

**Supplemental Material: Wrist Fracture and Risk of Subsequent Fracture: Post-hoc Findings from the Women’s Health Initiative Study**

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**Supplemental Table 1. Additional baseline characteristics, by wrist fracture, among WHI CT and OS participants \***

	Wrist Fracture <sup>†</sup>			p-value
	Total	No	Yes	
	N (%)	N (%)	N (%)	
<b>Annual Family Income</b>				
Less than \$10,000	6,817 (4.4)	6,495 (4.4)	322 (3.8)	0.007
\$10,000 to \$19,999	18,350 (11.9)	17,344 (11.9)	1,006 (11.9)	
\$20,000 to \$34,999	36,490 (23.6)	34,385 (23.5)	2,105 (24.9)	
\$35,000 to \$49,999	30,791 (19.9)	29,073 (19.9)	1,718 (20.3)	
\$50,000 to \$74,999	29,842 (19.3)	28,228 (19.3)	1,614 (19.1)	
\$75,000 to \$99,999	13,563 (8.8)	12,812 (8.8)	751 (8.9)	
\$100,000 to \$149,999	9,407 (6.1)	8,938 (6.1)	469 (5.5)	
\$150,000 or more	4,909 (3.2)	4,658 (3.2)	251 (3.0)	
Don't know	4,331 (2.8)	4,107 (2.8)	224 (2.6)	
Missing	6,430	6,098	332	
<b>Hormone Therapy (HT)</b>				
<b>Trial Arm</b>				
Not randomized to HT	133,687 (83.1)	126,536 (83.2)	7,151 (81.3)	<0.001
E-alone intervention <sup>‡</sup>	5,283 (3.3)	5,032 (3.3)	251 (2.9)	
E-alone control	5,405 (3.4)	5,039 (3.3)	366 (4.2)	
E+P intervention	8,478 (5.3)	8,008 (5.3)	470 (5.3)	
E+P control	8,077 (5.0)	7,523 (4.9)	554 (6.3)	
<b>Dietary Modification (DM)</b>				
<b>Trial Arm</b>				
Not randomized to Dietary Modification Trial	112,276 (69.8)	106,031 (69.7)	6,245 (71.0)	0.021
Intervention	19,481 (12.1)	18,441 (12.1)	1,040 (11.8)	
Control	29,173 (18.1)	27,666 (18.2)	1,507 (17.1)	
<b>Pack-years of cigarettes</b>				
Mean ± SD	10.1 (17.9)	10.0 (17.9)	10.5 (18.6)	0.012
Missing	4,975	4700	275	
<b>Moderate-strenuous activity episodes &gt;20 min/week</b>				
No activity	24,263 (15.8)	23,068 (15.9)	1,195 (14.4)	<0.001
Some activity of limited duration	62,152 (40.5)	58,932 (40.6)	3,220 (38.8)	
2 - <4 episodes per week	27,336 (17.8)	25,763 (17.7)	1,573 (18.9)	
4 episodes per week	39,747 (25.9)	37,426 (25.8)	2,321 (27.9)	
Missing	7,432	6,949	483	
<b>Strenuous activity episodes / week</b>				
0	115,323 (75.1)	109,172 (75.2)	6,151 (74.0)	0.023
1	7,654 (5.0)	7,269 (5.0)	385 (4.6)	
2	10,224 (6.7)	9,632 (6.6)	592 (7.1)	
3	11,901 (7.8)	11,207 (7.7)	694 (8.4)	
4	3,836 (2.5)	3,611 (2.5)	225 (2.7)	
5 or more	4,560 (3.0)	4,298 (3.0)	262 (3.2)	
Missing	7,432	6,949	483	
<b>Dietary Calcium (mg)</b>				

\* Values expressed as n (%) unless otherwise noted.

