Ernährung und Leben in den „Blauen Zonen“

F. Post

Katholisches Klinikum
Koblenz · Montabaur

BBT-Gruppe
Mit Kompetenz und Nächstenliebe
im Dienst für die Menschen:
Die Krankenhäuser
und Sozialeinrichtungen
der BBT-Gruppe

Katholisches Klinikum
Koblenz • Montabaur

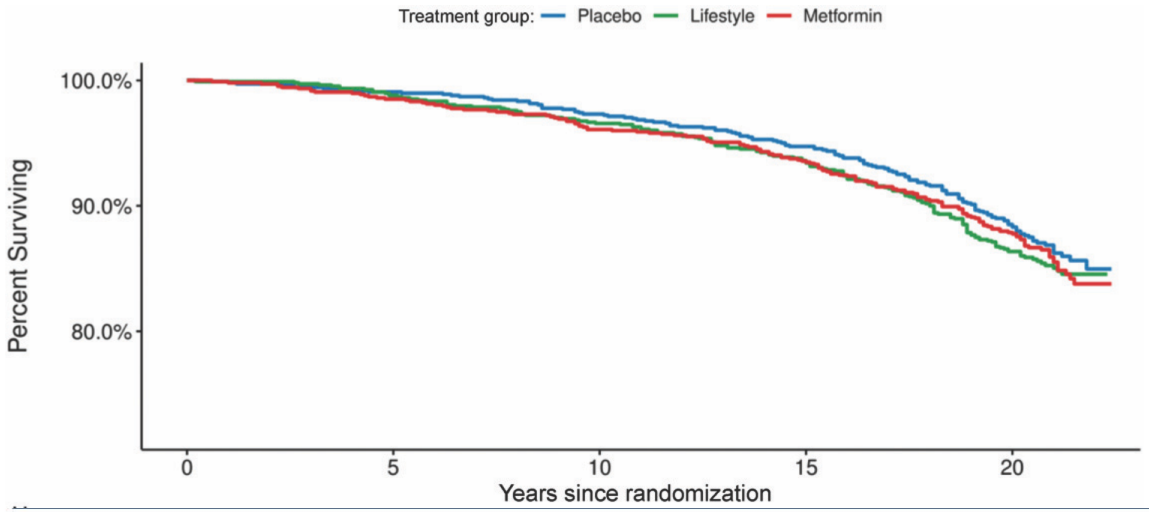
BBT-Gruppe
Mit Kompetenz und Nächstenliebe
im Dienst für die Menschen:
Die Krankenhäuser
und Sozialeinrichtungen
der BBT-Gruppe

Effect of Metformin and Lifestyle Interventions on Mortality in the Diabetes Prevention Program and Diabetes Prevention Program Outcomes Study

Diabetes Care 2021;44:2775–2782 | https://doi.org/10.2337/dc21-1046

Table 2—Adjudicated causes of death by DPP randomized groups

Cause of death	Total	Placebo	Metformin	Lifestyle
Cancer	170 (37)	53 (37)	57 (37)	60 (38)
Cardiovascular disease	131 (29)	38 (27)	44 (29)	49 (31)
Neurologic (nonstroke)	36 (8)	12 (8)	12 (8)	12 (8)
Unknown	32 (7)	14 (10)	7 (5)	11 (7)
Infection	25 (5)	8 (6)	11 (7)	6 (4)
Other*	22 (5)	5 (3)	10 (7)	7 (4)
Trauma	20 (4)	8 (6)	6 (4)	6 (4)
Chronic respiratory disease	9 (2)	3 (2)	3 (2)	3 (2)
Renal disease	8 (2)	2 (1)	2 (1)	4 (3)
Total	453	143	152	158



CONCLUSIONS

Among DPP participants at high risk for type 2 diabetes at study entry, all-cause mortality did not differ for those randomized to metformin or lifestyle compared with placebo over a median observation time of 21 years.

Received: 31 July 2018 | Revised: 10 October 2018 | Accepted: 28 October 2018

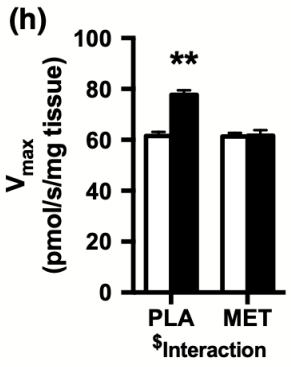
DOI: 10.1111/acel.12880

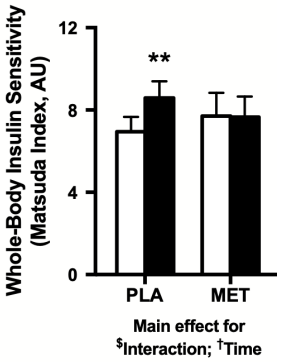
ORIGINAL PAPER

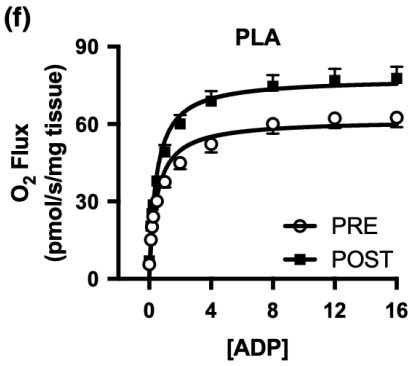
WILEY Aging Cell

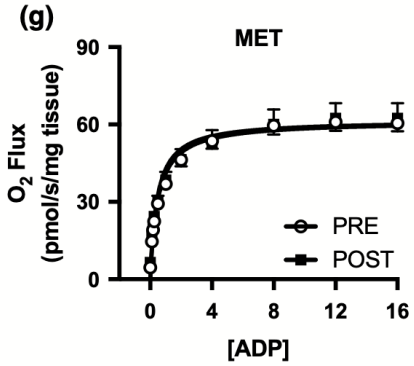
Metformin inhibits mitochondrial adaptations to aerobic exercise training in older adults

Adam R. Konopka[1,2] | Jaime L. Laurin[2] | Hayden M. Schoenberg[2] | Justin J. Reid[2] | William M. Castor[2] | Christopher A. Wolff[2] | Robert V. Musci[2] | Oscar D. Safairad[1] | Melissa A. Linden[2] | Laurie M. Biela[2] | Susan M. Bailey[3] | Karyn L. Hamilton[2,*] | Benjamin F. Miller[2,4,*]









4 | CONCLUSION

In summary, our findings show that metformin inhibits the increase in skeletal muscle mitochondrial respiration after 12 weeks of moderate to vigorous AET despite no differences between placebo and metformin on mitochondrial protein synthesis.

Our findings suggest that combining two healthspan extending treatments, metformin and exercise, may interfere with the improvement in some parameters of physiological function and do not interact synergistically. This study indicates that further research is needed before broadly prescribing metformin as a treatment to slow aging.

frontiers in Endocrinology

REVIEW
published: 05 August 2021
doi: 10.3389/fendo.2021.718942

A Critical Review of the Evidence That Metformin Is a Putative Anti-Aging Drug That Enhances Healthspan and Extends Lifespan

Ibrahim Mohammed[1*], *Morley D. Hollenberg*[2,3], *Hong Ding*[1,4] *and Chris R. Triggle*[1,4*]

[1] Department of Medical Education, Weill Cornell Medicine-Qatar, Al-Rayyan, Qatar, [2] Inflammation Research Network and Snyder Institute for Chronic Diseases, Department of Physiology & Pharmacology, University of Calgary Cumming School of Medicine, Calgary, AB, Canada, [3] Department of Medicine, University of Calgary Cumming School of Medicine, Calgary, AB, Canada, [4] Departments of Medical Education and Pharmacology, Weill Cornell Medicine-Qatar, Al-Rayyan, Qatar

Based on a 60-year history of use as an anti-diabetic drug for the treatment of T2DM, metformin is accepted as a comparatively safe drug. Metformin is no longer protected by patents and thus is comparatively inexpensive. Collectively, these attributes together with an extensive literature supportive of benefits in the settings of diabetes, obesity, cardiovascular disease and, arguably, cancer and dementia could justify its wider use as a prophylactic to offset the effects of aging and enhance healthspan and lifespan.

Moreover, the long-term chronic use of metformin would require attention to the potential occurrence of vitamin B12 deficiency. On this

Finally, although the evidence for lifespan expansion in mammalian species is not conclusive, a full analysis and follow-up of clinical trials, including MILES and TAME, may provide more definitive answers as to whether metformin should be promoted beyond its use to treat T2DM, as a drug that enhances both healthspan and lifespan.

Ernährung und Leben in den „Blauen Zonen“

PD Dr. F. Post

Chefarzt Innere Medizin/Kardiologie/Internistische Intensivmedizin

Ernährung und Leben in den „Blauen Zonen“

Dr. Felix Post

Mannschaftsarzt

Ernährung und Leben in den „Blauen Zonen“

Felix Post

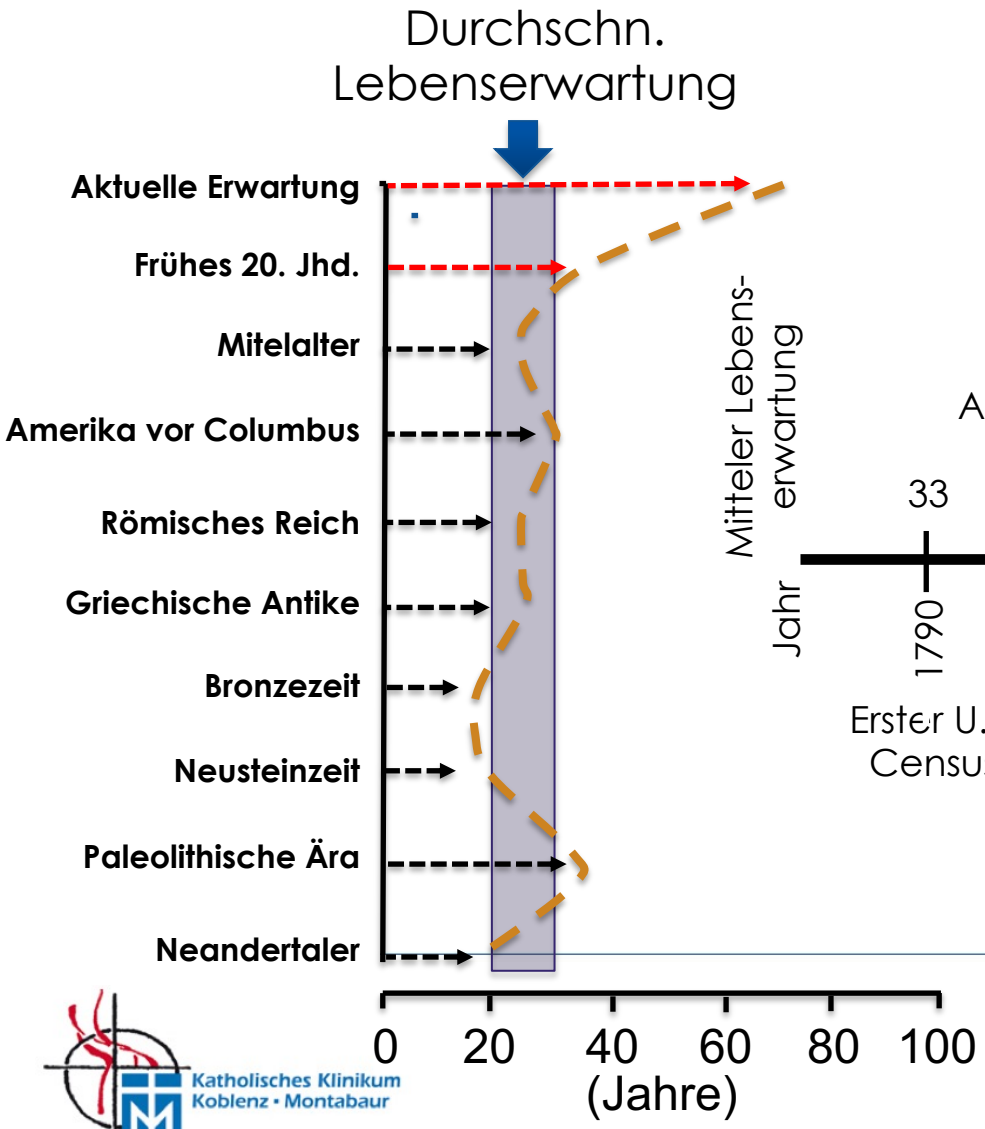
Huangdi neijing - 黄帝内经
ca. 200 v. Chr.

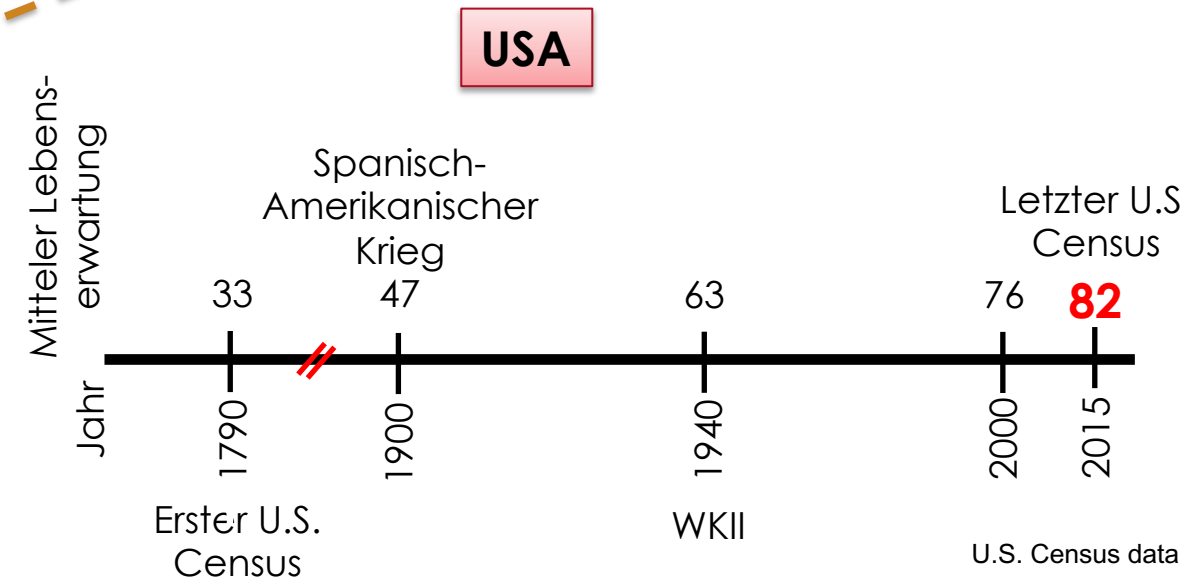
„Ein schlechter Arzt behandelt Krankheiten, nachdem sie entstanden sind, ein guter Arzt heilt Krankheiten, sobald sie entstehen, während ein ausgezeichneter Arzt Krankheiten heilt, bevor sie entstehen.“

Gilt als eines der ältesten Standardwerke der chinesischen Medizin. Dieses medizinische Fachwerk ist bis heute grundlegend und richtungsweisend für die Ausbildung innerhalb der chinesischen Medizin.
Es wurde von der UNESCO in die Liste des Weltdokumentenerbes aufgenommen.

Ein ausgezeichneter Arzt behandelt Erkrankungen bevor sie entstehen!

Zuerst eine gute Nachricht…Wir leben deutlich länger als alle unsere Vorfahren





Katholisches Klinikum Koblenz · Montabaur

BBT-Gruppe

Mit Kompetenz und Nächstenliebe im Dienst für die Menschen: Die Krankenhäuser und Sozialeinrichtungen der BBT-Gruppe

Schulmedizin hat die Lebens-erwartung dramatisch verlängert

Dramatischer Rückgang der Mortalität durch Infektionen

Verminderte Kinder-sterblichkeit

Macht "tödl." Erkrank. zu chronischen Erkrank.

Ersatz von physiol. Funktion

Hygiene-maßnahmen

Antibiotika

Bessere perinatale Versorgung

Medik.

"Assist" Devices

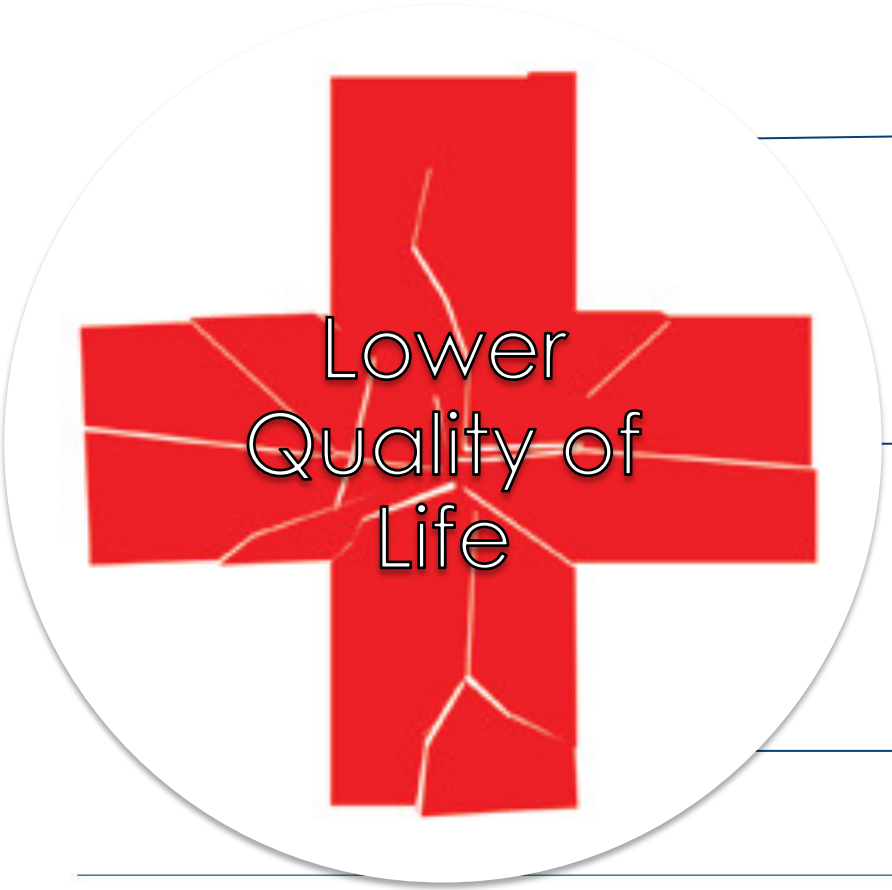
Katholisches Klinikum Koblenz • Montabaur

BBT-Gruppe

Mit Kompetenz und Nächstenliebe im Dienst für die Menschen: Die Krankenhäuser und Sozialeinrichtungen der BBT-Gruppe

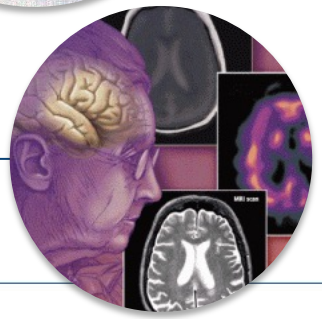

HEALTHSPAN
VS. LIFESPAN
WHAT'S THE DIFFERENCE?

Die erhöhte Lebenserwartung hat einen Preis:
chronische Erkrankungen + Abbau



chronische Erkrankungen

Gebrechlichkeit & Verlust an Alltagsaktivitäten



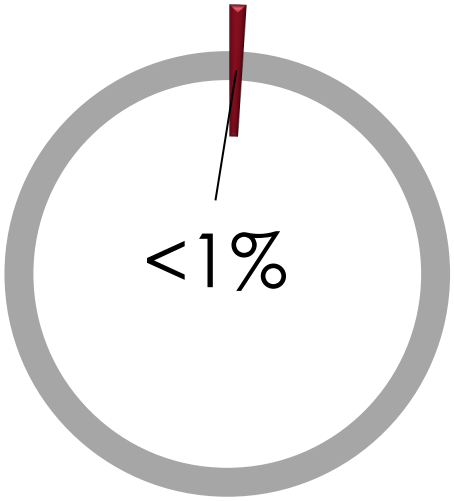
Demenz

Katholisches Klinikum Koblenz • Montabaur

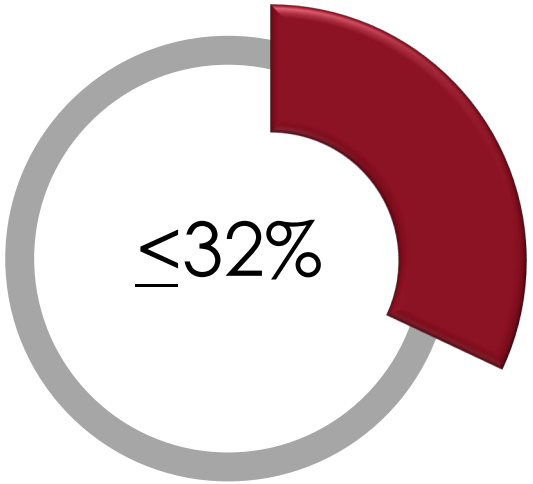
BBT-Gruppe

Mit Kompetenz und Nächstenliebe im Dienst für die Menschen: Die Krankenhäuser und Sozialeinrichtungen der BBT-Gruppe

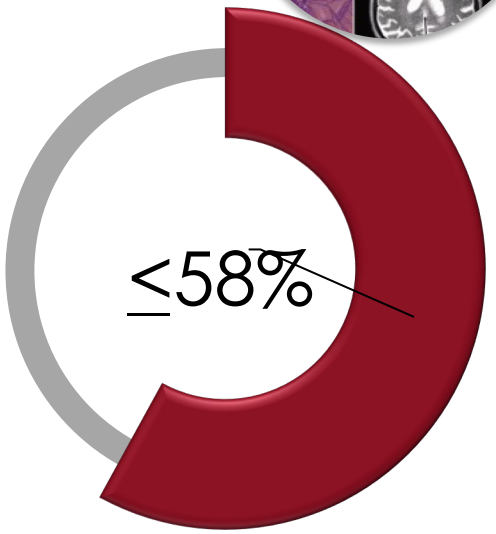
Deutliche Zunahme an Demenz mit zunehmendem Lebensalter



Under 65 years



80 to 89 years



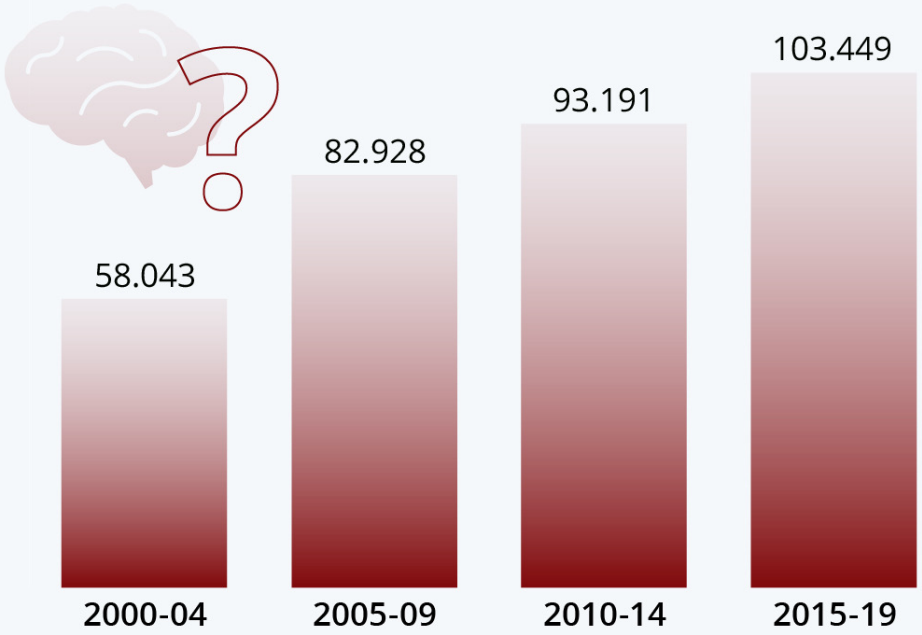
90 to 95 years

…milde Symptome treten häufig schon viel früher auf:

