Researchers at the University of South Florida have developed a mechanically adjustable prosthetic ankle with an interlocking gear mechanism for use in difficult climate and terrain situations.

Adjustable prosthetic ankles come in powered or non-powered versions. The primary problem with the current gold standards of ankle prosthetics is the mechanical mechanisms lack the durability to sustain rugged climates, environments and aggressive slopes with heavy loads. Additionally, the emerging powered prosthetic ankle systems do propose problems to address inconsistent terrain, however, these systems are not designed for non-flat or inconsistent ground such as access ramps, sloped driveways, lawn and golf-course. Hence, there is a need for a prosthetic ankle that enables the user to adjust the flexion angle of the ankle to accommodate inclines and declines.

Researchers at USF have developed a mechanically adjustable prosthetic ankle with an interlocking gear mechanism capable of combating the issues faced by the current industry standards. This ankle prosthesis can be locked in certain discrete ankle positions which are maintained by an interlocking gear mechanism. The position of the ankle is also adjustable via a compliant lever. This prosthesis is designed to be light weight, highly durable and to be serially installed in a lower extremity prosthesis using standard couplers. Further, this ankle prosthesis was designed with climate and terrain in mind. The ankle system can be used for participating in wilderness survival training with active duty and veteran military personnel and other adventurous outings.

**ADVANTAGES:**
- Light weight
- Resist corrosion
- Tolerant to variation in temperature
- Uses standard couplers

**Ankle Prosthetic for Difficult Climates and Terrain**

*Images of (a) Friction Adjustment Design and (b) Geared Coupling Design*

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