3936404 SCEP/M : MAJOR : PHYSIOLOGY OF EXERCISE; M.Sc. (PHYSIOLOGY OF EXERCISE)
KEY WORDS : SOMATOSENSORY EVOKED POTENTIAL / REACTION TIME / ATHLETE / CONDUCTION VELOCITY

URAIWAN KANJANAPATRANUN : LOCALIZATION OF ADAPTATION SITES IN THE FASTER REACTION NEURONAL CIRCUITS OF SOME ATHLETES. THESIS ADVISORS : THYON CHENTANEZ, Ph.D., RAWIPHAN WITOONPANICH, M.D., F.R.C.P., CHATURAPORN NA NAKORN, M.D. 122 P.
ISBN : 974-662-388-5

Median motor nerve conduction velocity (MNCV), somatosensory evoked potentials (SEPs), tactile reaction time tasks and maximum tapping performance (MTP) were evaluated in 26 subjects. These subjects were divided into 3 groups. The three groups of subjects consisted of 1) 9 control subjects, 2) 8 weightlifters, and 3) 9 runners. The subjects were similar in height and age between 18-27 years old. The latencies of somatosensory evoked potential (stimulating at the right wrist) at Erb (N9), cervical vertebra 7 (N13), cortical (N20) were measured and calculated to determine the sensory central delay time (N20-13) and peripheral (N9, N13) and central (N20) sensory conduction velocity. Tactile reaction time tasks were measured and calculated to determine the overall signal speed (OASS) of various reaction neuronal circuits. This study showed that the tactile reaction time of the weightlifters group was significantly shorter than that of other groups. The latencies of the somatosensory evoked potential of N9, N13, N20 were not significantly different between the 3 groups but the sensory central delay time (N20-13) of the weightlifters group was significantly shorter than that of other groups. There were no significant differences between the 3 groups in MNCV but the latency on stimulating at the wrist of the weightlifters group was significantly longer than the other groups. The MTP of the runners group was the fastest of all the subject groups.

These results suggest that the short reaction time of the weightlifters group may be due to the adaptation in faster central conduction time but the MNCV of the weightlifters was not the fastest probably because of possible median nerve lesion at the wrist. It can be seen that the fastest MTP was in the runners group. The above data indicate that strength training may cause the adaptation in the central nervous system to be faster and consequently improve the reaction time.