

HOW TO ACHIEVE THE PERFECT BIKE FIT

I recently had a great discussion with one of the premier fitters in the US – [link here](#).

The original discussion revolved around me asking “what differences (angles, etc.) are you seeing between fitting someone statically or dynamically?”

We also discussed the state of bike fitting, which will be a separate article.

QUICK DEFINITIONS:

- **Static Bike Fit** – All measurements taken in a static/fixed position. For example. the cyclist is placed in a foot down position then measured, foot forward position then measured, etc.
- **Dynamic Bike Fit** – All measurements are taken via a motion capture camera while the cyclist is pedaling under a high resistance (i.e., high wattage output). The video is analyzed then changes made to the bike.

Happy replied, “it’s actually more complicated than that.” He went on to say that there is a greater difference in measured angles depending upon the time of day.

HOW TALL ARE YOU?

There have been many scientific studies that conclude that people are 1-3cm (0.4”-1.2”) taller when they get out of bed than they are when they go to bed at the end of the day. Why? Gravity. In fact, [NASA states that astronauts](#) are 5-7.6cm (2”-3”) taller while in space.

For the bike fitter, during the interview process, there are more questions to ask;

- 1) Do you train to race or train to stay in shape?
- 2) Do you want your bike to fit you during your races, during your training or doesn’t matter?
 - a. What time of day are your races?
 - b. What time of day do you train

And, based on the cyclist’s answers to these questions, the bike fitter might opt to do the bike fit at the same time-of-day that the cyclist will be training or racing.

DIFFERENCES

Discussions with other premier bike fitters, most say that there is somewhere between a 4°-6° difference in knee angles between a Static bike fit and a Dynamic bike fit. The reason for this is that cyclists will tend to move either forward or rearward in the saddle when under a heavy load. Moving forward or rearward places the cyclist in a different position than when sitting neutral in the saddle as with a no-load condition.

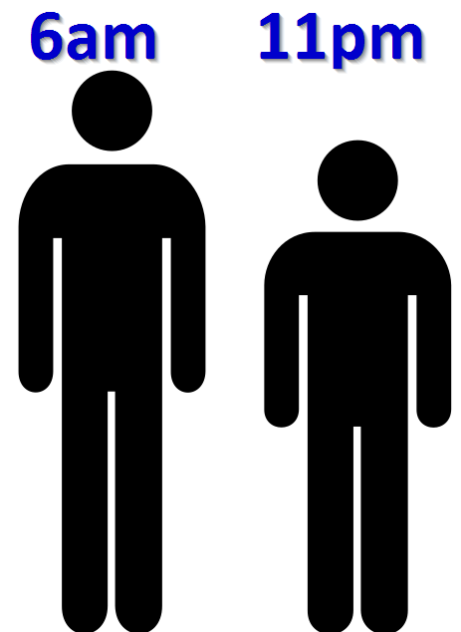


FIG 1. Public Domain Figure, US Dept of Justice, ADA Standards

SO, WHAT IS BEST?

Most bike fitters, including myself, agree that a Dynamic bike fit is best. The drawback is that this is a longer and therefore more expensive process, but, the advantage is that the fitter can view and evaluate the cyclist pedaling under real world loads. The cyclists' angles are recorded in real-time using a motion-based capture camera running at a high enough frame rate that smooth pedal rotations are seen without any blurring. The cyclists' motion is recorded to a file which is then opened in a computer analysis program such as Dartfish. Exact angles can be identified under different loads (if taken) and a more precise bike fit can be achieved.

A dynamic bike fit will put the cyclist closer to their optimal position than a static fit. For an even closer and more precise fit, you must also consider the time-of-day of your races and get a bike fit at this exact time.

SUMMARY

Does all of this matter? Even with a static bike fit, a good bike fitter will get their client into a better position than by having no bike fit at all. But, the same good bike fitter will get their client into an even better and near perfect position with a dynamic bike fit.

On average, a dynamic bike fit is about \$100 more than a static bike fit. This is because with a dynamic bike fit, the fit needs to be accomplished first, then, the bike fitter need to spend extra time copying the dimensions from the fit bike (Guru, Retul, Purely Custom, Shimano) machine onto the cyclists' bicycle. Of course, this is assuming that the bike fitter pays attention to detail as well as knows how to correctly and accurately copy measurements from the bike fit machine to the actual bicycle. Another option employed by a good bike fitter is to use the clients bicycle on a Computrainer and motion-based cameras and analysis software. In this example, the bike fit is a little more difficult to perform but once done, all updates have already been made to the clients' bicycle.

Since there are several items at play here, a good bike fitter will know how to use them to help you with the perfect fit. The only caveat is that you, the client, needs to find that bike fitter.

Bike Fitness Coaching is your one-stop shop for professional bike fitting and coaching. Guru, Trek and BikeFit static and dynamic fit certified, USAC level 2 certified coach with [Peaks Coaching Group](#).

