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The effect of an endurance training period with cellular Anti-aging purpose on telomerase enzyme activity in cardiac tissue and peripheral blood lymphocytes in male rats

Abstract

Introduction: The purpose of this study is to evaluate effect of moderate endurance training activity on cellular antiaging process by modulation of telomerase enzyme content in cardiac tissue and peripheral blood lymphocytes in male rats.

Methods: Samples were rats provided by Pasteur Institute of Iran. They were randomly assigned into two groups each composed of 8 rats.

Results: 2 weeks were allocated for adaptation to environment and changes of biological rhythm (1st week), and familiarity with treadmill (2nd week). major protocol began after that, which includes a session of moderate daily exercise for five days per week. Exercise continued for 16 weeks while the control group were sedentary. During the 1st eight weeks speed of running on treadmill increased from 15m/min to 25m/min and time from 15 minutes to 25 minutes progressively, but intensity was unchanged during the 2nd eight weeks period. One day after and to the protocol, Samples were collected in fasting situation. the results showed that moderate endurance training

have a statistically significant effect on increasing telomerase enzyme content in cardiac tissue (P=0.004), and lymphocytes (p=0.004).

Conclusion: In Summary, results suggested that moderate, regular physical activity (60-65% VO_{max}) have an induction effect in telomerase content and length stability, which in turn lead to cellular viability improvement and genomic stability that play an anti-aging role.

Keywords: long-term exercise, aging, telomere and telomerase