

FOREFOOT CONDITIONS

Many conditions that cause pain in the forefoot are collectively known as *metatarsalgia*. Metatarsalgia is a non-specific term to describe pain in and about the metatarsal head (ball of the foot) or metatarsal phalangeal joint and the adjacent soft tissue structures. Examples of common types of painful forefoot conditions include:

METATARSAL STRESS FRACTURES (march fractures)

Symptoms

- Local point tenderness of the involved metatarsal is evident initially during activity and with deep palpation and may progress to pain at rest if left untreated
- Diffuse swelling and pain will increase as the injury progresses
- Most commonly seen in the 2nd or 3rd metatarsals or in the 5th metatarsal in people who tend to supinate

What is it?

Stress fractures are a break in the bone caused by repetitive stress. These fractures generally occur when bone is reabsorbed faster than it is replaced. This results in micro fractures that coalesce to form a complete stress fracture.

Pedorthic Treatment

With a prescribing physician's recommendation, Canadian Certified Pedorthists may use over-the-counter devices or may create custom-made orthoses to help distribute pressure evenly beneath the foot in order to reduce high pressure areas and mechanical deficiencies. Orthoses may feature the use of metatarsal pads and metatarsal bars to support the transverse arch and unload the pressure beneath the metatarsal heads.

METATARSAL PHALANGEAL JOINT CAPSULITIS

Symptoms

- Tenderness, which is localized to the plantar aspect of the metatarsal head
- Patients often report it feels like a stone under the foot and it is worse when barefoot or in thin-soled shoes

What is it?

This refers to a local inflammation of the plantar aspect of the metatarsal head sometimes due to degeneration of the ligaments that stabilize the metatarsal head.

Pedorthic Treatment

With a prescribing physician's recommendation, Canadian Certified Pedorthists may use over-the-counter devices or may create custom-made orthosis to help distribute pressure evenly beneath the foot, reducing high pressure areas and mechanical deficiencies. Orthoses may feature the use of metatarsal pads and metatarsal bars, if tolerated, to support the transverse arch and unload the pressure beneath the metatarsal heads. A metatarsal head cutout also assists in offloading the painful area.

FREIBERG'S DISEASE (avascular necrosis of the 2nd metatarsal head)

Symptoms

- The dorsal aspect of the metatarsal phalangeal joint is sore with palpation and worsens with activity
- Most often affects the 2nd metatarsal head during adolescence
- Commonly affects females

What is it?

This condition occurs from a lack of blood supply which results in death of the bone at the metatarsal head. The avascularity leads to eventual collapse and deformity of the metatarsal head.

(Freiberg's Disease) Pedorthic Treatment

With a prescribing physician's recommendation, Canadian Certified Pedorthists may use over-the-counter devices or may create custom-made orthosis to help distribute pressure evenly beneath the foot in order to reduce high pressure areas and mechanical deficiencies. Orthoses should feature the use of metatarsal pads and metatarsal bars to support the transverse arch and unload the pressure beneath the affected metatarsal head.

MORTON'S NEUROMA (interdigital neuroma)

Symptoms

- Pain, tingling, burning, and/or numbness is reported between the metatarsal heads, often radiating into the toes
- Tenderness is found in the web space between the metatarsals and there may be a palpable click when squeezing the metatarsals together (Mulder's click)

What is it?

A Morton's Neuroma is a mechanical entrapment of the interdigital nerve, most commonly occurring between the 3rd and 4th metatarsals.

Pedorthic Treatment

With a prescribing physician's recommendation, Canadian Certified Pedorthists may use over-the-counter devices or may create custom-made orthoses, which feature the use of metatarsal pads to support the transverse arch and lift the metatarsal bones allowing the nerve to flow through freely and prevent the bones from compressing on the neuroma.

BUNION

Symptoms

- The first metatarsal will often be red, enlarged, and painful especially when irritated by ill-fitted footwear
- Some people with a bunion may also have a corresponding medial drift of the metatarsal and lateral drift of the hallux (hallux valgus)

What is it?

A bunion is a bony enlargement on the medial aspect of the first metatarsal head. This area is often irritated and made more painful by a poor fitting shoe, or by an over pronated gait which increases pressure on the 1st metatarsal phalangeal joint.

Pedorthic Treatment

With a prescribing physician's recommendation, Canadian Certified Pedorthists may use over-the-counter devices or may create custom-made orthoses to help address mechanical deficiencies such as over pronation which may contribute to the development of a bunion.

HALLUX LIMITUS (HL) / HALLUX RIGIDUS (HR)

Symptoms

- General enlargement of the 1st metatarsal phalangeal (MTP) joint that is tender along the joint line
- Pain is aggravated with increased weight-bearing
- Dorsal joint line osteophytes may be palpable
- Pain with dorsiflexion of the 1st MTP joint

What is it?

Hallux limitus is diminished motion in the 1 st MTP joint due to bony changes in the joint. Hallux rigidus is when the 1st MTP joint motion ceases to occur as changes have caused pronounced degeneration of the joint.

(HL / HR) Pedorthic Treatment

With a prescribing physician's recommendation, Canadian Certified Pedorthists may use over-the-counter devices or may create custom-made orthoses to help address mechanical deficiencies or accommodate reduced mobility. The orthosis may have a rigid splint under the first metatarsal phalangeal joint to reduce the motion of the painful joint. Footwear with a rocker sole is useful in decreasing painful motion of the 1st MTP joint.

HALLUX VALGUS DEFORMITY

Symptoms

- Not always symptomatic but pain is often present with forced flexion or extension of the hallux
- 2nd toe deformity (hammer toe or overriding the hallux) may occur due to the invading hallux

What is it?

This is a lateral deviation of the hallux with respect to the first metatarsal bone. It is often improperly identified as a bunion, but frequently co-exists with a bunion.

Pedorthic Treatment

With a prescribing physician's recommendation, Canadian Certified Pedorthists may use over-the-counter devices or may create custom-made orthoses to help address mechanical deficiencies that are promoting the development of hallux valgus. Selecting proper footwear is also important to accommodate the deformity, provide appropriate support and relieve pressure areas that may create pain

PEDORTHIC POINTERS FOR PATIENTS

To alleviate the pain caused by forefoot conditions, Canadian Certified Pedorthists recommend selecting footwear with:

- Wide, square toe box to allow proper room for toes and avoid friction with sensitive areas
- Low heeled shoes (less than 1 " or 2.5cm) to reduce stress put on the ball of the foot
- No stitching over bony prominences
- Thicker soles help to absorb shock
- Stiff, rocker bottoms to help off-load the ball of the foot by reducing how much it bends during the push-off phase of gait
- Strong heel counters to aid in control of foot motion
- Purchase shoes which are shaped like your foot