TREADMILL TRAINING SLOWS THE LOSS OF EXERCISE CAPACITY IN SENESCENT RATS

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With aging there is a decline in muscle strength and aerobic capacity. Exercise training is one method that may be used to minimize this loss. This study was designed to examine the impact of treadmill training, beginning in late-middle age and continuing across a 5 mo period when muscle atrophy and functional decline markedly accelerates, on exercise tolerance and capacity. 49 Fisher 344 X Brown Norway rats aged 29 mo performed a graded exercise test on a treadmill. The graded exercise test was performed by increasing the treadmill speed by 1 m/min each min until the rat could no longer maintain the pace. 24 rats were then treadmill trained (T) for 5 mo and 25 rats were not trained (C). Rats were trained 5 days/week for 1 h for 2 mo, after which training was decreased to 4 days/week for 1 h for the remaining 3 mo. Both groups performed similarly on their initial exercise test, with a maximum velocity of, mean (SD), 11.6 (1.1) and 11.8 (1.2) m/min for C and T, respectively. After 2 mo of training the C group showed no difference in their maximum velocity, 11.7 (1.0) m/min, while the T group had improved and had a greater maximum velocity than the C group, 13.2 (2.3) m/min (p<0.05). At an age of 34 mo and 5 mo of training both groups showed declines in maximum velocity compared to their previous tests, 8.6 (1.0) for C and 10.4 (2.0) m/min for T. However, the T group still had a higher maximum velocity than the C group (p<0.05). The results of our study suggest that treadmill training is able to attenuate the loss of exercise capacity seen with age; however, it does not completely prevent it.

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