Guideline-Based Physical Activity and Survival Among US Men With Nonmetastatic Prostate Cancer

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Web Appendix 1

The g-formula risk is a weighted average of risks conditional on a specified intervention history and observed confounder history. The weights are the probability density functions of the time-varying confounders, which are estimated using parametric regression models, and the weighted average is approximated using Monte Carlo simulation (of 10,000 men in our analyses). The adjustment covariates are described in **Web Table 2**.

To assess model misspecification, we compared the observed means of time-varying covariates with the model-based predicted means under no intervention (**Web Figures 1-4**). The estimated 10-year risk of death under no physical activity intervention was the same as the observed risk (15.4%), a necessary condition for no model misspecification, and the estimated and observed means of all time-varying covariates were close**.**

To assess the possibility of model extrapolation, we calculated the proportion of men who had to increase their activity at any point during follow-up and during each two-year period on average in order to keep adhering to the strategy (**Web Table 3**). The cumulative proportion of men who would have to change their behavior at any point over follow-up to keep adhering to the strategies was below 100% for all interventions. When we expanded the set of chronic conditions that would excuse men from following the recommended physical activity levels, the proportion of men who had to change their behavior at any time over follow-up to remain adherent to these strategies decreased, as expected.

Additionally, we estimated risk ratios with risk under low activity (<1.25 hours/week of vigorous or <2.5 hours/week of moderate) as the reference (**Web Table 12**). For comparison with a conventional approach, we fit pooled logistic models to estimate the association between physical activity and risk of death in two-year intervals (**Web Table 11**). As expected, estimated risk ratios were further from the null when risk under low physical activity was used as the reference rather than risk under no physical activity intervention (**Web Table 12** compared with

Main Table 2). Estimates from conventional pooled logistic models were qualitatively similar to these estimates, but further from the null (**Web Table 11** compared with **Web Table 12**).

As one of our sensitivity analyses for unmeasured confounding, we conducted an alternative analysis in which physical activity and covariate data are lagged by two years. This approach assumes (1) a two year lag between physical activity and its potential effects on chronic diseases and mortality, (2) any diagnosed chronic disease existed in a subclinical state for two years, and (3) any undiagnosed chronic disease would have been diagnosed by two years.

Web Appendix 2

Models used for the parametric g-formula

Model 1 Outcome model

The LOGISTIC Procedure

Model Information

Data Set	WORK.PARAM
Response Variable	event
Number of Response Levels	2
Weight Variable	_weight_
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	9119
Number of Observations Used	8972
Sum of Weights Read	9119
Sum of Weights Used	8972

Response Profile

Ordered Value	event	Total Frequency	Total Weight
1	1	250	250.0000
2	0	8722	8722.0000

Probability modeled is event=1.

Model Convergence Status

Convergence criterion (GCONV=1E-8) satisfied.

Analysis of Maximum Likelihood Estimates

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-1.5533	0.5177	9.0033	0.0027
baseage_1	1	-0.6195	0.2340	7.0103	0.0081
baseage_2	1	-0.5315	0.2091	6.4595	0.0110
baseage_3	1	-0.2737	0.1713	2.5513	0.1102
smkhx	1	0.0519	0.1377	0.1419	0.7064
treat_1	1	-0.6531	0.2308	8.0095	0.0047
treat_2	1	-0.1870	0.2036	0.8438	0.3583
stage_1	1	-0.0711	0.1473	0.2328	0.6295
psa_1	1	0.1947	0.2119	0.8439	0.3583
gleason_1	1	-0.8889	0.2079	18.2833	<.0001
gleason_2	1	-0.3619	0.2156	2.8191	0.0931
bmi_pre_1	1	-0.4894	1.1816	0.1715	0.6788
bmi_pre_2	1	0.1708	0.3975	0.1845	0.6675
bmi_pre_3	1	0.5384	0.3666	2.1571	0.1419
vigact_pre_1	1	0.1136	0.2333	0.2372	0.6263
vigact_pre_2	1	-0.0524	0.3215	0.0266	0.8706

vigact_pre_3	1	0.3216	0.2661	1.4613	0.2267
modact_pre_1	1	-0.2790	0.1871	2.2227	0.1360
modact_pre_2	1	0.0895	0.1929	0.2153	0.6427
modact_pre_3	1	-0.3047	0.2209	1.9030	0.1677
fhxmi	1	-0.4512	0.2314	3.8022	0.0512
period_1	1	-1.9668	0.2933	44.9689	<.0001
period_2	1	-1.0941	0.2092	27.3642	<.0001
period_3	1	-0.7179	0.1933	13.7946	0.0002
period_4	1	-0.6624	0.1952	11.5154	0.0007
xcond	1	1.3141	0.2703	23.6344	<.0001
tsxcond_inter	1	-0.1149	0.1256	0.8378	0.3600
modact	1	-0.2250	0.0428	27.5893	<.0001
modact_spl1	1	0.1548	0.0327	22.3509	<.0001
bmi_1	1	1.8081	0.6642	7.4107	0.0065
bmi_2	1	0.7712	0.3792	4.1365	0.0420
bmi_3	1	0.2690	0.3557	0.5718	0.4496
vigact	1	-0.2727	0.0983	7.7001	0.0055
vigact_spl1	1	0.1708	0.0924	3.4156	0.0646

Model 2 Development of conditions limiting physical activity model (composite of functional impairment, metastasis, myocardial infarction, stroke, congestive heart failure, or amyotrophic lateral sclerosis)

The LOGISTIC Procedure

Model Information

Data Set	WORK.PARAM
Response Variable	xcond
Number of Response Levels	2
Weight Variable	_weight_
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	6396
Number of Observations Used	6396
Sum of Weights Read	6396
Sum of Weights Used	6396

Response Profile

Ordered Value	xcond	Total Frequency	Total Weight
1	1	400	400.0000
2	0	5996	5996.0000

Probability modeled is xcond=1.

Model Convergence Status

Convergence criterion (GCONV=1E-8) satisfied.

