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various cortical targets, including the primary motor cortex (M1), supplementary motor area (SMA), and le dorsolateral prefrontal cortex (DLPFC), has been reported. A er application of high-frequency (HF)-rTMS over the M1, most studies have demonstrated that PD patient's exhibit improved motor function in their hands and gait [10-12]. e HF-rTMS over the M1 suggested being increased motor-related activity in the caudate nucleus. Even so, other studies have reported no bene cial e ects of this stimulation [13]. In one study, an rTMS of 5 Hz over the SMA modestly improved motor symptoms in patients with PD [14]. Another study, which aimed to improve disturbance in mood in PD patients by applying rTMS over the DLPFC, demonstrated positive e ects

and induce lasting enhancement in cortical excitability, thus leading to clinical improvement. Strafella et al. [21] showed that applying rTMS over the M1 increased dopamine release in the nigrostriatal system. On the other hand, SMA is suggested be important in motor planning and preparatory processes in PD [22]. e studies using positron emission computerized tomography for cortical activation in PD patients with akinesia-predominant Parkinsonism suggested the involvement of hypoactive SMA and dorsal premotor areas [23]. Decreased activity in the SMA was considered to be due to less e erent feedback from the basal ganglia-thalamocortical motor loop A randomized clinical trial reported that HF-rTMS (5 Hz) over the SMA could modestly tical motol