

Tests and Measures Used by Specialist Physical Therapists When Examining Patients with Stroke

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Background and Purpose: Examination procedures preferred by physical therapists have not been documented either specifically or comprehensively. The purpose of this study was to determine which tests and measures are used most frequently by specialists in the examination of adults with stroke.

Subjects: Physical therapy specialists were identified as having geriatric or neurologic certification through the American Board of Physical Therapy Specialties. A request to participate in a Web-based survey was sent to 471 individuals in the American Physical Therapy Association's Directory of Certified Specialists.

Methods: A comprehensive list of tests and measures was first derived from the Interactive Guide to Physical Therapist Practice. The list was finalized based on several exclusion criteria and the results of a pilot study. Subjects rated the frequency of use of 294 tests and measures with patients post-stroke on a Likert scale.

Results: The survey response rate was 31.7% (n = 128). The 50 most frequently used tests and measures were identified.

Discussion and Conclusion: The results of this study do not identify the tests and measures that clinicians should use, only those that the specialists use. Nevertheless, clinicians may want to consider tests and measurements frequently used by specialists when examining adults with stroke.

Key words: stroke, examination, physical therapy

(*JNPT* 2008;32: 122–128)

INTRODUCTION

Physical therapists play an integral role in the multidisciplinary rehabilitation of patients with stroke.¹ This rehabilitation process typically begins in the acute care setting and may continue in a variety of other settings. Effective and comprehensive examinations and re-examinations are recommended as patients enter each new setting.¹

Orest² presented the development of data-collection guidelines for patients with neurologic deficits. These guidelines were developed for use in a variety of settings including

acute care, inpatient rehabilitation, and outpatient settings. Categories of functional mobility, wheelchair seating, extremity function, general posture, balance, cognitive/behavioral factors, and team communication/caregiver education/discharge planning were presented. For each of the categories, recommendations were made for the observation of specific activities. For example, under the category of functional mobility, clinicians were cued to observe the patient's movement quality, speed, fluidity, posturing, and independence in activities such as rolling in bed and climbing stairs. Specific, standardized tests and measures, however, were not mentioned for most of the categories.

Part 3 of the Guide to Physical Therapist Practice lists many tests and measures from which a clinician may choose when examining a patient with stroke.³ This document, however, does not provide sufficient guidance for clinicians looking to conduct specific tests during an examination of a patient with stroke given the time constraints of clinical practice. Some specific tests have been recommended based on their reliability and validity.^{1,4} Currently, however, examination procedures actually conducted by physical therapists have not been documented specifically^{1,2,5} or comprehensively.^{6–9}

Perry et al⁵ also identified broad but nonspecific outcome measures used by physical therapists. Using a modified Delphi survey of 228 physiotherapists in Australia, they found that clinicians emphasize outcomes in the following body structure and function domains: balance and postural control, cardiovascular system functions, musculoskeletal movement-related functions, neurologic movement-related functions, pain, respiratory system functions, sensory function, skin functions, and urinary and bowel continence.

Some investigators have identified specific standardized tests for certain categories of the examination of a patient with stroke.^{6–9} Magner⁶ identified the way in which therapists in Ireland manage their patients with hemiplegic shoulders, including the examinations that are conducted. Tyson and Desouza⁸ conducted focus groups with physical therapists in the United Kingdom who were experienced neurologic clinicians. They asked these clinicians to describe the way in which they examined balance and posture in patients with stroke. The consensus was that balance typically was examined by asking the patient to perform a series of increasingly demanding tasks. The tasks became more demanding and challenging by progressing from a static position to a dy-

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ISSN: 1557-0576/08/3203-0122

DOI: 10.1097/NPT.0b013e3181847a2f

dynamic movement and by decreasing the base of support. Posture was examined via the observation of the alignment of body segments to each other and by the symmetry of weight distribution. The method used to examine weight distribution was usually a comparison of weight distribution between the weaker and stronger buttock in sitting and the weaker and stronger foot in standing. Standardized tests were not specified when describing the methods of examining balance and posture.

