The Hand Therapy Certification Examination:
Results of the First Five Years

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ABSTRACT: In 1991, the first Hand Therapy Certification Examination was administered to candidates throughout the United States. Since then, the examination has been given annually. The purpose of this paper is to summarize the processes that have been used to develop the examination as well as to report demographic data about the examination and certification candidates. Overall, the results of test administration have been very good. Twenty-two hundred therapists have become certified hand therapists. Eighty-five percent are occupational therapists, and 88% are female. Most candidates have practiced for ten years or less and have maintained caseloads of upper-extremity patients for three to six years. The examination has performed well. Reliability coefficients have been 0.91 or greater for each administration. The mean scores on the examination have decreased each year, from 148.4 in 1991 to 129.4 in 1995.
J HAND THER 9: 213–217, 1996.

The Hand Therapy Certification Commission, Inc. (HTCC), is a not-for-profit corporation established in 1989 for the purpose of sponsoring a volunteer certification program. The mission of HTCC is to support a high level of competence in the practice of hand therapy through the development and administration of a formal certification and recertification program. The program's goal is to test and recognize the knowledge and skills of occupational therapists and physical therapists who specialize in upper-extremity rehabilitation.

HISTORY OF HAND THERAPY CERTIFICATION

Certification benefits the public, the therapist, and the profession. HTCC is confident that this certification program will help maintain the high standards set for the practice of hand therapy. The purposes of the program are to:

- serve the public and the hand therapy community by maintaining high standards in the practice of hand therapy;
- enhance the quality of patient care;
- identify occupational therapists and physical therapists who have achieved this advanced level of professional knowledge; and
- encourage participation in continuing education and professional development.

An important step in the development of HTCC was its incorporation as a separate organization from the American Society of Hand Therapists (ASHT) in 1989. One of the guidelines of the National Organization for Competency Assurance (NOCA) for certification programs is administrative independence. That means that an organization should not certify its own members. For example, in the past the American Occupational Therapy Association (AOTA), a membership organization, provided certification for its members. Now occupational therapists are certified by the American Occupational Therapy Certification Board (AOTCB), which is not affiliated with AOTA. When HTCC incorporated, it completely separated from ASHT. The two organizations are governed by different boards of directors, and neither influences the decisions of the other. There is a liaison appointed between the two organizations for communication purposes, and HTCC sponsors a reception at the ASHT annual conference; all other activities of the two organizations are separate.

The HTCC board is made up of certified hand therapists (CHTs), a physician, and a public member. Additionally, CHTs may serve on a number of committees addressing special projects and needs, such as marketing and new item development. Nominations for board and committee members are sought from other organizations, such as ASHT, AOTA, the American Physical Therapy Association (APTA), the American Society for Surgery of the Hand (ASSH), and the American Association of Hand Surgeons (AAHS).

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ELIGIBILITY REQUIREMENTS

Candidates must meet the following eligibility requirements to sit for the examination:

- Occupational therapist or physical therapist residing in the United States or Canada, with a current certificate or license to practice
- Certified or licensed for a minimum of five years
- A minimum of 2,000 hours of direct practice experience in hand therapy acquired in the five years prior to the date of application
- Foreign trained therapists must submit additional documentation at least a month prior to the application deadline

RECERTIFICATION

Once certified, therapists must recertify every five years. The first group of CHTs who were tested in 1991 must recertify in 1996. The eligibility requirements for recertification are:

- Be a CHT in good standing with a current license or certificate to practice and residing in the United States or Canada
- Accrue a minimum of 2,000 hours in hand therapy practice in the United States or Canada; this may be a combination of direct provision of hand therapy, teaching, or research directly related to hand therapy—up to 1,000 of the 2,000 hours may be in direct supervision or administration of a hand therapy clinical program

CHTs wishing to recertify must also acquire 80 contact hours of continuing education (in designated content categories) or successfully pass the Hand Therapy Certification Examination. Each certification cycle is five years.