Beydoun et al. BMC Public Health 14: 643, 2014

Diagnose Alzheimer-Krankheit

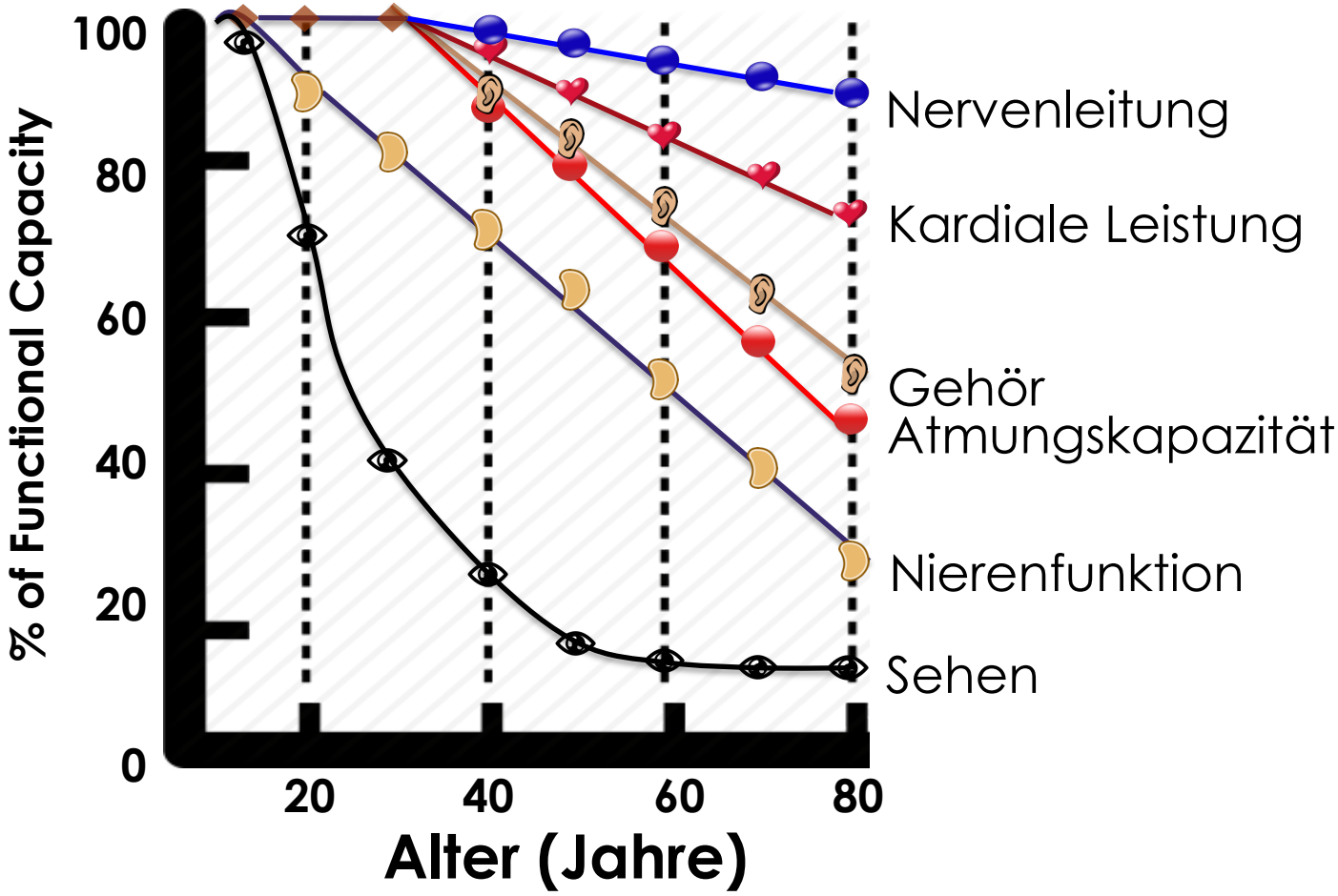
Anzahl der in deutschen Krankenhäusern festgestellten Alzheimer-Fälle



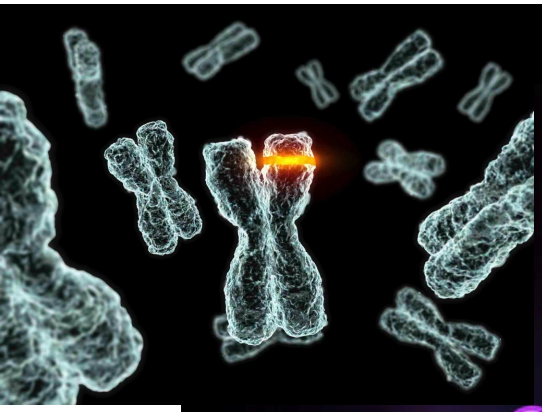
Quelle: Statistisches Bundesamt

statista

Die Rate an physiologischem Abbau korrelliert mit der Mortalität jeder Spezies



Ist unsere Lebenserwartung in unseren Genen programmiert?



Prinzipiell “ja”

Ein Blick auf den Stammbaum gibt einen Anhalt darüber, ob eine Wahrscheinlichkeit für Langlebigkeit vorliegt

1. Außergewöhnliche Langlebigkeit (1 bis 3 Dekaden über Durchschnitt) häuft sich familiär

2. Verwandte von “super-centenarians” leben länger als der Durchschnitt

Longevity runs in the family

101 Jahre

96 Jahre

91 Jahre

74 Jahre

Katholisches Klinikum
Koblenz • Montabaur

BBT-Gruppe
Mit Kompetenz und Nächstenliebe
im Dienst für die Menschen:
Die Krankenhäuser
und Sozialeinrichtungen
der BBT-Gruppe

Pro Aging

Longevity Schutz-syteme

Pro-Aging Faktoren

- Verlust von Erneuerungskapazität:
  - Stammzellen
  - Telomere
- Hormonelle Veränderungen
- Schadensakkumulation

Longevity Schutzsysteme

- DNA Reparatur
- Stresscoping
- Antioxidatives Potential
- Protein & Zell Turnover
- Mitochondrienerhalt

Alterungsrate: Pro-aging Factors vs. Longevity Schutzsysteme

BBT-Gruppe

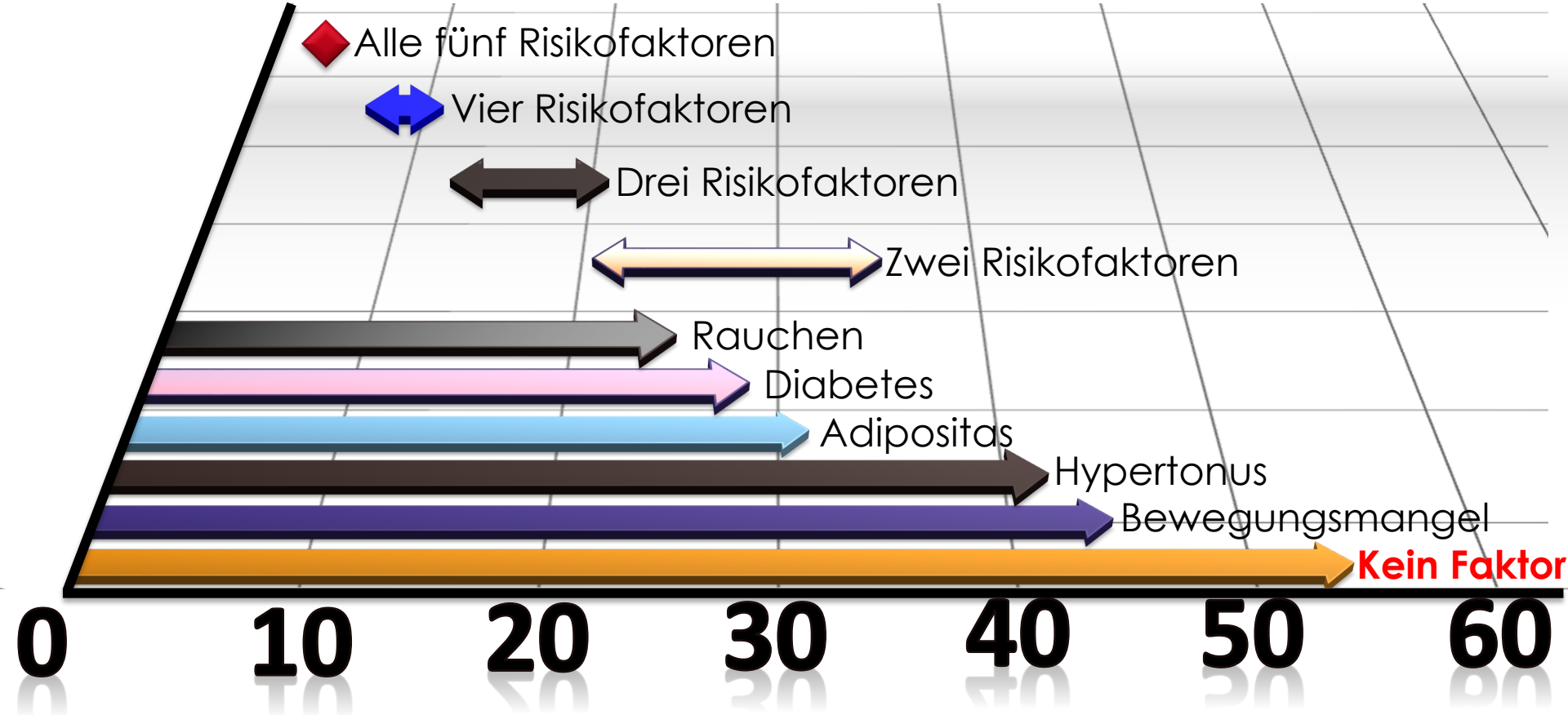
Mit Kompetenz und Nächstenliebe im Dienst für die Menschen: Die Krankenhäuser und Sozialeinrichtungen der BBT-Gruppe

Die fünf großen modifizierbaren Treiber einer verkürzten Lebenserwartung

- **<u>Bewegungsmangel</u>**:
  Gebrechlichkeit
- **<u>Hypertonus</u>**:
  Apoplex; Nierenversagen; kardiovaskuläre Erkrankungen
- **<u>Übergewicht</u>**:
  Metabolisches Syndrom; kardiovaskuläre Erkrankungen; Demenz; Karzinome
- **<u>Diabetes</u>**:
  Insulinresistenz;
  kardiovaskuläre Erkrankungen; Demenz
- **<u>Rauchen</u>**:
  Karzinome; Demenz;
  kardiovaskuläre Erkrankungen; Lungenerkrankungen

Katholisches Klinikum Koblenz • Montabaur

Wahrscheinlichkeit 70 Jahre alter Männer 90 Jahre alt zu werden

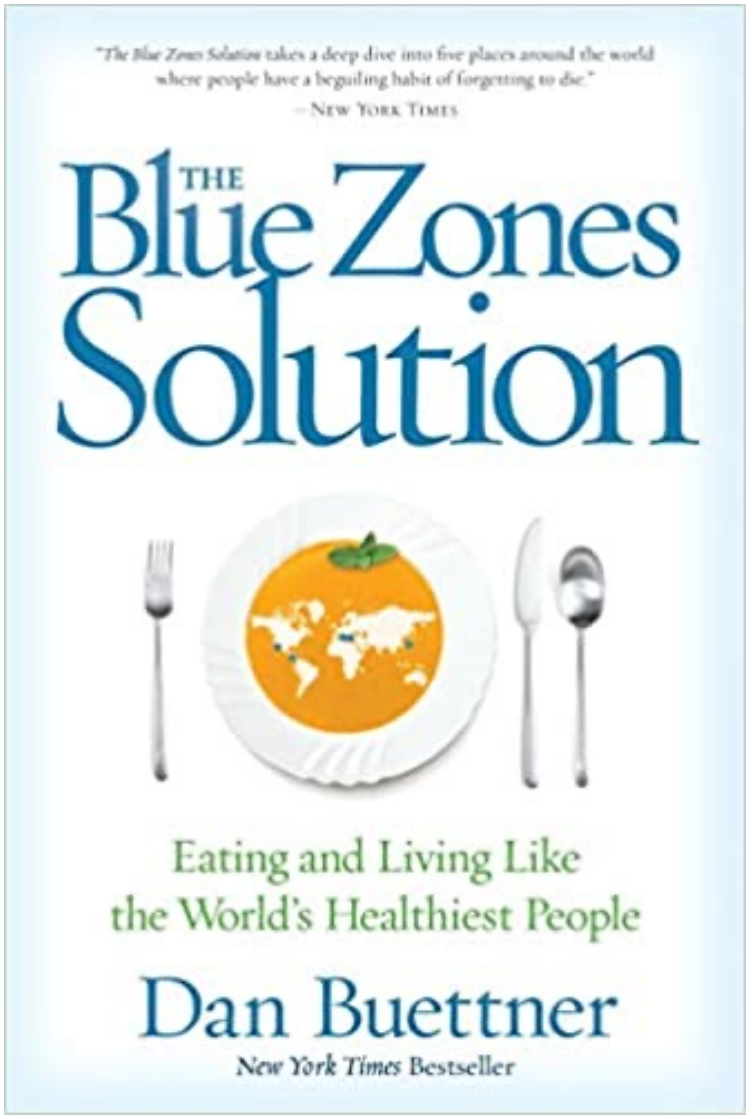


Katholisches Klinikum Koblenz • Montabaur

BBT-Gruppe
Mit Kompetenz und Nächstenliebe im Dienst für die Menschen: Die Krankenhäuser und Sozialeinrichtungen der BBT-Gruppe

Yates, LB et al. Arch Internal Medicine. 168: 284-290 (2008)

Lasst uns davon weg gehen, darüber zu reden, was Leute falsch machen!



Katholisches Klinikum
Koblenz • Montabaur

BBT-Gruppe

Mit Kompetenz und Nächstenliebe
im Dienst für die Menschen:
Die Krankenhäuser
und Sozialeinrichtungen
der BBT-Gruppe

Die Blauen Zonen – Blue zones

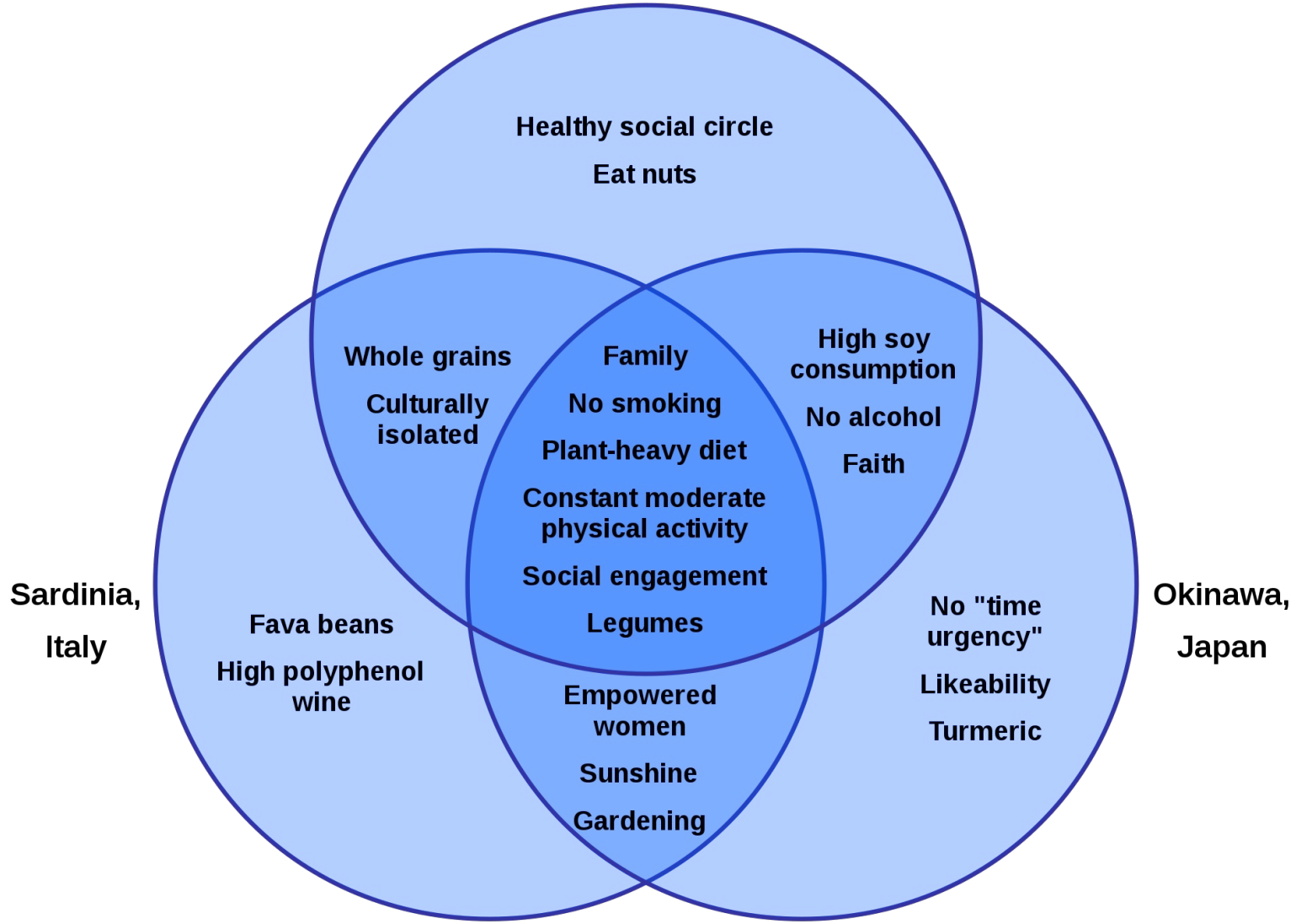
- **Sardinien**, Italien (insbesondere die Provinz Ogliastra, Barbagia von Ollolai und Barbagia von Seulo)
- Die Inseln **Okinawa**, Japan
- **Loma Linda**, Kalifornien
- **Nicoya-Halbinsel**, Costa Rica
- **Ikaria**, Griechenland

Blaue Zonen sind Regionen der Welt in denen Menschen viel länger als der Durchschnitt leben.
Das Konzept wird von Dan Buettner vertreten und wurde erstmals 2005 im National Geographic von Buettner vorgestellt.
Buettner nennt fünf Regionen, die er als „Blaue Zonen“ betrachtet:

Okinawa (Japan),
Sardinien (Italien),
die **Nicoya-Halbinsel** (Costa Rica),
Ikaria (Griechenland)
und unter den Siebenten-Tags-Adventisten in **Loma Linda**, Kalifornien.

Er gibt eine Erklärung, basierend auf epidemiologischen Daten und Beobachtungen, warum diese Menschen gesünder und länger leben.

Den englischen Begriff „Blue Zones“ hat sich Dan Buettner schützen lassen.


Loma Linda, United States
Healthy social circle
Eat nuts
Whole grains
Culturally isolated
Family
No smoking
Plant-heavy diet
Constant moderate physical activity
Social engagement
Legumes
High soy consumption
No alcohol
Faith
Sardinia, Italy
Fava beans
High polyphenol wine
Empowered women
Sunshine
Gardening
No "time urgency"
Likeability
Turmeric
Okinawa, Japan

The Power Nine

- Move naturally
- Purpose
- Downshift
- 80%-rule
- Plant slant
- Wine @ five
- Right tribe
- Community
- Loved ones first

The Power Nine

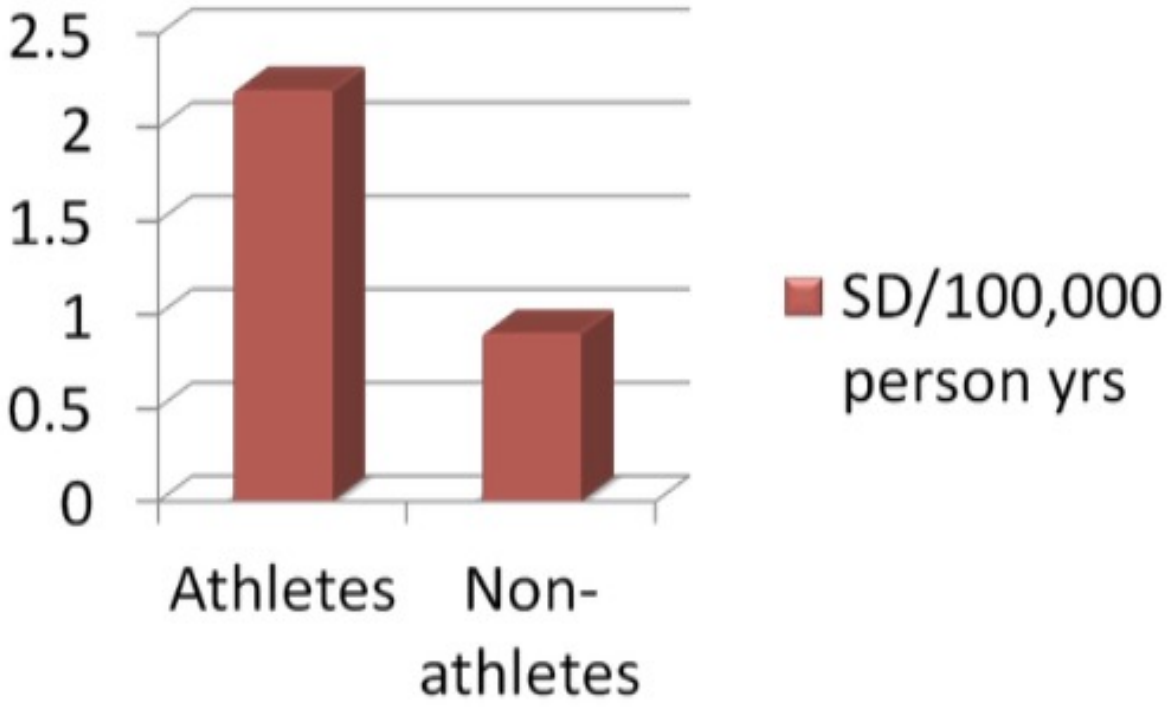
Move Naturally.

- The worlds longest-lived people don't pump iron, run marathons, or join gyms. Instead, they live in an environments that constantly nudge them into moving.
- The grow gardens and don’t have mechanical conveniences for house and yard work.
- Every trip to work, to a friend’s house, or to church occasions a walk.

Sport ist gesund!

Sport ist nicht gesund!

Relative Risk of SCD



ORIGINAL ARTICLE

MAYO CLINIC

25-Year Physical Activity Trajectories and Development of Subclinical Coronary Artery Disease as Measured by Coronary Artery Calcium: The Coronary Artery Risk Development in Young Adults (CARDIA) Study

Deepika R. Laddu, PhD; Jamal S. Rana, MD, PhD; Rosenda Murillo, PhD; Michael E. Sorel, MS; Charles P. Quesenberry Jr, PhD; Norrina B. Allen, PhD; Kelley P. Gabriel, PhD; Mercedes R. Carnethon, PhD; Kiang Liu, PhD; Jared P. Reis, PhD; Donald Lloyd-Jones, MD, ScM; J. Jeffrey Carr, MD; and Stephen Sidney, MD, MPH

Mayo Clin Proc. ■ November 2017;92(11):1660-1670 ■ http://dx.doi.org/10.1016/j.mayocp.2017.07.016
www.mayoclinicproceedings.org ■

Einteilung in 3 Gruppen:
Gruppe 1: weniger Sport als empfohlen
Gruppe 2: soviel Sport, wie empfohlen
Gruppe 3: mehr Sport als empfohlen

Beobachtung über 25 Jahre

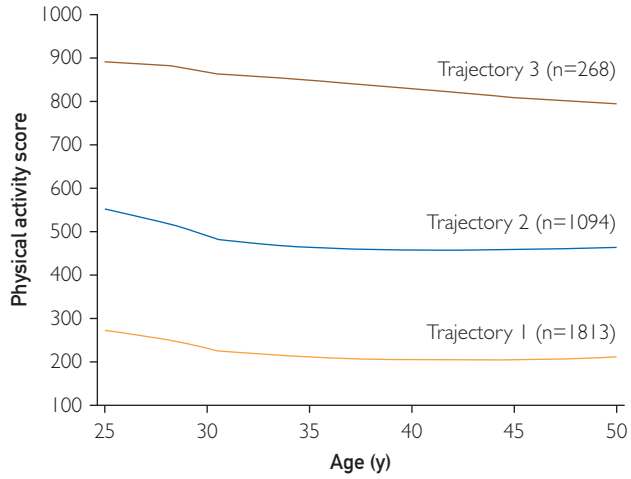


FIGURE. Trajectories of physical activity (PA) in the Coronary Artery Risk Development in Young Adults (CARDIA) study. Plotted lines represent the trajectory class identified for the estimated pattern of PA scores by age and number of CARDIA participants in each class. Trajectory 1 is defined as below PA guidelines (n=1813; 57.1%); trajectory 2, meeting PA guidelines (n=1094; 34.5%); and trajectory 3, 3 times PA guidelines (n=268; 8.4%).

