

Hausarzt-Symposium Geriatrie, 18. Mai 2017

Ernährung für die Erhaltung der Gehirnleistung und Demenzprävention

was, für wen und wieviel?



Michael Gagesch, Oberarzt
Klinik für Geriatrie USZ



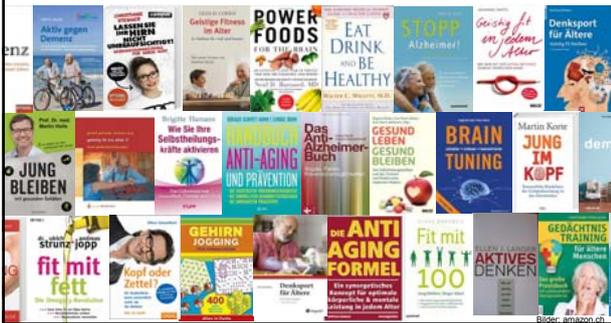
Bild: http://www.trekkdesk.com

Was erwartet Sie?

- Hintergrund** Risiken und Schutzfaktoren
- Fakten** Evidenz aus bisherigen Studien
- Perspektiven** Neue Ansätze und Hoffnungen
- Fazit** Worauf sollten Sie bei Ihren Patienten achten?

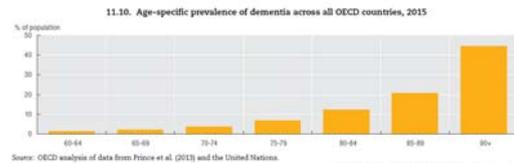


Ratgeber - Es werden **täglich** mehr...



Altern und Demenzrisiko

...eine wachsende demographische Herausforderung



Im Vergleich Prävalenz Typ 2 Diabetes mellitus >75 Jahre: 12.5% (BFS 2012)

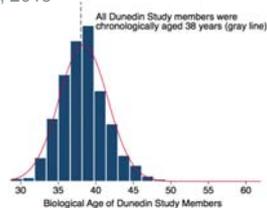
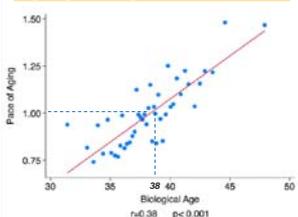
alz.org, Alzheimer's Disease Facts and Figures 2014



Altern wir unterschiedlich schnell? ...ja!

Belsky DW, Dunedin Study, PNAS, 2015

- N= 964 Neuseeländer (Jg. 1972-1973)
- 18 Biomarker, u.a. motorische und geistige Leistungstests



junge Erwachsene in der Mitte ihres vierten Lebensjahrzehnts unterschieden sich stark in ihrem biologischen Alter



Einflussfaktoren geistiger Entwicklung

Biologisch, psychosozial und kulturell



Ernährung
Schule und Ausbildung
Soziale Entwicklung
Motivation
Chancen



Motivation und Herausforderungen
Soziale Teilhabe
Ernährung
Traumata
Alkohol
Substanzgebrauch

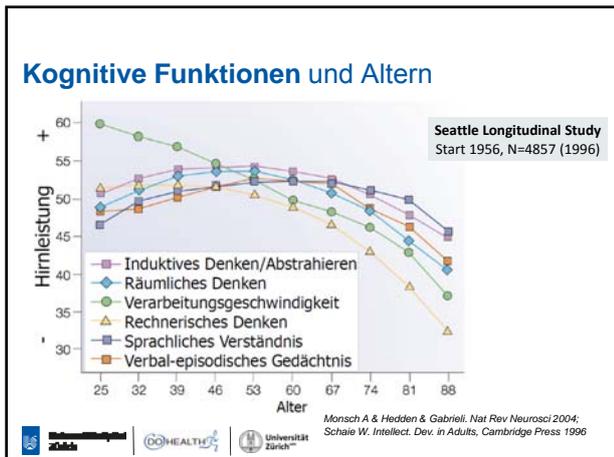


Herz-Kreislauf-Erkrankungen
Depression
ZNS-Erkrankungen
Soziales Netz
Ernährung

Morgane FJ, Effects of prenatal protein malnutrition on the hippocampal formation, *Neurosci Biobehav Rev* 2002

Cohen D, et al. *The Practice of Geriatrics* 1986
Bilder: GNU GPL, google.ch





Risikofaktoren Schutzfaktoren

Advances in the prevention of Alzheimer's disease and dementia

■ A. Solomon^{1,2}, F. Mangialasche³, E. Richard⁴, S. Agrilus⁵, D. A. Bennett⁶, M. Brytner⁷, L. Fratiglioni⁸, B. Hooshmand⁹, A. S. Khachaturian¹⁰, L. S. Schneider¹¹, I. Skog¹² & M. Kivipelto^{1,3}

