

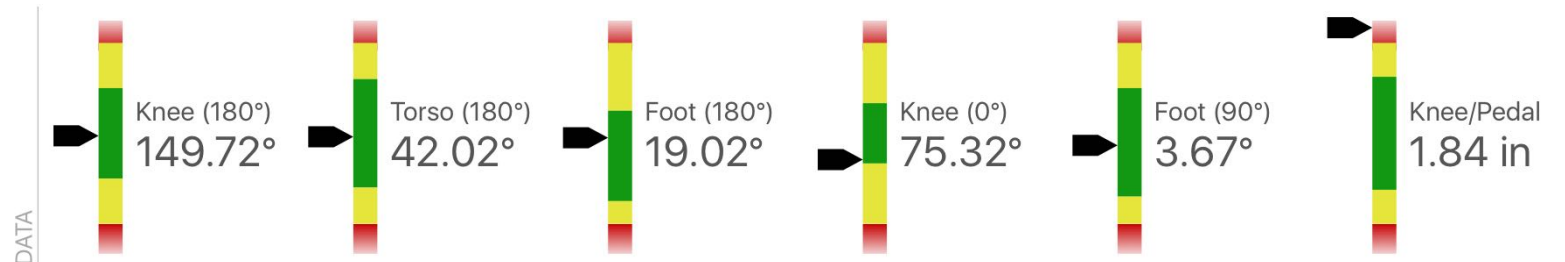
**Notes**

A sample file to demonstrate the function of Bike Fast Fit and provide some video to experiment with.

