SUPPLEMENT

Supplementary Table 1. Group-by-time interactions for outcomes of cognitive by domain at 12-month follow-up adjusted by baseline dietary factors.

	Energy	**Protein**	**Carbohydrate**	**Fat**
Immediate recall	β=0.38	β=0.50	β=0.39	β=0.47
	P=0.442	P=0.306	P=0.424	P=0.335
Verbal learning	β=-0.74	β=-0.49	β=-0.78	β=-0.56
	P=0.729	P=0.820	P=0.717	P=0.794
Delayed recall	β=-0.68	β=-0.63	β=-0.66	β=-0.68
	P=0.254	P=0.283	P=0.262	P=0.252
Verbal recall	β=-0.21	β=-0.24	β=-0.21	β=-0.20
	P=0.697	P=0.649	P=0.686	P=0.716
Verbal working memory	β=-0.72	β=-0.76	β=-0.75	β=-0.68
	P=0.123	P=0.103	P=0.105	P=0.143
Visuomotor speed	β=0.81	β=1.09	β=1.15	β=0.75
	P=0.773	P=0.699	P=0.681	P=0.786
Task switching	β=-4.13	β=-3.90	β=-4.41	β=-4.90
	P=0.675	P=0.693	P=0.654	P=0.618
Executive function	β=-5.22	β=-5.05	β=-5.88	β=-5.99
	P=0.600	P=0.613	P=0.554	P=0.545
Psychomotor attention	β=-0.10	β=-0.12	β=-0.10	β=-0.10
	P=0.643	P=0.582	P=0.660	P=0.651
Working memory learning	β=-0.15	β=-0.12	β=-0.13	β=-0.11
	P=0.395	P=0.482	P=0.465	P=0.502
Global cognition	β=-0.11	β=-0.11	β=-0.10	β=-0.10
	P=0.392	P=0.400	P=0.449	P=0.452

Data are β coefficient and P-values from adjusted linear mixed models.

SUPPLEMENT

Supplementary Table 2. Group-by-time interactions for outcomes of cognitive by domain at 12-month follow-up adjusted by treatment and disease factors.

	ADT duration at baseline	**Stopped ADT during study**	**Bone metastases at baseline**	**Started radiotherapy during study**	**Started chemotherapy during study**
Immediate recall	β=0.62 P=0.188	β=0.62 P=0.190	β=0.62 P=0.190	β=0.62 P=0.189	β=0.62 P=0.190
Verbal learning	β=-0.17 P=0.937	β=-0.20 P=0.926	β=-0.20 P=0.925	β=-0.19 P=0.927	β=-0.19 P=0.928
Delayed recall	β=-0.64 P=0.275	β=-0.65 P=0.272	β=-0.65 P=0.273	β=-0.65 P=0.274	β=-0.64 P=0.281
Verbal recall	β=-0.23 P=0.649	β=-0.23 P=0.650	β=-0.24 P=0.642	β=-0.23 P=0.648	β=-0.23 P=0.654
Verbal working memory	β=-0.70 P=0.125	β=-0.70 P=0.124	β=-0.71 P=0.121	β=-0.70 P=0.123	β=-0.71 P=0.121
Visuomotor speed	β=1.00 P=0.711	β=0.98 P=0.718	β=1.03 P=0.704	β=0.99 P=0.715	β=1.07 P=0.692
Task switching	β=-5.85 P=0.541	β=-5.87 P=0.539	β=-5.74 P=0.548	β=-5.81 P=0.544	β=-5.73 P=0.550
Executive function	β=-6.96 P=0.473	β=-6.93 P=0.474	β=-6.82 P=0.480	β=-6.87 P=0.478	β=-6.87 P=0.479
Psychomotor attention	β=-0.06 P=0.766	β=-0.06 P=0.766	β=-0.07 P=0.748	β=-0.06 P=0.767	β=-0.06 P=0.771
Working memory learning	β=-0.11 P=0.488	β=-0.11 P=0.487	β=-0.12 P=0.474	β=-0.11 P=0.490	β=-0.12 P=0.476
Global cognition	β=-0.07 P=0.575	β=-0.07 P=0.575	β=-0.07 P=0.561	β=-0.07 P=0.576	β=-0.07 P=0.572

Data are β coefficient and P-values from adjusted linear mixed models. ADT: androgen deprivation therapy.

