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Internal Motivation Modulates Voluntary Repetitive Movements: "Ha gayret" Energy

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AIM: Studies associating maximal voluntary movement with energy use and fatigue pointed out its polyphasic nature and the presence of two critical time points that divide the movement into 3 distinct periods. Limited number of studies in the literature displayed performance discrepancy in the last period of the movement. The present study aimed to bring up a matter of the behavioral pattern of this period.
METHODS: Finger tapping data of 10s and 20s of total task duration were obtained from 27 male university students. The critical time points at which a significant performance changes occur were measured using the statistical method of "sum of squared difference at discrete points". The relations between the behavioral patterns and the total task times were evaluated by linear regression analysis.
RESULTS: Both study groups displayed polyphasic behavioral pattern and each having increased performance in the last period of the movement. The absolute onset time of the last period in each group was calculated as approximately 8s and 16s and they remained a constant proportion of approximately the last 20% of total task time.
CONCLUSION: Despite the studies suggesting a sustained plateau in performance as the symptom of central and peripheral fatigue, the increased performances we observed in the last period of the tasks were consistent with our previous studies. This performance discrepancy and the proportionally varying critical time points support the suggestion of the dynamical systems approach to generalized motor program. Besides various physical variables, emotional states originating from higher neural structures such as limbic system are also important performance modulating factor. In this preliminary study we emphasize on the impact of internal motivation that may smartly modulates the performance in unexpected time periods. We name this phenomenon as "Ha gayret" energy in Turkish that may stand for "win or die" circumstances.

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Selenium Decreases Myelin and Axonal Damage in Peripheral Nerve Injury

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AIM: Although, the neuroprotective effects of selenium are known, its effect on peripheral nerve injury has not been shown. The aim of this study was to investigate whether selenium decreases myelin and axonal damage in experimental peripheral nerve injury.
METHODS: Twenty-eight male Wistar albino rats were divided into four groups (n=7 in each group): control (C), selenium (S), injury (I), and selenium-treated injury (SI). Injury was generated by 30 second of compression via Yasargil aneurysm clip on the sciatic nerve of rats in the I and SI groups. Then, selenium was given to rats in the S and SI groups at a dose of 1.5 mg/kg by oral gavage at 1, 24, 48 and 72 h after surgery. At the end of fourth day, electrophysiological, histological, and biochemical tests were performed. One way ANOVA and post hoc Tukey tests were used for statistical analysis. P values<0.05 were considered statistically significant.
RESULTS: Nerve conduction velocity (NCV), amplitude of compound action potential, myelin thickness, average axon diameter, myelinated and unmyelinated axon number of I group were significantly lower than the C, S and SI groups (All p values<0.001 except the p value between NCV values of I and SI groups, this p value<0.05). Also, SOD activity in the red blood cells of I group was significantly lower than the C and SI groups (All p values<0.05), the serum MDA levels of I group were significantly higher than the C, S and SI groups (All p values<0.001).
CONCLUSION: The findings of this study showed that selenium decreases myelin and axonal damage on peripheral nerve injury in rats and this neuroprotective effect of selenium is at least partially mediated by