

Supplementation of l-carnitine in athletes: does it make sense?

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Studies in athletes have shown that carnitine supplementation may foster exercise performance. As reported in the majority of studies, an increase in maximal oxygen consumption and a lowering of the respiratory quotient indicate that dietary carnitine has the potential to stimulate lipid metabolism. Treatment with l-carnitine also has been shown to induce a significant postexercise decrease in plasma lactate, which is formed and used continuously under fully aerobic conditions. Data from preliminary studies have indicated that l-carnitine supplementation can attenuate the deleterious effects of hypoxic training and speed up recovery from exercise stress. Recent data have indicated that l-carnitine plays a decisive role in the prevention of cellular damage and favorably affects recovery from exercise stress. Uptake of l-carnitine by blood cells may induce at least three mechanisms: 1) stimulation of hematopoiesis, 2) a dose-dependent inhibition of collagen-induced platelet aggregation, and 3) the prevention of programmed cell death in immune cells. As recently shown, carnitine has direct effects in regulation of gene expression (i.e., carnitine-acyltransferases) and may also exert effects via modulating intracellular fatty acid concentration. Thus there is evidence for a beneficial effect of l-carnitine supplementation in training, competition, and recovery from strenuous exercise and in regenerative athletics.

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