OUTCOME MEASURES

Please click on one of the following subheadings to see the outcome measures available for download.

1. GENERAL – scores for assessing the entire upper extremity

2. NERVE – scores related to nerve surgery

3. TENDON – scores for tendon repair

4. SHOULDER - common measures for shoulder problems

5. ELBOW – scores focused on the elbow

6. WRIST – outcome measures in wrist surgery

7. PAIN – measures for assessing pain

8. MISCELLANOUS – other commonly used measures

GENERAL

Disabilities of the Arm, Shoulder & Hand (DASH)

DASH is a self-administered outcome instrument, measuring disability and dysfunction of the upper extremity. It consists of 30 items of disability/symptom scale, each scored from 1 to 5. The final score is converted to a scale of 0 to 100 (higher scores represent higher disability). Two optional modules are available – the Work module and the Sports/ Performing Arts module.
The minimal clinically important difference [MCID] for the DASH is 10 points [95% confidence interval 5 – 15].

References:

- Gummesson C, Atroshi I, Ekdahl C. The disabilities of the arm, shoulder and hand (DASH) outcome questionnaire: longitudinal construct validity and measuring self-rated health change after surgery. BMC Musculoskelet Disord. 2003;4:11. doi:10.1186/1471-2474-4-11
- Sorensen AA, Howard D, Tan WH, Ketchersid J, Calfee RP. Minimal clinically important differences of 3 patient-rated outcomes instruments. J Hand Surg Am. 2013 Apr;38(4):641-9. doi: 10.1016/j.jhsa.2012.12.032. Epub 2013 Mar 6. PMID: 23481405; PMCID: PMC3640345.

Quick DASH

The Quick DASH score is an abbreviated version of the original DASH score. Instead of 30, it consists of 11 questions to measure upper extremity dysfunction of symptoms. The same optional modules as the full DASH questionnaire are also available.
The minimal clinically important difference [MCID] for the qDASH is 14 points [95% confidence interval 9 – 20].

References:

- Gummesson C, Ward MM, Atroshi I. The shortened disabilities of the arm, shoulder and hand questionnaire (QuickDASH): validity and reliability based on responses within the full-length DASH. BMC Musculoskelet Disord. 2006;7:44. Published 2006 May 18. doi:10.1186/1471-2474-7-44
- Sorensen AA, Howard D, Tan WH, Ketchersid J, Calfee RP. Minimal clinically important differences of 3 patient-rated outcomes instruments. J Hand Surg Am. 2013 Apr;38(4):641-9. doi: 10.1016/j.jhsa.2012.12.032. Epub 2013 Mar 6. PMID: 23481405; PMCID: PMC3640345.

Michigan Hand Questionnaire (MHQ)

The MHQ was developed in 1998 to determine the various health states in patients suffering from a hand pathology. It is a patient rated score consisting of 37 items in six domains – Pain, Work, Function, Aesthetics, Daily Living, Satisfaction.
The scoring consists of converting each domain into a scale of 0 to 100. This is performed as given below:

SCALE	RECODE*	RAW SCORE RANGE	NORMALISATION
Function	None	5 to 25 per hand	L or R =[-(raw score-25)/20]*100
Activities of Daily Living	None	5 to 25 per hand, 7 to 35 both hands	L or R =[-(raw score-25)/20]*100, Both = [-(raw score-35)/28]*100 Overall ADL - if only L or R affected = (L or R + Both)/2, Overall ADL - if both L and R affected = (L + R + Both)/3
Work	None	5 to 25 per hand	=[(raw score-5)/20]*100
Pain	Question 2 (iva2, ivb2) change: 1=5, 2=4, 4=2, 5=1	5 to 25 per hand	If Question 1 (iva1, ivb1) =5, then pain score =0 for that hand. If Question 1 (iva1, ivb1) does not =5,

			then pain score for L or R =[-(raw score-25)/20]*100
Aesthetics	Question 1 (va1, vb1) change: 1=5, 2=4, 4=2, 5=1	4 to 20 per hand	L or R = [(raw score-4)/16]*100
Satisfaction	None	6 to 30 per hand	L or R = [-(raw score-30)/24]*100

* the response for some questions need to be reversed and recoded.
For the Pain scale, higher scores mean more pain. For the other scales, higher scores represent better performance.

