

Selenium and impaired physical function in older adults. García-Esquinas E et al. Online Supplementary Material

Supplementary table S1: Cross-sectional association between **whole blood selenium** and measures of impaired physical function and disability in subgroups of participants in the **NHANES**. Results are odds ratios [95% confidence interval] per two fold increase in selenium concentrations.

Blood Se [$\mu\text{g/L}$]	Weakness (n=1614)			Impaired lower-extremity performance (n=1730)			Mobility limitation (n=1629)			Agility limitation (n=1703)			IADL disability (n=1584)		
	n/total	OR [95%CI]	p-int*	n/total	OR [95%CI]	p-int*	n/total	OR [95%CI]	p-int*	n/total	OR [95%CI]	p-int*	n/total	OR [95%CI]	p-int*
Sex															
Male	165/790	0.43 [0.15; 1.24]		173/840	0.33 [0.11; 1.02]		240/779	0.38 [0.09; 1.63]		110/829	0.15 [0.02; 1.23]		137/742	0.54 [0.12; 2.40]	
Female	175/824	0.53 [0.16; 1.81]	0.77	177/890	0.67 [0.16; 2.74]	0.41	379/850	0.33 [0.10; 1.12]	0.83	165/874	0.82 [0.21; 3.19]	0.20	188/842	0.40 [0.10; 1.63]	0.78
Age															
<70	89/805	0.57 [0.14; 2.30]		143/864	0.21 [0.06; 0.70]		256/824	0.76 [0.17; 3.38]		109/853	0.30 [0.06; 1.49]		152/815	0.20 [0.03; 1.61]	
≥ 70	251/809	0.37 [0.13; 1.03]	0.61	207/866	0.84 [0.22; 3.18]	0.10	363/805	0.18 [0.06; 0.52]	0.10	166/850	0.57 [0.14; 2.47]	0.53	173/769	0.78 [0.25; 2.42]	0.29
BMI															
Under/Normoweight	91/422	0.50 [0.06; 3.96]		67/456	0.99 [0.11; 8.80]		140/433	0.21 [0.03; 0.41]		47/453	0.48 [0.06; 4.14]		78/423	0.29 [0.02; 3.52]	
Overweight	114/563	0.54 [0.12; 2.36]		105/605	1.37 [0.30; 6.39]		181/579	0.43 [0.12; 1.50]		75/600	0.36 [0.07; 1.75]		85/551	0.29 [0.02; 3.52]	
Obese	135/629	0.44 [0.12; 1.55]	0.98	178/669	0.18 [0.05; 0.60]	<0.01	298/617	0.40 [0.06; 2.49]	0.80	153/650	0.55 [0.14; 2.14]	0.91	162/610	0.80 [0.15; 4.39]	0.45
Physical activity															
1 st tertile	173/561	0.31 [0.08; 1.17]		188/614	0.84 [0.22; 3.16]		316/559	0.26 [0.08; 0.91]		165/601	0.70 [0.16; 3.00]		175/540	0.88 [0.27; 2.85]	
2 nd tertile	111/557	0.75 [0.19; 3.01]		104/595	0.13 [0.03; 0.49]		188/564	0.17 [0.04; 0.68]		77/587	0.73 [0.15; 3.61]		93/555	0.11 [0.02; 0.51]	
3 rd tertile	56/494	0.82 [0.17; 4.05]	0.50	58/521	1.32 [0.16; 11.2]	0.05	115/506	1.38 [0.21; 9.22]	0.14	33/515	0.07 [0.00; 0.77]	0.25	57/489	0.83 [0.03; 21.2]	0.11
Chronic disease															
No	14/169	0.57 [0.01; 33.2]		14/182	0.95 [0.05; 17.8]		28/178	18.0 [0.15; 216.9]		8/181	0.38 [0.03; 5.58]		9/165	23.5 [0.00; 6953]	
Yes	326/1445	0.55 [0.23; 1.35]	0.98	336/1548	0.50 [0.18; 1.40]	0.97	591/1451	0.32 [0.13; 0.78]	0.09	267/1522	0.46 [0.19; 1.13]	0.88	316/1419	0.44 [0.15; 1.27]	0.32
Diet quality															
Excellent/Very good	133/622	1.05 [0.28; 4.02]		104/668	0.37 [0.09; 1.59]		196/631	0.35 [0.07; 1.63]		84/663	0.16 [0.02; 1.01]		99/612	0.61 [0.08; 4.62]	
Good	135/686	0.20 [0.06; 0.71]		140/733	0.47 [0.07; 3.02]		259/692	0.52 [0.17; 1.58]		105/722	0.48 [0.12; 1.96]		129/675	0.47 [0.10; 2.16]	