<sup>†</sup> Includes wrist fractures (radius, ulna, carpal bones) through the end of WHI extension phase

<sup>‡</sup> E-alone denotes estrogen alone, and E + P denotes estrogen + progestin

	Wrist Fracture <sup>†</sup>			p-value
	Total	No	Yes	
	160,930	152,138	8,792	
	N (%)	N (%)	N (%)	
Mean ± SD	815.9 (468.1)	815.1 (468.5)	829.7 (460.1)	0.004
Missing	296	282	14	
<b>Dietary Vitamin D (IU)</b>				
Mean ± SD	173 (124)	173 (124)	174 (122)	0.590
Missing	296	282	14	
<b>RAND Physical Function Score</b>				
Mean ± SD	81.1 (20.0)	81.1 (20.1)	81.2 (19.6)	0.585
Tertile 1	48,368 (30.6)	45,702 (30.6)	2,666 (30.8)	0.163
Tertile 2	51,093 (32.4)	48,227 (32.3)	2,866 (33.1)	
Tertile 3	58,404 (37.0)	55,279 (37.0)	3,125 (36.1)	
Missing	3,065	2,930	135	
<b>Selective Estrogen Receptor Modulator</b>				
No	160,886 (100.0)	152,097 (100.0)	8,789 (100.0)	0.632
Yes	42 (0.0)	39 (0.0)	3 (0.0)	
Missing	2	2	0	
<b>Calcitonin</b>				
No	160,453 (99.7)	151,709 (99.7)	8,744 (99.5)	<0.001
Yes	475 (0.3)	427 (0.3)	48 (0.5)	
Missing	2	2	0	
<b>Aromatase inhibitors</b>				
No	160,921 (100.0)	152,129 (100.0)	8,792 (100.0)	0.525
Yes	7 (0.0)	7 (0.0)	0 (0.0)	
Missing	2	2	0	
<b>Tamoxifen</b>				
No	159,910 (99.4)	151,174 (99.4)	8,736 (99.4)	0.958
Yes	1,018 (0.6)	962 (0.6)	56 (0.6)	
Missing	2	2	0	
<b>Anti-Depressants</b>				
No	149,507 (92.9)	141,470 (93.0)	8,037 (91.4)	<0.001
Yes	11,421 (7.1)	10,666 (7.0)	755 (8.6)	
Missing	2	2	0	
<b>Proton Pump inhibitors</b>				
No	157,552 (97.9)	148,983 (97.9)	8,569 (97.5)	0.003
Yes	3,376 (2.1)	3,153 (2.1)	223 (2.5)	
Missing	2	2	0	
<b>Oral Corticosteroids</b>				
No	159,812 (99.3)	151,087 (99.3)	8,725 (99.2)	0.425
Yes	1,116 (0.7)	1,049 (0.7)	67 (0.8)	
Missing	2	2	0	
<b>Thiazolidinediones</b>				
No	160,792 (99.9)	152,010 (99.9)	8,782 (99.9)	0.332
Yes	136 (0.1)	126 (0.1)	10 (0.1)	
Missing	2	2	0	

**Supplemental Table 2. Associations between incident wrist fracture and any subsequent non-wrist fracture by baseline characteristics and age at wrist fracture <sup>a</sup>**

