Lebensstilfaktoren und das Risiko chronischer Erkrankungen

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Healthy Living Is the Best Revenge

Findings From the European Prospective Investigation Into Cancer and Nutrition–Potsdam Study

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Background: Our objective was to describe the reduction in relative risk of developing major chronic diseases such as cardiovascular disease, diabetes, and cancer associated with 4 healthy lifestyle factors among German adults.

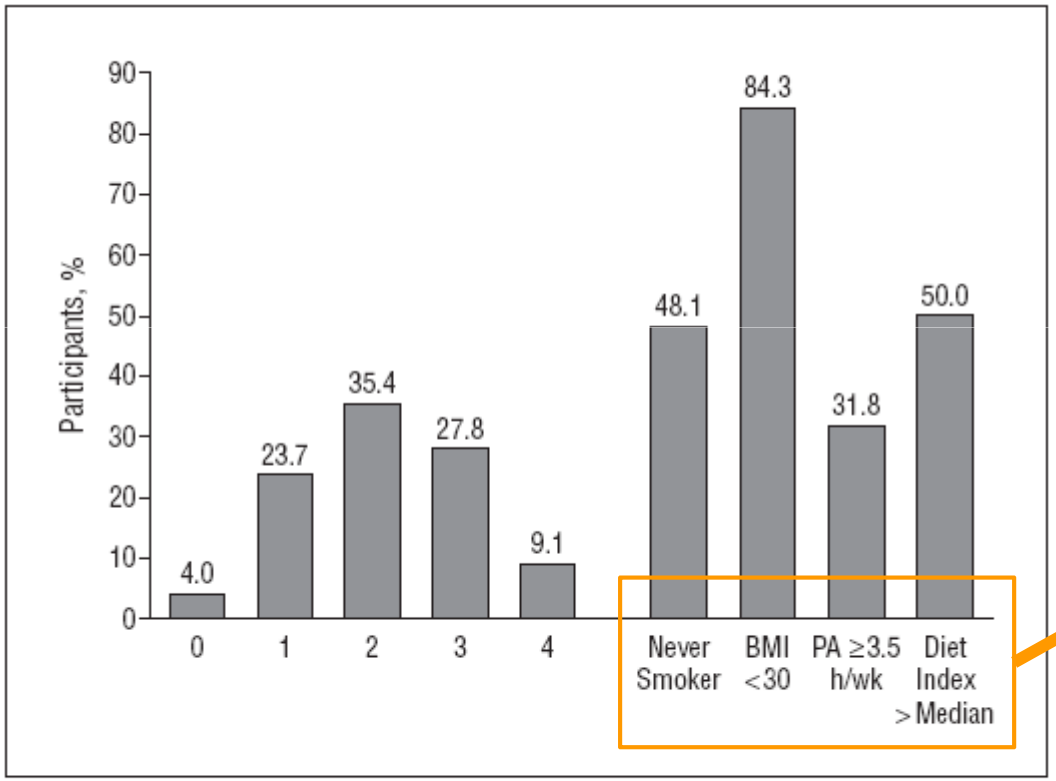
Methods: We used data from 23 153 German participants aged 35 to 65 years from the European Prospective Investigation Into Cancer and Nutrition–Potsdam study. End points included confirmed incident type 2 diabetes mellitus, myocardial infarction, stroke, and cancer. The 4 factors were never smoking, having a body mass index lower than 30 (calculated as weight in kilograms divided by height in meters squared), performing 3.5 h/wk or more of physical activity, and adhering to healthy dietary principles (high intake of fruits, vegetables, and whole-grain bread and low meat consumption). The 4 factors (healthy, 1 point; unhealthy, 0 points) were summed to form an index that ranged from 0 to 4.

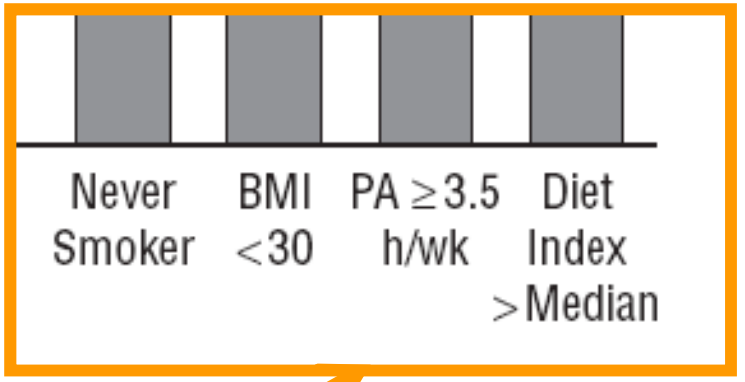
Results: During a mean follow-up of 7.8 years, 2006 participants developed new-onset diabetes (3.7%), myocardial infarction (0.9%), stroke (0.8%), or cancer (3.8%). Fewer than 4% of participants had zero healthy factors, most had 1 to 3 healthy factors, and approximately 9% had 4 factors. After adjusting for age, sex, educational status, and occupational status, the hazard ratio for developing a chronic disease decreased progressively as the number of healthy factors increased. Participants with all 4 factors at baseline had a 78% (95% confidence interval [CI], 72% to 83%) lower risk of developing a chronic disease (diabetes, 93% [95% CI, 88% to 95%]; myocardial infarction, 81% [95% CI, 47% to 93%]; stroke, 50% [95% CI, –18% to 79%]; and cancer, 36% [95% CI, 5% to 57%]) than participants without a healthy factor.

Conclusion: Adhering to 4 simple healthy lifestyle factors can have a strong impact on the prevention of chronic diseases.

