



Biomimetic Hydraulic Technology

Replicating nature to
support a healthy future



endolite

A Blatchford Company

Why hydraulics?

Lower limb amputees can face health issues long after amputation, and it is the consideration and management of these issues that are crucial to the sustained health of every patient.



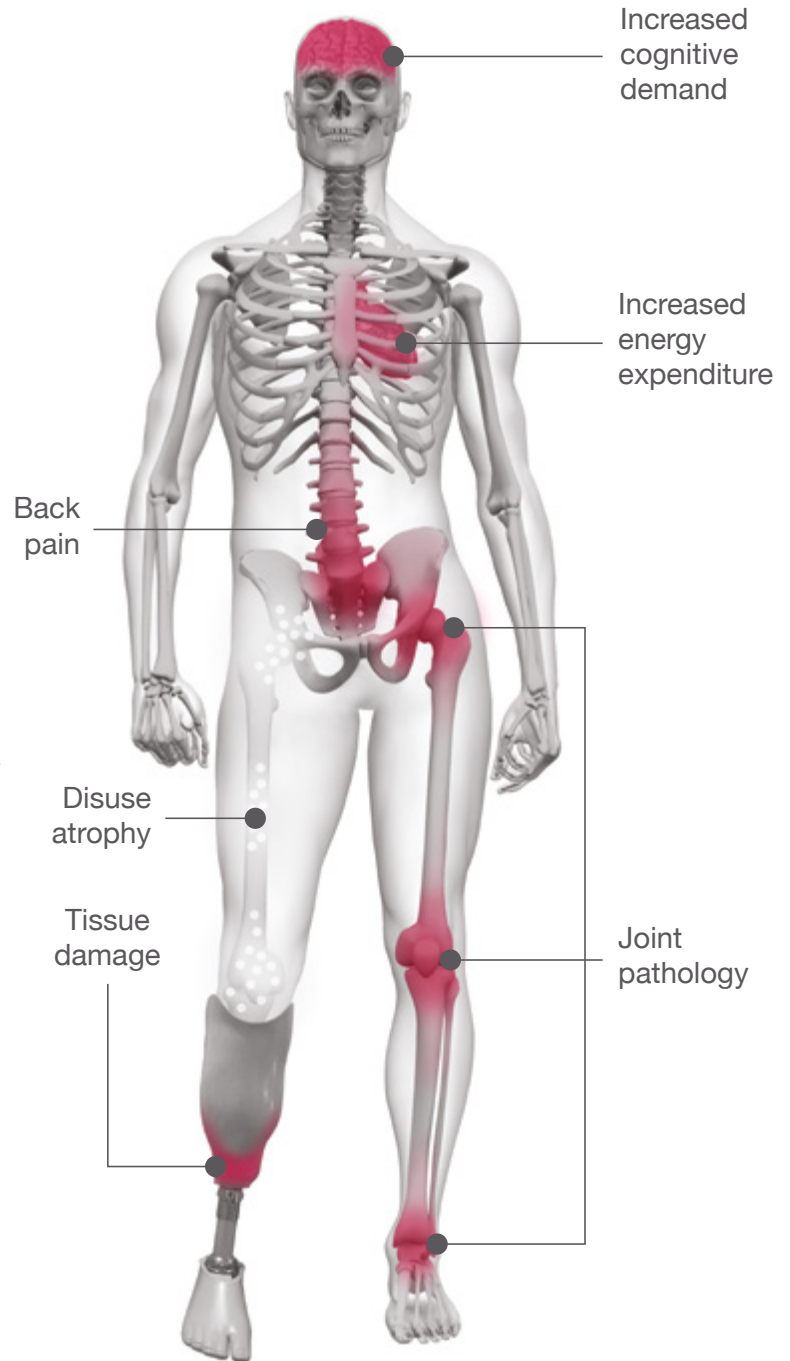
Lower limb amputees have **2-3x** increased risk of osteoarthritis in the knee or hip compared to the general population¹



61% of lower limb amputees experience moderate to severe back pain within 2 years of amputation²

At Endolite, we believe long-term musculoskeletal health depends on the replication of the dynamic and adaptive qualities of natural limb movement.

The engineering of nature is the prime source of inspiration at the heart of Endolite's biomimetic design philosophy where the development of award-winning prostheses is focussed on the long-term health and wellbeing of every amputee.





The human ankle and foot have four main rocker points that allow us to walk efficiently. By considering the natural function of the foot and replicating its structure through a unique combination of design elements, Endolite Biomimetic Hydraulic Technology provides a natural and fluid walking experience.



