



## Biking Injury Prevention Tips

The American Society of Hand Therapists offers the following recommendations to maximize the enjoyment of mountain biking and long-distance cycling while minimizing the risk of injury.

### Off Road/Mountain Biking

Mountain biking is an exciting sport that carries a certain amount of risk of injury. By understanding the effects of stress on the upper extremities and the prevention of stress-related injuries, riders can ensure their mountain biking adventures are safe and fun.

1. Make sure your hands are properly warmed up before you begin your ride. Spread your hands and fingers wide and then ball them up into a fist. Repeat five times. Rotate your wrists five times in one direction, then five times in the alternate direction. These exercises will keep your hands and wrists flexible and decrease the chances of muscle strain. Treat your hand and arm muscles like you would all other muscles that need to be properly stretched prior to riding.
2. **Make sure your bicycle is adjusted to fit you. The potential for stress injuries to your hands, wrists, elbows and shoulders are exacerbated when using equipment that doesn't fit well.**
  - To take the roughness out of your off road biking, a good suspension fork will absorb the shock for your upper body.
  - Handlebars with an 8-10 degree sweep will place your wrists in a more efficient position for grasping. Straight bars force you to bend your wrists towards your thumb (radial deviation). Positioning in radial deviation weakens your grip and can place pressure at the base of your thumb, causing joint pain.
  - Attaching bar ends to your handlebar will increase leverage for climbing and increase comfort for long distance riding. Bar ends with an L-bend will provide multiple hand positions that will decrease fatigue and numbness in the fingers. Ergonomic bar ends that are molded and made from hard rubber over an aluminum skeleton are now available.
  - Changing your handlebar grips is easy and will only cost about \$10. Dual-density grips help decrease vibration and will conform to your hand better than thin or hard rubber grips. There is now an ergonomic hexagonal design available.
  - Carbon fiber handlebars are sturdy and give a little during hard rides to provide vibration dampening for your upper body.
  - For a more upright position, you can choose a stem with a higher degree of rise or a riser handlebar. This will help relieve neck fatigue and decrease pressure on the palms of your hands. Most riser bars are available with ½ to 2 ½ " of rise. Be careful not to raise your handlebar much higher than your seat or you will be unable to maintain weight on your front tire when climbing hills.
  - Check the width of your handlebar. You may need to trim the length of your handlebar to fit your shoulder width. This will decrease arm fatigue and help you steer.
  - If you need to shorten your reach to your handlebar, replace your stem with a shorter one. Typical length is 90-140 mms.
  - If you over inflate your tires, you will have a stiffer ride. For a more comfortable ride, keep your tire pressure between 35-45 lbs.

3. If you are getting pain or numbness in your hands, try examining an old pair of padded gloves. Look at the palm side of the glove and feel where the handlebar is placing the most pressure on your hands. The glove's padding will be more worn in these areas. If the padding is worn more where you have the pain, try a glove with padding that is thicker or a different design.
4. If you do injure yourself, be sure you see a hand medical doctor and get proper treatment — a small injury to the hand or arm can become a serious long-term disability if neglected. If you have a repetitive motion injury, have your doctor refer you to a hand therapist to keep you active without pain.

### Long-Distance Road Cycling

1. The positioning of your hands during long-distance cycling is extremely important. Keeping your hands in one position for an extended period of time — greater than three to five minutes — can cause several problems, especially if the cyclist has pre-existing conditions such as osteoarthritis, tenosynovitis, and / or carpal tunnel syndrome. Keeping your hands in the same position over an extended period of time can compromise circulation, cause nerve stretching or compression, cause joint compression and cause undue stress on tendons and ligaments. All this can lead to inflammation and nerve compression, causing pain and numbness in the hands.

The key to minimizing the risk of any hand condition while cycling is movement, movement, movement. Maintaining proper posture, using proper gear, changing your hand positions regularly, and performing hand stretches before you ride and during water breaks are essential to having healthy, happy hands.

2. Here are a couple of good, quick stretches you can do to counteract the force and tension placed on your hands and arms while cycling over long distances. If you make these a habit every time you stop to rest, you'll maintain the health of your hands for years of cycling. Perform each of these about five times, holding the stretch for five to ten seconds:

- A. Wrist extension stretch to counteract gripping handlebars for hours



- C. Overhead arm stretch to counteract forward-sitting posture for hours



- B. Wrist flexion stretch to counteract long-term wrist extension



- C. Shoulder stretch to counteract back and elbow tightness



3. Achieving the proper fit with your bike is imperative for good riding posture. If the handlebars (stem height) are too low, the rider must lean forward and increase compression due to body weight. The saddle (seat) angle should not be too low in the front, or the rider will slide forward, increasing compression forces to the shoulders. It's wise to have your local bicycle dealer assess your bike fit prior to taking long journeys!

While cycling, your back should be slightly arched outward to minimize stress on the spine. Your shoulders should be kept in line with your body, so the chest muscles carry most of the weight of your upper body. And your elbows should be slightly bent and not locked in extension. A locked posture will cause undue stress to the elbow joint and strain to the triceps. The wrist should be kept in a neutral position or in line with your forearm.

4. Before we start to look at hand positioning for road bikes, let's talk about bike gloves. Gloves are designed to absorb compression to the hand and wrist much like shocks on your car. And they are imperative for safe riding!

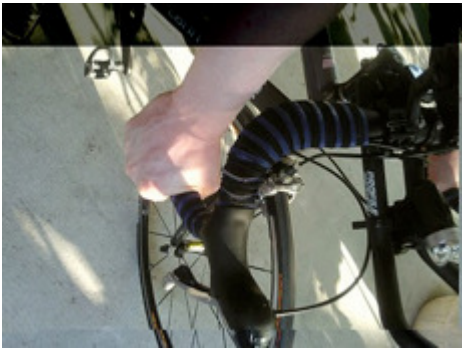
Ideally, your wrists should be kept neutral — or, in line with your forearm (see pictures C, D and E, below).

If the wrist is put in maximal extension (picture F, below) it will put undue pressure on the nerves and vessels that travel through the wrist, potentially causing numbness and diminished circulation.

Another way to take pressure off your hands and wrists is to install aerobars (pictures A and B, below).

Not only do you have the added benefit of improving your speed with these bars, as they make the rider more aerodynamic, but you are offered an option to take the weight off of your hands. These bars have been a lifesaver for my own wrist and hands.





E.



F.