Analysis of Maximum Likelihood Estimates

			Standard	Wald

Parameter	DF	Estimate	Error	Chi-Square	Pr > ChiSq
Intercept	1	-0.0539	0.3834	0.0198	0.8881
baseage_1	1	-1.2596	0.1870	45.3840	<.0001
baseage_2	1	-0.5674	0.1555	13.3161	0.0003
baseage_3	1	-0.3398	0.1379	6.0743	0.0137
smkhx	1	0.0342	0.1082	0.1001	0.7517
treat_1	1	-0.5107	0.1838	7.7207	0.0055
treat_2	1	-0.1951	0.1670	1.3642	0.2428
stage_1	1	-0.2366	0.1162	4.1433	0.0418
psa_1	1	-0.3521	0.1759	4.0052	0.0454
gleason_1	1	-0.6022	0.1659	13.1855	0.0003
gleason_2	1	-0.3454	0.1784	3.7464	0.0529
bmi_pre_1	1	-1.5383	1.1149	1.9038	0.1677
bmi_pre_2	1	-0.0499	0.2744	0.0331	0.8556
bmi_pre_3	1	-0.1727	0.2348	0.5411	0.4620
vigact_pre_1	1	-0.0748	0.1852	0.1633	0.6861
vigact_pre_2	1	-0.00800	0.2359	0.0011	0.9729
vigact_pre_3	1	0.1594	0.2034	0.6137	0.4334
modact_pre_1	1	0.1080	0.1544	0.4888	0.4845
modact_pre_2	1	0.2414	0.1619	2.2237	0.1359
modact_pre_3	1	0.0816	0.1659	0.2421	0.6227
fhxmi	1	0.2013	0.1538	1.7128	0.1906
period_1	0	0	.	.	.
period_2	1	-0.3085	0.1547	3.9758	0.0462
period_3	1	-0.3899	0.1631	5.7158	0.0168
period_4	1	-0.3082	0.1736	3.1541	0.0757
modact_l1	1	-0.0839	0.0360	5.4254	0.0198
modact_l1_spl1	1	0.0492	0.0272	3.2752	0.0703
bmi_l1_1	1	0.6708	0.6371	1.1086	0.2924
bmi_l1_2	1	-0.6886	0.2674	6.6323	0.0100
bmi_l1_3	1	-0.3326	0.2242	2.2013	0.1379
vigact_l1	1	-0.1384	0.0718	3.7121	0.0540
vigact_l1_spl1	1	0.0617	0.0661	0.8690	0.3512

Model 3 Moderate activity model

The REG Procedure
Model: MODEL1
Dependent Variable: modact

Number of Observations Read	6820
Number of Observations Used	6820

Root MSE	6.58707	R-Square	0.3772
Dependent Mean	7.65784	Adj R-Sq	0.3743
Coeff Var	86.01741		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	2.69012	0.66876	4.02	<.0001
baseage_1	1	0.85723	0.26537	3.23	0.0012
baseage_2	1	1.05468	0.25775	4.09	<.0001
baseage_3	1	0.64540	0.24380	2.65	0.0081
smkhx	1	-0.06564	0.16264	-0.40	0.6865

treat_1	1	0.10728	0.30874	0.35	0.7283
treat_2	1	-0.26481	0.30093	-0.88	0.3789
stage_1	1	0.04409	0.18358	0.24	0.8102
psa_1	1	0.08472	0.23860	0.36	0.7225
gleason_1	1	0.33983	0.31133	1.09	0.2751
gleason_2	1	0.40371	0.33265	1.21	0.2249
bmi_pre_1	1	-2.37861	1.35111	-1.76	0.0784
bmi_pre_2	1	-0.38232	0.44223	-0.86	0.3873
bmi_pre_3	1	-0.14650	0.38320	-0.38	0.7022
vigact_pre_1	1	-0.24552	0.26788	-0.92	0.3594
vigact_pre_2	1	-0.49579	0.33759	-1.47	0.1420
vigact_pre_3	1	0.01401	0.29942	0.05	0.9627
modact_pre_1	1	-2.72369	0.23121	-11.78	<.0001
modact_pre_2	1	-2.37572	0.24071	-9.87	<.0001
modact_pre_3	1	-1.40199	0.24593	-5.70	<.0001
fhxmi	1	0.43595	0.24342	1.79	0.0733
period_1	0	0	.	.	.
period_2	1	0.72158	0.24967	2.89	0.0039
period_3	1	0.71701	0.25250	2.84	0.0045
period_4	1	0.29881	0.26149	1.14	0.2532
xcond	1	-0.78575	0.51009	-1.54	0.1235
tsxcond_inter	1	0.08094	0.24691	0.33	0.7431
modact_l1	1	0.80444	0.05676	14.17	<.0001
modact_l1_spl1	1	-0.19971	0.04197	-4.76	<.0001
bmi_l1_1	1	4.32035	1.37096	3.15	0.0016
bmi_l1_2	1	0.84932	0.42325	2.01	0.0448
bmi_l1_3	1	0.63631	0.36352	1.75	0.0801
vigact_l1	1	-0.10662	0.10294	-1.04	0.3004
vigact_l1_spl1	1	0.07749	0.08853	0.88	0.3814

Model 4 BMI model

The REG Procedure
Model: MODEL1
Dependent Variable: bmi

Number of Observations Read	6820
Number of Observations Used	6820

Root MSE	0.06711	R-Square	0.7217
Dependent Mean	3.24274	Adj R-Sq	0.7203
Coeff Var	2.06948		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	3.46142	0.00687	503.79	<.0001
baseage_1	1	0.01699	0.00271	6.27	<.0001
baseage_2	1	0.01693	0.00263	6.43	<.0001
baseage_3	1	0.00810	0.00249	3.26	0.0011
smkhx	1	0.00309	0.00166	1.86	0.0625
treat_1	1	0.00411	0.00315	1.31	0.1913
treat_2	1	0.00132	0.00307	0.43	0.6675
stage_1	1	-0.00279	0.00187	-1.49	0.1354
psa_1	1	-0.00291	0.00243	-1.20	0.2307
gleason_1	1	-0.00258	0.00317	-0.81	0.4153

gleason_2	1	-0.00532	0.00339	-1.57	0.1166
bmi_pre_1	1	-0.13960	0.01377	-10.14	<.0001
bmi_pre_2	1	-0.11586	0.00451	-25.71	<.0001
bmi_pre_3	1	-0.05476	0.00390	-14.03	<.0001
vigact_pre_1	1	0.00198	0.00273	0.73	0.4674
vigact_pre_2	1	0.00270	0.00344	0.79	0.4320
vigact_pre_3	1	0.00167	0.00305	0.55	0.5844
modact_pre_1	1	0.00249	0.00239	1.04	0.2967
modact_pre_2	1	0.00261	0.00247	1.06	0.2904
modact_pre_3	1	0.00085917	0.00251	0.34	0.7323
fhxmi	1	-0.00353	0.00248	-1.42	0.1547
period_1	0	0	.	.	.
period_2	1	0.00642	0.00255	2.52	0.0117
period_3	1	0.00291	0.00258	1.13	0.2584
period_4	1	0.00144	0.00266	0.54	0.5893
xcond	1	-0.00474	0.00521	-0.91	0.3626
tsxcond_inter	1	0.00171	0.00252	0.68	0.4977
modact_l1	1	0.00020698	0.00064776	0.32	0.7493
modact_l1_spl1	1	-0.00006509	0.00047249	-0.14	0.8904
bmi_l1_1	1	-0.38170	0.01398	-27.31	<.0001
bmi_l1_2	1	-0.22560	0.00431	-52.30	<.0001
bmi_l1_3	1	-0.12555	0.00370	-33.89	<.0001
vigact_l1	1	-0.00171	0.00105	-1.63	0.1027
vigact_l1_spl1	1	0.00096989	0.00090280	1.07	0.2827
modact	1	-0.00045448	0.00062425	-0.73	0.4666
modact_spl1	1	0.00000458	0.00045730	0.01	0.9920

Model 5 Vigorous activity models

The LOGISTIC Procedure

Model Information

Data Set	WORK.PARAM
Response Variable	zvigact
Number of Response Levels	2
Weight Variable	_weight_
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	6820
Number of Observations Used	6820
Sum of Weights Read	6820
Sum of Weights Used	6820

Response Profile

Ordered Value	zvigact	Total Frequency	Total Weight
1	1	3594	3594.0000
2	0	3226	3226.0000

Probability modeled is zvigact=1.

