

Original Paper

## Effect of aerobic exercise and alpha lipoic acid supplement on insulin resistance in females with type 2 diabetes

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### Abstract

**Background and Objective:** Alpha lipoic acid (ALA) is a powerful biological antioxidant which is involved in metabolism and energy production as a co-factor in mitochondrial dehydrogenase enzyme complex. This study was done to evaluate the effect of aerobic exercise and alpha lipoic acid supplement on insulin resistance in females with type 2 diabetes.

**Methods:** In this quasi-experimental study, 44 females with type 2 diabetes divided into four groups including: control, supplementation, training and supplementation + training groups. Patients of supplementation and complex (supplementation + training) groups took three 100mg ALA capsules per day for eight weeks. The training program consisted of 8 weeks and three sessions per week. In each session, the subjects warmed up for 10-15 minutes, ran on a treadmill with the intensity of 40-50% of maximum heart rate for 30 minutes and then cooled down for 5-10 minutes. Blood samples were taken after 12-14 hours fasting in two stages - the beginning and the end of the eighth week.

**Results:** Eight weeks of taking ALA supplements significantly reduced patients' insulin resistance ( $P<0.05$ ). Eight weeks of running on a treadmill with an intensity of 40-50% of maximum heart rate non-significantly reduced insulin resistance in the training group compared to the controls. In the supplementation + training group a significant reduction of insulin resistance was observed ( $P<0.05$ ).

**Conclusion:** Alpha lipoic acid supplementation reduces insulin and insulin resistance. While, reduction in fasting blood glucose level causes reduction in insulin resistance in the combination of supplementation and training.

**Keywords:** Type 2 diabetic, Alpha lipoic acid, Exercise, Insulin

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Received 18 May 2014

Revised 30 Nov 2014

Accepted 31 Dec 2014