

Bike-fitting Basics

More people are looking for ways to exercise outdoors these days, and many are rediscovering the fun and health benefits of cycling. Whether you ride on-road or off, pedal casually or competitively, it is important to pay close attention to how your bicycle fits your body. A properly fitted bike will allow you to ride comfortably and safely, avoid injury, and produce more power so you can go faster with the same or less effort.

In general, when fitting a bicycle, there are five basic components to consider:

1. Frame size
2. Saddle (seat) height
3. Saddle position
4. Saddle tilt
5. Handlebar position

Frame Size

Frame size is perhaps the most important of all measurements because once you purchase the bike, there are very few—if any—minor adjustments that can affect the overall frame. Frame size is not necessarily dependent on your height; rather, it is more a matter of leg length. Simply, the frame should be easily straddled with both feet flat on the ground, and with perhaps an inch or two of clearance.

- For a road or hybrid bike, you should have an inch or two of clearance between your crotch and the top tube.
- For a mountain bike, clearance should be about four inches—especially if you plan to ride in rugged terrain where an unplanned dismount is likely.

Note that frame sizes come in inches or centimeters, depending on the manufacturer. Also, a 21-inch frame from one company may fit very differently from the same size made by another manufacturer. Lastly, frame size is not the same as wheel size, which is commonly used in sizing kids' bikes.

Saddle Height

A saddle (seat) set too high or too low can cause pain and lead to injuries of the back and knees, and will also affect the efficiency of each pedal stroke. As a starting point, set the saddle height so that your knee is slightly bent when the pedal is at its lowest position and the ball of your foot is on the pedal. It is recommended to make adjustments in very small increments and, if applicable, to wear your cycling shoes during the adjustment process.

Saddle Position

To check the saddle position, sit on your bicycle, using a friend or a stationary object to keep yourself balanced, and rotate your pedals until they are horizontal (at the 3 o'clock and 9 o'clock positions). If your saddle is positioned properly, your forward knee should be directly over the respective pedal axle (with the ball of your foot on the pedal). For precise measurement, use a plumb-bob to help you visualize the alignment. If adjustments are needed, loosen the seat post and slide the seat saddle forward or backward, keeping the seat level.

Saddle Tilt and Design

Generally speaking, your saddle should be level. Check this adjustment by using a carpenter's level balanced on the saddle while the bike is on level ground. If your saddle tips too much in either direction, pressure will be placed on your arms, shoulders and lower back. (Note: The type of bike you ride can influence the proper positioning and tilt of the saddle, so it is best to consult a bike shop for specific recommendations.)

Saddle selection is a matter of personal preference. Saddles come in gender-specific, comfort, and performance models. For example, women-specific saddles are wider at the back, have a shorter nose and usually have a soft or cut-out section in the middle.

Handlebar Position

Handlebar setup is a matter of personal preference because it will affect shoulder, neck and back comfort. Generally, handlebars are positioned higher for comfort (a more upright riding position) and lower for improved aerodynamics.

Bicycle Types

- Road bikes are designed for speed. They have lightweight frames, dropped handlebars, multiple gears, and narrow, high-pressure tires. Road bikes do not possess the stability or traction to be ridden off-road.
- Mountain bikes are designed for off-road cycling. Mountain bicycles feature sturdy, highly durable frames and wheels, along with wide, treaded tires to help the rider resist sudden jolts. Mountain bikes can also be used on the road, just not as efficiently as other bikes.
- Hybrid bikes are a compromise between mountain bikes and road bikes. Hybrids offer a more upright, comfortable riding position and have wider tires than road bikes. In comparison to mountain bikes, hybrids offer a smoother ride. Hybrids are great for fitness riding, riding with the family and light touring.

Always Wear a Helmet!

A bicycle crash can happen at any time, however, according to the National Highway Safety Traffic Administration, a properly fitted bicycle helmet reduces the risk of head injury by as much as 85 percent and the risk of brain injury by as much as 88 percent. The following are tips to help ensure the correct helmet fit:

- The helmet should be level on the head, and it must cover the forehead.
- The Y of the side straps should meet just below the ears.
- The chin strap should be snug against the chin so that when you open your mouth very wide, the helmet pulls down a little.
- Put your palm on the front of the helmet, and push up and back. If it moves more than an inch, more fitting is required.
- Shake your head around. If the helmet dislodges, work on the strap adjustments.
- Do not wear a hat under the helmet.
- All helmets sold in bike shops must be approved by the U.S. Consumer Product Safety Commission (CPSC) and should carry a CPSC sticker.

Consult a Professional

The suggestions above are general guidelines only. A quality bike shop should make the necessary adjustments for you or offer to help you fine-tune the fit of your bike, which is crucial to reduce wear and tear on the body, as well as minimize injuries. Visit the website of the National Bicycle Dealers Association at www.nbda.com to locate a nearby retailer. Professional bicycle retailers can fit you properly to a bike, assemble it professionally, and give you the advice and continuing service you need to ride safely and comfortably.

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For more information on prevention and wellness, or to find an ACA chiropractor near you, visit www.HandsDownBetter.org

Additional Resources:

- "Bike-fitting basics," REI, <https://www.rei.com/learn/expert-advice/bike-fit.html>. Accessed Oct. 4, 2020.
- Joe Lindsey, "Everything You Need to Know About Bike Fit," [Bicycling.com, https://www.bicycling.com/skills-tips/a20036352/bike-fit-0/](https://www.bicycling.com/skills-tips/a20036352/bike-fit-0/). Accessed Oct. 8, 2020.



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