# ABSTRACT

**Title:** Evaluation of the spasticity level in wheelchair bound individuals, observing movement in a virtual reality environment

**Objective:** Investigate whether people watching movement in virtual reality, experience changes in the level of spasticity due to intervention of the therapeutic programme.

**Methods:** Two case studies were orchestrated, both of probands diagnosed with spastic paraplegia due to an incomplete spinal cord lesion. Both probands did undergo a therapeutic programme in virtual reality, where each intervention consisted of 30 minutes in said programme. Interventions were organised in 10 consecutive days in the case of the first proband and 5 consecutive days in the case of the second. The levels of spasticity before and after each intervention were taken into account and evaluated by a modified Tardieu scale on plantar flexors of both ankle and knee joints of both lower limbs. Furthermore, a modified, subjective spasticity scale was created in order to observe individual, subjective inputs of each proband. Using this scale, probands evaluated their feelings towards individual spasticity changes on a scale 1-10 (0 = no spasticity, 10 = unbearable spasticity sensations). This evaluation took place before and after each individual intervention.

**Results:** Seven hypotheses were defined in the thesis, three of which were confirmed. The findings were most profound in the case of subjective evaluation, where we found an average change from 3,2 ± 0,25 to 2,5 ± 0,24 in the case of the first proband and a significant change was also confirmed by the Wilcoxon test in the case of the second proband, moving from 1,1 ± 0,25 to 0,7 ± 0,12. In the case of the modified Tardieu scale, the most significant finding is the R1 – R2 angle difference. Here a change was found in the cases of both probands in each of the observed muscle groups. Correlation of subjective inputs with standardized data, according to the Spearman correlation coefficient was not established.



**Key words:** spinal cord injury, virtual reality, spasticity, Modified Tardieu scale