

Disqualifizierende und Qualifizierende Nährstoffe
als
Wissenschaftliche Grundlage für Nährwertprofile

Christian A. Barth

Inst. f. Ernährungswissenschaft, Universität Potsdam

3. BfR-Forum, Marienfelde

Berlin 23.04.2007

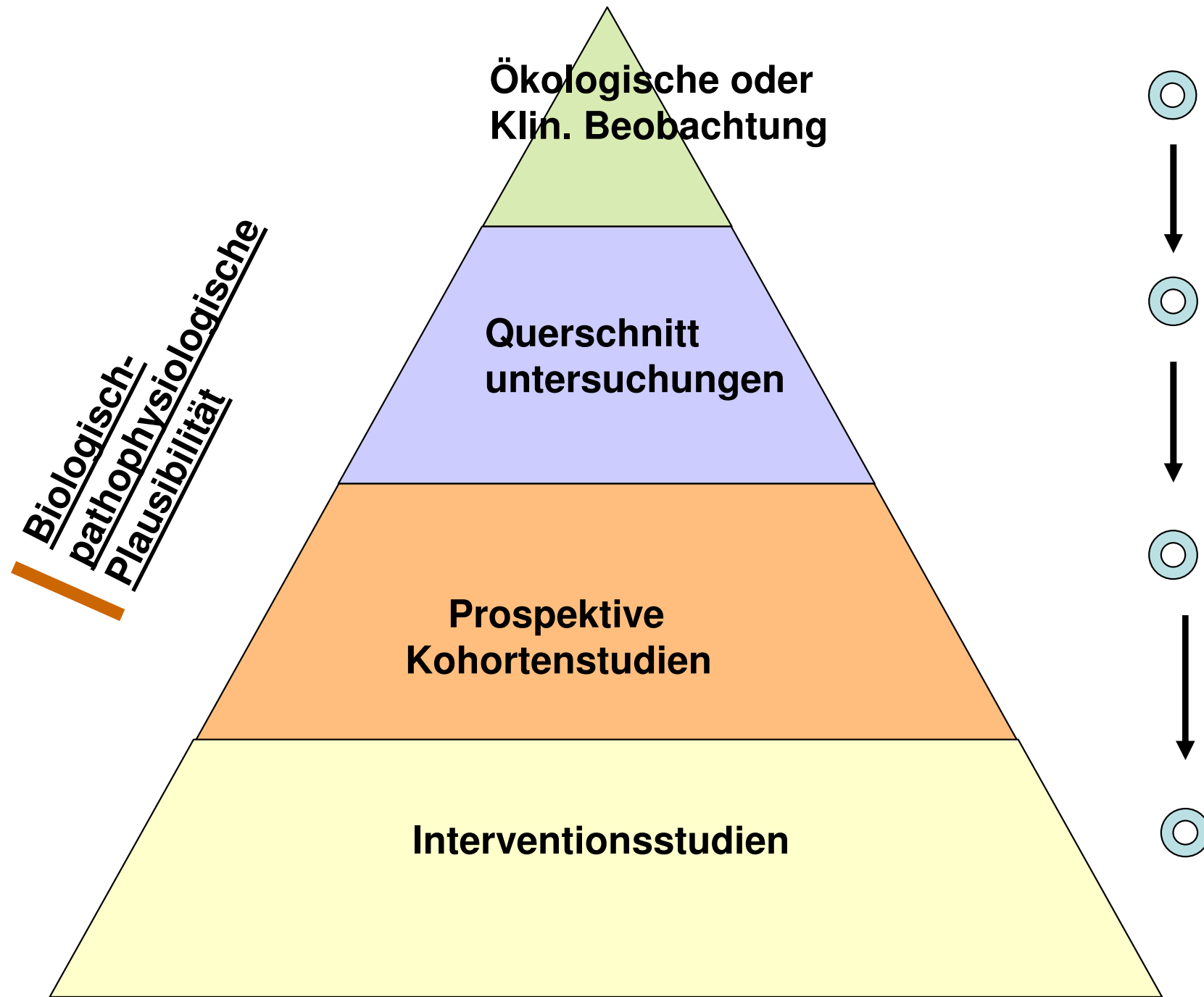
Gliederung

- **Das Problem**
- **Ansatz der Ernährungsmedizin**
- **Stand der Kenntnis (Übergew., Herz-Kreislauf, Karies, Osteoporose, Colon-Ca.)**
- **Zusammenfassung und
Schlussfolgerungen**