TABLE 2. Odds Ratios for CAC>0 at 25 Years Associated With PA Trajectory Groups, Overall and Stratified by Race and Sex[a]

Model	Odds ratio (95% CI) [%CAC>0]		
	Below PA guidelines [29.0%]	Meeting PA guidelines [33.2%]	3 times PA guidelines [41.8%]
Model 1 (adjusted for age)	Reference	1.22 (1.04-1.43)	1.76 (1.35-2.29)
Model 2 (fully adjusted)[b,c]	Reference	1.00 (0.80-1.15)	1.27 (0.95-1.70)

Ausdauersport ist Gesundheitssport!

European Heart Journal (2013) **34**, 3145–3150
doi:10.1093/eurheartj/eht347

Mortality of French participants in the Tour de France (1947–2012)

Eloi Marijon[1,2,3,4]*, Muriel Tafflet[1,2,5], Juliana Antero-Jacquemin[1,5], Nour El Helou[1,5,6], Geoffroy Berthelot[1,5], David S. Celermajer[7], Wulfran Bougouin[1,2,4], Nicolas Combes[8], Olivier Hermine[1,9,12,13], Jean-Philippe Empana[1,2], Grégoire Rey[10], Jean-François Toussaint[1,5,11†], and Xavier Jouven[1,2,3,4†]

[1]Paris Descartes University, Paris, France; [2]Paris Cardiovascular Research Center (PARCC), INSERM UMRS-970, Paris, France; [3]Cardiology Department, Georges Pompidou European Hospital and Assistance Publique–Hôpitaux de Paris (AP-HP), Paris, France; [4]Sudden Death Expertise Center, Paris, France; [5]Institut de Recherche BioMédicale et d'Épidémiologie du Sport (IRMES), Paris, France; [6]St Joseph University, Beirut, Lebanon; [7]University of Sydney, Sydney, Australia; [8]Clinique Pasteur, Toulouse, France; [9]Service d'hématologie Adultes, CNRS-UMR 8147, Hôpital Necker-Enfants-Malades, Paris, France; [10]CépiDc INSERM, Paris, France; [11]CIMS, Hôtel-Dieu, AP-HP, Paris, France; [12]Imagine, Institut des Maladies Génétiques, Paris, France; and [13]Laboratory of Excellence GR-EX, Paris, France

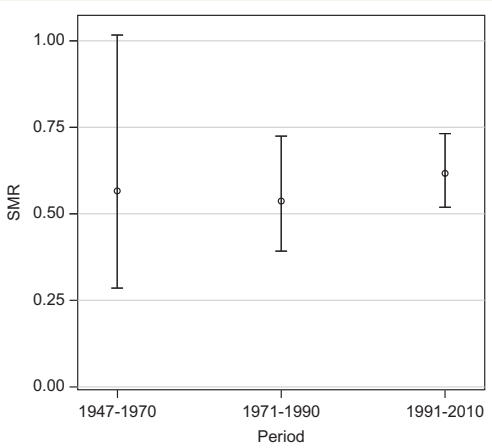


Figure 3 Standardized mortality ratio over time. We observed a lower mortality in the cyclists as compared to the male general population across the three time periods (1947–70, 1971–90, and 1991–2010), without any significant difference over time.

Table 1 Standardized mortality ratio by causes of death

	Expected Death	Observed Death	SMR	95% CI
Infectious diseases	5.44	4	0.74	(0.20–1.88)
Neoplasms	106.01	59	0.56	(0.42–0.72)
Endocrine and nutritional diseases	6.90	4	0.58	(0.16–1.48)
Mental disorders	6.61	3	0.45	(0.09–1.33)
Nervous system diseases	9.05	4	0.44	(0.12–1.13)
Cardiovascular diseases	78.87	53	0.67	(0.50–0.88)
Respiratory system diseases	17.87	5	0.28	(0.09–0.65)
Digestive system diseases	18.21	4	0.22	(0.06–0.56)
Musculoskeletal diseases	1.11	1	0.90	(0.02–5.02)
Genitourinary system diseases	3.66	2	0.55	(0.07–1.98)
Ill-defined conditions	14.03	8	0.57	(0.25–1.12)
External causes	27.29	29	1.06	(0.71–1.53)

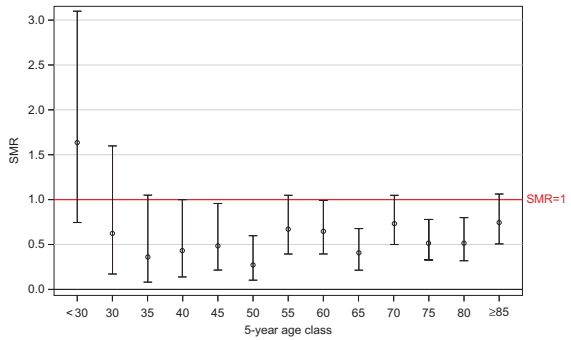
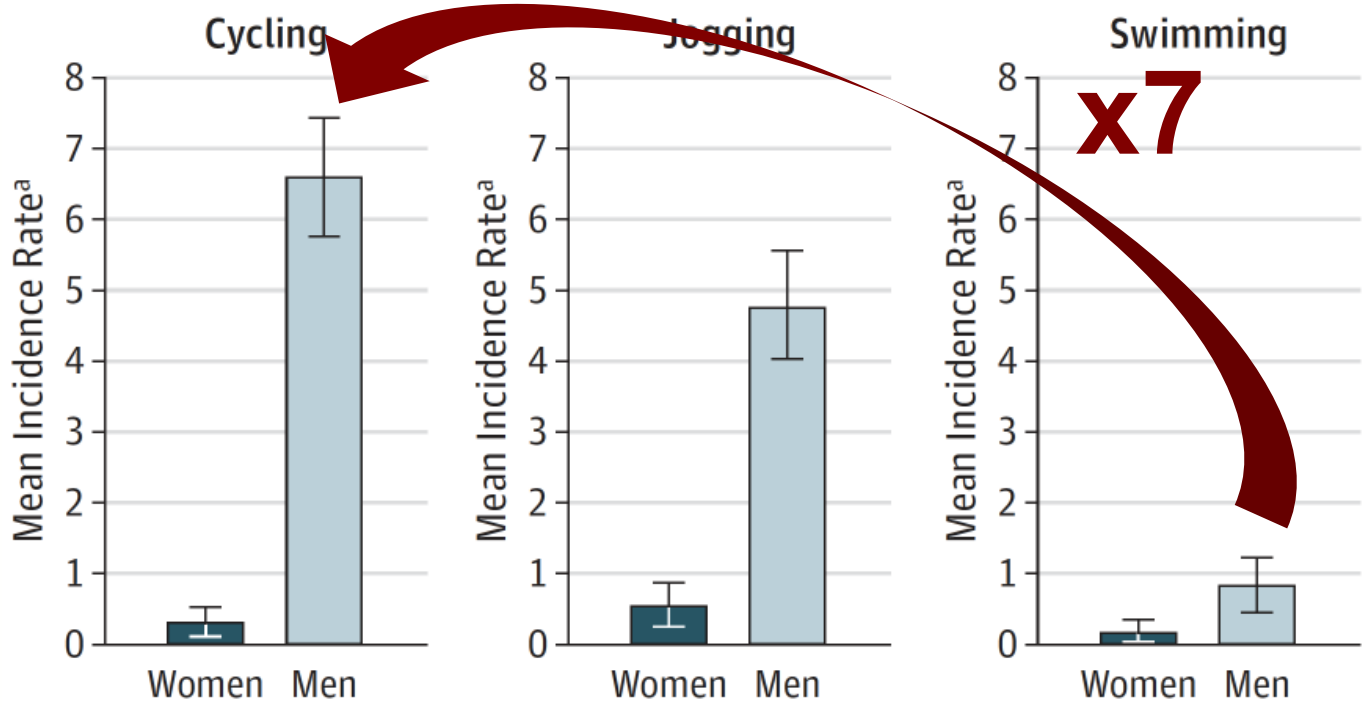


Figure 2 Standardized mortality ratio by 5-year-age class. Standardized mortality ratios were consistent across age, except for ages <30 years among whom only nine cyclists died. For this latter, an excess of mortality was suggested although the standardized mortality ratio was not statistically significant.

Welcher Sport ist wie gefährlich?



Marijon et al. JAMA. 2013 Aug 14;310(6):642-3.

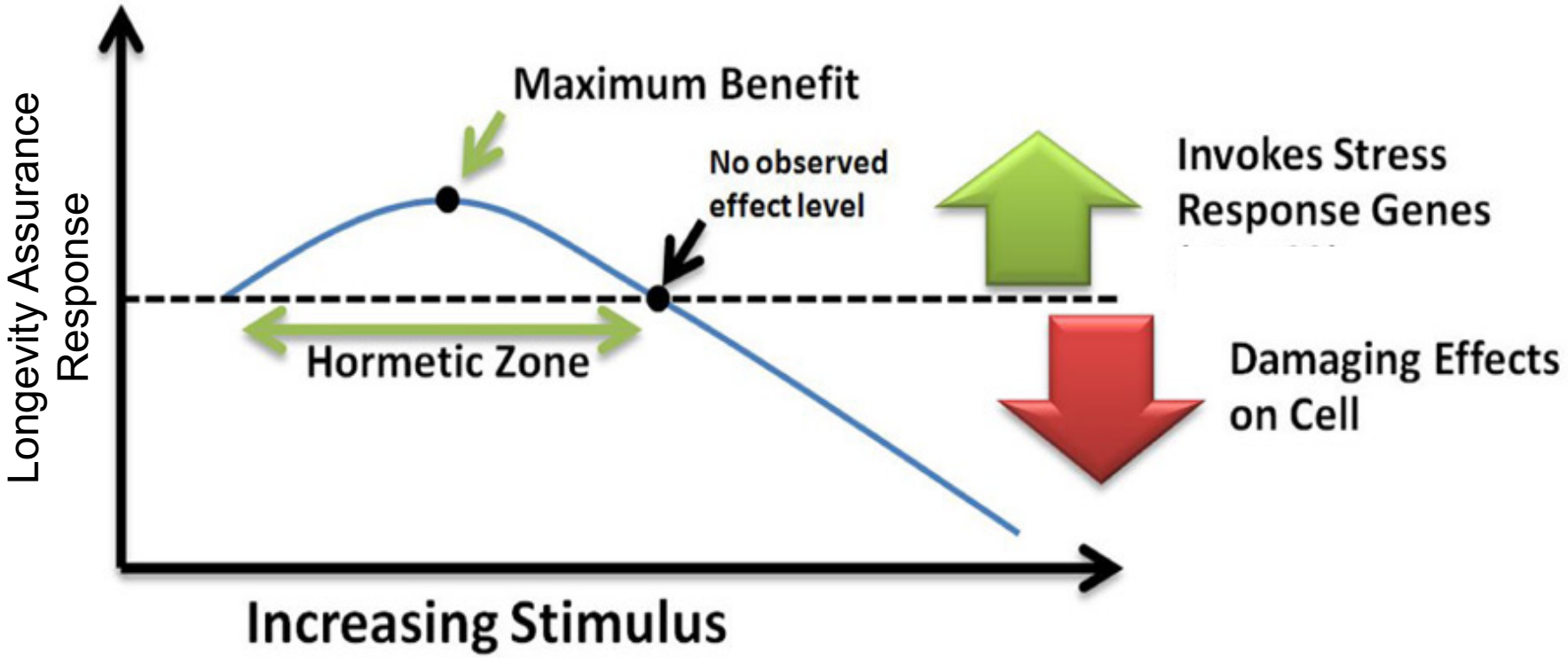
Katholisches Klinikum
Koblenz • Montabaur

BBT-Gruppe

Mit Kompetenz und Nächstenliebe
im Dienst für die Menschen:
Die Krankenhäuser
und Sozialeinrichtungen
der BBT-Gruppe

Der Benefit von Belastung als Beispiel für "Hormesis": Niedriger bis moderater Stress ist günstig

Hormesis



Katholisches Klinikum Koblenz · Montabaur

BBT-Gruppe
Mit Kompetenz und Nächstenliebe im Dienst für die Menschen: Die Krankenhäuser und Sozialeinrichtungen der BBT-Gruppe

Ist Ausdauersport gesund?

„Die Frage kann ich klar mit Jein beantworten“

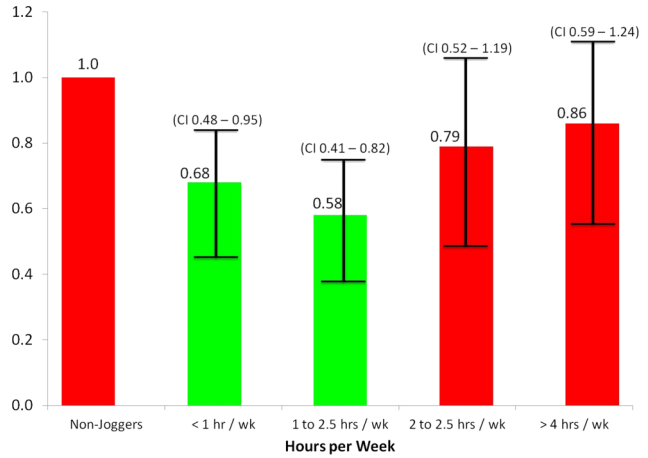


Figure 1 Quantity of jogging and mortality. Green bars: significantly different than non-joggers (referent).

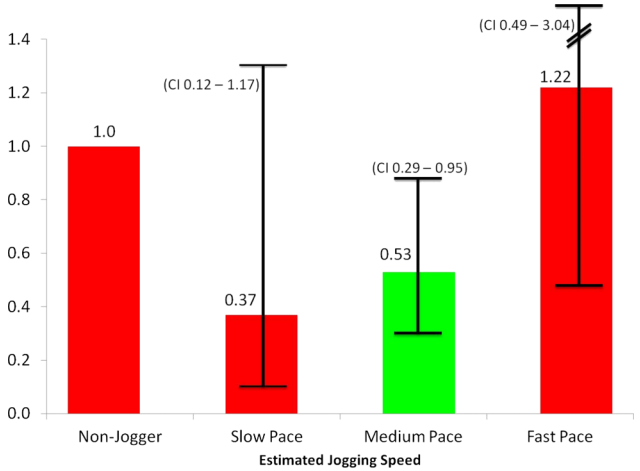


Figure 2 Jogging pace (running speed as estimated by the jogger) and mortality. Green bars: significantly different than non-joggers (referent).

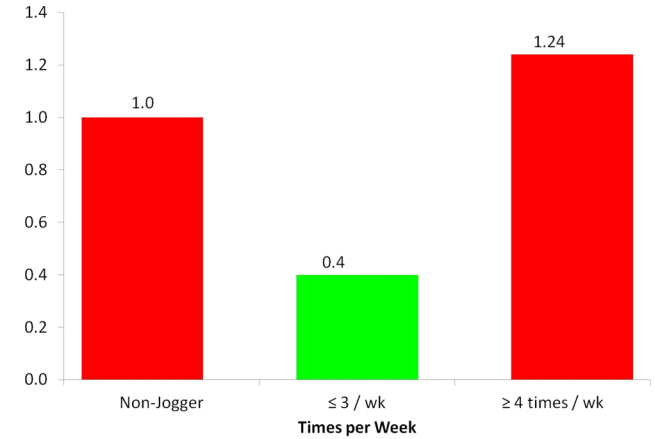
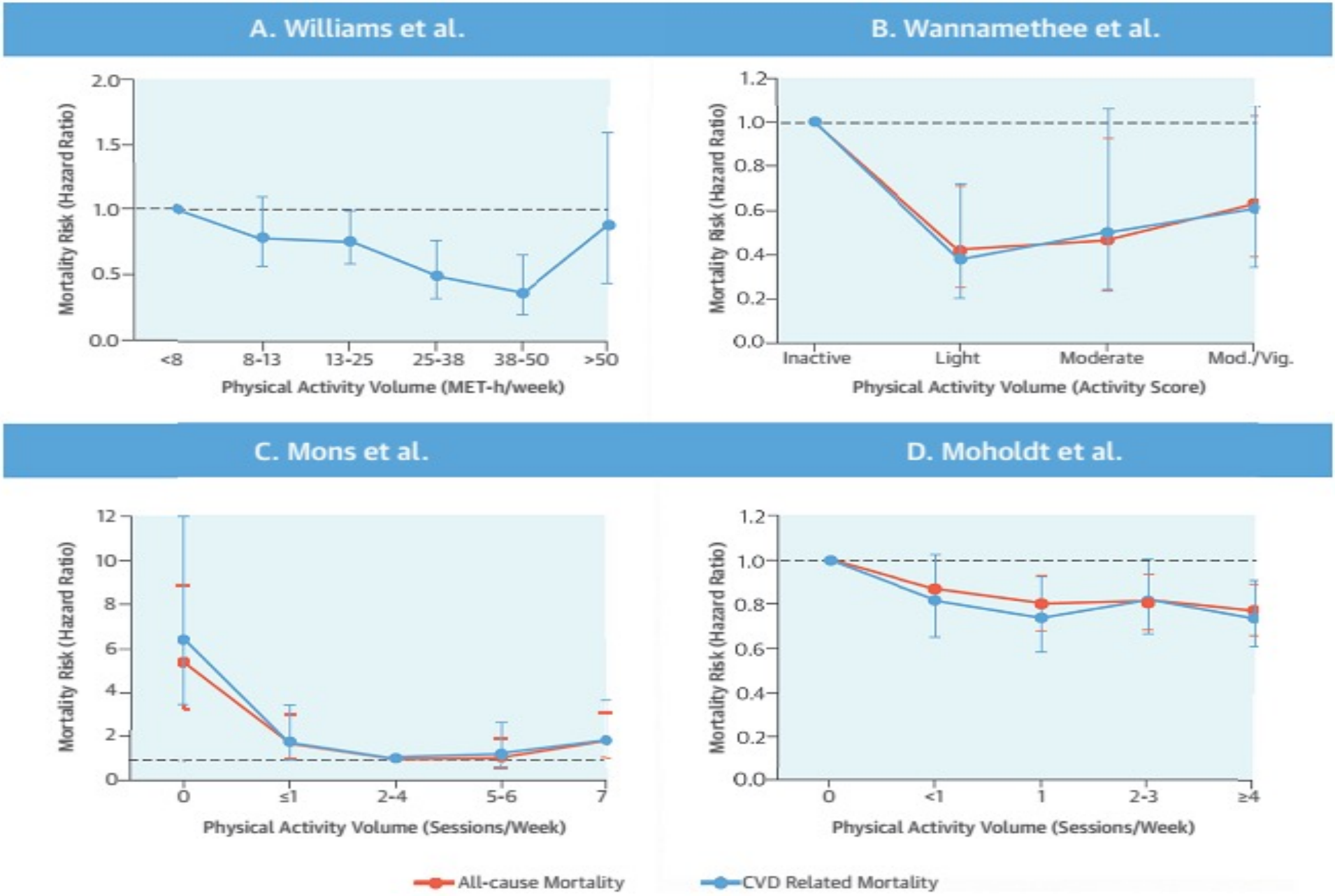


Figure 3 Frequency of jogging and mortality. Green bars: significantly different than non-joggers (referent).

Effekt von Training bei der Reduktion kardiovaskulärer Ereignisse bei Herzpatienten



Eijsvogels, T.M.H. et al. J Am Coll Cardiol. 2016; 67(3):316–29.

Was ist ein Läufer?

Fauja Singh

Am 16. Oktober 2011 gelang es Faujah Singh als erstem Menschen älter als 100 Jahre einen Marathon zu vollenden.

Seine Zeit betrug 8:11:06.

Fauja Singh ist heute 106 Jahre alt.

Auch wenn er seit 6 Jahren an keinen Wettkämpfen mehr teilnimmt, läuft er jeden Tag zwischen 8 und 12 km.

Fauja Sigh wird am 01.04.23 112 Jahre alt.

Fauja Singh

„Die ersten 20 Meilen sind nicht schwierig. Doch die letzten sechs Meilen renne ich, während ich mit Gott spreche.“

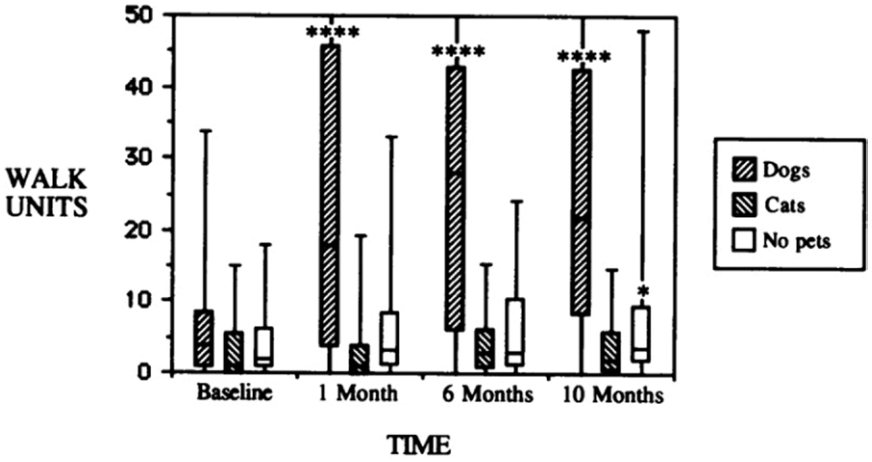
AHA Scientific Statement

Pet Ownership and Cardiovascular Risk

A Scientific Statement From the American Heart Association

Endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation, American Society of Hypertension, American Society for Preventive Cardiology, National Heart Foundation of Australia, Preventive Cardiovascular Nurses Association, and World Heart Federation

Im ersten Jahr nach Herzinfakt versterben:
- Hundebesitzer 50% weniger
- Katzenbesitzer 300% häufiger



Nach Herzinfarkt:
- wiegen Hundebesitzer weniger
- sind Hundebesitzer belastbarer
- haben Hundebesitzer weniger Diabetes
- sind Hundebesitzer zufriedener

Katholisches Klinikum
Koblenz · Montabaur

The Power Nine

Community.

- All but 5 of the 263 centenarians we interviewed belonged to a faith-based community.
- Denomination doesn't seem to matter.
- Research shows that attending faith-based services four times per month will add 4 to 14 years of life expectancy.

Frequency of Attendance at Religious Services, Hypertension, and Blood Pressure: The Third National Health and Nutrition Examination Survey

R. Frank Gillum, MD, MS, and Deborah D. Ingram, PhD

TABLE 3. Regression Coefficients From a Linear Regression Model Relating Systolic Blood Pressure (mm Hg) and Frequency of Attending Religious Services, Controlling for Sociodemographic and Health Variables Among Persons Aged 20 and Over: NHANES III

	β	95% CL
Services attended/yr		
1–51 services	2.12*	(0.46, 3.79)
52 services	−1.46**	(−2.33, −0.58)
>52 services	−3.03**	(−4.34, −1.72)

Die Häufigkeit des Besuchs von Gottesdiensten korreliert invers mit der Höhe des Blutdrucks

Age and Blood Pressure Changes

A 20-Year Follow-up Study in Nuns in a Secluded Order

MARIO TIMIO, PAOLO VERDECCHIA, SANDRO VENANZI,
SIMONETTA GENTILI, MAURIZIO RONCONI, BIANCA FRANCUCCI,
MAURO MONTANARI, AND ETTORE BICHISAO

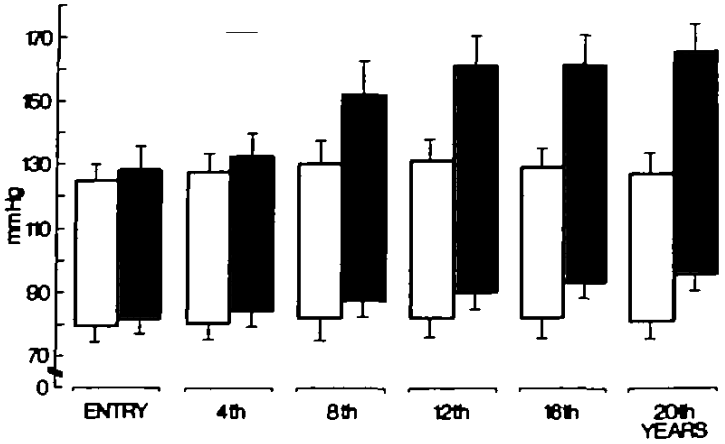


FIGURE 1. *Mean values (± SD) of systolic and diastolic blood pressure obtained every 4 years to the end of the study.*

Strukturiertes religiöses Leben scheint einen Einfluss auf den Blutdruck zu haben.

