

Cardiovascular complications of type 2 diabetes associated with levels of physical activity

November 13 2013

The risk of cardiovascular complications in people with type 2 diabetes is directly related to the frequency and duration of physical exercise, according to results of a large follow-up study reported today on World Diabetes Day.¹ Notably, those with low levels of physical activity had a 70% greater risk of cardiovascular death than those with higher levels.

Studies have shown indisputably that those diagnosed with type 2 [diabetes](#) are up to five times more likely to develop heart disease or stroke than healthy subjects in the general population. The risks for developing the disease have been clearly identified: age, family history and obesity, which is why the first-line treatments are a healthy diet, weight loss and regular exercise.

Studies have also consistently shown that [physical activity](#) is directly related to the risk of cardiovascular disease and mortality in all population groups. For example, a 2007 study from the National Institutes of Health in the USA found that recommendations for moderate activity (at least 30 minutes on most days of the week) or vigorous exercise (at least 20 minutes three times per week) was associated with a 27% and 32% overall decreased mortality risk, respectively.²

Now, on World Diabetes Day, a new follow-up study from a large Swedish cohort of subjects specifically with type 2 diabetes similarly

shows that those who engage in low levels of physical activity are at a "considerably" greater risk of cardiovascular disease and death than those who exercise at higher levels.

The study is reported today in the *European Journal of Preventive Cardiology*.

Low level activity was defined in the study as never or once or twice a week exercise for 30 minutes, while high level activity was defined as three or more times a week. The cohort comprised a total of 15,462 subjects (6963 doing low level activity and 8499 high level) with a mean age of 60 years from the Swedish National Diabetes Register; they were followed for five years or until a first cardiovascular event or death.

Results showed that those in the low level activity group had a 25% greater risk of coronary and cardiovascular events than those in the higher activity group, and a 70% greater risk of a fatal cardiovascular event. The results were calculated as statistically significant, and were maintained when controlled for age, gender, diabetes [duration](#), type of hypoglycaemic treatment and smoking.

Further sub-group analysis similarly found "statistically compelling" hazard estimates. For example, those with both baseline and final (five-year) low physical activity levels had considerably higher risk estimates (of 70%) for coronary and [cardiovascular disease](#) and mortality than all other study subjects (including those who raised their exercise levels from baseline). Thus, stepping up the duration and [frequency](#) of exercise following a diagnosis of type 2 diabetes will lower the risk of [cardiovascular complications](#) and death; remaining inactive will maximise the risk.

"Regular physical activity is an important part of the diabetes management plan and these findings underline the importance of

implementing regular physical activity as part of lifestyle measures," say the investigators.

Commenting on the results, the study's first author Dr Björn Zethelius from the University of Uppsala in Sweden said: "The message from this study is clear. Avoid a sedentary lifestyle. Engage in physical activity. Alongside diet, these are the cornerstone of type 2 diabetes treatment. If you are presently on a low level of physical activity, do more."

Dr Zethelius added that increased physical activity among those with type 2 diabetes has important public health implications, simply because of the increasing prevalence of the disease.

The results from the study, he said, have "high validity" because they were obtained from nationwide registers with wide coverage and real-life data from [type 2 diabetes](#) patients.

More information: 1. Zethelius B, Gudbjörnsdóttir S, Eliasson B, et al. Level of physical activity associated with risk of cardiovascular diseases and mortality in patients with type-2 diabetes: report from the Swedish National Diabetes Register. *Eur J Prevent Cardiol* 2013; [DOI: 10.1177/2047487313510893](#).

2. Leitzmann MF, Park Y, Blair A, et al. Physical activity recommendations and decreased risk of mortality. *Arch Intern Med* 2007; 167: 2453.

Provided by European Society of Cardiology

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