Stroke, a condition caused by oxygen deprivation through disruption to the brain’s blood supply, is a common disease that can affect one limb or side of the body. These disabilities often persist; early post-stroke rehabilitative therapy methods seem to promote compensatory reliance on the nonparetic forelimb, diminishing long-term recovery of the paretic side. Such therapy methods introduce competitive neuroplasticity by interfering with the rewiring of neural networks contralateral to the affected limb. Our study explored an alternative to current post-stroke therapy methods, whose success would revolutionize quality of life for stroke patients by prioritizing restored overall function over adapting and improving function of the unaffected limbs. A photothermal mouse stroke model was used to investigate the effect of fiber-optically inhibiting area M1, a region of the brain that corresponds to the nonparetic forelimb, on overall recovery of function in the paretic forelimb. Mice were given unilateral focal stroke after being sufficiently trained in completing a tapered beam walking test. Post-stroke, mice received either: a) compensatory limb training followed by paretic limb training; b) delayed rehabilitation of the paretic limb; or c) delayed rehabilitation of the paretic limb with inhibition of the non-paretic area M1. After seven days of therapy on the paretic limb, mice following treatment a) exhibited highest neurodeficit (NDS) scores for the beam walking task, whereas mice receiving treatment c) exhibited the lowest NDS scores. Our results suggest that inhibiting use of the nonparetic area M1 indirectly enhances neuroplasticity, for improved recovery of function in the paretic limb.

Themes:

Check (highlight) the most applicable theme according to the abstract.

| Innovation and Technology | Health and Wellness | Culture and Society | Sustainability and Conservation |

Comments: Method and results are clear and well written. A reminder that since MURC is a generalist conference, there may be some terms and concepts that need to be simplified for a broad audience to understand.