

# MAL: Instrument to evaluate the paretic upper limb

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## Introduction

Neurological disorders resulting from CVA cause, in most cases, hemiplegia which affect significantly the satisfaction of a significant number of activities of daily living. In this regard the evaluation of the quantity and quality of motor function of the upper limbs is important for better planning of rehabilitation programs.

## Objective

To analyze the relationship between the affected side after the CVA, the time of occurrence of AVC and handgrip strength to the quantity and quality of use of the paretic upper limb.

## Methodology

A cross-sectional descriptive study with a quantitative approach nature was given continuation in a non-probabilistic sample of patients who have had a CVA. The instruments of data collection used were the scale Motor Activity Log, a questionnaire to evaluate sociodemographic and clinical variables and handgrip dynamometer to measure grip strength.

## Results

Of the 148 patients in the sample, 58.8% were males, the average age is 66.12 years (SD = 11.39). The CVA occurred for an average time 35.15 months ago (SD = 28.92), 48% of patients studied remained with the dominant side affected. A correlation between the subscales and handgrip strength on the affected side was found (CCS = 0.290, p = 0.000 for the qualitative and CCS = 0,291 average, p = 0.000 for the quantitative average. Through T test, a difference in the mean of both subscales depending on the affected side may not be the dominant was verified.

| Distribution of age (years) |     |     |       |        |       |
|-----------------------------|-----|-----|-------|--------|-------|
|                             | min | Máx | Mean  | Median | (SD)  |
| Age                         | 38  | 91  | 66,12 | 66,0   | 11,39 |

| Handgrip strength (KPa) |     |     |       |        |       |
|-------------------------|-----|-----|-------|--------|-------|
|                         | min | máx | Mean  | Median | (SD)  |
| Affected side           | 0   | 50  | 11,52 | 10     | 11,60 |
| Unaffected side         | 15  | 80  | 35,20 | 30     | 15,77 |

| Time of occurrence of stroke (months) |     |     |       |       |
|---------------------------------------|-----|-----|-------|-------|
|                                       | min | Máx | Mean  | (SD)  |
| Tempo de ocorrência                   | 7   | 168 | 35,15 | 28,92 |

| Spearman's rho                  |                        | Handgrip side unaffected |
|---------------------------------|------------------------|--------------------------|
| Handgrip strength affected side | Coeficiente Correlação | ,449**                   |
|                                 | Sig. (2-tailed)        | ,000                     |
|                                 | N                      | 148                      |

CCS - Coeficiente de Correlação de Spearman.  
\*\*. Correlation is significant at the 0.01 level (2-tailed)

|                                | N  | Mean  | SD   | Test T |       |
|--------------------------------|----|-------|------|--------|-------|
|                                |    |       |      | T      | Sig   |
| Dominant side affected /QT     | 71 | 1,626 | 1,69 | 2,926  | 0,004 |
| Affected non-dominant side /QT | 77 | 1,013 | 0,52 |        |       |
| Dominant side affected /QT     | 71 | 1,211 | 1,26 | 2,790  | 0,006 |
| Affected non-dominant side /QT | 77 | 0,767 | 0,47 |        |       |

| Variables                       | Qualitative mean |      | Quantitative mean |      |
|---------------------------------|------------------|------|-------------------|------|
|                                 | CCS              | P    | CCS               | P    |
| Age                             | ,162             | ,141 | ,180*             | ,028 |
| Handgrip strength affected side | ,290**           | ,000 | ,291**            | ,000 |
| How long CVA occurred           | ,115             | ,166 | ,123              | ,135 |

CCS - Coeficiente de Correlação de Spearman.  
\*\*. Correlation is significant at the 0.01 level (2-tailed)

| Study and Version          |  | Psychometric properties   | RESULTS              |                       |
|----------------------------|--|---|----------------------|-----------------------|
| MAL-30                     |  |   | QL                   | QT                    |
| Uswatte et al. (2006)      | Sample   |   |                      |                       |
|                            | 106 patients with a mean age of 61 13.5 years, and 106 patients with a mean age of 63.3 12.6 years; with time of stroke between 6-12 months and caregivers | Internal consistency (Cronbach's alpha)<br>Test-retest reliability (ICC)  | 0,94<br>0,82         | 0,94<br>0,79          |
| Saliba (2009)              | 77 patients with a mean age of 57.5 12.4 years.  | Test-retest reliability (CCI)<br>Subscale item  | 0,98<br>>0,80        | 0,98<br>0,44 a 1,0    |
| Diz, Gomes e Galvão (2012) | 84 patients with a mean age of 66.77 years; with mean time of 34.45 months of CVA.   | Internal consistency (Cronbach's alpha) Test-retest reliability (ICC)<br>Correlation between Subscale and items | 0,97<br>0,97<br>>0,5 | 0,97<br>0,99<br>>0,54 |
|                            |  | Cross-construct validity  | 0,97                 |                       |
| Estudo Atual (2014)        | 148 patients with a mean age of 66.12 years; with a mean time of 35.15 months of stroke.   | Internal consistency (Cronbach's alpha) Test-retest reliability (ICC)<br>Correlation between Subscale and items | 0,97<br>0,97<br>>0,5 | 0,97<br>0,99<br>>0,54 |
|                            |  | Cross-construct validity  | 0,98                 |                       |

## Conclusion

The results reinforce the importance of studying strength and mobility of the upper limbs, the MAL constitute a useful tool for evaluating the motor performance of the paretic upper limb in patients who have suffered a CVA.

## References

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