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## Psyching Effects on Voluntary Torque Production and Cortico-Cortical Communication Using Electroencephalography

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Psyching refers to a type of mental preparation that involves using self-directed cognitive strategies to enhance arousal, focus, and confidence to improve psychomotor performance. **PURPOSE:** The purpose of this study was to determine if mental preparation i.e. psyching (PSY), will contribute to higher muscular performance (maximal knee extension) and heightened cortico-cortical communication when compared to distracting conditions Mental Arithmetic (MA), Reading Comprehension (RC). **METHODS:** Healthy adults (N=15) between the ages 19-30 were included in this experiment. This study consisted of two visits: the first consisting mainly of reviewing the consent form, along with taking measurements and familiarization with leg extension machine. The second visit involved the participants engaging in the three conditions: PSY, MA, and RC. Each condition consisted of three trials in which participants performed 20 second task periods prior to the voluntary movement of a maximal leg extension, beginning with the instructed “You may now begin” command. Following the end of the 20 second task period, the maximal leg extension was performed at the “Move” command. This all occurred while being hooked up to an electroencephalography (EEG) in order to record brain waves. Torque production was measured by the Biodex Quick Set Isokinetic Dynamometer, and EEG data was gathered via Brain Vision EEG Cap. **RESULTS:** Average torque production for participants within the PSY, MA, and RC condition were 144.80 N\*m, 122.05 N\*m, and 125.19 N\*m respectively. A significant difference was found between PSY and MA (0.008), and PSY and RC (0.005). No significant difference existed between RC and MA distractions. Coherence (High Alpha Bandwidth) averages for participants within PSY, MA, and RC, were 0.474, 0.420, and 0.419 respectively. A significant difference was found between PSY and RC (0.028). **CONCLUSION:** Amongst participants, the PSY condition produced higher torque averages compared to MA and RC which directly correlated to heightened overall cortico-cortical communication in PSY condition.

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