To clarify characteristics of each human somatosensory evoked field (SEF) component following passive movement (PM), PM1, PM2, and PM3, using high spatiotemporal resolution 306-channel magnetoencephalography and varying PM range and angular velocity. We recorded SEFs following PM under three conditions [normal range-normal velocity (NN), small range-normal velocity (SN), and small range-slow velocity (SS)] with changing movement range and angular velocity in 12 participants and calculated the amplitude, equivalent current dipole (ECD) location, and the ECD strength for each component. All components were observed in six participants, whereas only PM1 and PM3 in the other six. Clear response deflections at the ipsilateral hemisphere to PM side were observed in seven participants. PM1 amplitude was larger under NN and SN conditions, and mean ECD location for PM1 was at primary motor area. PM3 amplitude was larger under SN condition and mean ECD location for PM3 under SS condition was at primary somatosensory area. PM1 amplitude was dependent on the angular velocity of PM, suggesting that PM1 reflects afferent input from muscle spindle, whereas PM3 amplitude was dependent on the duration. The ECD for PM3 was located in the primary somatosensory cortex, suggesting that PM3 reflects cutaneous input. We confirmed the hypothesis for locally distinct generators and characteristics of each SEF component [1].

1)
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