The overall MHQ score is the average of the six subscales, after reversing the Pain score.
Overall MHQ Score per hand = [Function + Activities of Daily Living + Work + (100-Pain) + Aesthetics + Satisfaction]/6

References:
Shauver MJ, Chung KC. The Michigan hand outcomes questionnaire after 15 years of field trial. Plast Reconstr Surg. 2013 May;131(5):779e-787e

Brief MHQ

The brief MHQ is an abbreviated version of the Michigan Hand Questionnaire. It is a 12-item questionnaire with each item scored from 1 to 5. Similar to the full MHQ, the raw scores are totaled up and normalized to a scale of 0 to 100. Also, eight of the responses need to be reversed and recoded for the score calculation (details in the bMHQ PDF).

References:
Waljee JF, Kim HM, Burns PB, Chung KC. Development of a brief, 12-item version of the Michigan Hand Questionnaire. Plast Reconstr Surg. 2011;128(1):208-220.

Patient Reported Outcomes Measurement Information System (PROMIS)

The Patient Reported Outcomes Measurement Information System (PROMIS) is a comprehensive collection of resources for patient reported data collection. The PROMIS collection allows self-reporting of a wide variety of domains, including the Upper Extremity. PROMIS questionnaires can also be administered online via the Computer Adaptive Test option. The scores can also be converted to standardised T-scores that can be compared to the general population.

Link:
Intro to PROMIS

Patient Specific Functional Scale (PSFS)

The PSFS is a self-reported valid, reliable, and responsive outcome measure for patients with back, neck, knee and upper extremity problems. It has also been shown to have a high test-retest reliability in both generic lower back pain and knee dysfunction issues. It is also clinically responsive to changes over time with chronic pain patients. It is quick to complete and relatively easy for the patients.

References:
Hefford C, Abbott JH, Arnold R, Baxter GD. The patient-specific functional scale: validity, reliability, and responsiveness in patients with upper extremity musculoskeletal problems. J Orthop Sports Phys Ther. 2012 Feb;42(2):56-65

NERVE

Boston Carpal Tunnel Questionnaire

BCTQ is a patient reported outcome measure for use in carpal tunnel syndrome patients. The score consists of two subscales – the Symptom Severity scale (11 items) and the Functional Status scale (8 items). Each is rated from 1 to 5, with higher scores for higher disability. The mean of each subscale is then reported (maximum of 5).
The minimal clinically important differences [MCIDs] of the Symptom Severity and Functional Status scales are estimated to be 0.8 and 0.5 respectively.
References:

- Levine DW, Simmons BP, Koris MJ, Daltroy LH, Hohl GG, Fossel AH, Katz JN. A self-administered questionnaire for the assessment of severity of symptoms and functional status in carpal tunnel syndrome. J Bone Joint Surg Am. 1993;75(11):1585–92.
- Leite JC, Jerosch-Herold C, Song F. A systematic review of the psychometric properties of the Boston Carpal Tunnel Questionnaire. BMC Musculoskelet Disord. 2006 Oct 20;7:78. doi: 10.1186/1471-2474-7-78. PMID: 17054773; PMCID: PMC1624826.

Brachial Plexus Outcome Measure

BPOM is developed for the assessment of children with birth brachial plexus palsy. The Activity scale of the BPOM is based on the examiner's assessment of 11 upper limb movements, each scored from 1 (cannot complete task) to 5 (normal movement pattern). The Self-Evaluation scale of the BPOM can be used in older children to assess their satisfaction with the limb function and cosmesis.

References:

Ho ES, Curtis CG, Clarke HM. The brachial plexus outcome measure: development, internal consistency, and construct validity. J Hand Ther. 2012 Oct-Dec;25(4):406-16. doi: 10.1016/j.jht.2012.05.002. Epub 2012 Jul 20. PMID: 22818900.

Patient Rated Ulnar Nerve Evaluation

The PRUNE is a 20 item scale that evaluates four domains – Pain (6 items), Symptoms (4 items), Specific Activities (6 items) and Usual Activities (4 items). Each item is scored from zero to 10, with higher scores for higher disability. The Total score (out of 100) is calculated by dividing the grand total of all items by 2.

References:

MacDermid JC, Grewal R. Development and validation of the patient-rated ulnar nerve evaluation. BMC Musculoskelet Disord. 2013 Apr 26;14:146. doi: 10.1186/1471-2474-14-146. PMID: 23617407; PMCID: PMC3660194.

TENDON

Total Active Motion [ASSH]

The TAM of a finger is the total active ROM of the MCP, PIP and DIP joints. This is most often calculated by measuring the joint angles in full active flexion and the joint angles in full active extension. The difference in these angles is the TAM.

