SUPPLEMENTAL MATERIAL

Supplemental Table 1. Comparison between the participants from Chicago field center and those included in this study

	Total attended Y30 (n=745)	Included in this study		*p-value*
		No (n=554)	Yes (n=191)	
Demographics at Y30				
Age, y	55 ± 4	55 ± 4	54 ± 4	0.025
Female, %	57	61	46	<0.001
Blacks, %	46	47	44	0.454
Education, y	15 ± 3	16 ± 3	15 ± 3	0.130
Height, cm	170 ± 10	169 ± 9	171 ± 10	0.007
Risk Factors at Y30				
Body Mass Index, kg/m^2	30 ± 7	30 ± 7	30 ± 6	0.999
Current Smoker, %	15	15	14	0.892
Total cholesterol, mg/dL	190 ± 38	189 ± 37	192 ± 38	0.299
Prevalence of diabetes, %	16	16	15	0.717
SBP, mmHG	120 ± 17	120 ± 17	120 ± 15	0.884
DBP, mmHG	73 ± 11	73 ± 11	74 ± 11	0.524

Data are expressed as mean±SD or %. Characteristics were compared using t-test for continuous variables and chi-squared test for categorical variables. Chicago cohort had a total of 1108 participants at baseline. A total of 745 participants attended the Y30 follow-up examination (n=64 death before Y30 examination). Abbreviations: SBP: systolic blood pressure; DBP: diastolic blood pressure.

Supplemental Table 2. Cumulative systolic and diastolic blood pressure in relation to gait and cognition in midlife after adjusting for time-dependent risk factors

Gait	**Cumulative SBP** per 1 SD higher β (95% CI)	*p*-value	**Cumulative DBP** per 1 SD higher β (95% CI)	*p*-value
Step velocity, cm/sec				
Model 2	-3.76 (-7.03, -0.50)	0.024	-3.36 (-6.35, -0.38)	0.028
Step length, cm				
Model 2	-1.20 (-2.29, -0.10)	0.033	-1.22 (-2.22, -0.22)	0.017
Step time, sec				
Model 2	0.008 (-0.001, 0.02)	0.075	0.007 (-0.001, 0.02)	0.088
Stride width, cm				
Model 2	-0.31 (-0.94, 0.33)	0.345	-0.44 (-1.02, 0.14)	0.138
Gait variability index				
Model 2	1.41 (-0.21, 3.02)	0.087	2.05 (0.59, 3.50)	0.006
Step length asymmetry, cm				
Model 2	-0.47 (-1.32, 0.39)	0.283	-0.33 (-1.11, 0.46)	0.411

Cognition	**Cumulative SBP** per SD increase β (95% CI)	*p*-value	**Cumulative DBP** per SD increase β (95% CI)	*p*-value
Memory domain				
Model 2	-0.15 (-0.29, -0.02)	0.024	-0.16 (-0.28, -0.04)	0.012
Executive domain				
Model 2	-0.11 (-0.21, -0.002)	0.046	-0.04 (-0.14, 0.06)	0.428
Attention domain				
Model 2	-0.02 (-0.15, 0.10)	0.709	-0.02 (-0.13, 0.10)	0.785
Global domain				
Model 2	-0.11 (-0.20, -0.02)	0.018	-0.08 (-0.17, 0.009)	0.080

β represents unstandardized regression coefficients.
Model 2: Adjusted for age, sex, race, height, cumulative body mass index, lifetime pack years of cigarette smoking, cumulative fasting glucose, cumulative cholesterol, physical activity (for gait analyses) and depression (for cognition analyses).
Abbreviations: SBP: systolic blood pressure and DBP: diastolic blood pressure.

Supplemental Table 3. Association of cumulative blood pressure with cerebral white matter hyper-intensity in the MRI sub-cohort (n=144)

	Cumulative SBP per 1 SD higher β (95% CI)	*p*-value	**Cumulative DBP** per 1 SD higher β (95% CI)	*p*-value
WMH, %ICV*				
Model 1	0.40 (0.16, 0.64)	0.001	0.33 (0.09, 0.56)	0.007
Model 2	0.31 (0.06, 0.56)	0.014	0.25 (0.006, 0.50)	0.045

β represents unstandardized regression coefficients.

*WMH values were log-transformed because they were not normally distributed.

Model 1 is adjusted for age, sex and race. Model 2 is adjusted for age, sex, race, body mass index, smoking status, prevalence of diabetes and total cholesterol.

