



Hypertonie: Hot topics 2013



Davos, 11.2. 2013

Prof. Dr. med. G. Predel
Deutsche
Sporthochschule
Köln



Hypertonie – Hot-Topics 2013

Davos, 11.2.2013



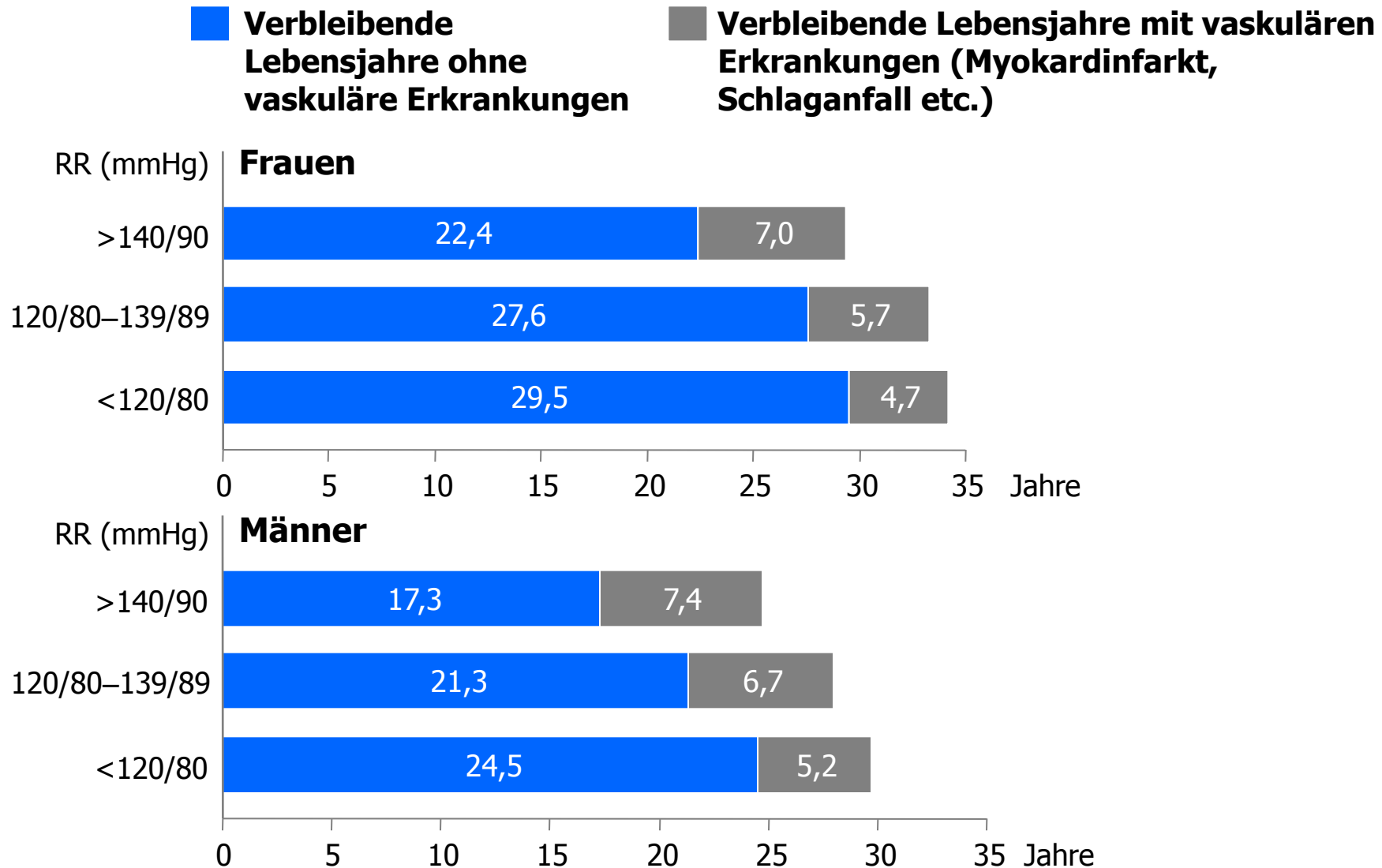
Bewegungsmangel, Hypertonie &
vorzeitige Gefäßalterung

Sport und Ernährung
als „Therapeutikum“

Antihypertensive Therapie
und Atheroskleroseprotektion

Demenzprotektion

"Disease Free Years": Lebenserwartung mit 50 Jahren in Abhängigkeit vom Blutdruck



Hypertension: a global disease

heartwire

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HYPERTENSION

Latest from PURE: 40% of adult population worldwide has hypertension

SEPTEMBER 5, 2012 Sue Hughes

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ESC **Munich, Germany** – Hypertension is truly a global epidemic, being highly prevalent in all communities worldwide, according to new data from the **Prospective Urban Rural Epidemiology (PURE)** study. Other findings show that awareness is very low and that once patients are aware, most are treated, but control is very poor.

The hypertension cohort of the PURE study was presented at last week's **European Society of Cardiology (ESC) 2012 Congress** by **Dr Rafael Diaz** (Instituto Cardiovascular de Rosario, Argentina). The study aimed to assess the prevalence, awareness, and control of hypertension worldwide by measuring blood pressure in 153 000 individuals from 528 urban and rural communities in 17 countries from five continents.

The mean age of the participants was 50.4, 60% were female, and 46% were from rural communities.

The prevalence of hypertension was lowest in lowest-income countries (around 30%) and highest in upper-middle-income economies (around 50%), with high-income and low-middle-income economies having an intermediate level (around 40%).

Only 13% controlled

Only 30% of the population had optimal blood pressure, with another 30% found to be in the prehypertension range. Of the 40% with hypertension, 46% of these individuals were aware of their condition, 40% were treated, but only 13% were controlled.



ACS

Arrhythmia/EP

Brain/Kidney/Peripheral

Clinical cardiology

Imaging

Interventional/Surgery

Lipid/Metabolic

Prevention

[heartwire]

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HYPERTENSION

High BP, no HTN diagnosis more likely in young adults than old—why?

NOVEMBER 12, 2012 Steve Stiles

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AHA

Los Angeles, CA - Imagine two individuals, one age 21 and the other 61, who repeatedly show high blood pressure when seeing a doctor or other provider; the younger patient is far less likely than the older one to receive a diagnosis of hypertension, suggests an analysis of primary-care visits at a large academic group practice.

The likelihood of a hypertension diagnosis, the analysis further suggests, is significantly raised for younger patients who are African American or diabetic or whose provider is a woman. And it is significantly reduced for younger patients who don't speak English as their primary language, reported **Dr Heather M Johnson** (University of Wisconsin School of Medicine and Public Health, Madison). Johnson led the study that was based on >13 000 adult patients initially without hypertension but who qualified for a hypertension diagnosis when seen by providers over four years.

The analysis reveals that a variety of reasons, including "patient characteristics, provider factors, and healthcare-system issues," contribute to a missing hypertension diagnosis in younger patients who ought to receive one, she said for **heartwire**. So the findings could help "development of interventions within the healthcare system tailored to young adults, so that hopefully we can improve the diagnosis rates and improve hypertension control in this population."

Johnson formally presented the retrospective study based on 2008-2011 data last week here at the **American Heart Association 2012 Scientific Sessions**.

<http://www.theheart.org/article/1474503.do>

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The Lancet, [Volume 380, Issue 9838](#), Pages 219 - 229, 21 July 2012
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Published Online: 18 July 2012

Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy

Dr [I-Min Lee](#) ScD [a](#) , [Eric J Shiroma](#) MSc [b](#), [Felipe Lobelo](#) MD [c](#), [Pekka Puska](#) MD [d](#), [Steven N Blair](#) PED [e](#), [Peter T Katzmarzyk](#) PhD [f](#), for the Lancet Physical Activity Series Working Group[†]

Summary

Background

Strong evidence shows that physical inactivity increases the risk of many adverse health conditions, including major non-communicable diseases such as coronary heart disease, type 2 diabetes, and breast and colon cancers, and shortens life expectancy. Because much of the world's population is inactive, this link presents a major public health issue. We aimed to quantify the effect of physical inactivity on these major non-communicable diseases by estimating how much disease could be averted if inactive people were to become active and to estimate gain in life expectancy at the population level.

Methods

For our analysis of burden of disease, we calculated population attributable fractions (PAFs) associated with physical inactivity using conservative assumptions for each of the major non-communicable diseases, by country, to estimate how much disease could be averted if physical inactivity were eliminated. We used life-table analysis to estimate gains in life expectancy of the population.

