# Objective Analysis of Muscle Spasticity Level in Rehabilitation Assessment

By: Puzi, AA (Puzi, Asmarani Ahmad)[1]; Sidek, SN (Sidek, Shahrul Naim)[1]; Yusof, HM (Yusof, Hazlina Md)[1]; Khairuddin, I (Khairuddin, Ismail)[1]

INTERNATIONAL JOURNAL OF INTEGRATED ENGINEERING
**Volume:** 11 **Issue:** 3 **Pages:** 223-231 **Special Issue:** SI
**Published:** 2019
**Document Type:** Article

## Abstract

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 (MA) 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

## Keywords

**Author Keywords:** Modified Ashworth Scale; ANOVA test; Classification; Feature selection; Support Vector Machine
**KeyWords Plus:** MODIFIED ASHWORTH SCALE; INTERRATER RELIABILITY; TEST-RETEST; MANAGEMENT; STIFFNESS

## Author Information

**Reprint Address:** Sidek, SN (reprint author)

+ Int Islamic Univ Malaysia, Dept Mechatron Engn, Kuala Lumpur 50728, Malaysia.

**Addresses:**

+ [1] Int Islamic Univ Malaysia, Dept Mechatron Engn, Kuala Lumpur 50728, Malaysia

**E-mail Addresses:** snaim@iium.edu.my

## Funding

| Funding Agency | Show details | Grant Number |
|---|---|---|
| Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC), Malaysia | | SF15-015-0065 |

View funding text

## Publisher

UNIV TUN HUSSEIN ONN MALAYSIA, 86400 PARIT RAJA, BATU PAHAT, JOHOR, 00000, MALAYSIA

## Categories / Classification

**Research Areas:** Engineering
**Web of Science Categories:** Engineering, Multidisciplinary

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1 of 1

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