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May 2, 2022

Effect of Structured, Moderate Exercise on Kidney Function Decline in Sedentary Older Adults

An Ancillary Analysis of the LIFE Study Randomized Clinical Trial

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Visual
Abstract

Key Points

Question Can a moderate-intensity physical activity and exercise intervention slow the rate of decline of estimated glomerular filtration rate per cystatin C in sedentary older adults?

Findings In this ancillary analysis of a randomized clinical trial of 1199 adults aged 70 to 89 years, those randomized to the physical activity and exercise intervention had statistically significantly lower decline in estimated glomerular filtration rate per cystatin C over 2 years compared with those in the health education arm.

Meaning Clinicians should consider prescribing physical activity and moderate-intensity exercise for older adults to slow the rate of decline of kidney function.

Abstract

Importance Observational evidence suggests that higher physical activity is associated with slower kidney function decline; however, to our knowledge, no large trial has evaluated whether activity and

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Objective To evaluate whether a moderate-intensity exercise intervention can affect the rate of estimated glomerular filtration rate per cystatin C (eGFR_{CysC}) change in older adults.

Design, Setting, and Participants This ancillary analysis of the Lifestyle Interventions and Independence For Elders randomized clinical trial enrolled 1199 community-dwelling, sedentary adults aged 70 to 89 years with mobility limitations and available blood specimens. The original trial was conducted across 8 academic centers in the US from February 2010 through December 2013. Data for this study were analyzed from March 29, 2021, to February 28, 2022.

Interventions Structured, 2-year, partially supervised, moderate-intensity physical activity and exercise (strength, flexibility) intervention compared with a health education control intervention with 2-year follow-up. Physical activity was measured by step count and minutes of moderate-intensity activity using accelerometers.

Main Outcomes and Measures The primary outcome was change in eGFR_{CysC}. Rapid eGFR_{CysC} decline was defined by the high tertile threshold of 6.7%/y.

Results Among the 1199 participants in the analysis, the mean (SD) age was 78.9 (5.2) years, and 800 (66.7%) were women. At baseline, the 2 groups were well balanced by age, comorbidity, and baseline eGFR_{CysC}. The physical activity and exercise intervention resulted in statistically significantly lower decline in eGFR_{CysC} over 2 years compared with the health education arm (mean difference, 0.96 mL/min/1.73 m²; 95% CI, 0.02-1.91 mL/min/1.73 m²) and lower odds of rapid eGFR_{CysC} decline (odds ratio, 0.79; 95% CI, 0.65-0.97).

Conclusions and Relevance Results of this ancillary analysis of a randomized clinical trial showed that when compared with health education, a physical activity and exercise intervention slowed the rate of decline in eGFR_{CysC} among community-dwelling sedentary older adults. Clinicians should consider targeted recommendation of physical activity and moderate-intensity exercise for older adults as a treatment to slow decline in eGFR_{CysC}.

Trial Registration ClinicalTrials.gov Identifier: [NCT01072500](https://clinicaltrials.gov/ct2/show/study/NCT01072500)



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May 4, 2022

Creatinine based GFR

Fatih Tufan, Assoc Prof | Istanbul Aydin University, Medical Park Florya Hospital, Department of Geriatrics

I read with interest and congratulate the authors for this very important and relevant study. Creatinine based GFR estimations remain to be more commonly used in clinical practice. However the use of a cystatin C based equation is most appropriate for such studies. I wonder if the authors have any creatinine based GFR progress data? Creatinine based equations may underestimate GFR in older adults who perform regular exercise and they may overestimate GFR in sarcopenic older adults. I think the results of this study imply that cystatin C based equations may provide more accurate estimations especially in sarcopenic older ...

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