Leben in einem Kloster bedeutet mehr als häufiges Beten

RESEARCH ARTICLE

Religious service attendance and mortality among older Black men

Marino A. Bruce[1,2,3,4]*, Bettina M. Beech[1,2,3,4], Dulcie Kermah[5], Shanelle Bailey[5], Nicole Phillips[6], Harlan P. Jones[6], Janice V. Bowie[1,4,7], Elizabeth Heitman[1,8], Keith C. Norris[1,4,9], Keith E. Whitfield[4,10], Roland J. Thorpe[1,4,7]

Table 2. Hazard ratios for all-cause mortality by religious service attendance for Black Men 50 and older in NHANES III.

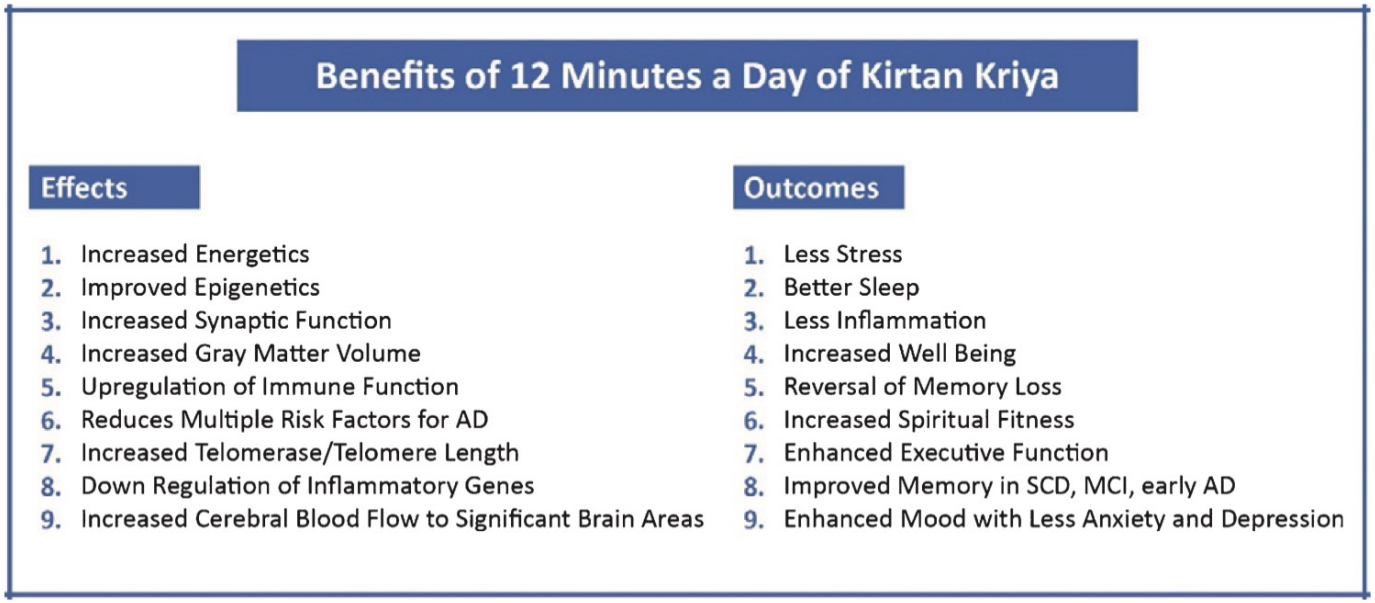
	Unadjusted	Adjusted			
		Model 1	Model 2	Model 3	Model 4
No attendance	Reference	Reference	Reference	Reference	Reference
Attendance 3 or fewer times/month	0.79 (0.64–0.96)	0.76 (0.57–1.02)	0.83 (0.61–1.11)	0.70 (0.46–1.07)	0.70 (0.46–1.07)
Attendance one or more times/week	0.71 (0.58–0.86)	0.59 (0.44–0.77)	0.62 (0.45–0.85)	0.51 (0.33–0.78)	0.53 (0.35–0.79)

Journal of Alzheimer's Disease 80 (2021) 505–519
DOI 10.3233/JAD-201433
IOS Press

Review

Spiritual Fitness: A New Dimension in Alzheimer's Disease Prevention

Dharma Singh Khalsa[a,*] and Andrew B. Newberg[b]
[a]*Alzheimer's Research and Prevention Foundation, Tucson, AZ, USA*
[b]*Department of Integrative Medicine and Nutritional Sciences, Department of Radiology, Marcus Institute of Integrative Health, Thomas Jefferson University, Philadelphia, PA, USA*



Conclusion: Religious and spiritual practices, including Kirtan Kriya, are crucial components in the development of enhanced cognition and well-being, which may help prevent and, in some cases, reverse cognitive decline. The key point of this review is that making a commitment to live a brain longevity lifestyle including spiritual fitness is a critically important way for aging Alzheimer's disease free. We hope that this article will inspire scientists, clinicians, and patients to embrace this new concept of spiritual fitness and make it a part of every multidomain program for the prevention of cognitive disability.

The Power Nine

Right Tribe.

- The world's longest-lived people choose, or were born into, social circles that support healthy behaviors.
- Okinawans create "Moais" – groups of five friends that commit to each other for life.
- Research shows that smoking, obesity, happiness, and even loneliness are contagious. By contrast, social networks of long-lived people favorably shape their health behaviors.

Social Networks Are Associated With Lower Mortality Rates Among Women With Suspected Coronary Disease: The National Heart, Lung, and Blood Institute-Sponsored Women's Ischemia Syndrome Evaluation Study

Rutledge, Thomas PhD; Reis, Steven E. MD, FACC; Olson, Marian MS; Owens, Jane PhD; Kelsey, Sheryl F. PhD; Pepine, Carl J. MD, FACC; Mankad, Sunil MD, FACC; Rogers, William J. MD, FACC; Bairey Merz, C Noel MD, FACC; Sopko, George MD; Cornell, Carol E. PhD; Sharaf, Barry MD, FACC; Matthews, Karen A. PhD

Conclusions:

Among a cohort of women with suspected CAD, smaller social circles were associated with increased CAD risk factors and mortality,

The Power Nine

Loved Ones First.

- Successful centenarians in the Blue Zones put their families first.
- The keep aging parents and grandparents nearby or in the home, which also lowers disease and mortality rates of their children.
- They commit to a life partner (which can add up to three years of life expectancy).
- They invest in their children with time and love, which makes the children more likely to be caretakers when the time comes.

Gesunde Hundertjährige in den Blue Zones stellen ihre Familie an die erste Stelle.
Dies bedeutet, dass ihre alternden Eltern und Großeltern nah ihres Hauses oder sogar in ihren Haushalt leben (was ebenfalls die Mortalität und Morbidität bei Kindern im Haushalt vermindert).
Sie bleiben ein Leben lang bei einem Partner (was die Lebenserwartung um 3 Jahre verlängert) und investieren in ihre Kinder Zeit, Geld und Liebe. (Was wiederum dazu führt, dass diese sich um sie kümmern, wenn sie selbst als sind.)

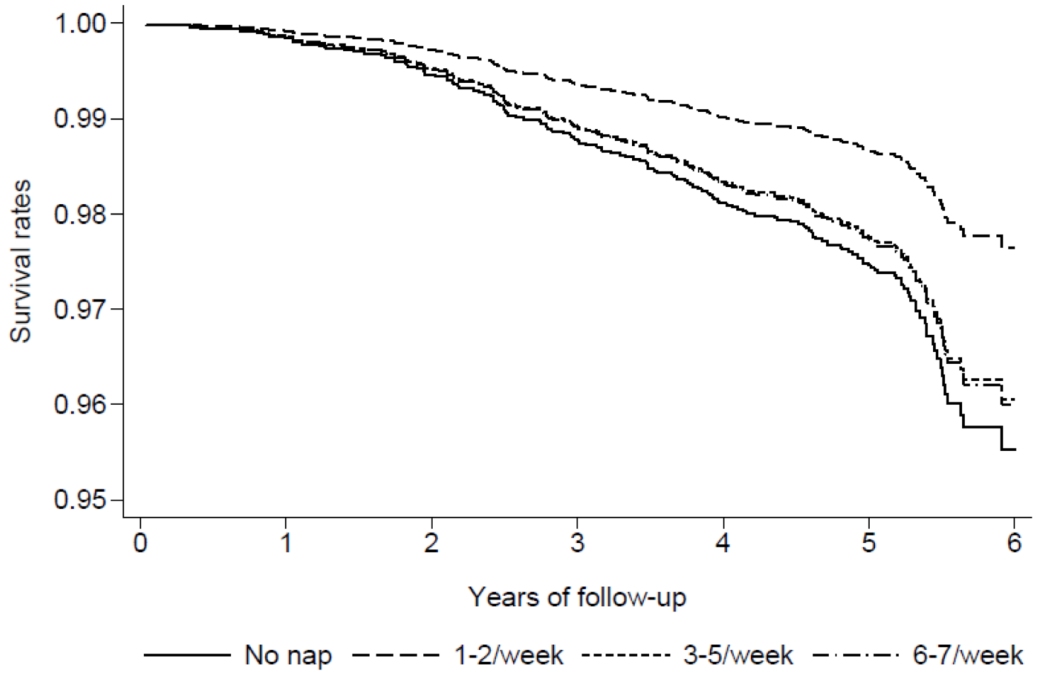
The Power Nine

Downshift.

- Even people in the Blue Zones experience stress, which leads to chronic inflammation, associated with every major age-related disease.
- The world' longest lived people have routines to shed that stress:
  - Okinawans take a few moments each day to remember their ancestors
  - Adventists pray
  - Ikarians take a nap
  - Sardinians do happy hour

Association of napping with incident cardiovascular events in a prospective cohort study

Nadine Häusler ,[1] Jose Haba-Rubio,[2] Raphael Heinzer,[2] Pedro Marques-Vidal[1]



CONCLUSION

Subjects who nap once or twice per week have a lower risk of incident CVD events, while no association was found for more frequent napping or napping duration. Nap frequency may help explain the discrepant findings regarding the association between napping and CVD events.

Effect of rosary prayer and yoga mantras on autonomic cardiovascular rhythms: comparative study

Luciano Bernardi, Peter Sleight, Gabriele Bandinelli, Simone Cencetti, Lamberto Fattorini, Johanna Wdowczyc-Szulc, Alfonso Lagi

Effekt des Ave Maria mit Rosenkranz bzw. eines yogischen Mantras auf Blutdruck und Atmung.

Probanden wurde in die Gebete eingewiesen und wurden untersucht.

Effekte ritueller Gebete auf Atmung

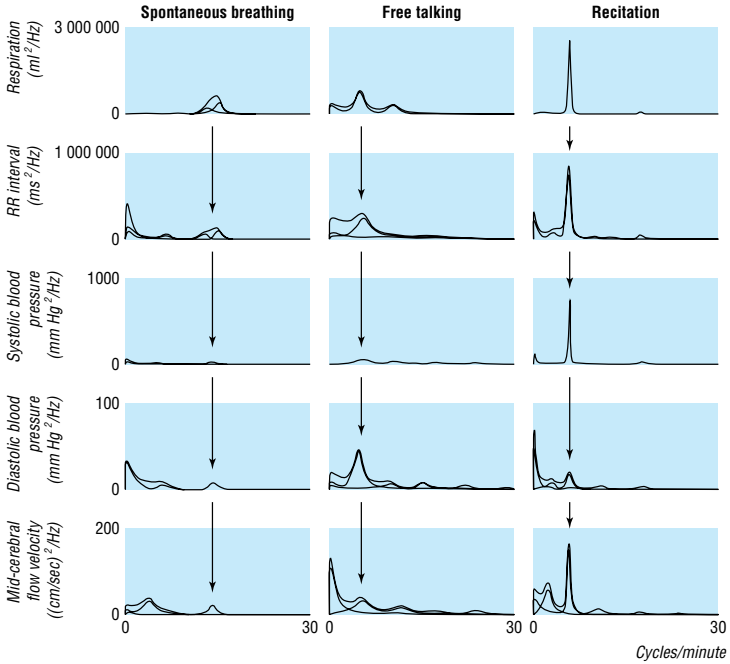


Fig 1 Effects (in one subject) of rhythmic rituals (Ave Maria and mantra om-mani-padme-om), compared with spontaneous breathing, on respiratory and cardiovascular rhythms. Note slow rhythmic oscillations (approximately 6/min) in all signals during recitation of prayer and mantra

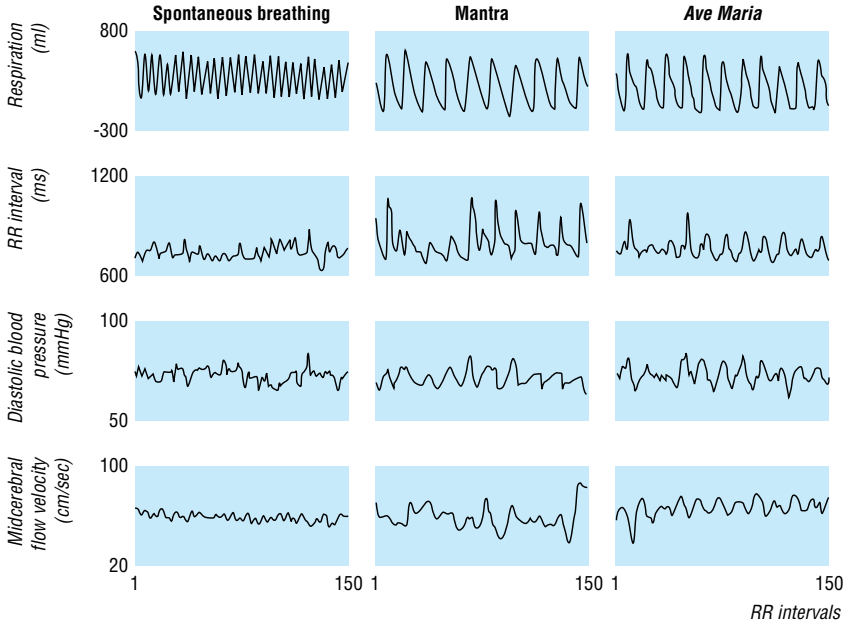


Fig 2 Power spectrums of respiration and cardiovascular signals during spontaneous breathing, free talking, and recitation of the Ave Maria. Note the left shift of the spectrums during vocal sequences, due to slower breathing. Rhythmic recitation (regular oscillations) gives narrower spectral peaks; free talking (irregular oscillations) produces broader peaks

The Power Nine

Purpose.

- The Okinawans call it “ikigai” and the Nicoyans “plan de de vida;” for both it translates to “why I wake up in the morning.”
- In all Blue Zones people had something to live for beyond just work.
- Research has shown that knowing your sense of purpose is worth up to seven years of life expectancy.

Ikigai and subsequent health and wellbeing among Japanese older adults: Longitudinal outcome-wide analysis

Sakurako S. Okuzono,[a,b,1]* Koichiro Shiba,[a,c,d,1] Eric S. Kim,[e] Kokoro Shirai,[f] Naoki Kondo,[g] Takeo Fujiwara,[b] Katunori Kondo,[h,i] Tim Lomas,[d] Claudia Trudel-Fitzgerald,[a,j] Ichiro Kawachi,[a] and Tyler J. VanderWeele[c,d,k]

Physical health						
All-cause mortality[c]		0.85	0.60	1.19	0.328	N.S.
Functional Disability (Any levels)[c]		0.69	0.58	0.82	<0.001	***
Functional Disability (Level 1 or greater)[c]		0.67	0.54	0.83	<0.001	***
Functional Disability (Level 2 or greater)[c]		0.71	0.53	0.96	0.027	*
Functional Disability (Need support)[c]		0.70	0.54	0.92	0.011	*
Dementia[c]		0.64	0.48	0.85	0.002	**
No remaining natural teeth		0.92	0.74	1.15	0.464	N.S.
Good self-rated health		1.05	1.00	1.10	0.070	N.S.
Instrumental Activity of Daily Living	0.19		0.10	0.28	<0.001	***

In conclusion, we found that having *Ikigai* may lead to decreased psychological distress and improved subjective wellbeing among Japanese older adults, as well as improved physical health among Japanese older men and those with high SES.

Psychosomatic Medicine, V 78 • 122-133

SYSTEMATIC REVIEW/META-ANALYSIS

Purpose in Life and Its Relationship to All-Cause Mortality and Cardiovascular Events: A Meta-Analysis

Randy Cohen, MD, MS, Chirag Bavishi, MD, MPH, and Alan Rozanski, MD

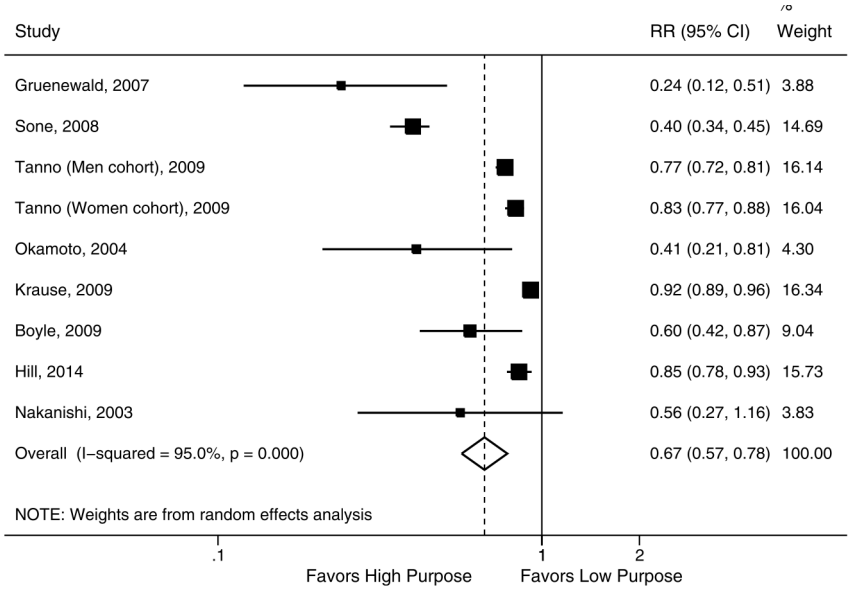


TABLE 2. Summary Statistics and Subgroup Analysis

	No. Studies[a]	RR (95% CI)	*p*	I^2
All-cause mortality				
Unadjusted	9	0.67 (0.57–0.78)	<.001	95.0%
Adjusted	9	0.83 (0.75–0.91)	<.001	82.5%
CVD mortality				
Unadjusted	5	0.65 (0.50–0.85)	.001	94.2%
Adjusted	5	0.83 (0.75–0.92)	.001	56.2%
Subgroup analysis of adjusted all-cause mortality				
By country				
USA	4	0.83 (0.70–0.98)	.036	83.2%
Japan	5	0.81 (0.73–0.90)	<.001	70.1%
By questionnaire used				
Modified Ryff Well-Being Scale	2	0.81 (0.68–0.97)	.026	30.7%
Other questionnaire	7	0.83 (0.74–0.92)	.001	85.7%
By follow-up				
Included participants with baseline CVD	5	0.63 (0.42–0.95)	.026	76.9%
No baseline CVD	4	0.84 (0.78–0.90)	<.001	68.6%
By age				
Mean age >65 y	5	0.63 (0.42–0.95)	.026	76.9%
Mean age ≤65 y	4	0.84 (0.78–0.90)	<.001	68.6%

Clinical Implications

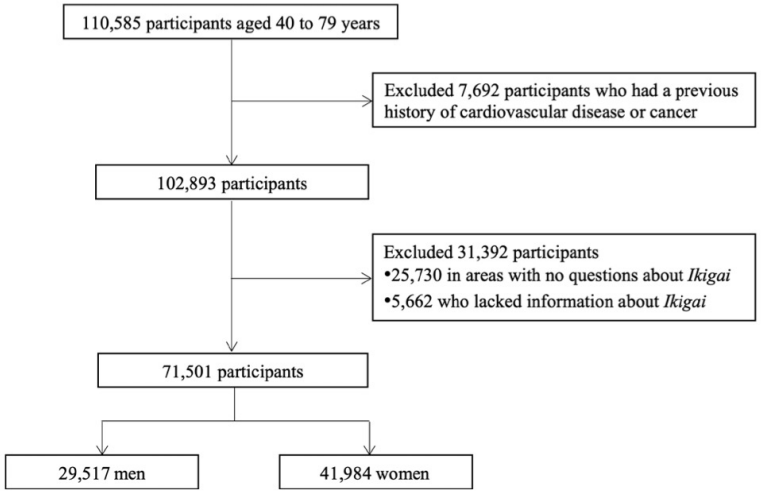
The results of our study, along with other recent outcome studies, indicate that purpose in life is an important health variable that is associated with a reduced risk of adverse outcomes, including all-cause mortality, cardiovascular outcomes, stroke, dementia (41), and development of disability (40).

BMJ Open

Purpose in life (*Ikigai*) and employment status in relation to cardiovascular mortality: the Japan Collaborative Cohort Study

Junji Miyazaki,[1] Kokoro Shirai,[1] Takashi Kimura,[2] Satoyo Ikehara,[1] Akiko Tamakoshi,[2] Hiroyasu Iso [1]

'*Ikigai*' is a Japanese concept similar to 'purpose in life', 'meaning of life', 'life worth living' and 'reason to live', which can be translated as 'that which most makes one's life seem worth living'.[9] In Japanese, *Ikigai* is defined as a comprehensive concept related to life satisfaction, self-esteem, self-efficacy, morale and cognitive evaluation of the meaning of one's life.[10] *Ikigai* involves more than enjoyment, pleasure or happiness and provides significance for one's value in life, including subjective motivation for a living.[11]



CONCLUSION

We found that higher levels of *Ikigai* were associated with a lower risk of CVD mortality, specifically for unemployed men and women. Having *Ikigai* might be useful for the risk reduction of CVD mortality among the unemployed.