Similarly, Winward et al⁹ surveyed clinicians in the United Kingdom who were members of the Association of Chartered Physiotherapists with an interest in neurology. These respondents were asked about the methods that they used in the examination of sensory integrity in patients with stroke. Eighty-four percent of the 98 respondents (n = 82) routinely performed somatosensory testing with their patients, at least during the initial examination. Of those who routinely tested sensation, all tested proprioception and all but one tested light touch appreciation routinely. The investigators noted that the methods used to test these sensory modalities varied widely.

Stevenson et al⁷ received 203 completed surveys from members of the Neurosciences Division of the Canadian Physiotherapy Association who worked with patients with stroke. Only 88 (43%) of the respondents to their survey indicated that they used standardized outcome measures to help evaluate the effectiveness of the interventions provided to patients with stroke. Of those who used standardized tests and measures, the most commonly used tests were the Berg Balance Scale¹⁰ (n = 37) and the Chedoke-McMaster Stroke Assessment¹¹ (n = 34). Other measures used less frequently by the respondents were the measurement of gait speed (n = 20), the functional independence measure (FIM)¹² (n = 15), and the Physiotherapy Clinical Outcome Variables Scale¹³ (n = 15).

To date, a comprehensive list of specific tests and measures used by specialist physical therapists in the United States who conduct examinations of patients with stroke has not been developed. Such a list may assist therapists in the development of a test battery for physical therapists to choose from when examining patients with stroke. Efficiency of practice may be enhanced based on these results because such a list will identify the tests and measures actually conducted given the time constraints present in the current clinical environment. Furthermore, physical therapy educators may benefit from a list of commonly used tests and measures with patients with stroke. A review of this list may help educators prepare students for what to expect when they observe and participate in the examination of patients with stroke.

The American Physical Therapy Association's Interactive Guide to Physical Therapist Practice, with Catalog of Tests and Measures, version 1.1³ lists 1373 tests and measures, which fall into 24 categories for use in the examination of all patients who receive physical therapy services. The purpose of this study was to determine which of the tests, measures, and categories are used most frequently by specialists in the examination of adults with stroke. We also sought to stratify the frequently used tests and measures by

practice setting to determine whether test selection and use varies by setting.

METHODS

Participants

Participants in this survey were specialist physical therapy clinicians as indicated by having geriatric (GCS) or neurologic (NCS) certification through the American Board of Physical Therapy Specialties (ABPTS).¹⁴ These individuals were identified from the ABPTS Web site as having GCS with either adult hemiplegia specialization or neurologic specialization or NCS with cerebrovascular accident specialization. All clinical specialists with such credentials with e-mail addresses in the directory were sent a link to the survey (N = 471) to comprehensively ascertain the tests and measures used with patients with stroke. Recipients of the survey were asked to respond only if they were actively involved in clinical practice including the physical therapy examination of adults with stroke.

Survey Design

The survey used was Web-based using Select-SurveyASP software (ClassApps, Inc., Clifton, NJ), designed to keep the participants anonymous. The request for participation in the survey was delivered via e-mail. The body of the e-mail correspondence explained the purpose of the study, the inclusion criterion for participation, and the link to the survey. Recipients of the survey were informed that responding to the survey indicated their informed consent for participation. This study was approved by the Elon University Institutional Review Board. The first page of the survey asked for demographic and practice information.

The American Physical Therapy Association's Interactive Guide to Physical Therapist Practice, with Catalog of Tests and Measures³ lists 1373 tests and measures. A test was eliminated from the survey if it met any of the following exclusion criteria:

- Test listed more than once in separate categories (eg, Fugl-Meyer is listed under balance, gait, and locomotion as well as sensory integrity and other categories but was only included in one category in the survey; the authors determined the specific category assignment for duplicate tests).
- Developmental test designed for infants and children (eg, Denver II, Carey Infant Temperament Questionnaire, Brigance Inventory of Early Development).
- Disease-specific scale not related directly to stroke (eg, Unified Parkinson's Disease Rating Scale, Chronic Heart Failure Questionnaire, Multiple Sclerosis Impairment Scale).
- Joint-specific test (eg, Harris Hip Scale, Prone Knee Flexion Test, Apprehension [Crank] Test).

