

# The effects of different community fitness centre based interventions in sedentary adults

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<b>Registration date</b> 05/03/2018	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
<b>Last Edited</b> 15/02/2019	<b>Condition category</b> Other	<input type="checkbox"/> Individual participant data

## Plain English summary of protocol

### Background and study aims

Loss of lean body mass and strength are key public health concerns. Aerobic physical activity as currently prescribed in guidelines is relatively ineffective for improving these outcomes. Resistance training however is known to improve both. There is relatively little research examining community-based resistance training interventions for public health. The aim of this study is to examine the effects of community fitness centre based exercise interventions involving resistance training using either a structured or unstructured approach, or physical activity counselling, upon lean body mass and strength.

### Who can participate?

Sedentary adults (not meeting physical activity recommendations) currently not taking any medication for cardiovascular (heart) disease

### What does the study involve?

Participants are offered one of two pathways. Those choosing the fitness centre pathway are randomly allocated to one of two interventions: a structured exercise programme or free /unstructured exercise. Those choosing a non-fitness centre pathway are randomly allocated to either physical activity counselling (PAC), or to just participate in the measurement sessions. At the start of the study and after the interventions (48 weeks) participants have their lean body mass and strength assessed.

### What are the possible benefits and risks of participating?

Participants benefit from being able to take part in either community fitness centre interventions or physical activity counselling for 48 weeks, which may result in improvements in lean body mass and strength. The potential risks include injury or other complications as a result of the exercise program.

### Where is the study run from?

University of Greenwich (UK)

### When is the study starting and how long is it expected to run for?

January 2013 to April 2015

Who is funding the study?  
University of Greenwich (UK) and ukactive (UK)

Who is the main contact?

1. Dr Steven Mann
2. Dr James Steele

## Contact information

### Type(s)

Public

### Contact name

Dr Steven Mann

### Contact details

Waters Edge  
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### Type(s)

Scientific

### Contact name

Dr James Steele

### Contact details

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## Additional identifiers

### Protocol serial number

CommunityFitnessCentreStudy

## Study information

### Scientific Title

The effects of 48 week structured exercise, unstructured exercise, physical activity counselling, or measurement only control on strength and body composition in sedentary adults

### Study objectives

A structured exercise intervention will result in greater strength and body composition improvements compared with either unstructured exercise, physical activity counselling, or measurement only control.

### **Ethics approval required**

Old ethics approval format

### **Ethics approval(s)**

University of Greenwich, 10/07/2012, ref: UREC/11/12.5.6.11

### **Study design**

Semi-randomised trial

### **Primary study design**

Interventional

### **Study type(s)**

Other

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

Physical activity and exercise

### **Interventions**

The population (P) was sedentary adults. The interventions (I) included two fitness centre interventions and a physical activity counselling intervention both described below, and the comparator (C) was a measurement only control group. Outcomes (O) included body composition and strength.

A semi-randomised trial design was utilised. Participants were initially offered one of two pathways. Those choosing the fitness centre pathway were randomised to one of two interventions; a structured exercise programme (STRUC), or free/unstructured exercise (FREE). Those choosing a non-fitness centre pathway were randomised to either physical activity counselling (PAC), or to a measurement only control condition (CONT) including two health checks. Interventions were delivered over 48 weeks with measures at 0 (baseline) and 48 weeks.

STRUC had access to all fitness centre facilities and received an individualised and structured RT programme. This programme was based on guidelines published by the American College of Sports Medicine (ACSM). RT loads were based upon calculations of one-repetition maximum (1RM) derived from baseline data (see below). As the studies were conducted in ecologically valid community settings there was some flexibility in the exercises utilised based on participant preferences and any orthopaedic issues/injuries. However, all participants at a minimum followed a full body routine consisting of an upper body multi-joint push (e.g. chest press, overhead press, or dip), upper body multi-joint pull (e.g. pulldown, or seated row), and lower body multi-joint push (e.g. leg press). Exercise professionals met STRUC participants once a month to discuss their progress.