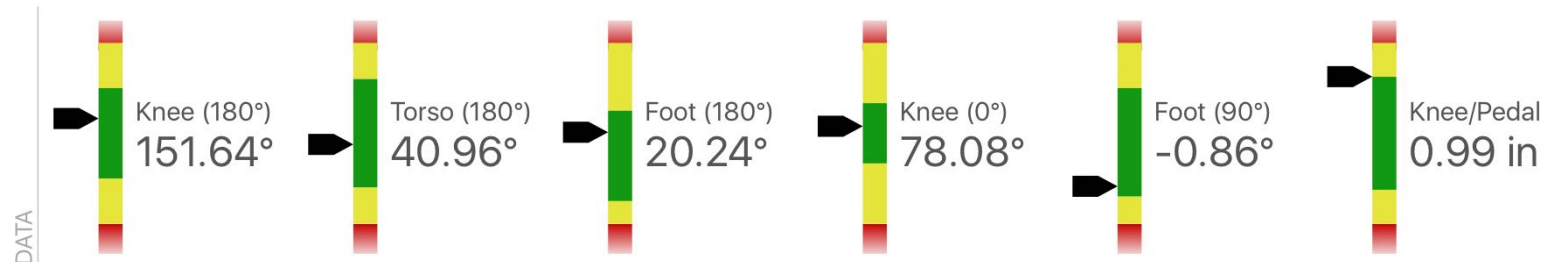
**Fitting Session Overview**



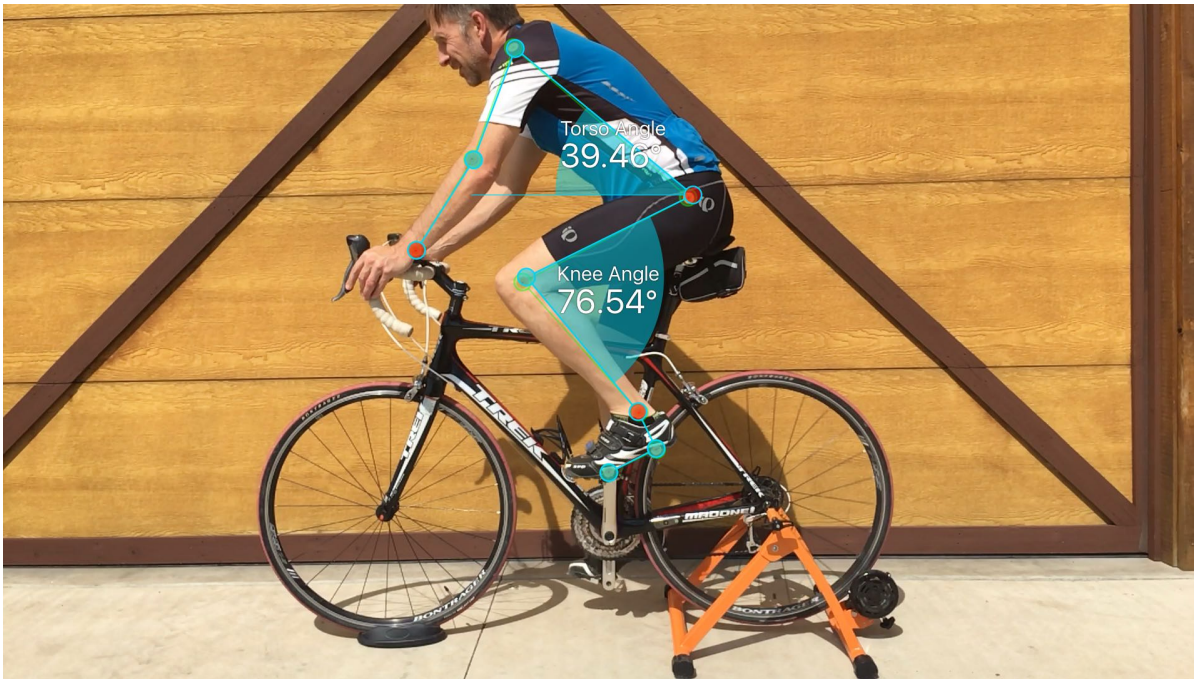
**Initial**



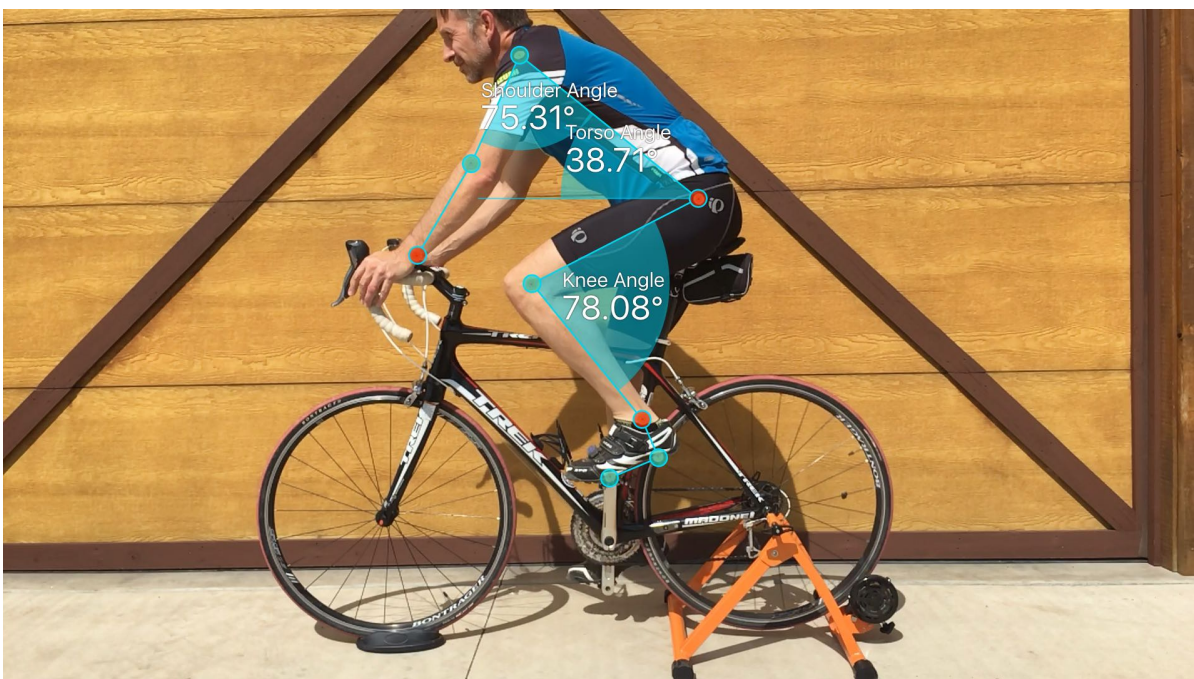
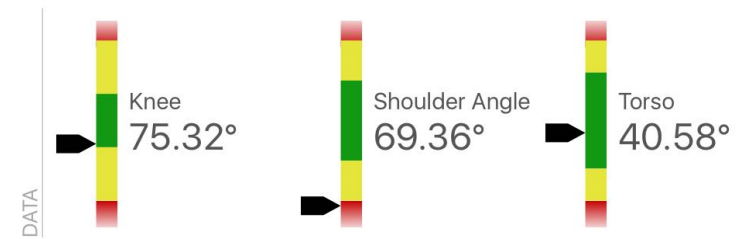
**Saddle Up 1/2" Back 1/2"**



