

# Bike Fit and Knee Pain



## Do you have knee pain with cycling?

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- Knee pain is the most common leg overuse injury in cyclists.
- Between 42%-65% of recreational and competitive cyclists experience overuse knee injuries.
- Knee pain in cyclists is typically caused by an overuse injury from training errors, IMPROPER BIKE FIT and lower limb alignment.

## Why is bike fit important?

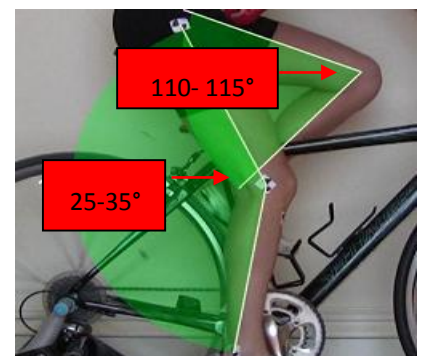
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- The average cyclist performs between 3,600-7,200 pedal revolutions per hour.
- Overuse injuries occur when the body experiences damage over and over again without enough time to heal itself.
- Having a bike fit that does not support your body's natural alignment can place your joints in uncomfortable positions that over time can cause discomfort and injury.
- A bike specialist can help fit you properly on the bike and if needed work together with you and other professionals that specialize in body alignment and movement, such as physical therapists, to provide you with an individualized bike fit.
- No matter what your level of cycling is, novice to competitive, an individualized bike fit is essential. It will improve your comfort, enjoyment on the bike, performance, and reduce the risk of injury.
- The most important components of bike fit to prevent knee injuries are saddle and pedal positioning.

## Saddle

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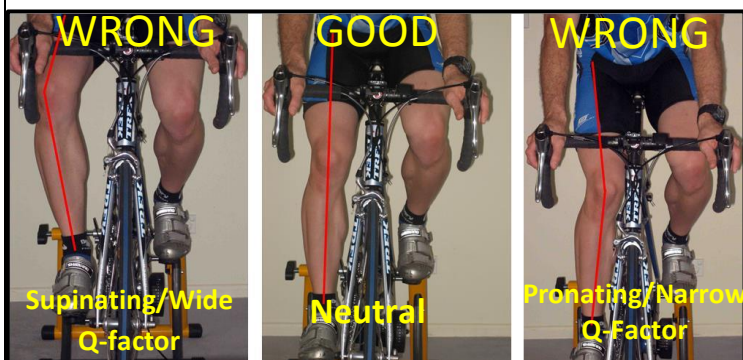
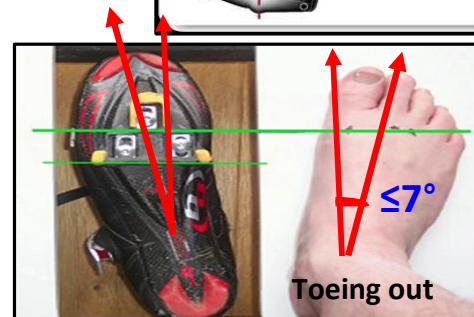
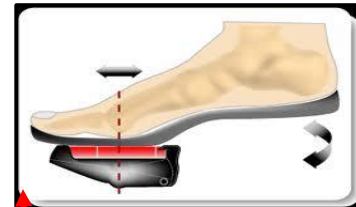
- Your saddle height should be adjusted so that at the bottom dead center of the pedal cycle your knee should be bent between 25 and 35°. At the top of the pedal cycle your knee should not bend more than 110-115°.
- Increased knee bending during cycling causes more stress on the knee and increases the risk of an overuse knee injury.
- Lowering the seat or moving your seat or your bottom on the seat forward will increase the amount of knee bending during cycling.



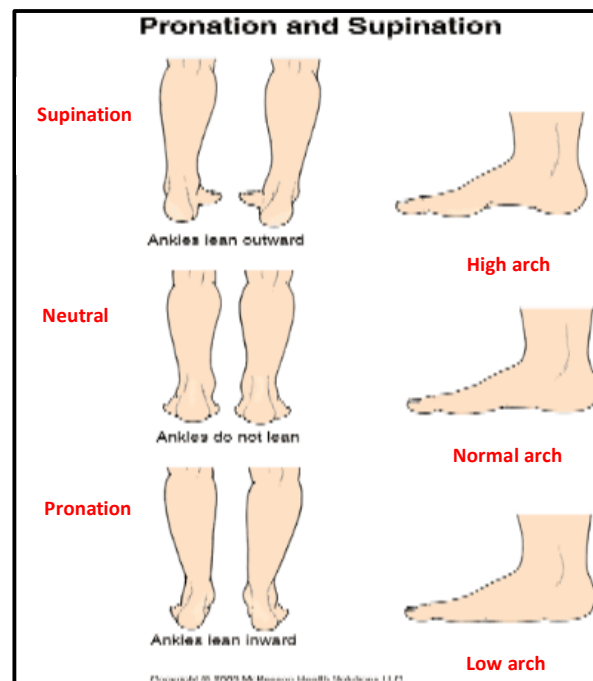
# Pedal

The bottom of your big toe should be positioned over the center of the pedal (right). If you are using clipless pedals they should be adjusted so that your bike shoe and foot can move a little bit in all directions (5-10°). This movement is known as “float.”

If you like to toe out or toe in when you walk you should position your cleats or shoes to match that position. If you have less than 7° of toeing in or out use a straight-ahead cleat or shoe position with 5-10° of float. Excessive toeing in and out during cycling causes the knee to twist which can cause injury and discomfort over time.



Your leg should be positioned so that a straight line can be drawn through the middle of your thigh, knee and ankle (GOOD). WRONG positioning of the legs can increase your risk for an overuse knee injury.



A very narrow or wide distance between the pedal and the bike (Q-factor, left) OR foot alignment from pronating or supinating (right) can result in these WRONG positions. Spacers added to the pedal and bike orthotics can be used to correct these postures.



From a side view a string dropped down from your knee should drop through the center of the pedal (left). Moving your knee forward in this position causes increased knee bending increasing your risk for an overuse knee injury.

*A neutral (GOOD) alignment of the leg with a little bit of float or movement allowed at the foot is appropriate for the majority of individuals. If you have knee pain an individualized bike fit may be appropriate. Ask **TrySports** for more details about individualized bike fitting for the prevention and mangement of knee pain.*