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Thirty years of hand therapy: The 2014 practice analysis

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ABSTRACT

Study Design: Quantitative and descriptive study.*Introduction:* In 2014, the Hand Therapy Certification Commission (HTCC), in consultation with Professional Examination Service, performed a practice analysis study of hand therapy, the fifth in a series of similar studies performed by HTCC over a 30-year period.*Purpose:* The purpose of the study was to gather data on current hand therapy practice to ensure the content of the Certified Hand Therapist (CHT) examination and credentialing program requirements match current practice.*Methods:* Subject-matter experts from the United States and Canada, representing a broad range of experiences and perspectives, developed an updated delineation of the domains, tasks, knowledge, and techniques and tools used in hand therapy practice. Practicing hand therapists from the United States, Canada, Australia, and 13 other countries reviewed the delineation in a large-scale online survey.*Results:* The survey overwhelmingly validated the updated profile. Additionally, the survey explored trends in hand therapy practice and compared findings with previous studies. The results were analyzed and compared with findings from previous studies.*Conclusion:* This analysis led to the revision of the test specifications for the HTCC; the affirmation of the definition of hand therapy; the refinement of the scope of hand therapy practice; and guidance for HTCC policy decisions.*Level of evidence:* Not applicable.

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Introduction

The primary goal of this practice analysis study was to validate the definition and delineation of hand therapy and to ensure that the test content outline for the Hand Therapy Certification Examination (HTCE) reflects the critical tasks, knowledge, and skills required in the professional practice of hand therapy. Additional goals of the study were to identify emerging and receding trends in hand therapy and to consider whether advances in the entry-level degree required for occupational therapy and physical therapy have impacted hand therapy practice.

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Certification in Hand Therapy is a voluntary credentialing program established in 1989 by the Hand Therapy Certification Commission (HTCC) to certify occupational therapists (OTs) and physical therapists (PTs) in the advanced clinical specialty of rehabilitation of the upper limb. The certified hand therapist (CHT) credential is a designation of excellence in hand therapy. A CHT is an OT or PT who has a minimum of 5 years of clinical experience, including 4000 hours or more in direct practice in hand therapy, and who has passed the comprehensive HTCE. The HTCE is a test of advanced clinical skills and theory in upper extremity rehabilitation. The examination, offered since 1991, covers the broad knowledge required for clinical intervention as well as the basic science and theory that support clinical treatment. A therapist must recertify every 5 years by examination or by accruing hours of work experience and professional development to continue to ensure that individuals maintain clinical competence. The program serves the public and hand therapy community by maintaining high standards of the practice of hand therapy, enhancing the quality of patient care, recognizing OTs and PTs who have achieved this advanced

level of professional knowledge, and encouraging participation in continuing education and professional development.

In 2014, HTCC, in consultation with examination and credentialing specialists from Professional Examination Service (ProExam), performed the fifth in a series of practice analysis studies that have been conducted by HTCC over a 30-year period. Previous studies were completed in 1985, 1994, 2001, and 2008.^{1–4} Additionally, the 2001 study included an in-depth analysis of competencies in hand therapy.⁵ In professional credentialing, the primary purpose of conducting a practice analysis is to create a valid and defensible empirical foundation for examination development. The practice analysis, which surveys hand therapists regarding the tasks, knowledge, and skills needed for clinical practice, results in a test content outline for the HTCE, which is used to guide item writing and examination construction, linking the examination content with clinical practice. Best practice in credentialing suggests that update practice analyses be conducted every 5–7 years to ensure that the examination content remains relevant to current practice or more frequently if warranted by the pace of change in the profession.^{6–8} Each study takes approximately 3–4 years to complete from initial planning to publication.

Methods

Update of delineation of hand therapy practice

A Practice Analysis Advisory Council (PAAC) made up of therapists who had participated in previous practice analysis studies and who were knowledgeable about the examination program provided guidance and oversight for the duration of the project. The PAAC participated in and appointed additional members to a Practice Analysis Task Force (PATF) charged with updating the 2008 delineation of practice. The PATF included CHTs who reflected the diversity of hand therapy practice, represented various geographical regions, employment settings, and areas of expertise, were familiar with CHT examination program (including current and former members of the examination committee), and included OT and PT educators. The PAAC selected additional subject-matter experts (SMEs) to participate in telephone interviews, serve as members of an independent review panel, and act as pilot testers for the survey conducted to validate the updated delineation of practice. These SMEs were also chosen to reflect the broad range of experiences and perspectives in hand therapy practice.

Preliminary data collection with SMEs

In preparation for the work of the PATF, ProExam conducted telephone interviews with 11 CHTs representing thought leadership in the profession. The interviews focused on identifying contemporary practices in hand therapy to include in the updated delineation of hand therapy practice. Interviewees also provided specific commentary on the then-current delineation of practice. Changes in practice most frequently cited included faster timelines in treatment, with a decrease in patient visits and a concomitant increase in home education programs; an increased focus on evidence-informed practice; and more requirements and regulations related to insurance and reimbursement.

PATF meeting 1

The PATF met for 2 days to develop an updated hand therapy delineation of practice. The delineation included major domains of practice, tasks performed by hand therapists, the scientific knowledge base underlying practice, diagnoses, and conditions presented by patients, and techniques and tools used by hand therapists. The PATF began their work by reviewing the results of the thought leader telephone interviews and augmented the

interview findings with their personal expertise and perspectives. The PATF reviewed and updated all elements of the 2008 delineation and slightly modified the basic domain structure.

At the meeting, the PATF finalized plans for validating the delineation through a survey of practice. They confirmed rating scales for the domains, tasks, knowledge, diagnoses, and conditions, as well as techniques and tools. They identified key demographic and professional background information to collect from survey participants. As new elements in this study, the PAAC and PATF developed a series of survey questions to explore whether changes in the health care system have affected hand therapy practice. These questions related to professional practice structure and delivery methods, ancillary personnel involved in practice, and services provided. Detailed questions regarding wound care management were also developed to validate more formally interim studies performed in response to practice issues.

Postmeeting review

Each member of the PATF independently reviewed the updated delineation of practice and made suggestions for further revisions. The PAAC reviewed all PATF suggestions and revised the delineation based on this feedback in advance of circulating it to outside reviewers.

Conduct of external review

Twelve SMEs completed an external review and independent evaluation of the updated delineation. The detailed commentary and suggestions provided helped to ensure the delineation was clear, comprehensive, and reflective of current practice.

