

Foot Drop and Myo-Orthotics Technology

Foot drop is a disorder that affects a person's ability to raise his or her foot at the ankle. Generally speaking, the person is also unable to point the toes toward the body or move the foot at the ankle inward or outward. Foot Drop makes walking a challenge, causing the person to either drag the foot and toes while walking or exhibit a high-stepping walk called steppage gait. Foot Drop is not a disease but a symptom of an underlying problem. Often Foot Drop is caused by injury to the peroneal nerve, which runs along the outside of the lower leg below the knee. Foot Drop is found in some patients with multiple sclerosis (MS), Parkinson's disease, spinal cord injuries, stroke and other medical conditions.

Treatment options for Foot Drop depend on the underlying cause of the condition. In most cases patients have been fit with an ankle-foot orthosis (AFO), brace, or splint that fits into the shoe to stabilize the ankle/foot. Surgery may also be an option to correct or alleviate the underlying problem causing Foot Drop. Now available is a new and exciting device. The **WalkAide** system is a medical device that has recently received marketing clearance from the FDA to be supplied in the USA. **Canadian government officials are currently reviewing the device to approve it for sale in Canada.** There are hopes to have the device approved by the end of 2006. Invented by a team at the University of Alberta, **WalkAide** simulates the typical nerve-to-muscle signals in the leg and foot, effectively lifting the toes at the appropriate time during the gait cycle. The resulting movement is a smoother, more natural and safer stepping motion. Users are able to walk faster and for longer distances with less fatigue. In fact, many people who try the **WalkAide** system experience immediate and substantial improvement in their walking ability, which increases their mobility, functionality, and overall independence. **Karl Hager Limb & Brace** recently manufactured an AFO that contained the **WalkAide** system. This device worked very well to support the patient's weak ankle.



WalkAide Provides the Following Advantages for the Patient:

- Easy one-handed operation and application
- Small, self-contained unit that attaches to the leg below the knee does not require orthopedic or special shoes
- Minimal contact means minimal discomfort with reduced perspiration
- May improve circulation, reduce atrophy, improve voluntary control and increase joint range of motion

Source: <http://www.ininc.us/index/html>

Ostenil – A New Viscosupplementation Option

As mentioned before in ARTIFACTS osteoarthritis affects one in ten Canadians. There are many treatment options to help individuals with the debilitating disease from custom knee bracing like the Neutralizer O.A. to viscosupplement injections. **Karl Hager Limb & Brace** is proud to announce that it now carries Ostenil.

Ostenil is a solution containing hyaluronic acid. It is injected into the space in the joint that contains synovial fluid. This therapeutic option is called Viscosupplementation. Ostenil works by restoring the normal balance between the breakdown and production of hyaluronic acid. This effect of Ostenil means that it can decrease pain and stiffness and improve the other symptoms of Osteoarthritis. The hyaluronic acid in Ostenil is very pure and is manufactured using a process called fermentation. It contains no animal proteins, which means that it is very unlikely to cause an allergic reaction. Ostenil has been given to tens of thousands of patients and has not been found to cause any serious side effects. The exact make-up of the hyaluronic acid in Ostenil has been carefully chosen so that it is as effective as possible in treating osteoarthritis.

With its efficacy guarantee and its special pricing program Ostenil should be of interest for those suffering from Osteoarthritis. For more information on Ostenil please call our office or contact Linda Shanks, Ostenil representative at: 1-604-868-7637.

Source: <http://www.ostenil.ca>



Next Generation Foam Pneumatic Walker

Commonly referred to as a “space boot” or “robo boot” the Aircast Walker is a great option for individuals that have severely sprained their ankle or have a stable fracture of their foot and/or ankle. The Walker can also be used to treat Diabetic ulcers of the foot. The cost-effective Aircast foam pneumatic walking brace, the FP Walker provides full-shell protection with pneumatic support.

Each FP Walker has a low rocker sole for added comfort and ease of ambulation, and a wider foot base with plenty of room for dressings without sacrificing comfort. With the patient in mind, the valve placement has been relocated to improve compliance and ease of inflation. As with all Aircast Walking Braces, the FP Walker has a lightweight, durable, semi-rigid shell that supports the limb while providing protection. Housed within the shell are two adjustable air cells that provide compression and support the malleoli. These air cells can be individually inflated using the included hand bulb for a customized fit and optimal comfort and support. Changes in limb dimension can easily be accommodated throughout the healing process by adjusting air cell inflation to ensure stability and immobilization.

The FP Walker comes in small, medium, and large accommodating foot sizes from size 4 – 15. **Karl Hager Limb & Brace** stocks all sizes and can supply the foam walker to a patient the same day should this be necessary.

Source: <http://www.aircast.com>



Knee Brace Manufacturing Procedure

Twenty years ago we introduced our first graphite knee orthosis. Still today we continue to implement many of the same techniques in fabricating the best hand crafted knee orthoses. While many of the materials we use have changed the steps are still very much the same.

