

Pronation Notes

What Is Pronation?

Pronation is the inward movement of the foot as it rolls to optimally distribute the force of impact on the ground as you run. With "normal" pronation, the foot "rolls" inward about 15 percent, comes in complete contact with the ground, and can support your body weight without any problem. Pronation is critical to proper shock absorption, and it helps you push off evenly from the ball of the foot at the end of the gait cycle.

Pronation is a natural movement of the foot, the size and strength of the runner's arch can affect the foot's ability to roll, causing either supination (underpronation- rolling outward or not rolling in far enough) or overpronation (rolling too far inward).

Overpronation

As with the "normal pronation" sequence, with overpronation, the outside of the heel makes the initial ground contact. However, the foot rolls inward more than the ideal 15 percent. This means the foot and ankle have problems stabilizing the body, and shock isn't absorbed as efficiently. At the end of the gait cycle, the front of the foot pushes off the ground mainly using the big toe and the second toe, which then must do all the work.

Overpronation causes extra stress and tightness to the muscles, so to prevent it, do a little extra stretching. Too much motion of the foot can cause calluses, bunions, runner's knee, plantar fasciitis, and Achilles tendinitis.

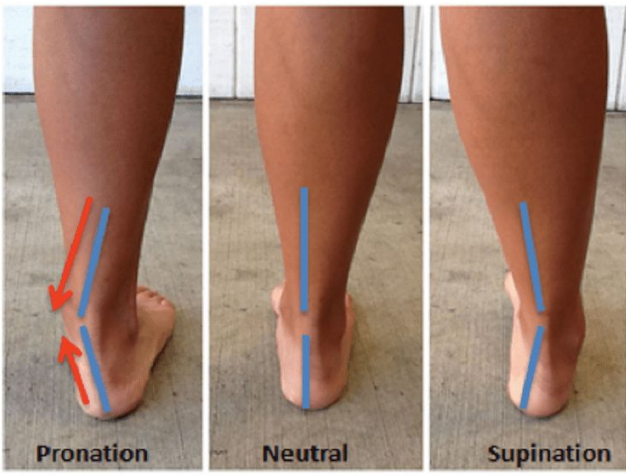
Underpronation (Supination)

Underpronation (or supination) is when your foot rolls inward after landing. Again, the outside of the heel makes initial contact with the ground, but the inward movement of the foot occurs at less than 15 percent (meaning there is less rolling in than for those with "normal" or "flat" feet). Consequently, forces of impact are concentrated on a smaller area of the foot (the outside part), and are not distributed as efficiently. In the push-off phase, most of the work is done by the smaller toes on the outside of the foot. This places extra stress on the foot, which can lead to iliotibial band syndrome, Achilles tendinitis, and plantar fasciitis.

Underpronating will also cause the outer edge of running shoes to wear sooner. To see if your shoes are unevenly worn, place them on a flat surface. If they tilt outward, supination is the culprit.

Runners with high arches and tight Achilles tendons tend to be supinators.

To prevent supination, you should do extra stretching and strength training for the calves, hamstrings, quads, and iliotibial band. Wearing the right type of running shoes and replacing worn shoes will also help avoid injuries.



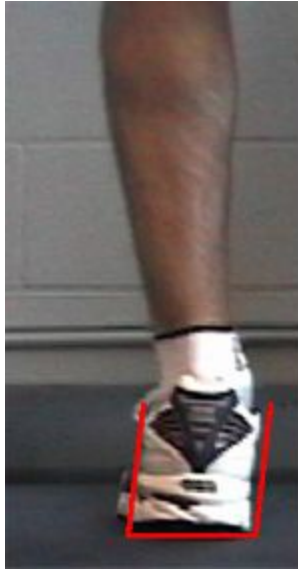
Pronation

Neutral

Supination



Left foot
Neutral position



Left foot
Moderate Over Pronation



Left foot
Severe Over Pronation



Left Foot
Supination (underpronation)



OVER PRONATION



NEUTRAL PRONATION



UNDER PRONATION

Pronation Video (Runner's World)

<https://www.runnersworld.com/video/a20797779/normal-pronation-what-is-it/>

Over Pronation (Runner's World)

<https://www.runnersworld.com/video/a20788902/overpronation-what-is-it/>

Under Pronation Video (Runner's World)

<https://www.runnersworld.com/video/a20788929/underpronation-what-is-it/>