After the exclusion criteria were applied to the list of tests and measures, 523 tests in the 24 categories were listed and sent in a pilot survey to 30 neurologic clinical specialists randomly selected from the ABPTS Web site. Nine specialists (30%) completed the survey. In addition to rating the frequency of the use of each test, each subject was given the

option of listing any additional tests or measures used for patients with stroke but not listed in the pilot survey.

The number of tests on the final survey equaled the number of additional tests identified on the pilot survey ($n = 50$) plus the number of tests on the pilot survey that were either used rarely or frequently with patients with stroke by one or more of the nine specialists ($n = 244$). Thus, the final survey consisted of 294 tests and measures organized by 23 of the 24 examination categories found in the Guide to Physical Therapist Practice.³ No specific tests listed under prosthetic requirements were included in the final survey. Examination categories on the survey were listed in alphabetic order and the tests and measures within each category were subsequently listed alphabetically. The five responses from which the participants could choose for each of the tests and measures listed within each category were never heard of the test, heard of the test but do not use with patients, use the test but not with patients with stroke, use the test rarely with patients with stroke, or use the test frequently with patients with stroke. After each category, the participants were allowed to name and describe any other tests and measures that they used that were not listed in the survey.

Procedure

The survey was electronically sent to 471 individuals via the e-mail addresses provided by the American Physical Therapy Association's Directory of Certified Specialists.¹⁴ Sixty-seven of the e-mails were returned as undeliverable; presumably 404 were received. A total of four e-mail reminders were sent out over the course of four weeks, and the participants had a total of eight weeks to complete the survey. The survey was begun by 160 participants (39.6% of recipients), and 128 of those who responded (31.7% of recipients) fully completed the survey.

Data Analysis

The demographic information and data from the 128 fully completed surveys were analyzed with descriptive statistics using Microsoft Office Excel 2007. Rating frequency (a percentage) was calculated for each of the 244 tests and measures on the survey, and a frequency score was generated for the category that indicated frequent use with patients with stroke. A high frequency score indicated a test or measure consistently rated by participants as being used frequently with patients with stroke. This frequency score was used to sort the tests and measures from highest score to lowest score.

RESULTS

Two thirds (66.40%) of the respondents who fully completed the survey reported ambulatory care/outpatient or rehabilitation/subacute rehabilitation as their primary practice setting (Table 1). This sample group was composed of 69% neurologic certified specialists ($n = 89$), 28% geriatric certified specialists ($n = 35$), and 3% with both specialties ($n = 4$). Approximately one third of the participants reported holding an additional certification and neurodevelopmental treatment topped this list at 15% (Table 2). The majority of the respondents held an entry-level professional bachelor's degree (53.12%) followed by 39.06% with an entry-level master's degree (Table 3).

TABLE 1. Subject Primary Practice Setting

Setting	% ^a (No.)
Academic/clinical site at PT school	2 (3)
Acute care/inpatient hospital facility	15 (19)
Ambulatory care/outpatient	39 (50)
ECF/nursing home/SNF	6 (8)
Home health	6 (8)
Rehabilitation/subacute rehabilitation	27 (35)
Research	3 (4)
Wellness/prevention/fitness program	1 (1)

Abbreviations: PT, physical therapy; ECF, Extended Care Facility; SNF, Skilled Nursing Facility.

^a Percentages do not total 100 because of rounding.

The therapists surveyed reported an average of 16.43 (SD = 7.07) years of experience as a physical therapist, and their practice locale was geographically diverse. They practiced in 32 different states and two foreign countries (Table 4).

Therapists surveyed provided an average of 22.8 (SD = 12.8) hours of patient care per week and completed 5.6 (SD = 5.3) initial examinations per week. Specifically, respondents reported an average of 1.97 (SD = 2.25) initial examinations per week of patients who have had a stroke with each initial examination lasting 57.16 (SD = 16) minutes.

Table 5 lists the 50 tests and measures with the highest scores. Seventeen of the 50 tests and measures with the highest scores were not in the Guide to Physical Therapist Practice³ but were identified during pilot testing by a small sample ($n = 9$) of specialists. None of the additional tests identified by the 128 specialists who responded to the final survey had a score high enough to place them in the top 50.

