

PROPER BIKE SET-UP

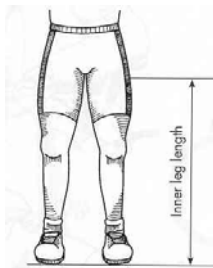
One of the best and most popular forms of exercise involves not only two feet, but also two wheels. Riding a mountain bike, road bike or just an old beater, can provide you with a great cardiovascular and total body workout. Proper positioning while on a bike is critical to your efficiency as well as your health. The following are some tips to help ensure that you make the most of your time on two wheels.

PROPER FRAME SIZE

Selecting a bike of proper frame size is a very individual task, as some people prefer to have a frame that is larger or smaller than is generally recommended. A good rule of thumb is to straddle over the top-tube and then attempt to lift the bike up toward your groin. There should be 2- 4 inches of clearance.

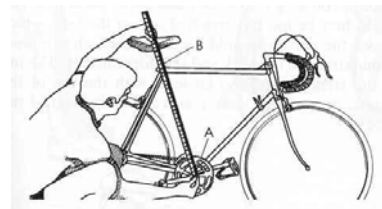
PROPER SEAT HEIGHT

Low back, shoulder and neck pain often results from an improper position on the bike. A correct position on the bike allows your leg muscles to work to their full extent, providing you with the most force generation per cycle. According to Greg Lemond, former multi-time Tour De France Champion, the optimal saddle height for the most effective power output and efficient oxygen consumption is 0.883 of the inseam. Inseam is measured with the cyclist standing barefoot, as shown in the diagram below.

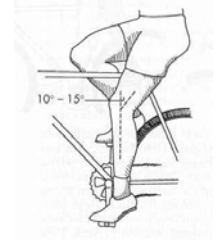


Your inseam measurement is multiplied by 0.883. The result is an optimal saddle height, measured from the centre of the bottom bracket to the top of the seat.

Due to the thickness of clipless pedals, 2 to 3 mm should be subtracted from the saddle height. Don't know what clipless pedals are? Don't worry about the 3 mm then!



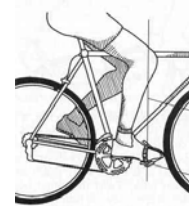
One of the more common injuries that we see in this clinic relating to cycling is lateral knee pain due to improper seat height position. When the seat height is set properly, the knee angle is 10 to 15 degrees when the cyclist is seated on the bike and pedalling with the ball of the foot. The measurement is taken when the pedal is at the lowest point of its stroke, a position called “bottom dead centre”.



PROPER SADDLE POSITION

The seat (also called a saddle) should be perfectly level, or elevated very slightly up in the front. The nose of the seat should not point down, as this encourages the rider to slide forward, which shifts the rider’s weight forward onto their hands.

The saddles fore and aft position should also be checked. With the pedals horizontal (in the 3 and 9 O’clock positions), and the rider on the balls of his or her feet, a plumb (vertical) line is extended down from the middle of the front of the knee cap. This line should intersect through the centre of the pedal axle. The fore and aft position of the seat can be changed as necessary to achieve this position.



STEM HEIGHT AND LENGTH

The stem attaches the handlebar to the frame, and is a key component to achieving proper rider positioning. The top of the stem should be level, or slightly lower (not more than 1 inch) than the seat height.

Stem length is imperative in producing a neutral riding position. It is the goal of choosing a proper stem length to achieve a 50 / 50 weight bias, so that the rider is neither leaning back, nor putting excessive load on the handlebars. With the bike supported by an assistant, the rider should stand up on the pedals (in the 3 and 9 O’clock positions). Remaining standing, the rider should be able to take their hands off of the bars with out falling forward or backward. The proper stem length minimizes strain on the back of the neck and shoulders, and helps to reduce the risk of cyclist wrist palsy.

COMMON INJURIES

1. Excessive forward weight bias puts an inordinate amount of pressure on the nerves of the hand as they cross the wrist. This pressure can result in a numb / tingling sensation in the hand. The lack of sensation can be treacherous because your grip is compromised. This condition is usually temporary, and goes away shortly after getting off the bike. However, with enough repetition, a chronic compressive injury to these nerves can result. Try to modify your grip by holding on to the bars as if you were turning a door knob.

2. Putting in long hours on a firm saddle places a great deal of pressure on a nerve that supplies the genitals. Much like wrist palsy, this condition is usually temporary and reversible, but consistent irritation can cause more permanent injuries, and has in fact been correlated with impotency and low sperm count in men. The solution is to invest in a high quality seat that has a cut-out down the full length of the middle of the seat.
3. Long periods of being arched over can put a tremendous amount of stress and strain on the junction between the neck and upper back. This repetitive strain causes muscles to tighten up, which restricts the motion of the joints that they cross. The subsequent lack of joint motion causes further irritation and muscle contracture, and a perpetuating cycle (pun intended) is formed. Proper bike set-up and frequent stretching breaks are the key to minimizing the discomfort while on a ride. See Dr. Holliday or Dr. Uchacz if the problem persists.

SUMMARY

Setting up your bike properly may seem like a lot of work, but you *will* benefit from it in terms of performance, health and comfort. If you don't feel qualified doing a full set-up yourself, take your bike to a reputable bike shop, preferably one that has it's own in-house race team, as they will be familiar with the intricacies of proper bike set-up. If you are setting up your bike on your own, get a friend to help you take the various measurements, and hold onto the bike while you are sitting on it. Better yet, get two friends to help you!