

Design Tips to Consider:

- How can you create joints in your prototype?
- How can you make your prototype comfortable for your patient?
- How can you ensure that your prototype will hold the weight of your patient?
- What materials might you use when you're turning your prototype into a prosthetic for your patient?

STEM Explanation:

After a patient has had a limb surgically removed because of a traumatic event or disease, the limb is replaced with a prosthetic, which acts as the limb that the patient has lost. To design these prosthetics, biomedical engineers first design a prototype, or model, and then create the prosthetic that the patient will use.

Fun facts about prosthetics:

- Scientists have found a way to use Bluetooth technology to regulate stride, pressure, and speed between sets of prosthetic legs. Scientists have engineered "robotic" knees, called microprocessor knees, which contain a computer within the prosthetic that allows amputees to have better control when walking, stopping, and moving on inclines.
- For many years, prostheses were made of wood, but now scientists have started using a material called carbon fiber, a much more life-like material. Titanium is also being used in prosthetics today, making them more durable and giving them a longer life. Scientists today are improving a technology called Targeted Muscle Reinnervation. This technology allows amputees to control their prosthetics using their brains, just like it was their own limb.

Career:

Biomedical engineers design appliances to straighten or support body parts. They use technology to engineer prosthetic limbs for people and animals that have suffered a serious injury that resulted in the loss of a body part.

Resources:

http://www.teachengineering.org/view_activity.php?url=collection/cub_/activities/cub_biomed/cub_biomed_lesson01_activity1.xml

http://www.ehow.com/how_5171930_build-elbow-joint-model.html

<http://www.livestrong.com/article/115889-five-different-types-joints/>

31 Days of STEM FUN!

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