There was at least one test and measure in the top 50 scores from 18 of the 24 test and measure categories (Table

TABLE 2. Subject Clinical Specialty Certification

Specialty Certification	% (No.)
Geriatric certified specialist (adult hemiplegia or neurologic specialization)	27 (35)
Neurologic certified specialist (cerebrovascular accident specialization)	70 (89)
Both GCS and NCS	3 (4)
"Other" reported certifications	
Athletic trainer certified	1 (1)
APTA credentialed clinical trainer	1 (1)
Assistive technology provider	1 (1)
Certified weight-lifting instructor	1 (1)
Certified wound specialist	2 (2)
Clinical instructor credentialed	4 (5)
Multiple sclerosis certified specialist	2 (2)
Neurodevelopmental treatment	15 (19)
Orthopedic/manual therapy	2 (2)
Proprioceptive neuromuscular facilitation	3 (4)
Vestibular	6 (8)

Abbreviations: GCS, geriatric certification; NCS, neurologic certification; APTA, American Physical Therapy Association.

TABLE 3. Degrees Obtained by Subjects

	% (No.)
Professional PT degree	
Certificate	4 (5)
Bachelor's	53 (68)
Master's	39 (50)
Doctorate	4 (5)
Highest earned degree	
Advanced masters	8 (11)
Bachelors	21 (27)
Certificate	2 (2)
DPT	16 (20)
DSc	2 (2)
EdD	1 (1)
Masters	41 (53)
PhD	9 (12)

Abbreviations: PT, physical therapy.

5). No tests met the top 50 frequency score criterion in the aerobic capacity, anthropometric characteristics, ergonomics and body mechanics, neuromotor development and sensory integration, and work, community, and leisure integration categories. No tests listed under prosthetic requirements even met the exclusion criteria for the final survey.

The frequency of test and measure use is stratified by practice setting in Table 5. Respondents primarily practiced in ambulatory care/outpatient ($n = 50$), rehabilitation/subacute rehabilitation ($n = 35$), or acute care/inpatient hospital facility ($n = 19$). Only five of the top 50 frequently used tests were used by less than 50% of therapists working in ambulatory care/outpatient settings. These tests were tests for neglect, heart rate, rhythm, and sounds, the FIM, a home assessment, and respiratory rate, rhythm, and pattern. Only one of the top 50 tests, the Timed Up and Go, was used

TABLE 4. Current Primary Practice State or Country

Primary Practice State	% (No.)
California	12 (15)
Pennsylvania	9 (11)
New York	8 (10)
Massachusetts	7 (9)
Ohio	6 (8)
Illinois	5 (7)
Maryland	4 (5)
Oregon	4 (5)
Washington	4 (5)
Wisconsin	4 (5)
Florida	3 (4)
Iowa	3 (4)
North Carolina	3 (4)
Texas	3 (4)
Indiana	2 (3)
Minnesota	2 (3)
Virginia	2 (3)
Others	<2 (18)

frequently by less than 50% of those who examined patients in the rehabilitation/subacute rehabilitation settings. The following four tests were used frequently by less than 50% of those who examined patients in the acute care/inpatient hospital setting: heart rate, rhythm, and sounds, the functional reach, the FIM, and a home assessment. Results from other practice settings were not included because there were so few participants who practiced in those settings. For example, only eight participants practiced in extended care facilities, nursing homes, or skilled nursing facilities, whereas only nine participants practiced in home health. The choices on the survey made by one person who practiced in either of these settings would affect the frequency score for each test by more than 10 percentage points.

DISCUSSION

The results of this study fulfill the expressed purposes: to identify the tests and measures used most frequently by specialist physical therapists when they examine adults with stroke and to stratify the tests used most often by practice setting. For the first time in the physical therapy profession, a comprehensive list of tests and measures used in the examination of patients with stroke has been formulated. Furthermore, several categories that do not contain any tests or measures used frequently by these specialists have been identified.