Model Convergence Status

Convergence criterion (GCONV=1E-8) satisfied.

Analysis of Maximum Likelihood Estimates

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-0.8979	0.2548	12.4194	0.0004
baseage_1	1	0.1565	0.1006	2.4190	0.1199
baseage_2	1	0.0774	0.0974	0.6321	0.4266
baseage_3	1	-0.0756	0.0918	0.6779	0.4103
smkhx	1	-0.0188	0.0617	0.0927	0.7608
treat_1	1	-0.00515	0.1156	0.0020	0.9645
treat_2	1	-0.0266	0.1123	0.0561	0.8128
stage_1	1	-0.0332	0.0698	0.2260	0.6345
psa_1	1	0.2505	0.0903	7.7006	0.0055
gleason_1	1	-0.0630	0.1171	0.2898	0.5904
gleason_2	1	-0.1946	0.1255	2.4032	0.1211
bmi_pre_1	1	-0.2860	0.5337	0.2871	0.5921
bmi_pre_2	1	0.1477	0.1717	0.7401	0.3896
bmi_pre_3	1	0.0553	0.1474	0.1408	0.7075
vigact_pre_1	1	-0.7733	0.1074	51.8625	<.0001
vigact_pre_2	1	-0.1523	0.1354	1.2659	0.2605
vigact_pre_3	1	-0.1665	0.1286	1.6761	0.1954
modact_pre_1	1	0.00604	0.0886	0.0047	0.9456
modact_pre_2	1	0.1338	0.0924	2.0959	0.1477
modact_pre_3	1	0.0476	0.0934	0.2594	0.6105
fhxmi	1	0.00232	0.0921	0.0006	0.9799
period_1	0	0	.	.	.
period_2	1	0.2977	0.0950	9.8205	0.0017
period_3	1	0.2448	0.0956	6.5549	0.0105
period_4	1	0.1821	0.0988	3.3964	0.0653
xcond	1	-0.3196	0.1911	2.7962	0.0945
tsxcond_inter	1	0.1810	0.0917	3.8987	0.0483
modact_l1	1	-0.0380	0.0239	2.5280	0.1118
modact_l1_spl1	1	0.0157	0.0175	0.8104	0.3680
bmi_l1_1	1	1.4904	0.6114	5.9429	0.0148
bmi_l1_2	1	0.1136	0.2023	0.3154	0.5744
bmi_l1_3	1	-0.0419	0.1718	0.0594	0.8075
vigact_l1	1	1.2295	0.0415	876.5002	<.0001
vigact_l1_spl1	1	-0.8123	0.0396	420.3715	<.0001
modact	1	0.0509	0.0231	4.8470	0.0277
modact_spl1	1	-0.0337	0.0169	3.9518	0.0468
bmi_1	1	-0.0613	0.5185	0.0140	0.9058
bmi_2	1	0.2039	0.1955	1.0883	0.2969
bmi_3	1	0.2138	0.1683	1.6138	0.2040

The REG Procedure
Model: MODEL1
Dependent Variable: lvigact

Number of Observations Read	3594
Number of Observations Used	3594

Root MSE	0.93504	R-Square	0.3856
Dependent Mean	0.57080	Adj R-Sq	0.3792
Coeff Var	163.81224		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	0.01801	0.13927	0.13	0.8971
baseage_1	1	0.05323	0.05262	1.01	0.3118
baseage_2	1	-0.06046	0.05137	-1.18	0.2393
baseage_3	1	-0.08028	0.04942	-1.62	0.1044
smkhx	1	-0.04550	0.03186	-1.43	0.1534
treat_1	1	0.01993	0.06121	0.33	0.7447
treat_2	1	0.03587	0.06006	0.60	0.5504
stage_1	1	-0.03920	0.03606	-1.09	0.2772
psa_1	1	-0.02066	0.04506	-0.46	0.6466
gleason_1	1	-0.03649	0.06097	-0.60	0.5495
gleason_2	1	-0.03803	0.06581	-0.58	0.5634
bmi_pre_1	1	0.65415	0.26096	2.51	0.0122
bmi_pre_2	1	0.07576	0.09952	0.76	0.4466
bmi_pre_3	1	-0.09356	0.08887	-1.05	0.2925
vigact_pre_1	1	-0.54831	0.04670	-11.74	<.0001
vigact_pre_2	1	-0.43617	0.05714	-7.63	<.0001
vigact_pre_3	1	-0.25045	0.04858	-5.16	<.0001
modact_pre_1	1	0.05254	0.04731	1.11	0.2668
modact_pre_2	1	0.07600	0.04718	1.61	0.1073
modact_pre_3	1	0.06920	0.04885	1.42	0.1567
fhxmi	1	-0.04421	0.04746	-0.93	0.3517
period_1	0	0	.	.	.
period_2	1	0.00246	0.04991	0.05	0.9607
period_3	1	0.00178	0.05066	0.04	0.9719
period_4	1	-0.01600	0.05274	-0.30	0.7617
xcond	1	0.10218	0.10863	0.94	0.3470
tsxcond_inter	1	-0.07787	0.05163	-1.51	0.1316
modact_l1	1	-0.04593	0.01291	-3.56	0.0004
modact_l1_spl1	1	0.02445	0.00940	2.60	0.0093
bmi_l1_1	1	-1.14109	0.28188	-4.05	<.0001
bmi_l1_2	1	-0.25861	0.12082	-2.14	0.0324
bmi_l1_3	1	-0.16659	0.10718	-1.55	0.1202
vigact_l1	1	0.39058	0.02040	19.15	<.0001
vigact_l1_spl1	1	-0.19963	0.01638	-12.19	<.0001
modact	1	0.08140	0.01253	6.50	<.0001
modact_spl1	1	-0.04302	0.00915	-4.70	<.0001
bmi_1	1	-0.22004	0.26131	-0.84	0.3998
bmi_2	1	0.23400	0.11383	2.06	0.0399
bmi_3	1	0.29331	0.10126	2.90	0.0038

Web Table 1. Specification and Emulation of a Target Trial of Physical Activity Interventions Among Men With Nonmetastatic Prostate Cancer Using Data From the Health Professionals Follow-up Study