Arch Intern Med. 2009;169(15):1355-1362

Lebensstilfaktoren





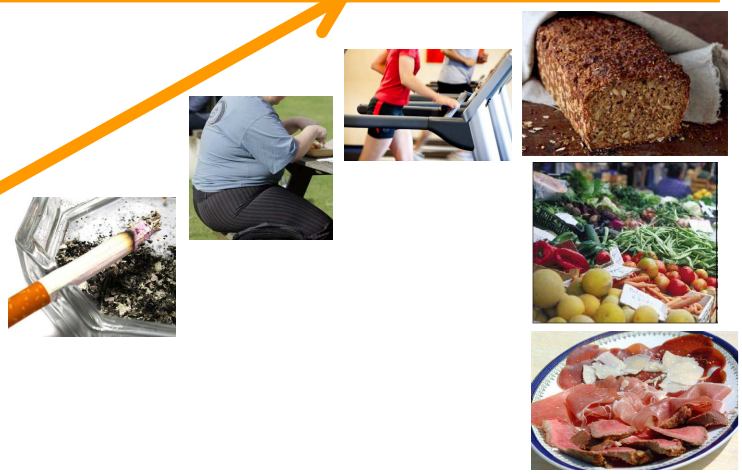


Figure 1. Distribution of healthy lifestyle factors among 23 153 participants aged 35 to 65 years (European Prospective Investigation Into Cancer and Nutrition–Potsdam study). BMI indicates body mass index (calculated as weight in kilograms divided by height in meters squared); PA, physical activity.

Ford et al., Arch Intern Med, 2009

Erkrankungsrisiken

Krebs + Diabetes + Herzinfarkt + Schlaganfall

	Anzahl Lebensstilfaktoren				
	0	1	2	3	4
Hazard Ratio (95%CI)	1 (Ref.)	0,51 (0,43-0,60)	0,37 (0,31-0,43)	0,28 (0,24-0,33)	0,22 (0,17-0,28)

Ford et al., Arch Intern Med, 2009

Erkrankungsrisiken
Krebs, Diabetes, Herzinfarkt, Schlaganfall

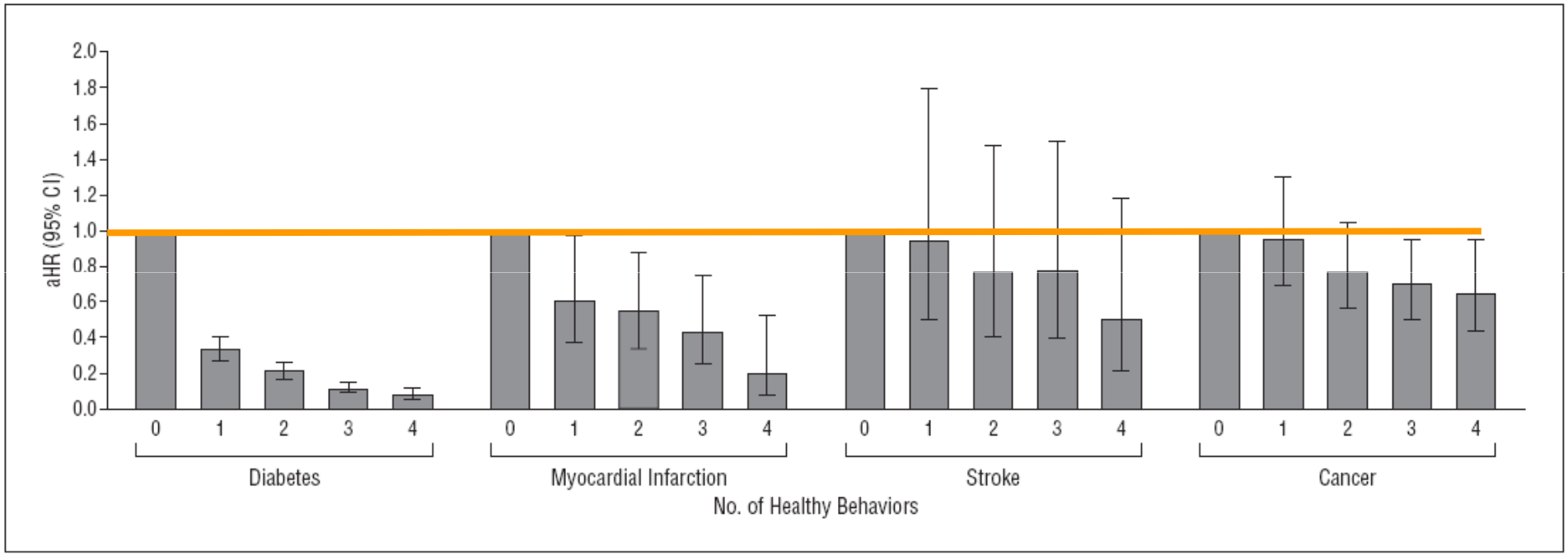


Figure 3. Adjusted hazard ratios (aHRs) and 95% confidence intervals (CIs) for incident diabetes, myocardial infarction, stroke, and cancer by number of healthy factors. Data for 23 153 participants aged 35 to 65 years from the European Prospective Investigation Into Cancer and Nutrition–Potsdam study were used. Results are stratified by age and adjusted for sex, educational status, and occupational status.

