

## Supplementary Material

**Table S1.** Baseline comparison of blood pressure measures, serum 25(OH)D and vitamin D supplementation dose according to age groups

Baseline measure	Age Range (yr)	N	Mean	SD	P-value*
<b>Systolic blood pressure (mmHg)</b>	< 35	947	116 <sup>d</sup>	12	< 0.001
	35-44	831	118 <sup>c</sup>	14	
	45-64	3,823	125 <sup>b</sup>	16	
	≥ 65	2,554	132 <sup>a</sup>	18	
	Total	8,155	125	17	
<b>Diastolic blood pressure (mmHg)</b>	< 35	947	73 <sup>d</sup>	9	< 0.001
	35-44	831	76 <sup>c</sup>	10	
	45-64	3,823	78 <sup>a</sup>	10	
	≥ 65	2,554	77 <sup>b</sup>	10	
	Total	8,155	77	10	
<b>Pulse Pressure (mmHg)</b>	< 35	947	42 <sup>c</sup>	9	< 0.001
	35-44	831	43 <sup>c</sup>	10	
	45-64	3,823	46 <sup>b</sup>	12	
	≥ 65	2,554	54 <sup>a</sup>	15	
	Total	8,155	48	13	
<b>Mean Arterial Pressure (mmHg)</b>	< 35	947	88 <sup>d</sup>	10	< 0.001
	35-44	831	90 <sup>c</sup>	11	
	45-64	3,823	94 <sup>b</sup>	11	
	≥ 65	2,554	95 <sup>a</sup>	11	
	Total	8,155	93	11	
<b>Serum 25(OH)D (nmol/L)</b>	< 35	947	84 <sup>bc</sup>	41	< 0.001
	35-44	831	83 <sup>c</sup>	39	
	45-64	3,823	87 <sup>ab</sup>	39	
	≥ 65	2,554	89 <sup>a</sup>	31	
	Total	8,155	87	37	
<b>Vitamin D dose (IU/d)</b>	< 35	947	1400 <sup>b</sup>	2800	< 0.001
	35-44	831	1500 <sup>ab</sup>	2700	
	45-64	3,823	1700 <sup>a</sup>	2600	
	≥ 65	2,554	1500 <sup>ab</sup>	2000	
	Total	8,155	1600	2500	
<b>BMI (kg/m<sup>2</sup>)</b>	< 35	947	26 <sup>c</sup>	5	< 0.001
	35-44	831	27 <sup>b</sup>	6	
	45-64	3,823	28 <sup>a</sup>	6	
	≥ 65	2,554	28 <sup>a</sup>	5	
	Total	8,155	27	6	

\*One-Way ANOVA, different superscripts denote differences using post-hoc Tukey's test

**Table S2.** Comparison of blood pressure status between baseline and one year (Participants who did not take BP-lowering medication at baseline and follow-up)

	Baseline Status	One Year Status		
		Normal	Pre-hypertension	Hypertension
<b>Whole population</b>	Normal	548 (65)	289 (34)	9 (1.1)
	Pre-hypertension	378 (36)	607 (59)	53 (5)
	Hypertension	8 (7)	77 (66)	32 (27)
<b>Age &lt; 34 yr</b>	Normal	65 (77)	19 (23)	0
	Pre-hypertension	19 (51)	17 (46)	1 (3)
	Hypertension	0	1 (100)	0
<b>35 – 44 yr</b>	Normal	55 (81)	12 (18)	1 (1)
	Pre-hypertension	16 (42)	22 (58)	0
	Hypertension	0	4 (57)	3 (43)
<b>45 – 64 yr</b>	Normal	312 (68)	142 (31)	4 (1)
	Pre-hypertension	214 (41)	270 (52)	38 (7)
	Hypertension	3 (5)	39 (64)	19 (31)
<b>≥ 65 yr</b>	Normal	116 (49)	116 (49)	4 (2)
	Pre-hypertension	129 (29)	298 (68)	14 (3)
	Hypertension	5 (10)	33 (69)	10 (21)

Chi square test,  $p < 0.001$ , Data presented as number (% within BP status at baseline)

**Table S3.** Blood pressure measures changes over time in whole population and after excluding participants on BP-lowering medication after joining the program, according to BP status

Study population		Whole population (n=8,155)				After excluding participants on BP meds (n=4,251)				Between groups p value*
Parameter	BP status	N	Mean	SD	P value	N	Mean	SD	P value <sup>#</sup>	
Systolic blood pressure change	normotensive	3273	6.0 <sup>a</sup>	14	< 0.01	1819	5.7 <sup>a</sup>	14	< 0.001	0.58
	pre-hypertensive	4290	-3.8 <sup>b</sup>	16		2156	-4.6 <sup>b</sup>	16		0.81
	hypertensive	592	-12 <sup>c</sup>	19		276	-13 <sup>c</sup>	18		0.53
Diastolic blood pressure change	normotensive	3273	2.6 <sup>a</sup>	9.6	< 0.01	1819	2.7 <sup>a</sup>	10	< 0.001	0.93
	pre-hypertensive	4290	-2.0 <sup>b</sup>	9.5		2156	-2.3 <sup>b</sup>	9.4		0.72
	hypertensive	592	-10 <sup>c</sup>	10		276	-10 <sup>c</sup>	10		0.89
Pulse Pressure change	normotensive	3273	3.4 <sup>a</sup>	12	< 0.01	1819	3.0 <sup>a</sup>	12	< 0.001	0.48
	pre-hypertensive	4290	-1.9 <sup>b</sup>	15		2156	-2.3 <sup>b</sup>	15		0.61
	hypertensive	592	-1.6 <sup>b</sup>	16		276	-3.0 <sup>b</sup>	16		0.06
Mean Arterial Pressure change	normotensive	3273	3.8 <sup>a</sup>	9.5	< 0.01	1819	3.7 <sup>a</sup>	9.4	< 0.001	0.88
	pre-hypertensive	4290	-2.6 <sup>b</sup>	9.6		2156	-3.1 <sup>b</sup>	9.3		0.27
	hypertensive	592	-11 <sup>c</sup>	11		276	-11 <sup>c</sup>	11		0.98
Serum 25(OH)D change	normotensive	3273	24 <sup>b</sup>	43	< 0.01	1819	23	42	0.01	0.97
	pre-hypertensive	4290	28 <sup>a</sup>	40		2156	27	40		0.83
	hypertensive	592	31 <sup>a</sup>	43		276	28	38		0.05

<sup>#</sup>One-way ANOVA, different letters show post-hoc test (Tukey test), <sup>\*</sup>Independent T-test,

Table S4. Comparison of changes in blood pressure measures in hypertensive participants according to the season of observation

<b>BP measure change</b>	<b>Season</b>	<b>N</b>	<b>Mean ± SD</b>	<b>P value</b>
Systolic blood pressure (mmHg)	Winter	309	-10 ± 17	0.02
	Summer	283	-14 ± 20	
Diastolic blood pressure (mmHg)	Winter	309	-10 ± 10	0.47
	Summer	283	-11 ± 10	
Pulse Pressure (mmHg)	Winter	309	-0.22 ± 15	0.03
	Summer	283	-3.1 ± 18	
Mean Atrial Pressure (mmHg)	Winter	309	-10 ± 11	0.07
	Summer	283	-12 ± 12	
Serum 25(OH)D (nmol/L)	Winter	309	31 ± 46	0.81
	Summer	283	31 ± 39	

Independent-Samples T-test, winter=November-April, summer=May-October