References:

Kleinert HE, Verdan C. Report of the Committee on Tendon Injuries (International Federation of Societies for Surgery of the Hand). J Hand Surg Am. 1983 Sep;8(5 Pt 2):794-8. doi: 10.1016/s0363-5023(83)80275-5. PMID: 6630960.

Strickland Criteria

An ordinal scale, rating the outcome from 'Excellent' to 'Poor' based on the return of motion.

References:

Strickland JW, Glogovac SV. Digital function following flexor tendon repair in Zone II: A comparison of immobilization and controlled passive motion techniques. J Hand Surg Am. 1980 Nov;5(6):537-43. doi: 10.1016/s0363-5023(80)80101-8. PMID: 7430595.

Buck – Gramcko Method

This method is based on the evaluation of the TAM, the extension deficit and the pulp-to-crease distance. The maximum score is 15, with better scores for better function.

References:

Buck-Gramcko D, Dietrich FE, Gogge S. Evaluation criteria in follow-up studies of flexor tendon therapy. Handchirurgie. 1976;8(2):65-9. German. PMID: 992488.

SHOULDER

ASES Shoulder Score

The ASES contains physician-rated and patient-rated sections, with only the Pain visual analog score (VAS) and ten functional questions used to calculate the reported ASES score.

The final pain score (maximum 50 points) is calculated by subtracting the VAS score from 10 and multiplying by 5. For the functional score, each of 10 separate questions is scored on an ordinal scale from 0-3 for a maximal raw functional score of 30 points. The raw score is multiplied by 5/3 to make the maximal functional score out of 50 possible points. The pain and functional portions are then summed to obtain the final ASES score (maximum of 100).

The minimal clinically important difference [MCID] for the ASES Score is estimated to be 27.1 points for arthroscopic rotator cuff repair and 21 points for shoulder arthroplasty.

References:

- Richards RR, An KN, Bigliani LU, Friedman RJ, Gartsman GM, Gristina AG, Iannotti JP, Mow VC, Sidles JA, Zuckerman JD. A standardized method for the assessment of shoulder function. J Shoulder Elbow Surg. 1994 Nov;3(6):347-52. doi: 10.1016/S1058-2746(09)80019-0.
- Tashjian RZ, Shin J, Broschinsky K, Yeh CC, Martin B, Chalmers PN, Greis PE, Burks RT, Zhang Y. Minimal clinically important differences in the American Shoulder and Elbow Surgeons, Simple Shoulder Test, and visual analog scale pain scores after arthroscopic rotator cuff repair. J Shoulder Elbow Surg. 2020 Jul;29(7):1406-1411. doi: 10.1016/j.jse.2019.11.018. Epub 2020 Feb 17. PMID: 32081634.
- ashjian RZ, Hung M, Keener JD, Bowen RC, McAllister J, Chen W, Ebersole G, Granger EK, Chamberlain AM. Determining the minimal clinically important difference for the American Shoulder and Elbow Surgeons score, Simple Shoulder Test, and visual analog scale (VAS) measuring pain after shoulder arthroplasty. J Shoulder Elbow Surg. 2017 Jan;26(1):144-148. doi: 10.1016/j.jse.2016.06.007. Epub 2016 Aug 18. PMID: 27545048.

SPADI (The Shoulder Pain And Disability Index)

The SPADI measures two dimensions of shoulder disability - Pain and Functional activities. The score consists of 13 items (5 for Pain dimension and 8 for Functional activity).

Each item is scored on a 10cm visual analogue scale. These are added up to calculate the Pain and Function subscales as percentages of the maximum possible score (50 for Pain and 80 for Function). The Total SPADI is calculated as a percentage of the maximum possible score of 130. Higher scores represent higher disability.

Reference:

Roach KE, Budiman-Mak E, Songsiridej N, Lertratanakul Y. Development of a shoulder pain and disability index. Arthritis Care Res. 1991 Dec;4(4):143-9.

ELBOW

Mayo Elbow Performance Score

The Mayo Elbow performance score includes 4 subscales

1) Pain intensity (Max. 45 points)
2) Range of Motion (max. 20 points)
3) Stability (max. 10 points)
4) Function (max. 25 points)

These are added up for a maximum score of 100, with scores above 90 considered as 'Excellent' and scores below 60 rated as 'Poor'.

Reference:

Morrey BF, An KN, Chao EY. Functional evaluation of the elbow and its disorders. the elbow and its disorders. Philadelphia: WB Saunders. 1985:73-91.

