This is a Sample version of the

Capabilities of Upper Extremity Questionaire (CUEQ)

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- CUEQ Overview information
- CUEQ Scoring/ Administration instructions
- CUEQ Complete Quesionnaire/ Assessment
- CUEQ Clinical Validity

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The Capabilities of Upper Extremity Instrument: Reliability and Validity of a Measure of Functional Limitation in Tetraplegia

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ABSTRACT. Marino RJ, Shea JA, Stineman MG. The Capabilities of Upper Extremity instrument: reliability and validity of a measure of functional limitation in tetraplegia. Arch Phys Med Rehabil 1998;79:1512-21.

Objective: To evaluate the reliability and validity of the Capabilities of Upper Extremity (CUE) instrument, designed to measure upper extremity functional limitations in individuals with tetraplegia. Functional limitations are actions such as reaching or grasping and are a link between the domains of impairment and disability.

Design: Survey of people with chronic spinal cord injury.

Setting: Regional spinal cord injury center.

Subjects: One hundred fifty-four individuals (140 male) with tetraplegia at least 1 year after injury and followed by the center. Mean age was 36.7 years (SD = 11.1). Sixty-eight percent were motor complete.

Methods: The 32-item CUE was administered by telephone interview twice about 2 weeks apart. The motor portion of the Functional Independence Measure (FIM[SM]) was collected during the first interview. Upper extremity motor scores and motor levels were obtained from the most recent assessment in the outpatient chart. The instrument was evaluated for internal consistency, reliability, and validity. Exploratory factor analysis was performed to examine scale structure.

Results: Homogeneity of the scale was excellent. Cronbach's α was .96, and item-total correlations ranged from .49 to .78. Test-retest reliability was high (ICC = .94). All but three items had desired levels of agreement ($\kappa > .60$). Analysis of variance indicated that the CUE distinguished between motor levels of tetraplegia more than one level apart. The CUE was correlated highly with both motor scores and FIM. Regression analysis indicated that the CUE was better than upper extremity motor scores for predicting FIM scores. The model containing the CUE explained 73% of the variance in FIM and was not enhanced by the addition of motor scores. Factor analysis suggested four potential subscales: arm function (bilateral), right hand function, left hand function, and reaching down.

Conclusion: The CUE exhibits good homogeneity, reliability, and validity; further work is needed to determine its sensitivity to change in function.

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THE NATIONAL CENTER for Medical Rehabilitation Research (NCMRR) has as one of its priorities the development of instruments that measure the effects of rehabilitation interventions on impairment and disability and quantify the influences of environmental factors on disability.[1] Current measures of disablement do not provide important information that is needed to relate severity of impairment to level of disability.[2]

A theory or model of disablement can facilitate attempts to understand the impact of rehabilitation on function. The model proposed by Nagi[3] and modified by the NCMRR[1] links impairment to disability through the domain of functional limitations (fig 1).[4] This domain operates at the level of the individual as a whole, as opposed to the domain of impairment concerned with function of an organ or organ system. Separation of functional limitations from impairments offers advantages over models of disablement that do not do so, such as that of the World Health Organization,[5] when the purpose of the investigation is to relate impairment to disability.

Functional limitations are defined as any "restriction or lack of ability to perform an action in the manner or within the range considered normal that results from impairment"[6] and represent the impact of various impairments on the individual. As such, they are "the most direct way through which impairments contribute to disability."[3] Examples of functional limitations include difficulties in reaching, grasping, and pushing. Functional limitations are considered attributes, indicators of which are found wholly within the individual. Disabilities, on the other hand, are relational concepts and require a context for assessment and interpretation. Therefore, unlike disabilities, functional limitations do not depend on environmental conditions or societal expectations but depend solely on factors intrinsic to the individual.[3] For example, consider an individual with C6 complete tetraplegia who has no active finger flexion or intrinsic hand muscle activity (impairment). He or she may have a limited ability to grasp because of tenodesis but no manipulative capacity with the fingers (functional limitations). This may result in a dressing or eating disability, which could be lessened with adaptive equipment such as built-up utensils or a button hook. The functional limitations, unlike the disability, do not depend on availability or acceptance of equipment.

