Researchers at the University of South Florida have developed the Compliant and Articulating Prosthetic Ankle (CAPA) which represents a new design for ankle-foot prosthetics that can provide a more natural gait.

The human ankle is crucial to mobility as it counteracts the forces and moments created during walking. Around 85% of the 1.7 million people in the United States living with limb loss are transtibial (below knee) and transfemoral (above knee) amputees who are missing their ankle and require a prosthetic. Current prosthetic ankle feet are not able to effectively replace the functions of a human ankle and foot and produce a natural gait. Thus, an amputee has difficulty with basic movement and a higher metabolic cost associated with walking.

USF inventors have created a solution to this common oversight associated with current prosthetics on the market today. The CAPA is a solution that stores and releases energy at three different locations, utilizes 3D printing, and allows for the full ankle range of motion (ROM) in the sagittal plane. Compared to the conventional non-articulating Solid Ankle Cushioned Heel (SACH) foot, the CAPA foot is shown to better mimic the ground reaction forces and ankle angles of a healthy gait. The CAPA may also have an application in the design of humanoid robots.

**ADVANTAGES:**
- More anatomically accurate embodiment of human gait
- Wide range of ankle motion for amputees
- Easy to manufacture
- Affordable to produce

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