Ford et al., Arch Intern Med, 2009

Erkrankungsrisiken
Krebs, Diabetes, Herzinfarkt, Schlaganfall

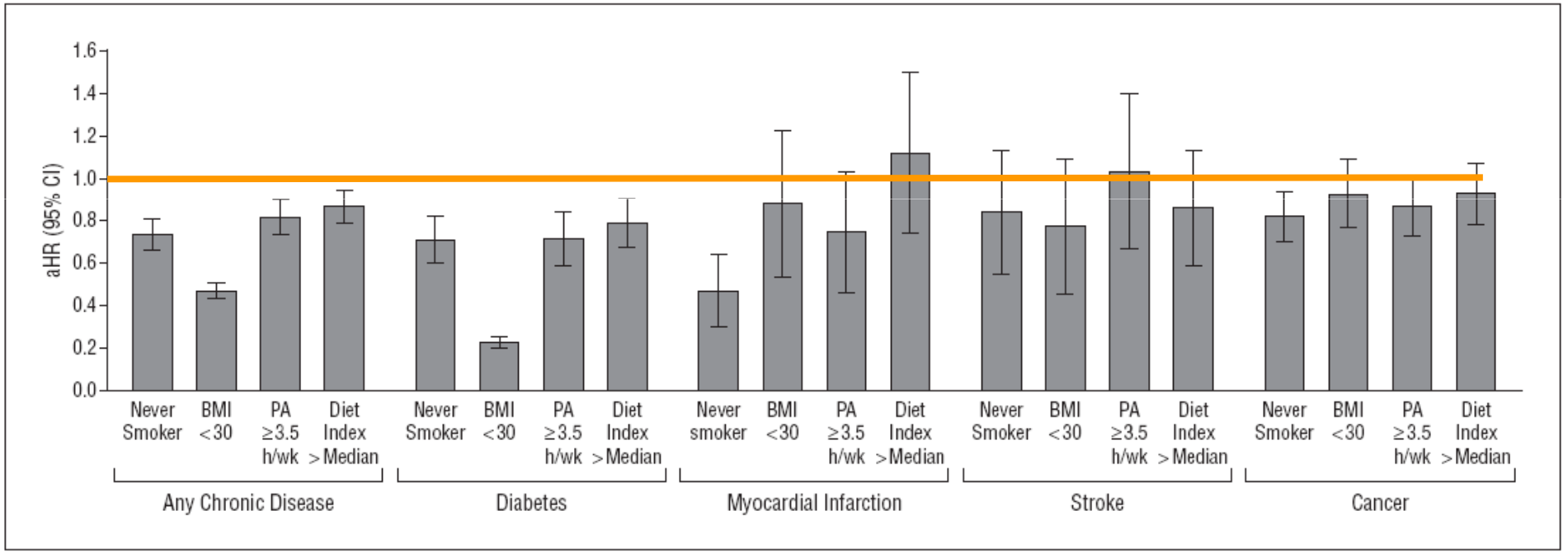


Figure 2. Adjusted hazard ratios (aHRs) and 95% confidence intervals (CIs) for incident chronic disease (cancer, diabetes, myocardial infarction, and stroke) by individual healthy factors. Data for 23 153 participants aged 35 to 65 years from the European Prospective Investigation Into Cancer and Nutrition–Potsdam study were used. Results are stratified by age and adjusted for sex, education status, and occupational status. Individual healthy lifestyle factors are also adjusted for each other. BMI indicates body mass index (calculated as weight in kilograms divided by height in meters squared); PA, physical activity.

Ford et al., Arch Intern Med, 2009

Kombinationen von Faktoren

Table 2. Adjusted[a] HRs for Incident Chronic Disease (Cancer, Diabetes, Myocardial Infarction, Stroke) by Combination of Individual Healthy Factors Among 23 153 Participants Aged 35 to 65 Years From the European Prospective Investigation Into Cancer and Nutrition–Potsdam Study

Combination	Never Smoker	BMI <30	PA ≥3.5 h/wk	Diet Index >Median	No.	No. of Events	PY of Follow-up	Unadjusted Rate per 1000 PY	Adjusted HR (95% CI)
1	0	0	0	0	924	209	6510	32.1	1 [Reference]
2	1	0	0	0	517	84	3854	21.8	0.67 (0.52-0.87)
3	0	1	0	0	4154	411	32 270	12.7	0.43 (0.36-0.51)
4	0	0	1	0	296	53	2173	24.4	0.76 (0.56-1.03)
5	0	0	0	1	524	92	3830	24.0	0.79 (0.61-1.01)
6	1	1	0	0	2915	175	23 753	7.4	0.28 (0.23-0.34)
7	1	0	1	0	166	25	1172	21.3	0.71 (0.47-1.09)
8	1	0	0	1	665	103	4889	21.1	0.64 (0.50-0.82)
9	0	1	0	1	2726	219	21 317	10.3	0.39 (0.32-0.48)
10	0	1	1	0	1466	124	11 350	10.9	0.36 (0.29-0.45)
11	0	0	1	1	268	21	2070	10.1	0.34 (0.22-0.54)
12	1	1	1	0	1135	76	9018	8.4	0.30 (0.23-0.39)
13	1	1	0	1	3364	196	27 058	7.2	0.27 (0.22-0.33)
14	1	0	1	1	273	27	2032	13.3	0.42 (0.28-0.63)
15	0	1	1	1	1660	95	12 881	7.4	0.30 (0.23-0.38)
16	1	1	1	1	2100	96	16 636	5.8	0.23 (0.18-0.29)
Total					**23 153**	**2006**	**180 815**		

Abbreviations: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared); CI, confidence interval; HR, hazard ratio; PA, physical activity; PY, person-years.

[a] Stratified by age and adjusted for sex, educational status, and occupational status.