Findings

Worldwide, we estimate that physical inactivity causes 6% (ranging from 3·2% in southeast Asia to 7·8% in the eastern Mediterranean region) of the burden of disease from coronary heart disease, 7% (3·9–9·6) of type 2 diabetes, 10% (5·6–14·1) of breast cancer, and 10% (5·7–13·8) of colon cancer. Inactivity causes 9% (range 5·1–12·5) of premature mortality, or more than 5·3 million of the 57 million deaths that occurred worldwide in 2008. If inactivity were not eliminated, but decreased instead by 10% or 25%, more than 533 000 and more than 1·3 million deaths, respectively, could be averted every year. We estimated that



Adipositas: ein lebenslanger Risikofaktor für arterielle Hypertonie

Circulation

JOURNAL OF THE AMERICAN HEART ASSOCIATION



Body Mass Index and Risk of Incident Hypertension over the Life Course: The Johns Hopkins Precursors Study

Hasan M. Shihab, Lucy A. Meoni, Audrey Y. Chu, Nae-Yuh Wang, Daniel E. Ford, Kung-Yee Liang, Joseph J. Gallo and Michael J. Klag

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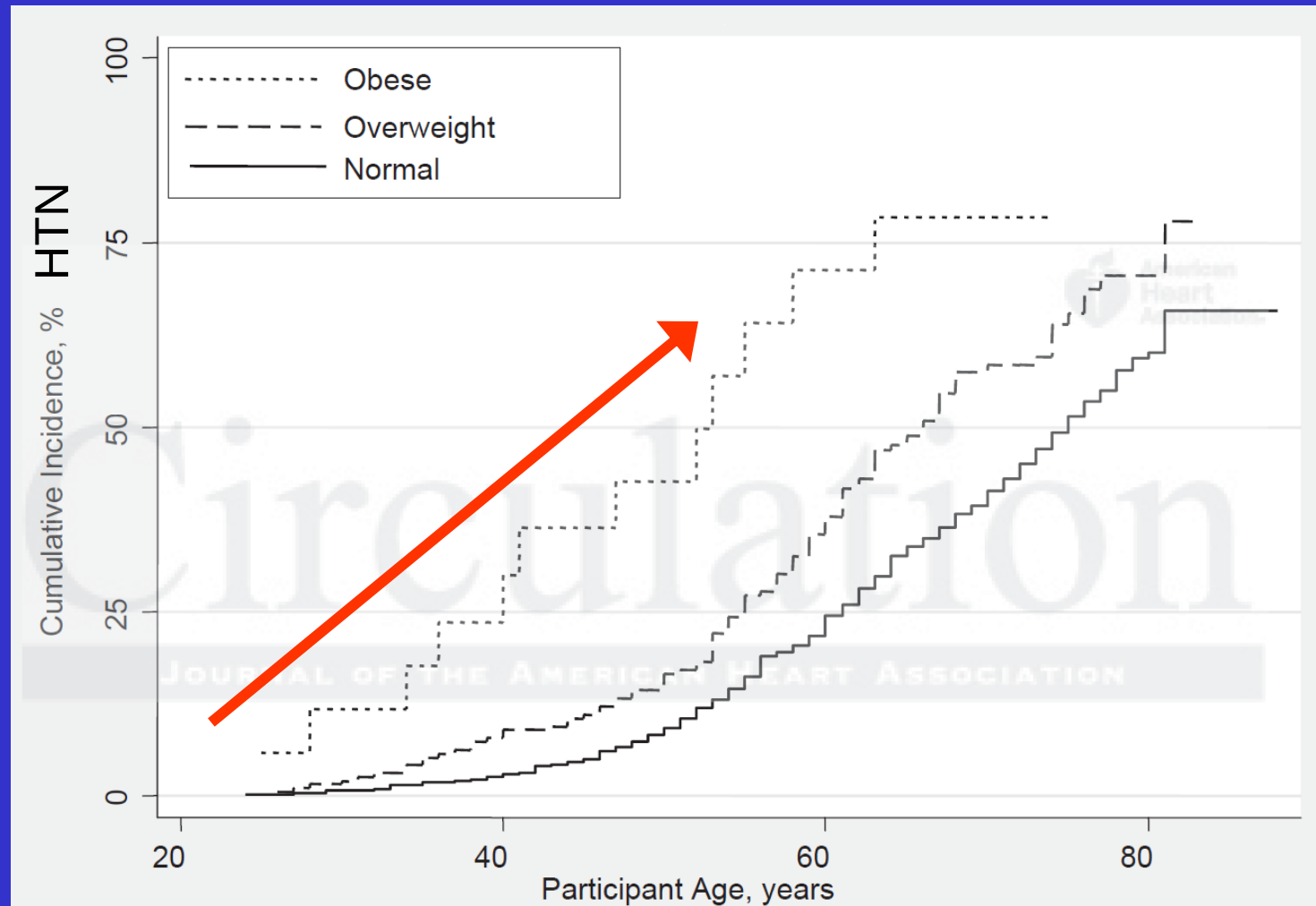
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<http://circ.ahajournals.org/content/early/2012/11/14/CIRCULATIONAHA.112.117333>



incidence of hypertension by baseline BMI over 46 years of follow-up



<http://circ.ahajournals.org/content/early/2012/11/14/CIRCULATIONAHA.112.117333>



Therapeutische Strategien bei art. Hypertonie

Leitlinien 2013

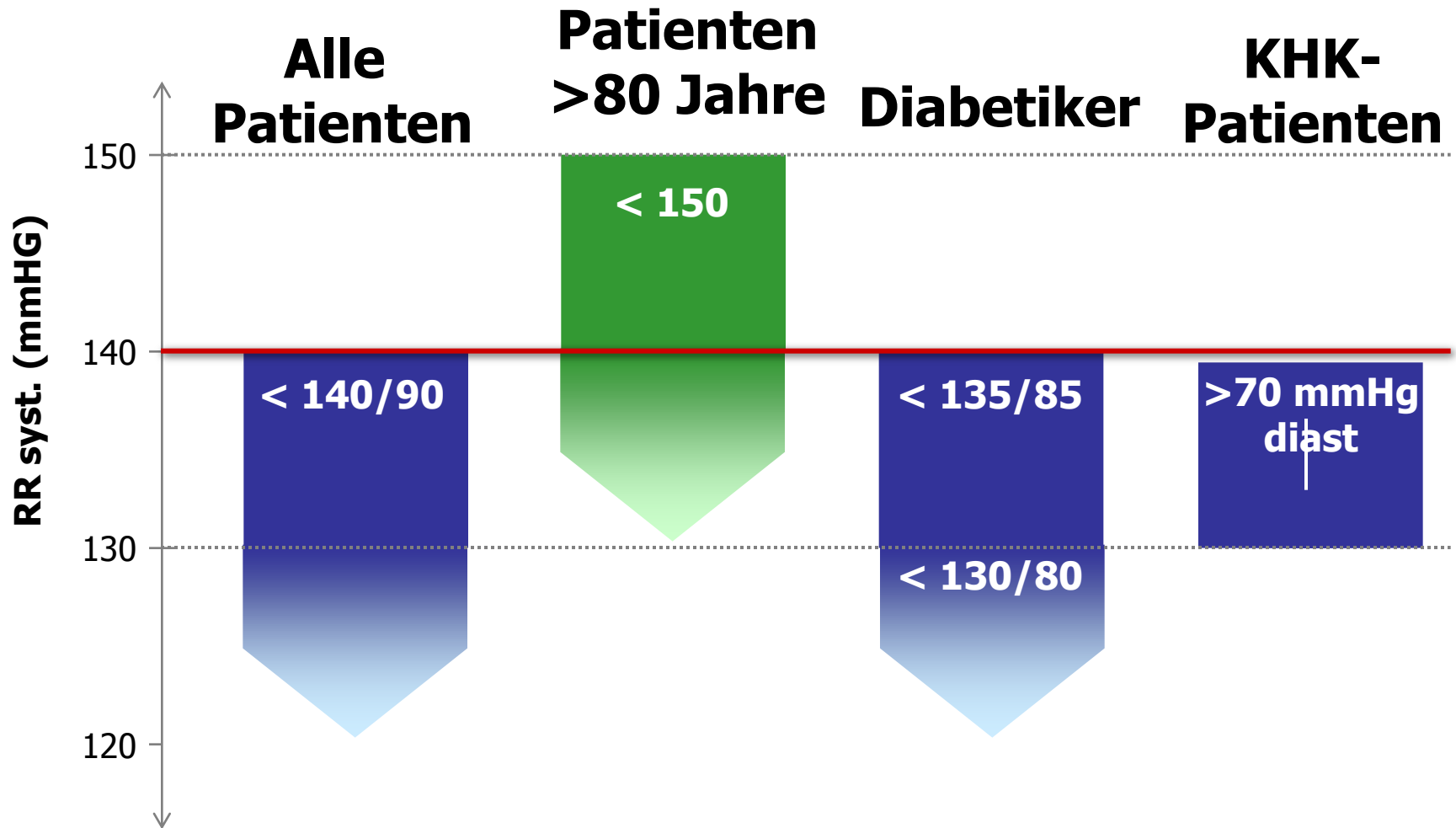
Stufe 2

Medikamentöse Therapie

Stufe 1

nicht-medikamentöse Therapie
körperliche Aktivität, DASH-Diet etc.

