



## User manual for ErgoArmMeter

ErgoArmMeter is a smartphone application for measuring arm elevation during work. It is shown by research that work with elevated arm may lead to shoulder/neck disorders. With ErgoArmMeter, it is possible to measure arm elevation during work easily and with low cost.

To start with, attach the phone using a sport armband on the upper arm, with the upper edge just below the deltoid muscle (see Figure 1):

1. Start a measurement by clicking “+”, fill in a project name and a recording number and “**Create**” the trial.
2. Calibration: let the subject lean to the measuring side, holding some weight in hand (e.g. a 2 kg dumbbell or similar) with a straight-arm (see Figure 2). Click “**Calibrate**”, keep the posture for 2 seconds.
3. Click “**Start**” to start the measurement. The time is shown, and the arm elevation angle is recorded.
4. Press “**Stop**” to end the measurement. To view the results, click on the trial name in the trial list.
5. Click “**Share**” to send the results and the whole data set via email. A csv file including the angles and angular velocity data during the measurement can be viewed and further analysed with Excel.



Figure 1. The phone's position on the arm.



Figure 2. Calibrating posture.

### Notice:

Since ErgoArmMeter uses accelerometer and gyroscope in the phone, it requires the phone remain unlocked to stay functioning. For iPhone, you can achieve it by changing “Auto-Lock” function, via “Settings-General-AutoLock-Never”, and then use the phone to measure arm elevation as long as you need

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