Finalizing the delineation to be surveyed

During a web-based meeting, the PAAC analyzed and incorporated the external review results into the final survey version of the delineation of hand therapy. The delineation included 28 tasks within 4 domains of practice and 1 fundamental knowledge area.

- Domain 1: Evaluate upper limb and relevant patient characteristics (12 tasks)
- Domain 2: Determine prognosis and plan of care (12 tasks)
- Domain 3: Implement therapeutic interventions (4 tasks)
- Domain 4: Promote professional practice (10 tasks)
- Knowledge: Fundamental knowledge and basic science (0 tasks)

Forty-two knowledge bases were also identified, organized into 2 categories: knowledge specifically related to tasks in domains 1–4 (17 knowledge areas) and a separate foundational category: *Fundamental knowledge and basic science* (25 knowledge areas). The final list of diagnoses and conditions included 26 problems treated by hand therapists. The updated list of techniques and tools included 95 techniques and tools related to assessment, tests and measurement, therapeutic exercise, modalities, orthotics and prosthetics, management of conditions, complementary approaches, and wound care management.

Validation of delineation of practice

Survey

A survey was conducted to validate the updated delineation of practice. The collection of validation data permits the identification of the most salient elements for inclusion on the examination and provides empirical support for allocating distribution on the examination across each major domain of practice. ProExam developed a web-based survey instrument designed to collect data from practitioners regarding all elements of the delineation. The survey was pilot tested by a group of 19 CHTs (of 20 invited) and by the task

force members. Participants also answered a series of questions about the clarity of survey instructions, ease of use of the survey instrument, time necessary to complete the survey, and whether any tasks, knowledge, diagnoses, and conditions, or techniques and tools used by hand therapists were missing from the survey. Based on their feedback, the PAAC made slight refinements to the survey instrument.

Survey versions

The use of 2 versions of the survey reduced demands on respondents. Both versions included questions about the domains and tasks of hand therapy. Tasks were rated on the frequency performed and their criticality to optimizing patient outcomes. Respondents reported the percentage of time they spent in the direct patient care domains and the extent to which they screened, treated, or referred patients with conditions related to different regions of the upper limb. Respondents recommended what percentage of the HTCE should focus on each of the 4 task-based domains plus the *fundamental knowledge and basic science* area. Respondents were then randomly assigned to 1 of 2 versions of the next section of the survey.

In *version A*, respondents rated the knowledge underlying hand therapy on 2 scales. The first was the point at which they had acquired the knowledge (*during formal education, before specialized practice in hand therapy, during the first 2 years of hand therapy practice, or after 2 years of hand therapy practice*). They also specified the means by which they acquired the knowledge (*entry-level OT/PT training, postprofessional program, on-the-job training, or continuing education*). In addition, respondents indicated the percentage of their patient populations that fell within each of the 26 diagnostic categories or conditions, using predetermined percentage ranges.

Version B of the survey asked respondents to rate 95 techniques or tools used by hand therapists on 2 scales: the *frequency* with which they used the technique or tools during the past year and the *criticality* of the technique or tool to optimizing patient outcomes.

Respondents to both versions answered a series of 39 questions related to their demographic and professional backgrounds. This section included questions about the percent of work time spent working with upper limb patients in the various areas of the upper limb and about specific patient populations. It also included a variety of questions designed to explore practice patterns, including services performed as a physician extender, referral sources, and certified and noncertified personnel at respondents' workplace.

Survey sampling and dissemination

The entire population of 5992 CHTs was invited to complete the survey. HTCC sent a prenotification e-mail to all CHTs alerting them to the upcoming survey. One day later, ProExam disseminated electronic invitations to participate. Each invitation contained an individualized password-protected link to the survey. One week after the initial invitations, reminder e-mails were sent to those who had not yet responded, and a final reminder to nonrespondents was sent 4 days after that.

Results

Characteristics of hand therapist respondents

One thousand six hundred ninety CHTs (of the 5992 invited) completed the survey resulting in a response rate of 29%. Although this response rate was slightly lower than the 32% for the 2008 study and those achieved in the previous studies, this still represents a good level of response for a lengthy online survey. It also represents the largest number of CHTs surveyed compared with previous hand therapy practice analyses. The sample size is robust and comparable or higher to those obtained in other practice

analysis studies of similar or related professions. The total number of respondents permits extrapolation of survey results to the larger population of hand therapists and provides a strong basis from which to make recommendations for the CHT credentialing program. Of those completing the survey, slightly less than half (46%) were routed to version A and rated the knowledge and the diagnoses/conditions of hand therapy patients. The remainder (54%) completed the ratings of techniques and tools.

Almost 87% of the respondents were OTs and 13% were PTs. Nine respondents (less than 1%) held both credentials. The ratio of OT-PT respondents is consistent with the overall ratio of OTs (85%) to PTs (14%) to dually credentialed OT/PT (1%) in the CHT population. The respondents were highly experienced, with a mean of 22.8 years of experience in OT and a mean of 25.6 years of experience in PT. For all respondents, the mean of years since initial certification as a CHT was 11.4. The mean age of the respondents has increased from 42 years in 2008 to 48 years in the present study, and more than 20% are older than 55 years. Subgroup analyses of task ratings by years certified as a CHT revealed virtually no difference in ratings by 3 experience cohorts (1–5, 6–15, and 16 or more years of experience).

HTCC supports CHTs throughout the life span of their careers from initial certification through retirement. For the first time, respondents were asked about their plans regarding their CHT status over the next 5 years. The vast majority of CHTs (94%) intend to renew their credential during the next 5 years, whereas others will retire or go on inactive status.

This study differed from previous studies by inviting all CHTs to participate, regardless of the country in which they practice. Before this, only countries with identified populations of 40 or more hand therapists were included. Representatives responded from 16 different countries (Australia, Bahamas, Bulgaria, Canada, Hong Kong, Ireland, Northern Ireland, New Zealand, Qatar, Republic of Panama, Saudi Arabia, Singapore, United Arab Emirates, the United States, and 2 others—not specified). Most respondents were from the United States (almost 93%). Canada represented the next highest cohort (4%), followed by Australia (2%). The remaining 1% represented 13 other countries.

Trends in entry-level education

A strong majority (77%) of the OT respondents entered the field with a bachelor's degree. Twenty-one percent entered with a master's degree, and less than 1% entered the OT field with a doctorate. The responses to a question about highest degree achieved in OT indicates that some respondents continued their OT education, with an additional 6% achieving a master's degree and 40 individuals (2.7%) achieving a doctorate. A similar pattern is found for PTs, although a slightly higher percentage of PTs entered with a master's degree or doctorate (24%), and a higher percentage of PTs have ultimately achieved a doctorate (2.7% for OTs and 18.6% for PTs). These numbers show a small increase in doctoral-level CHTs since the 2008 study (0.4% for OTs and 15.5% for PTs).