FREE participants had access to all fitness centre facilities but received no structured programme. Exercise professionals met with FREE participants once each month to discuss progress.

PAC participants met exercise professionals once each month for counselling sessions structured around the model proposed by Haase et al. and delivered within the fitness centre location. PAC participants did not however have access to any fitness centre exercise facilities.

CONT participants acted as the comparator group, did not receive an intervention, and did not have access to any fitness centre exercise facilities. Whilst CONT did not receive an exercise intervention, they did receive two free health screens (pre and post measurement) over the duration of the study. Exercise professionals were instructed to have no contact with CONT participants other than to arrange data collection at 0 and 48 weeks.

## **Intervention Type**

Behavioural

## **Primary outcome(s)**

Measured pre and post (48 weeks) intervention:

1. Body composition, including BF mass (kg), LBM (kg) and BF percentage (%), measured using bioelectrical-impedance (Bodystat 1500, Bodystat, Isle of Man, UK). Guidelines from the National Institute of Health Research Southampton Biomedical Research Centre were followed for body compositions assessment (<http://www.uhs.nhs.uk/Media/Southampton-Clinical-Research/Procedures/BRCProcedures/Procedure-for-bioimpedance-with-Bodystat-1500.pdf>).
2. Predicted 1RM for chest press, pull down and leg press obtained by gauging the maximal weight that could be lifted successfully for between 5 and 15 repetitions, and inputting these data into the Brzycki equation (i.e.  $\text{weight}/(1.0278-(0.0278 \times \text{No. Repetitions}))$ ). These results were collapsed into a single strength measure (the mean of the predicted 1RM for each exercise).

## **Key secondary outcome(s)**

Measured pre and post (48 weeks) intervention:

1. Maximal aerobic capacity (VO<sub>2</sub>max) predicted using the Modified Balke Protocol. Participants walked on a treadmill at between 3.6 and 5.6kph, depending on ability, for 3min. Following this, the gradient was increased by 1% each minute. Ratings of perceived exertions were recorded at 1min intervals using the OMNI1–10 scale. Oxygen consumption and heart rate were continuously monitored via direct gaseous analysis (Fitmate Pro, COSMED, Italy). Predicted VO<sub>2</sub>max was automatically extrapolated using the relationship with heart rate. The test was terminated when participants indicated perceived exertion above six (hard) and/or their heart rate reached 150 bpm.
2. Mean arterial pressure (MAP), which describes the average arterial pressure during a single cardiac cycle, incorporating both systolic and diastolic phases, but weighted towards the diastolic. Systolic (SBP) and diastolic (DBP) blood pressures (mmHg) were measured using a commercially available blood pressure monitor (Omron Healthcare, Japan). Three readings were collected and the mean value reported. MAP was estimated via the calculation  $\text{MAP} = \text{DBP} + 0.33(\text{SBP} - \text{DBP})$ .
3. Total cholesterol (TC: the sum of low-density lipoprotein (LDL) and high-density lipoprotein (HDL) cholesterol) measured via finger-prick blood analysis (Cholestech LDX, Alere, UK)

## **Completion date**

01/04/2015

## **Eligibility**

### **Key inclusion criteria**

1. Sedentary, defined as currently not meeting the physical activity recommendations of the UK Chief Medical Officer
2. Taking no medication that might impact cardiovascular risk

**Participant type(s)**

Healthy volunteer

**Healthy volunteers allowed**

No

**Age group**

Adult

**Sex**

All

**Key exclusion criteria**

1. Not classified as sedentary
2. Currently taking medication that might impact cardiovascular disease risk

**Date of first enrolment**

01/08/2013

**Date of final enrolment**

01/12/2013

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

United Kingdom

England

Scotland

**Study participating centre****Topnotch Health Club**

Unit 2

Phoenix Square

Wyncolls Rd

Colchester

United Kingdom

CO4 9AS

**Study participating centre****ESPH**

116 Lordship Lane

London  
United Kingdom  
SE22 8HD

**Study participating centre**  
**DC Leisure – Malden Centre**  
Blagdon Road  
New Malden  
United Kingdom  
KT3 4TA

**Study participating centre**  
**DC Leisure - Harbourne**  
Lordswood Road  
Harborne  
Birmingham  
United Kingdom  
B17 9QS