Oxford Elbow Score (OES)

OES is a patient reported measure that contains 12 questions under three domains: Pain, Function and Social-psychological (4 items in each domain).

Each item response is scored 0 to 4, with 0 representing greater severity. Scores for each domain are calculated as the sum of each individual item score within that domain. This is then converted to a metric of 0 — 100 (lower score representing greater severity) by the following formula –

$$100 \times \frac{Actual\ score}{Maximum\ possible\ score}$$

The minimal clinically important differences [MCIDs] for the OES Pain, Function and Social-psychological scales are approximately 18, 10 and 18 points respectively.

References:

- Dawson J., Doll H, Boller I., Fitzpatrick R, Little C, Rees J., Jenkinson C., and Carr, A. J.; The development and validation of a patient-reported questionnaire to assess outcomes of elbow surgery; J Bone Joint Surg. [Br] (2008) 90-B: 466-473.
- Dawson J, Doll H, Boller I, Fitzpatrick R, Little C, Rees J, Carr A. Comparative responsiveness and minimal change for the Oxford Elbow Score following surgery. Qual Life Res. 2008 Dec;17(10):1257-67. doi: 10.1007/s11136-008-9409-3. Epub 2008 Oct 29. PMID: 18958582.

Liverpool Elbow Score (LES)

It was developed in 2004 and consists of two main domains. The first is a six-item physician rated clinical assessment elbow motion, strength, and ulnar nerve sensitivity. The second is nine-item patient-answered questionnaire (PAQ) assessing pain, activities of daily living, and recreational activities.

For calculation of the final score, all responses are equally weighted and are transformed to a scale of 0–10. For this, the score of each item is divided by the maximum possible score for that item [4 for all patient answered items and one clinical item, 3 for other clinical items]. The average of these individual scores is calculated and multiplied by 10 to get the final score.

The minimal clinically important difference for the LES is estimated to be between 1.6 and 1.8 points for elbow arthroplasty.

References:

- Sathyamoorthy P, Kemp GJ, Rawal A, Rayner V, Frostick SP. Development and validation of an elbow score. Rheumatology. 2004 Nov 1;43(11):1434-40.
- Vishwanathan K, Alizadehkhaiyat O, Kemp GJ, Frostick SP. Minimal clinically important difference of Liverpool Elbow Score in elbow arthroplasty. JSES Open Access. 2017 Aug 30;1(3):144-148. doi: 10.1016/j.jses.2017.07.004. PMID: 30675558; PMCID: PMC6340916.

WRIST

Modified Mayo Wrist Score

The score assesses four domains: Pain, Function, Range of Motion and Grip Strength. Each of them is scored out of 25, for a maximum possible total score of 100. A score of 91 and above is considered 'Excellent' and one below 65 is considered 'Poor'. The score is a modification of the earlier Green and O'Brien score, but the reliability and validity of this score has not been studied.

Reference:

Cooney WP, Bussey R, Dobyns JH, Linscheid RL. Difficult wrist fractures. Perilunate fracture-dislocations of the wrist. Clin Orthop Relat Res. 1987 Jan;(214):136-47. PMID: 3791735.

Munich Wrist Questionnaire

The MWQ consists of 16 items in three domains – Pain (5 items), Work & ADL (7 items), Function (4 items). Scoring is performed out of 250, which is then converted to a scale of 100%. The questionnaire is designed to be filled by the patients themselves, including range of motion and strength items.

Reference:

Beirer M, Serly J, Vester H, Pförringer D, Crönlein M, Deiler S, Elberthaler P, Kirchhoff C. The Munich Wrist Questionnaire (MWQ) - development and validation of a new patient-reported outcome measurement tool for wrist disorders. BMC Musculoskelet Disord. 2016 Apr 14;17:167. doi: 10.1186/s12891-016-1029-4. PMID: 27079377; PMCID: PMC4832466.

Patient Rated Wrist Evaluation

PRWE is a 15-item questionnaire with two subscales: Pain (5 items) and Function (10 items). Each item is scored from 0 to 10 by the patient, with higher scores representing higher disability. The total score is out of 100, as given below-

Pain subscale: total score of 5 items (out of maximum 50)
Function subscale: [total score of 10 items (maximum 100)] ÷ 2
Total score = Pain score + Function score (out of 100)
The minimal clinically important difference of the PRWE is estimated as 14 points [95% confidence interval 8 – 20].

