

## Achilles Tendons

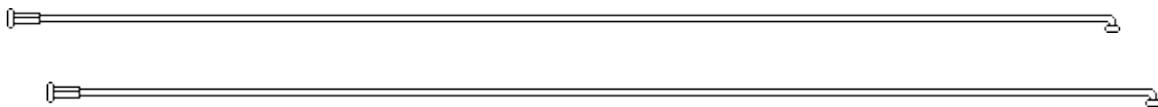
The Achilles tendons are the tendons at the back of the ankle, connecting the calf muscle to the heel. If you have pain in these tendons, it usually indicates a problem in pedaling technique. Achilles tendon problems often result from "[ankling](#)" during the pedal stroke. This is occasionally related to having the saddle set too high, forcing the cyclist to point the toes excessively to reach the bottom of the pedal swing.

It can also be caused by having your cleats set too far forward, or otherwise pedaling with the toes. The farther forward the contact between the foot and the pedal, the greater the stress on the Achilles tendons.

There is a widespread belief that you should pedal with the ball of the foot centered over the pedal shaft. I believe this is not necessarily desirable, though it dates back to the [high-wheeler](#) era.

Back in the high-wheeler era (1870s through early '90s) long legged riders had an advantage, because they could straddle a larger diameter wheel, effectively giving them a higher "gear." By pedaling on the balls of their feet, they could get a bit more leg extension, permitting a given rider to straddle a larger, faster machine. The development of the [safety bicycle](#) rendered this concern obsolete, but the habit (and advice) persisted.

The other reason for pedaling on the ball of the feet is if you are riding in soft-soled shoes, the ball of the foot is better able to bear weight than the arch is. However, with rigid-soled shoes this is a non-issue. For short distance, low intensity riding even with soft-soled shoes this is not generally a problem in practice.



## Ankles

Ankle pain while cycling is often the result of "[ankling](#)" while pedaling. It may also result from being flat-footed, in which case orthotic shoe inserts are a likely remedy.

Another possible cause of ankle pain is a bent pedal or crank, causing the foot to wobble back and forth as the pedals turn.



## Back

Back pain while cycling is usually caused by poor cycling [posture](#). Good cycling posture is very different from good posture while sitting or standing. A posture that is comfortable for sitting still will not necessarily be comfortable while actually riding a bicycle. Correct cycling posture

must facilitate the pedaling action, and also must enable the rider to cope with the jolts that result from road irregularities.

When riding a bicycle, the back should be arched, like a bridge, not drooping forward between the hips and the shoulders. If the back is properly arched, bumps will cause it to flex slightly in the direction of a bit more arch; this is harmless. If you ride swaybacked, bumps will cause the back to bow even farther in the forward direction, which can lead to severe lumbar pain.

Some back-pain sufferers modify their bicycles with extra-high handlebars so that they can sit bolt upright, with their spines straight. This is actually counterproductive in most cases, because a straight spine has no way to "give" when the bike hits bumps. Road irregularities will jam the vertebrae together, often aggravating existing back problems. The bolt-upright posture is comfortable if you're sitting stationary on the bike, but is not suitable for riding much faster than a brisk walk. Riders who for some reason require such a position should use some form of suspension...a [sprung saddle](#) at the very least.



## Feet

Foot discomfort is often the result of inappropriate footwear, specifically shoes with soft soles that concentrate the pedal pressure on isolated parts of the foot. It can also be related to riding in a too-[high gear](#), which results in more pressure of the foot against the pedal.

Some cyclists are hypersensitive to having their feet overheat while riding. An excellent solution to this is to wear cycling sandals. Cycling sandals are a fairly new development, and most people's initial reaction to them is "what a goofy idea." In practice, however, they are **very** comfortable in warm weather. For longer rides with sandals, you should wear socks to protect against chafing.



## Fingers

Numbness of the fingers is a potentially dangerous symptom, often related to carpal tunnel syndrome.

This is one of many problems which can result from bad [upper body posture](#).

### [The Two Bump Problem](#)

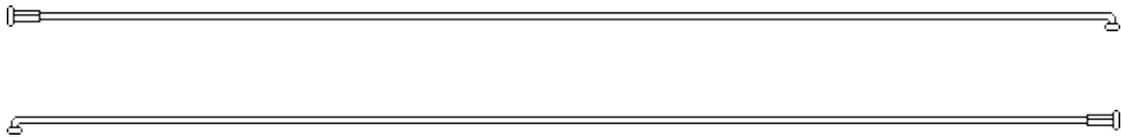
Like your bottom, the heel of your hand has two bumps, with a sort of valley between.