Hypertonie im Fokus: Zielwerte und therapeutische Strategien 2013:



HYPERTENSION

How not to get hypertension: Some clues from HARVEST

FEBRUARY 4, 2013 Shelley Wood

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PreHT **Barcelona, Spain** – New results from the **Hypertension and Ambulatory Recording Venetia Study** (HARVEST) are offering a glimpse at a group typically overlooked in hypertension studies: people who manage to avoid developing the disease over the long term.

Dr Paolo Palatini (University of Padova, Italy) presented the findings here at the **2013 International Conference on Prehypertension and Cardiometabolic Syndrome**.

The analysis, he said, may have implications for hypertension guidelines that typically recommend a delay to treatment in the range of several months for patients diagnosed with grade 1 hypertension. The data Palatini presented today detail the characteristics of young adults (mean age 33) diagnosed with grade 1 hypertension whose blood pressure fell to within normal range within the first few months of the study and who then managed to remain normotensive over 15 years of follow-up.

HARVEST was originally designed to examine characteristics of subjects diagnosed with grade 1 hypertension (140–159/90–99 mm Hg) who went on to develop established white-coat, masked, or sustained hypertension over a six-year period.

In the data he presented today, Palatini zeroed in on the 198 subjects whose BP fell to normal (<140/90) in the initial months of HARVEST, as compared with 822 patients who developed hypertension. In this subset, he noted, both systolic and diastolic BP fell sharply between study outset and three months (from grade 1 hypertension to normotensive) and continued to decline over the next decade and a half.

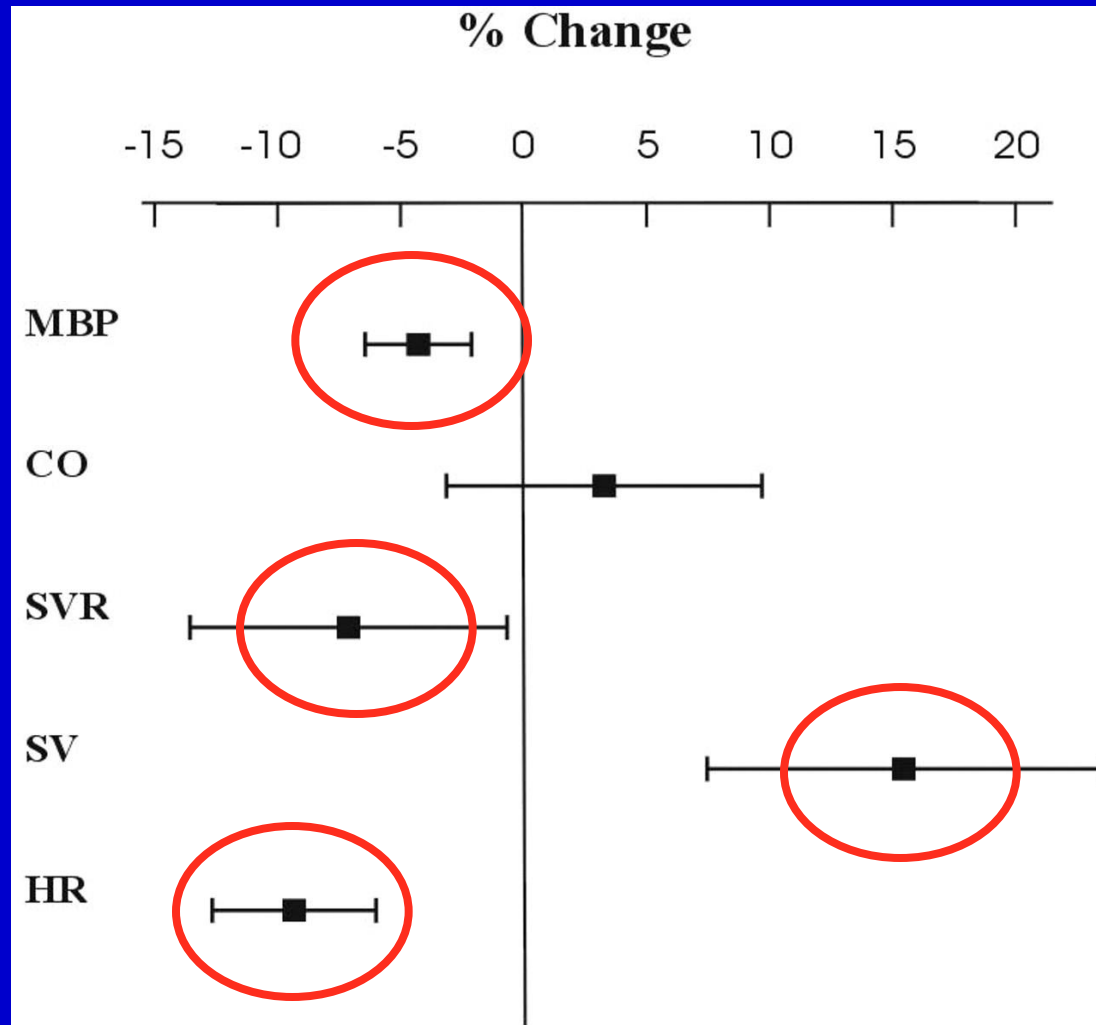
Statistically significant baseline differences included a slightly lower body-mass index (BMI), lower coffee consumption, lower triglycerides, and higher physical-activity levels among patients who remained normotensive. "Overall, they had better metabolic profiles," Palatini said.



Lifestyle-Maßnahmen zur Prävention und Therapie der art. Hypertonie



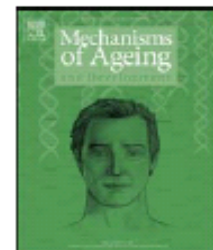
Blutdrucksenkung **und** Verbesserung der Gefäßelastizität durch Ausdauertraining



Contents lists available at ScienceDirect

Mechanisms of Ageing and Development

journal homepage: www.elsevier.com/locate/mechagedev



Short communication

Leukocyte telomere length is preserved with aging in endurance exercise-trained adults and related to maximal aerobic capacity

Thomas J. LaRocca, Douglas R. Seals*, Gary L. Pierce

Department of Integrative Physiology, University of Colorado, Boulder, CO 80309, USA

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ABSTRACT

Telomere length (TL), a measure of replicative senescence, decreases with aging, but the factors involved are incompletely understood. To determine if age-associated reductions in TL are related to habitual endurance exercise and maximal aerobic exercise capacity (maximal oxygen consumption, VO_2max), we studied groups of young (18–32 years; $n = 15, 7$ male) and older (55–72 years; $n = 15, 9$ male) sedentary and young ($n = 10, 7$ male) and older ($n = 17, 11$ male) endurance exercise-trained healthy adults. Leukocyte TL (LTL) was shorter in the older (7059 ± 141 bp) vs. young (8407 ± 218) sedentary adults ($P < 0.01$). LTL of the older endurance-trained adults (7992 ± 169 bp) was ~ 900 bp greater than their sedentary peers ($P < 0.01$) and was not significantly different ($P = 0.12$) from young exercise-trained adults (8579 ± 413). LTL was positively related to VO_2max as a result of a significant association in older adults ($r = 0.44$, $P < 0.01$). Stepwise multiple regression analysis revealed that VO_2max was the only independent predictor of LTL in the overall group. Our results indicate that LTL is preserved in healthy older adults who perform vigorous aerobic exercise and is



Taiwan-Studie: prospektive Studie – n = 600.000:

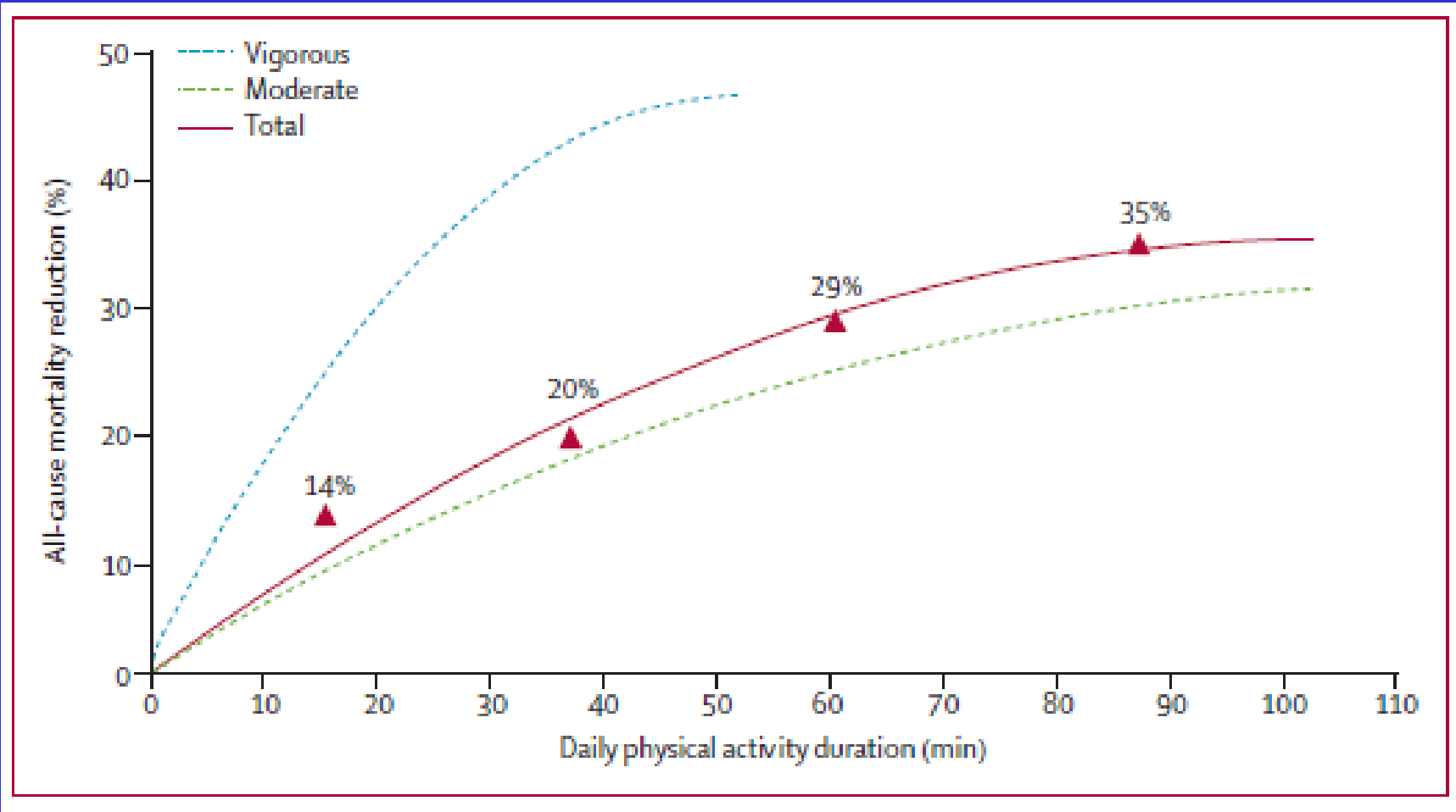
Minimum amount of physical activity for reduced mortality and extended life expectancy: a prospective cohort study

Chi Pang Wen, Jackson Pui Man Wai*, Min Kuang Tsai, Yi Chen Yang, Ting Yuan David Cheng, Meng-Chih Lee, Hui Ting Chan, Chwen Keng Tsao, Shan Pou Tsai, Xifeng Wu*