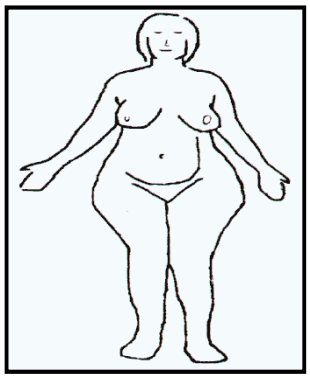
Ford et al., Arch Intern Med, 2009

Studien zu Lebensstilindices

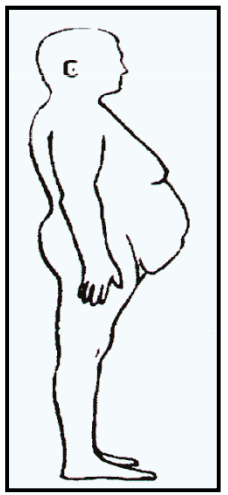
Author	year	n	country	age	enpoint	
					mortality	morbidity
Djoussé	2011	20,915 (m) ; 36,594 (w)	US	53.5 (m); 54.6 (w)		type 2 diabetes mellitus
Ford	2011	16,958	US		all-cause, cancer, cardiovascular, other	
McCullough	2011	111,966	US	50-74	all-cause, cardiovascular, cancer, other	
Odegaard	2011	50,466	Singapur	45-74	cardiovascular	
Reis	2011	207,479	US	50-71		type 2 diabetes mellitus
van den Brandt	2011	13,267	The Netherlands	55-69	all-cause	
Kvaavik	2010	4886	UK	≥ 18	all-cause, cardiovascular, cancer, other	
Mitchell	2010	38,110 (m)	US	20-84	cardiovascular	
Nechuta	2010	71,243 (w)	China	40-70	all-cause, cardiovascular, cancer, other	
Nöthlings	2010	1263	Germany	35-65	all-cause, cardiovascular, cancer, other	
Djoussé	2009	20,900	US	53.6		heart failure
Ford	2009	23,153	Germany	35/40-65		CHD; stroke; diabetes; cancer
Forman	2009	83,882	US	27-44		hypertension
Jiao	2009	450,416	US	50-71		pancreatic cancer
Mozaffarian	2009	4883	US	≥ 65		type 2 diabetes mellitus
Myint	2009	20,040	UK	40-80		stroke
Chiuve	2008	114,928	US			total; ischemic stroke
Khaw	2008	20,244	UK	45-79	all-cause, cancer, cardiovascular, other	
van Dam	2008	77,782 (f)	US	34-59	all-cause, cancer, cardiovascular	
Akesson	2007	24,444	Sweden			Myocardial infarction
King	2007	15,708	US	45-64	cardiovascular	cardiovascular
Chiuve	2006	42,847 (m)	US	40-75		CHD
Kurth	2006	37,636	US	≥ 45		stroke
Spencer	2005	7989 (m)	Australia	65-83	all-cause	
Knoops	2004	2239	EUR	70-90	all-cause, cancer, coronary heart disease, cardiovascular	
Tsubono	2004	28,333	Japan	40-64	all-cause	
Haveman-Nies	2002	1281	EUR	70-75	all-cause	
Hu	2001	84,941	US			type 2 diabetes mellitus
Stampfer	2000	84,129 (w)	US	30-55		CHD; cardiovascular events

- 29 prospektive Studien publiziert
- 15 zu Mortalität
  - Gesamt- und
  - ursachenspezifisch
- 15 zu Morbidität
  - Diabetes mellitus
  - Herzinfarkt
  - Schlaganfall
  - Herzinsuffizienz
  - Pankreaskrebs
- 16 x USA, 9 x Europa, 3 x Asien, 1 x Australien
- Alter 30-80 Jahre

Gesunde Lebensstilfaktoren in 29 Studien



	n
Nie-/Nicht-Rauchen	26
Gesunde Ernährung	27
Geringes relatives Gewicht (BMI)	22
Hohe Körperliche Aktivität	29
Moderater Alkoholkonsum	24
Geringer Taillen-Hüftumfangsverhältnis	3
Schlafdauer 6-8h	1
Gute Kardiorespiratorische Fitness	1
Kein Passivrauchen	1
Einnahme von Folsäuresupplementen; kein Nachsalzen; Verwendung von fettarmer oder –reduzierte Milch	Je 1



Ernährung

- A priori Ernährungsmuster
  - Mediterrane Ernährung, Healthy Eating Index, DASH-Diet
- Explorative Ernährungsmuster
- Verzehr ausgewählter Lebensmittelgruppen
  - Obst und Gemüse, Vollkornbrot, rotes Fleisch, Frühstückscerealien, Eier
- Nährstoffzusammensetzung der Ernährung
  - Ballaststoffe, mehrfach ungesättigte Fettsäuren (FS)/ gesättigte FS, Trans-FS
- Glykämischer Index
- Plasma Vitamin C

Singapore Chinese Health Study, n=44.056

	Definition of Lifestyle Factors	
	Referent	Protective
Dietary pattern	Lowest 40% of dietary pattern score characterized by high intake of vegetables, fruits, and soy	Upper 60% of dietary pattern score characterized by high intake of vegetables, fruits, and soy
Physical activity	<2 h/wk of moderate or no strenuous activity	≥2 h/wk of moderate or any strenuous activity
Sleep	<6 or ≥ 9 h/d	6–8 h/d
BMI		
Age <65 y	<18.5 and >21.5 kg/m^2	18.5–21.5 kg/m^2
Age ≥65 y	<18.5 and >24.5 kg/m^2	18.5–24.5 kg/m^2
Alcohol intake	None or >2 drinks/d	Light to moderate intake (1–14 drinks/wk)
Smoking	Ever smoked	Never smoked

Odegaard et al., Circulation, 2011

EPIC-Norfolk Studie, n=20.244

Table 1. Health Behaviour Score: Score One Point for Each of the Health Behaviours Below for a Total Score of Zero to Four

Health Behaviour	How Scored
Smoking habit	Nonsmoker = 1
Fruit and vegetable intake	Five servings or more daily as indicated by blood vitamin C = ≥50 nmol/l = 1
Alcohol intake	One or more, but less than 14 units, a week = 1. One unit = approximately 8 g of alcohol; i.e., one glass of wine, one small glass of sherry, one single shot of spirits, or one half pint of beer
Physical activity	Not inactive = 1; i.e., if sedentary occupation, at least half an hour of leisure time activity a day; e.g., cycling, swimming; or else a nonsedentary occupation with or without leisure-time activity

