SUPPLEMENTAL RESULTS

Supplemental Results Table 1. Characteristics of participants in each study site.

	Missing	Seattle VA (N=158)	Harborview Med Ctr (N=169)	UMD/BVAMC (N=58)
Demographic data, No. (%)	0			
Age		65.7±11	53.4±12	70.4±8
Female		4(3)	55(33)	4(7)
Race, No. (%)	0			
White		120(76)	97(57)	22(38)
Other		38(24)	72(43)	36(62)
Current Smoking, No. (%)	10	20(13)	39(23)	3(5)
Education, No. (%)	30			
Some high school or less		6(4)	11(7)	9(16)
Completed high school		97(70)	104(66)	36(62)
Completed college		36(26)	44(27)	13(22)
Physical examination, mean ± SD				
BMI (kg/m^2)	0	31.3±6.3	31±7.8	30.5±5.8
Labs, mean ± SD				
$eGFR_{MDRD}$($ml/min/1.73m^2$)	0	38.4±16.9	43.2±19.7	38.4±10.9
$eGFR_{CKD\ epi}$ ($ml/min/1.73m^2$)	0	38.7±17.9	45.6±21.9	35.6±10.6
Creatinine (mg/dL)	0	2.2±1.7	2.1±1.4	2.1±0.6
Hemoglobin (g/dL)	16	13.0±1.9	12.7±2.1	12.7±1.7
Bicarbonate (mmole/L)	0	24±3.6	24.4±3.4	26.4±2.8
CRP (mg/dL)	29	5±8.2	5.5±7.3	4.6±7.5
Albumin (mg/dL)	0	4±0.5	3.7±0.7	3.9±0.3
Phosphate (mg/dL)	1	3.8±0.8	3.8±0.9	4±0.7
Cholesterol (mg/dL)	0	174±49.7	184±64.1	168±49.7
Urine albumin (mg/g Cr)	6	78.7 [9.5-688.7]	153.6 [12.2-731.7]	61 [9-281.4]
Prevalent Disease, No. (%)				
Diabetes	2	90(57)	85(50)	38(66)
Any CAD	0	52(33)	36(22)	11(19)
Physical Performance, mean ± SD				

Grip Strength (kg)	4	38.7±10.5	34.6±10.7	33.6±9.3
Gait speed (m/s)	63	0.9±0.2	0.9±0.3	1±0.2
Timed Up and Go (sec)	23	11.8±4.2	10.7±5.1	11.2±3.3
6 minute walk distance (m)	76	385.6±91.5	412.8±102.2	396.6±109.1

Note: values for categorical variables given as number (percent); values for continuous variables given as mean ± standard deviation or median [25^{th} – 75^{th} percentile]
Abbreviations: UMD/BVAMC – University of Maryland / Baltimore VA Medical Center.

Supplemental Results Table 2. Upper and lower extremity physical performance measures and risk of death among participants in the Seattle Kidney Study. Values adjusted for eGFR measured by Cystatin C.

Measure	Performance	No. Death/at risk	Mortality rate (per 1000 P-Yr)	Model 1 HR (95% CI)	Model 2 HR (95% CI)
Gait speed	>0.8m/s	15/210	25 (15-42)	Ref	Ref
	≤0.8m/s	19/99	79 (50-124)	3.2 (1.44-7.10)	2.52 (1.13-5.68)
	Per 0.1m/s slower			1.31 (1.12-1.53)	1.28 (1.09-1.50)
TUAG	Fast (<12s)	16/204	27 (17-45)	Ref	Ref
	Slow (≥12s)	21/101	85 (56-131)	2.48 (1.19-5.21)	2.16 (1.06-4.3)
	Per 1sec slower			1.09 (1.03-1.15)	1.09 (1.02-1.15)
6 min walk	≥350m	10/185	19 (10-35)	Ref	Ref
	<350m	13/66	81 (47-138)	4.93 (2.17-11.17)	2.92 (1.09-7.84)
	Per 50m decrease			1.25 (1.06-1.47)	1.11 (0.93-1.32)
Grip	Stronger grip	25/255	39 (27-57)	Ref	Ref
	Weak grip*	14/68	78 (46-132)	1.62 (0.84-3.11)	1.19 (0.63-2.26)
	Per 5kg decrease			1.18 (1.02-1.36)	1.00 (0.85-1.18)