The first step is to conduct a thorough assessment of the patient's knee. Once the Certified Orthotist has an understanding of the underlying issue the knee is cast. The first step in manufacturing is to fill the patients cast with plaster to give us an exact model of the leg. Once the plaster hardens the technician then modifies the cast in order to assure the best fit. At this point the technician begins setting up the lamination process. Laminating is a process of uniting several layers of material (graphite) together.

The metal knee joints are bent by hand to follow the anatomy of the knee. After this the technician then prepares the graphite materials. The graphite we use is very specific to our application and is ordered from the USA. These same materials are also used in manufacturing many of the aircraft used by the US air force. After all the materials are applied to the positive mold using techniques that are a trade secret we then prepare the resin and the pigment colour chosen by the patient. The entire mold is placed under suction and the resin and pigment is applied over the mold. This step gives us the strength and the high luster finish

that can be seen on all of our knee braces. After about an hour the resin hardens allowing us to draw the trim lines onto the lamination. When this is complete the technician prepares to cut out the hardened lamination. In addition to their full body suit the technicians wear an air-purifying respirator that supplies them with filtered air to breath as they cut out the knee brace. The respirator is worn because the graphite material is an irritant to the skin and lungs when small filaments are created from the cutting and sanding of the knee brace shells.

Once the brace is cut out the technician finishes the brace by applying the buckles, straps and lining the brace. The final step is assembling the joint that fastens the two shells together. After a series of quality control checks the brace is then fit to the patient. Hand crafted knee braces take time to manufacture but this process ensures that the patient has a brace that fits great and will support them in the best way possible. To our knowledge, from the volume of knee braces we fabricate, The Knee Centre is possibly the only “hand-made” knee brace facility in Canada and possibly North America.





Prepeg Material Update

In last November's ARTIFACTS we introduced some new materials known as "Preregs." Preregs are materials consisting of woven fabrics (graphite) pre-coated with a controlled quantity of an uncured catalyzed resin formulation. These materials are extremely lightweight and remain very rigid or semi rigid depending on how the materials are applied during the lamination process. These materials are cured while being placed under suction in the oven for a few hours. This process is very different to the way we currently manufacture our graphite knee orthoses.

To date we have manufactured several knee orthoses and A.F.O.'s (ankle foot orthoses). We are still critiquing our devices to assure we are manufacturing the best devices possible. The latest device we manufactured is very comparable to the Neutralizer O.A. but manufactured using the Prepeg materials. This lamination was over 200 grams lighter and had an overall thickness of 1.5mm.

Considering our average device only weighs around 600 grams this is quite a difference! As we continue to develop these orthoses we have hopes to have all devices lighter and stronger than our current designs.



New "Proprio" Prosthetic Foot

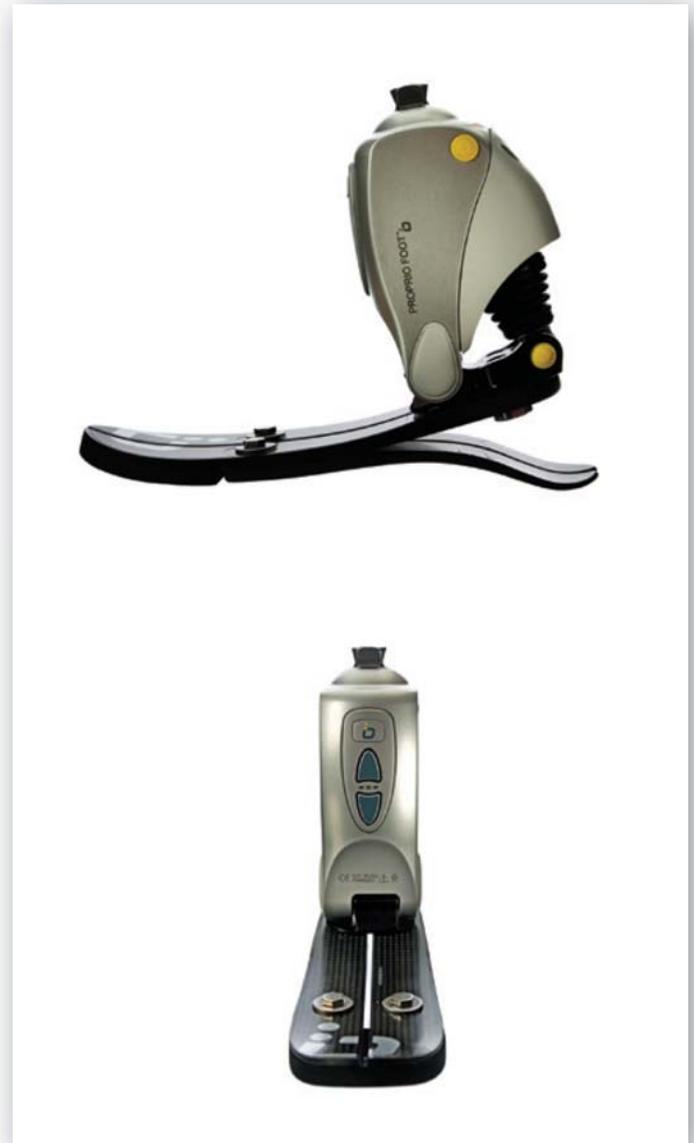
Ossur has announced the limited release of the Proprio Foot, the first intelligent foot module providing unprecedented physiological benefits for amputees. A wide and automated range of ankle flexion with proven Flex-Foot dynamics means function that is close to the human foot.

