



# In Motion

Highlighting Articles Advancing Pain Research in Canada and the World

## Featured article:

Gouriou, E., & Schneider, C. (2024). **Brain and muscles magnetic stimulation in a drug-free case of Parkinson's disease: Motor improvements concomitant to neuroplasticity.** *Heliyon*, 10, e35563. <https://doi.org/10.1016/j.heliyon.2024.e35563>

## Key insights from the study:

- **Innovative Treatment Method:** This case study investigated the effects of repetitive transcranial magnetic stimulation (rTMS) and repetitive peripheral magnetic stimulation (rPMS) on motor function in a 52-year-old woman with Parkinson's disease (PD), who had been drug-free for 10 years.
- **Positive Motor Improvements:** The combined rTMS and rPMS approach resulted in significant motor improvements, including reductions in rigidity and tremor, which lasted for up to 80 days post-treatment.
- **Potential for Neuroplasticity:** The study highlights the potential for neuroplastic changes in the brain's primary motor cortex, indicating that even long-term PD patients without medication may benefit from non-invasive neurostimulation.

## What happened?

The researchers applied four different combinations of rTMS and rPMS sessions, measuring motor symptoms in the primary motor cortex plasticity over time. The results showed that when both brain and muscle stimulation were used together in the treatment sessions, the patient experienced the biggest improvements in their ability to move. This highlights how effective this combined approach can be for enhancing motor function, and potentially reducing PD-related chronic pain.

## Why is it important?

This study provides promising evidence that non-invasive magnetic stimulation can induce motor improvements in drug-free PD patients, emphasizing the importance of exploring alternative therapies for managing PD symptoms without relying solely on medication. This approach may also shed light on strategies for managing chronic pain and improving motor function, as both conditions can exhibit similar neurological challenges.

## What now?

Future research should explore the long-term effects of this combined neurostimulation technique in larger, more diverse patient populations. Additionally, investigations into the mechanisms behind neuroplasticity in response to non-invasive stimulation may lead to innovative therapies for both Parkinson's disease and chronic pain management.

