

Proper Bike Position (Fitting)

COMFORT + EFFICIENCY = PERFORMANCE (The Golden Rule)

Three reasons why bike set up is very important for everyone:

1/ Optimum Performance.

2/ Injury Prevention

3/ Your body is growing significantly up to the age of 18-20

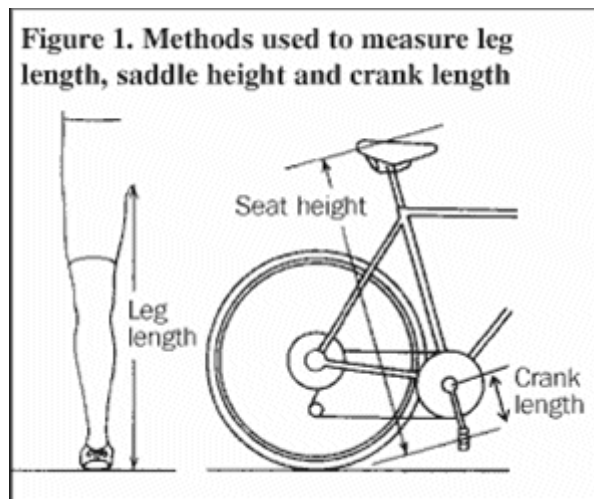
Bike Fit & Positioning – General

Incorrect frame size and poor bike fit will lead to inefficient energy use and can result in positioning problems and incorrect pedaling technique and injuries.

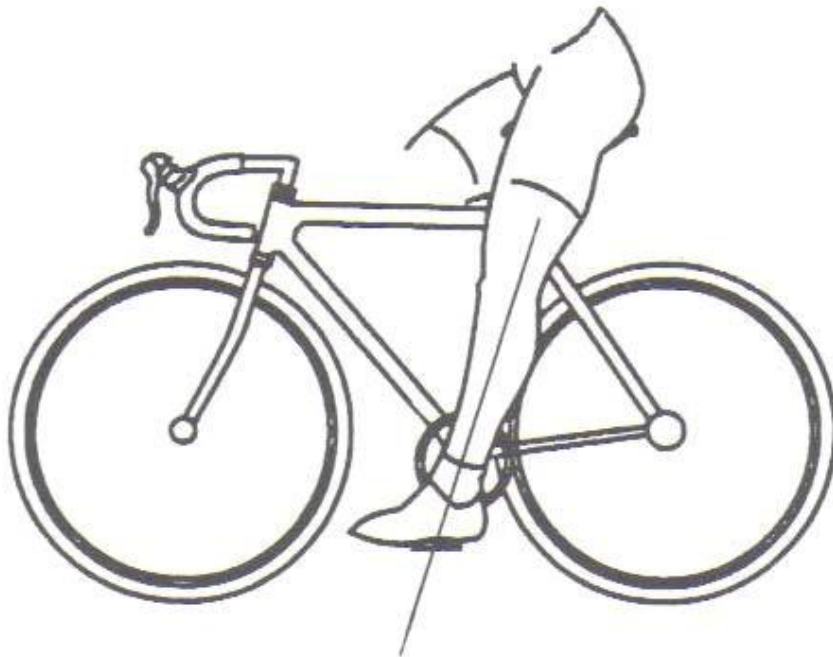
There are many techniques to achieve correct Bike Set Up but it is important for you to remember that we are all different and some slight adjustments may be required to account for long back, short legs, lack of flexibility, personal preference etc.

A/ Seat Height

Having your seat too high or too low may result in a loss of power and energy by over stretching or restricting the leg muscles. **Individualization:** It is important to realize the background and the goals of the rider being set up. The rider's goals will change how they are set up on the bike and how quickly changes can be made. For instance, a Road Bike position will differ from a Road Time Trial position and likewise on the Track a Pursuit rider will be set up differently than a Track Sprint rider.



There are several methods you can use but below is an initial set up that is very easy and practical to follow.



1. Sit on the seat with your cycling shoes on.
2. Put your heel on the lower pedal
3. Line the crank arms up so they are parallel with the seat tube
4. With the seat horizontal, adjust the seat so that the leg is almost fully extended,

A second method is to take the rider's inside leg measurements and multiply it by 0.885. This method gives you the measurement (parallel to the seat tube) from the centre of the crank (bottom bracket axle) to the top of the surface of the seat.

The third method which is used by Bike NZ for its Elite Athlete's involves the rider doing an effort on a wind trainer to find out where the rider would be sitting under load (effort) then with the crank in line with the seat tube and leg at full extension ensuring that the heel is dropped as far as possible we measure the angle of the shoe at the bottom of the pedal stroke