Lancet 2011; 378: 1244-53

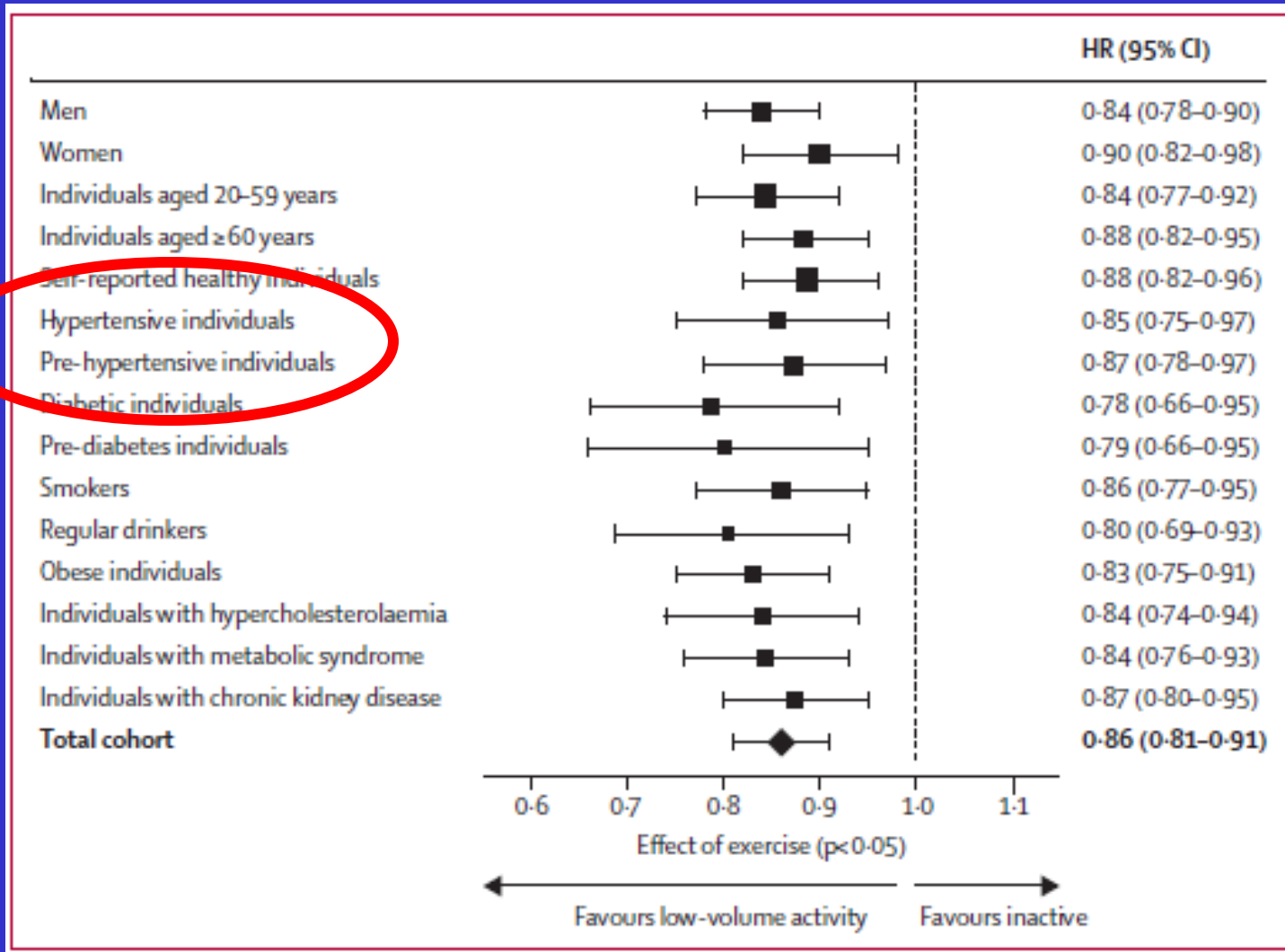


Wen et al: „schon 15 min moderate Bewegung pro Tag nützen umfassend“



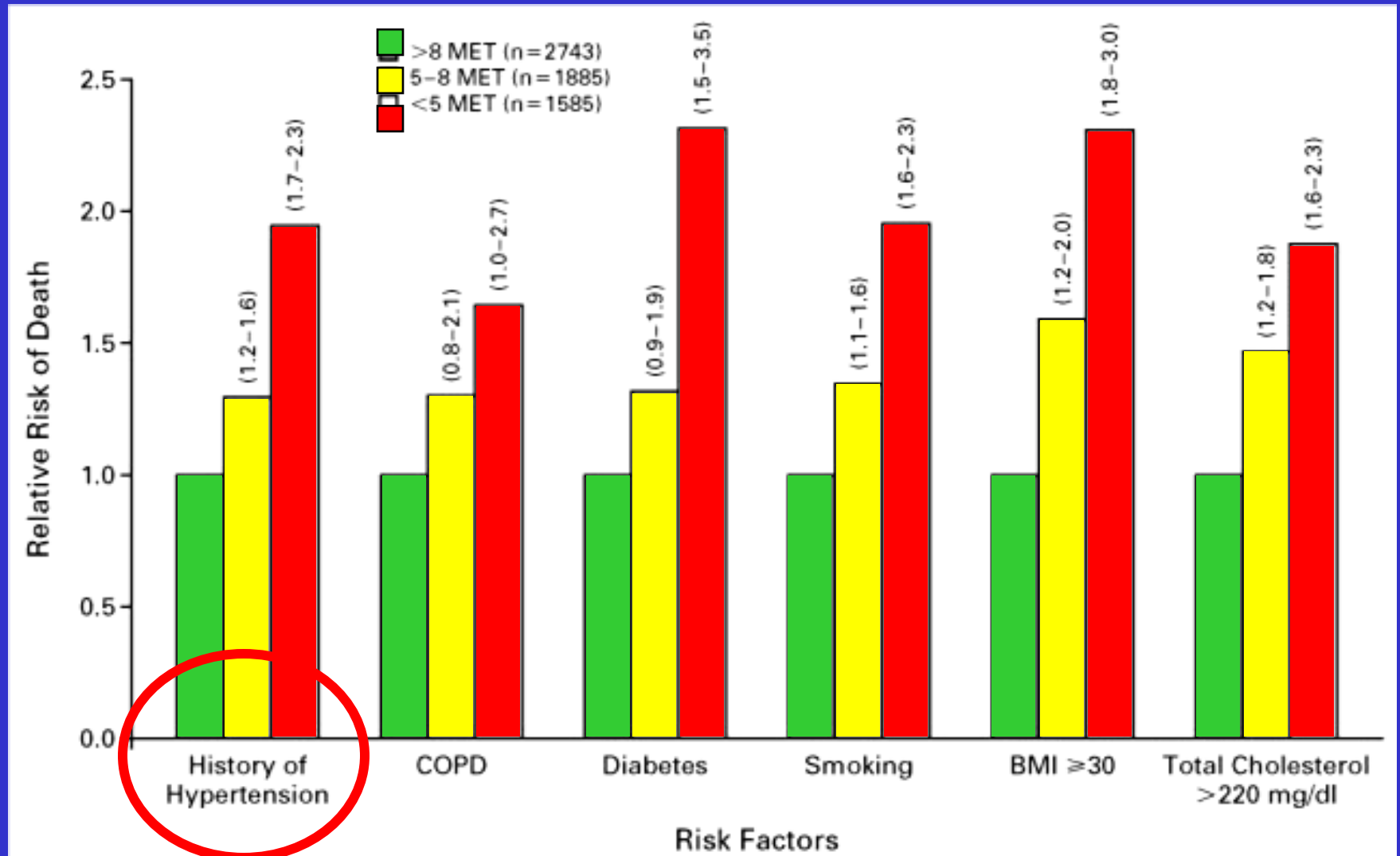


Taiwan-Studie: prospektive Studie – n = 600.000:





Fitte „Hypertoniker“ leben länger!





Circulation

JOURNAL OF THE AMERICAN HEART ASSOCIATION



The Importance of Cardiorespiratory Fitness in the United States: The Need for a National Registry : A Policy Statement From the American Heart Association

Leonard A. Kaminsky, Ross Arena, Theresa M. Beckie, Peter H. Brubaker, Timothy S. Church, Daniel E. Forman, Barry A. Franklin, Martha Gulati, Carl J. Lavie, Jonathan Myers, Mahesh J. Patel, Ileana L. Piña, William S. Weintraub and Mark A. Williams
on behalf of the American Heart Association Advocacy Coordinating Committee, Council on Clinical Cardiology, and Council on Nutrition, Physical Activity and Metabolism

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Paradigmenwechsel in der Sportkardiologie: Zu viel Sport als Risikofaktor?



Circulation

JOURNAL OF THE AMERICAN HEART ASSOCIATION

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Myocardial Injury and Ventricular Dysfunction Related to Training Levels Among Nonelite Participants in the Boston Marathon

Tomas G. Neilan, James L. Januzzi, Elizabeth Lee-Lewandrowski, Thanh-Thao Ton-Nu, Danita M. Yoerger, Davinder S. Jassal, Kent B. Lewandrowski, Arthur J. Siegel, Jane E. Marshall, Pamela S. Douglas, David Lawlor, Michael H. Picard and Malissa J. Wood

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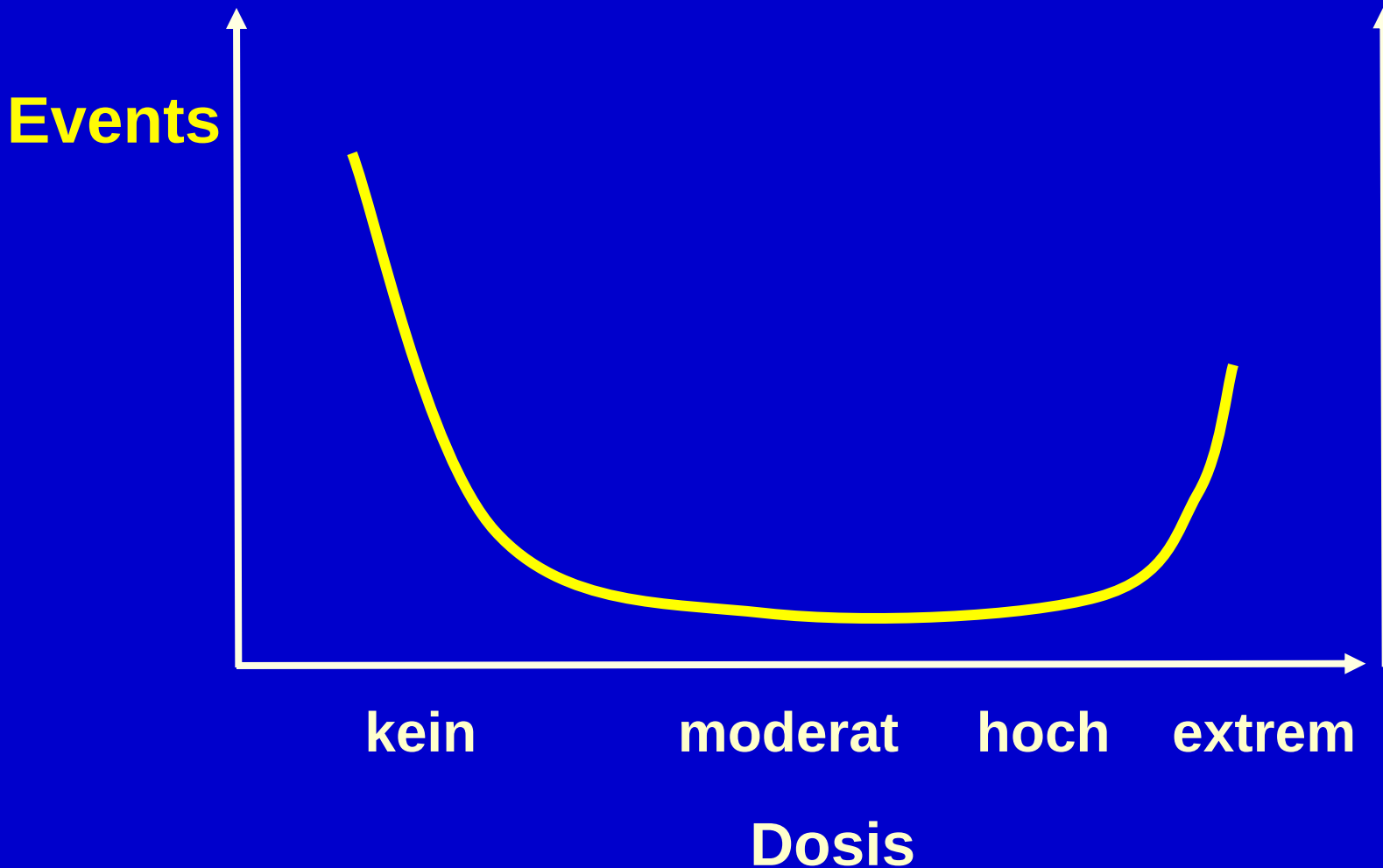
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„Dosierung“ der körperlichen Aktivitäten und KV-Protektion (U-shaped curve)



Gesunde Ernährung zur kardiovaskulären Prävention?





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PREVENTION

Big bucks, no bang: PHS II shows no benefits of vitamins for preventing CVD

NOVEMBER 5, 2012 12:00 Shelley Wood



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AHA **Los Angeles, CA** – The largest, randomized, double-blind trial to date has confirmed what smaller studies have suggested and what many physicians have long believed: a daily multivitamin does not reduce the risk of CVD [1].

Dr Howard D Sesso (Brigham and Women's Hospital, Boston, MA) presented the results of the **Physicians' Health Study (PHS) II** here today at the **American Heart Association 2012 Scientific Sessions**; the study was simultaneously published in the *Journal of the American Medical Association*.

"Individuals who believe they are deriving benefits from supplements may be less likely to engage in other preventive health behaviors, and chronic use of daily supplements poses a financial burden, with annual vitamin-supplement sales in the billions of US dollars," Sesso and colleagues write. "These [PHS II] data do not support multivitamin use to prevent CVD, demonstrating the importance of long-term clinical trials of commonly used nutritional supplements."

HYPERTENSION

Impressive antihypertensive effect with flaxseed

NOVEMBER 5, 2012 Lisa Nainggolan

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AHA **Los Angeles, CA** – Adding flaxseed to the diets of patients with peripheral arterial disease (PAD) resulted in large drops in blood pressure (BP) of around 10 mm Hg systolic and 7 mm Hg diastolic after six months, according to the results of a double-blind, placebo-controlled study.

"This reduction of SBP and DBP after administration of dietary flaxseed is the largest decrease in BP ever shown by any dietary intervention," said **Dr Delfin Rodriguez** (University Hospital Holguin, Cuba) speaking here today at the **American Heart Association 2012 Scientific Sessions**. Such reductions would be expected to result in around a 50% fall in the incidence of stroke and a 30% reduction in MI, he added.

Rodriguez explained that the trial, **FLAX-PAD**, was conducted in PAD patients because they happened to have a clinic for the disease in their center and, as around 75% of PAD patients have concomitant hypertension, "it was an easy population to study."

