

Designing a Prosthetic Leg for Playing Soccer

Abstract

Millions of people across the world suffer each day from some form of leg amputation. Although much advancement has been made in prosthetics, allowing for a more natural walking motion, there is still a great need for the development of prosthetics suitable for more strenuous activities. This research aims to do just that by developing a prosthetic leg that would allow amputees to play soccer. The focus of this research is on the mechanics of the knee and the inertial properties of the leg. The “knee”, whether robotic or human, is notably the most important aspect of the leg. Without it, we would not be able to walk, run, jump, kick, etc. Also, it is our belief that the inertial properties of the leg affect its motion. Our hypothesis is that a prosthetic leg with the same inertial properties as a human leg will be more effective in athletic situations. The development of our prosthetic leg involves research in the following areas; current prosthetic leg designs, the anatomical aspects of leg motion, and the physical requirements of soccer. It is anticipated that this research will lead to a new design for a prosthetic leg that we can test against our hypothesis. If our hypothesis is correct, we should find that the new design allows for a more natural motion and a more fulfilling soccer experience.