Component	Target trial	Emulation using observational data
Aim	To estimate the effect of physical activity interventions on 10-year risk of mortality among U.S. men aged 50-80 years and diagnosed with nonmetastatic prostate cancer.	Same.
Eligibility criteria	Men aged 50-80 years diagnosed with nonmetastatic prostate cancer between Jan 1998 and Jan 2010. Exclusion criteria of recent cardiovascular event (myocardial infarction or stroke), congestive heart failure, amyotrophic lateral sclerosis, or functional impairment (difficulty climbing a flight of stairs or walking eight blocks).	Same.
Treatment strategies	Initiate physical activity intervention at diagnosis and continue it over follow-up until the development of metastasis or a condition or disease limiting physical ability, including myocardial infarction, stroke, congestive heart failure, amyotrophic lateral sclerosis, or functional impairment.	Same, except baseline is taken as the return date of the first questionnaire after prostate cancer diagnosis.
Treatment assignment	At diagnosis, men assigned to a strategy and will be aware of the strategy to which they have been assigned.	Same.
Follow-up	Starts at diagnosis and ends at death, loss to follow-up, 10 years after baseline, or on 1 June 2014, whichever occurs first.	Same, except baseline is taken as the return date of the first questionnaire after prostate cancer diagnosis.
Outcome	All-cause mortality within 10 years of diagnosis.	Same.
Causal contrast of interest	Intention-to-treat effect, *i.e.*, effect of being assigned to a physical activity strategy vs. no strategy at baseline. Per-protocol effect, *i.e.*, effect that would have been observed if all men adhered to their assigned strategy over the 10-year follow-up.	Observational analog of per-protocol effect.
Statistical analysis	Intention-to-treat analysis. Per-protocol analysis: comparison of 10-year risk of death between groups receiving each treatment strategy with adjustment for pre- and post-baseline prognostic factors associated with adherence to the treatment strategies and loss to follow-up.	Same as per-protocol analysis.

Web Table 2. Covariates Used to Model 10-Year Risk of All-Cause Mortality Among Men With Nonmetastatic Prostate Cancer, Health Professionals Follow-Up Study.

A. Time-fixed covariates	Functional form as predictor	Variable name	Categories
Baseline (assessed in first post-diagnostic questionnaire)			
Age	4 categories	baseage_1	<65 years
		baseage_2	65-69.9 years
		baseage_3	70-74.9 years
		baseage_4	≥75 years
Clinical stage at diagnosis	2 categories	stage_1	T1
		stage_2	T2, T3, T4, N1/M0
Prostate-specific antigen level at diagnosis	2 categories	psa_1	<4 ng/mL
		psa_2	≥4 ng/mL
Gleason grade at diagnosis	3 categories	gleason_1	<7
		gleason_2	7
		gleason_3	>7
Primary treatment	3 categories	treat_1	Radical prostatectomy
		treat_2	Radiation
		treat_3	Hormones, watchful waiting, other
Parental history of myocardial infarction before age 60	Indicator	fhxmi	Yes/No
Pre-baseline (assessed in first pre-diagnostic questionnaire)			
BMI	4 categories	bmi_pre_1	<18.5 kg/m^2
		bmi_pre_2	18.5-24.9 kg/m^2
		bmi_pre_3	25.0-29.9 kg/m^2
		bmi_pre_4	≥30 kg/m^2
Vigorous physical activity	4 categories	vigact_pre_1	<1.25 hour/week
		vigact_pre_2	1.25-2.49 hours/week
		vigact_pre_3	2.50-3.74 hours/week
		vigact_pre_4	≥3.75 hours/week
Moderate physical activity	4 categories	modact_pre_1	<2.5 hours/week
		modact_pre_2	2.5-4.9 hours/week
		modact_pre_3	5-7.4 hours/week
		modact_pre_4	≥7.5 hours/week
Smoking history	Indicator	smkhx	Yes/No

Web Table 2 (continued). Covariates used to model 10-year risk of all-cause mortality among men with nonmetastatic prostate cancer, Health Professionals Follow-up Study.

B. Time-varying covariates[a]	Modeling as dependent	Variable name	Functional form as predictor	Category or knot locations
Period of follow-up	Not predicted	period	5 period indicators	N/A
BMI	Linear (on log scale)[b]	bmi	4 categories	18.5, 25, 30 kg/m^2
Vigorous physical activity	Logistic, then log-linear[c]	vigact	Restricted cubic splines, 3 knots	1.25, 2.5, 3.75 hours/week
Moderate physical activity	Linear[b]	modcat	Restricted cubic splines, 3 knots	2.5, 5, 7.5 hours/week
Development of functional impairment, metastasis, myocardial infarction, stroke, congestive heart failure, or amyotrophic lateral sclerosis	Logistic to failure[d]	xcond	Indicator and time since switch	N/A

Abbreviation: BMI, body mass index.

[a] Time-varying covariates were assessed in all periods.

[b] Variables predicted by a linear model were assigned a value equal to the predicted value plus the standard error multiplied by a random number from a Normal (0,1) distribution. Therefore, two subjects with the same risk factor history were not necessarily predicted to have exactly the same risk factor value at the next time point. Simulated values of continuous risk factors were truncated so that they did not fall outside of the observed range.

[c] Variables with many zero values were predicted in two stages. First, we fit a logistic model on an indicator that the variable is nonzero. Second, we fit a linear model for the natural log of the nonzero values. Simulated values were truncated so that they did not fall outside of the observed range.

[d] Variables predicted by a logistic model were assigned a value of 1 if the predicted probability was greater than a random number from a uniform distribution. After the first 1 is generated, the value is set to 1 thereafter.

Web Table 3. Cumulative and Average Percent of Men Intervened on Under Strategies in Main Table 2: Estimated Risk[a] of All-Cause Mortality Under Several Hypothetical Physical Activity Strategies Among Men With Nonmetastatic Prostate Cancer, Health Professionals Follow-Up Study. All Strategies Excuse Men From Following the Recommended Physical Activity Levels After Development of Functional Impairment, Metastasis, Myocardial Infarction, Stroke, Congestive Heart Failure, or Amyotrophic Lateral Sclerosis.

Strategy	Cumulative % intervened on[b]	Average % intervened on[c]
No intervention	0	0
Vigorous activity		
≥1.25 h/week	87	57
≥2.5 h/week	93	63
≥3.75 h/week	97	72
Moderate activity		
≥2.5 h/week	57	24
≥5 h/week	73	34
≥7.5 h/week	85	45

[a] Estimates based on the parametric g-formula adjusted for age, parental history of myocardial infarction, primary treatment, clinical stage at diagnosis, Gleason grade at diagnosis, prostate-specific antigen level at diagnosis, smoking history, body mass index, vigorous and moderate physical activity, and the development of functional impairment, metastasis, myocardial infarction, stroke, congestive heart failure, or amyotrophic lateral sclerosis.

[b] Cumulative proportion of men who would have to change their behavior in any time period over follow-up to keep adhering to the strategy.

[c] Average proportion of men who would have to change their behavior in each 2-year period to keep adhering to the strategy.

Web Table 3 (continued). Cumulative and Average Percent of Men Intervened on Under Strategies in Main Table 3: Estimated Risk[a] of All-Cause Mortality Under Several Hypothetical Physical Activity Strategies Among Men With Nonmetastatic Prostate Cancer, Health Professionals Follow-Up Study. All Strategies Excuse Men From Following the Recommended Physical Activity Levels After Development of Functional Impairment, Metastasis, or a Serious Chronic Condition.[b]

Strategy	Cumulative % intervened on[c]	Average % intervened on[d]
No intervention	0	0
Vigorous activity		
≥1.25 h/week	57	38
≥2.5 h/week	62	42
≥3.75 h/week	66	48
Moderate activity		
≥2.5 h/week	37	16
≥5 h/week	48	23
≥7.5 h/week	56	30

[a] Estimates based on the parametric g-formula adjusted for age, parental history of myocardial infarction, primary treatment, clinical stage at diagnosis, Gleason grade at diagnosis, prostate-specific antigen level at diagnosis, smoking history, body mass index, vigorous and moderate physical activity, and the development of functional impairment, metastasis, myocardial infarction, stroke, congestive heart failure, or amyotrophic lateral sclerosis.