Patterns of practice were consistent with previous studies. Respondents spend the greatest percentage of their work time (80%) providing direct patient care. Administration and management took the next largest percentage of time (6%), followed by clinical supervision or teaching (5%). More than half of the respondents worked at a designated hand therapy clinic, followed by a general outpatient setting for mixed diagnoses or a general orthopedic setting. Twenty-four respondents worked in a military setting.

Characteristics of hand therapy patients

CHTs see patients of all ages, although most patients were adults (55%) or older adults (30%). [Figure 1](#) shows the diagnoses or

Domains and Tasks

Domain 1. Evaluate Upper Limb and Relevant Patient Characteristics

- 1.1 Obtain and review medical, surgical, psychosocial, functional, developmental, vocational and avocational history
- 1.2 Conduct patient, family, and/or caregiver interview
- 1.3 Perform screening examination and systems review to identify symptoms of co-morbidities that may or may not have been previously identified
- 1.4 Identify factors that may require further consultations/referrals
- 1.5 Monitor factors that may affect rehabilitation potential and participation
- 1.6 Plan for and select reliable and valid assessment tools, tests, and outcome measures
- 1.7 Assess and document physical status of skeletal, muscular, nervous, vascular, lymphatic, skin and connective tissue
- 1.8 Screen for cervical conditions
- 1.9 Assess and document psychosocial, functional, developmental, vocational, avocational, and ergonomic factors
- 1.10 Identify impairments in body functions and body structure, activity limitations, and participation restrictions based on the results of evaluation
- 1.11 Identify factors that could affect management of specific populations (for example, workers, athletes, performing artists, age groups)
- 1.12 Reassess and document patient status at appropriate intervals

Domain 2: Determine Prognosis and Plan of Care

- 2.1 Establish an individualized plan of care by integrating basic science, fundamental knowledge, best clinical evidence, and clinical experience with evaluation results and patient goals
- 2.2 Determine rehabilitation potential and expected outcomes and communicate these with the patient, family, and/or caregiver
- 2.3 Establish functional and measurable goals of intervention that are specific to the evaluation findings including an anticipated time frame for attainment
- 2.4 Establish frequency and duration of interventions in collaboration with patient, family, or care-giver, and referral source
- 2.5 Make recommendations to produce optimal outcomes within the constraints of the patient's specific situation (for example, financial considerations, transportation, time/schedule restrictions, readiness to learn)
- 2.6 Select interventions and treatment techniques
- 2.7 Document the plan of care using defined parameters of frequency, duration, focus, and treatment interventions
- 2.8 Identify resources to which patients can be directed (for example, social services, patient education materials, community services)
- 2.9 Consult with and facilitate referrals to other health care professionals
- 2.10 Reassess the plan of care and make modifications as needed
- 2.11 Determine readiness to return to life/work activities
- 2.12 Determine readiness for discharge and formulate and document discharge plan

Fig. 1. Delineation of certified hand therapy practice. ALS = amyotrophic lateral sclerosis; MS = multiple sclerosis; MD = muscular dystrophy; ADL = activities of daily living; IADL = instrumental activities of daily living; ROM = range of motion; MMT = manual muscle testing; CPM = continuous passive motion.

conditions represented by respondents' patient populations. The most frequently seen diagnosis/condition was *edema* followed by *fractures*. The least frequently encountered diagnoses/conditions were *developmental disabilities* and *spinal cord and central nervous*

system injuries, with 53%–68% of the respondents having 0% of their patients with these diagnoses/conditions. The most frequently seen diagnoses/conditions are nearly unchanged from the previous practice analysis studies performed by HTCC.

Domain 3: Implement Therapeutic Interventions

- 3.1 Implement therapeutic interventions by integrating basic science, fundamental knowledge, best clinical evidence, clinical experience, and patient preferences with the plan of care to safely meet established goals
- 3.2 Select or create educational materials and home programs for the patient and/or caregiver
- 3.3 Implement education plans and verify patient understanding
- 3.4 Modify therapeutic interventions based on patient response and progress toward goals

Knowledge**Fundamental Knowledge and Basic Science**

1. Surface anatomy of the upper limb
2. Anatomy and physiology of connective tissue
3. Anatomy and physiology of the integumentary system
4. Anatomy and physiology of skeletal system
5. Anatomy and physiology of muscular system
6. Anatomy and physiology of nervous system
7. Anatomy and physiology of vascular and lymphatic system
8. Development of age-specific upper limb function
9. Kinesiology and biomechanics relative to the upper limb
10. Pathomechanics and pathophysiology relative to the upper limb
11. Etiology and pathology of medical conditions that may manifest with signs or symptoms in the hand or upper limb
12. Physiology of bone and soft tissue repair
13. Physiology and psychology of pain
14. Properties of heat, water, light, electricity and sound, as they apply to physical agent modalities
15. Mechanical properties of materials and components of orthotic and prosthetic devices
16. Behavioral science (including cultural diversity and biopsychosocial factors) and psychological reactions to impairment
17. Research design and statistics
18. Principles of evidence-based practice
19. Teaching and learning styles
20. Safe use and maintenance of equipment and devices
21. Safety techniques and procedures (for example, infection control, emergency procedures, practitioner safety, environmental safety)
22. Technology related to the practice of hand therapy
23. Hand Therapy Certification Commission's policies and regulatory guidelines
24. Physical therapy and occupational therapy practice standards and codes of ethics
25. Documents applicable to hand therapy produced by international health organizations

Fig. 1. (continued).

