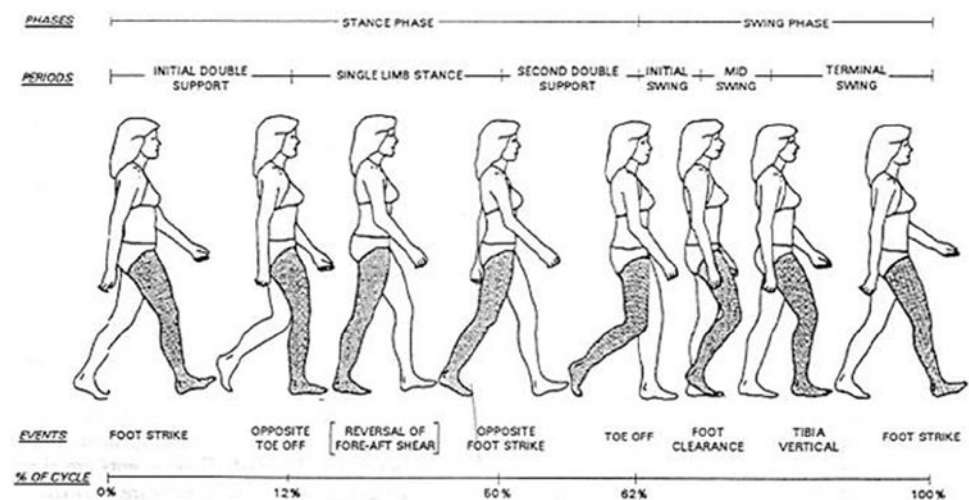


Pronation and Supination

Every body pronates and supinates—this allows the foot to absorb shock and act as a lever whilst walking. Pronation and supination are not diseases. However, when the pronatory or supinatory movements are in excess, or at the wrong stage of the gait cycle, they can be problematic.

In order to fully appreciate pronation and supination and understand how they can become problematic, it is a good idea to have a basic understanding of the gait cycle.

The Gait Cycle



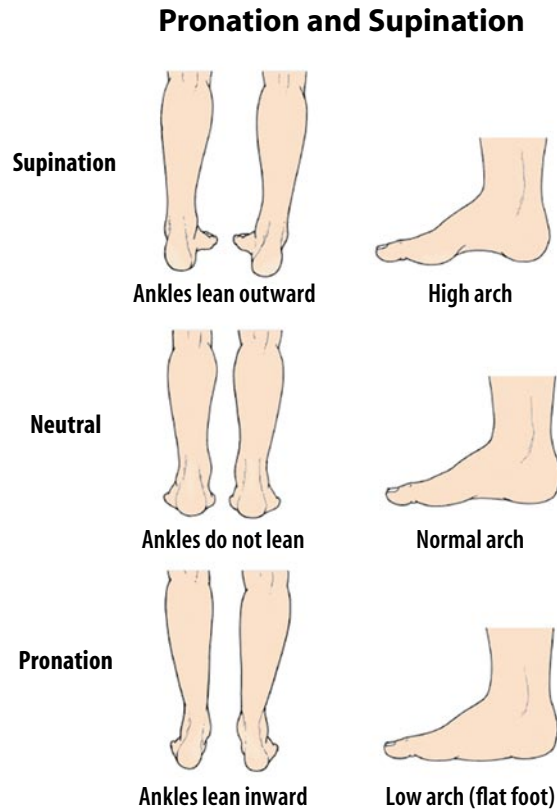
It is during the stance phase of gait that our feet move through pronation and supination. At heel strike (foot strike) our feet are in a supinated position, (ie. the foot is a rigid structure). This allows for adequate shock absorption of ground reaction forces upon striking the ground. The foot then moves through to a neutral position, it is neither pronated nor supinated, into a pronated position. This is when the foot is most mobile and allows for adaptation to the ground surface (this can be seen during single limb stance). As the same foot moves into toe off it will once again move into a supinated position creating a rigid lever to allow for adequate forward propulsion.

Pronation

Pronation is the flattening of the arch once the foot has made ground contact. The foot will pronate following heel strike. This helps absorb shock, allows the foot to adapt to the ground surface and assists in balance during the single support phase of gait. When pronation is excessive it can become problematic. It causes increased stress on the inside/medial aspect of the foot, leg and knee. It may also result in hip and lower back pain.

Supination

Supination allows the foot to become a more stable, rigid structure upon heel strike and toe off. Excessive supination can predispose the ankle to injury, as the muscles on the outside of the leg (peroneals) are in a stretched position. Potentially the ankle can roll over causing ligament damage to the outside/lateral aspect of the foot. Painful corns and callouses may also develop on certain aspects of the foot.



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