Supplemental Table 4. Cumulative exposure to blood pressure in relation to gait and cognition after adjustment for WMH (n=144)

Gait	Cumulative SBP per 1SD higher β (95% CI)	*p*-value	Cumulative DBP per 1SD higher β (95% CI)	*p*-value
Step velocity, cm/sec				
Model 2	-4.55 (-8.40, -0.70)	0.021	-3.77 (-7.57, 0.04)	0.053
Model 2 + WMH	-4.77 (-8.70, -0.83)	0.018	-3.90 (-7.76, -0.03)	0.048
Step Length, cm				
Model 2	-1.73 (-3.03, -0.42)	0.010	-1.38 (-2.67, -0.09)	0.036
Model 2 + WMH	-1.87 (-3.19, -0.54)	0.006	-1.48 (-2.79, -0.17)	0.027
Step time, sec				
Model 2	0.007 (-0.004, 0.018)	0.220	0.007 (-0.003, 0.018)	0.181
Model 2 + WMH	0.006 (-0.005, 0.017)	0.265	0.007 (-0.004, 0.018)	0.213
Stride width, cm				
Model 2	-0.39 (-1.06, 0.28)	0.252	-0.57 (-1.22, 0.08)	0.087
Model 2 + WMH	-0.38 (-1.07, 0.30)	0.272	-0.57 (-1.23, 0.10)	0.094
Gait variability index				
Model 2	1.59 (-0.14, 3.31)	0.071	1.97 (0.29, 3.64)	0.022
Model 2 + WMH	1.43 (-0.33, 3.18)	0.110	1.84 (0.14, 3.54)	0.034
Step length asymmetry, sec				
Model 2	-0.71 (-1.67, 0.25)	0.145	-0.48 (-1.44, 0.47)	0.318
Model 2 + WMH	-0.81 (-1.78, 0.17)	0.104	-0.55 (-1.51, 0.42)	0.264
Cognition	**Cumulative SBP** per SD increase β (95% CI)	*p*-value	**Cumulative DBP** per SD increase β (95% CI)	*p*-value
Memory domain				
Model 2	-0.23 (-0.39, -0.08)	0.003	-0.24 (-0.39, -0.09)	0.002
Model 2 + WMH	-0.21 (-0.37, -0.06)	0.007	-0.23 (-0.38, -0.08)	0.003
Executive domain				
Model 2	-0.14 (-0.26, -0.02)	0.024	-0.09 (-0.21, 0.03)	0.121
Model 2 + WMH	-0.13 (-0.25, -0.006)	0.040	-0.08 (-0.20, 0.04)	0.169
Attention domain				
Model 2	-0.10 (-0.24, 0.04)	0.155	-0.10 (-0.24, 0.04)	0.142
Model 2 + WMH	-0.09 (-0.23, 0.05)	0.215	-0.09 (-0.23, 0.05)	0.187
Global domain				
Model 2	-0.17 (-0.27, -0.07)	0.001	-0.15 (-0.25, -0.05)	0.004
Model 2 + WMH	-0.16 (-0.26, -0.05)	0.003	-0.14 (-0.24, -0.04)	0.008

β represents unstandardized regression coefficients.
Model 2: adjusted for age, sex, race, height or education, body mass index, smoking status, prevalence of diabetes and total cholesterol.

Supplemental Table 5. Cumulative blood pressure in relation to gait and cognition stratified for antihypertensive medication use

Gait	**Cumulative SBP** per SD increase β (95% CI)	*p* for interaction	**Cumulative DBP** per SD increase β (95% CI)	*P* for interaction
Step velocity, cm/sec				
BPmed no n=130	-4.43 (-8.98, 0.11)	0.355	-4.18 (-8.68, 0.32)	0.518
BPmed yes n=61	-3.02 (-8.89, 2.85)		-2.61 (-7.54, 2.31)	
Step length, cm				
BPmed no n=130	-1.51 (-2.99, -0.03)	0.122	-1.71 (-3.17, -0.26)	0.139
BPmed yes n=61	-0.28 (-2.28, 1.73)		-0.27 (-1.95, 1.41)	
Step time, sec				
BPmed no n=130	0.008 (-0.004, 0.020)	0.755	0.006 (-0.006, 0.018)	0.471
BPmed yes n=61	0.014 (-0.005, 0.032)		0.013 (-0.003, 0.028)	
Stride width, cm				
BPmed no n=130	-0.29 (-1.09,0.50)	0.848	-0.49 (-1.27, 0.29)	0.742
BPmed yes n=61	-0.57 (-1.80, 0.66)		-0.55 (-1.58, 0.48)	
Gait variability index				
BPmed no n=130	1.54 (-0.72, 3.80)	0.798	2.31 (0.10, 4.53)	0.950
BPmed yes n=61	1.81 (-0.91, 4.54)		2.51 (0.29, 4.73)	
Step length asymmetry, sec				
BPmed no n=130	-0.11 (-1.11, 0.88)	0.895	0.30 (-0.68, 1.28)	0.758
BPmed yes n=61	-0.58 (-2.49, 1.34)		-0.56 (-2.17, 1.06)	
Cognition	**Cumulative SBP** per SD increase β (95% CI)	*P* for interaction	**Cumulative DBP** per SD increase β (95% CI)	*P* for interaction
Memory domain				
BPmed no n=130	-0.18 (-0.36, 0.01)	0.639	-0.16 (-0.34, 0.03)	0.992
BPmed yes n=61	-0.14 (-0.37, 0.10)		-0.16 (-0.35, 0.03)	
Executive domain				
BPmed no n=130	-0.13 (-0.26, 0.001)	0.549	-0.09 (-0.22, 0.05)	0.456
BPmed yes n=61	-0.05 (-0.24, 0.15)		0.003 (-0.16, 0.17)	
Attention domain				
BPmed no n=130	-0.08 (-0.24, 0.09)	0.304	-0.03 (-0.19, 0.14)	0.777
BPmed yes n=61	0.06 (-0.17, 0.29)		-0.01 (-0.21, 0.18)	
Global domain				
BPmed no n=130	-0.15 (-0.27, -0.03)	0.255	-0.12 (-0.23, 0.004)	0.421
BPmed yes n=61	-0.04 (-0.22, 0.15)		-0.04 (-0.19, 0.11)	