SUPPLEMENT

Supplementary Table 3. Mean baseline and changes in habitual physical activity and dietary energy, carbohydrate, protein, fat, calcium and alcohol intake at six and 12 months in the exercise plus supplement and control group.

	Ex+Suppl		Control	
	n	**Mean ± SD or (95% CI)**	**n**	**Mean ± SD or (95% CI)**
Physical activity, kJ/d				
Baseline	34	3043 ± 1770	36	2248 ± 1571
Δ 6 months	32	588 (-280, 1456)	32	-90 (-637, 456)
Δ 12 months	32	-69 (-722, 583)	29	453 (70, 835)
Dietary energy, kJ/d				
Baseline	30	8920 ± 2941	30	8920 ± 2941
Δ 6 months	30	200 (-632, 1032)	25	442 (-490, 1373)
Δ 12 months	29	-628 (-1619, 364)	26	155 (-793, 1103)
Dietary protein, g/kg/d				
Baseline	30	1.12 ± 0.42	30	1.01 ± 0.28
Δ 6 months	30	0.07 (-0.09, 0.22)	25	0.01 (-0.11, 0.13)
Δ 12 months	29	0.02 (-0.15, 0.20)	26	-0.01 (-0.12, 0.11)
Dietary carbohydrate, g/d				
Baseline	30	219 ± 99	30	210 ± 76
Δ 6 months	30	-1 (-28, 26)	25	17 (-13, 47)
Δ 12 months	29	-24 (-53, 6)	26	5 (-31, 41)
Dietary fat, g/d				
Baseline	30	75.2 ± 31.4	30	79 ± 36.7
Δ 6 months	30	7.4 (-4.2, 19.1)	25	2.1 (-14.5, 18.7)
Δ 12 months	29	-5.5 (-20.1, 9.2)	26	1.8 (-12.5, 16.2)

Data are mean ± SD or mean change (95% confidence interval). Ex+Suppl: multi-component exercise program combined with protein, calcium and vitamin D supplementation.

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Supplementary Table 4. Number and proportion of cardiometabolic comorbidities in the exercise plus supplement and control at baseline, six and 12 months.

	Ex+Suppl		Control	
	n	**n (%)**	**n**	**n (%)**
Hypertension				
Baseline	34	25 (73.5)	36	26 (72.2)
6 months	33	23 (69.7)	31	21 (67.7)
12 months	31	21 (67.7)	29	20 (69.0)
Dyslipidaemia				
Baseline	34	26 (76.5)	36	25 (69.4)
6 months	34	27 (79.4)	32	21 (65.6)
12 months	32	30 (93.8)	29	23 (79.3)
Type 2 diabetes				
Baseline	34	1 (2.9)	36	6 (16.7)
6 months	34	2 (5.9)	32	7 (21.9)
12 months	32	0 (0.0)	29	6 (20.7)
Cardiovascular disease				
Baseline	34	6 (17.7)	36	14 (38.9)
6 months	34	6 (17.7)	32	13 (40.6)
12 months	31	4 (12.9)	29	11 (37.9)
Cardiometabolic medication				
Baseline	34	16 (47.1)	36	15 (41.7)
6 months	34	18 (52.9)	32	17 (53.1)
12 months	31	19 (61.3)	29	17 (58.6)

Data are number (percent within-group). Ex+Suppl: multi-component exercise program combined with protein, calcium and vitamin D supplementation. Hypertension: systolic ≥130 or diastolic ≥80; dyslipidaemia: cholesterol ≥5.5 mmol/L, LDL-cholesterol ≥3.5 mmol/L, HDL-cholesterol <1.0 mmol/L, triglycerides ≥2.0 mmol/L or taking lipid-modifying medication; type 2 diabetes: self-reported diagnosed; cardiovascular disease: self-report diagnosed; cardiometabolic medication: any prescribed for dyslipidaemia, type 2 diabetes or cardiovascular disease.

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Supplementary Figure 1. Q-Q plots of residuals from unadjusted models.