

Reading 2

Skills:

- Details
- Scanning
- Make associations

Getting started: What kind of prosthesis are you familiar with?

BIONIC LIMBS



People have been wearing **prosthetics**, or replacement body parts, for centuries. One of the oldest is a **wooden** toe used in ancient Egypt about 3,200 years ago. However, the latest technology is going far **beyond** such simple supports. **Modern** prosthetics can be controlled by brain impulses, meaning that **wearers** can **learn** to move them naturally, almost like a real limb. Advances in the field of robotics are having an impact on prosthetics. As well as creating entirely mechanical limbs, the technology includes control systems that make the limbs move naturally and respond automatically to **bumps** and knocks.

At the forefront of prosthetic limb technology is the Icelandic company Össur, who designed the world's first bionic limb—a mechanical version of a biological leg, able to move under its own power. This Symbiotic Leg attaches to the femur (thigh bone) of the upper leg and has a knee joint, lower leg, ankle, and foot. The motorized movements of the knee and ankle joints are timed to create a natural action as the leg steps forward. The leg is designed to synchronize with the wearer's normal step and to be treated like any other part of the body in terms of how the person moves and thinks of it, after a little practice.

The movements of a bionic leg are controlled by nerve signals from the brain, similar to the way a normal biological leg is controlled. The wearer must spend time learning how to think the bionic leg into action, but with practice, it is possible for that action to become more or less subconscious.

In order to control these movements, an impulse from the muscle control center in the brain sends a movement signal down through the nervous system to the leg muscle. An implant picks up the electrical activity of the leg muscle. The implant then triggers movement in the prosthetic leg. The knee joint bends as the upper leg swings forward. The ankle joint lifts the toe to prevent tripping and to prepare to make contact with the ground. The leg moves forward. It is ready to move again when another signal is sent from the brain.

**Adapted from How Super Cool Tech Works. DK Publishing*

Which of the following statements represent ideas that are developed in the text?

1. An implant receives the electrical input of a muscle.
2. Össur is a very important company in the field of prosthetics technology.
3. Scientists have been able to design mechanical hearts.
4. Prosthetics are not only related to our modern world.
5. The way prosthetics look influences the development of new robots.
6. The muscle in the leg sends an impulse to the brain.
7. The human brain is able to direct a mechanical limb.

Look at the words or phrases below. Find an equivalent for each one in the text.

Paragraph 1

1. For a long time
2. Nevertheless
3. People who wear prosthetics
4. Arms or legs

Paragraph 2

5. What connects the foot and the leg
6. Create

Paragraph 3

7. common
8. likely

Paragraph 4

9. To cause to function
10. To raise something

What do you think?

What kind of health situation requires a rapid technological solution?