Knowledge relating to specific tasks in Domains 1 to 3

1. Communication techniques and principles
2. Posture and its effects on the upper limb
3. Differential diagnosis
4. Surgical, non-surgical, and medical management of conditions of the hand or upper limb
5. Post-surgical, non-surgical and therapeutic intervention guidelines
6. Assessment tools, tests, and measures and their psychometric properties
7. Pharmacology as it relates to the scope of hand therapy practice
8. Basic laboratory values as they relate to the scope of hand therapy practice
9. Diagnostic imaging of the upper limb
10. Electrodiagnostics of the upper limb
11. Anticipated outcomes of medical and/or therapeutic intervention
12. Anticipated physiological and psychological effects of therapeutic interventions
13. Rationale, indications, precautions, and contraindications for interventions
14. Therapeutic interventions (methods, techniques and tools)
15. Concepts and principles of orthotic devices
16. Concepts and principles of prosthetic devices
17. Concepts and principles of ergonomics

Diagnoses/Conditions

1. *Adhesions or Tightness (e.g., musculotendinous, capsular)
2. Amputations
3. *Arthritis and Rheumatic Diseases
4. Congenital Anomalies/Differences
5. Crush Injuries/Mutilating Trauma
6. *Cumulative Trauma Disorders
7. Cysts and Tumors
8. Developmental Disabilities
9. Dislocations and Subluxations
10. Dupuytren's Disease
11. *Edema
12. Factitious Disorders
13. *Fractures
14. Infections
15. Ligamentous Injury and Instability
16. Lymphedema
17. *Muscular Strains, Tears, and Avulsions
18. *Nerve Injuries and Conditions (e.g., neuropathies, palsies, nerve repairs)
19. Neuromuscular Diseases – ALS, MS, MD
20. Pain (e.g. Complex Regional Pain Syndrome, Fibromyalgia)
21. Replantation and Revascularization
22. Spinal Cord & Central Nervous System Injuries
23. *Tendon Injuries and Conditions (e.g., lacerations, transfers, tendonitis, ruptures)
24. Thermal and Electrical Injuries
25. Vascular Disorders
26. *Wounds and Scars

*Top 10 diagnoses – very little change from prior practice analyses

Fig. 1. (continued).

The distribution of time spent by respondents in each direct patient care hand therapy domain is consistent with the 2008 and 2001 studies. Respondents spent most of their direct patient care time (54%) performing tasks in *domain 3: Implement therapeutic interventions*. Twenty-eight percent of direct patient care time was spent performing tasks in *domain 1: Evaluate upper extremity and relevant patient characteristics*, and 18% of direct patient care time was spent performing tasks related to *domain 2: Determine prognosis or plan of care*. The percentages of time spent in each domain are also similar to the 1994 study, but a precise comparison is not possible because of reorganization and consolidation of the domains since that study.

Techniques and Tools**Techniques to Assess:**

ADL, IADL
 Edema
 Vascular status
 Pain
 ROM
 Tightness (intrinsic, capsular, extensor)
 Strength (for example, dynamometry)
 Muscle function (for example, MMT, tone, imbalance)
 Sensibility
 Sympathetic function
 Handedness and dexterity
 Functional capacity and work site
 Wounds

Tests and Measures

Outcome Measures
 Signs and Tests
 Standardized Tests
 Electro-diagnostic Tests
 Differential Diagnosis

Therapeutic Exercise

Mobility (e.g., active, passive ROM)
 Strengthening
 Nerve gliding
 Tendon gliding
 Dexterity and coordination
 Endurance

Modalities

Contrast baths
 Cryotherapy
 Fluidotherapy
 Thermal/hot
 Iontophoresis/phonophoresis
 Electrical stimulation

Fig. 1. (continued).

The percent of direct patient care time spent in the various regions of the upper quadrant, shown in [Table 1](#), is nearly identical to the 2008 study. The greatest amount of time was in the hand region (36%), followed by the wrist (30%), elbow (18%), shoulder (14%), and cervical (3%). CHTs perform a variety of actions for their patients, including screening, treating, and referring to other professionals. [Table 1](#) shows the percentage of patients for which respondents

Paraffin
Ultrasound
Orthotic design and/or selection
Orthotic fitting, fabrication and training
Static
Dynamic
Static progressive
Serial casting
Casting to mobilize or immobilize
Soft materials (for example, neoprene, buddy taping, etc.)
Prosthetic design and/or selection
Prosthetic fitting, fabrication and training
Adaptive, assistive and ADL devices
Ergonomic and/or activity modification
Joint Protection
Posture awareness, modification and adjustment
Edema management
Lymphedema management
Functional activity
Sensory re-education
Desensitization
CPM
Manual therapy techniques (e.g., joint mobilization, soft tissue techniques)
Instrument assisted soft tissue mobilization
Taping
Patient/family/caregiver education
Work conditioning/hardening
Biofeedback
Neuromuscular reeducation
Graded motor imagery (e.g., laterality training, imagery, mirror therapy)
Wound Care
Debridement
Mechanical (other than sharp debridement)
Sharp (scissors/forceps or scalpel)
Sutureremoval
Non-selective
Chemical / enzymatic
Staple removal
Cleansing
Application of topical medications
Selection / application of dressings
Scar management
Negative pressure wound therapy
Physical Agent Modalities for Wound Care
Whirlpool
Electrical Stimulation
Ultrasound

Fig. 1. (continued).

performed each type of activity in both the present studies. Because CHTs can perform multiple actions for any given patient, the percentages do not need to total 100% across the range of activities.

Table 1

Percentage of direct patient care time and activities performed in regions of upper quadrant

Multiple responses permitted. Totals do not sum to 100%				
Regions	Patient care time, %	Activities performed		
		Screen	Treat	Refer
Cervical	2.9	65	25	80
Shoulder girdle	14.4	59	81	35
Elbow	17.5	50	100	5
Wrist	29.7	49	100	5
Hand	35.5	49	100	6

There were no systematic differences between the 2008 and 2014 studies in the activities CHTs are doing. CHTs treat most elbow, wrist and hand patients, and some shoulder patients but refer about 80% of cervical patients to other professionals. Therefore, the use of the terminology of *upper limb* instead of *upper quadrant* in the definition of hand therapy remains the most accurate representation of practice, as described in the 2008 analysis of practice.⁴

Validation of the scope of practice

Respondents overwhelmingly validated the delineation of the domains, tasks, and knowledge required in hand therapy to treat patients with the identified diagnoses and conditions of the upper limb (Fig. 1). All tasks within the domains achieved predetermined threshold levels for *frequency* (at least monthly to weekly), *criticality* (at least moderately to highly critical), or both, except *Develop and implement educational programs for professionals and other stakeholders* and *integrate theoretical concepts and terminology introduced by international health organizations*.

Techniques and tools used in hand therapy

This study also analyzed techniques and tools used in hand therapy. The techniques and tools presented in Table 2 met at least one of the threshold criteria for *frequency* or *criticality* and were rated at least *monthly* to *weekly* and or at least *minimally critical*.

