

## Database surface electromyography (SEMG) for lower limb analysis

**Abstract:** This database contains samples from 11 subjects with knee Abnormality previously diagnosed by a professional and 11 normally. These data were collected with electromyography and goniometry equipment MWX8 Datalog Biometrics.

<b>Característica de la base de datos</b>	Time Series	<b>Number of samples</b>	22	<b>Area</b>	Señales físicas
<b>Atributes</b>	Real	<b>Number of attributes</b>	5	<b>Sampling date</b>	July 2012 March 2013 July 2013

### 1. Sources:

Batallón de sanidad (BASAN) con apoyo de la Universidad Militar Nueva Granada – Bogotá (samples July 2012).

Carrera 7 No 52-48, Bogotá.

TecnoParque SENA nodo Manizales (samples march - july 2013).

Km 10 route to Magdalena, Manizales.

### 2. Information database:

#### 2.1. Protocol:

22 male subjects , 11 with different knee abnormalities previously diagnosed by a professional. They undergo three movements to analyze the behavior associated with the knee muscle , gait , leg extension from a sitting position , and flexion of the leg up. The acquisition process was conducted with 4 electrodes ( Vastus Medialis , semitendinosus , biceps femoris and rectus femoris ) and the goniometer in the knee .

#### 2.2. Instrumentation

Datalog equipment was used MWX8 by Biometrics of 8 digital channels and 4 analog channels , of which 4 for sampling were used SEMG and 1 for goniometry, these data were acquired directly to the computer MWX8 internal storage with microSD card and transmitted in Real-time Datalog software through bluetooth adapter , 14-bit resolution and sampling frequency of 1000Hz .

#### 2.3. Data configuration:

The total number of electrodes is 4, corresponding to the time series one for each channel (1 to 4). Each series contains ~ 5 shares or motion repetitions for each subject.

### 3. Attributes of information

Each data file contains 5 columns , organized as follows.

Segment	Lower Limb				
Channel	Ch1	Ch2	Ch3	Ch4	Ch5
Muscle	RF	BF	VM	ST	FX
Column	0	1	2	3	4

**Segment:** defines the body part where the data are taken.

**Channel:** corresponds to the electrode attached to a muscle.

**Muscle:** corresponds to the muscle being measured.

RF: Recto Femoral.

BF: Femoral Biceps.

VM: Vastus Medialis.

ST: Semitendinosus.

FX: Flexion at the knee.

### **Headings:**

File Name: 2Nsen.log

Channel 1: 'RF', 15300 values, engineering units: mV, no filters.

Channel 2: 'BF', 15300 values, engineering units: mV, no filters.

Channel 3: 'VM', 15300 values, engineering units: mV, no filters.

Channel 4: 'ST', 15300 values, engineering units: mV, no filters.

Channel 5: 'FX', 765 values, engineering units: deg, no filters, extrapolated from 50 to 1000 samples per second.to 1000 samples per second.

### **7. Number of classes:**

The database contains 22 samples and 11 normal 11 with knee pathology , each subject has 3 different shots , one sitting , one standing and one gait.

### **8. Otros:**

4 folders: A\_LOG, A\_TXT, N\_LOG Y N\_TXT .

Folder \_log contains data in .log format that can be loaded and analyzed by datalog software by Biometrics.

Folder \_txt contains SEMG data in columns and their headers