EXPLORE THE

INFINITE SOCKET®

SYSTEM

LiM innovations®

LIM Innovations at its Core

At LIM Innovations we empower people with limb loss to live beyond the limits of their prosthesis and achieve the mobility and independence they deserve. We provide functional, forward thinking products, and data-driven solutions in the O&P industry.

Our core company values focus on developing technology that addresses the unmet needs of patients and clinicians. We integrate advanced technical solutions and materials with unique design advantages to maximize comfort and performance.

function with purpose.

The Infinite Socket® system is the first custom molded, modular, and dynamic prosthetic sockets, offering adjustability at each component. The combination of advanced materials and adjustable systems empowers patients and clinicians to adjust the prosthesis in response to volume and shape change of the residual limb.

Dynamic

Modern materials and advanced designs drive our hallmark goal of bringing greater comfort and function to the lives of amputees. A combination of solid components and soft goods create a structured system with optimal comfort. The base plate, carbon fiber struts, and remoldable distal cup make up the solid structure. The molded textiles are engineered to allow movement of the leg and optimize weight distribution. They are made of easy-to-clean and frictionless materials to maximize comfort and control. By replacing the rigid structure of a traditional socket with moldable materials, the Infinite Socket allows patients to control the fit of their socket as their limb changes.

Adjustability & Modularity

The Infinite Socket system is equipped with closure systems for on-the-fly adjustment of the socket. The closure mechanisms are optimally placed and ergonomically designed to give you control in any situation. The primary macro-tensioning system facilitates easy donning and doffing of the socket, establishing a base level of fit, while small adjustments can be made to optimize the fit.

INFINITE SOCKET®
SYSTEM

Infinite TF

TF = Transfemoral

InfiniteTT

TT = Transtibial

Infinite TF

The Infinite TF combines a blend of advanced textiles and structural components, enabling transfemoral amputees to live beyond the limits of their prosthesis. It is made of a modular four strut configuration, base plate, and an adjustable brim designed to adapt and conform to limb fluctuation. We are consistently innovating transfemoral devices to improve patient outcomes. The future of prosthetic technologies is here.


Low Profile Brim
Dynamic Closure Systems
Dynamic Frame
Thermoplastic Carbon Fiber Struts
Suspension Systems

Dynamic Frame

The distal base plate is the central structural component of the Infinite TF. It comes in two sizes and four flexion angles to accommodate contractures. Clinicians can choose from medium and large base plates, with flexion angles of 0, 5, 10, and 15 degrees. Available suspension options include suction suspension, elevated vacuum, lanyard, and pin lock.

The struts can be adjusted within four distinct channels of the distal base plate. Each channel has up to 40 degrees of angular pivot control for rotational adjustment, and up to 10mm of movement on a radial slide for linear adjustment.

The interface between the distal base plate and struts provide adjustability in response to volume fluctuation and shape change of the residual limb. The ability to adjust the internal volume of the socket at the base allows for optimized fit and function, avoiding skin breakdown and discomfort.

° 15
° 10
° 5

Thermoplastic Carbon Fiber Struts

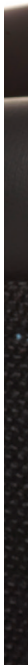
The custom molded thermoplastic carbonfiber struts connect directly with the distal base plate to make up the dynamic, modular frame of the TF. The distal plate is the base, while the four struts provide the vertical structure of the socket to support the adjustable brim.

The struts are made of a carbonfiber thermoplastic composite material. It is durable, lightweight, and reformable. The struts can be heated and reshaped multiple times, without losing structural integrity. The thermoplasticity allows the struts to be custom-molded and fine-tuned precisely for each patient. As the residual limb changes shape and volume, clinicians can reform the struts to recapture the shape of the residual limb.

Telescoping Ischial Seat

The telescoping ischial seat can be adjusted on a vertical and lateral plane, allowing the patient to determine the best position and appropriate amount of weight bearing to maximize control throughout their gait cycle. The ischial seat sits atop the posterior medial strut and acts as the primary weight bearing point for non-end bearing above-knee amputees. The ischial seat takes advantage of the ischium of the pelvis, which is naturally adapted to bear weight when a person is sitting.

The interchangeable ischial seat allows users to select a specific shape, style, and material. Notable variations include a seat shelf for additional containment, a concave channel to capture the shape of the ischium, and a wide-base for a larger contact surface. The ischial seat can be adjusted up to 30mm vertically and 15mm laterally.



