**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.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Característica de la base de datos** | Time Series | **Number of samples** | 22 | **Area** | Señales físicas |
| **Atributes** | Real | **Number of attributes** | 5 | **Sampling date** | 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.

1. **Information database:**
   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 .

* 1. **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 .

* 1. **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.

1. **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