Subgroup analyses of only the PAD patients with hypertension showed a

This reduction of SBP and DBP after administration of dietary flaxseed is the largest decrease in BP ever shown by any dietary intervention. ”



HYPERTENSION

WHO issues sodium-, potassium-intake guidelines

FEBRUARY 1, 2013 Steve Stiles



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Geneva, Switzerland – In a pair of new guideline documents, the **World Health Organization (WHO)** recommends a maximum daily intake level for sodium and a minimum level for potassium in both adults and children, with the aim of reducing the risks of stroke and cardiovascular disease from elevated blood pressure [1,2]. Most populations around the world, the group says, consume less-than-recommended levels of potassium and disproportionately high levels of sodium.

The recommended daily intake for sodium is less than 2 g, or 5 g of salt; a minimum daily intake of 3510 mg of potassium from food is also recommended. In both cases, the recommended levels are adjusted downward for children proportionally based on energy requirements.

In a press release [3], the WHO said, "Public-health measures to reduce sodium and increase potassium consumption and thereby decrease the population's risk of high blood pressure and heart disease can include food and product labeling, consumer education, updating national dietary guidelines, and negotiating with food manufacturers to reduce the amount of salt in processed foods."

Medikamentöse antihypertensive Therapie nach aktuellen ESC-Leitlinien

Wann immer möglich, sollte eine **Fix-Kombination** bevorzugt werden, da eine Vereinfachung der Therapie Vorteile für die Effektivität und Compliance mit sich bringt.



Study program on Physical activity and on Risk reduction in Treated Hypertensives (SPORT-H)

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Betablocker	+	+++	-	-	-	-
Diuretika	+	(+)	-	(-)	(-)	(-)
langwirksameCa Antagonisten	+	+	+	0	0	0
ACE-Hemmer	+	+	+	0	0	0
Alphablocker	+	(+)	0/+	0	0	0
Angiotensin II - Rezeptor - Antagonisten	+	+	+	0	0	0

OLIVUS

- untersuchte den Einfluss von Olmesartan (OLM) auf das Fortschreiten einer koronaren Atherosklerose.¹

OLIVUS Ex(tension)

- untersuchte den klinischen Effekt von Olmesartan (OLM) bei den Patienten der OLIVUS-Studie über 4 Jahre.²

■ ¹ Hirohata A et al. J Am Coll Cardiol 2010;55(10):976–982

■ ² Hirohata A et al. Atherosclerosis 2012;220(1):134–138

OLIVUS

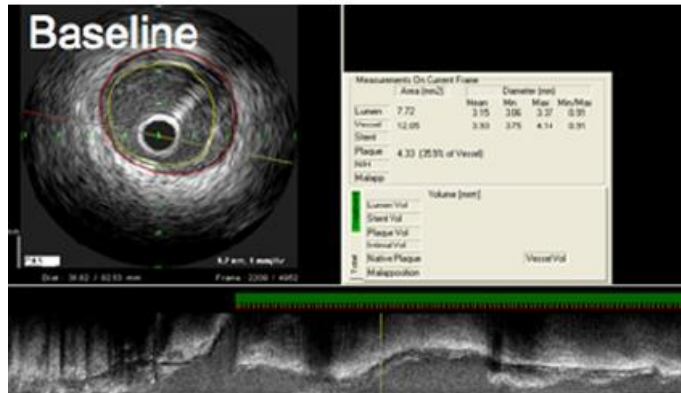
- Einfluss von Olmesartan auf atherosklerotische Koronarplaques.¹

OLIVUS Ex(tension)

- Auftreten von schwerwiegenden kardio- und zerebrovaskulären Ereignissen (MACCE*)²

- * MACCE = Major adverse cardio- and cerebrovascular events: (kardio- und zerebrovaskulärer Tod, Herzinfarkt, Schlaganfall, Angina pectoris und Herz- oder Niereninsuffizienz)
- ¹ Hirohata A et al. J Am Coll Cardiol 2010;55(10):976–982
- ² Hirohata A et al. Atherosclerosis 2012;220(1):134–138

Repräsentativer IVUS* (Kontrollgruppe)



Baseline

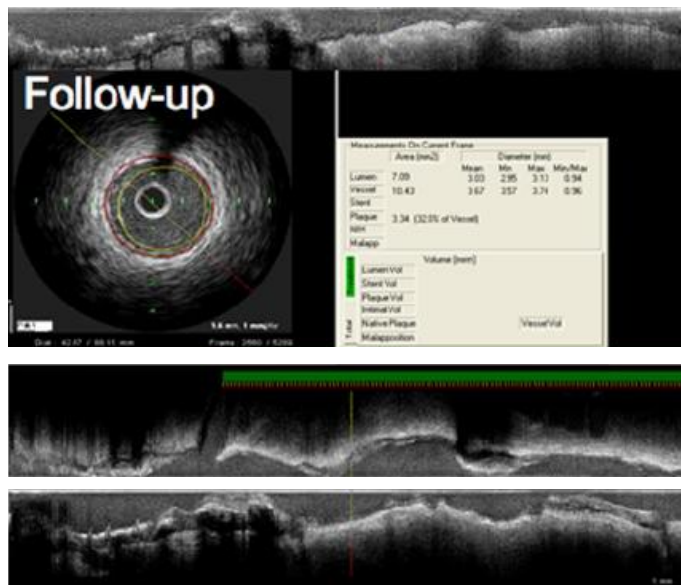
Gemessene Längen = 52 mm

Lumenvolumen = 320,7 mm³

Plaquesvolumen = 207,4 mm³

Gefäßvolumen = 528,1 mm³

Prozentuales Plaquesvolumen = 39,3 %



14-Monate Follow-up

Gemessene Längen = 52 mm

Lumenvolumen = 309,1 mm³

Plaquesvolumen = 221,2 mm³

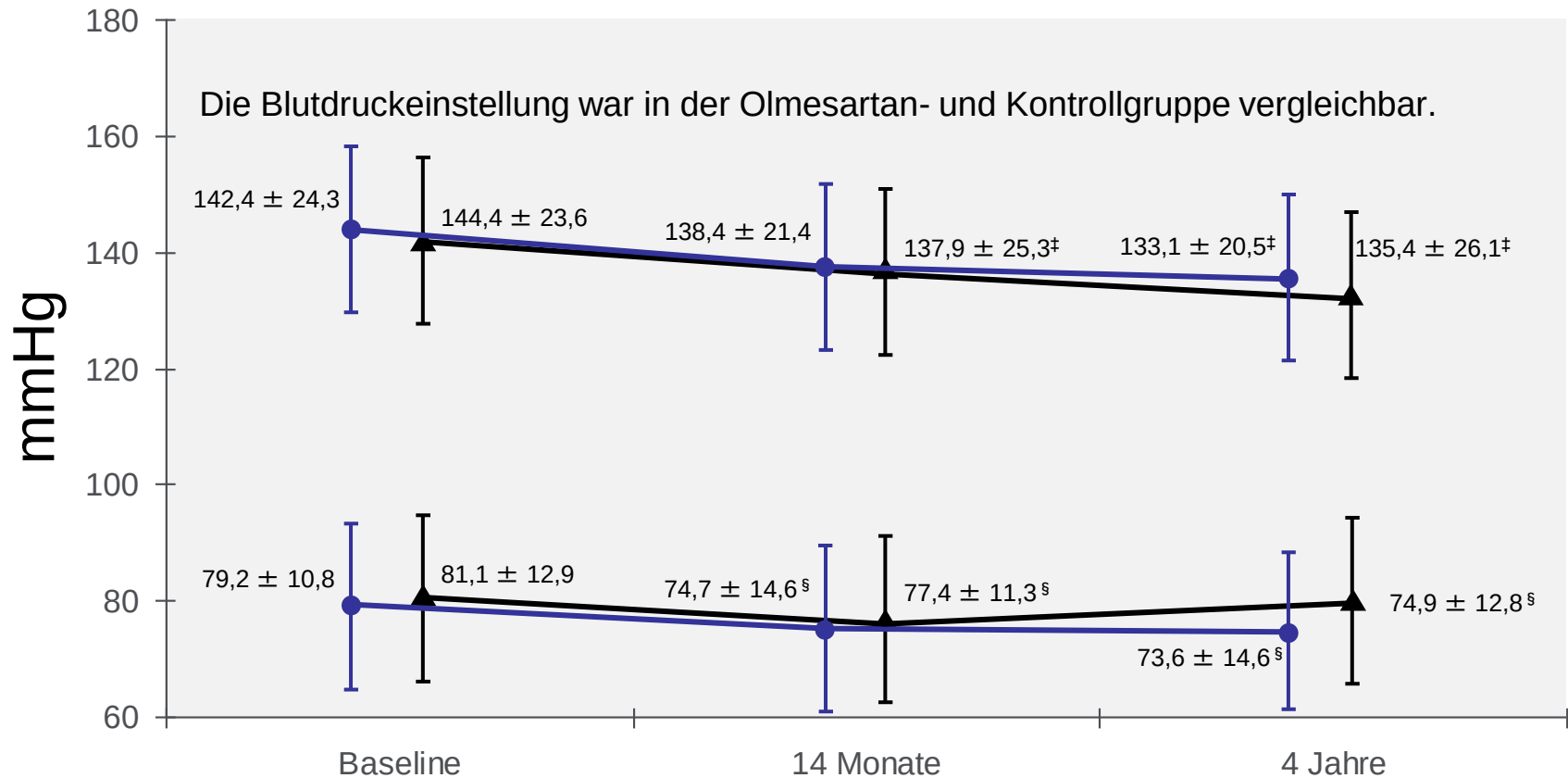
Gefäßvolumen = 530,3 mm³

Prozentuales Plaquesvolumen = 41,7 %

Prozentuale Veränderung des Plaquesvolumens = **6,6 %**

Veränderung des prozentualen Plaquesvolumens = **6,2 %**

- *IVUS = intravaskulärer Ultraschall
- Modifiziert nach Hirohata A et al. J Am Coll Cardiol 2010;55(10):976–982