Kosten ernährungsabhängiger Krankheiten in Deutschland im Jahre 1990 (Mill. DM)

Herz-Kreislauf-Krankheiten, insges.	32.968
Bösartige Neubildungen, insges.	9.663
Diabetes mellitus	3.829
Gicht	522
<hr/>	
Fettstoffwechselstörungen	1.380
Übergewicht	660
Struma	1.329
<hr/>	
Anämien	287
Alkoholismus	3.559
Karies	20.222
<hr/>	
Darmdivertikel	140
Osteoporose	829
übrige Erkrankungen	8.124
<hr/> <hr/>	
Alle ernährungsab. Krankheiten	83.511

Evidenzstufen der Public Health



Global Strategy on Diet, Physical Activity and Health

Diet, nutrition and the prevention of chronic diseases Report of the joint WHO/FAO expert

consultation WHO Technical Report Series, No. 916 (TRS 916) This report examines the science base of the relationship between diet and physical activity patterns, and the major nutrition-related chronic diseases. Recommendations are made to help prevent death and disability from these diseases. These population nutrient intake and physical activity goals should contribute in the development of regional strategies and national guidelines to reduce the burden of nutrition related diseases: obesity, diabetes, cardiovascular disease, several forms of cancer, osteoporosis and dental disease. The recommendations contained in this report are based on the examination and analysis of the best available evidence and the collective judgement of a group of international experts, brought together by WHO and the UN Food and Agriculture Organization (FAO). The report was formally launched in Rome on 23 April 2003, by WHO Director General Dr Gro Harlem Brundtland, and FAO Director General Jacques Diouf.

Abstufungen der Evidenz , WHO 2003

Überzeugend

Wahrscheinlich

Möglich

Unzureichend

Dietary factor Goal (% of total energy)

Total fat 15--30%

Saturated fatty acids <10%

Polyunsaturated fatty acids (PUFAs) 6--10%

n-6 Polyunsaturated fatty acids (PUFAs) 5--8%

n-3 Polyunsaturated fatty acids (PUFAs) 1--2%

Trans fatty acids <1%

Monounsaturated fatty acids (MUFAs) By difference

Total **carbohydrate** 55--75%

Free **sugars** <10%

Protein 10--15%

Cholesterol <300 mg per day

Sodium chloride (sodium) <5 g per day (<2 g per day)