Suspension Systems

- **Lanyard:** Uses a strap to pull the liner into the socket, which reduces rotation and shear.

- **Suction/Elevated Vacuum :** The vacuum enhances the socket/limb adhesiveness, regulates residual limb volume changes and improves circulation in the patients residual limb.

- **Pin Lock:** The pin is inserted into a shuttle lock built into the bottom of your socket for enhanced sense of security.

Low Profile Brim

The molded brim is engineered to support the proximal end of the struts, optimize weight distribution, and increase range of motion to increase comfort and function.

Dynamic Closure Systems

- **Ratchet:** The closure system, allows for easy donning and doffing of the socket.

- **Velcro:** The hook-and-loop velcro system is low profile, making it easier to fit the Infinite Socket under tight clothing.

InfiniteTT

The **Infinite TT** integrates advanced textiles and pressure distribution systems with a dynamic frame. The thermoplastic carbon fiber frame, hinging posterior strut, and BOA closure system draw in the medial and lateral walls to improve biomechanical control. The advanced pressure distribution system incorporates height adjustment and air bladders, designed in response to activity demands, pressure areas, and shape change. With a view to improve functional outcomes, the Infinite TT was developed from the ground up with the patient in mind.


Form Fitting Soft Shell Cover
Dynamic Frame
Dynamic Closure System
Pressure Distributing System
Suspension Systems
InfiniteTT

Soft Shell Cover

The soft-shell outer cover protects the sockets integral components and the patient's clothes from general wear and tear.

Dynamic Frame

The frame is made up of three modular and thermoplastic carbon fiber struts that connect to an adjustable base plate. This frame offers multiple points of adjustability and is designed to provide dynamic response flex. This anatomical design mimics anatomy and is engineered for shock absorption and energy return.

Frame Shifter

The entire frame assembly can be slid anteriorly or posteriorly with side access set screws for fast relief to bony prominence and pressure distribution contrrol.

Suspension Systems

• **Suction:** combines with a seal-in liner to engage the FIL cup for proper suction suspension.

• **Pin Lock:** features an anti-rotational feature built into the funnel ensuring reliable suspension and biomechanical control for the patient.

Patient Adjustability

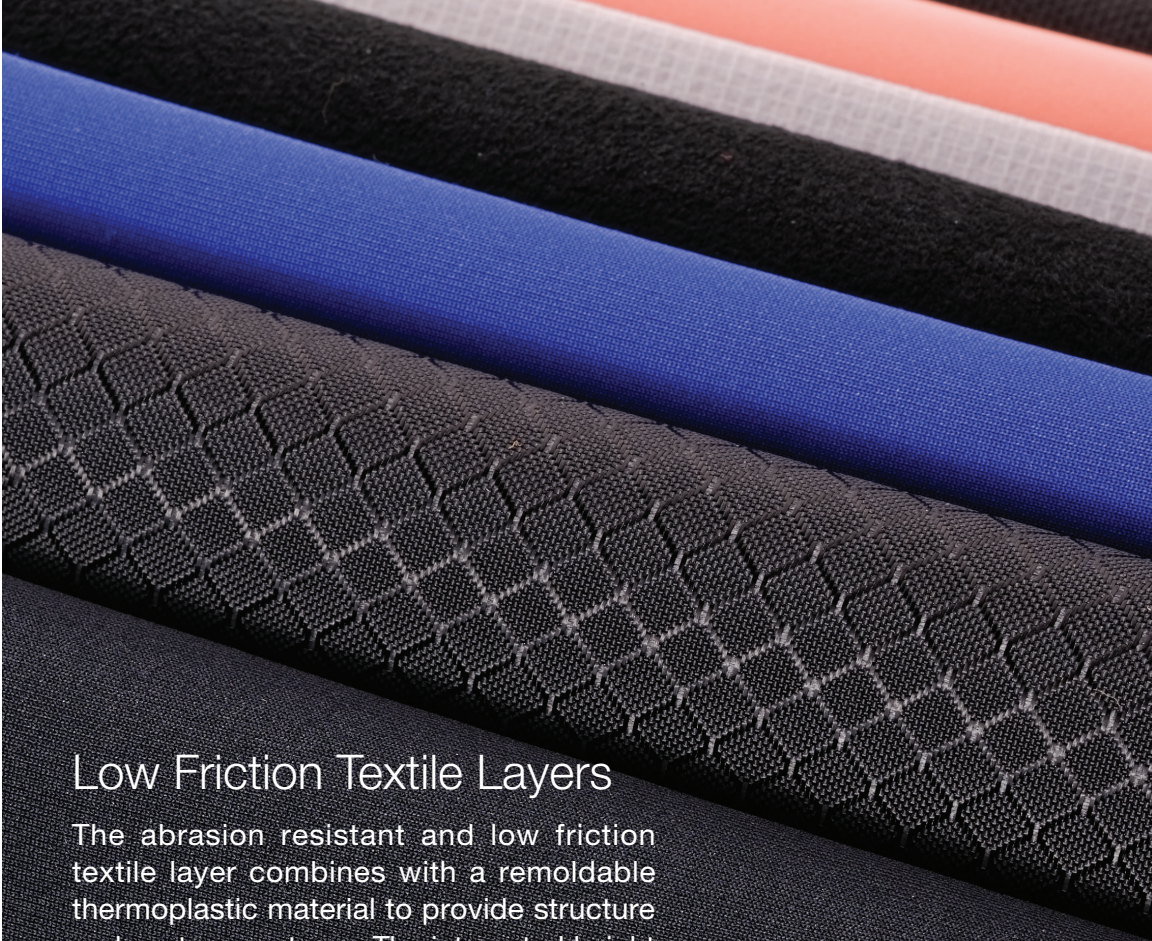
The hinging posterior lift assembly, patellar tendon bracing system, and inner textiles combined with a BOA closure system provide a dynamic closure system. Now the patient can easily loosen the fit of the entire socket while sitting, flexing their knee, or relaxing.

