

Abstract

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L-carnitine supplementation and physical exercise restore age-associated decline in some mitochondrial functions in the rat.

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BACKGROUND: In mammals, during the aging process, an atrophy of the muscle fibers, an increase in body fat mass, and a decrease in skeletal muscle oxidative capacities occur. Compounds and activities that interact with lipid oxidative metabolism may be useful in limiting damages that occur in aging muscle.

OBJECTIVE: In this study, we evaluated the effect of L-carnitine and physical exercise on several parameters related to muscle physiology.

RESULTS AND CONCLUSIONS: We described that supplementing old rats with L-carnitine at 30 mg/kg body weight for 12 weeks (a) allowed the restoration of L-carnitine level in muscle cells, (b) restored muscle oxidative activity in the soleus, and (c) induced positive changes in body composition: a decrease in abdominal fat mass and an increase in muscle capabilities without any change in food intake. Moderate physical exercise was also effective in (a) limiting fat mass gain and (b) inducing an increase in the capacities of the soleus to oxidize fatty acids.

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