References:

- MacDermid JC, Turgeon T, Richards RS, et al. Patient rating of wrist pain and disability: a reliable and valid measurement tool. J Orthop Trauma 1998;12:577-86.
- Sorensen AA, Howard D, Tan WH, Ketchersid J, Calfee RP. Minimal clinically important differences of 3 patient-rated outcomes instruments. J Hand Surg Am. 2013 Apr;38(4):641-9. doi: 10.1016/j.jhsa.2012.12.032. Epub 2013 Mar 6. PMID: 23481405; PMCID: PMC3640345.

PAIN

Numerical Pain Rating Scale [NPRS]

The NPRS is a patient reported scale of their pain levels ranging from 0 to 10, with higher scores for worse pain. It can be used as a single point measure or as an average of scores over a time period. It is often confused with the VAS, which is strictly different in that the VAS requires to visually mark levels of pain (or any characteristic).

References:
Pain - clinical manual for nursing practice. McCaffery M, Beebe A. Nurs Stand. 1994 Dec 7;9(11):55. doi: 10.7748/ns.9.11.55.s69. PMID: 27527475

PROMIS Pain Intensity

The Patient Reported Outcomes Measurement Information System (PROMIS) is a comprehensive collection of resources for patient reported data collection. The Pain Intensity questionnaire consists of three questions with responses scored from 1 [no pain] to 5 [very severe], which are then totalled for the final score.
PROMIS questionnaires can also be administered online via the Computer Adaptive Test option. The scores can also be converted to standardised T-scores that can be compared to the general population.

Link:
Intro to PROMIS

PROMIS Pain Interference

The Patient Reported Outcomes Measurement Information System (PROMIS) is a comprehensive collection of resources for patient reported data collection. The Pain Interference question bank consists of a total of 55 questions, each scored from 1 to 5. However, the entire set of questions are not necessary for a meaningful score. More details on the link below. A Computer Adaptive Test [CAT] option is also available that automates the length of the test depending on the responses.

Link:
Intro to PROMIS

MISCELLANOUS

Arthritis Impact Measurement Scales 2 (AIMS2)

The AIMS2 is a patient reported measure that assesses the multidimensional impact of arthritis. This 78-item questionnaire is comprehensive and consists of 12 subscales, including Hand and Finger Function. The scoring and interpretation of this measure is complex, for which a user guide can be downloaded here.

Reference:

Meenan RF, Mason JH, Anderson JJ, Guccione AA, Kazis LE. AIMS2. The content and properties of a revised and expanded Arthritis Impact Measurement Scales Health Status Questionnaire. Arthritis Rheum 1992; 35:1-10.

AUSCAN Questionnaire

A patient reported measure for hand osteoarthritis, with 15 items in three domains – Pain, Stiffness and Physical Function.
Each item can be scored as a visual analogue scale or numeric scale.

References:

- Bellamy N, Campbell J, Haraoui B, Buchbinder R, Hobby K, Roth JH and MacDermid JC. Dimensionality and clinical importance of pain and disability in hand osteoarthritis: development of the Australian/Canadian (AUSCAN) Osteoarthritis Hand Index. Osteoarthritis and Cartilage 2002;10(11):855-862.
- Bellamy N, Campbell J, Haraoui B, Gerecz-Simon E, Buchbinder R, Hobby K and MacDermid JC. Clinimetric properties of the AUSCAN Osteoarthritis Hand Index: an evaluation of reliability, validity and responsiveness. Osteoarthritis and Cartilage 2002;10(11):863-869.

ICHOM Complications

Developed by the Hand and Wrist Working Group of the International Consortium for Health Outcomes Measurement [ICHOM], for grading complications in hand and wrist conditions. It is a modification of the Clavien – Dindo scheme that grades complications from I to III, with increasing grades signifying worse complications. CRPS is added as grade IIIC, diagnosed as per the Budapest criteria (given below).

References:

- Wouters RM, Jobi-Odeneye AO, de la Torre A, Joseph A; ICHOM Hand and Wrist Working Group, Hovius SER. A Standard Set for Outcome Measurement in Patients With Hand and Wrist Conditions: Consensus by the International Consortium for Health Outcomes Measurement Hand and Wrist Working Group. J Hand Surg Am. 2021 Oct;46(10):841-855.e7. doi: 10.1016/j.jhsa.2021.06.004. Epub 2021 Jul 27. PMID: 34325941
- Dindo D, Demartines N, Clavien PA. Classification of surgical complications: a new proposal with evaluation in a cohort of 6336 patients and results of a survey. Ann Surg. 2004 Aug;240(2):205-13. doi:10.1097/01.sla.0000133083.54934.ae. PMID: 15273542
- Harden NR, Bruehl S, Perez RSGM, Birklein F, Marinus J, Maihofner C, Lubenow T, Buvanendran A, Mackey S, Graciosa J, Mogilevski M, Ramsden C, Chont M, Vatine JJ. Validation of proposed diagnostic criteria (the "Budapest Criteria") for Complex Regional Pain Syndrome. Pain. 2010 Aug;150(2):268-274. doi: 10.1016/j.pain.2010.04.030. Epub 2010 May 20. PMID: 20493633

