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**Title of Thesis:** Influence of Aerobic Exercise on Cognitive Function in Patients with Stroke  
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**Abstract:**

**Background:** One third of stroke patients suffered of cognitive deficits which impede recovery. **Purpose** of this study was to assess and explain from physiological point of view the efficacy of aerobic exercise on cognitive impairment of stroke patients. **Methods:** Thirty ischemic stroke patients from both sexes represented the sample of the study. Their age ranged from 40 to 60 years. The patients were assigned into two equal groups; control group (G1) and study group (G2). The control group treated by a selective physical therapy program and the study group treated by the same program in addition to aerobic exercise on bicycle for 40 min. The physical therapy program was conducted three times per week, for two months. Different domains of cognitive function (attention, memory, language, verbal fluency and visuospatial ability) were assessed by Addenbrooke's Cognitive Examination Revised test (ACER). Transcranial Doppler was used to measure blood flow velocity in MCA of both sides. Venous blood sample was analyzed to determine level of serum Brain Derived Neurotrophic Factor (BDNF). **The Results:** Before starting the treatment, there was a non-significant difference in the mean values of all variables in G1&G2. At the end of the treatment there was a non-significant change in all variables in (G1) except the verbal fluency domain of ACER test. In the study group (G2) there was a significant improvement in all domains of ACER test except the language domain. A significant increase in mean and maximum velocity in the affected MCA with lowering of pulsatility and resistance index in ipsilesional and contralesional MCA was observed. The mean value of serum BDNF level also showed significant increase \( p<0.05 \). There was a significant positive correlation between improvement in total score of ACER test, blood flow velocity and level of serum BDNF in (G2). **Conclusion:** Aerobic exercise has a positive effect in improving cognitive function in stroke patients.

**Keywords:**  
Aerobic exercise; Cognitive function; Stroke; TCD; BDNF.