A spontaneous recovery of the clinical condition on the basis of reabsorption of oedema in the central nervous system may be expected in the relapsing-remitting type of multiple sclerosis. The inflammation process during an MS exacerbation is accompanied by the formation of oedema, which hinders the passage of information through the central nervous system and leads to an outburst of symptoms (a relapse). After some time (days-weeks), the oedema is reabsorbed and the obstruction in the central nervous system reduced (remission), clinically manifested by a recovery of symptoms.
Studies using magnetic resonance imaging (MRI) however, have indicated that there has not always been a clear relation between lesions of the central nervous system seen on MRI and clinical manifestation of symptoms (Kidd et al, 1998).

The discrepancy between MRI-results and clinical symptoms may possibly indicate that some reorganisation occurs after a lesion at the central nervous system in multiple sclerosis. In two recent publications (Lee et al. 2000, Reddy et al. 2000), people with multiple sclerosis who had impaired hand function were examined with magnetic resonance spectroscopic imaging and functional MRI. In people with MS compared to normal controls, an activation of the sensorimotor cortex with simple hand movements was increased which suggests that in the people with MS, compensatory cortical adaptive responses may have occurred. The results of Lee et al (2000) also demonstrated that recruitment in the sensorimotor cortex with finger movements can change both quantitatively and qualitatively in people with MS, suggesting that cortical reorganisation or 'unmasking' of latent pathways can contribute to functional recovery. Reddy et al (2000) concluded that therapies directed towards promoting cortical reorganisation in response to brain injury could enhance recovery from relapses of multiple sclerosis.

Little is known about processes involved in the reorganisation of sensorimotor function related to neuroplasticity. Compared to a one-time occurrence of a lesion such as in stroke or TBI, the monitoring of these processes in multiple sclerosis is rendered difficult because of the unpredictable evolution and the various sites that can be affected in the central nervous system.