There are important nerves which run through this valley, and it is important to avoid excessive pressure here. One common cause of excess pressure on this "valley" is riding on the top corners of drop bars in such a way that the bar presses here.

As with saddles, the "two bump problem" can actually be exacerbated by excessive padding! If you use thick foam handlebar grips, and/or gloves with too much foam/gel padding, the "bumps" that are best able to carry weight will press through the foam, but the foam in the middle will press back at the valley. Thus, as with saddles, too much foam/gel can worsen the problem it was intended to correct!

### **Wrist angle.**

Numbness can also be related to poor wrist positioning. Generally, the wrist should be held so that the hand is pretty much in line with the forearm. If your hand is bent upward from the forearm, the nerves can get pinched, causing numbness.



### **Knees**

Cycling, done properly, is much less stressful to the knees than many other aerobic activities, since there's no impact involved. Nevertheless, knee injuries do occur, usually as a result of poor technique or position.

#### **Gear Selection**

A principal cause of knee problems is over-stress as the result of using too high a gear. For more on this, see my article on [Gear Shifting](#).

#### **Saddle Height**

Another common cause of knee problems is incorrect saddle adjustment, particularly if the saddle is too low. See my article on [Saddles](#) for more details on this.

#### **Cleat Adjustment**

Some knee problems result from incorrect placement of shoe cleats. Everybody has a natural angle that each of their feet prefers to be at; some are duck-footed, some are pigeon-toed, whatever. When you walk or ride with plain pedals, your foot assumes this angle, and everything is hunky-dory. If you use cleated shoes and matching pedals, it is important that the cleat is adjusted so as to permit your foot to be at its natural angle. If your cleats are misadjusted, the resulting twist on your lower leg will affect the alignment of the knee joint, and cause serious problems.

This is less of an issue if you ride pedals with "float" (limited rotational freedom) in the cleat attachment. Most newer clipless pedals offer at least some float.

The [N.E.C.A. Fit-Kit](#) © includes a cleat adjustment procedure called the "R.A.D." (Rotational Adjustment Device) which is very worthwhile for "problem" cleat fittings.

## Lateral Movement--Chondromalacia

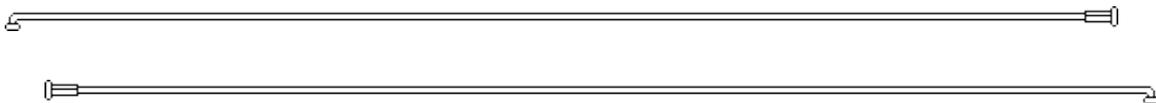
The knee joint is basically a ball-and-socket joint, with the ball at the bottom of the femur and the socket at the top of the shinbone. A common cycling-related injury is called "chondromalacia", and has to do with irritation of the cartilage pad in the "socket" which provides lubrication for this joint. Reputedly, an edge of this cartilage can get turned up and dog-eared, causing irritation and inflammation.

Chondromalacia is often blamed on lateral movement of the joint, and a common prescription is to strengthen the quadriceps muscles which run along the front of the thigh and along side the front of the kneecap. It is these muscles which provide lateral positioning for the joint. The usual exercise prescribed for this is to sit in a chair with one leg at a time held out straight, unsupported. Sometimes it is suggested to place a pillow or other weight on the foot for this exercise.

Something the doctors don't seem to think of suggesting, but which really helped me a lot, is to make a conscious effort to avoid lateral knee movement during the pedal stroke. Watch your knees as you ride (in a low-traffic setting!) They should move up and down as you pedal, with no sideward motion. Many cyclists have a sideways hitch in their pedaling motion, which I believe is a major contributor to chondromalacia. If you pay occasional attention to this, it doesn't take long to train yourself to keep the knees in line.

## Long Cranks

The longer your cranks are, the farther your knees will have to flex on each stroke. Different riders will have different amounts of flexibility in this regard, but riding with longer cranks than you are used to can definitely cause problems.



## Hands

If the skin of your hands gets sore, cycling gloves can help a great deal. If you ride bare handed, sweat may make your hands slippery, and this can lead you to grip the bars too tightly.