Some techniques, mostly in the complementary medicine category, achieved neither threshold (Table 3). The *techniques and tools* surveyed included 15 types of complementary medicine techniques. As in the 2008 survey, a strong majority (generally more than 70%) of CHTs never or rarely (*monthly* or less) used these techniques in hand therapy practice and also rated them as *not critical* or *minimally critical* to hand therapy practice. Of the techniques surveyed, respondents rated *relaxation training* the highest, although 57% reported never using this technique in practice.

Therapists in the United States, Canada, and Australia reported some differences in frequency of use of certain tools and techniques, which may merit future study. There were insufficient numbers of therapists reporting from other countries to provide adequate comparative data. Of note, therapists in Australia reported higher frequency (*daily*) use of orthotic design/selection/fitting/fabrication/training, including the use of soft materials, than the United States/Canada (*weekly/almost weekly*). Australian hand therapists also reported higher frequency of wound care techniques (*weekly/almost weekly*) than therapists in the United States and Canada (*monthly*). Therapists in the United States used fluid-otherapy more often (*weekly/almost weekly*) compared with therapists in Australia and Canada (*never*). These differences may merit future further study.

Table 2
Techniques and tools: *frequency and criticality ratings*

Techniques and Tools	Frequency	Criticality
Patient/family/caregiver education	4.5	3.9
Manual therapy techniques (eg, joint mobilization, soft tissue techniques)	4.6	3.8
Scar management	4.3	3.8
Edema management	4.3	3.8
Techniques to assess (ADL/IADL, edema, functional capacity and worksite, handedness and dexterity, muscle function, outcome measures, pain, ROM, sensibility, signs and tests, strength, sympathetic function, tightness, vascular status, wounds, and differential diagnosis)	3.5	3.8
Exercise (dexterity and coordination, endurance, mobility, nerve/tendon gliding, and strengthening)	4.3	3.7
Posture awareness, modification, and adjustment	3.7	3.6
Joint protection	3.4	3.6
Function (functional activity, desensitization, and sensory re-education)	3.8	3.6
Orthotics (design, selection, fitting, fabrication, training, casting [serial, immobilization, and mobilization], dynamic, static, static progressive, and soft materials)	3.0	3.5
Ergonomic and/or activity modification	3.3	3.5
Outcome measures ^a	3.8 (2008: 2.5)	3.4 (2008: 2.8)
Adaptive, assistive, and ADL devices	2.7	3.3
Neuromuscular re-education	3.2	3.3
Standardized tests	3.4	3.3
Modalities (heat/cold, electrical stimulation, fluidotherapy, iontophoresis, phonophoresis, ultrasound, and paraffin)	3.3	3.0
Work conditioning/hardening	2.4	3.0
Wound care (selection/application of dressings, cleansing, debridement, topical medications, ultrasound, and electrical stimulation)	2.4	3
Lymphedema management	1.9	3.0
Taping (kinesiotaping, McConnell, and athletic)	2.9	2.9
Prosthetics (design, selection, fitting, fabrication, and training)	1.4	2.6
Graded motor imagery (eg, laterality training, imagery, mirror therapy) ^b	2.0	2.6
Instrument-assisted soft tissue mobilization ^b	2.4	2.5
Electrodiagnostic tests	1.5	2.3
Biofeedback	1.4	2.2
Wound care (negative pressure therapy, low-level laser, pulsed lavage, staple removal, chemical/enzymatic debridement, and whirlpool)	1.5	2.2
Modalities (contrast baths, light therapy, diathermy, whirlpool, and CPM)	1.4	1.9
Use of crafts	1.4	1.9
Complementary medicine (active release therapy, acupressure, acupuncture, craniosacral therapy, energy healing, general body massage, magnet therapy, movement therapy [Feldenkrais, Nia Fitness, Alexander Technique, Hellerwork, and Bowen], Pilates, Qigong, Reiki, relaxation training, Rolfing, tai chi, and yoga)	1.2	1.7

ADL = activities of daily living; IADL = instrumental activities of daily living; ROM = range of motion; CPM = continuous passive motion.

Frequency ratings: 1 = never, 2 = monthly or less, 3 = weekly/almost weekly, 4 = daily, and 5 = several times a day.

Criticality ratings: 1 = not, 2 = minimally, 3 = moderately, and 4 = highly.

^a Largest change since 2008 practice analysis.

^b New in 2014 practice analysis.

Emerging and receding trends in hand therapy

New additions to the survey include the use of *instrument-assisted soft tissue mobilization* and *graded motor imagery*. Both were

Table 3
Complementary medicine techniques: *frequency and criticality ratings*

Techniques	Frequency	Criticality
Relaxation training	1.7	2.2
Active release therapy	1.6	1.9
Acupressure	1.5	1.9
Acupuncture	1.0	1.6
Craniosacral therapy	1.1	1.6
Energy healing	1.1	1.4
General body massage	1.4	1.9
Magnet therapy	1.0	1.3
Movement therapy (eg, Feldenkrais, Nia Fitness, Alexander Technique, Hellerwork, and Bowen)	1.2	1.7
Pilates instruction	1.2	1.8
Qigong instruction	1.0	1.4
Reiki	1.0	1.4
Rolfing	1.0	1.4
Tai Chi instruction	1.1	1.6
Yoga instruction	1.3	1.9

Frequency ratings: 1 = never, 2 = monthly or less, 3 = weekly/almost weekly, 4 = daily, and 5 = several times a day.

Criticality ratings: 1 = not, 2 = minimally, 3 = moderately, and 4 = highly.

validated by the survey and are used *weekly* to *monthly* and were rated as *minimally* to *moderately critical* to practice. They will be included in future studies to watch for changes in frequency or criticality.

Of the techniques and tools previously surveyed, the largest increase from prior studies, in both frequency and criticality, was noted for the *use of outcome measures*, now used nearly *daily* in hand therapy practice, and CHTs consider the *use of outcome measures* to be *moderately* or *highly critical* to hand therapy practice. This increase is almost certainly related to changes in (the United States) Medicare's 2013 mandate that therapists report functional codes, derived from outcome scores, on all claims. *Taping*, such as kinesiotaping or McConnell taping, also saw an increase in the frequency of use from *monthly* (1.8) to *weekly* or *almost weekly* (2.9).

Three techniques (*paraffin*, *whirlpool*, and *topical medications for wound care*) saw reduced frequency of use compared with the prior study. Although 57% of respondents still report using paraffin on a *weekly* or more frequent basis, the mean frequency is lower than in the previous study (by 0.6). *Whirlpool* also saw a reduction, with 87% of respondents now using this technique *monthly* or less frequently, and 67% report *never* using this treatment technique. Also, *biofeedback* saw reduced criticality (from 2.6 to 1.4), from *minimally* or *moderately critical* to less than *minimally critical*. *Continuous passive motion* and *whirlpool* also saw reduced criticality ratings from the prior study.