The foot allows amputees to participate in a wide range of activities, many of which were not possible with existing prosthetic solutions. The Proprio Foot features active plantar and dorsi flexion movements, allowing for maximum toe clearance and heel height adjustability. The two-button control system makes operation and set up simple and easy to use. The Proprio Foot is an artificially intelligent and motor-powered prosthesis that helps to replace the function that the body's central nervous system would normally play in processing information about changes occurring inside and outside the limb if it was still intact.

Using advanced motion sensing accelerometers, the Proprio Foot can "sense" the surroundings of each step and accommodate for such actions as sitting and standing, walking up and down stairs, and for level ground walking. As fast as it measures, the data is fed into the "brain" of the device through "Terrain Logic", identifying specific motions, such as heel strike, to enable a timely response to variations in terrain and activity. Foot motion is continuously analyzed. For each stride, gait pattern recognition algorithms in the foot are used to detect and identify when a user is walking on flat or sloped surfaces and up or down stairs, as well as when stationary or in a seated position.

Currently in limited launch, the Proprio Foot will be available early in the New Year.

With new advancements in technology like this brings a lot of excitement. The excitement comes from anticipating when this technology will wean down to items that are more readily used and can be afforded by all individuals with a limb loss.



Clinic Locations

A Full Service Prosthetic & Orthotic Clinic

Karl Hager Limb & Brace and The Knee Centre
 10733-124 Street Edmonton, Alberta T5M 0H2
 (780) 452-5771, Fax (780) 452-2752
 Toll Free 1-800-387-5053 www.khager.com

St. Paul

St. Paul General & Auxiliary Hospital
 4713-48 Ave
 St. Paul, AB T0A 3A3
 Appointments: 1-800-387-5053 (Shawna)

Cold Lake

Cold Lake Health Centre
 314-25 Street
 Cold Lake, AB T9M 1G6
 Appointments: 1-800-387-5053 (Shawna)

Slave Lake

The Family Clinic (Dr. Payne)
 608-6 Street SE
 Slave Lake, AB T0G 2A3
 Appointments: 1-800-387-5053 (Shawna)

High Prairie

High Prairie Health Complex
 Bag 1
 High Prairie, AB T0G 1E0
 Appointments: 1-800-387-5053 (Shawna)

Peace River

Peace River Health Centre
 1010-68 Street
 Peace River, AB T8S 1T6
 Appointments: 780-624-7553 (Rose or Shelly)

Vermilion

Vermilion Health Care Complex
 5720-50 Ave
 Vermilion, AB T9X 1K7
 Appointments: 780-853-3213 (Dot Hartwell)

Fort McMurray

Northern Lights Regional Health Centre
 7 Hospital Street
 Fort McMurray, AB T9H 1P2
 Appointments: 1-800-387-5053 (Shawna)

If you would like literature on the following please contact our office.

Free Literature:

- Double X Knee Orthosis
- Accelerator Knee Orthosis
- Bladerunner Knee Orthosis
- Neutralizer O.A. Knee Orthosis
- Flex X Knee Orthosis
- Foot Orthotics
- Strassburg Plantar Fasciitis Sock
- Viscosupplements: Synvisc, Durolane, Orthovisc, Ostenil
- Who Pays For What Guidelines

2006/2007 Clinic Dates

Karl Hager Limb & Brace and The Knee Centre

Dates subject to change

Clinic	Nov 06	Dec 06	Jan 07	Feb 07	Mar 07	Apr 07	May 07	June 07	July 07	Aug 07	Sept 07	Oct 07	Nov 07	Dec 07
Fort McMurray	2 & 30	NA	4	1	1	5	3,31	N/A	5	2,30	N/A	4	1,29	N/A
St. Paul	6	4	16	6	6	10	8	5	10	7	4	9	6	4
Cold Lake	6,7	4,5	16,17	6,7	6,7	10,11	8,9	5,6	10,11	7,8	4,5	9,10	6,7	4,5
High Prairie	8	6	N/A	8	8	12	10	7	12	9	6	11	8	6
Slave Lake	8	6	12	9	9	13	11	8	13	10	7	12	9	7
Peace River	15	13	17	14	14	18	16	13	18	15	12	17	14	12
Vermilion	23	20	25	22	22	26	24	21	26	23	20	25	22	20