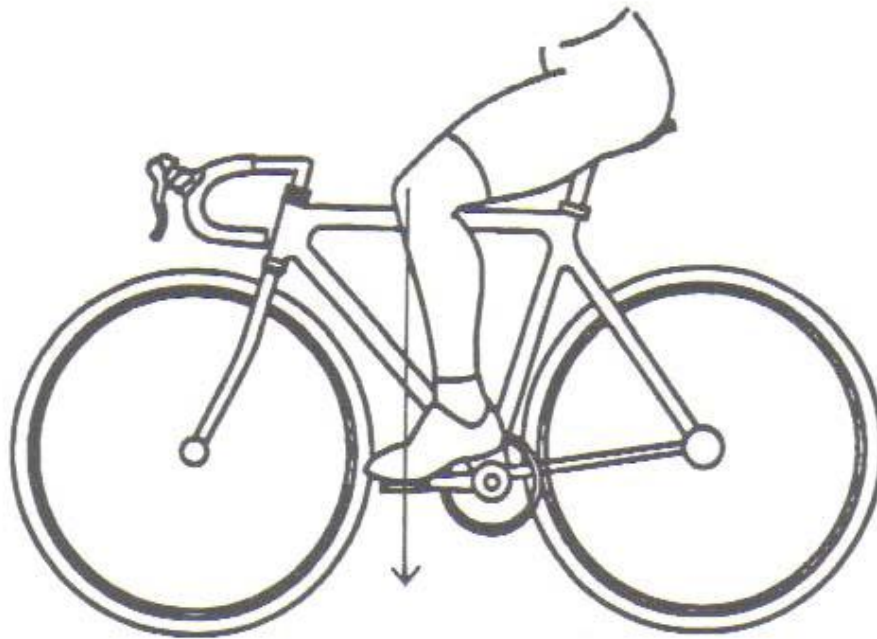
- **Road Position:** Heel should be 4 degree's below level
- **Road TT and Track Position:** Heel should be around 0 (neutral) to 1 degree above level
- **Track Pursuit:** Heel should be 4 degree's above level

Remember it is critical that this is done after doing a hard effort on a wind trainer.

Seat Position (Fore/Aft)

This is another critical measurement as it will determine the ability to put power through the pedals.

1. Have the rider on the bike either with the bike on a wind trainer or near a wall (to lean against). Make sure the ground is level
2. Slowly pedal until the cranks are horizontal to the ground (one foot at 3 o'clock and the other at 9 o'clock) Feet should be parallel to the ground
3. The rider should be holding onto the drops of the handle bars or the grips, and 'sit bones' should be positioned at the correct part of the seat
4. Drop a plumb bob (a piece of string with a heavy object on the bottom) from the tibial tuberosity on the knee down between the crank and frame (see diagram)
5. Adjust the seat forwards or backwards so the plumb line falls directly through or just behind the centre of the pedal axis



4 Stem Height and Reach

Your handlebar stem should be as low as possible, this is normally around 5-8 cm below the height of the seat (riders flexibility in the lower back, hips and hamstrings will limit how low you can comfortably set your handlebar stem).

Stem forward extension or reach should be sufficient that when handlebars and seat are in the correct position, the rider is neither 'reaching forward' nor 'cramped' in body position.

The low, aerodynamic stance of a stem and handlebar set-up being as low as possible and should be encouraged for true racing set-up

5 Handle Bars

Drop style handlebars should be positioned so the bottom (drop) part of the bar is angled slightly at about 5 -10 degrees from the horizontal (with the plug end of the bar lower than the front of the drop section). This places the wrists in a more natural position when holding the drops.

Make sure that the brake levers can be reached easily without undue hand movement. For road, low enough on the handlebars that moving the hand upwards out of the drops is not hard to do quickly.

Shoe and Cleat Position:

The purpose of cycling shoes is to maximize the drive through the pedal creating a stronger and smoother transfer of energy from foot to pedal.

However the natural style of the rider will also affect this.

1. Put your shoe on and mark the ball of your foot on the side of the shoe with a pen.
2. Put the pedal in the 3 o'clock position and put your foot on the pedal.
3. Check that the pedal is level, then adjust the cleat so that the ball of your foot is slightly in front of the pedal axle. The cleat (shoe plate that attaches to the pedal) should be placed over the ball of the foot (see chart below)
4. Looking down, feet should be parallel to the cranks, however some people have feet that turn naturally in or out so adjustments should be made to the cleats to accommodate the natural foot positioning eg: rotating the cleat left or right to allow each foot to sit in its natural position. An indication of where this position might be relative to the neutral position (parallel to the cranks) can be gained by observing where your feet naturally fall while walking.
5. Check that the inner sole arch support fitted in the shoes is also sufficient for the physiology/type of the rider's feet.

Knee, hip pains and muscle injuries are often caused by shoes and cleats being incorrectly set up. The exact position of shoes and cleats will be determined by your individual pedalling style, but this is a good start.



- Size 39-41: Center of ball of foot 8mm in front of center of pedal axle**
- Size 42-43: Center of ball of foot 9mm in front of center of pedal axle**
- Size 44-45: Center of ball of foot 10mm in front of center of pedal axle**
- Size 46-47: Center of ball of foot 11mm in front of center of pedal axle**
- Size 48-50: Center of ball of foot 12mm in front of center of pedal axle**

Additionally the alignment of the leg to ensure that the maximum power is transferred through the pedals is critical and this can be addressed through the use of wedges (The likes of Specialized Forefoot Wedges) to ensure the legs are straight.



Correct alignment is illustrated. Any degree of mis-alignment in the foot or ankle immediately travels up to the knee and hips.

Examples of styles of correct Bike Set Up

A/ Road Position:



B/ Road TT Position:



C/ Track Scratch Race Position:



D/ Track Pursuit Position:



