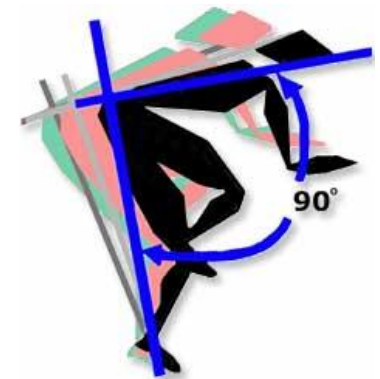


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Cycling in the Triathlon

Bike Selection and Fit

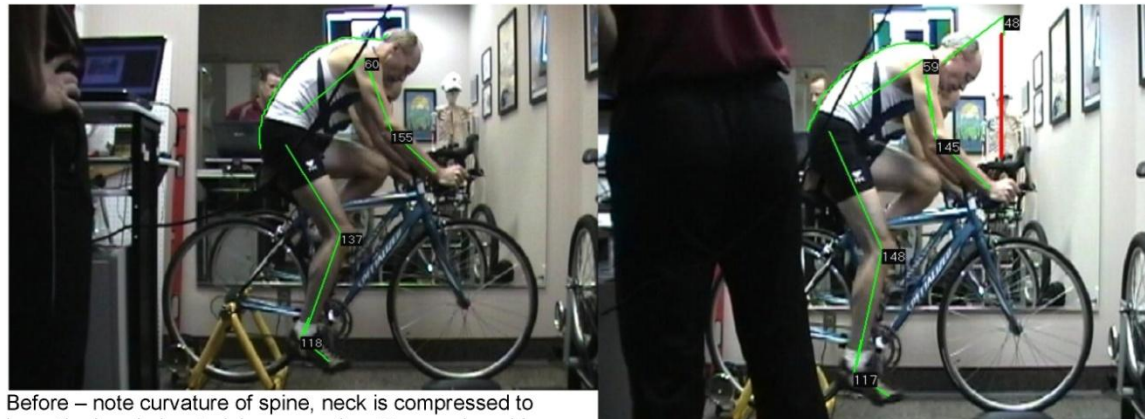
- The biker is more important than the bike
- Bikes come in many flavors:
 - Carbon is lightest and most expensive
 - Aluminum is light but fairly stiff; medium price
 - Steel is heaviest, strongest, least expensive
- Why aero bikes for triathlon?
 - Drafting is illegal...you must maintain 3 lengths between bikers unless passing
 - With no drafting, aerodynamics are key to maintaining speed
 - Aerodynamic position takes a lot of practice
 - Less control of the bike
 - Poorer view of the road – increased strain on the neck
 - Good flexibility required to avoid back pain
- Can I just add aero bars to my road bike?
 - You can, but your position will be compromised:
 - Road bikes are made for sitting higher – you lose handling and control; gear shifters are NOT where your hands are
 - Seats are set further back on road bikes – leaning forward on aerobars creates discomfort and perhaps injuries
- Bike Fit - why it is SO important
 - A poorly fitted bike may cause pain and injury
 - A poorly fitted bike may not handle well, and could lead to accidents
 - A poorly fitted bike will be uncomfortable
 - A poorly fitted bike will reduce your power and speed
 - A poorly fitted bike may not be very aerodynamic



Cycling in the Triathlon

Basic Fitting Guidelines

- Seat height – knees should have about a 30-degree (slight bend) at bottom of pedal stroke
 - Too low if all your weight is on your butt
 - Too high if your hips rock side-to-side or you point your toes to reach pedals
- Reach – your back should be relaxed
 - Road bars: elbows should be slightly bent with hands on hoods
 - Aero bars: shoulders and elbows should be bent about 90 degrees
- Drop (height between seat and handlebars)
 - Your back should be fairly straight, and relaxed
 - Bars too low if your back is round and neck is craned
 - Bars too high if all your weight is on seat
- Seat forward/aft – knees should be over pedals at the front of the pedal stroke



Before – note curvature of spine, neck is compressed to keep the head elevated, knees are bent too much, ankles are reaching for the pedals, arms are too straight.