[b] Myocardial infarction, stroke, congestive heart failure, amyotrophic lateral sclerosis, or any of the following conditions: angina pectoris, pulmonary embolism, heart rhythm disturbance, diabetes, chronic renal failure, rheumatoid arthritis, gout, ulcerative colitis or Crohn's disease, emphysema, Parkinson's disease, and multiple sclerosis.

[c] Cumulative proportion of men who would have to change their behavior in any time period over follow-up to keep adhering to the strategy.

[d] Average proportion of men who would have to change their behavior in each 2-year period to keep adhering to the strategy.

Web Table 4. Actual P-values for Results in Main Table 2 per Request of One Reviewer and the Editor: Estimated Risk[a] of All-Cause Mortality Under Several Hypothetical Physical Activity Strategies Among Men With Nonmetastatic Prostate Cancer, Health Professionals Follow-Up Study. All Strategies Excuse Men From Following the Recommended Physical Activity Levels After Development of Functional Impairment, Metastasis, Myocardial Infarction, Stroke, Congestive Heart Failure, or Amyotrophic Lateral Sclerosis.

Strategy	10-year risk (%)[b]	95% CI	Risk ratio	95% CI	P-value	Risk difference (%)	95% CI	P-value
No intervention	15.4	13.7, 17.4	1.0	--	--	0	--	--
Vigorous activity								
≥1.25 h/week	13.0	10.9, 15.4	0.84	0.75, 0.94	0.002	-2.4	-3.9, -0.9	0.002
≥2.5 h/week	11.1	8.7, 14.1	0.72	0.58, 0.88	0.002	-4.3	-6.6, -1.8	5×10^{-4}
≥3.75 h/week	10.5	8.0, 13.5	0.68	0.53, 0.85	0.001	-5.0	-7.3, -2.3	1×10^{-4}
Moderate activity								
≥2.5 h/week	13.9	12.0, 16.0	0.90	0.84, 0.94	3×10^{-4}	-1.6	-2.4, -0.9	3×10^{-5}
≥5 h/week	12.6	10.6, 14.7	0.81	0.73, 0.88	1×10^{-5}	-2.9	-4.2, -1.8	3×10^{-6}
≥7.5 h/week	12.2	10.3, 14.4	0.79	0.71, 0.86	2×10^{-6}	-3.2	-4.5, -2.1	3×10^{-7}

Abbreviation: CI, confidence interval.

[a] Estimates based on the parametric g-formula adjusted for age, parental history of myocardial infarction, primary treatment, clinical stage at diagnosis, Gleason grade at diagnosis, prostate-specific antigen level at diagnosis, smoking history, body mass index, vigorous and moderate physical activity, and the development of functional impairment, metastasis, myocardial infarction, stroke, congestive heart failure, or amyotrophic lateral sclerosis.

[b] The observed risk was 15.4%. There were 250 observed deaths among 2,299 men over 8,972 person-years of follow-up. Risk under no intervention (*i.e.* the natural course) is the referent.

Web Table 5. Actual P-values for Results in Main Table 3 per Request of One Reviewer and the Editor: Estimated Risk[a] of All-Cause Mortality Under Several Hypothetical Physical Activity Strategies Among Men With Nonmetastatic Prostate Cancer, Health Professionals Follow-Up Study. All Strategies Excuse Men From Following the Recommended Physical Activity Levels After Development of Functional Impairment, Metastasis, or a Serious Chronic Condition.[b]

Strategy	10-year risk (%)[c]	95% CI	Risk ratio	95% CI	P-value	Risk difference (%)	95% CI	P-value
No intervention	15.5	13.8, 17.4	1.0	--	--	0	--	--
Vigorous activity								
≥1.25 h/week	14.2	12.4, 16.2	0.92	0.85, 0.97	0.01	-1.3	-2.3, -0.5	0.005
≥2.5 h/week	13.1	11.2, 15.3	0.84	0.75, 0.93	0.001	-2.4	-3.9, -1.0	0.001
≥3.75 h/week	12.8	10.9, 14.9	0.83	0.72, 0.92	0.003	-2.7	-4.4, -1.2	0.001
Moderate activity								
≥2.5 h/week	14.3	12.7, 16.4	0.93	0.89, 0.96	2×10^{-4}	-1.1	-1.6, -0.6	2×10^{-5}
≥5 h/week	13.7	11.9, 15.6	0.89	0.83, 0.92	1×10^{-5}	-1.8	-2.7, -1.2	3×10^{-6}
≥7.5 h/week	13.4	11.8, 15.5	0.87	0.81, 0.91	4×10^{-6}	-2.1	-2.9, -1.3	4×10^{-7}

Abbreviation: CI, confidence interval.

[a] Estimates based on the parametric g-formula adjusted for age, parental history of myocardial infarction, primary treatment, clinical stage at diagnosis, Gleason grade at diagnosis, prostate-specific antigen level at diagnosis, smoking history, body mass index, vigorous and moderate physical activity, and the development of functional impairment, metastasis, myocardial infarction, stroke, congestive heart failure, or amyotrophic lateral sclerosis.

[b] Myocardial infarction, stroke, congestive heart failure, amyotrophic lateral sclerosis, or any of the following conditions: angina pectoris, pulmonary embolism, heart rhythm disturbance, diabetes, chronic renal failure, rheumatoid arthritis, gout, ulcerative colitis or Crohn's disease, emphysema, Parkinson's disease, and multiple sclerosis.

[c] The observed risk was 15.4%. There were 250 observed deaths among 2,299 men over 8,972 person-years of follow-up. Risk under no intervention (*i.e.* the natural course) is the referent.

Web Table 6. Estimated Survival Time[a] and Time Invested[b] in Physical Activity Over 10 Years Under Each Hypothetical Strategy Among Men With Nonmetastatic Prostate Cancer, Health Professionals Follow-Up Study.

Strategy	Average number of days (months) lived	Average number of days (months) lived, difference	Average number of days (months) invested in physical activity	Average number of days (months) invested in physical activity, difference
No intervention	3,408 (113.6)	0	35 (1.2) (vigorous) 180 (6.0) (moderate)	0
Vigorous activity				
1.25 h/week	3,448 (114.9)	40 (1.3)	56 (1.9)	21 (0.7)
2.5 h/week	3,479 (116.0)	71 (2.4)	81 (2.7)	46 (1.5)
3.75 h/week	3,489 (116.3)	81 (2.7)	103 (3.4)	67 (2.2)
Moderate activity				
2.5 h/week	3,435 (114.5)	27 (0.9)	194 (6.5)	14 (0.5)
5 h/week	3,458 (115.3)	50 (1.7)	216 (7.2)	36 (1.2)
7.5 h/week	3,463 (115.4)	55 (1.8)	243 (8.1)	63 (2.1)

[a] Average number of days lived calculated as restricted mean survival time under each strategy. Difference in average number of days lived calculated as the difference in restricted mean survival time comparing the specified strategy with no intervention (*i.e.* the natural course).