TEST ADMINISTRATION

Testing services are provided to HTCC by Professional Examination Services (PES) in New York City. The examination is offered annually on the first Saturday of each November at six sites: Chicago, Dallas, Denver, Los Angeles (odd years), New York, Orlando, and San Francisco (even years). The deadline for applications is July 1 of each year.

PRACTICE ANALYSIS AND TEST BLUEPRINT

The first step in developing the Hand Therapy Certification Examination (HTCE) was to perform a role delineation study or practice analysis (also known as a job analysis) of hand therapy. In 1985, a survey was written with consultation from a professional testing company. The survey was sent to ASHT members and non-members who practiced hand rehabilitation. The results of the survey formed the basis of the Scope of Practice and wer used to write the original test blueprint.[1] Based o the report of the certification committee, the mem bers of ASHT voted to proceed with hand therap certification at the 1987 annual meeting.

To ensure the integrity and viability of th hand therapy examination in the future and t maintain current practice standards, new practic analyses are performed every five to ten years i anticipation of changes in the field. In 1994, a nev practice-analysis survey was performed. Based o the results of the survey, the test blueprint for th HTCE was revised, and new test domains were es tablished. The results of this study appear in a com panion article in this journal.[2]

Item Writing and Review

Early in 1988, the first group of 17 item writer was trained by the testing company. They wrot approximately 600 test questions, which were the field-tested at the Hand Therapy Review Course o fered in locations throughout the United States i 1989 and 1990.[3] The final questions were selecte for the first test based on the test blueprint and th statistical performance of each question on the fiel test. The inaugural HTCE was administered in Ma 1991, and the first group of CHTs was designated

Examination development continues on a reg ular basis. New item writers are recruited from th CHT population through an application proces and trained by PES at an Item Writers Workshop.

Once items have been written, they are re viewed, revised, and validated by content expert Validation scales include: the level at which mas tery of the knowledge or skill is essential (entr level or advanced); the importance of the know edge or skill for on-the-job performance (rangin from not important to critically important); an whether lack of the knowledge or skill could resu in harm to the patient. Ideally, each question is es sential at the entry level with moderate or greate importance. The lack of knowledge should caus minimal or no harm to the patient.

The questions are also rated on their relevanc to the field, relationship to current practice, clarit and freedom from bias against any of the candidat population. For example, a therapeutic techniqu performed only in New England would not be good basis for a question on a national examin tion.

Once items have been reviewed and validatec they may be revised for content. Once the conter (including the question and the five answer op tions) is satisfactory, the questions are edited fc correct grammar and construction by the testin company. After meeting all the review standard new questions are categorized and added to th computerized item bank. New items are used in th examination following standard testing procedure

Passing Point Study

A new passing score study for the HTCE wa conducted in 1995 by PES. This study was wa

ranted because of the 1994 practice analysis and resulting changes in the 1995 test specifications. A modified Angoff[4] procedure was used to derive the passing score. The Angoff procedures represent a criterion-referenced method for determining a passing score. It is based on an absolute standard of competence rather than on a norm-referenced or group basis. This means the passing score is determined independent of average performance for any given group of test candidates.

The Angoff technique requires that a representative group of content experts with substantive expertise in the hand therapy profession serve as judges. Eleven judges were assembled and presented with an overview of various passing score approaches. The judges were then asked to review the eligibility requirements to sit for the HTCE and to develop a composite profile of a minimally qualified CHT. The judges developed a comprehensive list of job-related behaviors that distinguished a qualified hand therapist from someone who was below certification level. The judges were then asked to use this profile with each test question to answer the question, "What percentage of entry-level, minimally qualified certified hand therapists would answer each test question correctly?"

The judges were asked to make their percentage ratings for a selected set of practice test questions. The judges made their ratings independently and then discussed them with one another. The factors influencing ratings were discussed in order to ensure consideration of such issues as item difficulty, professional experience, and rater objectivity. At the conclusion of the practice session, the judges were asked to independently rate each of the 200 items on the 1995 HTCE. These ratings were then averaged across judges for each item and summed across the 200 items on the examination. This resulted in a statistically derived, criterion-referenced raw-score passing point.

