

# Improving Prosthetic Fitting for OrthoPro Prosthetics: Static Fitting Platform

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Lower limb amputations make up about 71% of dysvascular amputations, or amputations caused by problems in the blood vessels. These lower limb amputations are one of two types, transtibial (below the knee) and transfemoral (above the knee). This means that the patient is either wheelchair bound or needs a prosthetic leg. Currently, many prosthetics companies employ the use of a stool or chair to assist in the fitting process for amputees. This though, is both unprofessional and unsafe for patients as they are often unstable and have a tendency to move around, increasing the likelihood of falling and causing further injury to the patient. The sponsor, OrthoPro Inc. desired a device that could overcome those challenges while also providing adjustability for both types of amputees. The proposed solution is an innovation that can readily attach to the parallel bars, a common tool in the prosthetist profession, providing a stable apparatus that cannot be easily tipped over. It is also adjustable in half inch increments through the use of a pin-in-hole mechanism along the base, holding the desired adjustment in place. In the fitting process, the patient's residual limb is placed in a plexiglass mold that is then adjusted to the patient's individual need. The sponsor uses a variety of different molds each holding a different type of head or not having one at all. In order to accommodate for this, the design has a memory foam padding that helps stabilize the mold without regard to the head attached to the mold. To ensure safety of the device, tests were conducted to determine stress on vertical beam and the connection to the parallel bar among other tests to ensure the safety of the patient.