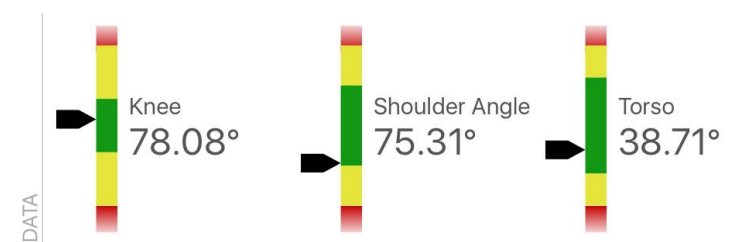
**Crank Position: 0°**



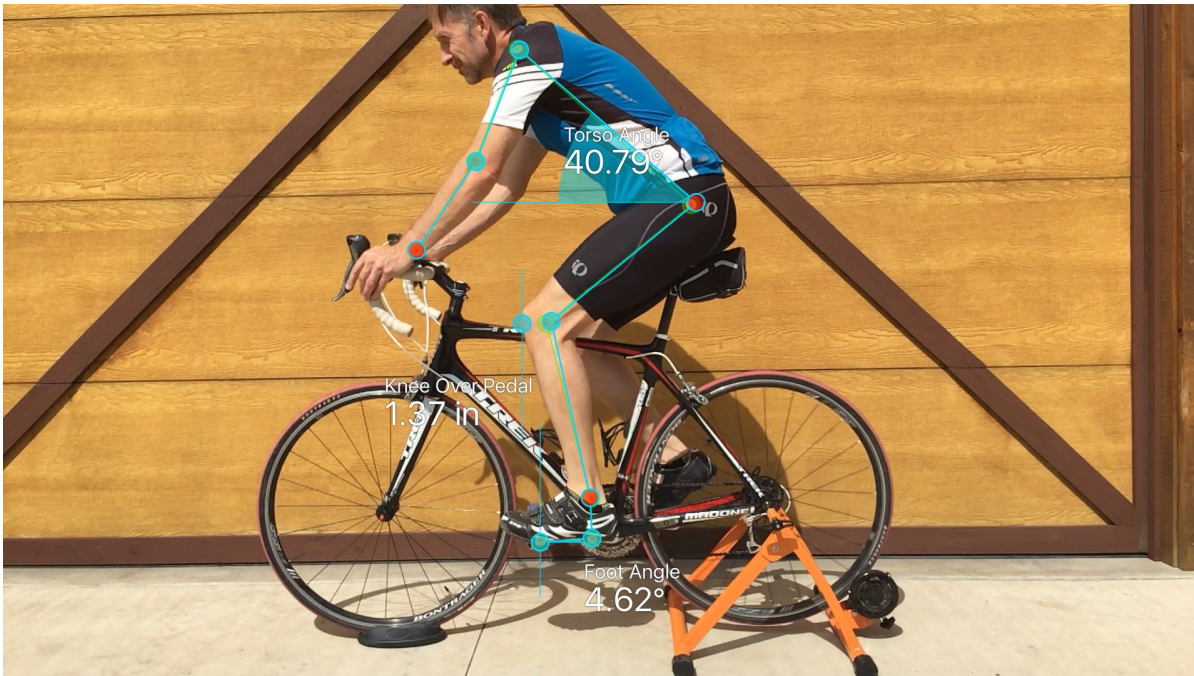
**Initial**



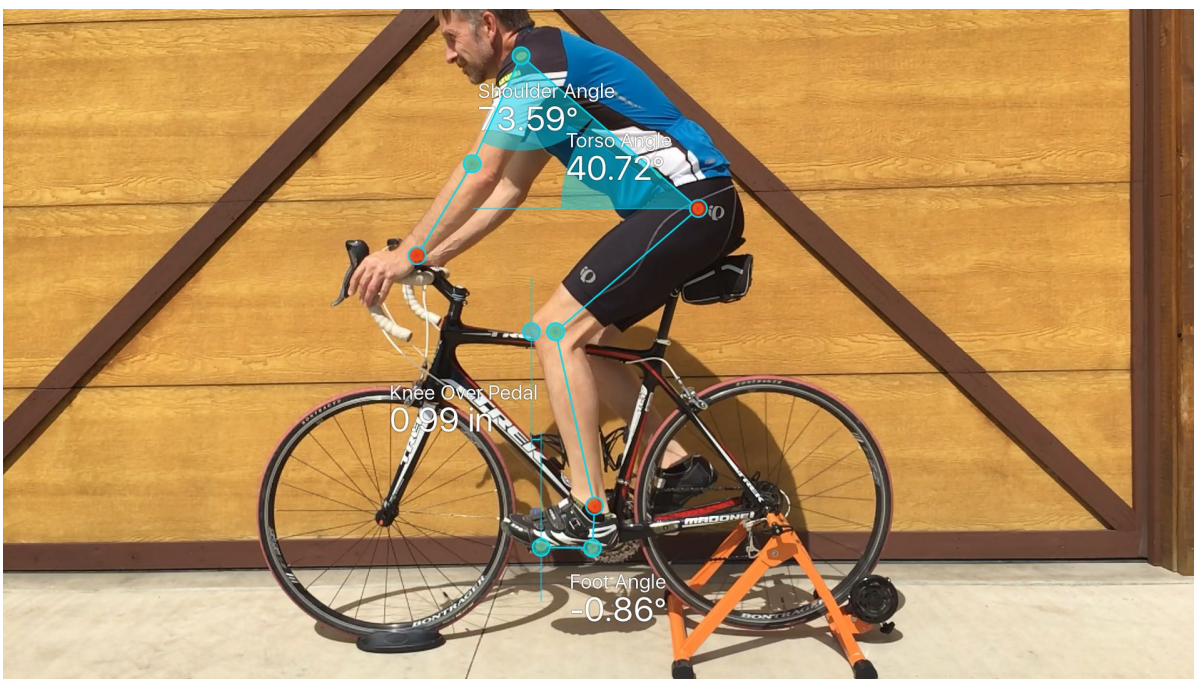
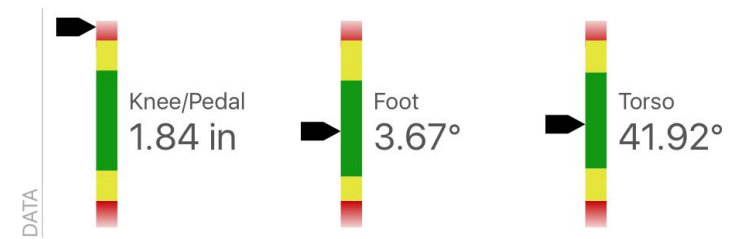
**Saddle Up 1/2" Back 1/2"**



