SIGNIFICANT IMPACT OF ECCENTRIC ENDURANCE EXERCISE ON LIVER ENZYMES IN OVERWEIGHT AND OBESE INDIVIDUALS

Poster Contributions
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Background: Elevated liver enzymes are highly prevalent in overweight and obese patients, reflect the presence of non-alcoholic fatty liver disease, and are associated with an increased risk of diabetes and cardiovascular events. Liver enzymes can be lowered by physical exercise, but many overweight patients are not willing or not able to engage in strenuous exercise regimens. Eccentric endurance exercise (e.g. hiking downwards) is less strenuous than concentric exercise (e.g. hiking upwards) but its effects on liver enzymes are unknown.

Methods: We allocated 42 overweight and obese sedentary individuals to an exercise intervention program, consisting of hiking downwards a predefined route in the Austrian Alps over two months. For the opposite way, a cable car was used where compliance was recorded electronically. The difference in altitude was 540 metres; the distance was covered three to five times a week. A matched group of 12 individuals served as a control group. Metabolic profiles were obtained at baseline and after the two months period.

Results: Compared to baseline, 8 weeks of eccentric endurance exercise significantly lowered serum alanine aminotransferase (ALT; 36±23 vs. 31±18 U/l; p<0.001), the ALT / aspartate aminotransferase (AST) ratio (1.22±0.41 vs. 1.02±0.33; p<0.001), and serum gamma-glutamyl transferase (56±98 vs. 44±65 U/l; p=0.005), whereas these parameters did not change significantly in the control group (p=0.261, p=0.272, and p=0.644, respectively). Eccentric enddurance exercise was well tolerated and there were no serious adverse events.

Conclusions: We conclude that eccentric exercise is a promising new exercise modality which significantly lowers liver enzymes in overweight and obese individuals and therefore is of interest as a therapeutic intervention in non-alcoholic fatty liver disease patients.