**Study participating centre**  
**The Shrewsbury Club**  
Sundorne Road  
Shrewsbury  
United Kingdom  
SY1 4RG

**Study participating centre**  
**Life Leisure: Avondale**  
Heathbank Road  
Cheadle Heath  
Stockport  
United Kingdom  
SK3 0UP

**Study participating centre**  
**Eze Fitness Redditch**  
17 Alcester Street  
Redditch  
United Kingdom  
B98 8AE

**Study participating centre**

**Airdrie Leisure Centre**

Motherwell Street

Airdrie

United Kingdom

ML6 7HU

**Study participating centre**

**The Essex Golf & Country Club**

Earls Colne

Colchester

United Kingdom

CO6 2NS

**Study participating centre**

**Chartham Park**

Felcourt Road

Felcourt

East Grinstead

United Kingdom

RH19 2JT

**Study participating centre**

**Adam Nicholas Eze Fitness**

E Service Road

Raynesway Spondon

Derby

United Kingdom

DE21 7BB

**Study participating centre**

**Richie Sundaram / Jermaine Ward**

15 Thomas More Square

London

United Kingdom

E1W 1YW

**Study participating centre**

**White Horse Leisure and Tennis Centre**

Audlett Drive  
Abingdon  
United Kingdom  
OX14 3PJ

**Study participating centre**

**All Seasons Leisure Centre**

United Kingdom  
PR7 1EX

**Study participating centre**

**Ravenscraig Regional Sports Facility**

O'Donnell Way  
Motherwell  
United Kingdom  
ML1 2TZ

**Study participating centre**

**Leith Victoria Leisure Centre**

Junction Place  
Edinburgh  
United Kingdom  
EH6 5JA

**Study participating centre**

**Nizels Golf & Country Club**

Nizels Lane  
Hildenborough  
United Kingdom  
TN11 8NU

**Study participating centre**

**Pent Valley Leisure Centre**

Tile Kiln Lane  
Cheriton  
Folkestone  
United Kingdom  
CT19 4PB



**Study participating centre**  
**Fitness First**  
179a Tottenham Court Road  
London  
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W1T 7PA

**Study participating centre**  
**Eze Fitness Scarborough**  
Dunslow Road  
Eastfield Business Park  
Scarborough  
United Kingdom  
YO11 3UT

**Study participating centre**  
**Pontefract Squash and Leisure Club**  
Stuart Road  
Pontefract  
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WF8 4PQ

**Study participating centre**  
**Fitness First**  
Aspects Leisure Park  
Kingswood  
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**Study participating centre**  
**DC Leisure**  
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**St James Leisure Centre**  
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United Kingdom  
DN1 3BU

## Sponsor information

### Organisation

University of Greenwich

### Organisation

ukactive

### Organisation

University of Greenwich

### ROR

<https://ror.org/00bmj0a71>

## Funder(s)

### Funder type

University/education

### Funder Name

University of Greenwich

### Alternative Name(s)

Woolwich Polytechnic, Thames Polytechnic

### Funding Body Type

Government organisation

### Funding Body Subtype

Universities (academic only)

### Location

United Kingdom

## Funder Name

ukactive

# Results and Publications

## Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study are/will be available upon request from Dr Steven Mann or Dr James Steele.

## IPD sharing plan summary

Available on request

## Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Results article</a>	results	27/03/2018		Yes	No
<a href="#">Participant information sheet</a>	Participant information sheet	11/11/2025	11/11/2025	No	Yes