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## OP:04

**Cognition, electroencephalogram, visual-evoked potentials and peripheral nerve conduction in long-term experienced meditators: a cross-sectional comparative study**

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**Background and Objectives:** Meditation is a self-entrainment that influences neuronal plasticity. We compared electroencephalography (EEG) and visual evoked potential (VEP) wave patterns, measures of cognition and peripheral nerve conduction (NCS) parameters of long-term experienced meditators (LTEM) with meditation naive controls (MNC) to assess central and peripheral neurological effects of long-term meditation.

**Methods:** Thirty LTEM (regular practice of >3 years) were selected using a validated intake-interview. Thirty matched MNC were recruited from the community. All had a Montreal cognitive assessment (MoCA) score of >26/30. A validated Sinhala-version of the repeatable battery for the assessment of neuropsychological status (RBANS) was used to assess cognition. Using 10-20 system, EEG was recorded with one-minute eyes-closed followed by 19 minutes of meditation among LTEM while in MNC, total 20 minutes of EEG recording was in an eyes-closed relaxed state. EEG wave frequencies in both groups were analysed from six regions. Latencies for N75, P100, N141 were measured on VEP. Median and tibial nerve conduction velocities and amplitudes were recorded via NCS.

**Results:** Sum of index scores of cognitive domains were higher among LTEM (mean age 42.8; SD=4.4 years) than MNC (mean age 42.6; SD=4.4 years): immediate memory, EM=106.7±12.4SD, MNC=81.3±17.9SD (p<0.001); visuospatial, LTEM=116.2±8.9SD, MNC=78.3±14.7SD (p<0.001); language, EM=117±9.35SD, MNC=104±8.5SD (p<0.001); attention, LTEM=119.8±16.8SD, MNC=97.2±17.2SD (p<0.001); delayed memory, LTEM=112.5±10.6SD, MNC=81.5±13.7SD (p<0.001).

In EEG, significantly higher right temporal alpha activity was observed among LTEM (44.5%) at rest compared to MNC (33.9%) (p=0.005). During meditation, bilateral frontopolar predominant higher frequency wave activity was found in LTEM compared to MNC.

NCS showed significantly higher conduction velocity (LTEM 41.9m/s, MNC 33.8m/s, p<0.001) and amplitude (LTEM 6.7mV, MNC 5.6mV, p=0.007) for tibial nerve among LTEM than MNC. VEP showed significantly shorter latencies bilaterally for all 3 deflections in LTEM than MNC.

**Conclusions:** Long-term meditation enhances cognitive domains and produces significant changes in EEG frequencies, VEP and NCS.