Fruits and vegetables >400 g per day

Total dietary **fibre** from foods > 25g/ d¹

Non-starch polysaccharides (NSP) from foods > 20g / d²

^{1,2} if >400 g fruit & veg. / d + whole grain

Fettaufnahme ■ und Fettoxidation ■ in 24h bei einem Energieüberschuß von 25%

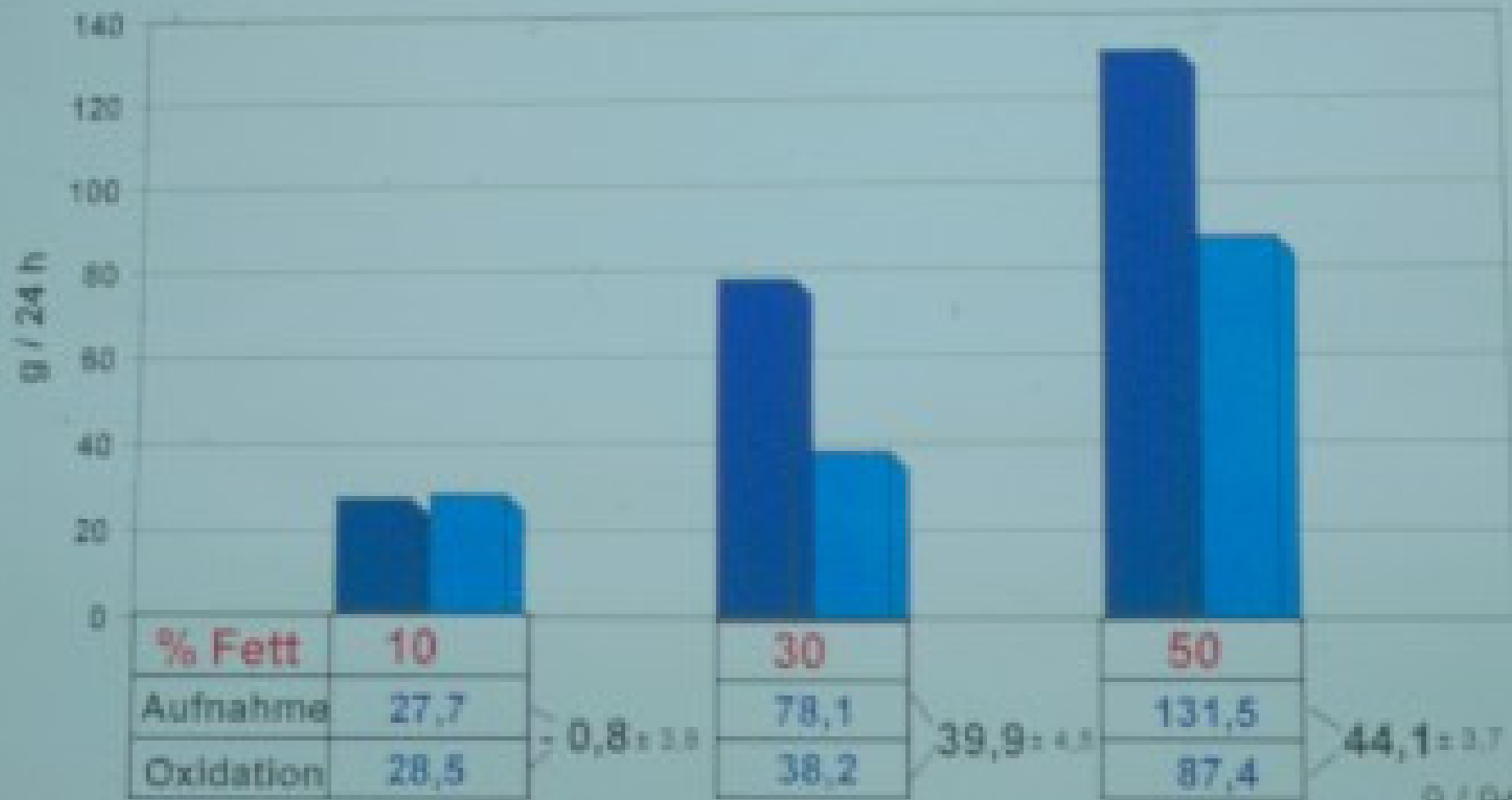


TABLE 1

Effect of variations in food quotient (FQ) on energy and nutrient intake^a

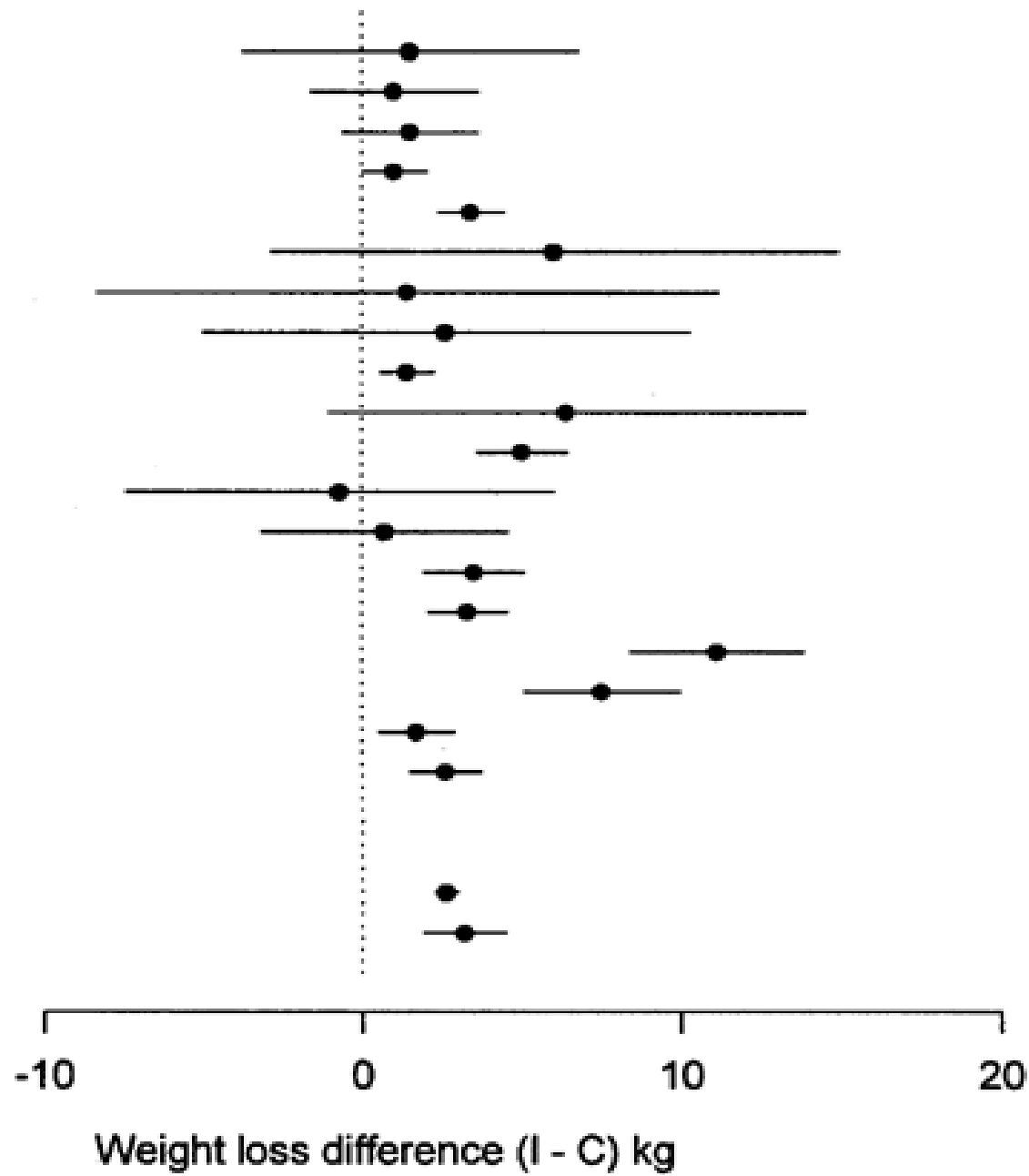
Energy and nutrient intake	FQ < 0.85	FQ > 0.85	Statistical significance
Energy (kcal/d)	4135 ± 484	2987 ± 421	<i>p</i> < 0.01
Protein (g/d)	121.9 ± 13.9	110.6 ± 13.2	NS
Lipid (g/d)	244.7 ± 28.4	73.2 ± 8.4	<i>p</i> < 0.01
Carbohydrate (g/d)	357.9 ± 58.6	488.1 ± 85.8	<i>p</i> < 0.01
FQ	0.81 ± 0.01	0.91 ± 0.02	<i>p</i> < 0.01

^a $\bar{x} \pm SD$. Values from 2 d in each condition in eight subjects.

