

The Effect of Vitamin D Supplements and Aerobic Exercise on Hunger and Serum Insulin Levels in Adolescents With Metabolic Syndrome

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Abstract : Metabolic syndrome is defined as having at least three of the five metabolic risk factors, including abdominal obesity, high blood pressure, high triglycerides, low HDL, and insulin resistance. Lifestyle changes towards reducing physical activity, unhealthy eating habits Especially the high-fat and high-carbohydrate diet is directly related to metabolic syndrome, and due to the epidemic of overweight and sedentary life, metabolic syndrome is a serious problem worldwide. On the other hand, vitamin D deficiency is considered as one of the most common problems in the world, which is related to the dysfunction of beta cells and insulin resistance, and therefore, vitamin D deficiency is considered as a factor in the occurrence of metabolic syndrome. 40 subjects (age: 16.12 ± 4.4 years and body mass index 25.61 ± 4.4 kg/m²) were randomly assigned to groups of aerobic exercise and placebo, aerobic exercise and vitamin D and placebo (no exercise) were divided. Vitamin D was taken at a dose of 50,000 units per week in a double-blind format for eight weeks, and the daily aerobic exercise program was performed for 50 to 60 minutes, three doses per week, with an intensity of 50-60% of the maximum heart rate. From one-way analysis of variance, Factorial variance analysis (2x2) repeated measurement and correlated t-test were used for data analysis. Aerobic exercise and vitamin D intake reduced all metabolic risk indicators and blood insulin ($P < 0.05$). However, the subjective feeling of hunger did not change significantly ($P < 0.05$). Regarding waist circumference and blood glucose, the effect of exercise combined with vitamin D consumption was greater than the corresponding effect in the vitamin D group ($P < 0.05$). Aerobic exercises and vitamin D intake are safe and effective for improving cardiometabolic health, Imam adds vitamin D to the exercise program has more benefits for weight and blood sugar control, which suggests prescribing it for patients with metabolic syndrome.

Keywords : vitamin D, aerobic exercise, metabolic control, adolescents

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