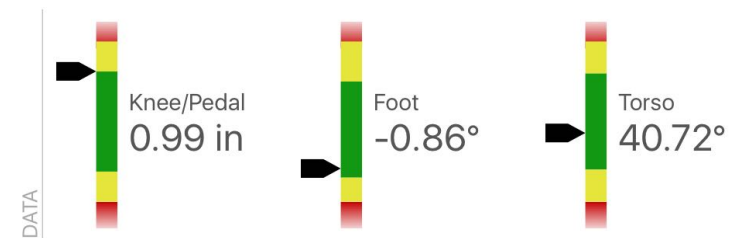
**Crank Position: 90°**



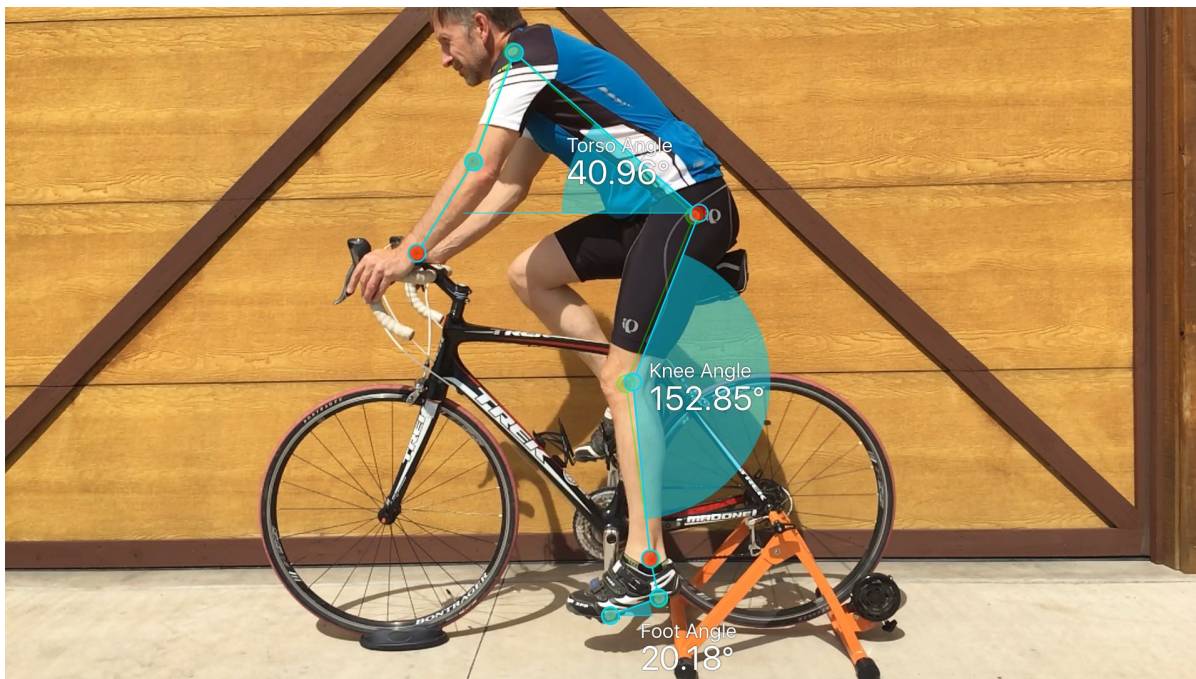
**Initial**



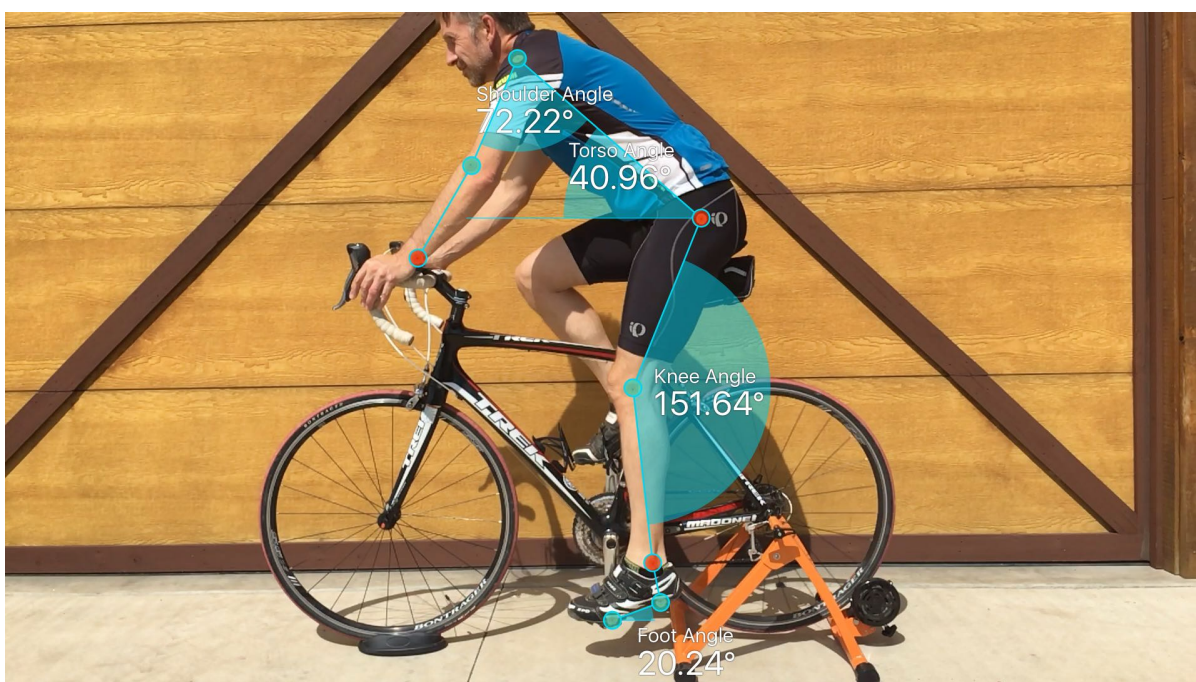
**Saddle Up 1/2" Back 1/2"**



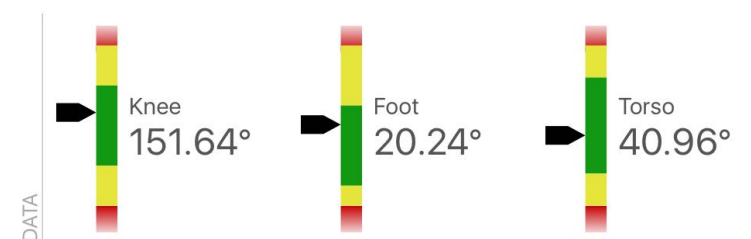