Khaw et al., PloS Med, 2008

Hohe körperliche Aktivität

- > 3,5h Sport/Woche
- ≥ 30 min/Tag moderate oder hohe körperliche Aktivität
- ≥ 2 mal Sport pro Woche
- ≥ 4.+ 5. Quintil MET-h*/Woche
- ≥ 5h Sport/Woche
- ≥ 20 min/Tag aktiv an 3 oder mehr Tagen pro Woche
- Durchschnittlich ≥ 30 min/Tag
- ≥ 2h/Woche körperlich aktiv
- ≥ 2 MET-h/Tag

** 1 MET-h ~15 min moderate körperliche Aktivität*

Combined Lifestyle Factors and Cardiovascular Disease Mortality in Chinese Men and Women

The Singapore Chinese Health Study

Andrew O. Odegaard, PhD, MPH; Woon-Puay Koh, PhD; Myron D. Gross, PhD; Jian-Min Yuan, MD, PhD; Mark A. Pereira, PhD, MPH, MS

Background—Lifestyle factors directly influence cardiovascular disease (CVD) risk, yet little research has examined the association of combined lifestyle factors with CVD mortality, especially in Asian populations.

Methods and Results—We examined the association of 6 combined lifestyle factors (dietary pattern, physical activity, alcohol intake, usual sleep, smoking status, and body mass index) with CVD mortality in 50 466 (44 056 without a history of diabetes mellitus, CVD, or cancer and 6410 with diabetes mellitus or history of clinical CVD) Chinese men and women in Singapore who were 45 to 74 years of age during enrollment in the Singapore Chinese Health Study in 1993 to 1998 and followed up through 2009. Each lifestyle factor was independently associated with CVD mortality. When combined, there was a strong, monotonic decrease in age- and sex-standardized CVD mortality rates with an increasing number of protective lifestyle factors. Relative to participants with no protective lifestyle factors, the hazard ratios of CVD mortality for 1, 2, 3, 4, and 5 to 6 protective lifestyle factors were 0.60 (95% confidence interval, 0.45–0.84), 0.50 (95% confidence interval, 0.38–0.67), 0.40 (95% confidence interval, 0.30–0.53), 0.32 (95% confidence interval, 0.24–0.43), and 0.24 (95% confidence interval, 0.17–0.34), respectively, among those without a history of diabetes mellitus, CVD, or cancer (P for trend <0.0001). A parallel graded inverse association was observed in participants with a history of CVD or diabetes mellitus at baseline. Results were consistent for coronary heart disease and cerebrovascular disease mortality.

Conclusion—An increasing number of protective lifestyle factors is associated with a marked decreased risk of coronary heart disease, cerebrovascular disease, and overall CVD mortality in Chinese men and women. (***Circulation.* 2011;124:2847-2854.**)

Lebensstil und CVD Mortalität

Independent Association of Lifestyle Factors With Cardiovascular Disease Mortality

Factor	Percent With Protective	Protective: HR (95% CI)
Dietary pattern	60.0	0.81 (0.74–0.89)
Physical activity	23.6	0.85 (0.76–0.95)
Sleep	85.0	0.83 (0.75–0.93)
BMI	32.7	0.77 (0.70–0.85)
Alcohol intake	19.2	0.82 (0.73–0.92)
Smoking	70.6	0.68 (0.61–0.75)

BMI indicates body mass index; HR, hazard ratio; and CI, confidence interval. Model includes all factors simultaneously and adjusted for age, sex, dialect, year enrolled, education, marital status, and energy intake. n=44 056 healthy participants.

Odegaard et al., Circulation, 2011

Prävalenz Lebensstilfaktoren

Table 2. Baseline Participant Characteristics According to the Number of Protective Lifestyle Factors in Healthy Participants (Free of Diabetes Mellitus and History of Cardiovascular Disease)

	Protective Lifestyle Factors						
	0	1	2	3	4	5	6
n	415	3589	11 353	15 998	9764	2648	289
Age, y	57.8 (7.4)	56.5 (7.6)	55.6 (7.6)	55.1 (7.6)	55.0 (7.9)	55.2 (8.2)	54.2 (8.1)
Female sex, %	20.7	32.7	50.8	61.6	59.5	52.0	43.3
Education, %	21.9	21.0	26.7	31.2	41.1	50.5	58.9
Married, %	76.5	83.2	84.1	85.5	86.5	87.6	88.9
Hypertension, %	21.4	21.6	21.9	21.1	18.4	15.7	10.0
BMI, kg/m^2	23.1 (4.4)	23.6 (4.1)	23.6 (3.7)	23.2 (3.5)	22.2 (3.0)	21.5 (2.4)	20.5 (1.1)
Percent reporting protective level of lifestyle factor							
BMI	NA	7.4	16.9	29.0	54.3	75.9	100
Dietary pattern	NA	9.5	30.5	69.8	88.5	95.9	100
Physical activity	NA	1.9	6.7	16.7	45.7	81.3	100
Sleep	NA	54.3	77.9	90.3	95.5	98.9	100
Smoking	NA	23.2	57.2	78.0	87.4	94.1	100
Alcohol intake	NA	3.7	10.7	16.3	28.6	53.9	100

Data for age and body mass index (BMI) are given as mean (SD).