From the ¹Research Institute Alzheimer Disease Research Center (ADRC), Stockholm, Sweden; ²Department of Neurology, University of Eastern Finland, Kuopio, Finland; ³Ageing Research Center, Geriatrics Institute and Stockholm University, Stockholm, Sweden; ⁴Department of Neurology, Amsterdam Medical Centre, University of Amsterdam, Amsterdam, the Netherlands; ⁵Department of Epidemiology and Public Health, Tufts University Hospital, Boston, France; ⁶Paul Alzheimer's Disease Center, Rush University Medical Center, Chicago, IL, USA; ⁷German Center for Neurodegenerative Diseases (DZNE) and University of Bonn, Bonn, Germany; ⁸Samueli Institute for Research on Alzheimer's Disease by 2020 (PADI2020), Rockville, MD, USA; ⁹Rush School of Medicine, University of Southern California, Los Angeles, CA, USA; and ¹⁰Neuropsychiatric Epidemiology Research Unit, University of Gothenburg, The Swedish Academy, Gothenburg, Sweden

Solomon A, Kivipelto M. J Int Med 2014

Risikofaktoren Schutzfaktoren

Age
Genetic
Familial aggregation
APOE ε4
Different genes (e.g. CR1, PICALM, CLU, TREM2, TOMM40)
have been proposed (www.alzgene.org)

Vascular and metabolic
Cerebrovascular lesions
Cardiovascular diseases
Diabetes mellitus and pre-diabetes
Multiple positive association but late-life negative association
Hypertension
High BMI (overweight and obesity)
High serum cholesterol

Lifestyle
Smoking
High alcohol intake

Diet
Saturated fats
Low B vitamins/high homocysteine
Homocysteine

Others
Depression
Traumatic brain injury
Occupational exposure (heavy metals, ELF-EMFs)
Infective agents (herpes simplex virus type 1, Chlamydia/philip pneumoniae, spirochetes)

Genetic
Different genes (e.g. APP, APOE ε2) have been proposed (www.alzgene.org)

Psychosocial factors
High levels of education and SES
High level of complexity of work
Rich social network and social engagement
Mentally stimulating activity

Lifestyle
Physical activity
Moderate alcohol intake

Diet
Mediterranean diet
PUFAs and fish-related fats
Vitamins B6 and B12, folate
Antioxidant vitamins (A, C and E)
Vitamin D

Drugs
Antihypertensive drugs
Statins
HRT
NSAIDs

Solomon A, Kivipelto M. J Int Med 2014

Beeinflussbare Risikofaktoren für Demenz

Ist Fernsehen das neue Rauchen?!

Barnes DW. The projected effect of risk factor reduction on Alzheimer's disease prevalence. Lancet Neuro 2011; Norton S. Potential for primary prevention of Alzheimer's disease: an analysis of population-based data. Lancet Neuro 2014

Beeinflussbare Risikofaktoren für Demenz

Relative Risikoerhöhung für die Entwicklung einer Demenz	Reduction
Diabetes mellitus	+46%
Bluthochdruck	+61%
Übergewicht	+60%
Depression	+65%
Inaktiver Lebensstil	+82%
Rauchen	+59%
Geringe Ausbildung	+59%

3 Mio. vermeidbare Demenzfälle weltweit

Barnes DW. The projected effect of risk factor reduction on Alzheimer's disease prevalence. Lancet Neuro 2011; Norton S. Potential for primary prevention of Alzheimer's disease: an analysis of population-based data. Lancet Neuro 2014

20 Jahre DASH Studie...

The New England Journal of Medicine

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VOLUME 336 APRIL 17, 1997 NUMBER 16

A CLINICAL TRIAL OF THE EFFECTS OF DIETARY PATTERNS ON BLOOD PRESSURE

LAWRENCE J. APPEL, M.D., M.P.H., THOMAS J. MOORE, M.D., EVA OBARZANEK, Ph.D., WILLIAM M. VOLLMER, Ph.D., LAURA P. SVETKEY, M.D., M.H.S., FRANK M. SACKS, M.D., GEORGE A. BRAY, M.D., THOMAS M. VOGT, M.D., M.P.H., JEFFREY A. CUTLER, M.D., MARLENE M. WINDHAUSER, Ph.D., R.D., PAD-HWA LIN, Ph.D., AND NJERI KARANJA, Ph.D., FOR THE DASH COLLABORATIVE RESEARCH GROUP*