**Crank Position: 180°**



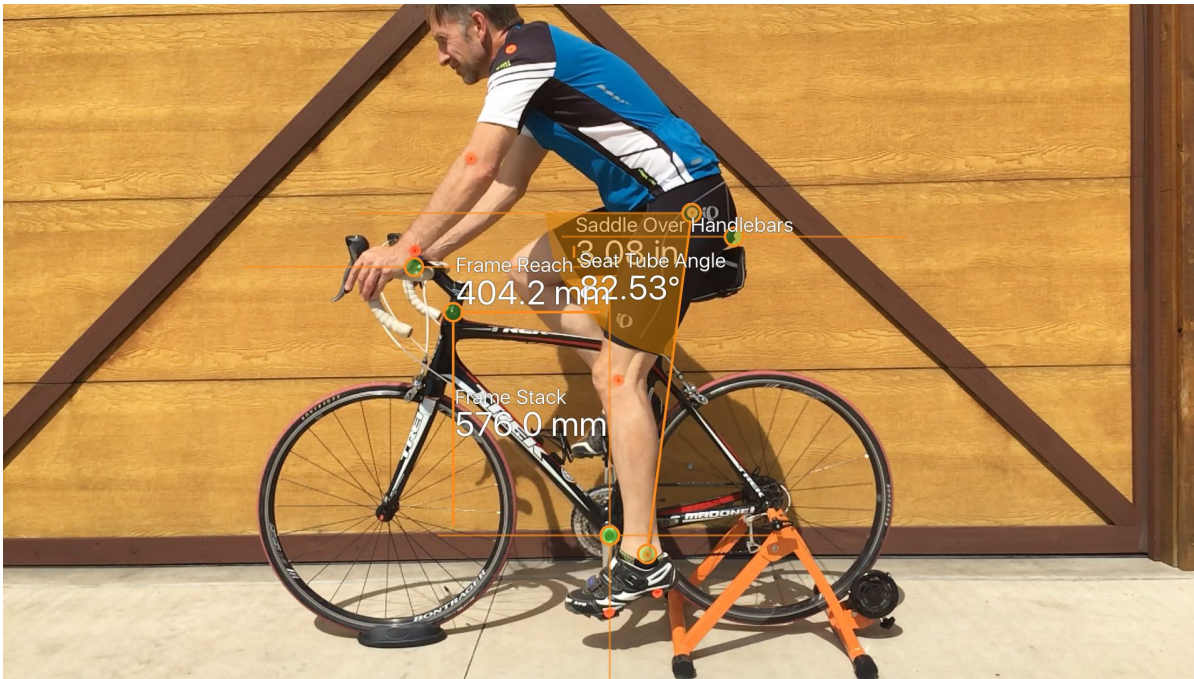
**Initial**



**Saddle Up 1/2" Back 1/2"**



**Snapshots: Initial**



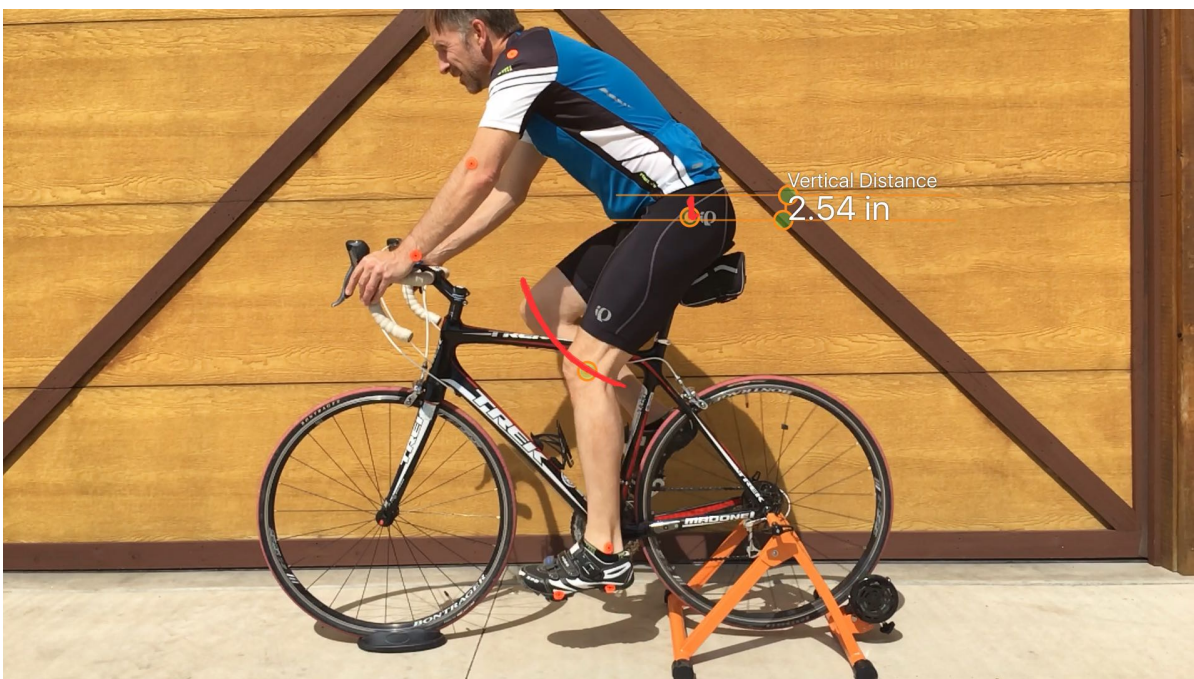
**Frame Reach / Stack**

**Notes**

Some basic frame measurements.

