

The effects of combined exercise programs along with whey protein and vitamin D supplementation on insulin resistance and some factors related the health of women with type 2 diabetes

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Objective: The main purpose of this study is the effects of combined exercise programs along with whey protein and vitamin D supplementation on insulin resistance and some factors related the health of women with type 2 diabetes

Methodology: In this survey 30 women with type 2 diabetes average age $54/93 \pm 4/1$ were recruited Khomam Health center to participate in this examination. 3 groups of 10 subjects including combined exercise and supplementation, supplementation and control were randomly allocated. Physical exercise were done 3 times a week, each session 45-60 minutes, for 8 weeks. In the intervention groups, subjects took 2000 units of vitamin D along with 20 gr whey protein powder with 150 ml water before breakfast every day while in exercise group with supplementation, this amount was taken 2 hours after work out every day. In order to measure the patients' fasting insulin and glucose, glycosylated hemoglobin and lipids profile, a fasting blood test was taken. For conveying the patients' body composition, their height, weight, waist to hip ratio (WHR), body fat percent(\diamond), lean body mass (LBM) and also resting blood pressure were measured and recorded. Moreover, the quality of life questionnaire SF36 was used to convey the quality of life. The data were analyzed with kolmogorov-smirnov test, correlative t and one way ANOVA. **Results:** the results of this study showed that supplementation with whey protein and vitamin D caused significant increase in body mass index (BMI) ($p=0/004$), WHR ($p=0/017$), \diamond ($p=0/024$) and in other groups there were not any remarkable changes ($p>0/05$). LBM decreased but this decrease was unremarkable. FBS decreased in all three groups which only in the

combined exercise group with supplementation was significant ($p=0/045$). The triglyceride (TG) level noticeably decreased in the supplementation group ($p=0/012$). There was significant difference in high density lipoprotein (HDL) level between three groups ($p=0/032$). The HOMA, total cholesterol (TC), low density lipoprotein (LDL), HDL and resting blood pressure improved in some way, but it wasn't significant ($p>0/05$). The average quality of life significantly increased in both combined exercise along with supplementation group ($p=0/001$) and supplementation group ($p=0/038$).
Conclusion: Combined exercise along supplementation with whey protein and vitamin D could moderately improve the glycemic control and lipid profile levels in woman with type 2 diabetes and caused remarkable increase in quality of their lifes.

Keywords : Type 2 diabet- glycemic control-lipids profile- quality of life- body composition.

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