Dietary Approaches to Stop Hypertension (DASH)

Appel LJ 1997

TABLE 1. NUTRIENT TARGETS, MENU ANALYSES, AND AVERAGE DAILY SERVINGS OF FOODS, ACCORDING TO DIET.*

ITEM	CONTROL DIET		FRUITS-AND-VEGETABLES DIET		COMBINATION DIET	
	NUTRIENT TARGET	MENU ANALYSIS†	NUTRIENT TARGET	MENU ANALYSIS†	NUTRIENT TARGET	MENU ANALYSIS†
Nutrients						
Fat (% of total kcal)	37	35.7	37	35.7	27	25.6
Saturated	16	14.1	16	12.7	6	7.0
Monounsaturated	13	12.4	13	13.9	13	9.9
Polyunsaturated	8	6.2	8	7.3	8	6.8
Carbohydrates (% of total kcal)	48	50.5	48	49.2	55	56.5
Protein (% of total kcal)	15	13.8	15	15.1	18	17.9
Cholesterol (mg/day)	300	233	300	184	150	151
Fiber (g/day)	9	N/A	31	N/A	31	N/A
Electrolytes						
Potassium (mg/day)	1700	1752	4700	4101	4700	4415
Magnesium (mg/day)‡	165	176	500	423	500	480
Calcium (mg/day)‡	450	443	450	534	1240	1265
Sodium (mg/day)	3000	3028	2000	2016	3000	2309
Food groups (no. of servings/day)						
Fruit and juices	1.6		5.2		5.2	
Vegetables	2.0		3.3		4.4	
Grains	8.2		6.9		7.5	
Low-fat dairy	0.1		0.0		2.0	
Regular-fat dairy	0.4		0.3		0.7	
Nuts, seeds, and legumes	0.0		0.6		0.7	
Beef, pork, and ham	1.5		1.8		0.5	
Poultry	0.8		0.4		0.6	
Fish	0.2		0.3		0.5	
Fat, oils, and salad dressing	5.8		5.3		2.5	
Sweets and starches	4.1		1.4		0.7	

*Values are for diets designed to provide an energy level of 2100 kcal.
†Values are the results of chemical analyses of the menus prepared during the validation phase and during the trial. NA denotes not available.

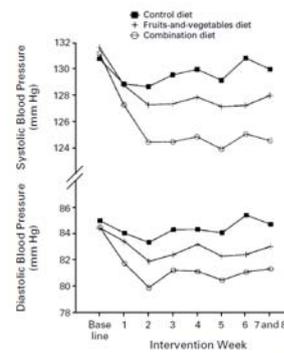


Figure 1. Mean Systolic and Diastolic Blood Pressures at Baseline and during Each Intervention Week, According to Diet, for 378 Subjects with Complete Sets of Weekly Blood-Pressure Measurements.

Ernährungsfaktoren, die den Blutdruck beeinflussen

Burnier M SZE 2009

Blutdrucksteigernde Nahrungsbestandteile

- NaCl (Salz)
- Fruktose
- Alkohol
- Koffein
- Lakritze
- Ephedrin
- Guarana

Blutdrucksenkende Nahrungsbestandteile

- Kalium
- Kalzium
- Vitamin D
- Folsäure
- einfach ungesättigte Fettsäuren
- Pflanzeneiweiss
- Ballaststoffe

Mayo Clinic Study of Aging

N=1233 (Olmsted County)

Original Research Article

Dementia
and
Cognitive Disorders

Dement Geriatr Cogn Disord 2010;29:413-423
DOI: 10.1159/000305099

Accepted March 16, 2010
Published online May 20, 2010

Vegetables, Unsaturated Fats, Moderate Alcohol Intake, and Mild Cognitive Impairment

Rosebud O. Roberts^a, Yonas E. Geda^{a,c}, James R. Cerhan^a, David S. Knopman^d, Ruth H. Cha^b, Teresa J.H. Christianson^b, V. Shane Pankratz^b, Robert J. Hunk^c, Bradley F. Boeve^d, Helen M. O'Connor^d, Ronald C. Petersen^{a,d}

Divisions of ^aEpidemiology and ^bBiomedical Statistics and Informatics, Department of Health Sciences Research, Departments of ^cPsychiatry and Psychology and ^dNeurology and ^eOffice for Human Research Protection, College of Medicine, Mayo Clinic, Rochester, Minn., USA

