

# Finding the Optimal Resistance Training Exercise for type 2 diabetes

<b>Submission date</b> 14/01/2010	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered
		<input type="checkbox"/> Protocol
<b>Registration date</b> 21/06/2010	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan
		<input type="checkbox"/> Results
<b>Last Edited</b> 21/06/2010	<b>Condition category</b> Nutritional, Metabolic, Endocrine	<input type="checkbox"/> Individual participant data
		<input type="checkbox"/> Record updated in last year

**Plain English summary of protocol**  
Not provided at time of registration

## Contact information

**Type(s)**  
Scientific

**Contact name**  
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## Additional identifiers

**EudraCT/CTIS number**

**IRAS number**

**ClinicalTrials.gov number**

**Secondary identifying numbers**  
#19581

## Study information

**Scientific Title**

Finding the optimal volume and intensity of resistance training exercise for type 2 diabetes: a randomised controlled trial

**Acronym**

The FORTE Study

**Study objectives**

A higher intensity, hypertrophic resistance training protocol added to aerobic training would lead to more marked improvements to glycaemic control and cardiovascular risk factors compared to lower intensity endurance training.

**Ethics approval required**

Old ethics approval format

**Ethics approval(s)**

University of Toronto Research Ethics Board (REB) approved in February 2006 (ref: 19581)

**Study design**

Randomised controlled trial

**Primary study design**

Interventional

**Secondary study design**

Randomised controlled trial

**Study setting(s)**

Hospital

**Study type(s)**

Quality of life

**Participant information sheet**

Not available in web format, please use the contact details below to request a patient information sheet

**Health condition(s) or problem(s) studied**

Type 2 diabetes

**Interventions**

Six months of aerobic and resistance training:

1. Aerobic training and minimal resistance training (usual care)
2. Aerobic training and high intensity resistance training
3. Aerobic training and low intensity resistance training

The intervention for all groups was 6 months. Following completion of the program, patients will not be followed-up.

**Intervention Type**

Other

**Phase**

Not Applicable

**Primary outcome measure**

Measured at baseline and 6 months:

1. HbA1c
2. Maximal aerobic power (VO2 max)

**Secondary outcome measures**

Measured at baseline and 6 months:

1. Fasting glucose
2. Insulin
3. Proinsulin
4. Blood lipid profile
5. Body composition (dual energy x-ray absorptiometry [DEXA])
6. Cytokines (interleukin-6 [IL-6], interleukin-1B [IL-1B], c-reactive protein [CRP])
7. Adipokines (tumour necrotising factor-alpha [TNF-alpha], adiponectin, leptin, leptin receptor)
8. Depressive mood (Center for Epidemiologic Studies Depression Scale [CESD])
9. Quality of life (Diabetes Quality of Life Clinical Trial Questionnaire [DQLQ])
10. Nutrition intake

**Overall study start date**

01/05/2006

**Completion date**

31/03/2009

**Eligibility****Key inclusion criteria**

1. Adults aged greater than 18 years, either sex
2. Type 2 Diabetes
3. Participating in the Diabetes Exercise and Healthy Lifestyle Program of the Toronto Rehabilitation Institute

**Participant type(s)**

Patient

**Age group**

Adult

**Lower age limit**

18 Years

**Sex**

Both

**Target number of participants**

120

**Key exclusion criteria**

1. History of diagnosed cardiovascular disease
2. Contraindications to high intensity exercise participation:
  - 2.1. Glaucoma
  - 2.2. Retinopathy
  - 2.3. Musculoskeletal limitations
  - 2.4. Kidney disease
  - 2.5. Balance impairments

**Date of first enrolment**

01/05/2006

**Date of final enrolment**

31/03/2009

**Locations****Countries of recruitment**

Canada

**Study participating centre**

**Toronto Rehabilitation Institute**

Toronto

Canada

M4G 1R7

**Sponsor information****Organisation**

Toronto Rehabilitation Institute (Canada)

**Sponsor details**

c/o Paul Oh, MD

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**Sponsor type**

Research organisation

**Website**

<http://www.torontorehab.on.ca/>

**ROR**

<https://ror.org/00mxe0976>

## **Funder(s)**

### **Funder type**

Research organisation

### **Funder Name**

Toronto Rehabilitation Institute (Canada)

### **Alternative Name(s)**

Toronto Rehab, UHN Toronto Rehabilitation Institute, TRI

### **Funding Body Type**

Private sector organisation

### **Funding Body Subtype**

Other non-profit organizations

### **Location**

Canada

### **Funder Name**

Human Physiology Performance Laboratory (Canada)

### **Funder Name**

Canadian Diabetes Association (Canada)

## **Results and Publications**

### **Publication and dissemination plan**

Not provided at time of registration

### **Intention to publish date**

### **Individual participant data (IPD) sharing plan**

### **IPD sharing plan summary**

Not provided at time of registration

