

1: Universidad de Valencia. 2: mDurance S.L. nachomingo96@gmail.com

Basketball is a high intensity sport, rules do not allow to re-warm during the game, therefore positive effects are lost. On the one hand, benches are too small compared to players height involving slumped postures which cause cool down and low back pain. On the other hand, upright sitting promotes low back muscles activation, specially erector spinae (ES) conditioning. Although, there is no scientific evidence testing ES activity during replay after seated rest time neither if upright sitting is better.

OBJECTIVE: To determine how does slump and upright sitting while waiting at benches affects ES performance.

The research shown is a experimentally designed study which used a randomized controlled clinical trial. 8 basketball players (age = 22 ± 4 years, height = 1.83 ± 0.5 m, mass = 75 ± 10 kg) volunteered to participate in the study. For the measurement and data collection a protocol including a test battery was designed (Figure 2).

Surface electromyography (EMG) for right erector spinae (RES) and left erector spinae (LES) was recorded (mDurance software) during tests. Maximal voluntary contraction (MVC) was measured to normalize EMG signal. Values of the root mean square (RMS) were calculated with a window of 1s and an overlap of 0.5s. Jump height was estimated using the app Myjump2. A self perceived pain scale test was completed after counter movement jump test (CMJ).

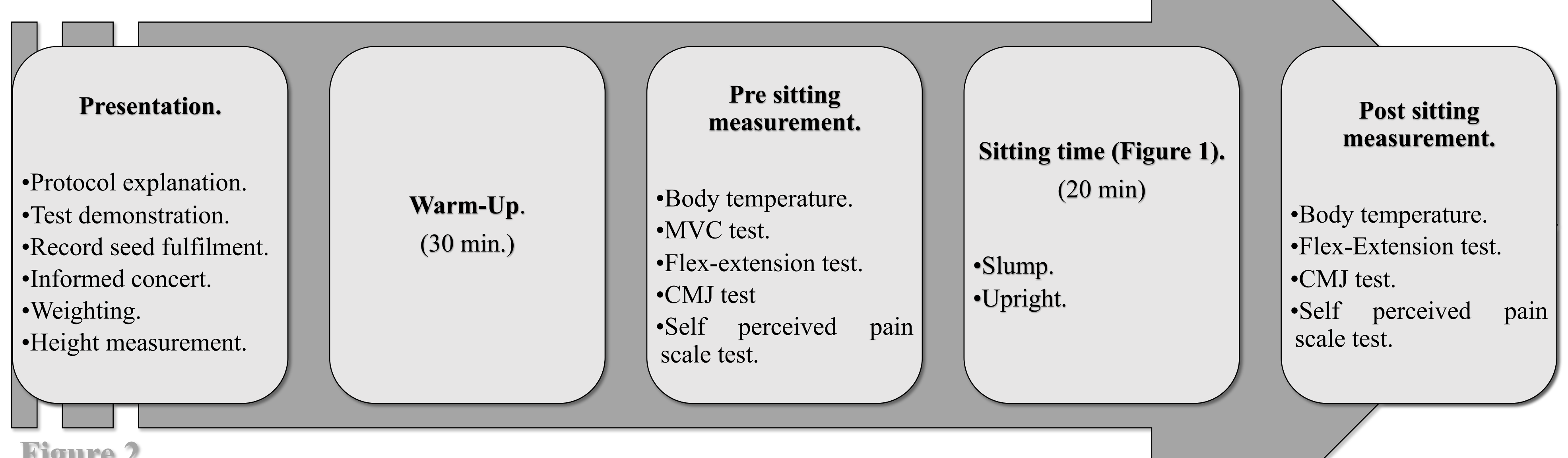
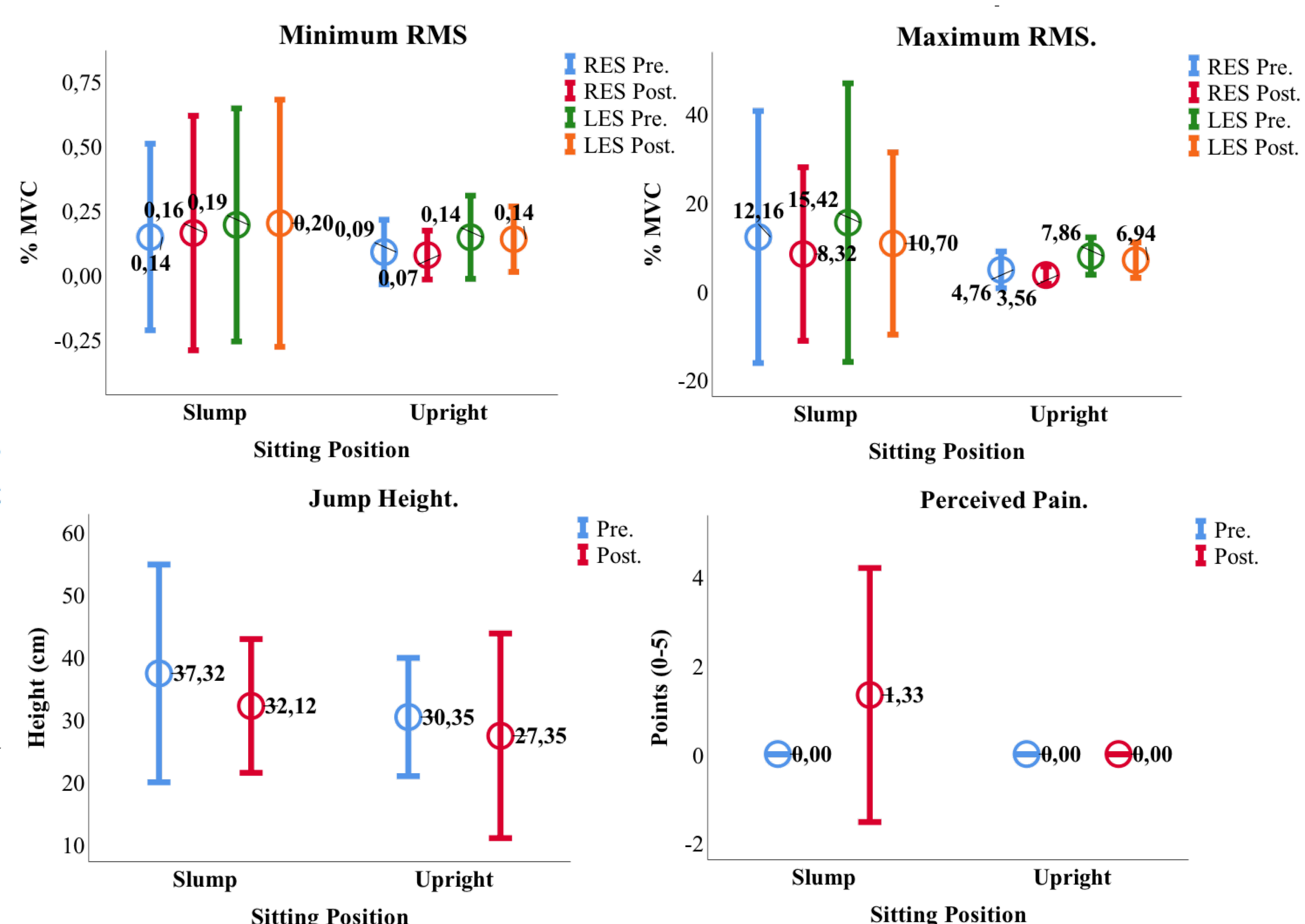


Table 1.: Overview results Slump vs Upright (Pre-sitting y Post sitting).

- Regarding Flexor-Extension test, **minimum RMS** in slump increased RES activation and LES activation. However, upright decreased RES activation while LES didn't change. Other variables showed greater ES activation decreased in slump compared to upright, as it is shown in the **RMS**.
- Regarding CMJ, ES **maximal contraction** in slump decreased both, RES and LES activation. Nevertheless, upright increased RES and LES activation. **Jump height** was less affected by upright compared to slump.
- **Perceived pain** at landing increased in slump compared to upright which remained 0 points.



Note: TD = Typical deviation. Pre. = Pre-sitting. Post. = Post sitting RES = Right erector spinae. LES = Left erector spinae. RMS = root mean square. CMJ = counter movement jump.

MAIN: The intervention proved slump postures decreased overall ES performance. Also, upright sitting improved jump performance test results and decreased lumbar perceived pain at CMJ landing.

- After warm-up inactivity cause performance decrease.
- Sitting position is fundamental for ES electromyographic response.
- EMG decrease and asymmetry, may cause low back pain and injuries in other structures.