Mehr Gemüse (>110g/d) = 30% niedrigeres MCI Risiko
Hohe Kalorienzufuhr (>2140kcal/d) = 85% erhöhtes MCI Risiko

Association of Mediterranean Diet with Mild Cognitive Impairment and Alzheimer's Disease: A Systematic Review and Meta-Analysis

Rabinder Singh^{1,2}, Ajay K. Parvaid¹, Michelle M. Mielke¹, Patricia J. Erwin¹, David S. Knopman³, Ronald C. Petersen^{3,4} and Rosebud O. Roberts^{1,2*}

¹Department of Neurology, Mayo Clinic, Rochester, MN, USA

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³Mayo Medical Laboratories, Mayo Clinic, Rochester, MN, USA

⁴Department of Clinical Neuroscience, University of North Dakota School of Medicine and Health Sciences, Fargo, ND, USA

- Höchstes MeDi Terzil hatte 33% geringeres MCI/AD Risiko
- Grössere Adhärenz mit 27% geringerem Risiko für eine Konversion MCI zu AD verbunden

Die MIND Diät

Morris MC et al., Alz & Dem 2015

Mediterranean-DASH diet intervention for neurodegenerative delay (MIND)

Rush Memory & Aging Project

n=960, 4.7 years

Background:

1. Mediterranean diet showed protective effects on cognition in RCT
Martinez-Lapiseina EH, 2013
2. DASH diet showed protective effects on cognition in RCT
Smith PJ, Hypertension, 2010

MIND diet component	servings and scoring	0	0.5	1
Green leafy ^a vegetables	≥2 servings/wk	>2 to <5/wk	≥6 servings/wk	
Other vegetables ^b	<5 servings/wk	5 to <7 wk	≥1 servings/d	
Berries ^c	<1 serving/wk	1/wk	≥2 servings/wk	
Nuts	<1mo	1mo to <5/wk	≥5 servings/wk	
Olive oil	Not primary oil	Primary oil used		
Butter, margarine	>2 T/d	1-2d	<1 T/d	
Cheese	7+ servings/wk	1-6/wk	<1 servings/wk	
Whole grains	<1 servings/d	1-2d	≥3 servings/d	
Fish (not fried) ^d	Rarely	1-3mo	≥1 meals/wk	
Beans ^e	<1 meal/wk	1-3/wk	>3 meals/wk	
Poultry (not fried) ^f	<1 meal/wk	1/wk	≥2 meals/wk	
Red meat and products ^g	7+ meals/wk	4-6/wk	<4 meals/wk	
Fast fried foods ^h	4+ times/wk	1-3/wk	<1 time/wk	
Pastries and sweets ⁱ	7+ servings/wk	5-6/wk	<5 servings/wk	
Wine	>1 glass/d or never	1mo-6/wk	1 glass/d	
Total score			15	

Abbreviation: MIND, Mediterranean-DASH diet intervention for neurodegenerative delay.

Die 15 Komponenten der MIND Diät

Morris MC et al., Alz & Dem 2015

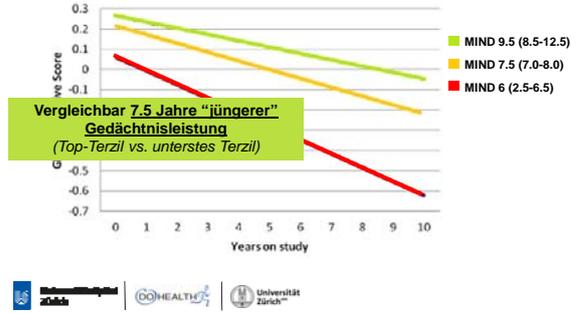
10 x gesund		5 x ungesund
Grüne Blattgemüse	Bohnen	Rotes Fleisch
Gelbe Gemüse	Fisch	Butter, Margarine
Nüsse	Poulet	Käse
Beeren	Olivenöl	Süßigkeiten
Vollkorngetreide	Wein	Frittiertes /Fast Food

PLUS an Superfoods

Bild: Bischoff-Ferrari, HA 2016

Cognitiver Decline und MIND Score

Morris MC et al., Alz & Dem 2015



Von Beeren und Hirnfunktionen

Nurses' Health Study

- >16.000 pensionierte Krankenschwestern
- >70 Jahre (Ø 75 Jahre)
- Kognitive Funktion über 4 Jahre



Schlussfolgerung:

- Blaubeeren (≥1x Woche vs. <1x Monat) und Erdbeeren (≥2x Woche vs. <1x Woche) assoziiert mit einer **verlangsamten Abnahme der Gedächtnisleistung**
- Der Unterschied entsprach 1.5 – 2.5 Jahre langsamerem Abbau**

Devore EE, 2012 Ann Neurol
Bild: pixabay, Wikimedia commons GNU GPL

Vitamine & Co.

