

【Original Article】

Interaction of Drinking Habits and Cardiorespiratory Fitness on the Incidence of Type 2 Diabetes: A Cohort Study of Japanese Men

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Abstract

Objective: Several studies have shown that heavy alcohol consumption and low cardiorespiratory fitness are risk factors of type 2 diabetes. However, there is no cohort study that has assessed the interaction between cardiorespiratory fitness and drinking habits on the incidence of type 2 diabetes. We investigated the joint effect of drinking habits and cardiorespiratory fitness on the incidence of type 2 diabetes among Japanese men.

Methods: We evaluated the drinking habits and cardiorespiratory fitness (CRF) on the incidence of type 2 diabetes in 4,745 (Age: 20-40 yr) nondiabetic Japanese men who were given a submaximal exercise test, a medical examination, and questionnaires on their health habits in 1985. CRF was measured using a cycle ergometer test, and the men were assigned to Low, Moderate, and High CRF categories based on tertiles of the CRF distribution. Also, the men were assigned to Low Drinking (Non or Not-daily), Moderate Drinking (under 45 g/day), and Heavy Drinking (over 45 g/day) categories.

Results: During a 14 year follow-up, 280 men developed type 2 diabetes. Relative risks and 95% confidence intervals for the incidence of type 2 diabetes were obtained using the Cox proportional hazards model while adjusting for age, body mass index, systolic blood pressure, family history of diabetes, and smoking habits. Using the Low CRF & Heavy Drinking group as reference, the relative risks and 95% confidence intervals were 0.16 (0.05-0.50) for the High CRF & Low-Drinking group, 0.50 (0.26-0.94) for the Low CRF & Low-Drinking group, and 0.82 (0.30-2.27) for the High CRF & Heavy Drinking group, respectively.

Conclusion: These results suggest that there is a strong interaction effect of cardiorespiratory fitness and drinking habits on the incidence of type 2 diabetes. Health care professionals should encourage physical activity and low-level, or abstaining from, drinking.

Key words: exercise test, maximal oxygen uptake, epidemiology, relative risk, interaction

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