

# The effect of resistance training and aerobic exercise on vascular stiffness, novel cardiovascular risk markers, aerobic capacity, muscle strength and incidence of complications in the first year of renal transplantation. A randomised controlled study

<b>Submission date</b> 31/07/2014	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered
<b>Registration date</b> 31/07/2014	<b>Overall study status</b> Completed	<input type="checkbox"/> Protocol
<b>Last Edited</b> 06/02/2017	<b>Condition category</b> Urological and Genital Diseases	<input type="checkbox"/> Statistical analysis plan
		<input checked="" type="checkbox"/> Results
		<input type="checkbox"/> Individual participant data

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

## Contact information

**Type(s)**  
Scientific

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## Additional identifiers

**Protocol serial number**  
13611

# Study information

## Scientific Title

The effect of resistance training and aerobic exercise on vascular stiffness, novel cardiovascular risk markers, aerobic capacity, muscle strength and incidence of complications in the first year of renal transplantation. A randomised controlled study

## Acronym

ExeRT Trial (EXercise in Renal Transplant Trial)

## Study objectives

Physical activity and exercise plays a beneficial role in maintaining the health in those with chronic illnesses however poor physical functioning among patients with chronic kidney disease is well-recognised. The use of modern immunosuppressant therapies have improved the life-expectancy of kidney grafts, however, risks of secondary complications such as diabetes, cardiovascular disease and obesity are an associated risk. It has been established that recipients of kidney transplants increase their physical activity level in the subsequent years after transplantation due to improved quality of life; however within that time they do not reach the level of physical activity of those of age matched healthy controls. Regular aerobic exercise helps to prevent and treat cardiovascular disease and to prevent and reverse arterial stiffening. Resistance training is also an important physical activity that can prevent or treat lifestyle-related diseases. However, high-intensity resistance training reduces arterial compliance and increases arterial stiffness, although this is not a universal finding. That is, regular aerobic exercise increases, whereas high-intensity resistance training decreases arterial compliance. This project will examine the effect and timing of aerobic exercise and resistance training exercise delivered in a 24-week supervised outpatient class setting, on vascular stiffness, aerobic capacity, functional ability, transplant outcomes and quality of life in patients who have received a kidney transplant. The project aims to provide evidence for the importance of exercise for patients that have received a kidney transplant and encourage the commissioning of physiotherapy services for this patient group.

## Ethics approval required

Old ethics approval format

## Ethics approval(s)

12/LO/1644

## Study design

Randomised; Interventional; Design type: Not specified, Treatment

## Primary study design

Interventional

## Study type(s)

Treatment

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

Topic: Renal disorders; Subtopic: Renal disorders; Disease: All Renal disorders

## Interventions

Aerobic training: AT will predominantly be on stationary exercise cycles at 80% hear rate reserve.  
Resistance Training: Resistance training will use RT machines training large muscle groups (e.g. bench press, latissimus pulldown, bicep curl, triceps pull down, leg press, knee extension, hamstring curl, calf raises). Intensity will be 80% of 1RM, building up to 3 sets of 10 reps.; Study Entry : Single Randomisation only

### **Intervention Type**

Other

### **Phase**

Not Applicable

### **Primary outcome(s)**

Pulse Wave Velocity (PWV); Timepoint(s): Baseline, 12 weeks and 12 months

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

1. CVD biomarkers - Fetuin A, TNF receptor 2, IL6, HS CRP; Timepoint(s): Baseline, 12 weeks and 12 months
2. Duke's Activity Status Index; Timepoint(s): Baseline and 12 weeks
3. Muscle strength (myometer); Timepoint(s): baseline and 12 weeks
4. Resting heart rate and blood pressure; Timepoint(s): baseline, 12 weeks and 12 months
5. Sit to stand 60; Timepoint(s): baseline and 12 weeks
6. VO2peak; Timepoint(s): baseline, 12 weeks and 12 months

### **Completion date**

31/10/2014

## **Eligibility**

### **Key inclusion criteria**

1. All patients undergoing renal transplant
2. Male or female
3. Aged >18 years
4. Written informed consent; Target Gender: Male & Female ; Lower Age Limit 18 years

### **Participant type(s)**

Patient

### **Healthy volunteers allowed**

No

### **Age group**

Adult

### **Lower age limit**

18 years

### **Sex**

All

## **Key exclusion criteria**

1. Requiring support for ambulation less than 20m
2. Vasculitis
3. Proliferative diabetic retinopathy,
4. Severe osteodystrophy
5. Uncontrolled diabetes
6. Psychiatric illness, including anxiety, mood and untreated eating disorders
7. Infection or course of antibiotics within the last month

## **Date of first enrolment**

01/03/2013

## **Date of final enrolment**

31/10/2014

## **Locations**

### **Countries of recruitment**

United Kingdom

England

### **Study participating centre**

**Denmark Hill**

London

United Kingdom

SE5 9RS

## **Sponsor information**

### **Organisation**

King's College Hospital NHS Foundation Trust (UK)

### **ROR**

<https://ror.org/01n0k5m85>

## **Funder(s)**

### **Funder type**

Government

### **Funder Name**

## Results and Publications

### Individual participant data (IPD) sharing plan

#### IPD sharing plan summary

Not provided at time of registration

#### Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Results article</a>	results	03/02/2017		Yes	No
<a href="#">HRA research summary</a>			28/06/2023	No	No