Table 4
Wound care management techniques and tools, frequency and criticality ratings

Wound care techniques and tools	Frequency	Criticality
Debridement		
Mechanical (other than sharp debridement)	2.2	3.1
Sharp (scissors/forceps or scalpel)	2.3	3.2
Nonselective	1.9	2.6
Chemical/enzymatic	1.4	2.4
Suture removal	2.4	3.2
Staple removal	1.5	2.5
Cleansing	2.7	3.3
Application of topical medications	2.2	2.9
Selection/application of dressings	3.1	3.6
Scar management	4.3	3.8
Negative pressure wound therapy	1.2	2.1
Physical agent modalities for wound care		
Whirlpool	1.6	2.3
Pulsed lavage with suction	1.1	1.8
Electrical stimulation	2.0	2.5
Low-level laser therapy	1.3	1.8
Ultrasound	2.2	2.7

Frequency ratings: 1 = never, 2 = monthly or less, 3 = weekly/almost weekly, 4 = daily, and 5 = several times a day.

Criticality ratings: 1 = not, 2 = minimally, 3 = moderately, and 4 = highly.

In 2014, technology is used more frequently in hand therapy treatment programs, with 51% of survey respondents indicating that they use electronic technology to deliver services or provide education in practice. Also, most hand therapists (71%) now use electronic medical record systems to document the care they provide.

HTCC will continue to monitor practice for emerging or receding trends in hand therapy treatment.

Wound care management

Hand therapists use a variety of techniques and tools to facilitate wound healing. The study explored this area in detail, confirming the results of 2 large-scale and detailed informal surveys conducted by HTCC after the 2008 practice analysis, the first in 2009 (2015 respondents) and the second in 2011 (1404 respondents). In addition to rating the frequency and criticality (Table 4) of 15 activities associated with wound care, respondents also indicated when they had acquired the skill necessary to perform each activity (Table 5).

As shown in Table 4, of the wound care techniques surveyed, respondents performed scar management most frequently,

followed by selection and application of dressings. Seven of the listed techniques are infrequently used (less than monthly). Wound care techniques received higher ratings for criticality than for frequency. Six techniques were rated moderately or highly critical (mechanical debridement, sharp debridement, suture removal, scar management, and selection and application of dressings), with only 2 being considered lower than somewhat critical. These were pulsed lavage with suction and low-level laser therapy.

As shown in Table 5, respondents acquired the skills needed for the wound care management activities at various times in their education and development as a CHT. More than 70% of respondents had acquired the skills to perform 6 of the wound management techniques during formal education, before specializing in hand therapy, or during the first 2 years of hand therapy, inclusive. These techniques include scar management (95% acquired during those periods), selection/application of dressings (85%), cleansing (83%), application of topical medications (74%), suture removal (73%), and whirlpool (73%). However, many respondents noted that they had never acquired the skills to perform 5 of the activities: pulsed lavage with suction (75% never acquired), negative pressure wound therapy (69% never acquired), low-level laser therapy (60% never acquired), chemical/enzymatic debridement (43% never acquired), and staple removal (39% never acquired).

Test specifications

The domains of hand therapy were reorganized to distribute the elements of promote professional practice into the other domains and knowledge area. The survey confirmed that many of the tasks and knowledge areas in the promote professional practice domain are developed during entry-level OT or PT education and, therefore, are not unique to specialized practice in hand therapy. The task participate in case management and referral, which constituted a large portion of the promote professional practice domain, was moved to determine prognosis and plan of care domain. After this change, the already small domain (6% of the examination) was further diminished. The remaining knowledge areas of the promote professional practice domain with high criticality or frequency and the areas that specifically relate to the specialized area of hand therapy were absorbed into basic science and fundamental knowledge.

Table 6 illustrates the current and proposed test specifications after these changes.

Table 5
When wound care skills were acquired

Wound care skills	Never %	During formal education %	Before specialized practice %	First 2 y of hand therapy %	After 2 y of hand therapy %	Total		
						n	Mean frequency	Mean criticality
Debridement								
Mechanical (other than sharp debridement)	15	6	19	43	16	856	2.2	3.1
Sharp (scissors/forceps or scalpel)	11	5	16	47	20	867	2.3	3.2
Suture removal	5	4	18	51	22	873	2.4	3.2
Nonselective	28	7	16	35	13	831	1.9	2.6
Staple removal	39	2	12	31	16	806	1.5	2.5
Cleansing	5	10	25	48	12	864	2.7	3.3
Application of topical medications	13	8	22	44	13	838	2.2	2.9
Selection/application of dressings	1	9	26	50	14	868	3.1	3.6
Scar management	0	18	33	44	5	872	4.3	3.8
Physical agent modalities for wound care								
Whirlpool	20	18	24	31	7	827	1.6	2.3
Electrical stimulation	25	16	17	29	14	827	2.0	2.5
Low-level laser therapy	60	6	6	10	18	809	1.3	1.8
Ultrasound	19	19	19	31	11	845	2.6	2.7

Frequency ratings: 1 = never, 2 = monthly or less, 3 = weekly/almost weekly, 4 = daily, and 5 = several times a day.

Criticality ratings: 1 = not, 2 = minimally, 3 = moderately, and 4 = highly.

Table 6
Recommended test specifications for CHT examination

Domains and knowledge areas	Current % of examination	Proposed % of examination
Basic science and fundamental knowledge	20	22
Evaluate upper limb and relevant patient characteristics	26	26
Determine prognosis and plan of care	18	20
Implement therapeutic interventions	30	32
Professional practice	6	0 ^a

CHT = certified hand therapist.

^a Knowledge from professional practice area redistributed through other categories.

Use of assistants and unlicensed personnel in hand therapy

This practice analysis survey, like the 2001 survey, asked questions regarding the use of licensed therapy assistants (occupational therapy assistant or physical therapy assistant) in hand therapy practice. The use of licensed therapy assistants in hand therapy practice has remained very similar over the past decade. In 2001, 46% of respondents reported working with licensed therapy assistants compared with 50% in 2014. Thirty-eight percent of CHTs reported supervising occupational therapy assistants or physical therapy assistants at a ratio of less than 1 assistant per therapist, whereas less than 4% reported working with a ratio of 1 therapist to 2 or more assistants. The survey asked similar questions regarding the supervision of unlicensed personnel (eg, a therapy aide). Fifty-four percent reported supervising unlicensed aides, at a ratio of less than 1 aide per therapist, and 32% reported supervising no unlicensed personnel. These findings are consistent with data that the primary role of a CHT is to provide direct patient care in clinical practice, accounting for 80% of their work time.