Table 3 Sex-specific, multivariable HRs and 95% CIs of total cardiovascular mortality according to the perceived levels of *Ikigai* after exclusion of deaths occurred 1–5 years from the baseline among unemployed persons

	Ikigai			
	Low	**Moderate**	**High**	**P_{Trend}**
Men				
At risk	436	2262	1802	
Person-years	4821	27 595	23 334	
No. of deaths	84	368	250	
Multivariable* HR	1.00	0.74 (0.57 to 0.97)	0.69 (0.52 to 0.93)	0.044
	79	358	243	
Deaths within 1 year exclude*	1.00	0.74 (0.56 to 0.97)	0.68 (0.51 to 0.92)	0.044
	73	343	232	
Deaths within 2 years exclude*	1.00	0.77 (0.58 to 1.02)	0.71 (0.52 to 0.96)	0.087
	67	318	223	
Deaths within 3 years exclude*	1.00	0.75 (0.56 to 1.01)	0.71 (0.52 to 0.98)	0.104
	60	299	210	
Deaths within 4 years exclude*	1.00	0.78 (0.57 to 1.06)	0.72 (0.52 to 1.01)	0.157
	56	282	201	
Deaths within 5 years exclude*	1.00	0.75 (0.55 to 1.04)	0.69 (0.49 to 0.98)	0.115
Women				
No. at risk	894	4364	2637	
No. of person-years	11 864	62 898	38 599	
No. of deaths	145	555	306	
Multivariable* HR	1.00	0.78 (0.64 to 0.95)	0.77 (0.61 to 0.97)	0.039
	138	540	299	
Deaths within 1 year excluded*	1.00	0.78 (0.64 to 0.96)	0.78 (0.62 to 0.98)	0.056
	134	526	290	
Deaths within 2 years excluded*	1.00	0.79 (0.64 to 0.97)	0.78 (0.61 to 0.98)	0.061
	125	498	281	
Deaths within 3 years excluded*	1.00	0.77 (0.62 to 0.96)	0.78 (0.61 to 1.00)	0.057
	113	480	273	
Deaths within 4 years excluded*	1.00	0.81 (0.65 to 1.02)	0.83 (0.65 to 1.08)	0.193
	112	462	267	
Deaths within 5 years excluded*	1.00	0.78 (0.62 to 0.97)	0.80 (0.62 to 1.04)	0.092

Table 4 Age-adjusted and sex-adjusted and multivariable HRs and 95% CIs of mortality from type-specific cardiovascular diseases according to the perceived levels of *Ikigai* among unemployed persons

		Ikigai			
		Low	**Moderate**	**High**	**P_{Trend}**
Total stroke	No. at risk	1330	6626	4439	
	No. of person-years	16 684	90 493	61 933	
	No. of deaths	107	375	242	
	Age-adjusted, sex-adjusted HR (95% CI)	1.00	0.58 (0.47 to 0.72)	0.51 (0.41 to 0.65)	<0.001
	Multivariable* HR (95% CI)	1.00	0.72 (0.57 to 0.91)	0.74 (0.56 to 0.96)	0.022
Ischaemic stroke	No. of deaths	37	157	91	
	Age-adjusted, sex-adjusted HR (95% CI)	1.00	0.70 (0.49 to 1.00)	0.54 (0.37 to 0.80)	0.007
	Multivariable* HR (95% CI)	1.00	0.82 (0.56 to 1.20)	0.80 (0.51 to 1.24)	0.555
Haemorrhagic stroke	No. of deaths	30	95	67	
	Age-adjusted, sex-adjusted HR (95% CI)	1.00	0.54 (0.36 to 0.82)	0.54 (0.35 to 0.83)	0.008
	Multivariable* HR (95% CI)	1.00	0.74 (0.47 to 1.19)	0.84 (0.49 to 1.42)	0.425
Stroke of undetermined type	No. of deaths	40	123	84	
	Age-adjusted, sex-adjusted HR (95% CI)	1.00	0.51 (0.36 to 0.73)	0.47 (0.32 to 0.69)	<0.001
	Multivariable* HR (95% CI)	1.00	0.61 (0.41 to 0.90)	0.61 (0.39 to 0.96)	0.041
Coronary heart disease	No. of deaths	43	196	99	
	Age-adjusted, sex-adjusted HR (95% CI)	1.00	0.75 (0.54 to 1.05)	0.51 (0.36 to 0.74)	<0.001
	Multivariable* HR (95% CI)	1.00	0.77 (0.54 to 1.10)	0.64 (0.43 to 0.97)	0.103
Heart failure	No. of deaths	43	187	120	
	Age-adjusted, sex-adjusted HR (95% CI)	1.00	0.73 (0.52 to 1.01)	0.65 (0.46 to 0.92)	0.055
	Multivariable* HR (95% CI)	1.00	0.90 (0.63 to 1.30)	1.01 (0.67 to 1.52)	0.663
Other CVDs	No. of deaths	36	165	95	
	Age-adjusted, sex-adjusted HR (95% CI)	1.00	0.75 (0.52 to 1.08)	0.60 (0.40 to 0.87)	0.023
	Multivariable* HR (95% CI)	1.00	0.75 (0.51 to 1.11)	0.64 (0.42 to 1.00)	0.144

The Power Nine

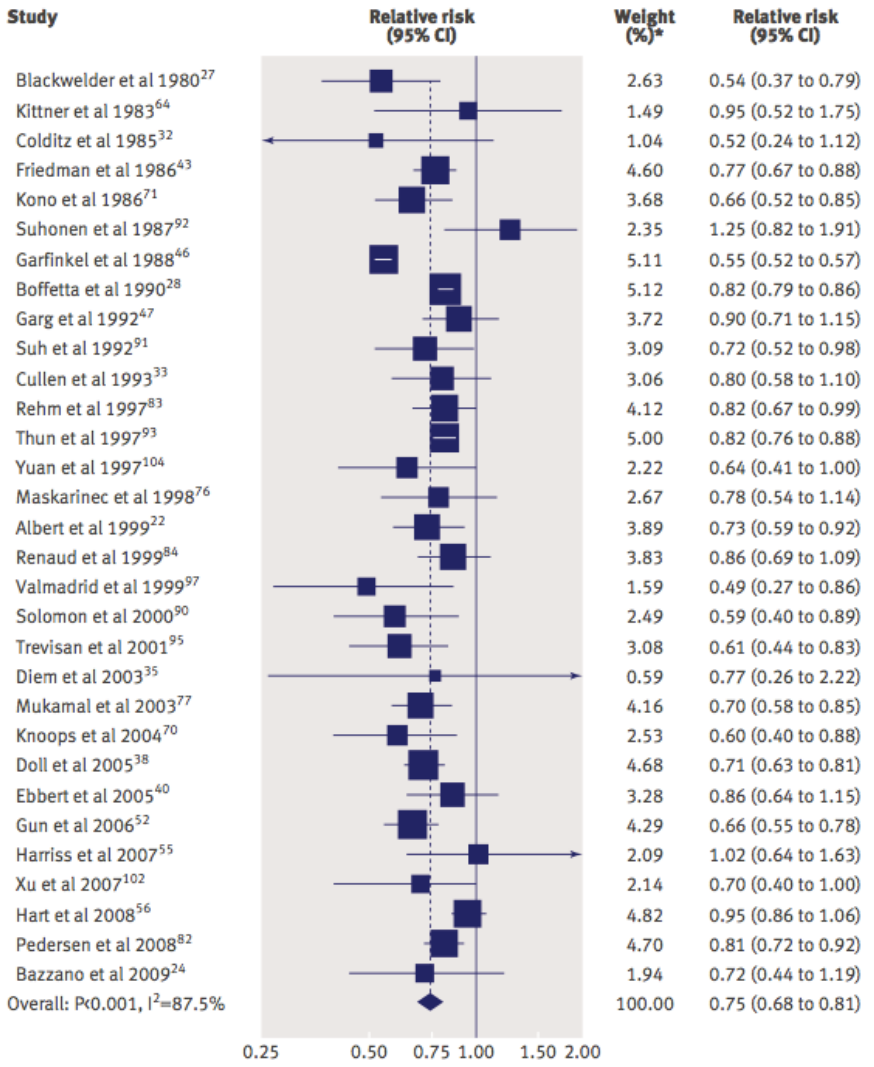
Wine @ 5.

- People in all Blue Zones (even some Adventists) drink alcohol moderately and regularly.
- Moderate drinkers outlive nondrinkers.
- The trick is to drink one to two glasses per day with friends and/or with food.
- And no, you can't save up all week and have 14 drinks on Saturday.

KHK-Mortalität und Alkoholkonsum

Metaanalyse von 84 prospektiven Kohortenstudie, > 1Mio. Teilnehmer

Mittlere Risikoreduktion 25%



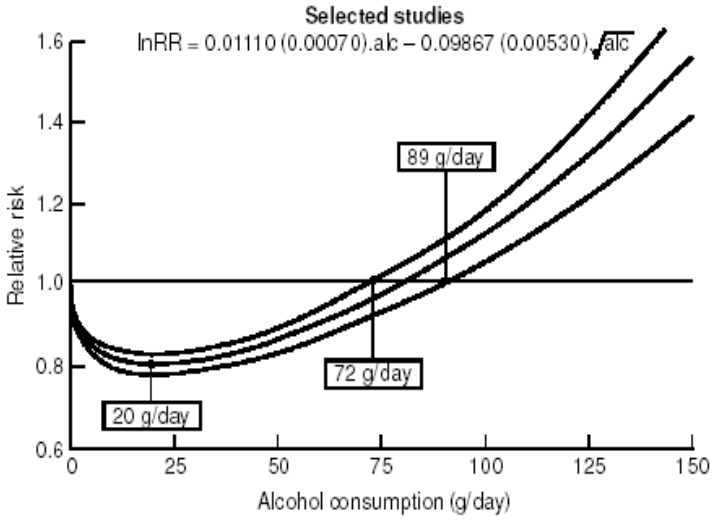
Ronksley et al.: Association of alcohol consumption with selected cardiovascular disease outcomes: a systematic review and meta-analysis, BMJ 2011;342:d67

Katholisches Klinikum Koblenz · Montabaur

BBT-Gruppe

Mit Kompetenz und Nächstenliebe im Dienst für die Menschen: Die Krankenhäuser und Sozialeinrichtungen der BBT-Gruppe

Alkohol, Herzinfarkt und Mortalität



Corrao et al, Addiction 2000

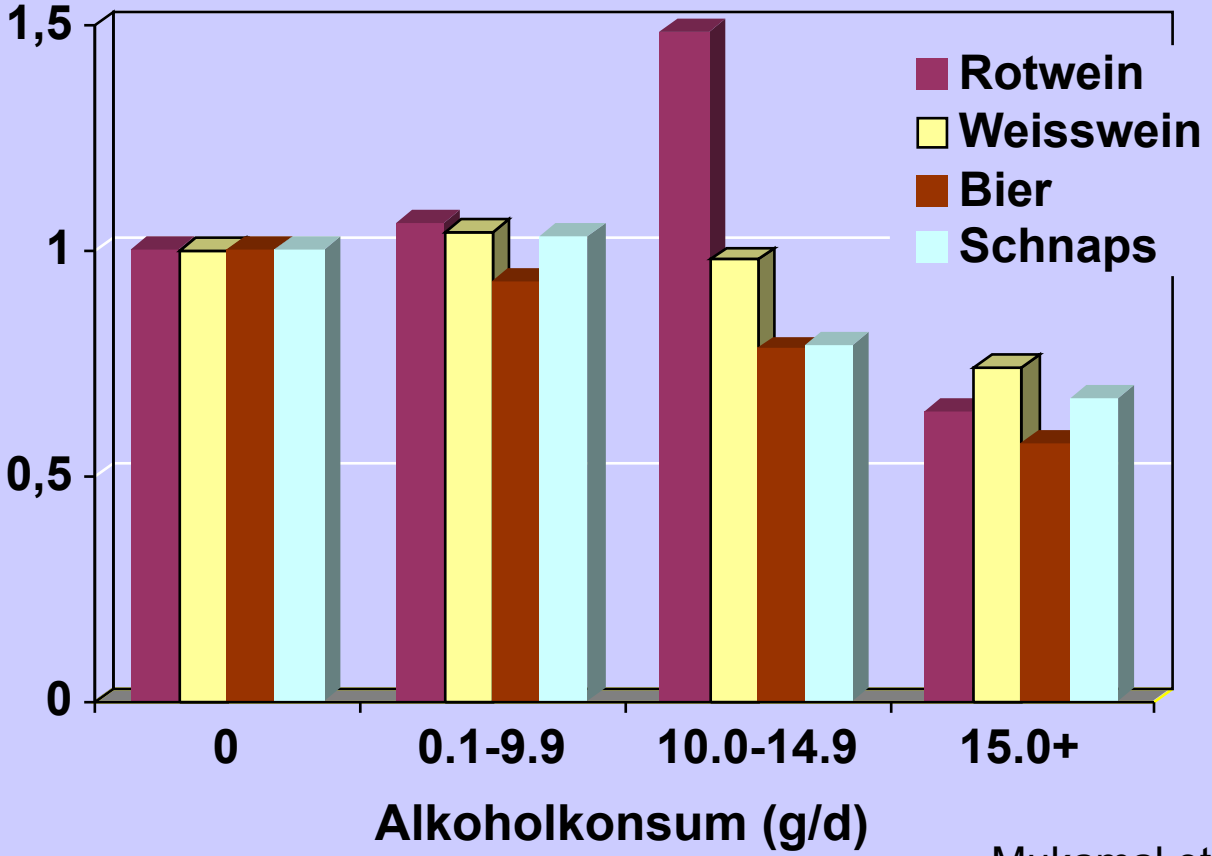
Was sind 20 Gramm Alkohol?

3 dl Bier
12g Alkohol

1 dl Wein
10g Alkohol

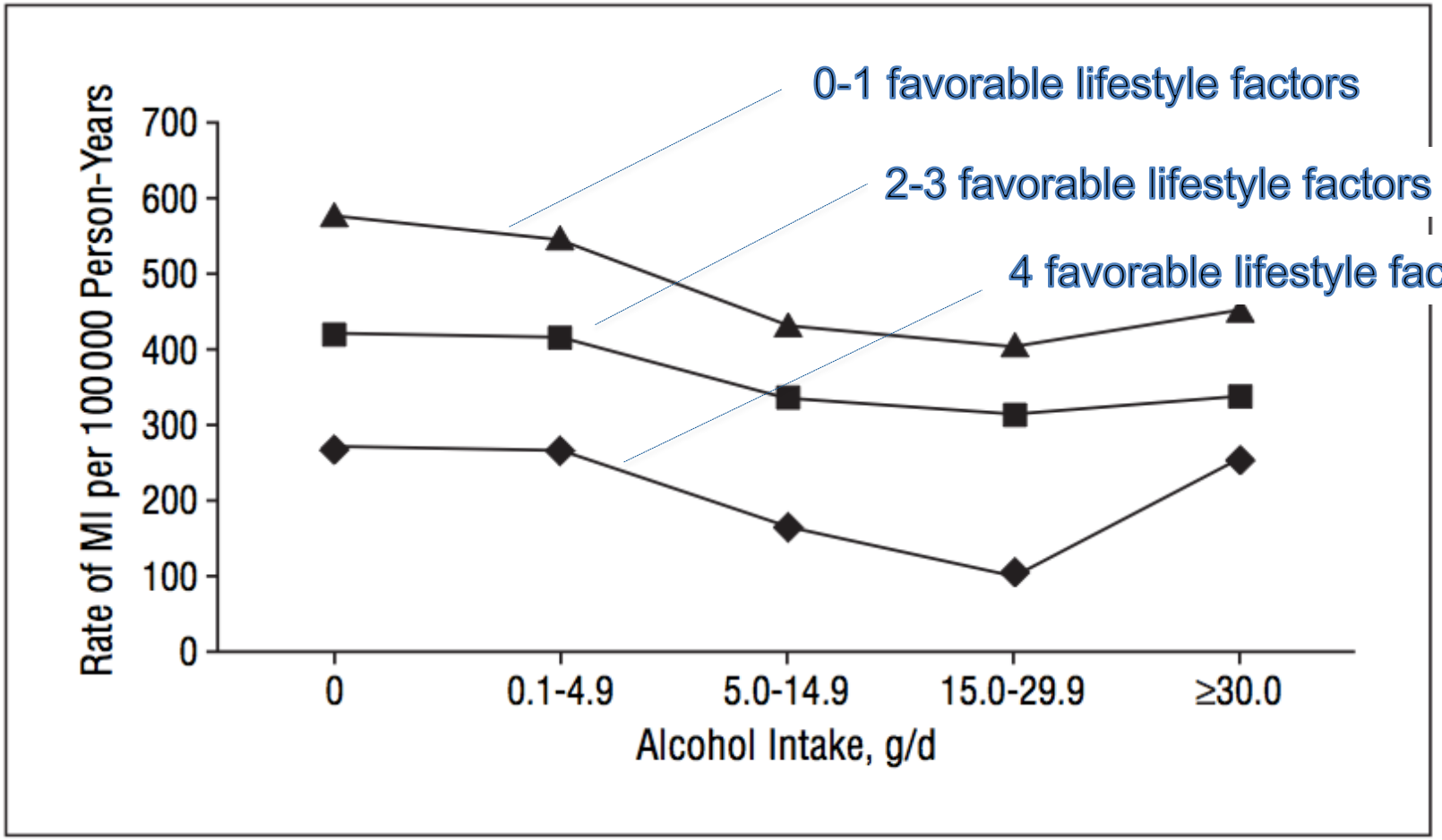
0.2 dl Schnaps
6.5g Alkohol

Beverage Type and Risk of MI: Health Professionals Follow-up Study



Mukamal et al, NEJM 2003

Alcohol Consumption and Risk for Coronary Heart Disease in Men Depending on Lifestyle



Mukamal, et al ARCH INTERN MED. 2006

Katholisches Klinikum Koblenz · Montabaur

BBT-Gruppe

Mit Kompetenz und Nächstenliebe im Dienst für die Menschen: Die Krankenhäuser und Sozialeinrichtungen der BBT-Gruppe

Apostel Paulus an Timotheus:

“Höre auf nur Wasser zu trinken und trinke ein wenig Wein für dein Herz und deinen Bauch”

1892 erklärte die Ortskrankenkasse in Heidelberg in Absprache mit den Kassenärzten eine Flasche **Wein als verschreibungsfähiges Therapeutikum**.

Curtis Ellison, Chefepidemiologe an der University von Boston :

"Ein Tag ohne ein Glas Wein ist ein Risiko für unsere Gesundheit”

The Power Nine

80 Percent Rule.

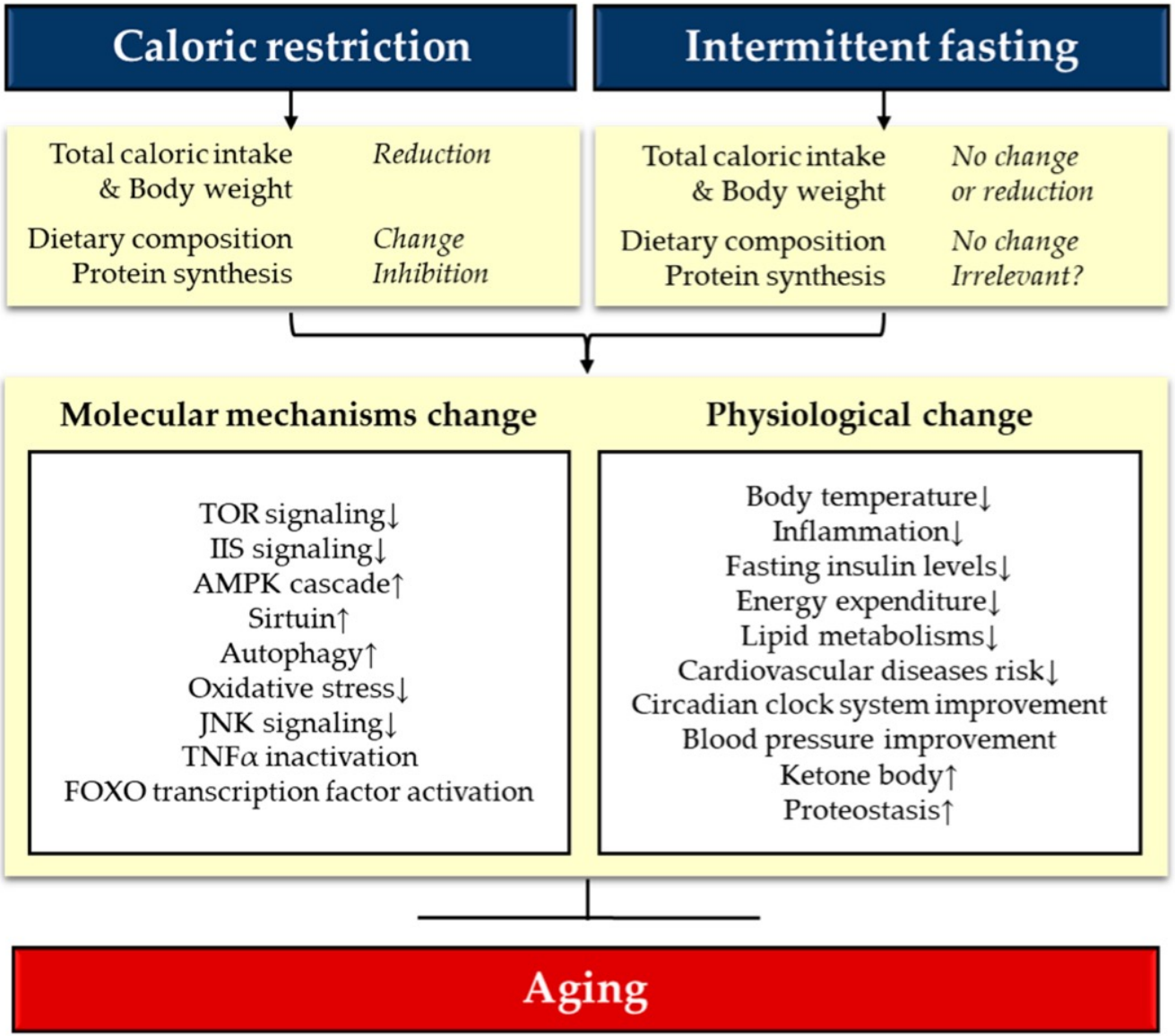
- "Hara Hachi Bu" – The 2,500 year-old Confucian mantra spoken before meals on Okinawa – reminds people to stop eating when their stomachs are 80% full.
- The 20% gap between not being hungry and feeling full could be the difference between losing weight and gaining it.
- People in the Blue Zones eat their smallest meal in the late afternoon or early evening, and then they don't eat any more the rest of the day.

Hara hachi bu

腹八分目

In Okinawa kommen auf 100.000 Einwohner mehr als 60 100-Jährige – also im Verhältnis dreimal mehr als in den USA. Woran liegt das? Es könnte an **Hara hachi bu** der Japaner liegen.

Dahinter verbirgt sich die konfuzianische Regel, nur so viel zu essen, bis der Magen zu 80 Prozent gefüllt sei – und nicht wie in weiten Teilen der Welt, bis man vollständig satt ist. Auf diese Weise wird die Kalorienzufuhr beschränkt, so dass sie auf Okinawa bei etwa 1800 bis 1900 Kilokalorien pro Tag liegt.



Hwagbo et al. 2020

Caloric restriction delays disease onset and mortality in rhesus monkeys

Ricki J. Colman[1], **Rozalyn M. Anderson**[1], **Sterling C. Johnson**[1,2,3], **Erik K. Kastman**[2,3], **Kristopher J. Kosmatka**[2,3], **T. Mark Beasley**[4], **David B. Allison**[4], **Christina Cruzen**[1], **Heather A. Simmons**[1], **Joseph W. Kemnitz**[1,2], and **Richard Weindruch**[1,2,3]

[1]Wisconsin National Primate Research Center, University of Wisconsin, Madison, WI 53715

[2]Department of Medicine, University of Wisconsin, Madison, WI 53706

[3]Geriatric Research, Education, and Clinical Center, William S. Middleton Memorial Veterans Hospital, Madison, WI 53705

[4]Department of Biostatistics, University of Alabama at Birmingham, AL 35294

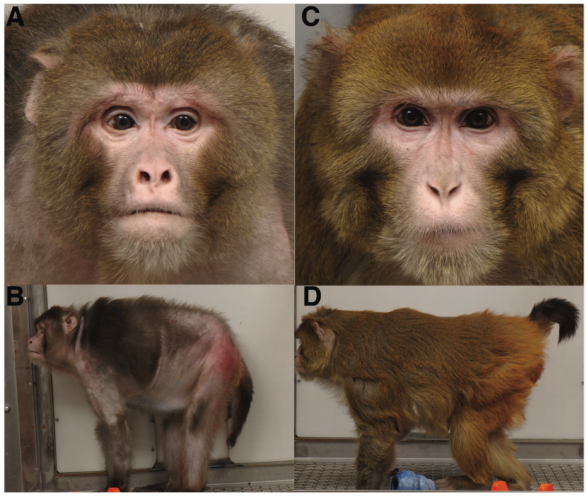
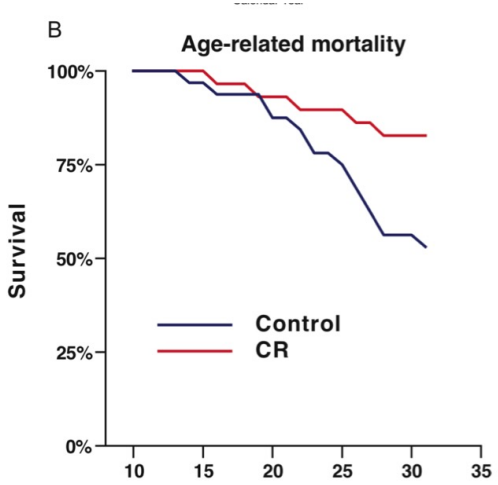
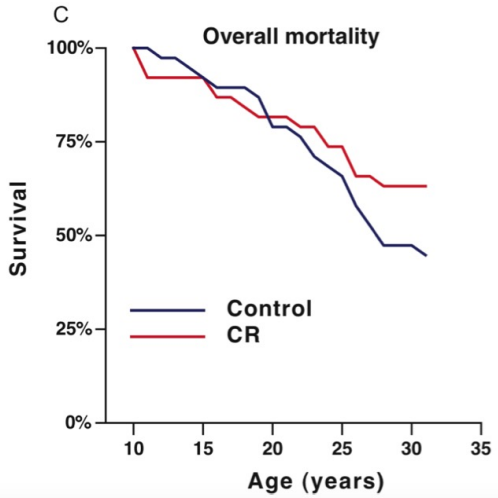


Fig. 1.
Animal appearance in old age. **(A–B)** Photographs of a typical control animal at 27.6 years of age (~age of average lifespan). **(C–D)** Photographs of an age-matched animal on CR.





