The widely used rubber hand illusion (RHI) paradigm provides insight into how the brain manages conflicting multisensory integration regarding bodily self-consciousness. Previous functional neuroimaging studies have revealed that the feeling of body ownership is linked to activity in the premotor cortex, the intraparietal areas, the occipitotemporal cortex, and the insula. The current study investigated whether the individual differences in the sensation of body ownership over a rubber hand, as measured by the subjective report and the proprioceptive drift, are associated with structural brain differences in terms of cortical thickness in 67 healthy young adults. Matuz-Budai et al. found that individual differences measured by the subjective report of body ownership are associated with the cortical thickness in the somatosensory regions, the temporoparietal junction, the intraparietal areas, and the occipitotemporal cortex, while the proprioceptive drift is linked to the premotor cortex and the anterior cingulate cortex. These results are in line with functional neuroimaging studies indicating that these areas are indeed involved in processes such as cognitive-affective perspective-taking, visual processing of the body, and the experience of body ownership and bodily awareness. Consequently, these individual differences in the sensation of body ownership are pronounced in both functional and structural differences [1)].

1)
Matuz-Budai T, Lábadi B, Kohn E, Matuz A, Zsidó AN, Inhóf O, Kállai J, Szolcsányi T, Perlaki G, Orsi G, Nagy SA, Janszky J, Darnai G. Individual differences in the experience of body ownership are related to cortical thickness. Sci Rep. 2022 Jan 17;12(1):808. doi: 10.1038/s41598-021-04720-8. PMID: 35039541.