The preliminary passing score was reviewed by a separate group of content experts and evaluated relative to statistical measurement error, prior candidate performance, and objective test difficulty data. Through a group-consensus procedure assessing all relevant data, a final passing score was determined.

During previous years of administration, the passing score for the HTCE was derived by using linear equating to the first and second anchor forms of the examination. Criterion-referenced passing-score studies employing both the Angoff and the Ebel[5] techniques were used on the first two anchor forms.

Linear equating is used when a different examination form is administered. This is the case with the HTCE, in that each annual administration uses a different examination form. Although different examination forms are developed to be very similar, they cannot be expected to be exactly the same with regard to level and range of difficulty. Thus, a comparison of raw test scores from year to year on different forms could be unfair to test candidates who have taken a more difficult form. With linear equating, a transformation is chosen such that scores on two test forms are equated if they correspond to the same number of standard deviations above or below the mean in a reference group of examinees. The equating process ensures that test candidates are evaluated according to the same competency standard from year to year despite slight variations in examination form difficulty levels.

TABLE 1. **Percentages of Candidates Reporting Association Memberships**

	1991 (%)	*1992 (%)*	*1993 (%)*	*1994 (%)*	*1995 (%)*	*1991–95 (%)*
AOTA	79.8	50.4	66.0	61.0	53.8	62.2
APTA	9.7	7.4	6.4	8.2	8.8	8.1
ASHT	23.4	13.4	29.2	35.9	44.1	29.2
AAHS	*	*	2.6	3.9	3.4	3.3
State OT/PT association or chapter	*	*	51.7	56.9	55.6	54.7

*These data not collected for the year cited.

TABLE 2. **Percentages of Candidates Working in Particular Facility Types**

	1991 (%)	*1992 (%)*	*1993 (%)*	*1994 (%)*	*1995 (%)*	*1991–95 (%)*
Inpatient or outpatient hospital-based treatment	38.2	46.9	45.5	48.8	49.4	45.8
Therapist-owned practice	33.9	27.8	25.3	22.6	24.8	26.9
Physician-owned practice	17.4	12.9	14.1	11.7	7.4	12.7
Corporate-owned practice	*	*	10.0	13.6	15.0	12.9
Other	9.6	12.4	5.1	3.4	3.4	6.9

*These data not collected for the year cited.

EXAMINATION DEMOGRAPHICS

After five administrations of the HTCE, 3,252 candidates have taken the examination, and there are 2,211 CHTs. Eighty-five percent of the CHTs are occupational therapists, and 15% are physical therapists. The number of physical therapists taking the examination has increased slightly each year. Between 1993 and 1995, when gender data were collected, 88% of CHTs were female.

Data have been collected each year on the entire candidate population. Candidates reported being members of a variety of organizations (Table 1). Most were members of AOTA (62.2%), with fewer being members of ASHT (29.2%), APTA (8.1%), and AAHS (3.3%). Fifty-five percent also reported being members of their state OT or PT association or chapter.

Therapists reported working in a number of treatment settings (Table 2). While there has been an increase in the number of candidates working in inpatient or outpatient hospital-based practices and corporate-owned practices, there has been a decrease in therapist- and physician-owned practices. About three-fourths of the candidates work full time in patient care, and approximately half reported working as staff therapists (Table 3).

TABLE 3. **Candidate Job Titles**

	1993 (%)	*1994 (%)*	*1995 (%)*
Staff therapist	44.3	49.5	47.8
Senior therapist	21.4	19.6	20.3
Clinic supervisor	9.5	11.2	10.4
Department supervisor	12.1	11.4	10.6
Facility supervisor	4.4	3.9	5.8
Educator	1.0	0.2	0.4
Researcher	0.5	0.2	0.0
Student	0.0	0.0	0.0
Other	7.2	3.9	4.8

Over the five years, the length of experience of the candidate population has decreased (Table 4). In the first two years the examination was administered, about 56% had more than 11 years of clinical practice experience. In the past three years, there has been a reverse in this trend, with 4.5% of the candidates being licensed or certified for five to seven years.

