Letters to the Editor

Beneficial Effects of a Mild Exercise Programme on Hypertriglyceridaemia, Glucose Tolerance and Hyperinsulinaemia in Obese Patients

Dear Sir,

A recent article by Becker-Zimmerman et al. has shown that increased physical activity partially prevented the development of hypertriglyceridaemia, glucose intolerance, and hyperinsulinaemia in Zucker rats [1]. In view of this finding, I have examined the changes in serum lipid concentrations that occurred during a study in obese patients designed to investigate the effect of changes in physical activity on insulin receptors. Data were obtained from five women and two men (aged 19 to 53 years) who were at least 100% above ideal body weight. As a group, the patients had glucose intolerance, hyperinsulinaemia, and hypertriglyceridaemia, although none were diabetic according to the American Diabetes Association criteria. The patients were hospitalized and given a weight-maintaining diet consisting of 45% carbohydrate, 20% protein, and 35% fat. For the first 4 days, the patients' physical activity was limited to reading and watching television in their room. This restriction of physical activity was associated with a $21 \pm 8\%$ (mean $\pm$ SEM) rise in fasting triglyceride levels (Table 1), and higher levels of glucose and insulin after an oral glucose load. For the next 7 days, the patients were required to walk 5–7 km/day over a period of 60–90 min. This increase in physical activity was associated with a $24 \pm 9\%$ fall in fasting triglyceride levels (Table 1), as well as improvement in glucose tolerance and hyperinsulinaemia. Fasting serum cholesterol concentrations remained constant throughout the study. Details of the insulin receptor studies and data on glucose and insulin levels were presented at the recent EASD meeting in Budapest [2] and have recently been published in complete form [3].

Several studies have shown that physical training improves hypertriglyceridaemia, glucose tolerance, and hyperinsulinaemia [4]. My study shows that these changes can be brought about by very modest

changes in physical activity and are manifested after only a few days. These results suggest that the sedentary life style of many obese patients can account, in part, for some of their metabolic abnormalities [5]. To the extent that hypertriglyceridaemia, glucose intolerance, and hyperinsulinaemia represent risk factors for the development of cardiovascular disease [6], a mild walking programme would probably be beneficial.

Yours Sincerely

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References

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Table 1. Effects of changes in physical activity on serum triglycerides

Day of Study	0	4	11
Activity	Admission	Sedentary	Active
Serum triglyceride (mmol/l)	1.40 ± 0.35	1.70 ± 0.41	1.29 ± 0.30
change (mmol/l)		$+0.30 \pm 0.11$	-0.41 ± 0.15
P value by Student's t-test		<0.05	<0.05

Results expressed as mean $\pm$ SEM

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