Our data indicate that adult-onset, moderate CR delays the onset of age-associated pathologies and promotes survival in a primate species.

Ageing Research Reviews
Volume 47, November 2018, Pages 183-197

Review

The effect of fasting or calorie restriction on autophagy induction: A review of the literature

Mohammad Bagherniya [a], Alexandra E. Butler [b], George E. Barreto [c d], Amirhossein Sahebkar [e f g]

Fasting or caloric restriction for Healthy Aging

Stephen Anton* and **Christiaan Leeuwenburgh***
University of Florida, Department of Aging and Geriatric Research, Institute on Aging, Gainesville, FL, United States

OPEN ACCESS
CellPress

Cell Reports
Report

Long-Term Calorie Restriction Enhances Cellular Quality-Control Processes in Human Skeletal Muscle

Ling Yang,[1,11] Danilo Licastro,[2,11] Edda Cava,[3,4,11] Nicola Veronese,[3,5] Francesco Spelta,[3,6] Wanda Rizza,[3,7] Beatrice Bertozzi,[3] Dennis T. Villareal,[3,8] Gökhan S. Hotamisligil,[1] John O. Holloszy,[3] and Luigi Fontana[3,9,10,*]

Curr Diab Rep (2017) 17: 123
https://doi.org/10.1007/s11892-017-0951-7

CrossMark

LIFESTYLE MANAGEMENT TO REDUCE DIABETES/CARDIOVASCULAR RISK (B CONWAY AND H KEENAN, SECTION EDITORS)

Health Benefits of Fasting and Caloric Restriction

Saeid Golbidi[1] · Andreas Daiber[2] · Bato Korac[3] · Huige Li[4] · M. Faadiel Essop[5] · Ismail Laher[1]

The Power Nine

Plant Slant.

- Beans, including fava, black, soy, and lentil, are the cornerstone of most centenarian diets.
- Meat – mostly pork – is eaten on average only five times per month, and in a serving of three to four ounces, about the size of a deck of cards.

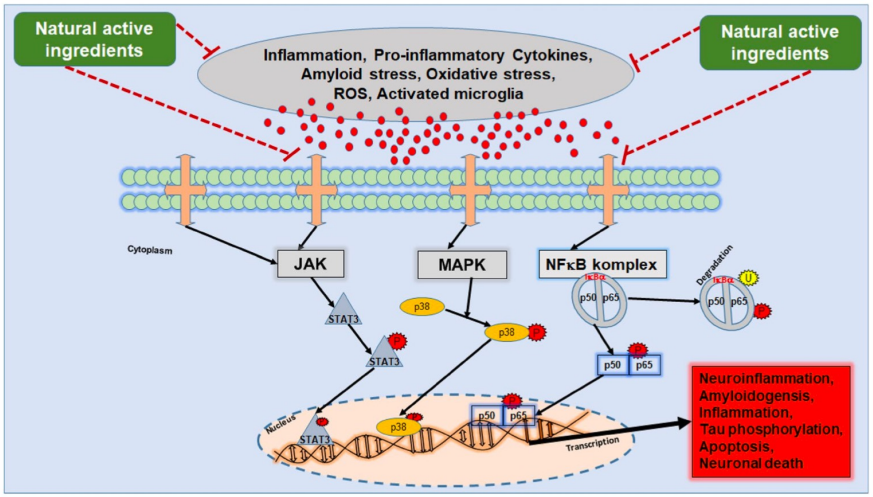
Neurochemical Research
https://doi.org/10.1007/s11064-022-03746-2

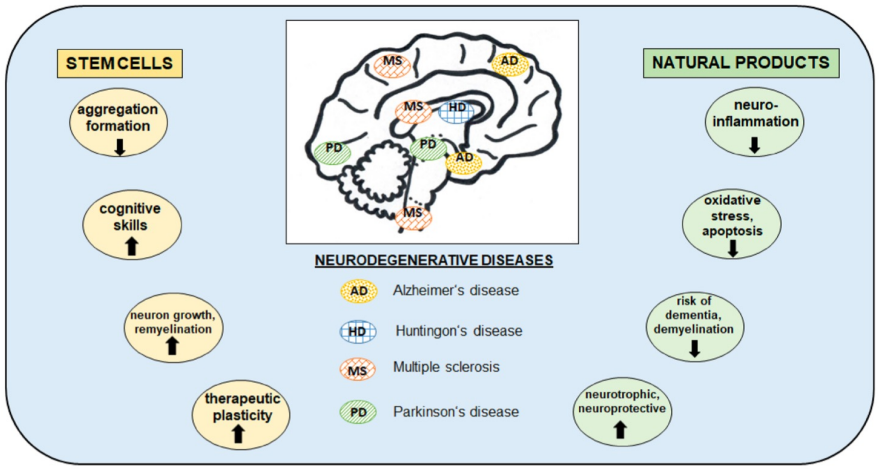
REVIEW

Stem Cells and Natural Agents in the Management of Neurodegenerative Diseases: A New Approach

Aranka Brockmueller[1] · Negin Mahmoudi[2] · Amir Kian Movaeni[2] · Anna-Lena Mueller[1] · Abdol-Mohammad Kajbafzadeh[2] · Mehdi Shakibaei[1] · Masoumeh Majidi Zolbin[2]

Active compound	Class of substance	Plants of origin	Targeted disease	Mode of action	Year	References
Astaxanthin	Carotenoid	*Chlorophyta*	AD, HD, PD, MS	Amelioration of hippocampal insulin resistance, anti-inflammatory action, reduction of oxidative cell stress and demyelination	2019 2021 2022	[47, 50, 65]
Galantamine	Alkaloid	*Galanthus spp.*	AD	Inhibition of acetylcholinesterase	2013	[66]
Huperzine A	Alkaloid	*Huperzia serrate*	AD	Inhibition of acetylcholinesterase	2013	[66]
Lunasin	Polypeptide	*Glycine max*	AD	Regeneration of Aβ42-triggered neurodegeneration	2018	[26]
Resveratrol	Polyphenol	*Vitis vinifera, Rubus idaeus, Arachis hyogaea*	AD	Inhibition of tau protein hyperphosphorylation via signaling modulation of ERK1/2 and GSK-3β	2008 2017	[33, 67]
Curcumin	Polyphenol	*Curcuma longa*	AD	Reduction of tau hyperphosphorylation via Caveolin-1/GSK-3β regulation	2017	[68]
Hyperforin	Polyphenol	*Hypericum perforatum*	AD	Regulation of Akt/GSK-3β pathway, thereby regulation of Aβ production and tau hyperphosphorylation	2017	[12]
Capsaicin	Polyphenol	*Capsicum*	AD	Reduction of brain Aβ aggregation and strengthening of cognitive function	2017	[51, 63]
Kaempferol	Flavonoid	*Spinacia oleracea, Brassica oleracea var. italica*	AD	Decrease of oxidative stress and acetylcholinesterase	2018	[57]
Berberine	Alkaloid	*Berberis vulgaris*	AD	Reduction of inflammation, oxidative stress, cholinesterase and Aβ	2019	[60]
Quercetin	Flavonoid	*Camellia sinensis, Allium cepa*	AD, MS	Modulation of cytokines, JNK, MAPK and PI3K/Akt signaling	2019	[69, 70]
Naringenin	Flavonoid	*Citrus sinensis*	AD, HD, PD, MS	Inhibition of Aβ, α-synuclein and inflammatory cytokines	2019	[71]
Hesperidin	Flavonoid	*Citrus sinensis, Citrus limon, Citrus aurantiifolia*	AD	Suppression of Aβ deposition, APP expression, microglial activity	2015	[72]
Luteolin	Flavonoid	*Matricaria chamomilla L., Menta x piperita, Cynara scolymus L*	MS	Developing of strong anti-inflammatory effect. Inhibition of activated peripheral blood leukocytes and mast cells	2009 2015	[73, 74]
Icariin	Flavonoid	*Epimedium spp.*	MS	Reduction of pro-inflammatory microglia responses and activation of estrogen-induced pathways	2016 2019	[64, 75]
Kurarinone	Flavonoid	*Sophora flavescens*	MS	Inhibition of inflammation-triggered immune cell differentiation	2018	[76]

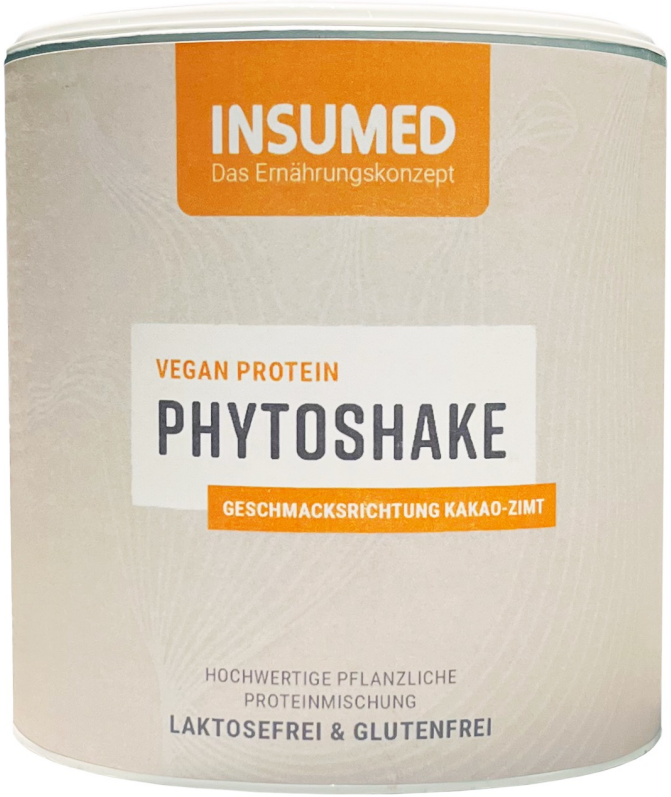




Wie funktionieren Phytopharmaka?

Wirkmechanismen der Vielstoffgemische

Michael Wink



Vielstoffgemisch als Chance

Es ist mehrfach berichtet worden, dass ein Extrakt aus einer Arzneidroge seine Wirksamkeit verliert, wenn man ihn in seine chemischen Bestandteile fraktioniert. Dies deutet daraufhin, dass eine Kooperativität der verschiedenen Komponenten in einem Vielstoffgemisch vorliegt. Wenn zugleich Proteine und Biomembranen angegriffen werden, ist der antimikrobielle Effekt sicher größer als wenn nur ein einzelnes Target bekämpft wird. Dies ist durchaus plausibel. Die Wirkung einer Einzelkomponente ist gewöhnlich gering, aber die Addition vieler einzelner Wirkungen führt zu einem messbaren Gesamteffekt.

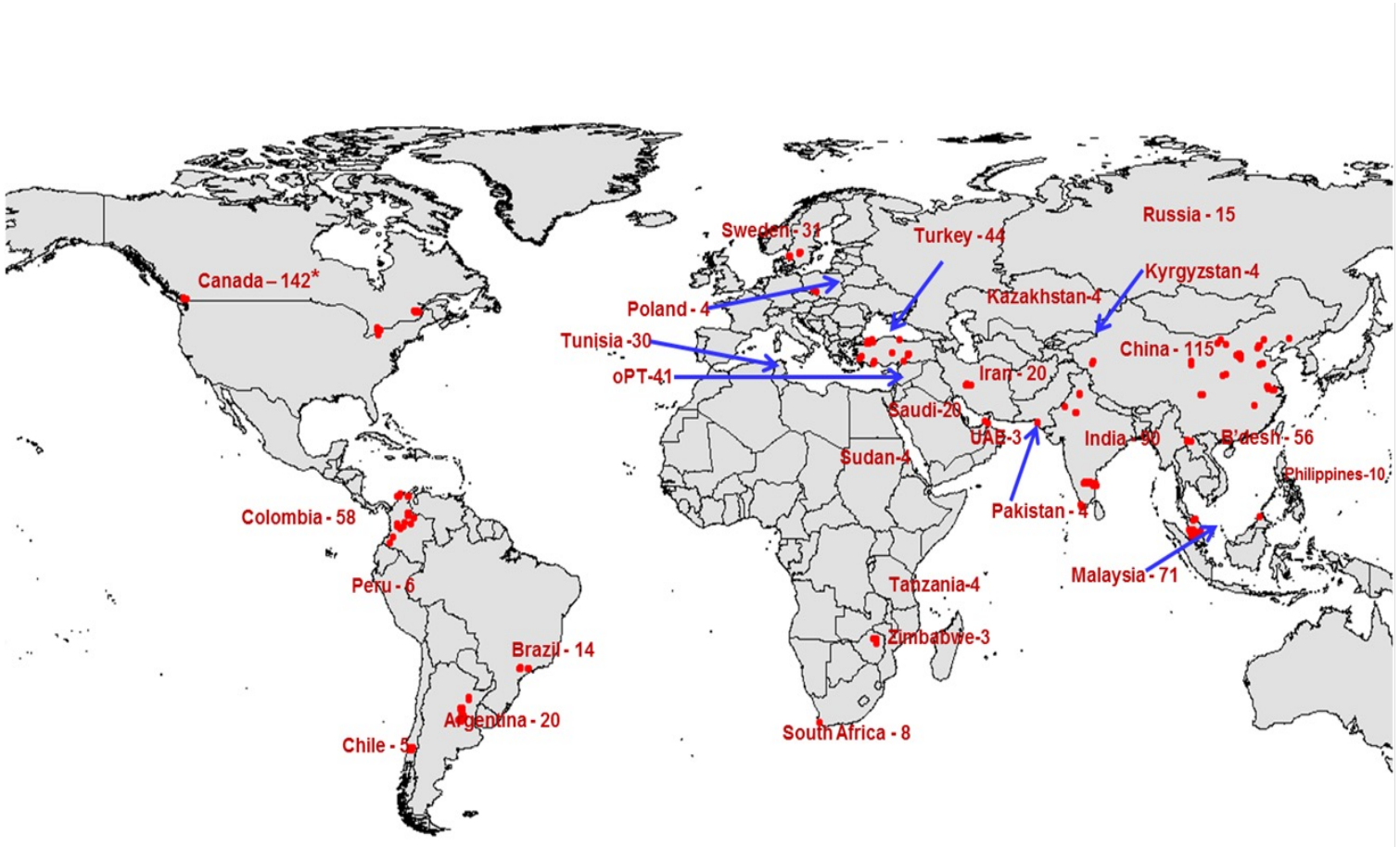
Associations of fats and carbohydrate intake with cardiovascular disease and mortality in 18 countries from five continents (PURE): a prospective cohort study

*Mahshid Dehghan, Andrew Mente, Xiaohe Zhang, Sumathi Swaminathan, Wei Li, Viswanathan Mohan, Romaina Iqbal, Rajesh Kumar, Edelweiss Wentzel-Viljoen, Annika Rosengren, Leela Itty Amma, Alvaro Avezum, Jephat Chifamba, Rafael Diaz, Rasha Khatib, Scott Lear, Patricio Lopez-Jaramillo, Xiaoyun Liu, Rajeev Gupta, Noushin Mohammadifard, Nan Gao, Aytekin Oguz, Anis Safura Ramli, Pamela Seron, Yi Sun, Andrzej Szuba, Lungiswa Tsolekile, Andreas Wielgosz, Rita Yusuf, Afzal Hussein Yusufali, Koon K Teo, Sumathy Rangarajan, Gilles Dagenais, Shrikant I Bangdiwala, Shofiqul Islam, Sonia S Anand, Salim Yusuf, on behalf of the Prospective Urban Rural Epidemiology (PURE) study investigators**

THE LANCET
International journal of medical science and practice

www.thelancet.com **Published online August 29, 2017 http://dx.doi.org/10.1016/S0140-6736(17)32252-3**

PURE: 135,335 from 667 communities in 18 Phase 1 countries from 5 continents

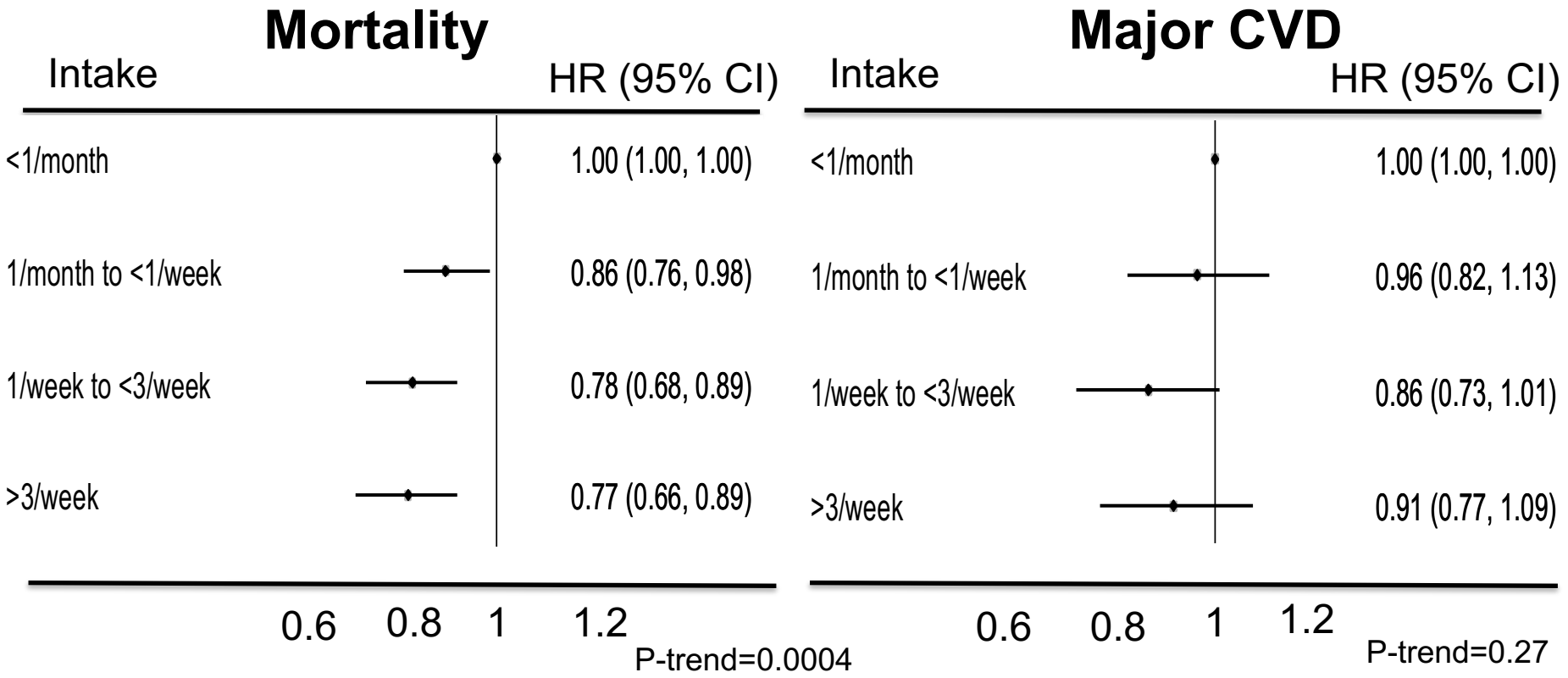


Katholisches Klinikum Koblenz • Montabaur

BBT-Gruppe

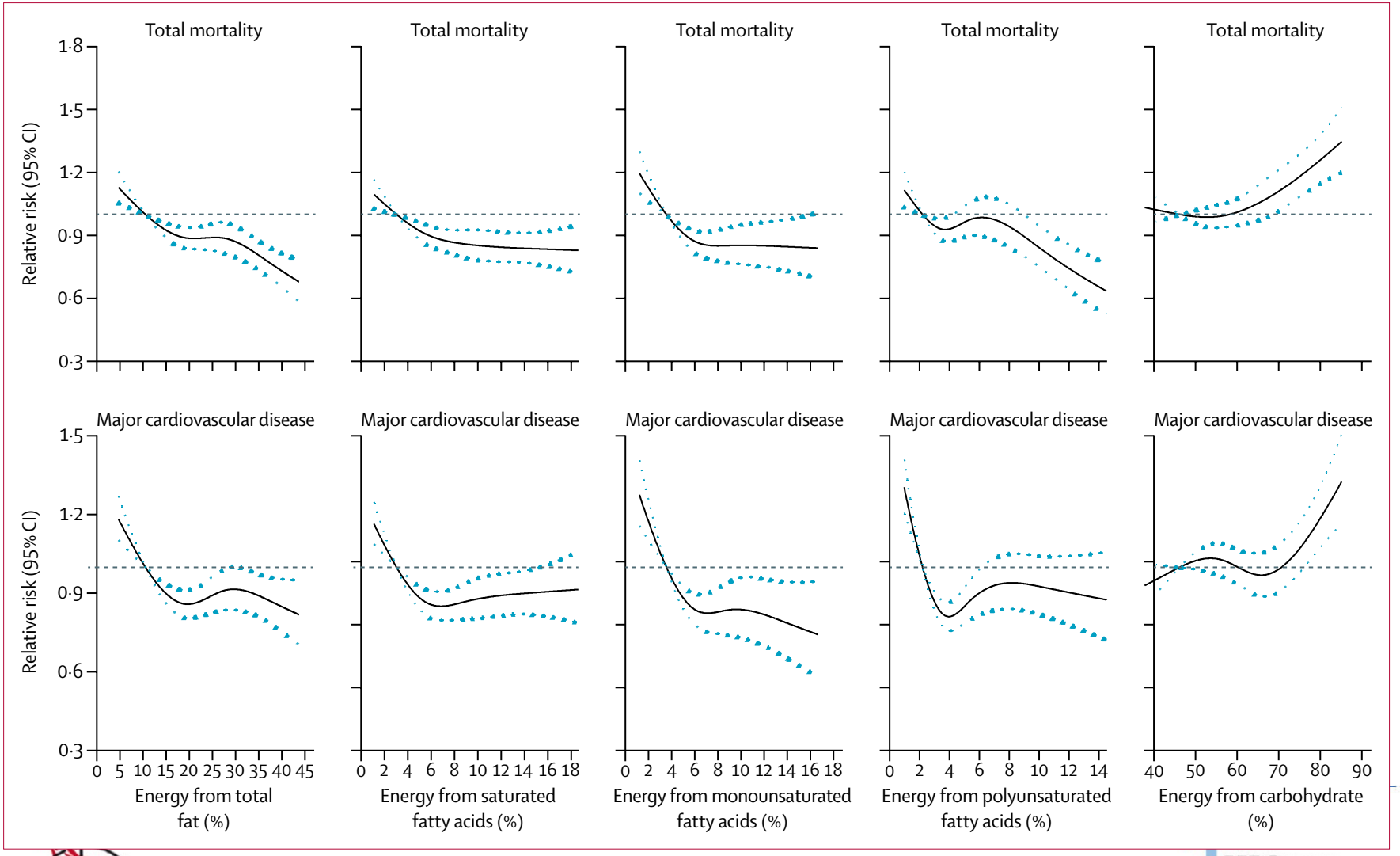
Mit Kompetenz und Nächstenliebe im Dienst für die Menschen: Die Krankenhäuser und Sozialeinrichtungen der BBT-Gruppe