(Tremblay et al., 1985)

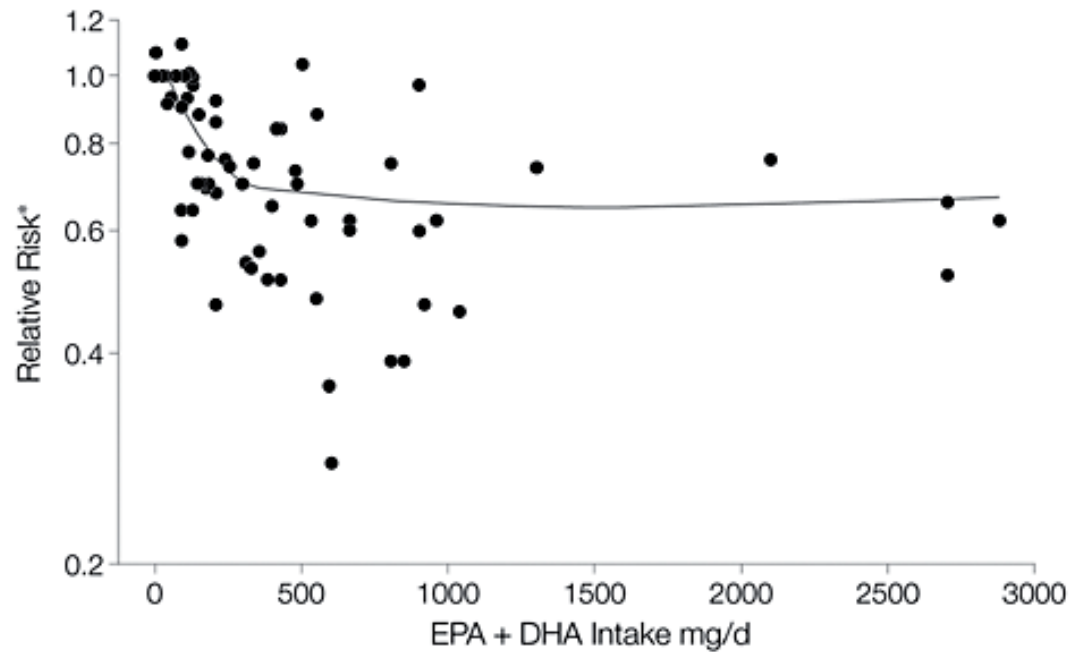
Tremblay 1989

Lee-Han et al. (1988)
 Boyd et al. (1990)
 Buzzard et al. (1990)
 Bloemberg et al. (1991)
 Sheppard et al. (1991)
 Baer (1993)
 Hunninghake et al. (1993)
 Kasim et al. (1993)
 Raben et al. (1995)
 Pritchard et al. (1996)
 Siggaard et al. (1996)
 Simon et al. (1997)
 Weststrate et al. (1998)
 Stefanick et al. F (1998)
 Stefanick et al. M (1998)
 Skov et al. HP (1999)
 Skov et al. LP (1999)
 Saris et al. SCHO (2000)
 Saris et al. CCHO (2000)



