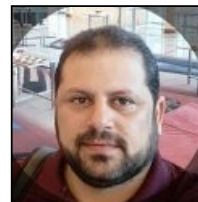


## Exercise has been shown to reduce the pathological changes, therefore reducing the risk of developing Type2 diabetes mellitus and its complications



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### Abstract

**Introduction:** Type2 diabetes mellitus (T2DM) is allied with pathological variations in physiological and immunological parameters.

**Aim:** To observe the acute and chronic effects of combined cardiovascular exercise (CE) and resistance exercise (RE) on immunological and physiological parameters in a type 2 diabetic (T2D) and a non-diabetic (ND).

**Methods:** Participants attended exercise sessions twice weekly for 10 weeks as following. RE= Three sets of RE's-each set consisted of five weight lifting exercises CE= 20 minutes on a stationary bike baseline measurements: Glucose tolerance, glycated haemoglobin (HbA1c), lipid profile, resting heart rate, lung capacity, waist circumference, Body Mass Index (BMI), levels of immunological markers; adiponectin, cystatin C and C-reactive protein (CRP). Acute effect of exercise: Participants' glucose tolerance, adiponectin, cystatin C and CRP levels were measured after a single exercise session. Chronic effect of exercise: Baseline measurements were repeated after. Results of acute exercise: Adiponectin levels increased in both the T2D (+59.4%) and the ND (+34.6%). Chronic exercise: Adiponectin levels increased in the T2D (+22.3%) but decreased in the ND (-8.3%). This may explain the greater increase in glucose tolerance seen in the T2DM. Levels of adiponectin were still higher in the ND after chronic exercise. Chronic exercise decreased HbA1c. HbA1c is haemoglobin which is bound to glucose. When blood glucose levels are poorly controlled, more glucose is available to bind to haemoglobin, resulting in a larger HbA1c value.

**Conclusion:** Acute and chronic exercise results in different changes to physiological and immunological parameters. Acute exercise reduces glucose tolerance but increases adiponectin levels. Chronic exercise improves physiological and anthropometric parameters, with greater improvements observed in T2DM. Combined exercise can prevent or reverse pathological changes, therefore reducing the risk of developing T2DM and its complications.

### Biography

Mohammad Al Hassan is working as an Assistant Director of Pharmacy for inpatient services at Prince Sultan Military Medical City, Saudi Arabia.

### Publications

Seismic upgrade of interior beam-column subassemblages with high-performance fiber-reinforced concrete jackets.

Low-cycle fatigue testing of high-performance concrete bonded overlay-bridge deck slab systems.

High-performance plain and fibrous latex-modified and microsilica concrete overlays

Influence of synthetic fibers on the shear behavior of lightweight concrete beams.

Impact resistance of polypropylene fiber reinforced concrete two-way slabs.



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