- [‡] p < 0,05, [§] p < 0,01, von Baseline bis Follow-up
- = Olmesartan ▲ = Kontrolle
- Modifiziert nach Hirohata A et al. Atherosclerosis 2012;220(1):134–138

Veränderung der IVUS Parameter Baseline/Monat 14

	Control (n = 121)	Olmesartan (n = 126)	p Value
Nominal change			
Atheroma volume (mm ³)	7.1 (1.8–12.4)*	−2.6 (−7.9–2.8)	0.011
Lumen volume (mm ³)	0.3 (−8.7–9.3)	0.4 (−7.6–8.3)	0.989
Vessel volume (mm ³)	7.8 (2.5–10.5)	−2.1 (−8.5–2.5)	0.178
PAV (%)	1.1 (0.1–2.1)†	−0.1 (−0.9–0.8)	0.085
Change in total atheroma volume and PAV			
Total atheroma volume (%)	5.4 (2.4–8.5)	0.6 (−1.9–3.1)	0.016
PAV (%)	3.1 (0.7–5.6)	−0.7 (−3.4–2.0)	0.038

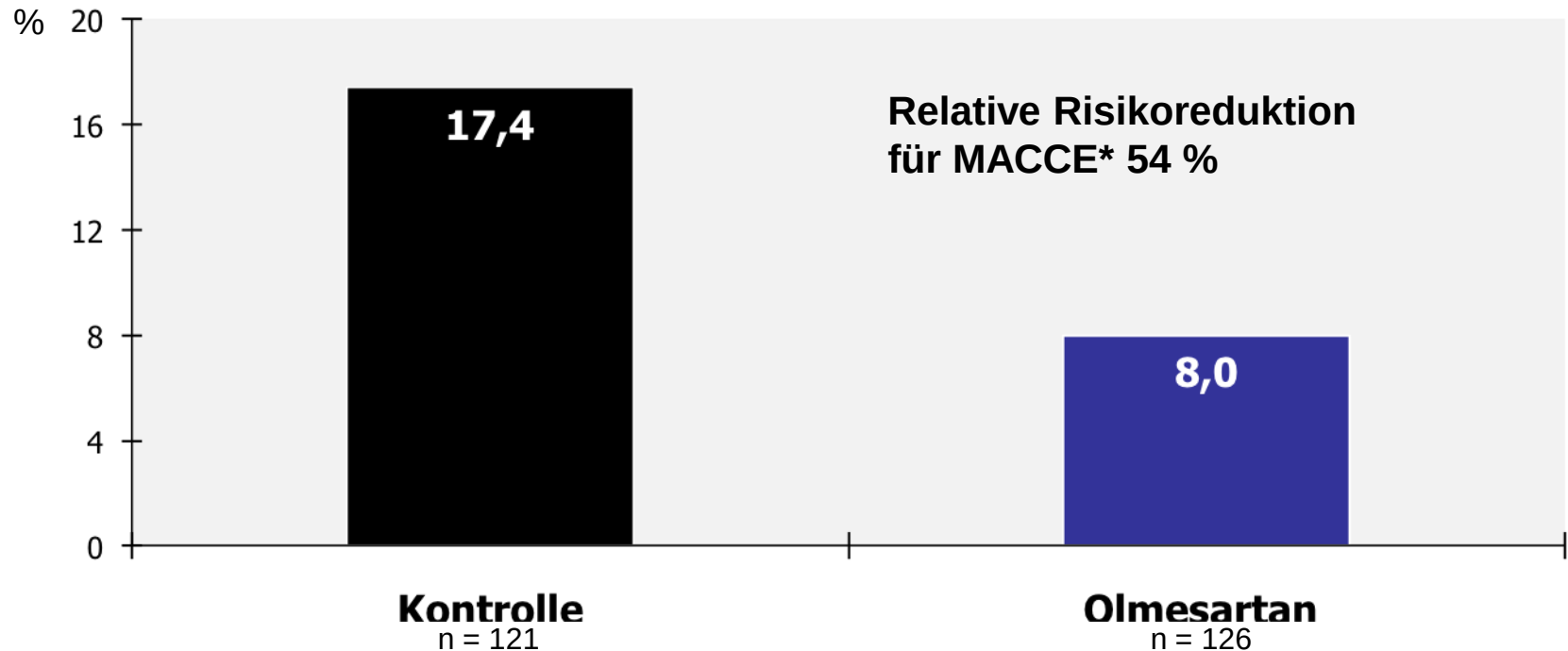
- Zunahme des Plaque-Gesamtvolumens in der Kontrollgruppe um 5,4%.
- In der Olmesartan-Gruppe blieb das Volumen nahezu unverändert (0,6%).
- Abnahme des prozentualen Plaque-Volumens (PAV = percent atheroma volume: Atheromvolumen / Gefäßvolumen) unter Olmesartan (−0,7 %).
- Zunahme des PAV in der Kontrollgruppe um 3,1%.

*p < 0.01; † p < 0.05 between baseline and follow up

Modifiziert nach Hirohata A et al. J Am Coll Cardiol 2010;55(10):976–982

Presentation Name |

Patienten mit kardio- und zerebrovaskulären Ereignissen
(kumulierte MACCE*) nach 4 Jahren (in %)



- * MACCE = Major adverse cardio- and cerebrovascular events (kardio- und zerebrovaskulärer Tod, Herzinfarkt, Schlaganfall, Angina pectoris und Herz- oder Niereninsuffizienz);
- Modifiziert nach Hirohata A al. Atherosclerosis 2012;220(1):134–138

- Die OLIVUS-Studie zeigte, dass eine Behandlung von hypertensiven Patienten mit koronarer Herzerkrankung mit Olmesartan einen positiven Einfluss auf die Entwicklung koronarer Plaques hatte.¹
- Die Ergebnisse für das Plaquevolumen deuten dabei nicht nur auf eine stabilisierende, sondern sogar auf eine rückbildende Wirkung hin.¹
- Dies manifestierte sich klinisch in OLIVUS Ex(tension) in einer signifikanten Reduktion von kardio- und zerebrovaskulären Ereignissen (kumulativ). Die relative Risikoreduktion unter Olmesartan für MACCE in der 4-jährigen Follow-up-Periode betrug 54 %.²

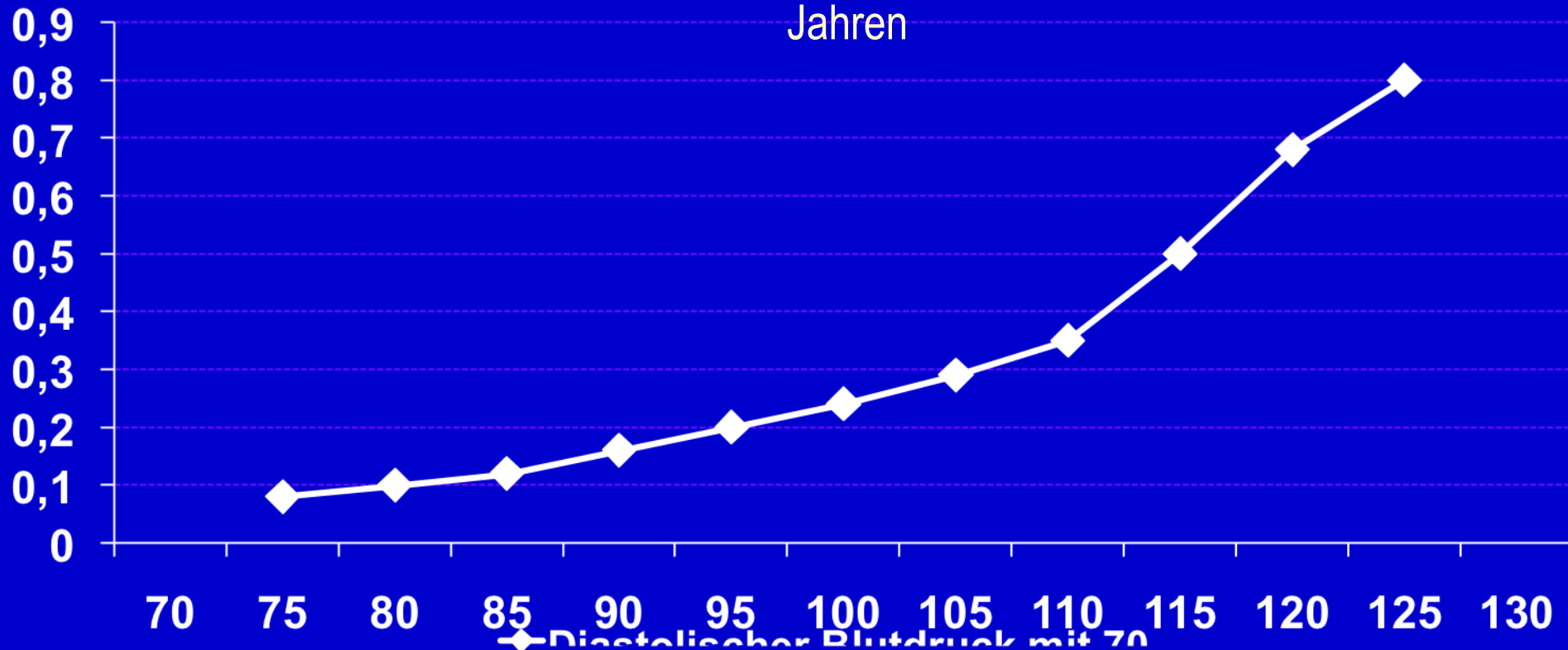
■ ¹ Hirohata A et al. J Am Coll Cardiol 2010;55(10):976–982

