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Objective analysis of muscle spasticity level in rehabilitation assessment (Article) [Open Access](#)

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Abstract

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In current practice, the assessment of upper limb spasticity is subjectively evaluated based on the experience and perception of therapists. This leads to inconsistency in assessment and could affect the efficacy of rehabilitation process. Thus, the aims of this paper are to study and extract relevant information from the torque and angle signal measured from the muscle of the arm and to select independent features in order to classify the level of spasticity of the muscle based on Modified Ashworth Scale (MAS) assessment tool. Data were collected from twenty-five subjects that met the criteria with consent. The data went through pre-processing stage and analyzed before the features extracted. The seven features extracted from the data forming the dataset which later used to train and feed into suitable classifier to classify the level of spasticity. One-way ANOVA test was run in order to evaluate the statistical significant differences among the level. Based on the results from the test, four features were selected out from seven. Linear Support Machine (SVM) based classifier accorded the highest performance with 84% accuracy compared to other classifiers. © Universiti Tun Hussein Onn Malaysia Publisher's Office.

Author keywords

[ANOVA test](#) [Classification](#) [Feature selection](#) [Modified Ashworth Scale](#) [Support vector machine](#)

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1 Nouri, F.M., Lincoln, N.B.

An extended activities of daily living scale for stroke patients

(1987) *Clinical Rehabilitation*, 1 (4), pp. 301-305. Cited 464 times.
doi: 10.1177/026921558700100409

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2 Kim, K., Kim, Y.M., Kim, E.K.

Correlation between the activities of daily living of stroke patients in a community setting and their quality of life [\(Open Access\)](#)

(2014) *Journal of Physical Therapy Science*, 26 (3), pp. 417-419. Cited 39 times.
https://www.jstage.jst.go.jp/article/jpts/26/3/26_jpts-2013-383/_pdf
doi: 10.1589/jpts.26.417

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3 Miller, E.L., Murray, L., Richards, L., Zorowitz, R.D., Bakas, T., Clark, P., Billinger, S.A.

Comprehensive overview of nursing and interdisciplinary rehabilitation care of the stroke patient: A scientific statement from the American heart association [\(Open Access\)](#)

(2010) *Stroke*, 41 (10), pp. 2402-2448. Cited 373 times.
doi: 10.1161/STR.0b013e3181e7512b

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4 Charalambous, C.P.

Interrater reliability of a modified ashworth scale of muscle spasticity

(2014) *Classic Papers in Orthopaedics*, pp. 415-417. Cited 17 times.
<http://dx.doi.org/10.1007/978-1-4471-5451-8>
ISBN: 978-144715451-8; 1447154509; 978-144715450-1
doi: 10.1007/978-1-4471-5451-8_105

[View at Publisher](#)

5 Bethoux, F.

Spasticity Management After Stroke

(2015) *Physical Medicine and Rehabilitation Clinics of North America*, 26 (4), pp. 625-639. Cited 11 times.
<http://www.elsevier.com/locate/ynbrc>
doi: 10.1016/j.pmr.2015.07.003

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6 Thibaut, A., Chatelle, C., Ziegler, E., Bruno, M.-A., Laureys, S., Gosseries, O.

Spasticity after stroke: Physiology, assessment and treatment

(2013) *Brain Injury*, 27 (10), pp. 1093-1105. Cited 121 times.
doi: 10.3109/02699052.2013.804202

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