There has been a similar pattern in the lengths of time candidates have maintained upper-extremity caseloads of 50% or more. For example, in 1991, 63.9% of test candidates reported that they had maintained caseloads of upper-extremity patients for six years or more. In 1995, 75.2% of candidates had maintained upper-extremity caseloads for six years or less (Table 5).

Therefore, the average candidate is a female occupational therapist who is a member of AOTA and the state occupational therapy association. She has practiced for ten years or less and is employed full time as a staff therapist in a hospital setting. She has maintained a 50% caseload in upper-extremity rehabilitation for three to six years.

TEST PERFORMANCE

The mean score on the examination has decreased each year. In 1991, the average raw score for all test candidates was 148.4. In 1995, the average raw score for all test candidates was 129.4. Average test performance has systematically dropped by four points with each administration of the HTCE. Passing rates have paralleled this drop in mean scores.

Although there have been shifts in candidate performances, the overall performance of the examination itself has remained stable. During each year of administration, the HTCE has demonstrated a high degree of reliability. The Kuder-Richardson (KR-20) and split-half reliabilities are used to estimate the extent to which the examination is consistent in measurement. Both reliability coefficients have been 0.91 or greater for each administration of the HTCE.

The standard error of measurement indicates how much an individual's score might vary upon repeated administrations of the same test. The standard error of measurement has consistently been slightly below six points for all examination administrations. Item-level data have also been regularly evaluated to assess the psychometric quality of the HTCE. Indices of item difficulty level and item discrimination have consistently met high standards. At all levels, the HTCE meets sound psychometric standards.

THE FUTURE OF HAND THERAPY CERTIFICATION

The long-range goal of the HTCC is that every qualified therapist will become certified. The HTCC anticipates that CHTs may provide leadership in the managed care arena, establishing clinical standards for ethical and effective rehabilitation of the upper extremity. As the future of specialization is being questioned, hand therapy is one specialty whose need is widely recognized. Public education, consultation in industry, and prevention of disability are areas that may provide opportunities for qualified hand therapists.

TABLE 4. **Candidate Years of Occupational or Physical Therapy Licensure/Certification**

	1991 (%)	*1992 (%)*		*1993 (%)*	*1994 (%)*	*199 (%)*
Licensed in 1975 or earlier	23.0	13.1	Licensed 21 years or more	3.1	5.5	7.2
Licensed in 1976–1980	33.6	23.7	Licensed 14–20 years	15.5	18.5	19.2
Licensed in 1981–1986	43.5	49.2	Licensed 8–13 years	34.3	31.5	28.8
Licensed in 1987 or later	0	14.0	Licensed 5–7 years	47.2	44.5	44.7

TABLE 5. **Percentages of Candidates Who Have Maintained Caseloads of 50% or More Upper-extremity Patients**

	1991 (%)	*1992 (%)*		*1993 (%)*	*1994 (%)*	*199 (%)*
			1–2 years	11.2	11.2	8.4
5 years or less	34.9	51.7	3–4 years	37.0	33.7	32.1
			5–6 years	32.9	26.6	34.7
6 to 10 years	44.7	39.4	7–10 years	18.6	18.9	16.1
11 years or more	19.2	16.4	11 years or more	0.0	9.6	8.8

The commitment to continued competency as demonstrated by the recertification process ensures that therapists will participate in a variety of professional development activities. This represents a recognition of the need for a continual quest for knowledge. It helps to assure the public that the therapy services provided by a CHT meet the highest standards for the industry.

WHERE TO GET INFORMATION

The HTCC's national administrative headquarters is in Kansas City, Missouri. To obtain handbooks about certification or recertification or to obtain further information about hand therapy certification, contact the administrative office at 9140 Ward Parkway, Kansas City, MO, 64114; phone: (816) 444-3500; fax: (816) 444-0330.

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