	person-years	Any non-wrist fracture Event	Wrist Fracture		P value <sup>b</sup>
			No	Yes HR (95% CI)	
Current age					0.020
<55	58,038	652	1 (ref)	2.49 (1.18-5.24)	
55-<60	187,258	2,291	1 (ref)	1.96 (1.43-2.68)	
60-<65	316,832	4,626	1 (ref)	1.64 (1.36-1.96)	
65-<70	382,910	6,735	1 (ref)	1.45 (1.26-1.66)	
70-<75	356,914	7,373	1 (ref)	1.35 (1.19-1.52)	
75-<80	251,469	6,926	1 (ref)	1.45 (1.31-1.62)	
80 or older	139,235	5,375	1 (ref)	1.24 (1.11-1.39)	
Ethnicity					0.029
White (not of Hispanic origin)	67,075	30,231	1 (ref)	1.39 (1.31-1.47)	
Black or African-American	146,610	1,553	1 (ref)	1.04 (0.64-1.67)	
Hispanic/Latino	60,912	822	1 (ref)	1.95 (1.35-2.83)	
Other	1,418,060	990	1 (ref)	1.97 (1.43-2.71)	
Total MET-hours per week					0.070
Q1 (0.00-2.25)	393,527	7,941	1 (ref)	1.50 (1.33-1.68)	
Q2 (2.33-8.29)	390,781	7,831	1 (ref)	1.50 (1.34-1.68)	
Q3 (8.33-17.71)	404,410	8,159	1 (ref)	1.45 (1.30-1.62)	
Q4 (17.75-142.33)	412,355	8,090	1 (ref)	1.25 (1.11-1.40)	
RAND Physical Function Score					0.985
T1 (0-75)	465,717	1,1184	1 (ref)	1.41 (1.28-1.55)	
T2 (80-90)	544,977	10,927	1 (ref)	1.42 (1.29-1.56)	
T3 (95-100)	653,004	10,905	1 (ref)	1.40 (1.27-1.54)	
Falls					0.331
None	1,098,083	19,881	1 (ref)	1.40 (1.30-1.51)	
1 time	322,330	7,114	1 (ref)	1.42 (1.27-1.59)	
2 times	129,737	3,389	1 (ref)	1.20 (1.02-1.42)	
3 or more times	62,466	1,904	1 (ref)	1.48 (1.22-1.80)	
WHO FRAX 10-yr predicted probability of fracture, quartile (range of absolute predicted risk)					0.072
Q1 (0.66-5.47)	438,595	5,941	1 (ref)	1.65 (1.41-1.92)	
Q2 (5.48-8.34)	444,627	7,357	1 (ref)	1.32 (1.16-1.50)	
Q3 (8.35-12.94)	423,297	8,799	1 (ref)	1.43 (1.29-1.58)	
Q4 (12.95-83.91)	386,115	11,499	1 (ref)	1.32 (1.21-1.44)	

<sup>a</sup> Adjusted for age, race, and BMI

<sup>b</sup> p-value for cross product interaction term between wrist fracture and characteristic being tested

**Supplemental Table 3. Associations between incident wrist fracture and any subsequent non-wrist fracture or death overall and by age at wrist fracture**

	Wrist Fracture			HR (95% CI)	P value
	Total N	Any non-wrist fracture Event	No		
Overall	159,118	48,049		1.29 (1.23-1.35)	
Current age	person-years	Event		HR (95% CI)	0.003
<55	58,038	712	1 (ref)	2.19 (1.04-4.62)	
55-<60	187,258	2,674	1 (ref)	1.87 (1.40-2.50)	
60-<65	316,832	5,712	1 (ref)	1.55 (1.31-1.83)	
65-<70	382,910	8,745	1 (ref)	1.28 (1.13-1.45)	
70-<75	356,914	10,307	1 (ref)	1.25 (1.12-1.39)	
75-<80	251,469	10,419	1 (ref)	1.36 (1.24-1.48)	
80 or older	139,235	9,479	1 (ref)	1.16 (1.06-1.27)	

Adjusted for age, race, and BMI

p-value for cross product interaction term between wrist fracture and characteristic being tested

**Supplemental Table 4. Adjusted associations between wrist fracture and subsequent non-wrist fracture in the subset of participants for whom baseline BMD information was available (n = 11,350)**

			Wrist Fracture	
			No	Yes
	Total N	Event		HR (95% CI)
<b>Overall analytic sample</b>				
<b>Any non-wrist fracture</b>				
Crude	160,930	33,979	1 (ref)	1.54 (1.46-1.62)
Model 1 <sup>a</sup>	159,118	33,596	1 (ref)	1.40 (1.33-1.48)
<b>BMD cohort (n=11,350)</b>				
<b>Any non-wrist fracture</b>				
Crude	11,350	2,303	1 (ref)	1.59 (1.30-1.94)
Model 1	11,260	2,291	1 (ref)	1.42 (1.16-1.74)
Crude + baseline Femoral Neck BMD	11,350	2,303	1 (ref)	1.36 (1.11-1.66)
Model 1 + baseline Femoral Neck BMD	11,115	2,149	1 (ref)	1.30 (1.06-1.59)

<sup>a</sup> Model 1 adjusted for age, race, and BMI