EXERCISE INTERVENTION IN TYPE 2 DIABETES MELLITUS
IMPACT ON CARDIAC DIASTOLIC FUNCTION

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Type 2 diabetes mellitus (T2DM) is a risk factor for developing heart failure with preserved ejection fraction (HFpEF).

There is no specific evidence-based therapy for HFpEF. This study aimed to assess whether an exercise intervention could improve the diastolic function and glycemic control in T2DM patients.

The impact of exercise training in a fasted or fed state was also compared, because training in a fasted state would push the major cardiac fuel towards fatty acids instead of more glucose use as in a fed state.

A randomised training study was conducted in a group of 22 male T2DM patients (age 63±8 years; HbA1c 7.4±1.9 %).

Subjects were randomly assigned to exercise training in a fed state (n=11) or exercise training in a fasted state (n=11).

The exercise intervention consisted of 3 supervised endurance exercise sessions per week, for 3 months (for a total duration of 45 min/session, at medium-intensity (60% of baseline VO2peak reserve), without strength training).

Before and after the exercise intervention a transthoracic echocardiography was performed and the patients’ blood HbA1c and glucose concentrations were measured.

We combined the change in E/A ratio with the change of other echographic parameters to determine whether it improved or not, by assigning the change a positive or negative value.

A significant improvement in blood glucose and HbA1c concentrations was noticed in both subgroups: HbA1c was lowered by 0.22% in total group (p=0.002), but without differences between groups (p>0.10).

At entry of intervention 55% (12/22) of T2DM patients displayed a diastolic dysfunction, grade I or II.

No significant improvement was seen in their class of diastolic dysfunction after exercise intervention.

As result of exercise intervention, there was a significant improvement in E/A ratio (parameter of cardiac diastolic cardiac function) in the fasted group (p=0.03), but not in the fed group (p=0.64).

Results:

CONCLUSION:

Next to reductions in blood HbA1c concentrations exercise training in a fasted state, but not in a fed state, leads to improvements in the echocardiographic E/A ratio (a diastolic parameter) in patients with type 2 diabetes.