Representation of Categories

More tests and measures were listed under the categories of motor function ($n = 7$) and gait, locomotion, and balance ($n = 10$) than any other category in the Guide to Physical Therapist Practice. A higher frequency of these kinds of examination procedures coincides with the emphasis of physical therapy practice. Physical therapists work to help people "who have medical problems or other health-related conditions that limit their abilities to move and perform functional activities in their daily lives."¹⁵

Many tests and measures have domains that allow them to be included in multiple categories listed in the Guide to Physical Therapist Practice. Despite the ability of many tests and measures to transcend categories, six categories did not have any associated tests that were used by the specialists when examining patients with stroke.³ No tests for prosthetic requirements even met the criteria for inclusion in the final survey. Given that one of the exclusion criteria was disease-specific scale not related directly to stroke and that limb loss is not a direct consequence of stroke, the absence of tests under prosthetic requirements is expected.

No test or measure of aerobic capacity was used by 75% or more of the specialists when they examined patients with stroke. Only 23.4% of the respondents used the Borg Rating of Perceived Exertion Scale^{16,17} frequently and 27.3% used the six-minute walk test frequently.^{18,19} More therapists should consider incorporating tests of aerobic capacity into their practice given the benefits of fitness training on aerobic capacity in patients with stroke.²⁰

Likewise, the lack of utilization of anthropometric characteristics is curious, especially given that 37% of patients post-stroke develop hand edema.²¹ The most commonly

TABLE 5. Percentage of Top 50 Tests and Measures Frequently Used by All of the Survey Respondents and Stratified by Practice Location

Category	Test or Measure	Overall (n = 128)	Ambulatory Care/ Outpatient (n = 50)	Rehabilitation/ Subacute Rehabilitation (n = 35)	Acute Care/ Inpatient Hospital Facility (n = 19)	
Arousal, attention, and cognition	Ability to follow multistep commands	88.3	82.0	94.3	79.0	
	Alert, oriented times 4	88.3	82.0	91.4	94.7	
	Tests for neglect	56.3	38.0	68.6	73.7	
Assistive and adaptive devices	Description of device used	78.1	72.0	74.3	94.7	
	Blood pressure measurement	93.0	92.0	100.0	89.5	
Circulation	Pulses (apical, peripheral)	61.7	60.0	74.3	57.9	
	Heart rate, rhythm, and sounds	56.3	44.0	77.1	47.4	
	Cranial and peripheral nerve integrity	57.8	56.0	60.0	68.4	
Environmental, home, and work barriers	Home assessment	57.0	40.0	74.3	47.4	
Gait, locomotion, and balance	Berg Balance Scale	85.2	88.0	88.6	68.4	
	Gait speed: comfortable/normal	75.8	82.0	74.3	73.7	
	Equilibrium reactions	70.3	70.0	77.1	68.4	
	Functional reach tests	66.4	70.0	68.6	47.4	
	Quiet standing	64.8	64.0	77.1	52.6	
	One legged stance	62.5	60.0	60.0	73.7	
	Timed Up and Go	62.5	70.0	48.6	57.9	
	Romberg tests	60.9	66.0	57.1	68.4	
	Gait speed: maximum/fast	60.2	62.0	65.7	68.4	
	Obstacle course	57.8	54.0	68.6	52.6	
	Integumentary integrity	Assess skin integrity with orthotic use	88.3	88.0	97.1	79.0
	Joint integrity and mobility	Palpation of subluxation	87.5	80.0	94.3	94.7
	Motor function	Descriptive quality of movement	93.0	92.0	97.1	89.5
		Finger-to-nose test	74.2	70.0	77.1	84.2
Alternating heel to knee, heel to toe		70.3	60.0	77.1	94.7	
Tandem walking		66.4	60.0	82.9	68.4	
Finger opposition		64.1	60.0	68.6	63.2	
Timed rapid alternating movements		60.9	60.0	71.4	63.2	
Pronation/supination		57.0	54.0	71.4	57.9	
Muscle performance		Muscle tests, functional: general	89.1	86.0	91.4	89.5
	Sit-to-stand tests	85.9	86.0	80.0	89.5	
	Muscle tests, manual: general	83.6	78.0	91.4	79.0	
	Orthotic, protective, and support. devices	Trials and comparisons of different devices	82.8	76.0	97.1	79.0
Pain	Pain Numerical Rating Scale	76.6	72.0	82.9	84.2	
	Pain Verbal Rating Scales	57.0	52.0	62.9	57.9	
Posture	Qualitative description of posture	84.4	86.0	91.4	79.0	
Range of motion	Goniometry	72.7	80.0	65.7	52.6	
	Active knee extension test	63.3	54.0	80.0	57.9	
	Active knee flexion test	60.9	56.0	74.3	57.9	
	End feel assessment	54.7	60.0	54.3	57.9	
	Reflex integrity	Ankle clonus	89.8	86.0	91.4	94.7
	Associated reactions	65.6	54.0	74.3	73.7	
	Babinski reflex	61.7	52.0	62.9	84.2	
	Ankle reflex (Achilles tendon reflex)	58.6	60.0	51.4	63.2	
	Modified Ashworth Scale	56.3	56.0	62.9	52.6	
	Self-care and home management	Functional independence measure	59.4	42.0	94.3	47.4
Sensory Integrity	Proprioception test	88.3	86.0	91.4	84.2	
	Touch	84.4	74.0	88.6	100.0	
	Sharp-dull	65.6	64.0	68.6	68.4	
Ventilation and respiration/gas Exchange	Pulse oximetry	62.5	52.0	85.7	63.2	
	Respiratory rate, rhythm, and pattern	60.9	48.0	77.1	52.6	