Dynamic Closure System

The BOA closure system is designed to provide an optimal fit for the patient that can be adjusted for various activities, daily volume change, and easy donning and doffing of the socket.

LIM Air Bladder System

This system is designed to evenly distribute pressure regardless of volume change. They are anatomically placed for patient ease of use. They are made with high strength fabrics for improved durability and are backed with a custom-molded, plastic layer.



Low Friction Textile Layers

The abrasion resistant and low friction textile layer combines with a remoldable thermoplastic material to provide structure and custom contours. The integrated height adjustable system is cushioned and equipped with air bladders to improve pressure distribution and protect sensitive areas.

Infinite Socket: Problems Solved

CLINICAL ISSUE	*INFINITE SOCKET SYSTEM SOLUTION*
Limb Volume Fluctuation	The radial slide and angular pivot features of the custom formed carbon struts on the Infinite TF accommodate ongoing changes in volume and shape of the residual limb. The thermoplastic carbon fiber struts can be re-contoured in response to changes in volume or anatomy. The adjustable features allow for tension adjustments in response to daily fluctuation and activity levels.
Neuroma Pain	Height adjustments on the ischial seat and medial brim on the Infinite TF reduce weight bearing on painful distal end neuromas. Air bladders and soft goods from the Infinite TT conform around the limb to provide support and offload sensitive areas of the residual limb.
Hip Flexion Contractures and Force Indications	Interchangeable base plates accommodate a range of hip flexion positions for the Infinite TF
General Fatigue & Limited Walking Range	The natural mechanical compliance of the custom molded carbon struts promote greater comfort along weight bearing areas of the residual limb. This allows greater mobility and comfort for improved endurance.
Documented Fall History	Ability to re-contour struts provides relief from bony anatomy, neuromas, wounds or ulcerations.
Skin ulcerations and heterotopic ossification	Modular and adjustable components provide an ongoing optimal fit that patients can adjust to support their gait.
Sitting comfort	Ability to loosen the flexible textile brim in the Infinite TF provides sitting comfort for soft tissues. Then, tightening the brim when walking achieves socket stability against skeletal tissue. Height adjustments in the posterior popliteal area of the Infinite TT allows knee flexion and comfort while sitting.

Functional Outcome Measures

Clinical evidence shows that socket fit is a key factor in determining successful patient outcomes. We utilize data metrics to measure the improvements experienced by patients wearing the Infinite Socket system and to innovate prosthetic designs based on the results.

Functional Outcome Measures:

- 54% improvement on Socket Comfort Score
- 14% mobility increase in 4 Square Step Test mobility Test
- 11% efficiency improvement on 2 Minute Timed Walk Test

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