

Types of Orthoses

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The hand is an amazing adaptive tool for interacting with our surroundings. Orthotic fabrication can be an indispensable means of allowing our patients optimal use of that tool and, therefore, maximizing overall upper extremity function. Intervention decisions must be based on an integration of therapeutic knowledge and clinical experience as well as patient-specific information such as diagnosis, general medical status and the physician's prescription. The appropriate use of orthoses can be an effective adjunct to other therapy techniques for restoring use of the hand. The following will outline the various types of orthoses that are commonly utilized in hand clinics.

Immobilization orthoses are applied to stop motion in specific joints and tissues. Even though they are the simplest type of orthosis we fabricate, they can be used for the most complex injuries. These devices are either articular or nonarticular, immobilizing the joints they cross (articular) or stabilizing a structure to which they are applied (nonarticular). Shown is a hand-based thumb MP immobilization orthosis used to address and injury to the UCL ligament. The most common objectives include:

- Provide symptom relief
- Protect and position edematous structures
- Aid in maximizing functional use
- Maintain tissue length
- Protect healing structures and surgical procedures
- Provide support and protection for soft tissue healing
- Maintain and protect reduction of fracture
- Improve and preserve joint alignment
- Block and transfer muscle and tendon forces
- Influence a spastic muscle
- Prevent possible contracture development



Mobilization orthoses most commonly are used to stretch specific soft tissues or joints to create change (facilitate cellular growth). The benefits of using mobilization orthoses as a treatment modality have been well documented in the literature. The stimulation of tissue growth occurs when steady tension is applied through the orthosis over a long period of time. Orthoses that mobilize tissue include serial static, static progressive, and dynamic. Shown is static progressive MCP/PIP/DIP mobilization orthosis used to address loss of passive digit flexion. The most common objectives include:

- Remodel long-standing, dense, mature scar
- Elongate soft tissue contractures, adhesions, and musculotendinous tightness
- Increase passive joint ROM
- Realign or maintain joint and ligament profile
- Substitute for weak or absent motion
- Maintain reduction of an intraarticular fracture with preservation of joint mobility



Restriction orthoses block an aspect of joint motion while allowing unrestricted motion in the opposite direction. Shown is a PIP extension restriction orthosis used to manage swan neck deformity in the digit (hyperextension at PIP). The most common objectives include:

- Limit motion after nerve or tendon injury or repair
- Limit motion after bone or ligament injury or repair
- Provide and improve joint stability and alignment
- Assist in functional use of the hand

