



## AMERICAN SOCIETY OF HAND THERAPISTS POSITION PAPER ON THE USE OF ORTHOTICS IN HAND THERAPY

### A. Background

In September 2002, the American Society of Hand Therapists (ASHT) Board of Directors ascertained the need to clarify their society's position on various issues of importance to hand therapists through the development of a series of position papers to clarify common therapy practices. An ad hoc committee was established to work on various orthotic/prosthetic issues facing therapists, including the development of this position statement on the use of orthotics in hand therapy. The task force consisted of:

A splint/orthosis is defined, for the purpose of this paper, as a device externally applied to the body that is used to support, restrict, mobilize or immobilize structures. Although there are many therapeutic uses for splints/orthoses, they are most commonly referenced for use in deformity prevention, deformity correction, protection of healing structures, motion restriction, functional improvement, and influence of tissue growth and remodeling.<sup>1</sup>

In researching this position paper, the Hand Therapy Certification Commission's (HTCC) Practice Analysis in 2001 was referenced. This survey found that the safe and appropriate use and maintenance of assistive devices is considered part of the scientific knowledge basis of hand therapy. Both prosthetics and splinting are listed as a treatment technique and tool in the therapeutic intervention of hand and upper quarter patients. Splinting/orthotics were used by all hand therapists responding to HTCC's 2001 practice analysis, and 90% responded that splinting/orthotics are utilized in the treatment of 26% or more of their patients.<sup>2</sup>

The history of therapist use of splinting/orthotics was reviewed, including the large volume of therapist written contributions to the science of splinting/orthotics. An overview of references on orthotics/splinting found over 400 references which address therapist use of splint, orthosis, and/or brace in therapist's practice, dating back to the 1950s. The first therapist written splint/orthosis manual was written by Bleyer and published in 1956.<sup>3</sup> Over the first 15 years of publication of the official journal of the American Society of Hand Therapists, the *Journal of Hand Therapy*, the current editor estimates that 172 out of 429 published articles addressed splinting/orthotics.

Therapist fabrication of orthotics was formally addressed by the orthotic/prosthetic profession when the Committee on Prosthetic-Orthotic Education, National Academy of Sciences-National Research Council assigned a joint task force with therapists and O&P professionals in 1965 to explore appropriate therapist orthotic/prosthetic activities. Therapist fabrication of orthotics was officially recognized in 1967, when this group published the *Study of Orthotic and Prosthetic Activities for Physical Therapists and Occupational Therapists*.<sup>4</sup> This document outlined the educational criteria needed in the training of therapists in orthotics/prosthetics, and officially noted therapists' ability to provide these services, stating; "where orthotic service is not available, simple orthotic devices may be furnished by occupational therapists and physical therapists". From this simple beginning, orthotic fabrication has evolved on all levels into an integral component of the hand therapist's practice.

Given the previous documents, the ASHT ad hoc splinting committee developed the following position statement.

## **B. Position**

1. The American Society of Hand Therapists (ASHT) endorses the safe and effective use of splints/orthoses in upper extremity rehabilitation by certified hand therapists, licensed or registered occupational therapists, and physical therapists who have acquired the appropriate level of knowledge in their use as recommended in this ASHT position paper on splints/orthoses. Splints/orthoses must only be used within the parameters of the individual therapist's governing bodies, including their employers and their professional, state, and national regulatory bodies.
2. The American Society of Hand Therapists recognizes that a comprehensive knowledge of splinting/orthotics is an integral part of the hand therapist's practice as evidenced by practice analysis surveys and literature review. These splints/orthoses are developed using the clinical reasoning skills of the trained therapist, including but not limited to, knowledge of the anatomy, disease/injury process (including surgical procedures and wound healing physiology), unique characteristics of the person to whom the device is to be applied (including psychosocial factors), and knowledge of the ultimate goal(s) of the device.
3. The American Society of Hand Therapists acknowledges that the terms orthosis, splint and brace can and have been used interchangeably in our literature.<sup>5,6</sup>
4. The American Society of Hand Therapists recognizes that hand therapists have diversified educational backgrounds that include occupational therapy, physical therapy, and additional orthotic training. It also recognizes that these disciplines have a basic therapy degree that includes education in splinting/orthotics and prosthetics and the basis for the reasoning skills needed to apply orthotics safely and effectively.
5. The American Society of Hand Therapists recognizes that there are both academic and non-academic methods of training in splint/orthosis fabrication and use. We acknowledge the ever-changing scientific and clinical information available to hand therapists, and support both academic and non-academic continuing education as a means to maintain knowledge on new techniques and to ensure effective splint/orthosis use. All splint/orthosis fabrication must be carried out within the legal guidelines of each state and must meet ethical and safe practice guidelines of the profession.

