



## Effects of Lifestyle Intervention on Myocardial Function in Patients with Type 2 Diabetes



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## The Diabetes Lifestyle Intervention Study

- Randomised control trial
- 3 year lifestyle intervention in patients with T2DM
- Stage 1: (Gym Based)
  - Individualised exercise training (4 weeks)
- Stage 2: (Home Based)
  - Individualised training with telephone exercise counselling (3 years)
  - Dietary intervention with monthly dietary reviews

## Research Question


What is the effect of a 1 year predominantly home-based lifestyle intervention with telephone counselling on myocardial function in patients with type 2 diabetes?






## Methods

- Two Groups

1. Lifestyle Intervention (n=88)
  - Exercise Component
  - Dietary Component
2. Control (n=88)
  - Usual Care









## Methods

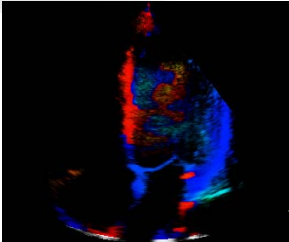
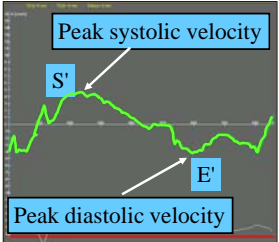
Pre and post intervention testing

- Myocardial & CV function
  - Systolic tissue velocity (S')
  - Diastolic tissue velocity (E')
  - Myocardial strain
  - Myocardial strain rate
  - Blood pressure (rest & peak)
  - HR (rest and peak)
- Metabolic function
  - HbA<sub>1c</sub>
  - Fasting Glucose
  - Fasting Insulin
  - BMI & Waist/Hip ratio
  - % Body fat
  - Blood lipid profile
- Functional capacity
  - VO<sub>2max</sub> (kg/ml/min)
  - 6 minute walk
- Physical Activity
  - Active Australia survey



## Myocardial Function Tissue Velocities - Tissue Doppler

# 1. Intervention Effects

CCRE  
Cardiovascular Disease & Metabolic Disorders

- Hypothesised that a 1 year lifestyle intervention would:
  - ↑ Myocardial function
  - ↑ Glycaemic control
  - ↓ Waist circumference
  - ↑ Cardiorespiratory fitness

# 1. Intervention Effects

CCRE  
Cardiovascular Disease & Metabolic Disorders

**E' Tissue Velocity**

Change in E' (cm/sec)

† p<0.05 within Groups      \* p<0.05 between Groups

□ Intervention      ■ Control

# Exercise Adherence

CCRE  
Cardiovascular Disease & Metabolic Disorders

min/week

Walking

Vigorous

Moderate

Baseline      1 Month      1 Year

— Intervention      - - - Control

† significant group × time effect (p<0.01) \* significant increase from baseline (p<0.05)  
\*\* significant decrease from one month (p<0.05) ‡ significantly less than one month intervention (p<0.01)

# Accounting for Adherence

	Change in E'			
	Intervention		Control	
Group	β	p	β	p
Group	0 <sup>a</sup>	.	0.213	0.15
Δ Moderate	< -0.01	0.08	< -0.01	0.08
Δ Vigorous	< -0.01	0.47	< -0.01	0.47
Group × Δ Mod	0 <sup>a</sup>	.	< -0.01	0.95
Group × Δ Vig	0 <sup>a</sup>	.	< -0.01	0.67
<b>Group × Δ Mod × Δ Vig</b>	<b>-1.05×10<sup>-5</sup></b>	<b>&lt;0.001</b>	<b>-5.72×10<sup>-6</sup></b>	<b>0.317</b>

Analysis, performed by multiple linear regression ANCOVA modelling.  
<sup>a</sup> This parameter is set to zero because it is redundant.  
 Δ = change in type of activity from baseline to one year.  
 x = interaction

# 1. Intervention Effects

CCRE  
Cardiovascular Disease & Metabolic Disorders

- 1 year lifestyle intervention did:
  - ↑ myocardial function

in intervention patients that had the greatest increases in both moderate and vigorous activity

\* p<0.05 between Groups

□ Intervention      ■ Control

# 1. Intervention Effects

CCRE  
Cardiovascular Disease & Metabolic Disorders

- The intervention also improved:
  - Glycaemic control
  - Waist circumference
  - Cardiorespiratory fitness

\* p<0.05 between Groups

□ Intervention      ■ Control