**Measurements**

Frame Stack	576.0 mm
Saddle Over Handlebars	3.08 in
Seat Tube Angle	82.53°
Frame Reach	404.2 mm



**Initial Hip Drop**

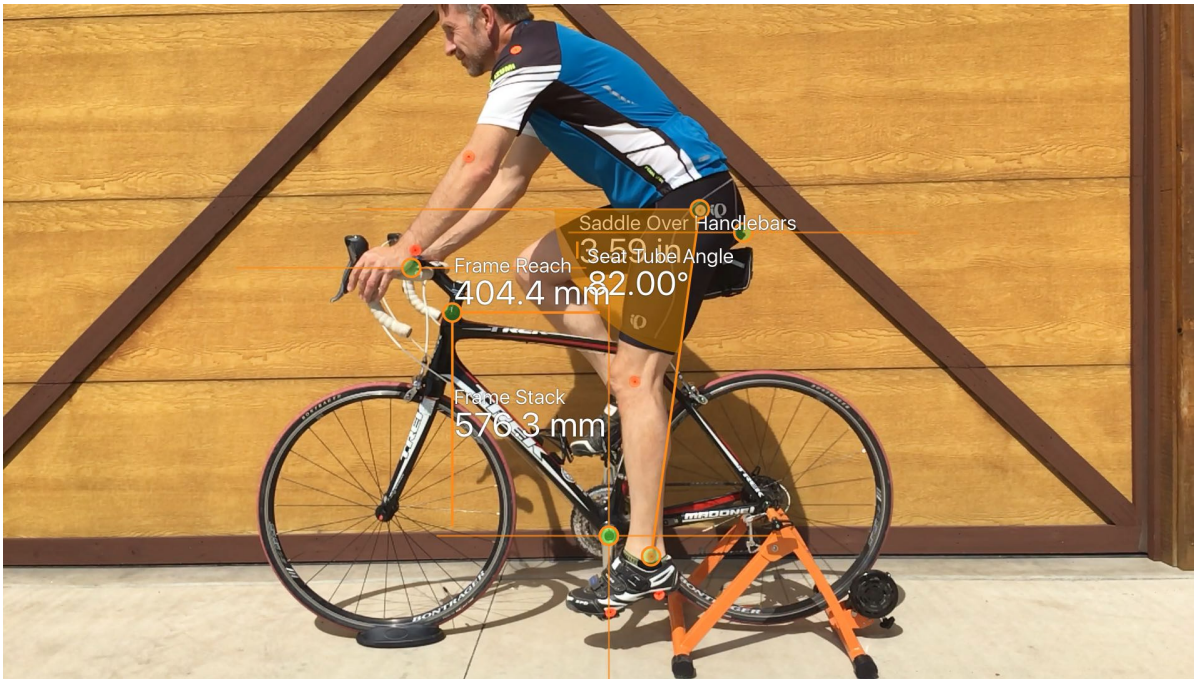
**Notes**

Looking at a trace of the hip and knee.