## **C. Additional Clarification of Educational Background**

The American Society of Hand Therapists can identify three (3) progressive levels of education for the safe and effective use of splints/orthoses in hand therapy that address the diverse training of hand therapists. Each level is dependent on completion of the previous levels of training, and fulfillment of each is recommended before proceeding to the next level.

**LEVEL I:** Basic sciences of anatomy, kinesiology, biomechanics, human neurosciences, physiology, and disease process.

Level I includes the scientific background of splinting/orthotics, including comprehensive understanding of anatomy, physiology, pathology, biomechanics and kinesiology. Fulfillment of this level can be achieved through academic education.

**LEVEL II:** Theory of applied sciences.

Level II includes the specific techniques used in the decision process for effective splinting/orthotic construction and application. The course time spent on each of these subjects is determined by degree of

difficulty and material content. Level II course work addresses the following issues on splint/orthotic fabrication and application:

1. Principles of splint/orthotic design and construction
2. Biomechanics of splint/orthotic design
3. Splint classification and nomenclature
4. Criteria for optimum material selection
5. Physiological response of healthy and pathological soft tissue and musculoskeletal tissues to the effects of the splint/orthosis
6. Indications and expected outcomes
7. Contraindications and precautions for specific splint/orthosis applications
8. Psychosocial considerations of splint/orthosis application to individuals
9. Patient education for the use of splint/orthoses
10. Documentation of splint/orthosis application and use
11. Techniques for evaluation of the effectiveness of the splint/orthosis
12. Legal and ethical issues relating to splint/orthotic application
13. Complete evaluation of patient's status and needs and the role of splinting/orthotics in meeting these needs

Level II can be fulfilled through academic curriculum, academic or non-academic continuing education and/or self-study.

### **LEVEL III: Advanced Clinical Reasoning**

Level III education is geared specifically toward common upper quarter problems in hand therapy. This includes the development of the skills necessary to synthesize pathology, anatomy, and clinical knowledge in order to choose an appropriate and effective splint/orthosis. This level of education facilitates the development of these skills through a problem-oriented approach to common hand problems such as edema, pain, wounds, spasms, contractures, paralysis, weakness, neuromuscular dysfunction, adhesions, and instability.

Level III course work addresses:

1. Discussion of the optimal use of splints/orthoses in conjunction with other hand therapy treatment.
2. Case studies demonstrating the application of splints/orthoses
3. Demonstration lectures of application of splints/orthoses for specific clinical problems
4. Hands-on labs for construction and critique of splint/orthosis fabrication
5. Documentation of construction and application of splints/orthoses
6. Legal and ethical issues relating to the application of splints/orthoses.

Level III course work can be completed through continuing education and/or self-study.

### **D. Disclaimer**

The American Society of Hand Therapists as an organization of hand therapists assumes no liability for the practice or recommendations of any member or other practitioner, or for the policies and procedures of any practice setting. The therapist functions within the limitations of licensure, state practice act, and/or institutional policy.

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<sup>1</sup> Fess, Elaine. *A History of Splinting: To Understand the Present, View the Past*. J Hand Ther. 2002;15(2)97-132.

<sup>2</sup> Muenzen, P, Kasch, M, Greenberg, S, Fullenwider, L, Taylor, P, Dimick, M. *A New Practice Analysis of Hand Therapy*. J Hand Ther 2002;15(3)215-225

<sup>3</sup> Bleyer, D. *A Manual on the Use and Construction of Splints for the Occupational Therapist*. 1956: Milwaukee-Downer College and the Office of Vocational Rehabilitation, Department of Health, Education and Welfare.

<sup>4</sup>Committee on Prosthetics Research and Development, D.o.E., National Research Council, *A Study of Orthotic and Prosthetic Activities Appropriate for Physical Therapists and Occupational Therapists*. AJOT, 1967; 21(6) 404-405

<sup>5</sup> Malick, Maude. *Upper Extremity Orthotics in Occupational Therapy*, 7<sup>th</sup> ed. eds Hopkins, Helen, Smith. Philadelphia, J.B. Lippincott Company, 1988.

<sup>6</sup>American Society of Hand Therapists, *Splint Classification System*, 1992