[b] Average number of days invested in strategy-specific (i.e. vigorous or moderate) physical activity over follow-up. Difference in average number of days invested in physical activity calculated as the difference in average number of days invested in physical activity comparing the specified strategy with no intervention. Differences were calculated based on values before rounding.

Web Table 7. Sensitivity Analysis Using a Negative Outcome Control: Estimated Risk[a] of Questionnaire Non-Response Under Several Hypothetical Physical Activity Strategies Among Men With Nonmetastatic Prostate Cancer, Health Professionals Follow-Up Study. All Strategies Excuse Men From Following the Recommended Physical Activity Levels After Development of Functional Impairment, Metastasis, Myocardial Infarction, Stroke, Congestive Heart Failure, or Amyotrophic Lateral Sclerosis.

Strategy	10-year risk (%)[b]	95% CI	Risk ratio	95% CI	Risk difference	95% CI	Cumulative % intervened on[c]	Average % intervened on[d]
No intervention	12.8	11.2, 14.7	1.0	--	0	--	0	0
Vigorous activity								
≥1.25 h/week	13.5	11.2, 15.8	1.05	0.93, 1.17	0.7	-0.8, 2.1	87	57
≥2.5 h/week	13.5	10.5, 16.9	1.05	0.86, 1.30	0.7	-1.7, 3.7	93	63
≥3.75 h/week	12.6	9.7, 15.9	0.98	0.79, 1.22	-0.2	-2.7, 2.9	97	72
Moderate activity								
≥2.5 h/week	12.3	10.5, 14.1	0.96	0.91, 0.99	-0.5	-1.2, -0.1	57	24
≥5 h/week	11.7	9.9, 13.8	0.92	0.83, 0.99	-1.1	-2.1, -0.2	73	34
≥7.5 h/week	11.8	9.9, 13.9	0.92	0.83, 0.99	-1.0	-2.1, -0.1	85	45

Abbreviation: CI, confidence interval.

[a] Estimates based on the parametric g-formula adjusted for age, parental history of myocardial infarction, primary treatment, clinical stage at diagnosis, Gleason grade at diagnosis, prostate-specific antigen level at diagnosis, smoking history, body mass index, vigorous and moderate physical activity, and the development of metastasis, myocardial infarction, stroke, congestive heart failure, amyotrophic lateral sclerosis, or functional impairment.

[b] The observed risk was 12.7%. There were 205 events among 2,299 men over 8,927 person-years of follow-up.

[c] Cumulative proportion of men who would have to change their behavior in any time period over follow-up to keep adhering to the strategy.

[d] Average proportion of men who would have to change their behavior in each 2-year period to keep adhering to the strategy.

Web Table 8. Same as Main Table 2 Except Assuming That the Development of Functional Impairment, Metastasis, and Chronic Diseases Occurred Two Years Before the Questionnaire in Which These Conditions Were Reported. This Involved Excluding Those Developing These Conditions Through the End of the First Period and Stopping the Interventions in the Period Before (Rather Than After) Any of These Conditions Were Reported to Have Developed Over Follow-Up: Estimated Risk[a] of All-Cause Mortality Under Several Hypothetical Physical Activity Strategies Among Men With Nonmetastatic Prostate Cancer, Health Professionals Follow-Up Study.

Strategy	10-year risk (%)[b]	95% CI	Risk ratio	95% CI	Risk difference	95% CI	Cumulative % intervened on[c]	Average % intervened on[d]
No intervention	13.7	12.0, 15.8	1.0	--	0	--	0	0
Vigorous activity								
≥1.25 h/week	11.5	9.6, 13.9	0.83	0.73, 0.95	-2.3	-3.8, -0.7	86	56
≥2.5 h/week	9.7	7.4, 12.8	0.71	0.55, 0.88	-4.0	-6.2, -1.6	93	61
≥3.75 h/week	9.2	7.0, 12.4	0.67	0.52, 0.86	-4.5	-6.9, -1.9	97	71
Moderate activity								
≥2.5 h/week	12.1	10.4, 14.2	0.88	0.83, 0.94	-1.6	-2.5, -0.8	58	24
≥5 h/week	11.1	9.2, 13.3	0.81	0.71, 0.90	-2.7	-4.0, -1.5	74	34
≥7.5 h/week	11.0	9.0, 13.1	0.80	0.70, 0.89	-2.7	-4.2, -1.6	85	44

Abbreviation: CI, confidence interval.

[a] Estimates based on the parametric g-formula adjusted for age, parental history of myocardial infarction, primary treatment, clinical stage at diagnosis, Gleason grade at diagnosis, prostate-specific antigen level at diagnosis, smoking history, body mass index, vigorous and moderate physical activity, and the development of functional impairment, metastasis, myocardial infarction, stroke, congestive heart failure, or amyotrophic lateral sclerosis.

[b] The observed risk was 14.0%. There were 209 observed deaths among 2,149 men over 8,431 person-years of follow-up.

[c] Cumulative proportion of men who would have to change their behavior in any time period over follow-up to keep adhering to the strategy.

[d] Average proportion of men who would have to change their behavior in each 2-year period to keep adhering to the strategy.

Web Table 9. Same as Main Table 2 Except That Total Time Devoted to Vigorous and Moderate Physical Activity Was Kept Constant: Estimated Risk[a] of All-Cause Mortality Under Several Hypothetical Physical Activity Strategies Among Men With Nonmetastatic Prostate Cancer, Health Professionals Follow-Up Study. All Strategies Excuse Men From Following the Recommended Physical Activity Levels After Development of Functional Impairment, Metastasis, Myocardial Infarction, Stroke, Congestive Heart Failure, or Amyotrophic Lateral Sclerosis.

Strategy	10-year risk (%)[b]	95% CI	Risk ratio	95% CI	Risk difference	95% CI	Cumulative % intervened on[c]	Average % intervened on[d]
No intervention	15.4	13.7, 17.4	1.0	--	0	--	0	0
Vigorous activity								
≥1.25 h/week	13.4	11.4, 15.9	0.87	0.77, 0.98	-2.1	-3.5, -0.3	87	56
≥2.5 h/week	11.9	9.3, 15.0	0.77	0.62, 0.95	-3.5	-6.0, -0.7	93	63
≥3.75 h/week	11.9	9.1, 15.0	0.77	0.59, 0.96	-3.6	-6.2, -0.6	97	72
Moderate activity								
≥2.5 h/week	14.4	12.4, 16.5	0.93	0.87, 0.97	-1.1	-2.1, -0.4	56	23
≥5 h/week	13.2	11.0, 15.5	0.86	0.76, 0.92	-2.2	-3.7, -1.2	74	34
≥7.5 h/week	13.1	10.8, 15.6	0.85	0.75, 0.92	-2.4	-3.9, -1.2	85	45

Abbreviation: CI, confidence interval.

[a] Estimates based on the parametric g-formula adjusted for age, parental history of myocardial infarction, primary treatment, clinical stage at diagnosis, Gleason grade at diagnosis, prostate-specific antigen level at diagnosis, smoking history, body mass index, vigorous and moderate physical activity, and the development of functional impairment, metastasis, myocardial infarction, stroke, congestive heart failure, or amyotrophic lateral sclerosis.