Studienlage zur Demenzprävention

- Antioxidantien** (ß-Carotin, Vit. C/E, Flavonoide) **uneinheitliche Daten** bisher (u.a. Devore EE 2010, Dunn JE 2007, Press D 2017)
- Vitamin B12** (Cobalamine) **Meta-Analyse (Clarke R 2014, n=22'000): Ø signifikanter Effekt auf Kognition**
- Vitamin D₃** (Cholecalciferol) **Meta-Analyse (37 Studien 2012): niedriger 25OH-Spiegel (<50nmol/L bzw. <20ng/ml) assoziiert mit schlechterer Kognition (Balion C, Neurology); bisher keine kontrollierte Interventionsstudie, (aktuell RCT Rekrutierung: Press Y, NCT02381600)**
- Multivitamin-Präparate** Eine aktuelle RCT (Grodstein F, 2013, n=5947, 65+, FU 12y) und eine Meta-Analyse (Grima NA 2012) konnten **keinen positive Einfluss** auf den Erhalt kognitiver Funktionen nachweisen

Press D & Michael A, 2016
Bild: wakingtimes.com

Was sonst noch diskutiert wird...

Neue Indikationen für bekannte Wirkstoffe?

- NSAR** (Ibuprofen etc.): Gemischte Resultate, vermuteter reduzierender Effekt auf Amyloid-β42, **Dauer, Dosierung und Zeitpunkt unklar** (Eminan M, Sys. Rev. and meta-analysis of observational studies, BMJ 2003; Bretiner JC, Neurology 2009)
- Statine**: HR 0.57 in der Rotterdam Studie (retrospektiv), aktuelle Meta-Analysen zeigten keinen +/- Effekt (Swiger KJ 2013, Statins and Cognition Review; McGuinness B, Statins for the prevention of dementia, Cochrane Database Syst Rev, 2016)
- Hormonersatz bei Frauen**: Nicht empfohlen (ggf. sogar erhöhtes Risiko) (Shumaker SA, Women's Health Initiative Memory Study RCT, JAMA 2003)
- Blutdrucksenker** (u.a. ACE-Hemmer, Sartane): Bisher keine eindeutigen Ergebnisse, ggf. positiver Effekt (Levi Marpillat SO, Network Meta-Analysis, J Hypertens 2013; Saxby BK, Neurology 2008)
- Acetylcholinesterase-Hemmer (Antidementiva)**: Bei MCI bisher nicht belegt (Russ TC, Cochrane Database Syst Rev, 2012; Ströhle A, Systematic Review and Meta-Analysis, n=3'693 patients, Am J Geriatr Psychiatry, 2015)

Bild: fikr, Victor Casale

Welche ist denn jetzt die beste Vorbeugung?

Lehert P, Network Meta-Analysis 2015, 24 RCTs, 11 Interventionen

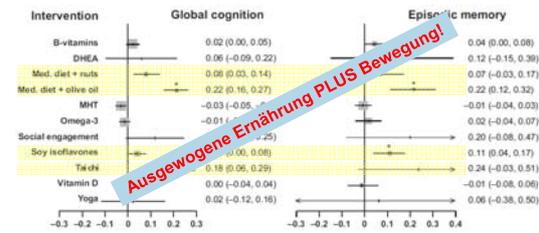
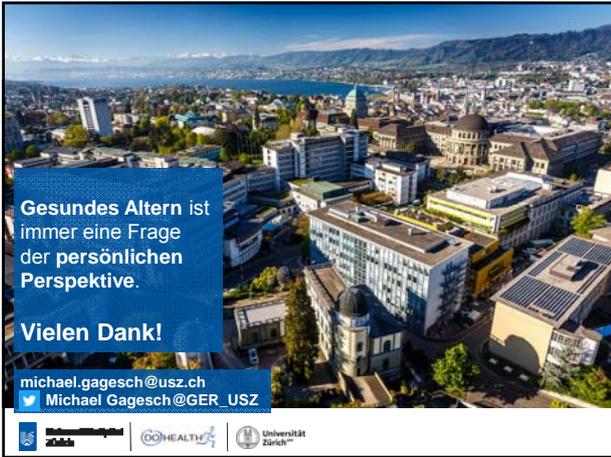


Bild: fikr, Victor Casale



Gesundes Altern ist immer eine Frage der **persönlichen Perspektive**.

Vielen Dank!

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