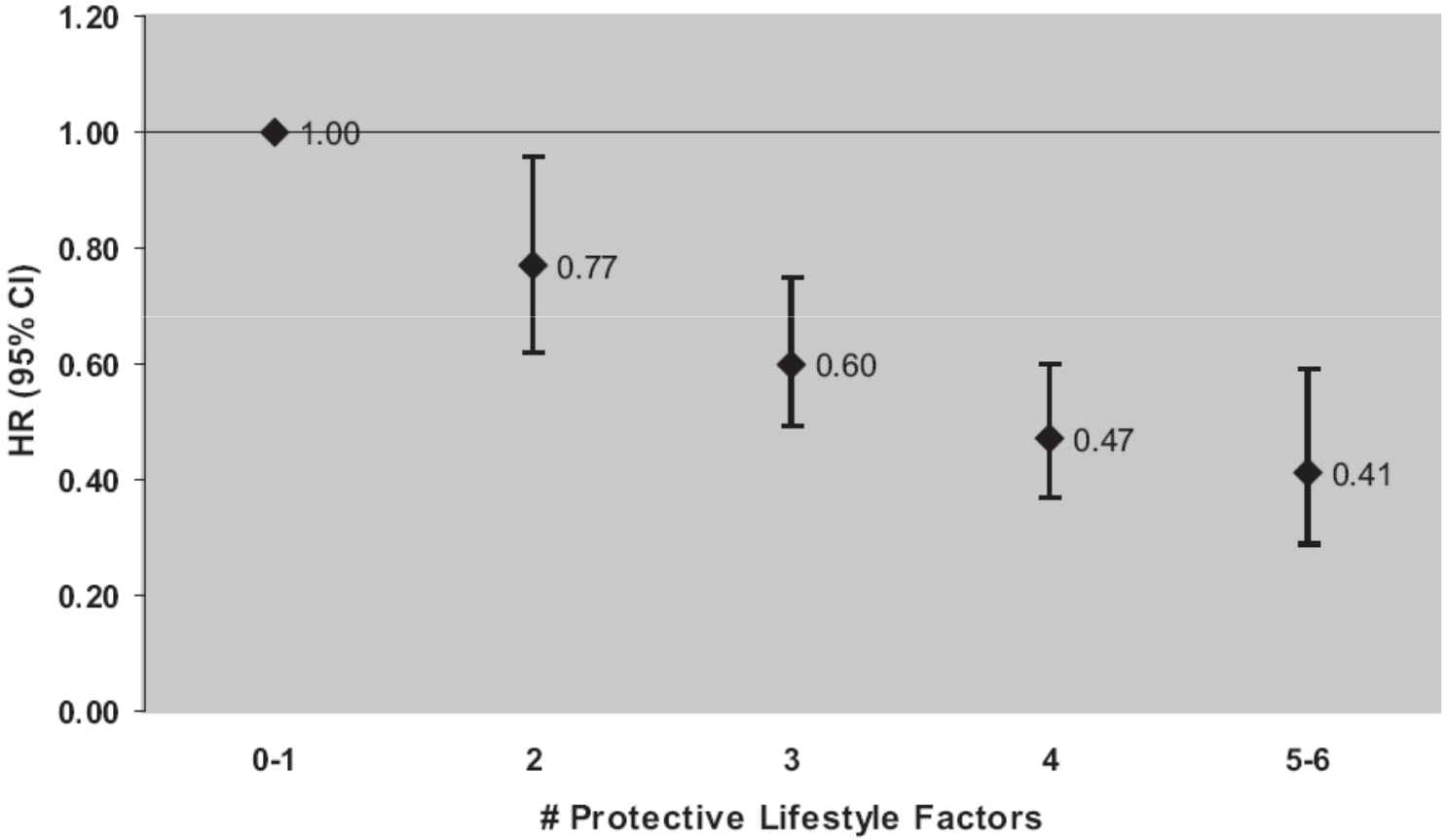
Odegaard et al., Circulation, 2011

Lebensstilfaktoren in Kombination

Lebensstil-faktoren	CVD	CHD	CERE
	HR (95% CI)		
0	1	1	1
1	0,60 (0,45-0,84)	0,67 (0,45-0,99)	0,41 (0,24-0,69)
2	0,50 (0,38-0,67)	0,53 (0,36-0,78)	0,46 (0,28-0,74)
3	0,40 (0,30-0,53)	0,40 (0,27-0,59)	0,33 (0,20-0,54)
4	0,32 (0,24-0,43)	0,30 (0,20-0,45)	0,30 (0,18-0,50)
5/6	0,24 (0,17-0,34)	0,23 (0,14-0,37)	0,25 (0,14-0,46)
P Trend	<0,0001	<0,0001	<0,0001

Odegaard et al., Circulation, 2011

Personen mit Diabetes oder CHD, n=6410



Odegaard et al., Circulation, 2011

Combined Impact of Health Behaviours and Mortality in Men and Women: The EPIC-Norfolk Prospective Population Study

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ABSTRACT

Background

There is overwhelming evidence that behavioural factors influence health, but their combined impact on the general population is less well documented. We aimed to quantify the potential combined impact of four health behaviours on mortality in men and women living in the general community.

Methods and Findings

We examined the prospective relationship between lifestyle and mortality in a prospective population study of 20,244 men and women aged 45–79 y with no known cardiovascular disease or cancer at baseline survey in 1993–1997, living in the general community in the United Kingdom, and followed up to 2006. Participants scored one point for each health behaviour: current non-smoking, not physically inactive, moderate alcohol intake (1–14 units a week) and plasma vitamin C >50 mmol/l indicating fruit and vegetable intake of at least five servings a day, for a total score ranging from zero to four. After an average 11 y follow-up, the age-, sex-, body mass–, and social class–adjusted relative risks (95% confidence intervals) for all-cause mortality(1,987 deaths) for men and women who had three, two, one, and zero compared to four health behaviours were respectively, 1.39 (1.21–1.60), 1.95 (1.70–-2.25), 2.52 (2.13–3.00), and 4.04 (2.95–5.54) $p < 0.001$ trend. The relationships were consistent in subgroups stratified by sex, age, body mass index, and social class, and after excluding deaths within 2 y. The trends were strongest for cardiovascular causes. The mortality risk for those with four compared to zero health behaviours was equivalent to being 14 y younger in chronological age.

Conclusions

Four health behaviours combined predict a 4-fold difference in total mortality in men and women, with an estimated impact equivalent to 14 y in chronological age.