[b] The observed risk was 15.4%. There were 250 observed deaths among 2,299 men over 8,972 person-years of follow-up.

[c] Cumulative proportion of men who would have to change their behavior in any time period over follow-up to keep adhering to the strategy.

[d] Average proportion of men who would have to change their behavior in each 2-year period to keep adhering to the strategy.

Web Table 10. Same as Main Table 2 Except That a Two-Year Lag Time Was Imposed: Estimated Risk[a] of All-Cause Mortality Under Several Hypothetical Physical Activity Strategies Among Men With Nonmetastatic Prostate Cancer, Health Professionals Follow-Up Study. All Strategies Excuse Men From Following the Recommended Physical Activity Levels After Development of Functional Impairment, Metastasis, Myocardial Infarction, Stroke, Congestive Heart Failure, or Amyotrophic Lateral Sclerosis.

Strategy	10-year risk (%)[b]	95% CI	Risk ratio	95% CI	Risk difference	95% CI	Cumulative % intervened on[c]	Average % intervened on[d]
No intervention	15.6	13.7, 17.5	1.0	--	0	--	0	0
Vigorous activity								
≥1.25 h/week	13.3	11.5, 15.5	0.85	0.77, 0.94	-2.4	-3.7, -0.9	78	53
≥2.5 h/week	11.7	9.7, 14.3	0.75	0.63, 0.89	-3.9	-6.0, -1.7	85	59
≥3.75 h/week	11.5	9.3, 14.1	0.74	0.61, 0.88	-4.1	-6.3, -1.8	90	68
Moderate activity								
≥2.5 h/week	14.8	12.7, 16.7	0.95	0.90, 0.99	-0.8	-1.6, -0.2	48	22
≥5 h/week	14.0	11.6, 16.0	0.89	0.82, 0.96	-1.7	-2.9, -0.5	64	31
≥7.5 h/week	13.8	11.3, 15.9	0.89	0.80, 0.96	-1.8	-3.1, -0.7	76	42

Abbreviation: CI, confidence interval.

[a] Estimates based on the parametric g-formula adjusted for age, parental history of myocardial infarction, primary treatment, clinical stage at diagnosis, Gleason grade at diagnosis, prostate-specific antigen level at diagnosis, smoking history, body mass index, vigorous and moderate physical activity, and the development of functional impairment, metastasis, myocardial infarction, stroke, congestive heart failure, or amyotrophic lateral sclerosis.

[b] The observed risk was 15.4%. There were 250 observed deaths among 2,299 men over 8,972 person-years of follow-up.

[c] Cumulative proportion of men who would have to change their behavior in any time period over follow-up to keep adhering to the strategy.

[d] Average proportion of men who would have to change their behavior in each 2-year period to keep adhering to the strategy.

Web Table 11. Estimated Odds Ratios[a] for All-Cause Mortality in Two-Year Intervals by Duration of Weekly Physical Activity Cancer Among Men With Nonmetastatic Prostate Cancer, Health Professionals Follow-Up Study.

	Vigorous activity (hours/week)				Moderate activity (hours/week)			
	<1.25	1.25 to <2.5	2.5 to <3.75	≥3.75	<2.5	2.5 to <5	5 to <7.5	≥7.5
Cases	201	15	17	17	125	41	30	54
Person-years	5,706	841	1,058	1,367	2,442	1,763	1,536	3,231
Age-adjusted OR (95% CI)	1	0.61	0.61	0.51	1	0.54	0.46	0.40
		(0.36, 1.04)	(0.37, 1.01)	(0.30, 0.84)		(0.37, 0.77)	(0.30, 0.69)	(0.28, 0.55)
+pre-baseline physical activity	1	0.60	0.60	0.53	1	0.52	0.44	0.38
		(0.35, 1.04)	(0.35, 1.01)	(0.30, 0.92)		(0.36, 0.75)	(0.29, 0.68)	(0.26, 0.54)
+baseline covariates	1	0.58	0.62	0.52	1	0.51	0.44	0.39
		(0.34, 1.01)	(0.37, 1.04)	(0.30, 0.91)		(0.35, 0.74)	(0.29, 0.67)	(0.27, 0.56)
+simple update covariates	1	0.57	0.62	0.52	1	0.52	0.44	0.38
		(0.33, 0.99)	(0.37, 1.05)	(0.30, 0.92)		(0.36, 0.75)	(0.29, 0.67)	(0.26, 0.54)
+intermediate diagnoses	1	0.59	0.62	0.56	1	0.60	0.47	0.44
		(0.34, 1.03)	(0.36, 1.05)	(0.32, 0.99)		(0.41, 0.88)	(0.31, 0.73)	(0.30, 0.63)

Abbreviations: CI, confidence interval; OR, odds ratio.

[a] Estimates based on pooled logistic regression models updating physical activity each time period. Vigorous and moderate physical activity were mutually adjusted. To age-adjusted models (containing linear and quadratic terms for age), we sequentially added the following adjustment variables: pre-baseline physical activity, baseline covariates, simple update covariates, and intermediate diagnoses. Pre-baseline physical activity included vigorous and moderate activity. Baseline covariates included parental history of myocardial infarction, primary treatment, clinical stage at diagnosis, Gleason grade at diagnosis, prostate-specific antigen level at diagnosis, smoking history, pre-baseline body mass index. Simple update covariates included body mass index. Intermediate diagnoses included the development of functional impairment, metastasis, myocardial infarction, stroke, congestive heart failure, or amyotrophic lateral sclerosis.

Web Table 12. Same as Main Table 2 but With Low Levels of Physical Activity as the Reference: Estimated Risk[a] of All-Cause Mortality Under Several Hypothetical Physical Activity Strategies Among Men With Nonmetastatic Prostate Cancer, Health Professionals Follow-Up Study. All Strategies Excuse Men From Following the Recommended Physical Activity Levels After Development of Functional Impairment, Metastasis, Myocardial Infarction, Stroke, Congestive Heart Failure, or Amyotrophic Lateral Sclerosis.

