


Weightlifting shows benefits for kidney disease patients

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The importance of strength training in CKD NEW

Is combining both aerobic and strength exercise better than just doing aerobic exercise by itself in CKD?




41 CKD patients (non-dialysis)
Age ~63 years old
Stages 3b to 5
eGFR ~25 ml/min/1.73m²


Randomised into either:

- 1) Aerobic only group 
- 2) Combined group (aerobic + leg strength exercise) 


Patients exercised 3x a week for 12 weeks

Leg strength 

Aerobic group	↑ 19%
Combined group	↑ 37%

Walking distance 


Aerobic group	↑ 28m
Combined group	↑ 32m

Quadriceps (leg) muscle size 

Aerobic group	↑ 5%
Combined group	↑ 9%


In non-dialysis CKD patients, aerobic exercise can ↑ strength, fitness, and muscle size

However, by adding strength training too, patients can receive increased benefits in all these aspects



Watson, Gould, Wilkinson et al. 2018. Am J Physiol Renal Physiol
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Leicester Kidney Lifestyle Team

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Credit: University of Leicester

Lifting weights can provide significant health benefits to patients

suffering from kidney disease.

A new study by University of Leicester researchers, led by Dr Emma Watson, Dr Tom Wilkinson, and Professor Alice Smith, has shown that non-dialysis chronic [kidney disease](#) (CKD) [patients](#) who conducted both [aerobic exercise](#) and combined exercise for 12 weeks, 3 times a week experienced significant increases in strength, leg muscle size and cardiorespiratory fitness.

While positive changes were seen in patients just doing aerobic exercise - such as treadmill walking, cycling and rowing - the addition of [resistance exercise](#), such as weightlifting, led to greater increases in muscle mass (9% compared to 5%) and strength (49% compared to 17%) than aerobic exercise alone.

"There is limited research on the effects of exercise in CKD patients, and a lack of knowledge on what exercise is most beneficial in this group" says Dr Tom Wilkinson from the University of Leicester's Department of Infection, Immunity and Inflammation. "Our study shows that both aerobic exercises and strength exercises are important in CKD patients in keeping muscles strong and healthy and can be combined successfully and safely."

"For time and logistical reasons, combining both modes of exercise - aerobic and strength - in the same session would be optimal," added Dr Emma Watson.

Patients, who were recruited from outpatient clinics at Leicester's Hospitals, had a 6 week run in control period before starting the exercise programme. The researchers observed any 'natural' changes in [strength](#), fitness, and [muscle](#). No changes were seen, which meant that any changes seen after the intervention were a result of the exercise.

Patients then underwent 12 weeks of supervised aerobic based exercise (treadmill, rowing or cycling exercise) for 30 minutes, or combined training (aerobic exercise plus leg extension and leg press exercise) performed 3 times week. The researchers then analysed the potential [health benefits](#).

The sessions took place at the exercise gym in the Leicester Diabetes Centre.

One female patient, aged 80, said: "I went for my first session and I was absolutely over the moon. I loved it because it was just exercise and I thought fancy me at my age and I can do all this. I thought when I tell my grandchildren they will be absolutely delighted. I used to really like the [exercise](#) and the staff there were so supportive and explained everything to me. I was just a very happy lady."

"I have certainly noticed that my general level of fitness changed after the extra CKD and I discovered muscles that I hadn't had for a little while," added a male patient, 62 years old, who took part in the study.

More information: Emma L Watson et al, 12-weeks combined resistance and aerobic training confers greater benefits than aerobic alone in non-dialysis CKD, *American Journal of Physiology-Renal Physiology* (2018). [DOI: 10.1152/ajprenal.00012.2018](https://doi.org/10.1152/ajprenal.00012.2018)

Provided by University of Leicester

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