BUDAPEST CRITERIA

(1) Continuing pain, which is disproportionate to any inciting event
(2) Must report at least one symptom in *three of the four* following categories:
  - *Sensory:* reports of hyperesthesia and/or allodynia
  - *Vasomotor:* reports of temperature asymmetry and/or skin color changes and/or skin color asymmetry
  - *Sudomotor/edema:* reports of edema and/or sweating changes and/or sweating asymmetry
  - *Motor/trophic:* reports of decreased range of motion and/or motor dysfunction (weakness, tremor, dystonia) and/or trophic changes (hair, nail, skin)
(3) Must display at least one sign at time of evaluation in *two or more* of the following categories:
  - *Sensory:* evidence of hyperalgesia (to pinprick) and/or allodynia (to light touch and/or deep somatic pressure and/or joint movement)
  - *Vasomotor:* evidence of temperature asymmetry and/or skin color changes and/or asymmetry
  - *Sudomotor/edema:* evidence of edema and/or sweating changes and/or sweating asymmetry
  - *Motor/trophic:* evidence of decreased range of motion and/or motor dysfunction (weakness, tremor, dystonia) and/or trophic changes (hair, nail, skin)
(4) There is no other diagnosis that better explains the signs and symptoms

ICHOM Return to Work

Self-designed questionnaire by the Hand and Wrist Working Group of the International Consortium for Health Outcome Measures [ICHOM]. It consists of seven questions that assess return to work and the duration of impairment.

Reference:

Wouters RM, Jobi-Odeneye AO, de la Torre A, Joseph A; ICHOM Hand and Wrist Working Group, Hovius SER. A Standard Set for Outcome Measurement in Patients With Hand and Wrist Conditions: Consensus by the International Consortium for Health Outcomes Measurement Hand and Wrist Working Group. J Hand Surg Am. 2021 Oct;46(10):841-855.e7. doi: 10.1016/j.jhsa.2021.06.004. Epub 2021 Jul 27. PMID: 34325941

ICHOM Satisfaction

Self-designed questionnaire by the Hand and Wrist Working Group of the International Consortium for Health Outcome Measures [ICHOM]. It consists of three questions that assess satisfaction with treatment.

Reference:

Wouters RM, Jobi-Odeneye AO, de la Torre A, Joseph A; ICHOM Hand and Wrist Working Group, Hovius SER. A Standard Set for Outcome Measurement in Patients With Hand and Wrist Conditions: Consensus by the International Consortium for Health Outcomes Measurement Hand and Wrist Working Group. J Hand Surg Am. 2021 Oct;46(10):841-855.e7. doi: 10.1016/j.jhsa.2021.06.004. Epub 2021 Jul 27. PMID: 34325941

Chen's criteria

Consists of Grades I to IV, with lesser grade being better function. Assesses the range of motion, sensibility and MRC grading of muscle power, along with an examiner's assessment of global function of the replanted part.

Reference:

Chen ZW, Yu HL. Current procedures in China on replantation of severed limbs and digits. Clin Orthop Relat Res. 1987 Feb;(215):15-23. PMID: 3802631

Shriner's Hospital Upper Extremity Evaluation

The Shriner's Hospital Upper Extremity Evaluation (SHUEE), published in 1996, is a form of objective assessment of upper limb based on video analysis, described for 3-18 year old patients with cerebral palsy (CP). This test has been used for assessment, treatment planning and measurement of treatment outcomes. The score determines the dynamic aspects of the deformities and functional limitations present in spastic CP. SHUEE analyses spasticity, arc of movement, muscular strength, spontaneous functional analysis, positional dynamic analysis and the grip-release function.

Reference:

Davids JR, Peace LC, Wagner LV, Gidewall MA, Blackhurst DW, Roberson WM. Validation of the Shriners Hospital for Children Upper Extremity Evaluation (SHUEE) for children with hemiplegic cerebral palsy. J Bone Joint Surg Am. 2006 Feb;88(2):326-33