■ ² Hirohata A et al. Atherosclerosis 2012;220(1):134–138

Demenz: Risikofaktor Hypertonie

Hypertonie und Demenz

Wahrscheinlichkeit der Entwicklung einer vaskulären Demenz mit 80 Jahren

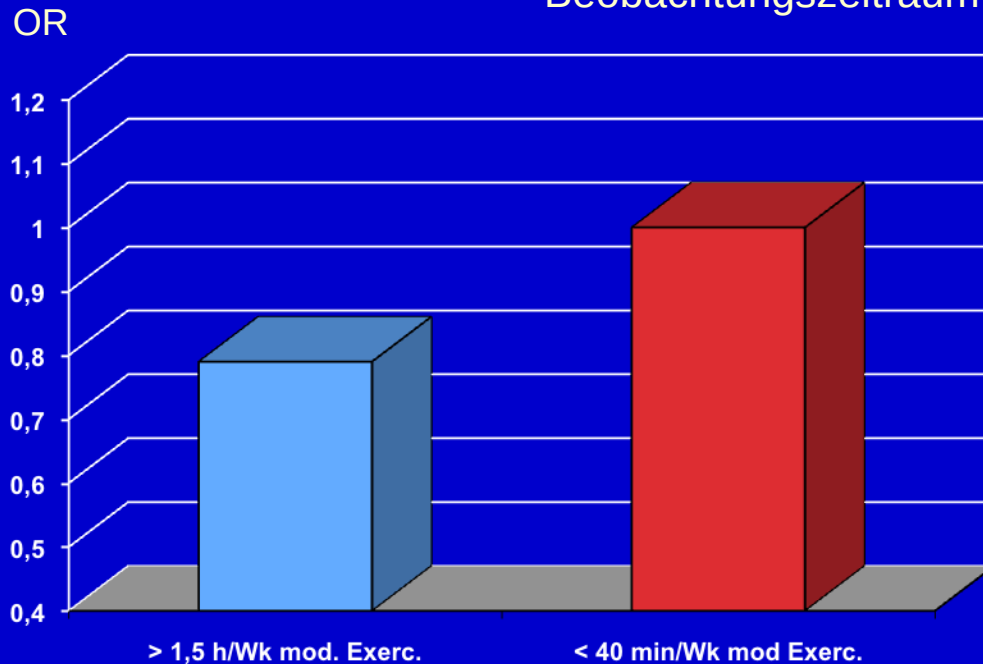


Skoog et al. Lancet 1998

Risiko des kognitiven Funktionsverlustes vermindert durch regelmässigen Sport

Nurses' Health Study mit 18.766 US Frauen im Alter von 70 bis 81 Jahren

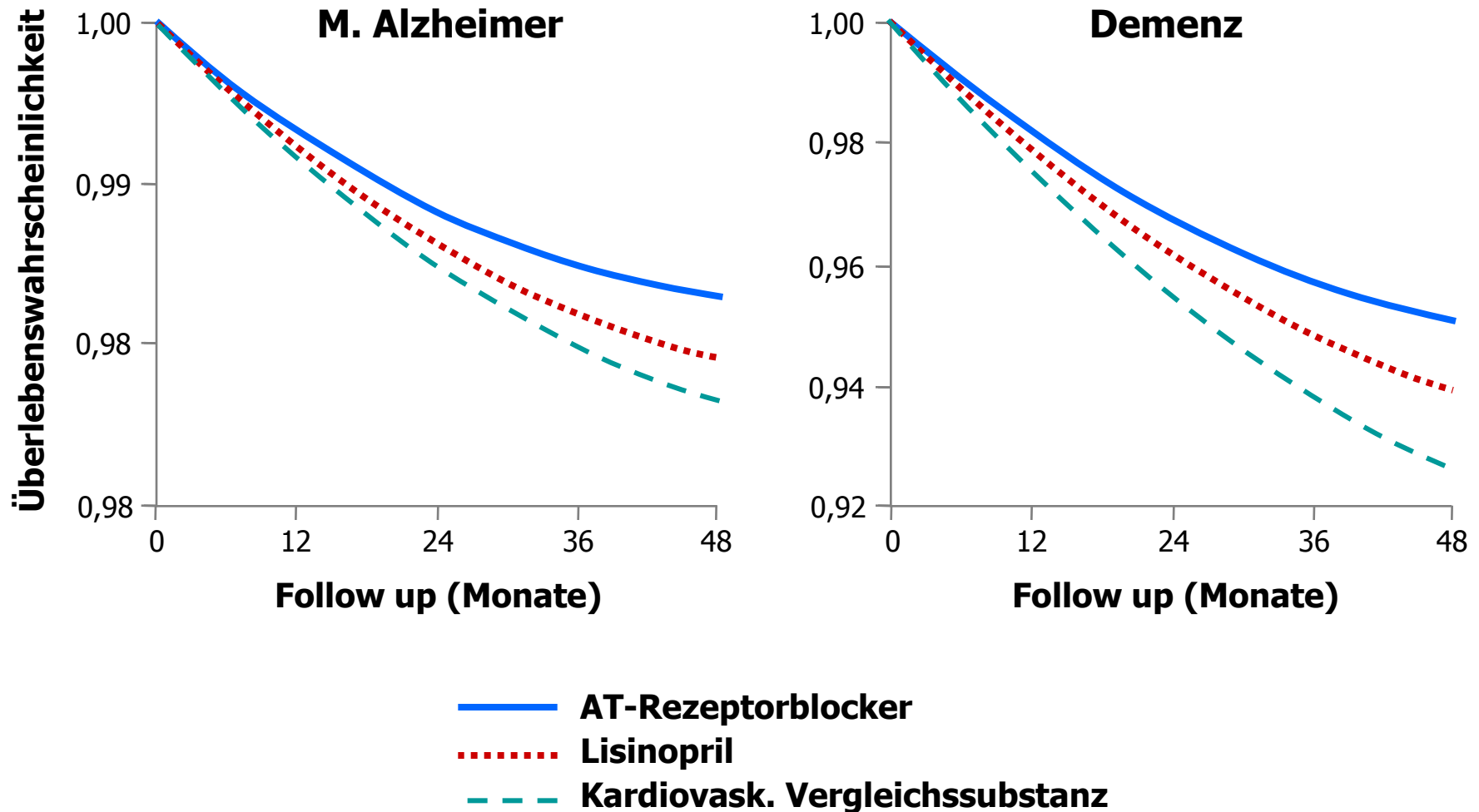
Beobachtungszeitraum: 15 Jahre



CONCLUSIO: Langfristige und regelmäßige körperliche Aktivität, inkl. Walking
vermindert den kognitiven Funktionsverlust im Altersgang.

Risiko einer Demenzentwicklung bei art. Hypertonie – Differenzialtherapeutische Effekte

Inzidenz in Studienkohorten (ca. 1 Mio Pat)





Alzheimer-Prävention durch Sartane?

ORIGINAL CONTRIBUTION

ONLINE FIRST

Impact of Angiotensin Receptor Blockers on Alzheimer Disease Neuropathology in a Large Brain Autopsy Series

Ihab Hajjar, MD, MS; Lauren Brown, BS, MPH; Wendy J. Mack, PhD; Helena Chui, MD

Signifikant weniger Amyloid-Ablagerungen unter
Sartan-Therapie!