After – spine is straighter and more relaxed, head is more in line with spine (keeping neck more relaxed), knees are at proper angle, ankles are "flatter" and more powerful, arms are more relaxed, frontal area (wind resistance/red line) has reduced.

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Cycling in the Triathlon

Basic Riding Guidelines

- Clipping out of pedals – practice on trainer
- Brake gradually using BOTH brakes – NEVER apply front (right) brake only or suddenly (unless you want to fly!)
- Use gear shifts to maintain consistent cadence (usually 80-95 rpm)
 - Anticipate grade changes and shift just BEFORE severe grade change
 - Never shift with high pressure on the pedals; always shift with light pressure on pedals
 - Practice shifting through ALL gears, until you find your “favorite” gears for climbing, flats, and descending.
 - Gears on the two rings overlap
- Ride on the right side unless passing
- Drafting is illegal in races



Cycling in the Triathlon

Bike Gears and “Gear”

- Cranksets – include “spider rings” and pedal cranks
 - Most road/tri bikes have two-ring cranksets
 - 53x39 rings are standard
 - 50x34 rings are found on “compact” cranksets...make climbing easier
 - Most road/tri bikes have 9- or 10-ring rear cassettes
 - Many are 11x23
 - 12x25 cog sets make climbing a little easier
- Shimano gear and brakes – most common brand
 - Sora and Tiagra are least expensive
 - 105 is more durable and smoother shifting
 - Ultegra is lighter and smoother than 105
 - Dura-Ace is ultra-light, very smooth, and very expensive
 - Electronic Dura-Ace is now available (extremely expensive)
- Pedals – must be secure but easy to escape!
 - Old-fashioned “toe-clips” (cage and strap) are still legal: least efficient/powerful.
 - Shimano SPD-style are found on basic road bikes and mountain bikes: good balance of efficiency/safety
 - Shimano SPD-SL or LOOK styles (triangular) provide more power, but are harder to escape
 - Speedplay provide a good balance of adjustability, power, and ease of escape



Cycling in the Triathlon

Bike Gears and “Gear” - continued

- Saddles (seats) – are highly individual: experiment until you find one you like
 - Aero position requires sitting on the front half of the saddle
 - Saddle should be level or (for aero bikes) tilted slightly downward
- Wheels/tires – are not critical until your speeds are very high
 - “Clinchers” – have replaceable inner tubes, usually have metal rims and grip the tire on the edges
 - “Tubulars” – have no inner tubes: tires are one-piece tubes which are glued to the wheel rim
- Helmets – aero helmets aid aerodynamics more than most aero wheels
- Clothing – “tri” shorts have thinner pads (for swim) than road-bike shorts
- Shoes – “tri” shoes have one strap for quick on/off in transition
- Bike Computers – help you train and monitor performance
 - Basic – speed and cadence
 - Moderate – GPS and heart rate
 - Advanced – power output
- Water bottles – essential for hydration



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Triathlon Performance

- Bike is the longest portion of the triathlon – bike speed is critical to successful performance
- 3 keys to bike speed:
 1. Leg and hip strength – especially quadriceps
 2. Efficient/comfortable position (bike fit) – you can't produce power if you're uncomfortable or in pain
 3. Aerodynamic position – the higher the speed, the more important is aerodynamics (critical above 19 mph)
- Practice on hills as well as flats
- Train for endurance (long slow rides) as well as power (shorter rides with hard/hill intervals)
- Maintain a steady cadence as much as possible – higher cadence (85-95 rpm) is better for endurance and running performance
- Pedal in smooth circles (but no need to “pull up” on pedals)
- Advanced handling techniques:
 - Maintain higher speed (or keep pedaling) on descents
 - Brake later into turns; accelerate out of turns to return to full speed quicker
 - Keep cadence up on ascents and don't let up until you reach the summit



Let's Ride!!!



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