Assessment of functional limitations can help guide the use of therapeutic interventions. In structuring a treatment program, Guccione recommends that therapists address those "impairments [that] are related to the patient's functional limitations and can also be remediated by physical therapy intervention."[7]

CAPABILITIES OF UPPER EXTREMITY QUESTIONNAIRE
Data analysis

Title of Assessment	**Capabilities of Upper Extremity Instrument**
Purpose	**To measure upper extremity functional limitations in individuals with tetraplegia.**
Acronym	**CUE**
Instrument Reviewer(s)	**Initially reviewed by Cara Leone Weibsach PT, DPT; Wendy Romney, PT, DPT, NCS; and the SCI EDGE task force of the Neurology Section of the APTA in 3/2012**
Summary Date	13 12 2013

Description	• 32 item questionnaire
	  ○ 15 unilateral (left and right), 2 bilateral
	    ■ 3 Reaching items
	    ■ 4 Pulling/pushing items
	    ■ 2 Wrist items
	    ■ 6 Hand and Finger items
	    ■ 2 Bilateral items
	• Scored on 7-point scale representing self-perceived difficulty 1 = "Totally limited, can't do at all", 7 = "Not at all limited"
	• Minimum score = 32, Maximum score = 224 (higher score = greater function)
	• Left and right scores can be assessed separately
	• Self-reported measure performed by interview

ICF Domain	**Body Function**
Time to Administer	**approximately 30 minutes**
Number of Items	32
Equipment Required	**None**
Training Required	**No training required**
Actual Cost	**Free**
Populations Tested	• **Spinal Cord Injury (SCI)**
Standard Error of Measurement (SEM)	<u>Cervical SCI:</u> (Marino, Shea, Stineman, 1998, *n* = 154; mean age = 36.7; motor complete (AIS A or B) or incomplete (AIS C or D); 68% were motor complete) • **SEM = 12.2 (95% CI indicating true score is within 23.9 points of score obtained)**
Minimal Detectable Change (MDC)	<u>Cervical SCI:</u> **(Marino, Shea, Stineman, 1998)** • **MDC = 33.82**
Minimally Clinically Important Difference (MCID)	**Not Established**
Cut-Off Scores	**Not Established**
Normative Data	<u>Cervical SCI:</u> **(Marino, Shea, Stineman, 1998)**

CUE Scores in Participants with Cervical SCI

Item	Mean (SD)	
	Right	Left
Arm Function		
Reach 1	4.5 (2.0)	5.4 (2.1)
Reach 2	4.6 (2.4)	4.5 (2.5)
Reach 3	3.2 (2.5)	3.2 (2.5)
Pull/push 1	5.9 (1.9)	5.7 (2.1)
Pull/push 2	5.1 (2.2)	5.0 (2.2)

This is the end of the SAMPLE CUEQ Overview.
Please go to page 1 to purchase complete version.

CAPABILITIES OF UPPER EXTREMITY QUESTIONNAIRE

Instruction Manual for version 2.1 of CUE^{TM}
Read instructions to patient. Emphasize that each question focuses on a specific part of arm or hand.
Read the individual scores and words associated with them (0=unable, complete difficulty, 1=.., etc.)
once before starting.

Notes on Individual Items.

1. Reach out.	Only concerned with reaching forward to touch item at shoulder level. Do not need to grasp.
2. Reach overhead.	Need to be able to get hand over head with elbow straight to do completely.
3. Reach Down	Not allowed to use other arm or hand to assist. Must be able to touch floor AND get back into sitting position.
4. Lift Overhead.	Asking about lifting object over head. Do not need to grasp. Think of blanket draped over forearms.
5. Pull light object	Concerned with ARM function, not hand function. If item was taped to hand, could person move it.
6. Pull heavy object	Concerned with ARM function, not hand function. If item was taped to hand, could person move it. Suggested items if person having trouble: bag of flour, bag of potatoes.
7. Push light object	Concerned with ARM function, not hand function. If item was taped to hand, could person move it.
8. Push heavy object	Concerned with ARM function, not hand function. If item was taped to hand, could person move it. Suggested items if person having trouble: bag of flour, bag of potatoes.

**This is the end of the SAMPLE CUEQ scoring & administration.
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Name\ID: Date:

Interviewed by:

CUE 2.1	Unable/ Complete Difficulty	Severe Difficulty	Moderate Difficulty	Mild Difficulty	No Difficulty
THE FOLLOWING QUESTIONS ARE ABOUT YOUR ABILITY TO REACH OR LIFT					
1. Think about reaching out with your arm to touch something directly in front of you that is at shoulder level:					
….how difficult is it to do this using your RIGHT ARM	0	1	2	3	4
...how difficult is it to do this using your LEFT ARM?	**0**	**1**	**2**	**3**	**4**
2. Think about raising your arm directly over your head, with your arm straight:					
...how difficult is it to do this motion using your RIGHT ARM?	0	1	2	3	4
...how difficult is it to do this motion using your LEFT ARM?	**0**	**1**	**2**	**3**	**4**
3. Think about reaching down to touch the floor and sitting back up straight, without hooking with your other arm or using it to pull yourself up:					
...how difficult is it to do this with your RIGHT HAND?	0	1	2	3	4
...how difficult is it to do this with your LEFT HAND?	**0**	**1**	**2**	**3**	**4**