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Activation pattern of rectus femoris during gait in subjects with stroke – an exploratory study of the loading phase.

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Gait impairment is a major consequence of stroke (Michael et al., 2005). The loading phase (LP) is a demanding period of gait, as it requires stability of the lower limb whilst the body weight transfer occurs. The LP is usually impaired after stroke, mainly due to variations in the knee joint kinematics (Lucareli and Greve, 2006), but there is no consensus about the role of knee muscles in this impairment (Ahmed and Ahmed, 2008). The aim of this study was to compare the main characteristics of the rectus femoris (RF) activity during the LP of healthy subjects and those with stroke.

Subjects with chronic stroke (N=3) and healthy controls (N=3) were recruited. A tripod sensor was placed on the RF muscle on the affected limb of stroke subjects and one (randomly selected) lower limb of healthy controls, to measure the muscle activity. Two force sensors (loading heel; contralateral big toe) were used to the LP detection. Data were collected

using electromyography whilst subjects walked 10 meters, at their preferred speed. Three trials were performed. The best trial of each subject was analysed considering the (i) number of action potentials (RFap), (ii) RF activity magnitude (RFm.) and (iii) RF activity per second (RFsec.) Descriptive statistics and Mann-Whitney non-parametric tests were used for data analysis.

Subjects with stroke were 59,33±6,42 years old; and overweight (BMI=25,23±2,51kg/m²). Healthy controls were 54,33±1,15 years old; and normal-weight (BMI of 22,12±3,79 kg/m²). Subjects with stroke demonstrated a tendency to statistically significant increases in the RFap. (p=0,05) and decreases in the RFm. (p=0,05) in comparison to health controls. No statistically significant differences were observed in RFsec. (p=0,127).

This exploratory study identified modifications in RF activity in the LP of people with stroke. Further research is needed to understand the impact of these muscle activity modifications on gait recovery after stroke.

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Functional outcome of severe dysphagia in neurorehabilitation - a series.

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Background: Dysphagia requiring nasogastral or FGT (feeding gastrostomy