Model 1: Age, sex, race, study site
Model 2: + smoking, BMI, diabetes, prevalent CAD, eGFRcysc per 10ml/min/1.73m^2
* Grip strength cut offs defined by gender and BMI specific cut-offs from the Cardiovascular Health Study

SUPPLEMENTAL METHODS:

Definition of comorbidities:

Heart failure (HF) was defined as either a history of HF, use of digoxin, or at least two out of the following three HF symptoms: dyspnea after walking less than one block, paroxysmal nocturnal dyspnea, or orthopnea. Angina was defined as a history of angina, use of an anti-anginal medication, or reported symptoms of chest pain accompanied by shortness of breath and relived by rest. A history of any coronary artery disease included prior myocardial infarction (MI), cardiac arrest, coronary artery bypass graft surgery (CABG), or percutaneous coronary intervention. Diabetes was defined by the use of an oral hypoglycemic medication, insulin, fasting blood sugar ≥126mg/dL, non-fasting blood sugar ≥200, or hemoglobin A1c ≥6.5%.

Validation of comorbidity definitions:

Comorbidities: We compared participant responses for prevalent comorbidities to diagnosis and procedure codes in the electronic medical record among a subsample of 164 VAMC study participants who had at least two primary care visits and at least 7 years of medical contact with the VAMC. Sensitivity and specificity characteristics for MI were (83%, 80%), for stroke were (77%, 94%), and for CABG or percutaneous coronary intervention were (95%, 86%), respectively.

Normative equations:

1. The previously published normative equation for the 6 minute walk (6MWD) was as follows:[1]

$6MWD_{pred} = 218 + (5.14 \times height - 5.32 \times age) - (1.80 \times weight + (51.31 \times sex))$

In this equation sex is determined as 1 for male and 0 for females and height is in centimeters and weight in kilograms.

2. Normative values for timed get up and go (TUAG) was calculated based on the following normative equation derived from the timed get up and go values of 78 subjects without CKD recruited as controls for the University of Maryland cohort:

$Ln(TUAG) = 2.127484 + (0.0084882 * (age-65)) + (0.000368 * (age-65)^2) - (0.0528428 * male) + (0.0161584 * (bmi-28)) - (0.1343379 * caucasian)$

In this equation male sex is indicated as 1 and female sex as 0. Similarly Caucasian race is indicated as 1 and non-Caucasian as 0.

The characteristics of study sample used to derive the normative values for TUAG can be found on Table 1.

3. Grip strength - age and gender specific cut points from Mathiowetz V et al. J Hand Surg Am. Mar 1984; 9(2):222-226.

4. Usual gait speed - age and gender specific cut points from Bohannon RW. Age Ageing. Jan 1997; 26(1):15-19.

Statistical Analysis:

Grip Strength cutoffs were adapted from the Cardiovascular Health Study[2] which were stratified by gender and body mass index (BMI) quartiles (Supplemental methods Table 2)

SUPPLEMENTAL METHODS

Supplemental Methods Table 1. Characteristics of 78 non-CKD controls used to derive normative equation for the timed up and go test.

Age, mean ± SD	65.4 ±10.9
Male, No. (%)	46 (60%)
Caucasian, No. (%)	66 (86)
BMI (kg/m^2), mean ± SD	27.9 ±5.6
BMI>30 kg/m^2, No. (%)	23 (30)
Hypertension, No. (%)	30 (39)
Diabetes type 2, No. (%)	8 (10)
Current/former smoking, No. (%)_	20 (26)

Supplemental Methods Table 2. Gender and BMI specific cutoffs for grip strength derived from the Cardiovascular Health Study.

	Cutoff for grip strength (Kg)
Males	
BMI ≤24	≤29
BMI 24.1-26	≤30
BMI 26.1-28	≤30
BMI >28	≤32
Females	
BMI ≤23	≤17
BMI 23.1-26	≤17.3
BMI 26.1-29	≤18
BMI >29	≤21

REFERENCES:

1. Troosters T, Gosselink R, Decramer M. Six minute walking distance in healthy elderly subjects. *Eur Respir J.* Aug 1999;14(2):270-274.

2. Fried L, Tangen C, Walston J. Frailty in older adults: evidence for a phenotype. *J of Gerontol.* 2001;56A(3):M146-M156.