Risk of mortality and major CVD by raw vegetable intake (servings)



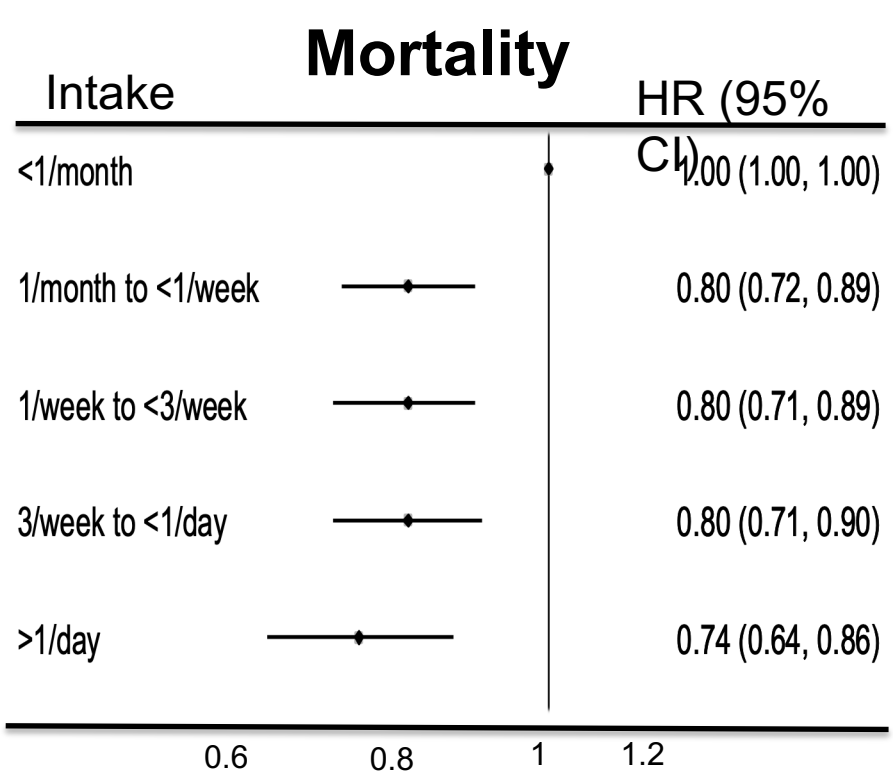
Katholisches Klinikum Koblenz · Montabaur

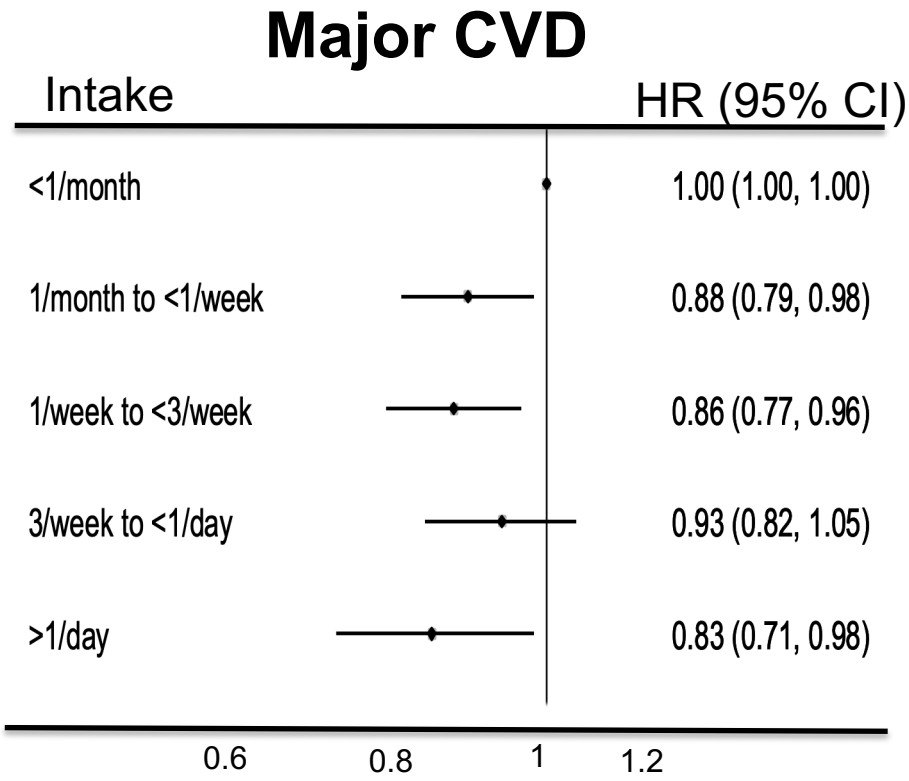
BBT-Gruppe
Mit Kompetenz und Nächstenliebe im Dienst für die Menschen: Die Krankenhäuser und Sozialeinrichtungen der BBT-Gruppe



www.thelancet.com Published online August 29, 2017 http://dx.doi.org/10.1016/S0140-6736(17)32252-3

Risk of mortality and major CVD by legume intake (servings)

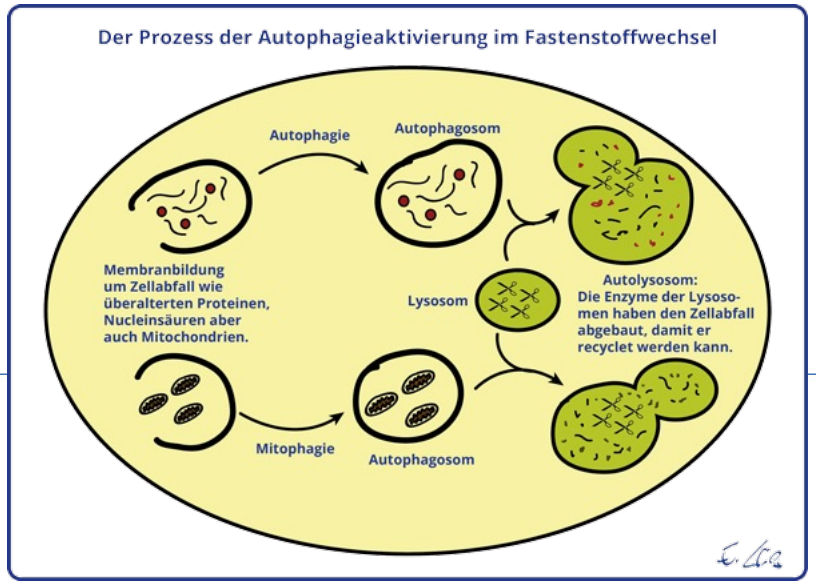




Autophagie

Autophagie (von altgriechisch αὐτόφαγος autóphagos „sich selbst verzehrend“) bezeichnet den Prozess in Zellen, mit dem sie eigene Bestandteile abbauen und verwerten.
Dies reicht von fehlgefalteten Proteinen bis zu ganzen Zellorganellen. Ein verwandter Prozess ist die Phagozytose (eine Form der Endozytose), bei der Stoffe von außerhalb der Zelle aufgenommen und verwertet werden.

Dem japanischen Wissenschaftler Yoshinori Ōsumi wurde für seine Entdeckungen auf dem Gebiet 2016 der Nobelpreis für Physiologie oder Medizin verliehen.



REVIEW ARTICLE
https://doi.org/10.1038/s43587-021-00098-4
nature aging
Check for updates

Autophagy in healthy aging and disease

Yahyah Aman[1,2,22], Tomas Schmauck-Medina[1,22], Malene Hansen[3], Richard I. Morimoto[4], Anna Katharina Simon[5], Ivana Bjedov[2,6], Konstantinos Palikaras[7], Anne Simonsen[8,9], Terje Johansen[10], Nektarios Tavernarakis[11,12], David C. Rubinsztein[13,14], Linda Partridge[2,15], Guido Kroemer[16,17,18,19,20], John Labbadia[2] ✉ and Evandro F. Fang[1,21] ✉

Autophagy is a fundamental cellular process that eliminates molecules and subcellular elements, including nucleic acids, proteins, lipids and organelles, via lysosome-mediated degradation to promote homeostasis, differentiation, development and survival. \

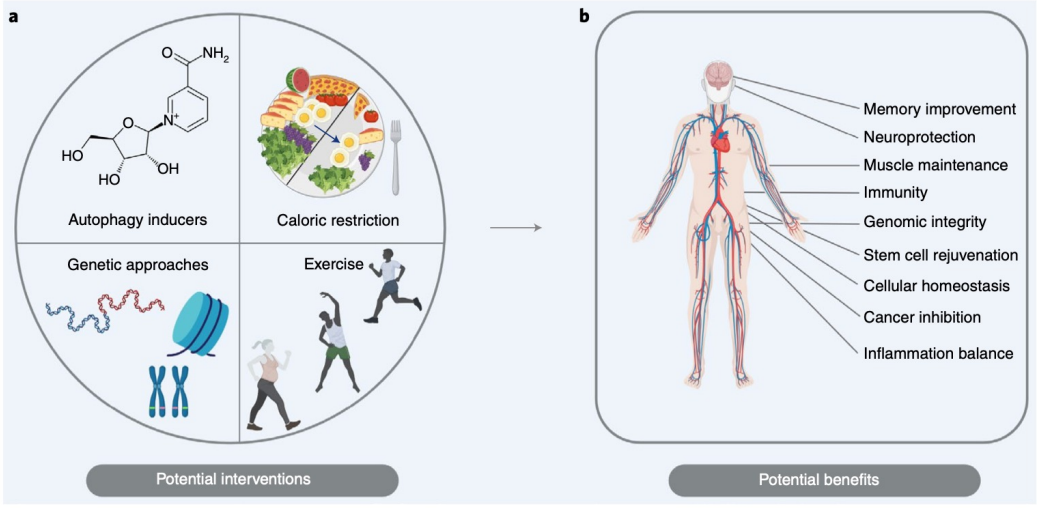
Table 2 | Summary of autophagy inducers that extend healthspan and increase lifespan in laboratory animals

Pharmacological agent	Health benefit	Mode of action
Metformin	W, M: increase in lifespan and healthspan	Activates AMPK and other mechanisms[241] (also reviewed in ref. [242])
Rapamycin	W, F, M: increase in lifespan and different healthspan parameters	Direct autophagy induction via mTOR inhibition[243] (reviewed in ref. [242])
Resveratrol	Y, W, F, M: increase in lifespan and different healthspan parameters[a]	SIRT1-dependent induction of autophagy and non-autophagy pathways[112] (reviewed in ref. [68])
Spermidine	W, F, M, R: increase in median lifespan and different healthspan parameters	Autophagy, anti-inflammation, and arginine and nitric oxide metabolism[196,199]
NR/NMN	W, F, M: increase in lifespan; W, F, M: increase in healthspan; M: increased memory	Pathways dependent and independent of autophagy/mitophagy (reviewed in ref. [185,244])
Urolithin A	W: increase in lifespan and healthspan; W, M: increased memory	Autophagy/mitophagy induction[138,207,208]
Actinonin	W, M: increased memory	Autophagy/mitophagy-dependent pathway[138]
Tomatidine	W: increase in lifespan and healthspan	Mitophagy induction via the SKN-1–Nrf2 pathway[142]
Trehalose	W: increase in lifespan and healthspan[245]	?
MI	W: increase in lifespan and healthspan	PINK1-dependent mitophagy induction[246]
XPO1 inhibitors	W, F: increase in lifespan and improved conditions in neurodegenerative models	Induction of nuclear localization of HLH-30/TFEB[47]

Y, yeast; W, worms; F, flies; M, mice; R, rats; MI, myoinositol; NR, nicotinamide riboside; NMN, nicotinamide mononucleotide. [a]No extension was found in wild-type mice with normal diet, but extended lifespan was observed in mice fed a high-fat diet[112].

Conclusions and future perspectives

Mounting evidence from studies using laboratory animals, human tissues and related clinical trials supports the concept that (1) there is an age-dependent decline in autophagy, (2) autophagy is a crucial determinant of cellular health and organismal longevity and (3) impairment or imbalance in autophagy promotes pathological aging and disease. Given the broad spectrum of unique properties associated with autophagy, we propose that 'compromised autophagy' is a central feature of normal aging.



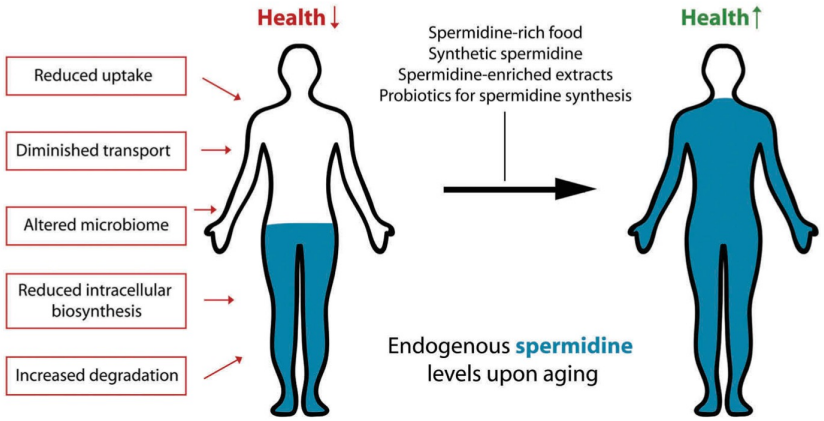
Katholisches Klinikum Koblenz · Montabaur

COMMENTARY

OPEN ACCESS Check for updates

Spermidine: a physiological autophagy inducer acting as an anti-aging vitamin in humans?

Frank Madeo[a,b], Maria A. Bauer[a], Didac Carmona-Gutierrez[a], and Guido Kroemer [c,d,e,f,g,h]



The age-protective effects of increased spermidine intake are in line with the paradigm that a decline of spermidine concentration upon aging is not only causally linked to reduced health- and lifespan, but that it might be reversed. Given the factors that

In sum, in our view, spermidine is synthesized by our organism in sufficient quantities during youth, but not in old age. Thus, one may argue that, as we age, spermidine evolves to the status of a vitamin, and thus has to be supplemented from external sources to secure the maintenance of autophagic flux required for organismal homeostasis.

AUTOPHAGY
2017, VOL. 13, NO. 4, 767–769
http://dx.doi.org/10.1080/15548627.2017.1280225

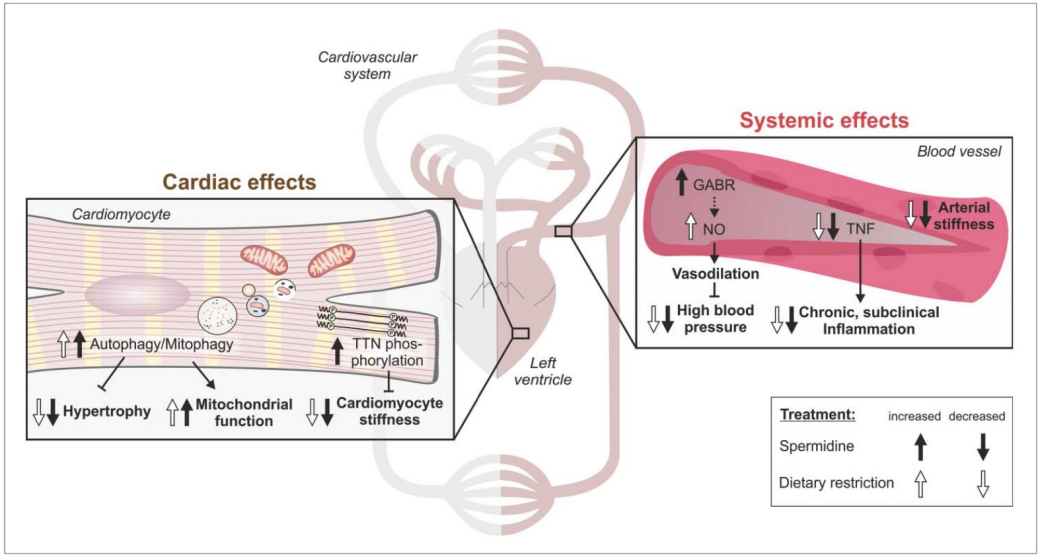
Taylor & Francis
Taylor & Francis Group

AUTOPHAGIC PUNCTUM

OPEN ACCESS

Dietary spermidine for lowering high blood pressure

Tobias Eisenberg[a,b,†], Mahmoud Abdellatif[c,†], Andreas Zimmermann[a], Sabrina Schroeder[a], Tobias Pendl[a], Alexandra Harger[a,d], Slaven Stekovic[a], Julia Schipke[e,f], Christoph Magnes[g], Albrecht Schmidt[c], Christoph Ruckenstuhl[a], Christopher Dammbrueck[a], Angelina S. Gross[a], Viktoria Herbst[c], Didac Carmona-Gutierrez[a], Federico Pietrocola[h,i,j,k,l], Thomas R. Pieber[b,d,g], Stephan J. Sigrist[m,n], Wolfgang A. Linke[o], Christian Mühlfeld[e,f], Junichi Sadoshima[p], Joern Dengjel[q,r], Stefan Kiechl[s], Guido Kroemer[h,i,j,k,l,t,u], Simon Sedej[b,c], and Frank Madeo[a,b]



In humans, spermidine-rich diet, as assessed by food questionnaires, is associated with reduced blood pressure and decreased risk of heart failure and cardiovascular disease.

For example, supplementation of spermidine or spermidine-rich natural food extracts along with anti-hypertensive or heart-supporting drugs in the setting of hypertension or heart failure may help to reduce the number and/or the dose of combined medications and, thus, alleviate their potential adverse effects.

Received: 27 October 2020 | Revised: 31 March 2021 | Accepted: 18 April 2021

DOI: 10.1111/acel.13377

ORIGINAL ARTICLE

Aging Cell WILEY

Spermidine inhibits vascular calcification in chronic kidney disease through modulation of SIRT1 signaling pathway

Xiaoyu Liu[1,2,3] | An Chen[1,2,3] | Qingchun Liang[4] | Xiulin Yang[1,2,3] | Qianqian Dong[1,2,3] | Mingwei Fu[1,2,3] | Siyi Wang[1,2,3] | Yining Li[1,2,3] | Yuanzhi Ye[1,2,3] | Zirong Lan[1,2,3] | Yanting Chen[5] | Jing-Song Ou[6] | Pingzhen Yang[1,2,3] | Lihe Lu[5] | Jianyun Yan[1,2,3]

In conclusion, our study suggests that Spd acts as a novel regulator of vascular calcification. Moreover, Spd protects against vascular calcification in CKD by modulation of SIRT1 and ER stress signals. Dietary polyamine uptake may serve as a promising strategy for the prevention of vascular calcification. This study paves the way for prospective clinical trials to investigate the beneficial effect of Spd on arterial calcification in CKD patients.

www.aging-us.com AGING 2020, Vol. 12, No. 7

Research Paper

Spermidine and spermine delay brain aging by inducing autophagy in SAMP8 mice

Ting-Ting Xu[1,2], Han Li[1,2], Zhao Dai[1,2], George K. Lau[4], Ben-Yue Li[1,2], Wen-Li Zhu[1,2], Xiao-Qi Liu[1,2], Hao-Fei Liu[1,2], Wei-Wu Cai[1,2], Shui-Qing Huang[1,2], Qi Wang[1,2], Shi-Jie Zhang[3]

AMP-activated kinase (AMPK), an intracellular energy sensor, promotes autophagy through the phosphorylation of AMPK [51–53]. In the brain of spermidine, spermine and rapamycin, the expression of P-AMPK is improved, compared to SAMP8. Polyamine (putrescine, spermidine and spermine; Figure 1) have been reported to decrease with age in the brain of rats and humans

DISCUSSION

In this study, we demonstrated that long-time administration of polyamines, spermidine and spermine, delay brain aging and improved cognitive dysfunction in SAMP8. We further explored the mechanism of polyamine spermidine and spermine in anti-brain aging.

original article

Wien Klin Wochenschr (2021) 133:484–491
https://doi.org/10.1007/s00508-020-01758-y

Wiener klinische Wochenschrift
The Central European Journal of Medicine

The positive effect of spermidine in older adults suffering from dementia

First results of a 3-month trial

Thomas Pekar · Katharina Bruckner · Susanne Pauschenwein-Frantsich · Anna Gschaider · Martina Oppliger · Julia Willesberger · Petra Ungersbäck · Aribert Wendzel · Alexandra Kremer · Walter Flak · Felix Wantke · Reinhart Jarisch

In the implementation of the study, the 92 subjects were divided into two random groups. One group received a grain roll with wheat germ (Schalkmühle, Ilz, Austria; 1075 mg/kg spermidine) for breakfast 6 times a week (roll A). Each roll A contained 3.3 mg of spermidine after baking. To scrutinize the success of spermidine, the second group received rolls baked with wheat bran (Schafler Mühle, Feistritz, Austria; 115 mg/kg spermidine) instead of wheat germ (roll B). Each finished roll B contained 1.9 mg of spermidine. Both the wheat germ and the wheat bran were added to the dough mixture during preparation.

