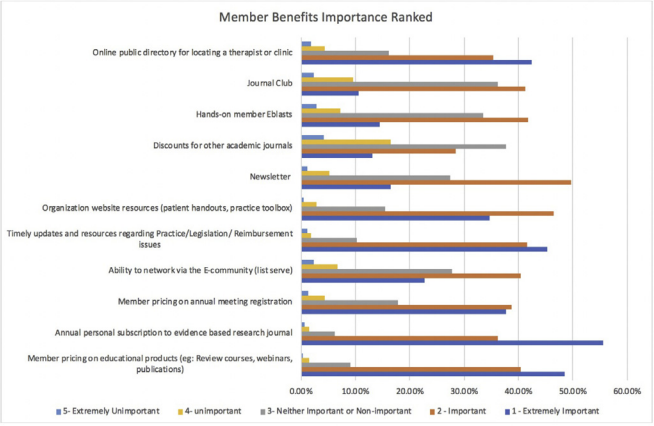
Society of Hand Therapy includes the cost, uninformed of membership benefits, and being either retired or an out of country practitioner.

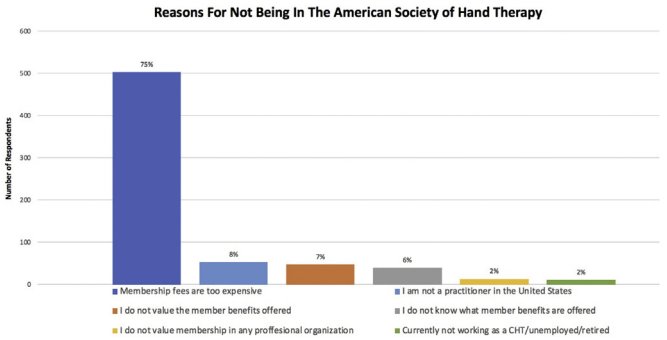
From the survey, 202 (16%) respondents characterized themselves as millennials (1977-1995), 552 (44%) respondents characterized themselves as generation X (1965-1976), 499 (40%) respondents characterized themselves as baby boomers (1946-1964), (1%) respondents identified themselves as other, and nine respondents skipped this question.

Out of the survey respondents, 581 (46%)worked in a hospital based practice (inpatient or outpatient). There were 222 (18%) respondents answered that they worked in private therapist owned practice. Additionally, 216 (17%) respondents answered that they worked at a physician owned practice. There were 155 (12%) respondents that worked in a corporate therapy owned practice and 91 (7%) respondents answered other.

Conclusion: Many current American Society of Hand Therapy members value their membership and find it beneficial not only for themselves, but for furthering hand therapy practice as well. Some certified hand therapists identified cost as the most apparent factor for not joining the American Society of Hand Therapy.



Gender Identification (1,263 responses)	Percentage	Total Number of Responses
Male	14%	176
Female	85%	1077
Preferred Not to Answer	1%	8
Generational Cohorts (1,262 responses)		
Millennial	16%	202
Generation X	44%	552
Baby Boomers	40%	499
Other	1%	9
Skipped	1%	9
Practice Credential (1,265 responses)		
OT	86%	1098
PT	12%	158
Both	1%	9
Skipped	<1%	6
Practice Setting (1,265 responses)		
Private Therapist Owned Practice	18%	222
Hospital Based Practice (Inpatient or Outpatient)	46%	581
Corporate Therapy Owned Practice	12%	155
Physician Owned Practice	17%	216
Other	7%	91
Skipped	<1%	6



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Overuse Musculoskeletal Injuries After Upper Limb Amputation

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Purpose: Service Members who have sustained traumatic upper limb amputation are thought to be at high risk for developing painful secondary overuse musculoskeletal conditions that can be detrimental to daily function and quality of life. Regardless of whether the Service Member's goal is to return to active duty or transition to civilian life, these individuals generally share a common goal to continue a highly active, relatively pain-free lifestyle. The objective of this study was to compare the one-year incidence of overuse musculoskeletal injuries in Service Members with different levels of combat-related upper limb amputation compared to Service Members who have sustained minor combat-related upper limb injuries.

Methods: The Expeditionary Medical Encounter Database was queried for deployment-related, immediate unilateral upper limb amputations between 2003 and 2015, with an exclusion criteria of concurrent lower limb amputation. Service Members with a single deployment-related skin abrasion, contusion or laceration to the upper limb were queried to serve as a minor injury comparison group. These queries resulted in 148 Service Members with a deployment-related unilateral upper limb amputation and 371 Service Members with a minor upper limb injury. Of those who sustained a unilateral upper limb amputation, 55 were at or proximal to the elbow (above elbow) and 93 were below the elbow. Overuse musculoskeletal conditions were defined through International Classification of Diseases, 9th edition and retrieved from the Military Health System Medical Data Repository for one year prior to and after the date of injury and divided into three regions: lower limb, upper limb, low back. The incidence of overuse musculoskeletal conditions was calculated by excluding Service Members with the identical overuse condition within one year prior to injury. Separate logistic regression models were used to determine the association between injury type (above elbow amputation, below elbow amputation and minor upper limb injury) and developing an overuse musculoskeletal condition (lower limb, upper limb, low back) after controlling for age.