β represents unstandardized regression coefficients.

Analyses were adjusted for age, sex, race, height or education, body mass index, smoking status, prevalence of diabetes and total cholesterol.

Abbreviations: SBP: systolic blood pressure; DBP: diastolic blood pressure and BPmed: antihypertensive medication use.

Supplemental Table 6. Cumulative blood pressure in relation to gait and cognition stratified by presence or absence of hypertension during follow-up

Gait	**Cumulative SBP** per SD increase β (95% CI)	*p* for interaction	**Cumulative DBP** per SD increase β (95% CI)	*p* for interaction
Step velocity, cm/sec				
Normotensive	-4.19 (-9.40, 1.03)	0.648	-3.18 (-8.19, 1.83)	0.928
Hypertensive	-4.23 (-9.36, 0.79)		-3.79 (-8.08, 0.50)	
Step length, cm				
Normotensive	-1.55 (-3.20, 0.11)	0.264	-1.51 (-3.09, 0.07)	0.365
Hypertensive	-0.66 (-2.50, 1.17)		-0.72 (-2.26, 0.82)	
Step time, sec				
Normotensive	0.007 (-0.007, 0.021)	0.530	0.004 (-0.009, 0.018)	0.338
Hypertensive	0.016 (0.0004, 0.031)		0.014 (0.001, 0.027)	
Stride width, cm				
Normotensive	-0.30 (-1.15, 0.56)	0.705	-0.47 (-1.28, 0.35)	0.728
Hypertensive	-0.30 (-1.47, 0.87)		-0.37 (-1.36, 0.62)	
Gait variability index				
Normotensive	2.91 (0.41, 5.41)	0.614	3.43 (1.08, 5.78)	0.489
Hypertensive	1.69 (-0.85, 4.22)		2.62 (0.57, 4.68)	
Step length asymmetry, sec				
Normotensive	-0.50 (-1.62, 0.62)	0.459	-0.22 (-1.29, 0.86)	0.365
Hypertensive	-0.46 (-2.16, 1.25)		-0.29 (-1.76, 1.17)	

Cognition	**Cumulative SBP** per SD increase β (95% CI)	*P* for interaction	**Cumulative DBP** per SD increase β (95% CI)	*P* for interaction
Executive domain				
Normotensive	-0.10 (-0.25, 0.04)	0.556	-0.03 (-0.17, 0.11)	0.736
Hypertensive	-0.02 (-0.20, 0.16)		-0.007 (-0.16, 0.14)	
Attention domain				
Normotensive	-0.09 (-0.27, 0.08)	0.125	-0.04 (-0.20, 0.13)	0.591
Hypertensive	0.11 (-0.11, 0.32)		-0.0002 (-0.19, 0.19)	
Memory domain				
Normotensive	-0.18 (-0.39, 0.02)	0.502	-0.14 (-0.34, 0.06)	0.919
Hypertensive	-0.15 (-0.36, 0.06)		-0.20 (-0.37, -0.03)	
Global domain				
Normotensive	-0.12 (-0.25, 0.008)	0.280	-0.06 (-0.18, 0.07)	0.826
Hypertensive	-0.03 (-0.19, 0.13)		-0.07 (-0.20, 0.07)	

β represents unstandardized regression coefficients

Analyses were adjusted for age, sex, race, height or education, body mass index, smoking status, prevalence of diabetes and total cholesterol

Abbreviations: SBP: systolic blood pressure and DBP: diastolic blood pressure.