used test under anthropometric characteristics was the pitting edema scale cited by only 26% of the respondents as a frequently used test. The other therapists may simply use observational skills to identify edema and do not use a specific anthropometric measurement.

Tests for work, community, and leisure integration are also underrepresented in the results of this survey. The most commonly used test for work, community, and leisure integration was the Medical Outcomes Study–Short Form-36.²² Only 5% of the survey respondents indicated that they frequently used the Short Form-36 with their patients with stroke. This lack of utilization of a quality-of-life measure is disappointing considering the current healthcare environment where an emphasis is placed on patient outcome and quality of life.

Not surprising to the investigators was the fact that no tests and measures listed under the categories of ergonomics and body mechanics and neuromotor development and sensory integration were identified in this survey. Most of the specific tests listed under the ergonomics and body mechanics category are tests used in determining an individual's ability to return to physical work. Individuals undergoing these types of tests will often have musculoskeletal pathologies and not a neurologic pathology affecting the central nervous system such as a stroke. The specific tests listed under the neuromotor development and sensory integration category were designed primarily for the pediatric population and not for adults with stroke. Survey respondents were instructed to note tests that they conducted only with adults with stroke.

Participant Characteristics

Despite their similarity with regard to having NCS or GCS or both, the survey respondents were diverse in regards to their practice setting, educational background, years of experience, and geographic location.

Observation of the educational background of the survey participants shows a diversity of professional education from Certificate to the Doctor of Physical Therapy degree. In addition to their certification through the ABPTS, many of these clinicians formally enhanced their professional education by obtaining certifications through other organizations and by obtaining more advanced degrees. This demonstrated commitment to further professional development along with the numerous years of experience reported by the respondents, an average of 16.4 years, indicates further the expertise of these clinicians.

Tests and Measures Stratified by Practice Setting

Most specialists used tests and measures frequently irrespective of the practice setting. However, a few tests and measures were used more frequently in certain settings than in others. Heart rate, rhythm, and sounds were not tested as frequently in outpatient and acute care settings as they were in rehabilitation settings. Frese et al²³ also found in their survey of physical therapy clinical instructors that heart rate is measured less in the outpatient setting than in any other physical therapy practice setting. Unlike the experience of Frese et al, however, 77.1% of the specialists in this study

who practiced in a rehabilitation setting measured heart rate frequently. Only 29.1% of the clinicians in rehabilitation settings surveyed by Frese et al measured heart rate more than half of the time during patients' examinations. This discrepancy between these two studies may point to the specialists' increased awareness of the importance of vital signs measurements and the impact that they can have on physical therapy practice.

FIM¹² scores influence reimbursement in rehabilitation settings but not in outpatient or acute care settings. Thus, although the FIM is commonly used by the respondents to this survey, most of these specialists are practicing in the rehabilitation setting.