Results: One year incidence rates of overuse musculoskeletal conditions were consistently higher in Service Members who sustained upper limb amputation compared to minor upper limb

injuries. The rates of at least one overuse condition were 57.8% in Service Members with below elbow amputations and 47.2% in above elbow amputations while only 21.2% in the minor injury group. The incidence of overuse upper limb conditions was 36.3% in the below elbow group, 20.0% in the above elbow group, and 9.4% in the minor injury group. The incidence of overuse lower limb conditions was 35.6% in the below elbow group, 28.3% in the above elbow group, and 11.8% in the minor injury group. The incidence of low back pain was 19.8% in the below elbow group, 24.1% in the above elbow group, and 7.3% in the minor injury group. After controlling for age, the odds of developing an upper limb overuse condition in the first year after injury was two times greater [Odds ratio (OR): 2.39; 95% confidence interval (CI): 1.13 − 5.05; $p < 0.05$] in above elbow amputation and five times greater [OR: 5.45; 95% CI: 3.13 − 9.49; $p < 0.001$] in below elbow amputations as compared to the minor injury group. The odds of developing a lower limb overuse condition in the first year after injury was nearly three times greater [OR: 2.93; 95% CI: 1.48 − 5.79; $p < 0.01$] in above elbow amputation and four times greater [OR: 4.07; 95% CI: 2.35 − 7.04; $p < 0.001$] in below elbow amputations as compared to the minor injury group. The odds of developing low back pain in the first year after injury was nearly four times greater [OR: 3.95; 95% CI: 1.87− 8.32; $p < 0.01$] in above elbow amputation and three times greater [OR: 3.07; 95% CI: 1.59 − 5.92; $p < 0.01$] in below elbow amputations as compared to the minor injury group. Overlap in confidence intervals for the above and below elbow amputations groups suggests no difference in the odds of developing an overuse musculoskeletal condition in the first year after injury between the upper limb amputation levels.

Conclusion: The findings of this study suggest that Service Members who have sustained upper limb traumatic amputation are at an elevated risk for developing overuse upper limb, lower limb, and low back conditions within the first year after amputation. The findings from study this suggest there is a need to develop preventative and rehabilitative strategies for overuse upper limb, lower limb, and spine conditions in patients who have sustained upper limb amputation.

Disclosure: The view(s) expressed herein are those of the author(s) and do not reflect the official policy or position of Brooke Army Medical Center, the U.S. Army Medical Department, the U.S. Army Office of the Surgeon General, the Department of the Air Force, the Department of the Army, Department of the Navy, or the Department of Defense or the U.S. Government.

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Cubital Tunnel Control Orthosis (CTCO) for the Non-Operative Management of Cubital Tunnel Syndrome

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Purpose: Cubital tunnel syndrome (CuTS), ulnar nerve entrapment about the elbow, is the second most common neuropathy of the upper extremity. Symptoms most commonly reported include paresthesia of the small finger and ulnar half of ring finger, difficulty maintaining grasp on objects and difficulty sleeping. These symptoms may be worsened by repetitive flexion of the elbow or external pressure at the ulnar aspect of the elbow. Conservative treatment is most often utilized for management of mild and moderate CuTS symptoms and include a combination of patient education, activity modification, non-steroidal medication use, ulnar nerve glides, and nocturnal extension splinting. It was observed that traditional static elbow extension orthoses, while effective, presented barriers to positive patient outcomes in terms of comfort and compliance at an outpatient hand clinic. This article describes a novel orthosis design for the non-operative treatment of cubital tunnel syndrome.

Methods: The two cases described followed standard non-operative management of cubital tunnel syndrome rehabilitation with the use of a dynamic cubital tunnel control orthosis (CTCO) as an alternative to the static elbow extension orthosis. The CTCO orthosis differs from the traditional static extension orthosis in that it allows for active flexion of the elbow while promoting passive extension when the joint is at rest (Fig1). Due to the design of the thermoplastic dynamic bars that allow active movement at the elbow joint and the position of the straps, there is no pressure over the cubital tunnel (Fig 2). Patients were instructed to wear the orthosis at every night and during the day as needed to manage symptoms. Patient progress was evaluated though use of the QuickDASH, an 11-point numerical pain rating scale, and grip strength assessed with a dynamometer.

Results: Case 1 was a 33 year old right hand dominant male with a five-year history of ulnar nerve compression to the left upper extremity with no co-morbidities noted. He underwent bilateral ulnar nerve transposition surgery five years prior with resolution of symptoms to his right upper extremity, but persistent ulnar nerve compression symptoms to the left remained. He was unable to tolerate a traditional static orthosis due to pain caused by pressure over the ulnar aspect of his elbow. After 14 weeks of conservative treatment with a home program including nightly use of the CTCO, the patient demonstrated an 18.18% decrease in his QuickDASH score, a 6-point decrease in pain with activity (0/10 pain at discharge), and an increase of 24 pounds in grip strength. Case 2 was a 56 year old right hand dominant female with a two month history of ulnar nerve compression at the left elbow. Her job involved desk work and she often experience severe symptoms while at work. After 8 weeks of conservative treatment with a home going program including use of the CTCO, the patient demonstrated a 15.91% decrease in the QuickDASH, a 4-point decrease in pain with activity (0/10 pain at discharge), and a 25 pound increase in grip strength. The patient reported that due to the dynamic nature of the CTCO she was able to wear the orthosis at work in addition to nocturnal wear to help manage her symptoms. Of note, neither patient required orthosis modification during their course of wear. Both patients were able to wean themselves from their orthoses and reported independent function with daily tasks three months after initial evaluation.

Conclusion: Utilizing this new orthosis may increase patient orthosis wear compliance in comparison to traditional methods. Both cases show meaningful change in the QuickDASH, reduction in pain, increase in grip strength, and were able to return to functional independence within a three month timeframe. Further evaluation of CTCO orthosis in comparison to traditional orthosis methods are warranted.

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