Fair/Poor	72/306	0.67 [0.14; 3.28]	0.15	106/329	0.58 [0.18; 1.92]	0.88	164/306	0.20 [0.04; 1.08]	0.56	86/318	0.93 [0.19; 4.70]	0.47	97/297	0.33 [0.06; 1.99]	0.90
Protein intake (g/day)															
<60	155/585	0.25 [0.07; 0.87]		147/637	0.68 [0.17; 2.71]		274/598	0.15 [0.04; 0.51]		130/627	0.54 [0.10; 2.75]		139/584	0.15 [0.03; 0.65]	
60-80	97/523	1.41 [0.30; 6.71]		115/554	0.54 [0.08; 3.74]		202/518	1.09 [0.25; 4.78]		79/546	0.28 [0.03; 3.00]		104/512	3.42 [0.64; 18.31]	
>80	88/506	0.58 [0.12; 2.75]	0.25	88/539	0.22 [0.02; 2.90]	0.61	143/513	0.43 [0.03; 7.10]	0.19	66/530	0.59 [0.06; 6.27]	0.88	82/488	0.36 [0.02; 8.29]	0.04
Protein intake (g per kg of weight/day)															
≤ 1.2	270/1279	0.53 [0.23; 1.20]		296/1364	0.50 [0.19; 1.33]		522/1278	0.28 [0.13; 0.62]		236/1342	0.40 [0.11; 1.40]		260/1243	0.41 [0.16; 1.05]	
>1.2	70/335	0.26 [0.03; 2.44]	0.53	54/367	0.38 [0.02; 6.50]	0.84	97/351	0.94 [0.05; 18.8]	0.42	39/362	0.83 [0.09; 7.94]	0.60	65/341	0.50 [0.02; 10.72]	0.89
RDA recommendations for Se															
Yes	304/1478	0.56 [0.22; 1.43]		315/1584	0.49 [0.18; 1.35]		546/1491	0.50 [0.19; 1.34]		239/1560	0.63 [0.20; 1.96]		292/1452	0.78 [0.24; 2.50]	
No (<55)	36/136	0.20 [0.01; 3.36]	0.52	35/146	0.60 [0.07; 5.52]	0.85	73/138	0.04 [0.01; 0.30]	0.03	36/143	0.17 [0.02; 1.57]	0.24	33/132	0.01 [0.00; 0.13]	<0.01
RDA recommendations for vitamins															
<5	123/683	0.56 [0.17; 1.84]		130/732	0.88 [0.16; 4.83]		221/685	0.59 [0.12; 2.96]		101/721	0.63 [0.09; 4.69]		127/673	1.24 [0.28; 5.53]	
≥ 5	217/931	0.45 [0.17; 1.16]	0.75	220/998	0.38 [0.14; 1.02]	0.3574	398/944	0.25 [0.10; 0.62]	0.33	174/982	0.39 [0.10; 1.49]	0.70	198/911	0.23 [0.08; 0.64]	0.03
Adequate intake															
Vitamin A															
Yes	67/417	1.11 [0.26; 4.80]		74/442	0.96 [0.14; 6.45]		138/413	1.32 [0.15; 11.6]		57/435	0.50 [0.05; 5.00]		79/414	1.59 [0.20; 12.79]	
No	266/1197	0.34 [0.14; 0.82]	0.13	276/1288	0.41 [0.15; 1.08]	0.36	481/1216	0.20 [0.08; 0.50]	0.13	218/1268	0.44 [0.14; 1.39]	0.93	246/1170	0.26 [0.09; 0.79]	0.13
Vitamin B1															
Yes	215/1079	0.79 [0.31; 2.04]		217/1157	1.27 [0.42; 3.85]		381/1094	0.48 [0.14; 1.61]		160/1139	0.59 [0.11; 3.08]		199/1056	1.05 [0.23; 4.86]	
No	125/535	0.21 [0.05; 0.88]	0.12	133/573	0.14 [0.04; 0.52]	<0.01	238/535	0.21 [0.05; 0.80]	0.35	115/564	0.31 [0.08; 1.23]	0.58	126/528	0.12 [0.03; 0.52]	0.07
Vitamin B2															
Yes	271/1322	0.66 [0.25; 1.70]		286/1421	0.64 [0.23; 1.77]		489/1335	0.45 [0.15; 1.34]		220/1396	0.54 [0.16; 1.80]		260/1300	0.58 [0.18; 1.85]	
No	69/292	0.14 [0.02; 0.89]	0.15	64/309	0.17 [0.02; 1.24]	0.20	130/294	0.07 [0.01; 0.62]	0.17	55/307	0.22 [0.03; 1.94]	0.46	65/284	0.13 [0.01; 1.09]	0.23
Vitamin B3															
Yes	257/1276	0.87 [0.30; 2.49]		262/1357	0.55 [0.23; 1.30]		442/1279	0.48 [0.18; 1.32]		188/1337	0.52 [0.12; 2.25]		246/1250	1.20 [0.43; 3.35]	
No	83/338	0.12 [0.02; 0.66]	0.06	88/373	0.44 [0.09; 2.20]	0.73	177/350	0.15 [0.03; 0.73]	0.19	87/366	0.36 [0.06; 2.30]	0.77	79/334	0.03 [0.00; 0.24]	<0.01