Heel Rocker



Ankle Rocker



Forefoot Rocker



Medial Lateral Rocker



Heel Rocker



Ankle Rocker



Forefoot Rocker



Medial Lateral Rocker



Equal weight bearing restores inter limb loading symmetry



Reduced pain and discomfort



Reduced physical and cognitive demand



Reduced chance of trips and falls



Greater long term health, wellbeing and independence

The human ankle foot complex contains 28 bones and 33 joints that work in sequence to provide balance, stability and a seamless walking experience. Endolite hydraulic ankles respond to the design specifications that natural movement dictates, fine-tuning joint position to align the body for optimum posture and comfort.

By continuously adjusting to absorb and release energy, our hydraulic ankles allow for an efficient roll-over, remaining perfectly aligned with the user for the next step to help reduce the risk of falls.

Enhanced ground clearance throughout the gait cycle



Biomimetic Design Philosophy

“The replication of natural motion is at the heart of Blatchford’s design philosophy.” Stephen Blatchford



Clinically proven* for long term health

Improved safety



18% increase in toe clearance reduces the chance of trips and falls³

Greater control and stability



Increased confidence in walking and negotiating variable terrain^{4,5}

Greater comfort



Socket pressure reduced by 60%⁶

Balanced limb loading



Reduced chance of long term limb disease^{7,8}

Improved energy efficiency



10% reduction in energy cost⁷

Patient satisfaction



33.4% increase for bilateral patients⁵

Patients' requirements vary, depending on their needs.

Just as people's needs are unique, so are our hydraulic ankles. Our biomimetic design philosophy runs through the whole range of Endolite ankles.

*For full references please see back cover, or visit our website to view our clinical compendium.



Avalon^{K2}

Avalon^{K2} enhances walking confidence where additional security is required, by improving swing through and allowing the body to move fluidly over the foot in a comfortable and relaxed manner.

Product Overview

Activity Level



Roll-over shape optimised for elderly gait

Single adjuster to set plantar and dorsiflexion resistance simultaneously

Waterproof

Sandal toe footshell

Features





Echelon

The award-winning Echelon provides users with a natural fluid walking experience, promoting stability and confidence on uneven terrain and slopes.



EchelonVAC

EchelonVAC incorporates a pneumatic vacuum chamber that works with our Biomimetic Hydraulic Technology to generate an elevated vacuum, helping maintain a secure connection.



EchelonVT

EchelonVT provides excellent terrain compliance and rotation, and features an integral shock absorber making it ideal for moderate impact activities that require a high level of energy return.



Elan

Elan is a microprocessor controlled hydraulic ankle that continuously self-aligns and adapts resistance for smoother, easier walking with greater comfort and stability on uneven terrain and slopes.



Linx

The award-winning integrated limb system. Designed to deliver a walking experience that mimics the incredible and complex structure of the human leg.



Independent control of plantar and dorsiflexion resistance

E-carbon heel and toe springs with split toe

Lightweight, compact design

Natural ankle pivot position

Weatherproof

Sandal toe footshell



Integrated elevated vacuum

No battery or pump required

Quiet operation

Lightweight, compact design

E-carbon heel and toe springs with split toe

Weatherproof

Sandal toe footshell



Independent control of plantar and dorsiflexion resistance

Rotation and vertical shock absorption

E-carbon heel and toe springs with split toe

Lightweight, compact design

Weatherproof

Sandal toe footshell



Microprocessor Active Resistance Control

Standing Support

E-carbon heel and toe springs with split toe

Lightweight, compact design

2 day battery life

Weatherproof

Sandal toe footshell



Situational Awareness

Varying levels of stance resistance to optimise safety at all times including controlled stance, standing and sitting support, stumble recovery, dynamic stair and slope descent

Cycling Mode and Fixed Angle Flexion Lock Mode

Up to 3 days battery life

Sandal Toe Footshell



References:

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6. S. Portnoy, A. Kristal, A. Gefen, I. Siev-Ner. Outdoor dynamic subject-specific evaluation of internal stresses in the residual limb: Hydraulic energy-stored prosthetic foot compared to conventional energy-stored prosthetic feet. Gait and Posture 2012; 35(1), 121-5
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An annual visual inspection is recommended. Check for visual defects that may affect proper function. Maintenance must be carried out by competent personnel. Before carrying out any new activities of daily living, please check with your clinician whether specific training is required.