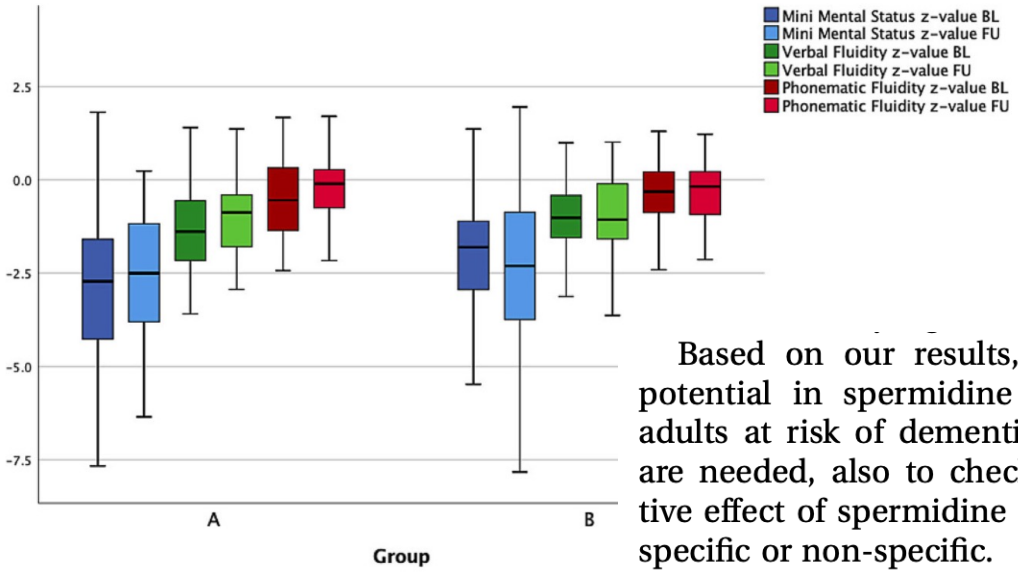
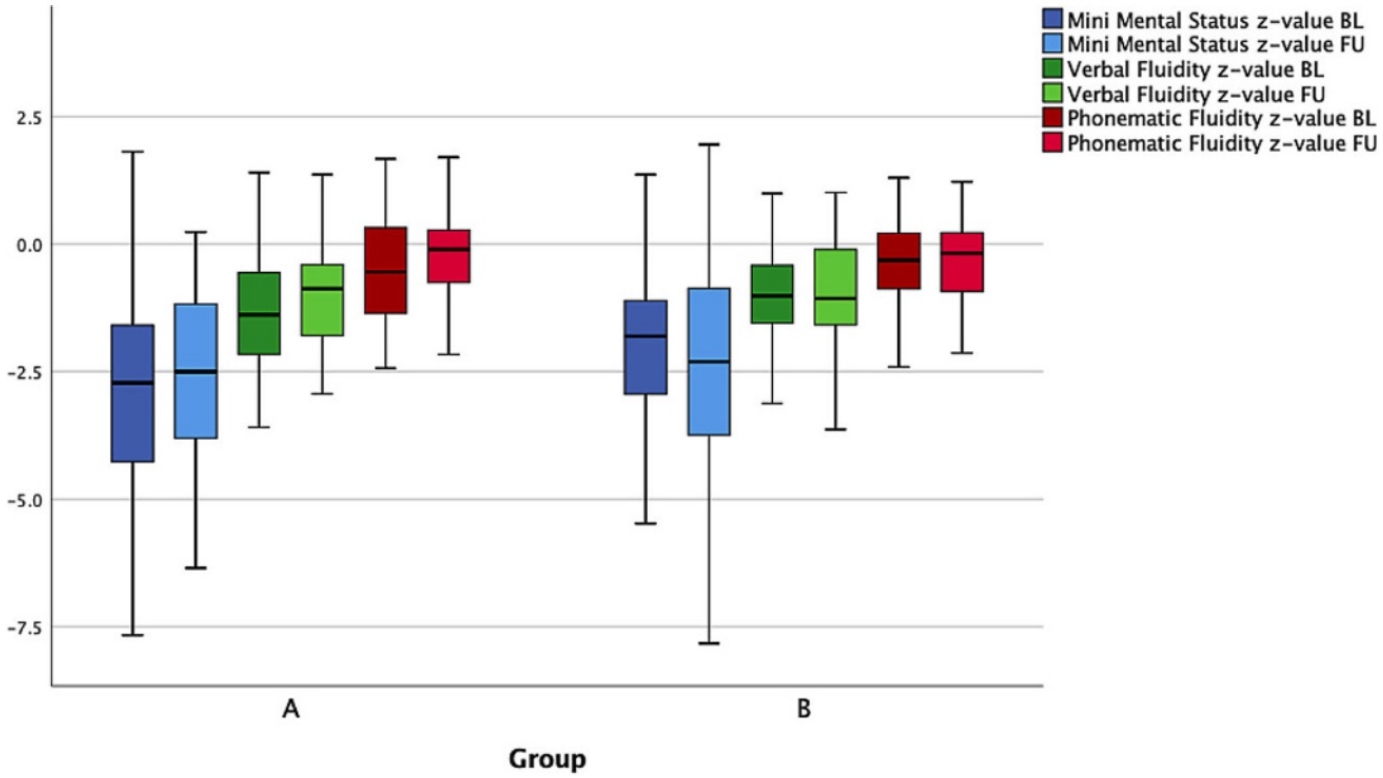


Fig. 4 Comparison of CERAD-Plus test items; measurement times: baseline and follow-up after 3 months

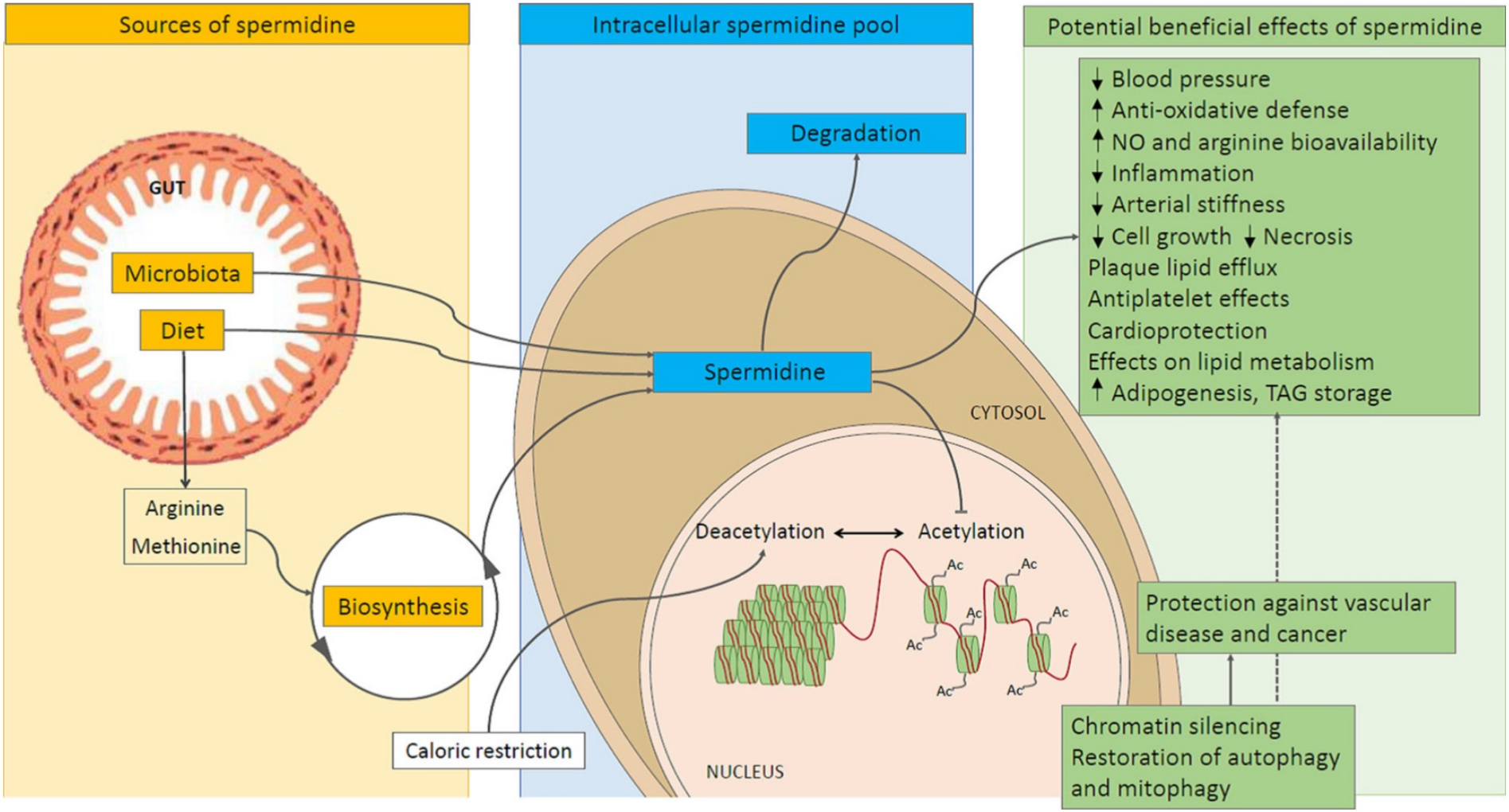
Based on our results, we see great therapeutic potential in spermidine supplementation in older adults at risk of dementia; however, further studies are needed, also to check whether the shown positive effect of spermidine on the cognitive function is specific or non-specific.

Fig. 4 Comparison of CERAD-Plus test items; measurement times: baseline and follow-up after 3 months



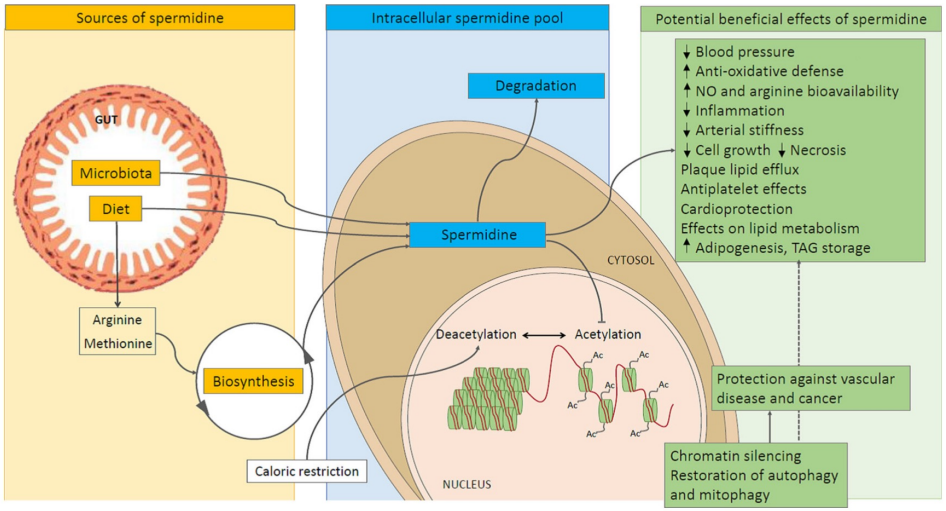
Higher spermidine intake is linked to lower mortality: a prospective population-based study

Stefan Kiechl,[1] Raimund Pechlaner,[1,3] Peter Willeit,[1,3,4] Marlene Notdurfter,[5] Bernhard Paulweber,[6] Karin Willeit,[1] Philipp Werner,[7] Christoph Ruckenstuhl,[8,9] Bernhard Iglseder,[6] Siegfried Weger,[5] Barbara Mairhofer,[5] Markus Gartner,[5] Ludmilla Kedenko,[6] Monika Chmelikova,[10] Slaven Stekovic,[8,9] Hermann Stuppner,[11,12] Friedrich Oberhollenzer,[5] Guido Kroemer,[13,14,15,16,17,18] Manuel Mayr,[3] Tobias Eisenberg,[8,9] Herbert Tilg,[2] Frank Madeo,[8,9] and Johann Willeit[1]



Higher spermidine intake is linked to lower mortality: a prospective population-based study

Stefan Kiechl,[1] Raimund Pechlaner,[1,3] Peter Willeit,[1,3,4] Marlene Notdurfter,[5] Bernhard Paulweber,[6] Karin Willeit,[1] Philipp Werner,[7] Christoph Ruckenstuhl,[8,9] Bernhard Iglseder,[6] Siegfried Weger,[5] Barbara Mairhofer,[5] Markus Gartner,[5] Ludmilla Kedenko,[6] Monika Chmelikova,[10] Slaven Stekovic,[8,9] Hermann Stuppner,[11,12] Friedrich Oberhollenzer,[5] Guido Kroemer,[13,14,15,16,17,18] Manuel Mayr,[3] Tobias Eisenberg,[8,9] Herbert Tilg,[2] Frank Madeo,[8,9] and Johann Willeit[1]

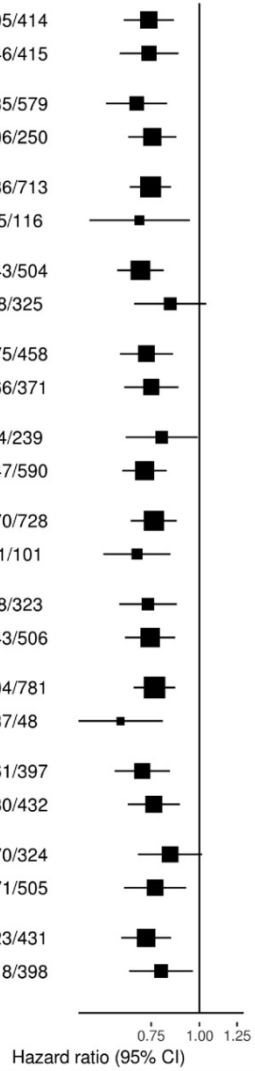


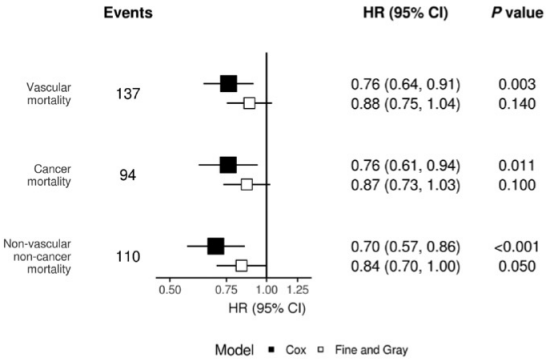
Conclusions

In summary, this study provides the first evidence, to our knowledge, for an association between nutrition rich in spermidine and increased survival in humans. These data add to experimental findings that suggest longevity-inducing and health-promoting effects of spermidine in model organisms and human cell lines

	Tertile		
	Tertile 1 (low intake)	Tertile 2	Tertile 3 (high intake)
Spermidine group			
Person-years, *n*	4227	4353	4439
Deaths, *n*	171	103	67
Incidence rate per 1000 person-years	40.5 (36.1, 44.7)	23.7 (20.0, 27.0)	15.1 (12.6, 17.8)
Twenty-year cumulative incidence of death: age-, sex-, and caloric intake–adjusted	0.48 (0.45, 0.51)	0.41 (0.38, 0.45)	0.38 (0.34, 0.41)

Subgroup	Stratum	Events/n	Hazard ratio (95% CI)	P value	Interaction P
Sex	Male	195/414	0.74 (0.64, 0.86)	<0.001	0.99
	Female	146/415	0.74 (0.62, 0.88)	<0.001	
Age at baseline	<70 years	135/579	0.69 (0.57, 0.82)	<0.001	0.43
	≥70 years	206/250	0.76 (0.65, 0.87)	<0.001	
Body mass index	<30	286/713	0.75 (0.66, 0.84)	<0.001	0.70
	≥30	55/116	0.70 (0.52, 0.94)	0.020	
Social status	Low	243/504	0.70 (0.61, 0.81)	<0.001	0.170
	Middle or high	98/325	0.84 (0.68, 1.04)	0.112	
Smoking	Never	175/458	0.73 (0.62, 0.85)	<0.001	0.80
	Former or current	166/371	0.75 (0.64, 0.88)	<0.001	
Alcohol consumption	No	94/239	0.80 (0.64, 0.99)	0.040	0.42
	Yes	247/590	0.72 (0.63, 0.82)	<0.001	
Aspirin medication	No	270/728	0.76 (0.66, 0.87)	<0.001	0.41
	Yes	71/101	0.69 (0.56, 0.84)	<0.001	
Hypertension	Absent	98/323	0.74 (0.62, 0.87)	<0.001	0.91
	Present	243/506	0.75 (0.64, 0.87)	<0.001	
Diabetes	Absent	304/781	0.76 (0.68, 0.87)	<0.001	0.156
	Present	37/48	0.63 (0.49, 0.80)	<0.001	
Physical activity	Low	161/397	0.71 (0.60, 0.84)	<0.001	0.55
	High	180/432	0.76 (0.65, 0.89)	<0.001	
Diet quality	AHEI <33.5	170/324	0.84 (0.69, 1.01)	0.071	0.51
	AHEI ≥33.5	171/505	0.77 (0.64, 0.92)	0.005	
Years of post-primary education	4	223/431	0.73 (0.63, 0.84)	<0.001	0.47
	>4	118/398	0.80 (0.66, 0.96)	0.018	





Katholisches Klinikum Koblenz • Montabaur

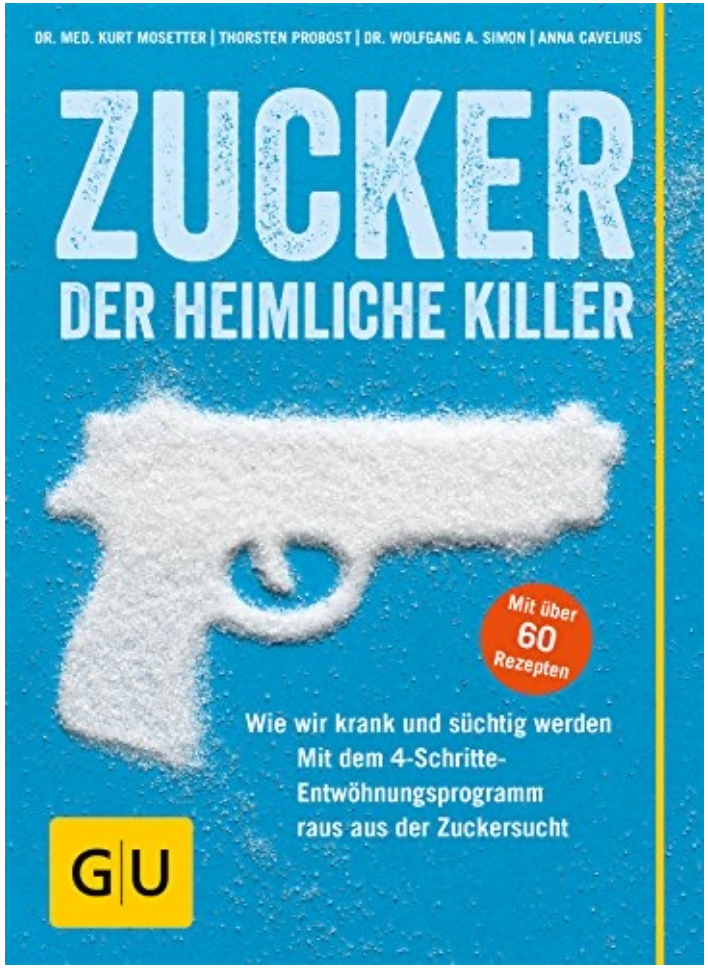
BBT-Gruppe

Mit Kompetenz und Nächstenliebe im Dienst für die Menschen: Die Krankenhäuser und Sozialeinrichtungen der BBT-Gruppe

Wo finde ich Spermidin?

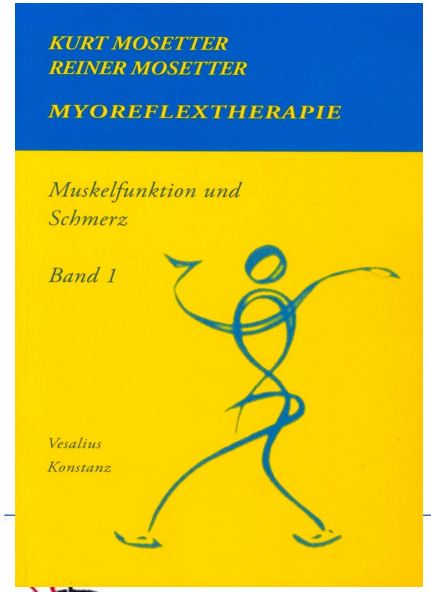
Take Home Message

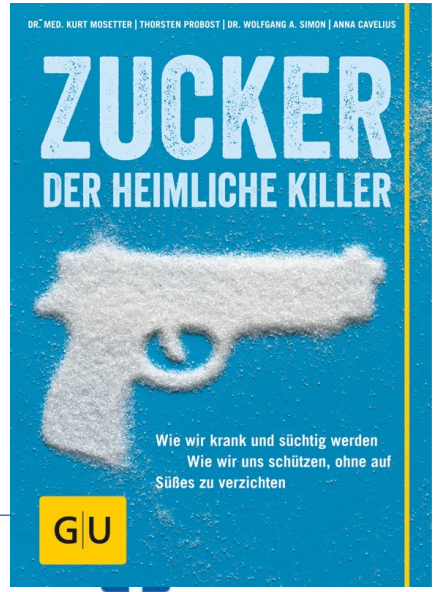
- Langlebigkeit sollte in Gesundheit erfolgen
- Eine Analyse der Blue Zones zeigt, dass dies möglich ist
- Die Power 9 können auch außerhalb der Blue Zones angewandt werden
- Hierbei spielen Lifestylemodifikationen eine große Rolle
- Phytopharmaka werden in ihrem Potential immer noch unterschätzt
- Spermidin spielt über Induktion der Autophagie eine Schlüsselrolle
- Ein ausgezeichneter Arzt behandelt Erkrankungen bevor sie entstehen!



„Es ist mein Job, für die Spieler beste Bedingungen zu schaffen, damit sie ihre Leistungsfähigkeit möglichst optimal ausschöpfen können. Dabei habe ich über all die Jahre hinweg mit Kurt Mosetter nur die besten Erfahrungen gemacht."

Jürgen Klinsmann





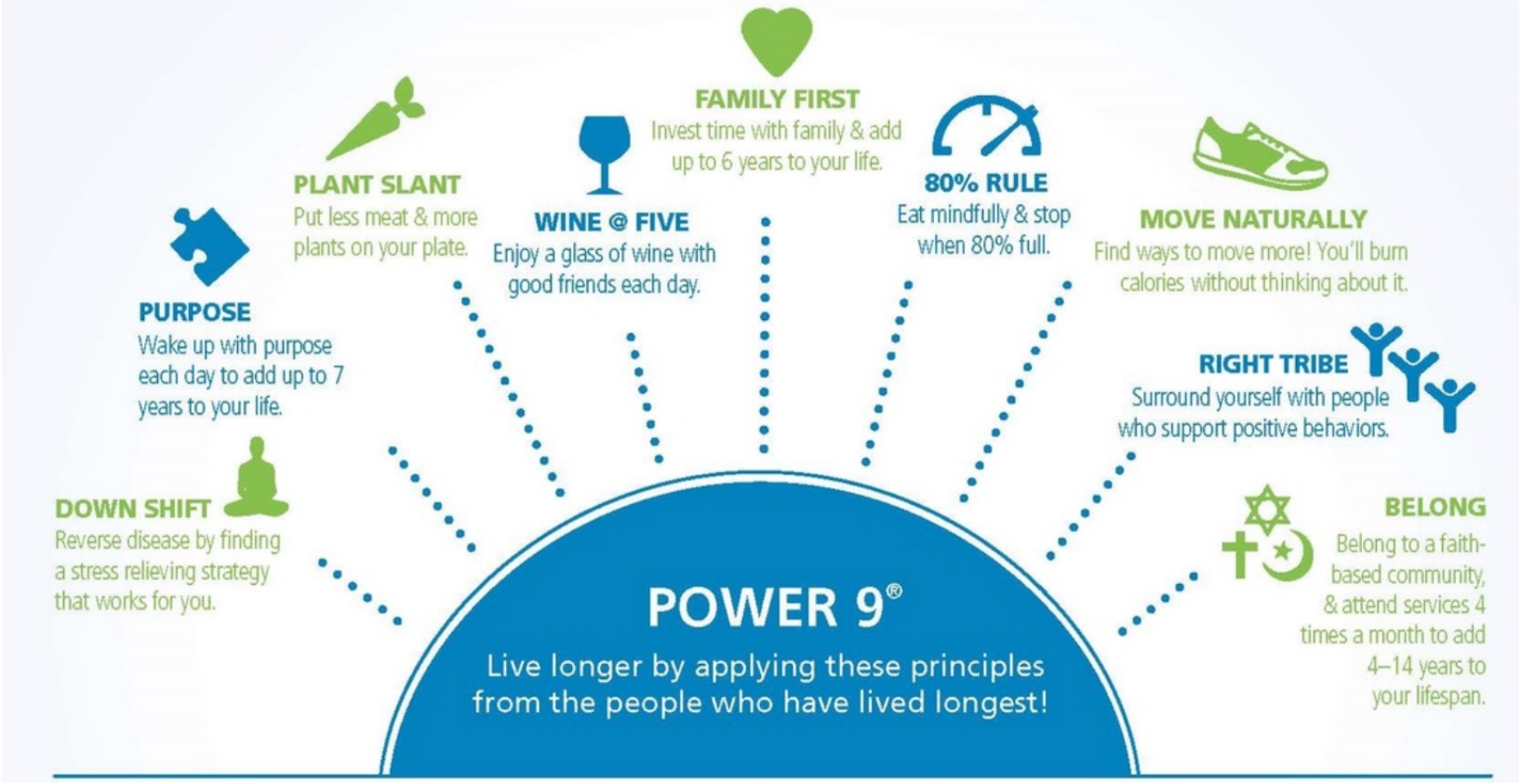
Katholisches Klinikum Koblenz · Montabaur

BBT-Gruppe

Mit Kompetenz und Nächstenliebe im Dienst für die Menschen: Die Krankenhäuser und Sozialeinrichtungen der BBT-Gruppe

„Listen to me now and believe me later!“

Hans and Franz


FAMILY FIRST
Invest time with family & add up to 6 years to your life.
PLANT SLANT
Put less meat & more plants on your plate.
WINE @ FIVE
Enjoy a glass of wine with good friends each day.
80% RULE
Eat mindfully & stop when 80% full.
MOVE NATURALLY
Find ways to move more! You'll burn calories without thinking about it.
PURPOSE
Wake up with purpose each day to add up to 7 years to your life.
RIGHT TRIBE
Surround yourself with people who support positive behaviors.
DOWN SHIFT
Reverse disease by finding a stress relieving strategy that works for you.
BELONG
Belong to a faith-based community, & attend services 4 times a month to add 4–14 years to your lifespan.
POWER 9®
Live longer by applying these principles from the people who have lived longest!