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Blood Se [$\mu\text{g/L}$]		Weakness (n=1614)			Impaired lower-extremity performance (n=1730)			Mobility limitation (n=1629)			Agility limitation (n=1703)			IADL disability (n=1584)		
		n/total	OR [95%CI]	p-int*	n/total	OR [95%CI]	p-int*	n/total	OR [95%CI]	p-int*	n/total	OR [95%CI]	p-int*	n/total	OR [95%CI]	p-int*
Vitamin B6	Yes	176/941	0.55 [0.17; 1.71]		189/1005	0.64 [0.17; 2.43]		323/945	0.55 [0.13; 2.39]		145/992	0.66 [0.16; 2.64]		182/928	1.32 [0.34; 5.10]	
	No	164/673	0.42 [0.15; 1.24]	0.72	161/725	0.41 [0.13; 1.26]	0.55	296/684	0.21 [0.07; 0.68]	0.33	130/711	0.33 [0.06; 1.81]	0.55	143/656	0.13 [0.04; 0.44]	0.01
Vitamin B12	Yes	249/1238	0.71 [0.22; 2.30]		260/1331	0.71 [0.26; 1.93]		461/1251	0.37 [0.11; 1.23]		210/1308	0.40 [0.09; 1.81]		249/1219	0.65 [0.22; 1.91]	
	No	91/376	0.17 [0.04; 0.72]	0.16	90/399	0.22 [0.04; 1.15]	0.16	158/378	0.29 [0.07; 1.14]	0.80	65/395	0.63 [0.09; 4.68]	0.74	76/365	0.17 [0.03; 1.08]	0.16
Vitamin C	Yes	134/658	0.26 [0.06; 1.11]		135/709	0.36 [0.08; 1.73]		229/666	0.16 [0.04; 0.63]		97/696	0.13 [0.02; 0.83]		130/652	0.63 [0.12; 3.23]	
	No	206/956	0.71 [0.27; 1.87]	0.23	215/1021	0.59 [0.19; 1.77]	0.57	390/963	0.53 [0.16; 1.75]	0.19	178/1007	0.85 [0.21; 3.42]	0.12	195/932	0.35 [0.10; 1.20]	0.54
Vitamin D	Yes	12/45	-		6/48	-		13/46	-		7/48	-		11/43	-	
	No	328/1569	-	-	344/1682	-	-	606/1583	-	-	268/1655	-	-	314/1541	-	-
Vitamin E	Yes	15/116	0.18 [0.00; 3.57]		22/125	0.59 [0.01; 40.8]		28/113	0.05 [0.00; 11.5]		15/123	0.03 [0.00; 8.27]		23/119	0.03 [0.00; 0.43]	
	No	325/1498	0.51 [0.21; 1.25]	0.54	328/1605	0.51 [0.20; 1.30]	0.94	591/1516	0.39 [0.18; 0.88]	0.42	260/1580	0.55 [0.20; 1.53]	0.29	302/1465	0.57 [0.19; 1.71]	0.03
Folate	Yes	103/570	0.33 [0.11; 0.97]		108/614	1.11 [1.33; 9.28]		182/571	0.30 [0.04; 2.16]		89/607	0.67 [0.14; 3.15]		97/561	0.72 [0.10; 5.28]	
	No	237/1044	0.60 [0.20; 1.82]	0.44	242/1116	0.32 [0.12; 0.85]	0.29	437/1058	0.38 [0.16; 0.89]	0.83	186/1096	0.38 [0.10; 1.46]	0.57	228/1023	0.33 [0.13; 0.84]	0.46

IADL: Instrumental Activities of Daily Living. OR: Odds Ratio. CI: Confidence Interval. *P-values for interaction were obtained from likelihood ratio test. All models are adjusted as model B in table 2.

