

## EXERCISE TYPE AND MORTALITY RISK IN MODERATE CHRONIC KIDNEY DISEASE (CKD): NHANES III

Neilson, J., Baird, B, Zitterkoph, J, Greene, T, and Beddhu, S

The survival benefits of physical activity type (aerobic exercise only or the combination of aerobic with resistance exercise) in moderate CKD are unknown. We examined the associations of type of exercise with mortality in non-CKD and CKD (MDRD GFR <60 ml/min/1.73m<sup>2</sup>) cohorts in the National Health and Nutrition Examination survey (NHANES) III.

A physical activity questionnaire was used to collect data on the frequency of walking a mile without stopping, running or jogging, riding a bicycle or exercise bike, swimming, aerobics, dancing, calisthenics, garden or yard work, lifting weights or other activities. Resistance exercise was defined as weight lifting or performing calisthenics. Participants were divided into three physical activity groups (No exercise, aerobic only and combination of aerobic and resistance).

Of the 20,050 NHANES participants, a sub-population of 15,926 with non-missing data was examined. 1127 had CKD. The associations of physical activity type with mortality was examined in multivariate Cox models adjusted for age, gender, race, cardiovascular disease, metabolic syndrome, systolic and diastolic blood pressures, GFR, proteinuria and frequency of physical activity in non-CKD and CKD populations (Table 1). Stata 10.0 (Stata Inc, College Station, TX) was used to analyze the data.

**Table 1 Physical activity type and mortality**

|              | Non-CKD               | CKD                   |
|--------------|-----------------------|-----------------------|
|              | Hazard Ratio (95% CI) | Hazard Ratio (95% CI) |
| No Exercise  | Reference             | Reference             |
| Aerobic Only | .63 (.46-.85)         | .59 (.44-.80)         |
| Combination  | .45 (.30-.68)         | .46 (.28-.74)         |

Aerobic exercise only group was associated with lower mortality but the combination group had the lowest mortality in both CKD and non-CKD populations.

Patients with CKD should be encouraged to perform a combination of aerobic and resistance activities.