**Measurements**

Knee Trace	Trace
Vertical Distance	2.54 in
Hip Trace	Trace

**Snapshots: Saddle Up 1/2" Back 1/2"**



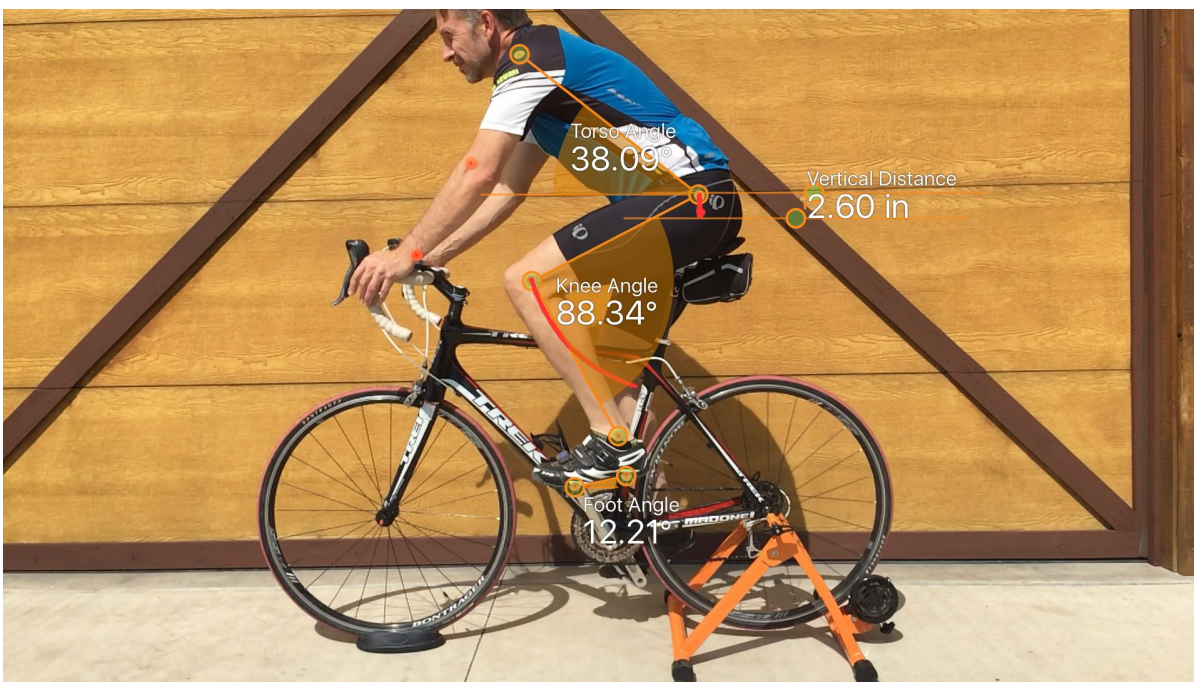
**Frame Reach / Stack**

**Notes**

Recheck of the basic measurements.

**Measurements**

Frame Stack	576.3 mm
Saddle Over Handlebars	3.59 in
Seat Tube Angle	82.00°
Frame Reach	404.4 mm



**Hip Movement**

**Notes**

Check to see how the hip drop has been affected by raising the saddle.

**Measurements**

Knee Trace	Trace
Knee Angle	88.34°
Foot Angle	12.21°
Vertical Distance	2.60 in
Torso Angle	38.09°
Hip Trace	Trace

## ManualTitle9

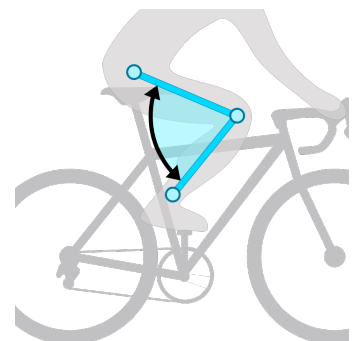
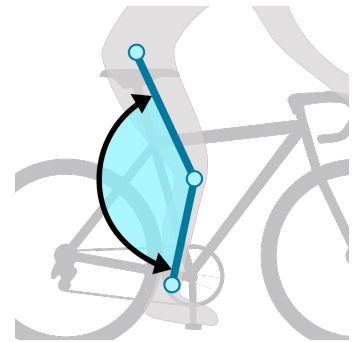
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### Knee Angle

Knee Angle is the angle formed by the hip, knee, and ankle. Knee angle is adjusted by raising or lowering the saddle.

Maximum knee angle is measured when the leg is at the bottom of the stroke (180° Crank Position).

