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Proprioceptive neuromuscular facilitation increases alpha absolute power in the dorsolateral refrontal cortex and superior parietal cortex

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The clinical practice of physiotherapists includes Proprioceptive Neuromuscular Facilitation (PNF), which is a treatment concept that accelerates the response of neuromuscular mechanisms through spiral and diagonal movements. The adaptations that occur in the nervous system following PNF are still poorly described in the literature. Thus, the aim of this study was to investigate the electrophysiological changes in the fronto-parietal circuit during PNF and movement in the sagittal and diagonal patterns. This study included 30 female participants, who were divided into 3 groups (control, PNF and flexion groups). Electroencephalogram measurements were determined before and after tasks were performed by each group. For the statistical analysis, a two-way ANOVA was performed for the factors, group and time. Interactions between the two factors were investigated using a one-way ANOVA. $P < 0.004$ was considered significant. The results showed an increase in alpha absolute power in the left dorsolateral prefrontal cortex and upper left parietal cortex of the PNF group, suggesting these areas work together to execute a motor action. The PNF group showed a greater alpha absolute power compared with the other groups, indicating a specific cortical demand for planning and attention, reinforcing its use for the rehabilitation of individuals.

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