Home assessments are also more frequently used in rehabilitation settings than in outpatient or acute care settings. However, the tests and measures were not defined for the participants, so more specialists in rehabilitation settings may have used a more broad definition of home assessment. Specialists in rehabilitation may have included patient and family descriptions of the home environment as a form of a home assessment.

Comparison with Previous Studies

Although no other studies have comprehensively examined the tests and measures physical therapists conduct with patients with stroke, there are some noteworthy comparisons that can be made between the results of previous studies and this study. The frequently used tests and measures identified in this study compare favorably to the tests and measures identified by other researchers.^{6–9} Although the tests and measures identified were similar, the frequency of test and measure identification was higher for many tests and measures in this study when compared with the previous studies.^{6–8}

The higher response rate from the participants in this study may be related to differences in the survey design between the various studies. Participants in some of the previous studies^{6–8} were asked to recall tests used, whereas subjects in this study were given an extensive list of tests and measures that they did not have to recall.

Magner's survey⁶ of physiotherapists in Ireland found that when examining the hemiplegic upper limb in patients, 68% of physiotherapists used the Motor Assessment Scale.²⁴ Only 18% of the participants in this survey reported using the Motor Assessment Scale frequently. Furthermore, two tests identified by Stevenson and associates⁷ in their survey of Canadian physiotherapists, the Chedoke-McMaster Stroke Assessment¹¹ and the Physiotherapy Clinical Outcome Variables Scale,¹³ were not frequently used by the clinicians in this study (9% and 0%, respectively). None of these aforementioned tests were developed in the United States, so a test may be more likely to be used in its country of origin than elsewhere.

One question that can be addressed by future surveys of specialist clinicians pertains to whether clinicians choose different tests based on the type of stroke that a patient has experienced. For example, do physical therapists use more coordination and balance tests with patients with posterior circulation strokes and more tests of cognition with patients

with anterior circulation strokes? Follow-up research also needs to be conducted on the types of interventions that specialists employ when working with patients with stroke.

Limitations

Although the results of this study may be helpful in guiding the examination choices for novice clinicians and clinicians who do not routinely work with stroke patients, other factors must be considered when determining which tests and measures are appropriate to use. Just because a test is used by specialists does not mean that the test has documented reliability, validity, sensitivity, or specificity. The psychometric properties of a test or measure are vital considerations before a test is used. Of the few tests and measures recommended in the Clinical Practice Guideline endorsed by the American Heart Association and the American Stroke Association,³ the National Institutes of Health Stroke Scale (NIHSS)³, the FIM, and the Pain Numerical Rating Scale are identified. Of these recommended tests, only the FIM and the Pain Numerical Rating Scale made the list of most used tests and measures by these specialists. The NIHSS is a scale that examines the wide variety of impairments that patients may experience post-stroke. Despite the current emphasis on functional recovery in patients undergoing stroke rehabilitation, the NIHSS should garner more consideration from physical therapists in their practice. Thus, the results of this study do not identify the tests and measures that specialist clinicians should use, only those that they do use.

Another limitation of this study is that, like other surveys, there may be a selection bias.²⁵ The responses of those who work with patients with stroke but refused to respond to the survey may have been different from those who did respond. Those who did respond may have been more attuned to using objective tests and measures; thus, the percentages of clinicians who used the tests and measures in Table 5 may have been lower if more survey recipients had responded.

The results of this study also may have been limited by the frequency categories provided to the respondents. For those who used a test with patients with stroke, there were no other options from which to choose besides “use the test rarely” and “use the test frequently.” These options should have been defined for the participants and/or another option should have been provided for those who use a test more than rarely but less than frequently.

Definitions of the tests and measures were not provided to the participants so the understanding of each test may have differed between clinicians. One example mentioned previously is that some specialists may have interpreted a home assessment as meaning the clinician physically visits the patient’s home. Other specialists may have included surveys and questions of patients and family members about the home environment as additional means of conducting home assessments.

CONCLUSION

Specialist physical therapists’ top 50 tests and measures used when examining patients with stroke cover most of the categories listed in the Guide to Physical Therapist Practice.³ Clinicians may want to consider these more popular tests and measures when examining their patients with stroke.

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