Lebensstil und Mortalität

Sex	Variable	All Cause	
		RR (95% CI)	*p*-Value
Men and women combined	—	*n* = 1,977 events	—
	Current smoker versus nonsmoker	1.77 (1.55–2.01)	<0.001
	Physically inactive versus not inactive	1.24 (1.13–1.36)	<0.001
	Alcohol intake <1 or >14 units/wk	1.26 (1.14–1.38)	<0.001
	Vitamin C level <50 mmol/l	1.44 (1.31–1.59)	<0.001
Men	—	*n* = 1,161 events	—
	Current smoker versus nonsmoker	1.68 (1.43–1.99)	<0.001
	Physically inactive versus not inactive	1.50 (1.23–1.82)	<0.001.
	Alcohol intake <1 or >14 units/wk	1.35 (1.20–1.52)	<0.001
	Vitamin C level <50 mmol/l	1.53 (1.35–1.74)	<0.001
Women	—	*n* = 816 events	—
	Current smoker versus nonsmoker	1.85 (1.50–2.28)	<0.001
	Physically inactive versus not inactive	1.26 (1.09–1.47)	0.002
	Alcohol intake <1 or >14 units/wk	1.15 (0.99–1.34)	0.08
	Vitamin C level <50 mmol/l	1.33 (1.14–1.54)	<0.001

All values given as relative risk (95% confidence intervals), except where noted.
CVD, cardiovascular disease.

Khaw et al., PloS Med, 2008

Lebensstil und CVD/Krebs-Mortalität

Sex	Variable	Cardiovascular		Cancer	
		RR (95% CI)	*p*-Value	RR (95% CI)	*p*-Value
Men and women combined	—	*n* = 676 events	—	*n* = 839 events	—
	Current smoker versus nonsmoker	1.94 (1.56–2.41)	<0.001	1.77 (1.46–2.15)	<0.001
	Physically inactive versus not inactive	1.28 (1.09–1.50)	0.003	1.08 (0.93–1.25)	0.34
	Alcohol intake <1 or >14 units/wk	1.29 (1.10–1.51)	0.002	1.28 (1.11–1.49)	<0.001
	Vitamin C level <50 mmol/l	1.70 (1.44–2.00)	<0.001	1.36 (1.18–1.58)	<0.001
Men	—	*n* = 409 events	—	*n* = 475 events	—
	Current smoker versus nonsmoker	1.90 (1.45–2.50)	<0.001	1.61 (1.24–2.08)	<0.001
	Physically inactive versus not inactive	1.27 (1.03–1.55)	0.02	1.02 (0.84–1.24)	0.86
	Alcohol intake <1 or >14 units/wk	1.22 (0.99–1.49)	0.06	1.46 (1.21–1.76)	<0.001
	Vitamin C level <50 mmol/l	1.77 (1.42–2.21)	<0.001	1.51 (1.24–1.84)	<0.001
Women	—	*n* = 267 events	—	*n* = 364 events	—
	Current smoker versus nonsmoker	2.07 (1.44–2.97)	<0.001	1.91 (1.42–2.57)	<0.001
	Physically inactive versus not inactive	1.27 (0.98–1.64)	0.07	1.23 (0.97–1.53)	0.09
	Alcohol intake <1 or >14 units/wk	1.37 (1.06–1.77)	0.17	1.14 (0.90–1.43)	0.29
	Vitamin C level <50 mmol/l	1.59 (1.23–2.06)	<0.001	1.20 (0.95–1.51)	0.12

All values given as relative risk (95% confidence intervals), except where noted.
CVD, cardiovascular disease.