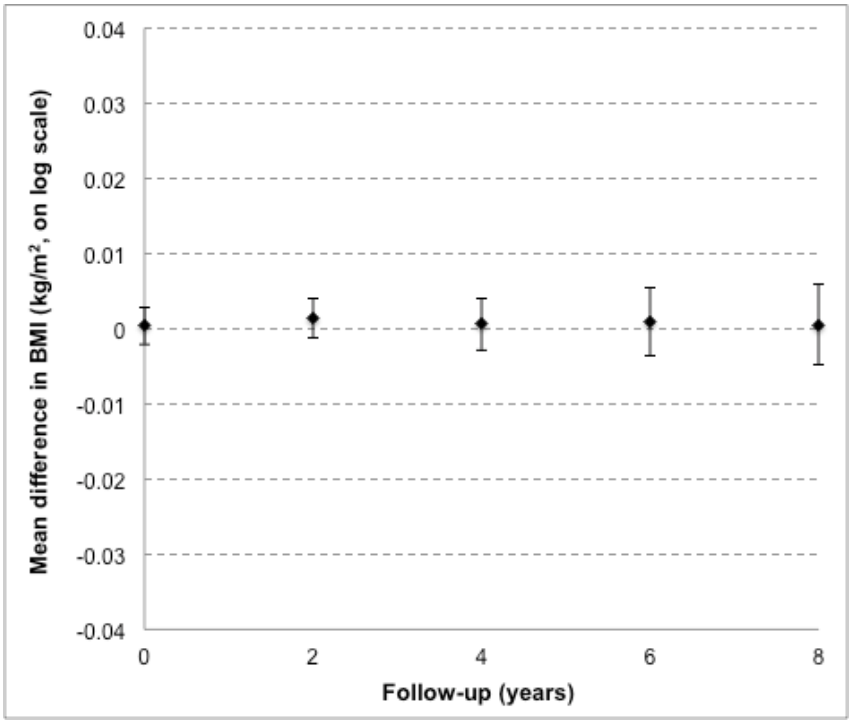
Strategy	10-year risk (%)[b]	95% CI	Risk ratio	95% CI
Vigorous activity				
<1.25 h/week	16.7	14.6, 18.8	1.0	--
≥1.25 h/week	13.0	10.9, 15.4	0.78	0.68, 0.91
≥2.5 h/week	11.1	8.7, 14.1	0.66	0.52, 0.85
≥3.75 h/week	10.5	8.0, 13.5	0.62	0.48, 0.83
Moderate activity				
<2.5 h/week	19.8	17.4, 22.4	1.0	--
≥2.5 h/week	13.9	12.0, 16.0	0.70	0.62, 0.79
≥5 h/week	12.6	10.6, 14.7	0.63	0.54, 0.74
≥7.5 h/week	12.2	10.3, 14.4	0.62	0.51, 0.72

Abbreviation: CI, confidence interval.

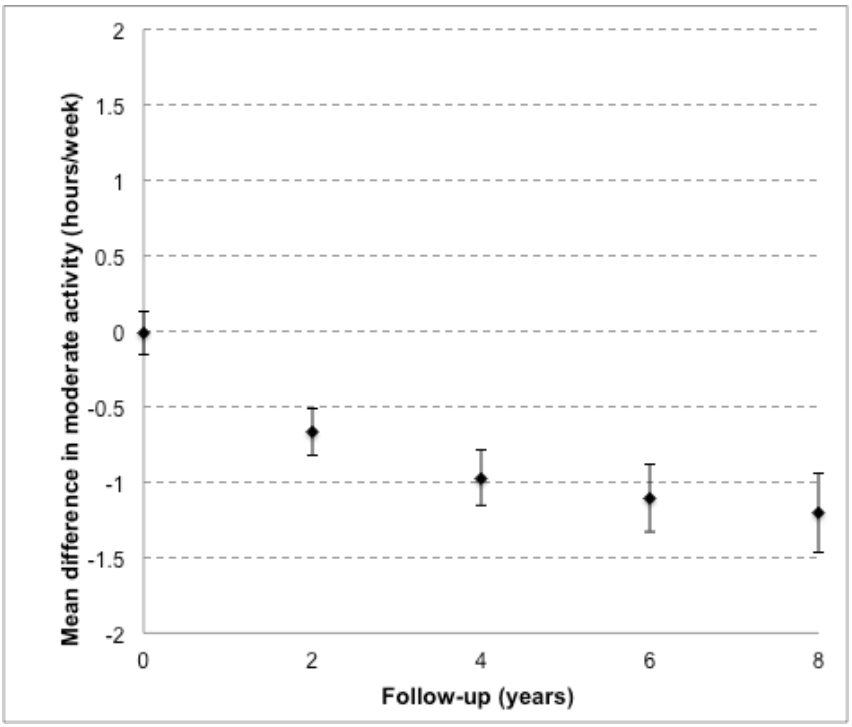
[a] Estimates based on the parametric g-formula adjusted for age, parental history of myocardial infarction, primary treatment, clinical stage at diagnosis, Gleason grade at diagnosis, prostate-specific antigen level at diagnosis, smoking history, body mass index, vigorous and moderate physical activity, and the development of functional impairment, metastasis, myocardial infarction, stroke, congestive heart failure, or amyotrophic lateral sclerosis.

[b] The observed risk was 15.4%. There were 250 observed deaths among 2,299 men over 8,972 person-years of follow-up.

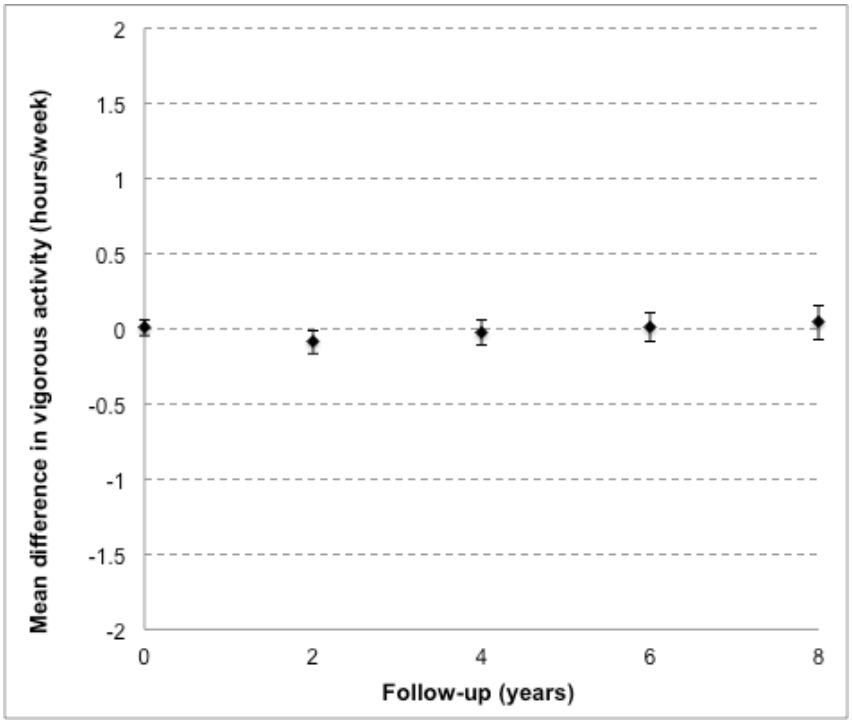
Web Figure 1. Mean differences between observed and simulated values for body mass index and their 95% confidence intervals by year of follow-up. Differences were never greater than 0.04%.



Web Figure 2. Mean differences between observed and simulated values for moderate activity and their 95% confidence intervals by year of follow-up. Differences were never greater than 16%.



Web Figure 3. Mean differences between observed and simulated values for vigorous activity and their 95% confidence intervals by year of follow-up. Differences were never greater than 5%.



Web Figure 4. Mean differences between observed and simulated values for an indicator of conditions limiting physical ability (functional impairment, metastasis, myocardial infarction, stroke, congestive heart failure, amyotrophic lateral sclerosis) and their 95% confidence intervals by year of follow-up. Differences were never greater than 15%.