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Modulation of physical activity, adiposity, diet composition and cardiovascular risk factors in type 2 diabetic patients

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Objectives: This study aimed to investigate the impact of physical activity, body adiposity and diet composition on cardiovascular risk in patients with type 2 diabetes (T2D).

Methods: Sixty-five adolescents with T2D (age range: 45-75 years; M/F: 33/32) were enrolled. Physical (height, weight, waist circumference, bioelectrical impedance analysis) and biochemical (HbA1c, lipid profile) parameters were recorded. Subjects were instructed to wear an activity monitor (SenseWear Xiaomi band) for 3 consecutive days, including a weekend day and to fill out a weighed dietary record for the same days. Regression models, using Triglyceride-to-HDL cholesterol ratio [(a gross index of cardiovascular risk (CVR)] as the dependent variable and fat mass (FM) %, lipid-to-carbohydrate intake ratio and physical activity (h/day) as independent ones, were calculated.

Results: Triglyceride-to-HDL cholesterol ratio was significantly associated with adiposity (FM%; r = 0.273; P = 0.028), lipid-tocarbohydrate intake ratio (r = 0.258; P = 0.038), the amount (h/day;r = -0.285; P = 0.022) and intensity [expressed as metabolic equivalent (METs), kcal/kg/h; r = -0.283; P = 0.022] of physical activity. Triglyceride-to-HDL cholesterol ratio was not associated with HbA1c (mmol/mol) (r=0.030, P=0.81). Multiple regression analysis showed that diet composition (lipid-to-carbohydrate intake ratio) and physical activity duration contributed to explaining the inter-individual variability of Triglyceride-to-HDL cholesterol ratio (R2 = 0.152; P < 0.05), independently from gender and the level of adiposity.

Conclusions: Intervention to reduce cardiovascular risk in patients with T2D could take advantage from regular physical activity and adequate diet composition.