Khaw et al., PloS Med, 2008

Überlebensanalyse

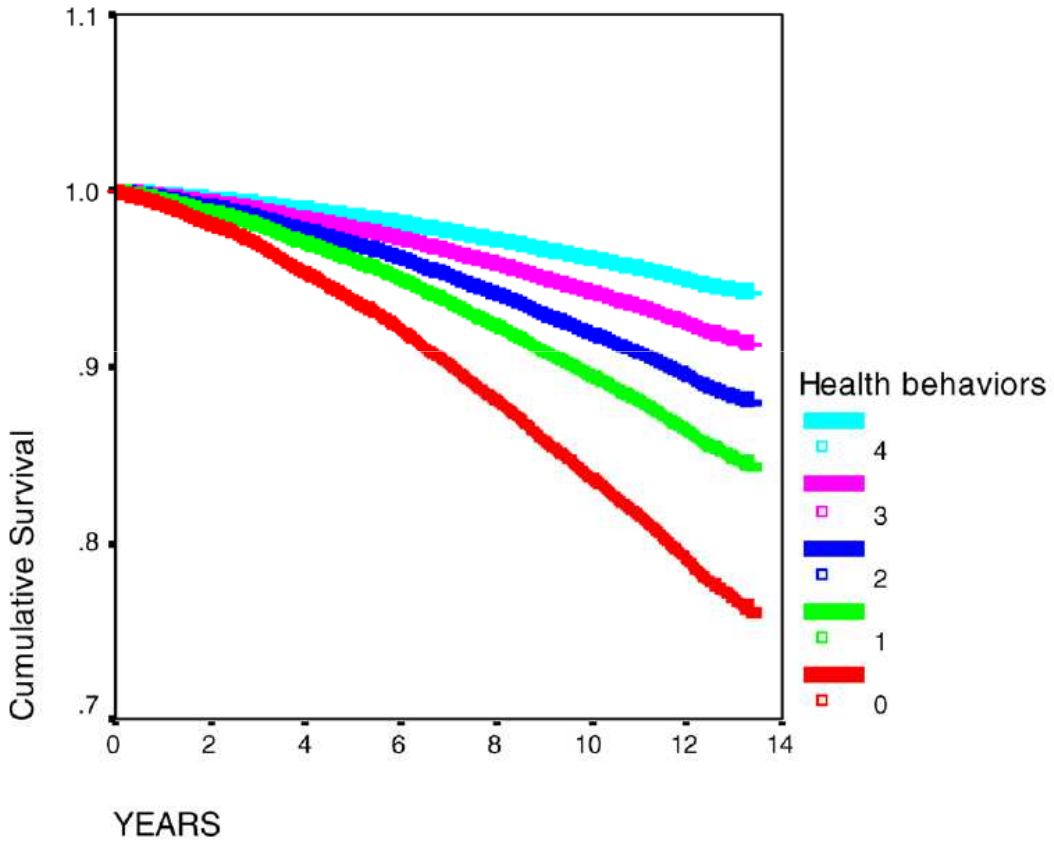

Figure 1. Survival Function According to Number of Health Behaviours in Men and Women Aged 45–79 Years without Known Cardiovascular Disease or Cancer, Adjusted for Age, Sex, Body Mass Index and Social Class, EPIC-Norfolk 1993–2006

Khaw et al., PloS Med, 2008

Summe Lebensstilfaktoren und Mortalität

	Anzahl Lebensstilfaktoren (RR (95%))				
	4	3	2	1	0
Gesamtmortalität	1	1,39 (1,21-1,60)	1,95 (1,70-2,25)	2,52 (2,13-3,00)	4,04 (2,95-5,54)
CVD-Mortalität	1	1,59 (1,23-2,06)	2,47 (1,91-3,19)	3,36 (2,49-4,51)	5,02 (2,93-8,61)
Krebsmortalität	1	1,21 (0,99-1,48)	1,81 (1,48-2,22)	1,94 (1,48-2,54)	3,74 (2,34-5,98)
Nicht-CVD/nicht-Krebs Mortalität	1	1,53 (1,16-2,03)	1,66 (1,23-2,24)	2,70 (1,92-3,82)	3,56 (1,77-7,16)

Khaw et al., PloS Med, 2008

Veränderung von Lebensstilfaktoren

TABLE 4. Multivariate Relative Risk of CHD According to Changes in Healthy Lifestyle Score*

Change in Lifestyle Score†	Frequency, %	No. of Cases	RR (95%CI)
Decrease by ≥2	5	81	1.48 (1.15–1.88)
Decrease by 1	21	327	1.01 (0.97–1.28)
No change	52	797	1.00 (ref)
Increase by 1	17	302	0.91 (0.79–1.05)
Increase by ≥2	4	76	0.73 (0.57–0.93)
P value for trend			<0.0001

*Among men who completed the baseline questionnaire (1986) and at least one follow-up questionnaire (1988–1998); all models are adjusted for total No. of healthy lifestyle factors in 1986, age, family history of MI before age of 60, aspirin use, use of antihypertensive medication, baseline hypercholesterolemia, and baseline hypertension. CI denotes confidence interval.

†Low risk for each lifestyle factor was defined as not currently smoking, BMI <25 kg/m^2, exercise moderate/vigorous intensity for 30 min/d, diet in the top 40% of AHEI-based diet score distribution, and 5–30 g/d alcohol consumption.

Chiuve et al., Circulation, 2006

Mortalität: Vergleich extremer Indices in 15 Studien

Endpunkt		Gesund vs. ungesund	Ungesund vs. gesund	Studien
		RR (95%CI)		
Mortalität	Min.	0,35 (0,28-0,44)	2,61 (1,79-3,80)	Knoops 2004: van den Brandt 2011
	Max.	0,60 (0,39-0,92)	4,31 (3,51-5,31)	King 2007; van Dam 2008
CVD-Mortalität	Min.	0,24 (0,17-0,34)	3,14 (1,57-6,29)	Odegaard 2011: Kvaavik 2010
	Max.	0,52 (0,45-0,59)	8,17 (4,96-13,47)	McCullough 2011; van Dam 2008
Krebs-mortalität	Min.	0,31 (0,19-0,50)	3,26 (2,45-4,34)	Knoops 2004; van Dam 2008
	Max.	0,76 (0,54-1,06)	3,74 (2,34-5,98)	Nechuta 2010; Khaw 2008
Andere	Min.	0,33 (0,19-0,58)	3,56 (1,77-7,16)	Knoops 2004; Khaw 2008
	Max.	0,43 (0,25-0,74)	4,29 (2,07-9,15)	Ford 2011; Kvaavik 2010

Inzidenz: Vergleich extremer Indices in 15 Studien

Endpunkt		Gesund vs. ungesund	Ungesund vs. gesund	Studien
		RR (95%CI)		
CVD	Min.	0,08 (0,02-0,28)	2,31 (1,33-4,02)	Akesson 2007; Myint 2009
	Max.	0,65 (0,52-0,81)		King 2007
Diabetes	Min.	0,09 (0,05-0,17)	6,4 (4,2-8,6)	Hu 2001; Djoussé 2011
	Max.	0,28 (0,23-0,34)	7,3 (5,7-8,9)	Reis 2011; Djoussé 2011
Hypertonie	Min.	0,22 (0,10-0,51)		Forman 2009
	Max.			
Pankreas-krebs	Min.	0,42 (0,26-0,66)		Jiao 2009
	Max.			

Zusammenfassung

- Viele Studien haben simple Lebensstilindices und chronische Erkrankungen untersucht
- Lebensstilfaktoren: Rauchen, BMI, Ernährung, Alkohol, körperliche Aktivität
- Alle Studien zeigen statistisch signifikante Assoziationen
- Meist Dosis-Wirkungs-Beziehung
- Assoziationen für kardiovaskuläre Mortalität etwas stärker als für Krebsmortalität

Fazit

- Ein gesunder Lebensstil hat hohes Potential zur Prävention chronischer Erkrankungen