The Mechanics of Proper Bike Fit (Part 2)

In the last installment of "The Mechanics of Proper Bike Fit (Part 1)" we discussed that optimal bike fitting encompasses addressing the fit from 3 legs of a stool:

1-your rear-end
2-your hands or hand/elbows (depending on whether you rode w/ aero-bars or not)
3-your feet

…….and we made it through talking about the mechanics of optimal leg-extension and saddle height.

In THIS article, we'll discuss your saddle's fore/aft (front to back) positioning.

Before we begin, it's central to note that, while nearly everyone agrees that a knee extension of 30-degrees (+ or - 2 degrees) is commonly accepted as the optimal saddle height, A LOT of differing opinions seems to weigh in on the ideal fore-aft positioning.

A simple online "Google" search on bike fitting will yield a range of extreme opinions from being "Big Slammed" back (aft)…….to being "FIST Fit' forward (fore). Time after time after time, I hear triathletes come in and ask, "*I'm a triathlete, so I need a tri-bike, right?"* Well, not so fast.

First, a demonstration: Remember back to Junior high School when the P.E. teacher lined the class up w/ their backs to the wall and had the class do a "wall sit?" Go ahead and position yourself in that position right now……..w/ a 90-degree, right angle from your thighs to torso and a 90-degree, right angle @ the knee (thighs to tibia), just like you are sitting in an imaginary chair.

No problem, right?

Now begin to (while keeping your back in the same place on the wall)……begin to pull your heels UNDER your rear-end (closer to the wall), making the knee angle more and more acute. Quads began to scream, right?!?!

So what is the purpose of this demonstration and the moral of the story here? In short, it is this: IT IS NOT JUST THE HIP ANGLE THAT MATTERS!!

So often, a bike-or-tri-shop will simply slide an athlete's saddle forward (or sell them a bike w/ a steep seat-tube angle) in an attempt to "open" the hip angle. While this does, indeed open the hip angle, you must know that when the hip-angle opens anteriorly (ie: to the front of the body, facing forward) the knee opens POSTERIORLY (ie: to the back, facing backwards).

Because the knee and hip angles open in opposing directions, you simply cannot open one without closing the other! *(And remember what happened when we closed the knee angle in our wall-sit demo??)*

IDEALLY, you want to position your fore-aft positioning at a point that ***blends*** the posterior and anterior kinetic chain of muscles while you're in the aero position (or road position for a road-specific fitting).

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This means if you're fitting for use w/ aero-bars, you'll generally find yourself at a fore-aft position that's from 75 to 76.5 degrees behind the bottom-bracket. This is a general statement, because some athletes find that they're best fitted even farther forward (77-78 degrees)……while others have no business on a "tri-bike" and produce power best farther back (74-75 degrees).

To set your fore-aft positioning, have a friend drop a plumb-line from your tibial-tuberocity (the bump below your kneecap) while your pedals are positioned @ the 3 and 9 o'clock (parallel to the ground). Your goal is to get the plumb-line to fall within 1cm [slightly in front of or slightly behind] the pedal spindle.

If you have access to a wattage meter, optimal fore-aft positioning is a fairly ez thing to test for. Simply do a Lactate Threshold Wattage test (a 30min TT) and note your average cadence, average wattage……..and the average heart-rate (the COST) that it took to produce that average wattage. You'll quickly figure out that positioning your seat "slammed" way back……or driven far forward….is not as functionally optimal as a mid-point fore-aft setting. Not only does this optimal position impact your power on the bike, but also has an impact on your ability to run off the bike *(for more information on this topic read our training article "Riding to Run" on our website)*

Now, a quick word on saddle-tilt……..and that quick word is: "**DON'T**".

It's simply not a good idea to use the tilt of your saddle as a mechanism to relieve saddle-nose pressure in your groin area. By tilting the saddle nose down….you end up unconsciously sliding forward, and you guessed it, changing your optimal fore-aft positioning. You also increase muscular tension on your upper body's neck, arms and shoulders to stop that forward slide.