EXERCISE INTERVENTION IN TYPE 2 DIABETES MELLITUS

IMPACT ON CARDIAC DIASTOLIC FUNCTION

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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.

BACKGROUND

- **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.

METHODS

- 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 VO_{2peak} reserve), without strength training).
- **Before and after** the exercise intervention a **transthoracic echography** 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.

RESULTS

- 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).
- 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).

No conflict of interest - Contact: Dominique.hansen@uhasselt.be