

Physical Therapy Practice Guidelines for Persons with Bleeding Disorders:

Orthoses in Treating Ankle Hemophilic Arthropathy

The following practice guidelines were developed through the consensus of the therapists that work with patients with bleeding disorders and edited by the National Hemophilia Foundation’s Physical Therapy Working Group. The information contained in the practice guidelines is not intended in any way to be used as primary medical advice or to replace medical advice. They are intended to guide the physical therapist caring for individuals with bleeding disorders in the important factors and elements of quality care.

This is not meant to be a complete catalog of all the orthoses that are currently on the market but a guide to help providers consider orthotic intervention for improved functional outcomes.

Definition

- Orthoses are devices that are used to modify the functional or structural characteristics of the skeletal system.
- Ankles, knees, and elbows are the most frequent joints in hemophilia for which orthoses are prescribed.
- Must be prescribed by a physician

Goals

- To reduce pain by controlling or preventing joint movement, stabilizing a joint or relieving load or stress during weight bearing (axial load and weight distribution).
- For lower extremities it is meant to improve ambulation
- Protect or assist joint function
- Compensate for deformity or weakness
- Slow down the progression of arthropathy
- Limit painful mobility at a joint
- Correct alignment to improve joint mechanics
- Reduce instability and microtrauma
- Improve comfort and sensation of stability in gait
- Reduce bleeds due to altered alignment, weakness
- Shock absorption
- Provide compression, protection and/or warmth for prophylactic or therapeutic purposes

Indications for Referral for Orthoses Consideration

- Pain that impacts life by restricting activity participation and everyday activities

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- A fixed or flexible ankle foot deformity that alters weight bearing forces, impacts gait efficiency or causes pain
- Weakness that impacts joint integrity
- Increased bleeding episodes due to hemarthropathy, altered joint mechanics, weakness, chronic synovitis despite factor replacement treatment

Types of Orthoses for the Ankle Foot Complex

- Static
 - prevent joint movement due to pain and hemarthropathy
- Dynamic
 - Allows partial joint movement
 - Supports, aligns, or stabilizes a joint
- Inserts
 - Custom made, prefabricated based on foot size, or over the counter
 - Cushion or modify weight bearing distribution
 - Can be as simple as a heel lift to accommodate a plantar flexion contracture
- Ankle foot orthosis (AFO)
 - A brace that surrounds/supports the ankle and part of the foot
 - Consider over the counter options: Ankle stabilizing orthosis (ASO), aircasts, ankle wraps
 - May need to be custom molded due degree of hemarthropathy
 - Arizona brace, Ritchie brace, carbon fiber AFOs are options that provide varying degrees of support for the hemophilic ankle joint
- Orthopedic shoes
 - Prescribed when the foot deformity cannot be accommodated by orthotics, ankle foot orthosis or changes to the shoe sole.
 - The orthopedic shoe is molded to fit the deformity bringing the ground up to the foot to allow for weight distribution and comfort for improved gait kinematics.
 - Some over the counter orthopedic shoes: Z coils, MBT shoes

Considerations

- Must be prescribed on an individual basis
- Degree of hemarthropathy, joint alignment, strength and desired activities are essential to assess
- It is a symptomatic treatment for hemarthropathy, not an etiological one.
 - The goal is not always to correct to “normal” alignment.
 - Accommodate fixed deformities, improve alignment of flexible deformities respecting patient feedback
- It does not replace factor replacement as prescribed by the individual’s hematologist
- Essential to monitor use of the orthosis for proper fit and use
- Materials and design are important in ensuring function

- Feedback from the individual is essential in assessing fit, function, and participation.
- Simple can be effective
 - Consider heel lift for loss of DF due to joint degeneration.

Footwear and Orthotic Options:

This is not meant to be a comprehensive list of footwear and orthotic options for the ankle foot complex but a suggestive list as a starting point in considering options to improve function and participation for people with bleeding disorders.

Over the Counter Options

- **Heel lifts:** accommodate plantar flexion contractures, leg length difference, open anterior joint space to decrease pain due to osteophyte formation, limited joint space or joint degeneration



- **Inserts:** can provide support for hind and mid foot alignment



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- **Ankle Support Othosis (ASO):** Provides compressive support, but allows a degree of motion at the talocrural and subtalar joints.



- **Individual shoe choice:** varies based on degree of hemarthropathy, pain, and activity participation. People make individual choices and may choose a shoe style over the use of orthotics. Consider height of heel, slope under toes, support up through ankle
 - Often shoe choice can be enough, respect individual choices



- Cowboy boots provide heel lift to accommodate plantarflexion deformity and allows weight bearing through heels distributing weight bearing forces throughout the foot. They promote forward progression of tibia despite joint limitations at the talocrural joint.



- **Specialized shoes:** Z coils® and MBT shoes®, rocker bottom style shoes: Provide a degree of shock absorption and accommodates fixed deformities or limited joint motion in the sagittal plane at the ankle, to improve gait efficiency and comfort.



Orthoses that Require Referral to an Orthotist

- **Ritchie® brace:** Provides medial-lateral support while allowing for sagittal plane movement. Provides support when ankle musculature is weak and foot deformity is flexible



- **Carbon Fiber AFO:** this is a ground reaction floor brace that minimizes painful talocrural motion, while giving back energy at push off that would normally come from muscle action of gastroc soleus complex. It comes in varying degrees of stiffness depending on amount of motion tolerated at the talocrural joint. Can be coupled with a custom molded foot orthotic depending on degree of hemarthropathy.
- **Arizona Brace®:** limits talocrural joint motion, provides compression, is soft and form fitting



- **Custom molded foot orthotics:** Molded by orthotist to accommodate fixed and flexible ankle foot deformities. Added features can include heel lifts of varying degrees, posting under first ray, arch support, and solid ankle support.

References:

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