Minimum knee angle is measured at the top of the stroke (0° Crank Position).



#### Road Bike

A maximum knee angle of 145 to 155 degrees is considered optimal.

#### Aero / Trial Bike

A maximum knee angle of 143 to 155 degrees is considered optimal.

#### Mountain Bike

A maximum knee angle of 146 to 150 degrees is considered optimal.

Avoid a minimum knee angle of less than 70 degrees. Angles less than 70 degrees can put excessive stress on the knees and lower back. @Measurement1Education.11

### Torso Angle

Torso angle is the angle formed by shoulder, hip and a horizontal line. Torso angle is measured with rider hands on hoods for road bikes. Torso Angle can be adjusted by either raising the saddle or by changing the stem angle or length.

Higher torso angles are generally more comfortable. Lower torso angles are generally more aerodynamic, but require back and hamstring flexibility. Bicycling science is trending towards a more upright position when on the hoods. This provides for better breathing and power. If you want to get more aero then use the drops.

Typical road bike torso angles:

#### Novice

45 to 60 degrees

#### Intermediate

40 to 45 degrees

#### Advanced

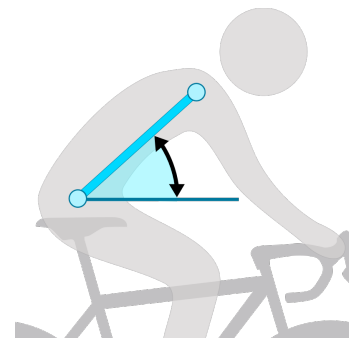
30 to 40 degrees

#### Elite

25 to 35 degrees

Aero/trials bikers will have a much lower torso angle of around 20 degrees.

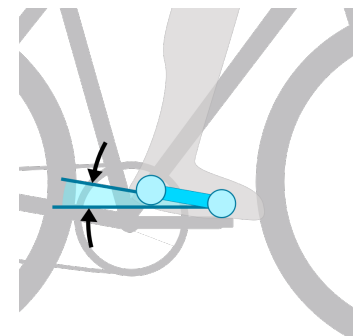
Mountain bikers prefer a torso angle of around 45 degrees which provides a more open hip angle and ability to generate maximum power.



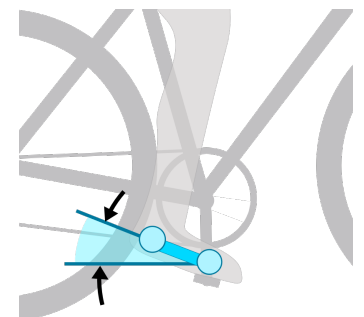
## Foot Angle

The angle formed by heel, toes and a horizontal line when pedal is in horizontal (90° Crank Position) or at the bottom of its stroke (180° Crank Position).

When the pedal is the 3 o'clock position of a normal stroke (90° Crank Position), the typical foot angle range is 7 to 15 degrees. Excessive toe pointing stresses calve muscles. Excessive heel dropping forces quads to do more work in the power phase of the pedal stroke.



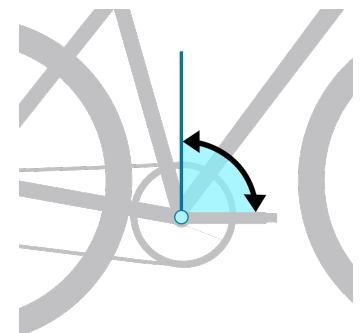
When the pedal is the 6 o'clock position of a normal stroke (180° Crank Position), the typical foot angle range is 15 to 30 degrees.



## Crank Position

The angle formed by the bottom bracket, crank arm and vertical line.

The crank position start at 0 degrees at the top of the stroke to 90 degrees when the crank is horizontal to 180 degrees at the bottom of the stroke. The angle is clockwise for the right side of the bike and counter clockwise for the left.

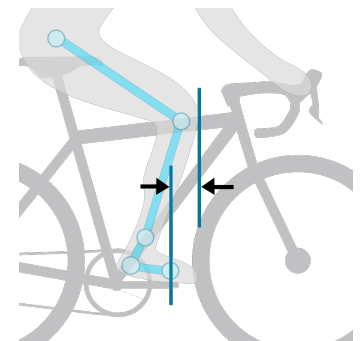


## Knee Over Pedal

The distance from tip of knee to pedal axle with crank forward and horizontal (90° Crank Position).

Knee over pedal distance is changed by moving the saddle fore or aft.

Bike fitters have typically recommended the front of the knee be flush with the front of the pedal spindle. Taller and long-distance riders typically move the knee up to 1 inch (2 cm) behind the pedal spindle. Triathletes and time trialists sometimes adjust the saddle so the knee is forward of the pedal spindle.



## Shoulder Angle

The angle formed by the hip, shoulder and elbow.

### Road Bike

Road bike shoulder angle is calculated with hands on the hoods and elbows bent about 15 degrees. Shoulder angle should be around 90 degrees for elite riders and is progressively lower as the torso increases.

### Aero/Trials Bike

For bikes with aero bars, aero bars should be placed so rider forearms represent a column perpendicular to the weight they are supporting.