Discussion

Thirty years of hand therapy

Each practice analysis survey since 1985 has validated that hand therapy is an advanced practice specialty with its roots in both occupational therapy and physical therapy. In 1987, the membership of American Society of Hand Therapists adopted the initial hand therapy definition based on the 1985 study, which led to the creation of HTCC and an independent HTCE. Following the 2001 survey, the original definition and scope of practice was updated and adopted by the Board of Directors of the HTCC in May 2002. The definition of hand therapy (Fig. 2) underwent further refinement in 2008 replacing the term *upper quarter* with *upper limb* to more accurately reflect that the focus of hand therapy therapeutic intervention is primarily on the hand, wrist, elbow, and shoulder girdle. Since 2001, changes in the hand therapy delineation of practice have been primarily structural and related to the roles hand therapists play outside direct patient care, such as research, education, and patient safety.

Hand therapy is the art and science of rehabilitation of the upper limb, which includes the hand, wrist, elbow and shoulder girdle. It is a merging of occupational therapy and physical therapy theory and practice that combines comprehensive knowledge of the structure of the upper limb with function and activity. Using specialized skills in assessment, planning and treatment, hand therapists provide therapeutic interventions to prevent dysfunction, restore function, and/or reverse the progression of pathology of the upper limb in order to enhance an individual's ability to execute tasks and to participate fully in life situations.

Characteristics of hand therapists and their patients have remained strikingly similar over the years. CHTs are primarily Caucasian (89%) and females (86%). Approximately 85% of US CHTs are OTs, whereas 15% are PTs. In Canada, which had the second largest group of respondents, the ratio of OT-PT CHTs is closer to 1:1. Most have entered the field with a bachelor's degree. This 2014 study, along with the 2008 study, shows an increasing number of CHTs with doctorates. This advance in educational level may impact hand therapy practice or continuing education needs. However, the number of hand therapists with doctorates is not yet large enough to analyze whether this has had an influence on the profession. Although the level of entry-level education is changing, this study confirmed previous findings that therapists gain most specialized knowledge within the first 2 years of hand therapy practice.

Despite tremendous changes in health care delivery systems over the last 30 years, CHTs continue to be the primary provider of direct hand therapy and use few assistants or therapy extenders. CHTs typically spend more than 80% of their work day in direct patient care, with the largest groups working in a designated hand therapy clinic or general outpatient setting. The time CHTs spend in patient assessment, determining plans of care and implementing therapeutic interventions has remained remarkably stable over the years.

Hand therapy patients are mostly adults, although they span all age groups. The most frequent conditions/diagnoses encountered continue to be musculoskeletal. Hand therapy has evolved to include more proximal regions of the upper extremity. In 1985, hand therapy was focused on the hand, wrist, and elbow. By 2001, the shoulder and cervical regions were being routinely screened, assessed, and treated by many hand therapists, possibly recognizing that this area is often inseparable from distal hand conditions. Since 2008, HTCC has more closely studied the CHTs' involvement in each region of the upper quadrant and has found that most CHTs routinely treat patients with shoulder conditions. As further evidence of this trend, over the past several years, in the United States, a large number of surgical and therapy-specialized hand centers have renamed their facilities to include the shoulder. Most CHTs screen patients for cervical pathology but are more likely to refer patients with cervical pathology to other providers (Table 1) than to provide treatment for cervical problems. However, some hand therapists (25%) regularly treat these conditions.

HTCC has used the practice analyses to identify and study both emerging and receding trends in hand therapy. Areas of interest over the years have included physical agent modalities, edema management, wound care intervention and techniques, complementary medicine, use of technology, as well as the various roles that CHTs perform, such as being a researcher, an educator, or acting as a physician extender. Some areas, such as edema management, have undergone tremendous change over the last 3 decades, with many test items becoming obsolete. Replacement items have been developed to reflect current practice. Activities that are new or seem to be inconsistent with the typical practice of hand therapy may undergo more in-depth analysis to determine if they

Fig. 2. Definition of hand therapy practice.

Basic science and fundamental knowledge

Understand and apply knowledge of the theory and principles of anatomy, physiology, kinesiology, and biomechanics as they relate to the upper extremity; understand physical properties and expected outcomes of treatment interventions; understand the etiology, pathology, and surgical and medical treatments of conditions affecting the upper extremity. Provide ethical, safe, and fiscally responsible practice; manage human resources; use evidence-based practice; interpret and apply research; promote ongoing professional development for self and others; and advocate for patients and the profession.

Evaluate upper extremity and relevant patient characteristics

Perform and document all aspects of patient evaluation, including interviews and assessments.

Determine prognosis and plan of care

Based on the results of the evaluation, determine treatment interventions and expected outcomes. Plan discharge based on progress toward goals.

Implement therapeutic interventions

Apply and modify therapeutic interventions, including patient education and home programs.

Fig. 3. Domains of hand therapy.

have become core hand therapy practice or if they are an adjunct to practice. This information provides a foundation for developing new test items and the deletion of others so that the HTCE always reflects current practice. The periodic and systematic analysis of current professional practice provides a scientifically based mechanism to identify current core concepts and techniques to be represented on the examination and in the recertification policies for CHTs.

Since the prior practice analysis, the HTCE has become computer based and can now be taken anywhere in the world at a commercial testing center. This change allows improved access to the examination and the credential, even in countries where hand therapy is an emerging specialty. Previously, the examination was only given in countries that had enough CHTs with interest to complete their own practice analysis, which limited the ability of an individual or small group of hand therapy specialists to complete the examination.

This hand therapy practice analysis is the fifth in a series of similar studies performed over the last 30 years. Direct comparison among the studies is not always possible because of ongoing development of the descriptive model of practice, which has become structurally more robust over the years, as well as changes to the structure of the survey. The 1985 role delineation was content based and described hand therapy by focusing primarily on discrete descriptors of the activities, tasks, and tools used and the diagnoses seen in hand therapy. Later studies used a more comprehensive structural model focusing on the entire treatment process and patient picture, as well as by examining the profession as an evolving discipline. The 2001 study included the identification of competencies, professional practice exemplars, and behavioral progressions, which led to a better understanding of the unique aspects of hand therapy.⁵ This study also established a continuum of competency from the first years of practice as an OT or a PT, through the attainment of skills as an expert clinician in hand therapy. Each practice analysis has led to a better understanding of the profession and a more sophisticated and complex approach to delineating test specifications, developing test items, and determining requirements for recertification as a CHT.