See also the entries on [wrists](#) and [fingers](#)



## Neck

Neck problems are most often due to poor cycling [posture](#).

An occasional source of neck trouble is poor adjustment of a helmet, specifically, a helmet which is too far forward on the head. If the helmet is too low in front, the rider is forced to tilt the head

upward to keep the helmet from blocking the view forward. Sharp backward bends in the neck can cause severe problems, so make sure that your helmet is properly fitted for **your** riding style.

Riders with a more aggressive riding position need to wear their helmets farther back than those who sit more upright.

Poorly fitted eyeglasses can also cause this problem. If your glasses slide down your nose you may have to tilt your head up higher to be able to be looking through, not over, the glasses.



## Posture

Good cycling posture is very different from good posture while sitting or standing. A posture that is comfortable for sitting still will not necessarily be comfortable while actually riding a bicycle. Correct cycling posture must facilitate the pedaling action, and also must enable the rider to cope with the jolts that result from road irregularities.

Many inexperienced cyclists adopt a posture which allows their upper bodies to be supported entirely by their bones. This has the advantage that it requires no muscular effort, but can lead to discomfort or injury when road shocks are transmitted through the rigid bones. This discomfort may affect the [back](#), [hands](#), [wrists](#), [shoulders](#) or [neck](#).

Posture faults are mainly found in three places:

1. **The back** should be arched, like a bridge, not drooping forward between the hips and the shoulders. If the back is properly arched, bumps will cause it to flex slightly in the direction of a bit more arch; this is harmless. If you ride swaybacked, bumps will cause the back to bow even farther in the forward direction, which can lead to severe lumbar pain, or even serious injury.
2. **The elbows** should be slightly bent, not straight and locked. This allows the arm muscles to act as shock absorbers.
3. **The shoulders** should be pushed forward so that the muscles in the front of the chest help carry the weight of the upper body. Many cyclists make the error of letting their upper spine dangle forward, held up by the collar bones.

Rolling the shoulders forward counteracts the bending of the arms, resulting in the same general angle of the upper body as a relaxed, bone-supported posture provides, but with the resiliency of muscles providing shock absorption.

If you've been letting your bones do all the work, you'll find that the muscle-supported posture is tiring at first. The harder you pedal, the more of your upper-body weight will be supported by the reaction forces to the pedaling.

If you're not used to riding this way, you'll find that you can only sustain the muscle-supported posture for a few miles. When you tire, you'll revert to a bone-supported posture, and problems

will ensue. The answer to this is to start with rather short distances and only gradually work up to longer ones. It is true that anybody in normal health can ride a bicycle for 10 miles, but someone who is not accustomed to riding with good posture will find such a ride uncomfortable. It is better to start out with 2- or 3-mile rides and **gradually** increase the distance.

Your ability to adopt a good posture on a given bicycle will depend on correct fitting/adjustment of the bicycle. See my article on [Frame Sizing](#) for more on this.

If you ride a racing-type bike, but have a non-competitive riding style, it's not unlikely that your handlebars are too low. This is a common cause of [hand](#), [wrist](#), [shoulder](#) or [neck](#) discomfort. See my article ["Hands Up!"](#)



## Shoulders

Shoulder discomfort is generally due to faults in the rider's [posture](#)

It can also be caused by having the [saddle angle](#) too low in front: This tends to make you slide forward as you ride, and you wind up using your hands to push yourself back into position.

If you have pain in just one shoulder, it may be due to an asymmetry. Are you bending your arms both the same amount? Are you holding one of your shoulders higher than the other?

Some people have one arm that is longer than the other. For these people, it may help to deliberately set the handlebars slightly askew with respect to the front wheel, turning them away from the longer arm.



## Thighs

Cyclists who do longer rides in hot weather are at risk for painful chafing on the inner thighs. This is usually the result of an in-appropriate saddle. A saddle that is [too wide](#) will chafe, and saddles with excessive foam/[gel](#) are also likely to cause this sort of problem. The best saddles for preventing chafing are traditional [leather saddles](#).

Wearing proper cycling shorts will help, but beware shorts with excessive padding, which can make it worse.

Many cyclists find relief by generous application of corn starch before longer rides.



## Wrists

Wrist pain is often caused by poor [upper body posture](#).

It can also be caused by having the [saddle angle](#) too low in front: This tends to make you slide forward as you ride, and you wind up using your hands to push yourself back into position.

See also the section on [numb fingers](#).