Blood Se [$\mu\text{g/L}$]		Weakness (n=2540)			Impaired lower-extremity function (n=2530)			Mobility limitation (n=2520)			Agility limitation (n=2520)			Frailty (n=2548)			IADL disability (n=2534)		
		n/total	OR [95%CI]	p-int*	n/total	OR [95%CI]	p-int*	n/total	OR [95%CI]	p-int*	n/total	OR [95%CI]	p-int*	n/total	OR [95%CI]	p-int*	n/total	OR [95%CI]	p-int
Vitamin B6	Yes	372/2125	0.55 [0.34;0.90]		525/2117	0.59 [0.38;0.92]		785/2112	0.51 [0.34;0.78]		1208/2112	0.71 [0.47;1.06]		390/2131	0.27 [0.15;0.48]		135/2120	0.28 [0.13;0.60]	
	No	125/415	0.55 [0.21;1.44]	0.99	151/413	0.66 [0.26;1.68]	0.82	177/408	0.77 [0.29;2.04]	0.45	234/408	1.16 [0.44; 3.07]		114/417	0.21 [0.06;0.70]	0.70	54/414	0.55 [0.14;2.19]	0.40
Vitamin B12	Yes	473/2446	0.52 [0.33;0.82]		652/2437	0.61 [0.40;0.92]		914/2427	0.54 [0.36;0.80]		1384/2427	0.82 [0.56;1.20]		484/2454	0.23 [0.13;0.39]		181/2441	-	
	No	24/94	0.99 [0.16;6.03]	0.34	24/93	0.12 [0.02;1.00]	0.14	48/93	0.77 [0.14;4.28]	0.68	58/93	0.14 [0.02;0.93]		20/94	1.54 [0.15;15.5]	0.12	8/93	-	-
Vitamin C	Yes	395/2086	0.50 [0.31;0.81]		543/2077	0.61 [0.39;0.95]		801/2071	0.48[0.32;0.73]		1194/2071	0.65 [0.43;0.98]		401/2092	0.28 [0.16;0.49]		152/2083	0.32 [0.15;0.67]	
	No	102/454	0.77 [0.30;2.02]	0.42	133/453	0.57 [0.23;1.43]	0.90	161/449	1.02 [0.41;2.55]	0.23	248/449	1.73 [0.72;4.15]		103/456	0.17 [0.05;0.56]	0.44	37/451	0.32 [0.06;1.57]	0.98
Vitamin D	Yes	2/4	-		1/4	-		1/4	-		3/4	-		-	-		0/4	-	
	No	495/2536	-	-	675/2526	-	-	961/2516	-	-	1439/2516	-	-	-	-	-	189/2530	-	-
Vitamin E	Yes	45/223	0.33 [0.08;1.40]		54/223	0.30 [0.07;1.20]		69/222	1.39 [0.39;4.94]		135/222	1.69 [0.50;5.67]		34/223	1.22 [0.21;7.05]		17/223	0.99 [0.11;8.57]	
	No	452/2317	0.56 [0.36;0.89]	0.48	622/2307	0.63 [0.42;0.96]	0.34	893/2298	0.50 [0.33;0.75]	0.12	1307/2298	0.70 [0.47;1.04]	0.17	470/2325	0.23 [0.13; 0.39]	0.07	172/2311	0.29 [0.14;0.60]	0.28
Folate	Yes	64/418	0.44 [0.14;1.32]		79/417	0.78 [0.29;2.07]		133/419	0.59 [0.25;1.40]		230/419	1.18 [0.52;2.67]		72/420	1.69 [0.22;2.17]		15/418	0.20 [0.02;1.88]	
	No	433/2122	0.57 [0.35;0.91]	0.68	597/2113	0.57 [0.37;0.89]	0.60	829/2101	0.53 [0.35;0.82]	0.82	1212/2101	0.68 [0.45;1.04]	0.24	432/2128	0.21 [0.12;0.37]	0.07	174/2116	0.34 [0.17;0.68]	0.65

IADL: Instrumental Activities of Daily Living. OR: Odds Ratio. CI: Confidence Interval. *P-values for interaction were obtained from likelihood ratio test. All models are adjusted as model B in table 2.