Impact to scope of practice

The PAAC removed items that did not meet the criteria for sufficient frequency or criticality in hand therapy from the delineation of the scope of practice presented in [Figure 1](#).

Impact to test specifications

The PAAC relocated a large portion of the *promote professional practice* domain to the *determine prognosis and plan of care* domain. Many of the tasks and knowledge areas surveyed are acquired before specialized training in hand therapy. Therefore, the PAAC recommended the elimination of the *promote professional practice* domain and removal or dissemination of the remaining task and knowledge areas to other domains, which are shown in [Figure 3](#). The removal of *promote professional practice* as a separate domain impacts the test specification. The knowledge areas in this domain moved to the knowledge area of *basic science and fundamental knowledge*, which serves as a foundation for the task and knowledge areas of the other 3 clinical practice domains. The survey of hand therapists describes the percentage of time therapists spend in each of the 3 direct patient care domains with 54% of the time implementing treatment, 28% evaluating, and 18% planning treatment and care. Current and proposed test specifications correlate to these proportions with the largest percentage of the examination coming from the *implement therapeutic interventions* domain followed by *evaluate upper limb and relevant patient characteristics* and *determine prognosis and plan of care*. [Table 6](#) compares the current and proposed test specifications after the elimination of the *promote professional practice* domain.

Respondents recommended percentages of the certification examination to focus on each of the 5 domains of practice, including the 3 direct patient care domains and the 2 nonpatient care domains. The PAAC reviewed these results, and after thoughtful discussion, and reassignment of the *promote professional practice* domain, tasks and knowledge areas derived the final test specifications presented in [Table 6](#).

Impact on recertification

The survey data on the use of complementary medicine techniques are important to the members of the Recertification Committee, who oversee the Recertification process for hand therapists. Therapists are required to recertify every 5 years and can recertify by professional development or by retaking the CHT examination. To recertify by professional development, continued active hand therapy practice and 80 hours of professional development activities are required. Therapists earn hours for formal and informal courses in hand therapy, courses with general clinical occupational and physical therapy contents, publications and presentations

related to hand therapy, as well as other activities and service related to the profession. The Recertification Committee used the data from the practice analysis to support an increased focus on core upper extremity therapy topics in the education and professional activities allowed for recertification.

Wound care management

Wound care management is frequently provided as a component of hand therapy treatment to reduce impairment and allow improved function and participation in occupations. In hand therapy practice, wound care management is an adjunct to other treatment techniques focused on the restoration of mobility and function in the upper extremity. Therapists use wound care techniques relatively infrequently, but when needed, they are considered moderately or highly critical to hand therapy practice. In particular, sharp debridement is highly critical, although used relatively infrequently, and is learned mostly on the job by working closely with skilled physicians, therapists, and other professionals. Although some state practice acts for physical therapy and most for occupational therapy are silent on this topic, there is clear indication that this is a highly critical and regularly used skill in hand therapy practice.

Conclusions

This wide-scale survey of the CHT community represents the data-driven scientific process that illustrates current hand therapy practice and ensures that certification and recertification policies for the CHT credential accurately reflect current practice.

In 2008 and 2014, the use of technology in the practice analysis process allowed the use of an online survey in place of a mailed paper survey. The ease of use of e-mail notification, reminders, and online survey tools also makes more in-depth and timely analysis of specific questions possible on an as-needed basis between the formal practice analysis processes, such as the 2009 and 2011 surveys, regarding the use of wound care techniques.

HTCC policy changes

Two of the primary purposes of the study were to update the content outline for the HTCE and to update HTCC policies based on empirical data. The Recertification Committee used the data obtained to update the requirements for the Recertification program for 2017 and beyond. Overall, the updated delineation of practice was validated, and the results obtained were strikingly consistent with prior practice analysis studies of hand therapy practice.

Definition of hand therapy confirmed

The data obtained in this practice analysis confirmed the definition of hand therapy adopted by HTCC in 2009 (Fig. 2), and no changes are proposed. The hand therapist follows a holistic model, screening the individual for all physical abilities and their impact on one's ability to function in daily life. However, the focus of therapeutic interventions is primarily on how impairments in the

structure or function of the hand, wrist, elbow, and shoulder girdle limit an individual's ability to execute tasks and to participate fully in life situations. The definition reads:

“Hand therapy is the art and science of rehabilitation of the upper limb, which includes the hand, wrist, elbow, and shoulder girdle. It is a merging of occupational therapy and physical therapy theory and practice that combines comprehensive knowledge of the structure and function of the upper limb with function and activity. Using specialized skills in assessment, planning, and treatment, hand therapists provide therapeutic interventions to prevent dysfunction, restore function, or reverse the progression of pathology of the upper limb to enhance an individual's ability to execute tasks and to participate fully in life situations.”

HTCC will continue to track practice data as a part of its mission to support a high level of competence in hand therapy practice and to advance the specialty through a formal credentialing process. We will continue to analyze future practice analysis data for the impact of higher level of entry-level education and increased number of advanced degrees obtained by the occupational and PTs in the specialty.

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Quiz: #421

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- #1. Data was obtained through
- the APTA and AOTA data bases
 - an online survey of hand therapists
 - state by state (US and UK) data bases
 - phone interviews of 1000 CHTs
- #2. The results
- demonstrated the importance of cervical spine work within the scope of hand therapy
 - validated the preference of CHT referrals by hand surgeons
 - revised the definition of hand therapy
 - affirmed the definition of hand therapy
- #3. A primary purpose of the report was to see that
- studying for the CHT certification examination was more efficient
 - a higher percentage of candidates passed the CHT certification examination
 - the CHT certification examination reflected the current practice of hand therapy
 - CHTs gained greater professional recognition

- #4. To assure quality, a _____ provided professional guidance and oversight of the project
- team of therapists and surgeons
 - PAAC
 - joint commission from the ASHT, APTA, and AOTA
 - group chosen by the IFSHT
- #5. Implementation of therapeutic interventions accounted for the greatest percentage of the CHT certification examination
- true
 - false

When submitting to the HTCC for re-certification, please batch your JHT RFC certificates in groups of 3 or more to get full credit.