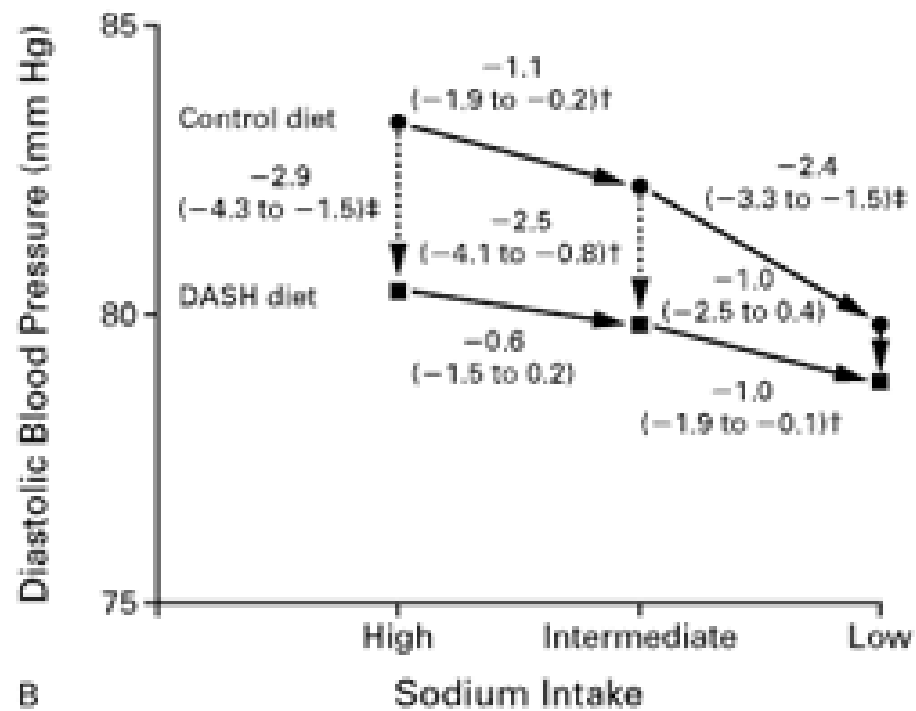
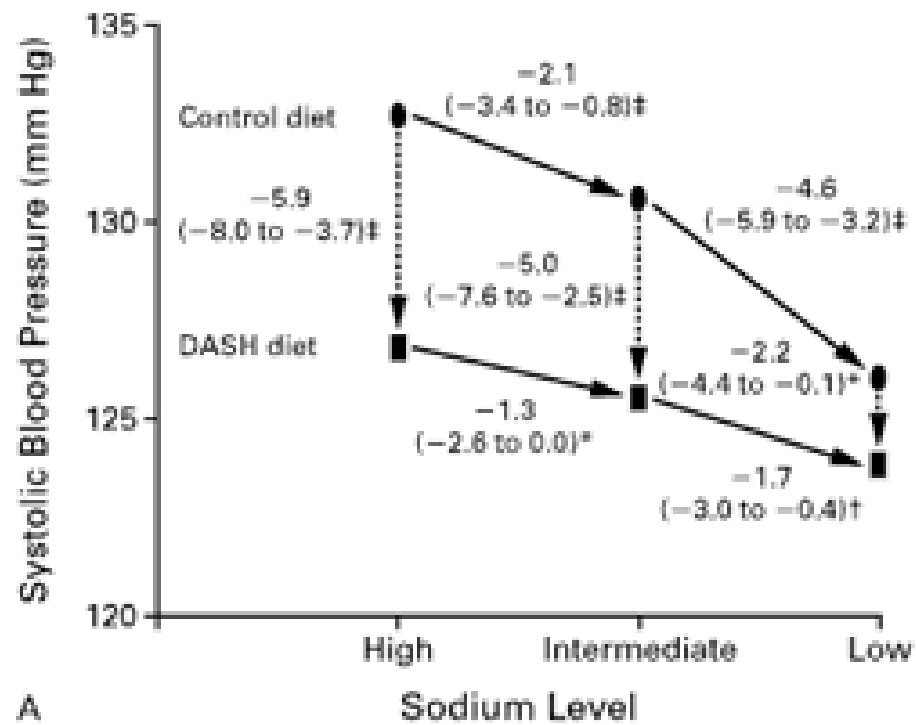
Astrup et al. (2001)

Relationship Between Intake of Fish or Fish Oil and Relative Risks of CHD Death in Prospective Cohort Studies and Randomized Clinical Trials



Mozaffarian, D. et al. JAMA 2006;296:1885-1899.

Erhöhung von	Adipo-sitas	Dia-betes mellitus	Dyslipo-proteinämie	Hyper-tonie	KHK	Schlag-anfall	Krebs
Gesamtfett	↑↑	∞	↑↑↑ ^{1,2}	~	∞	◦	∞
SFA	—	∞	↑↑↑ ¹	∞∞	↑	◦	∞ ↑ ⁶
MUFA	~	∞	↓↓↓	~	◦	∞	∞ ↓ ⁶
PUFA/n-6 FA	~	↓	↓↓↓ ¹	~	↓	∞	∞
langkettigen n-3 PUFA	—	~	↓↓↓ ³	↓↓↓	↓↓↓	↓↓↓ ⁴ ∞∞ ⁵	↓ ⁷
trans-FA	—	~	↑↑↑	—	↑↑↑	◦	~



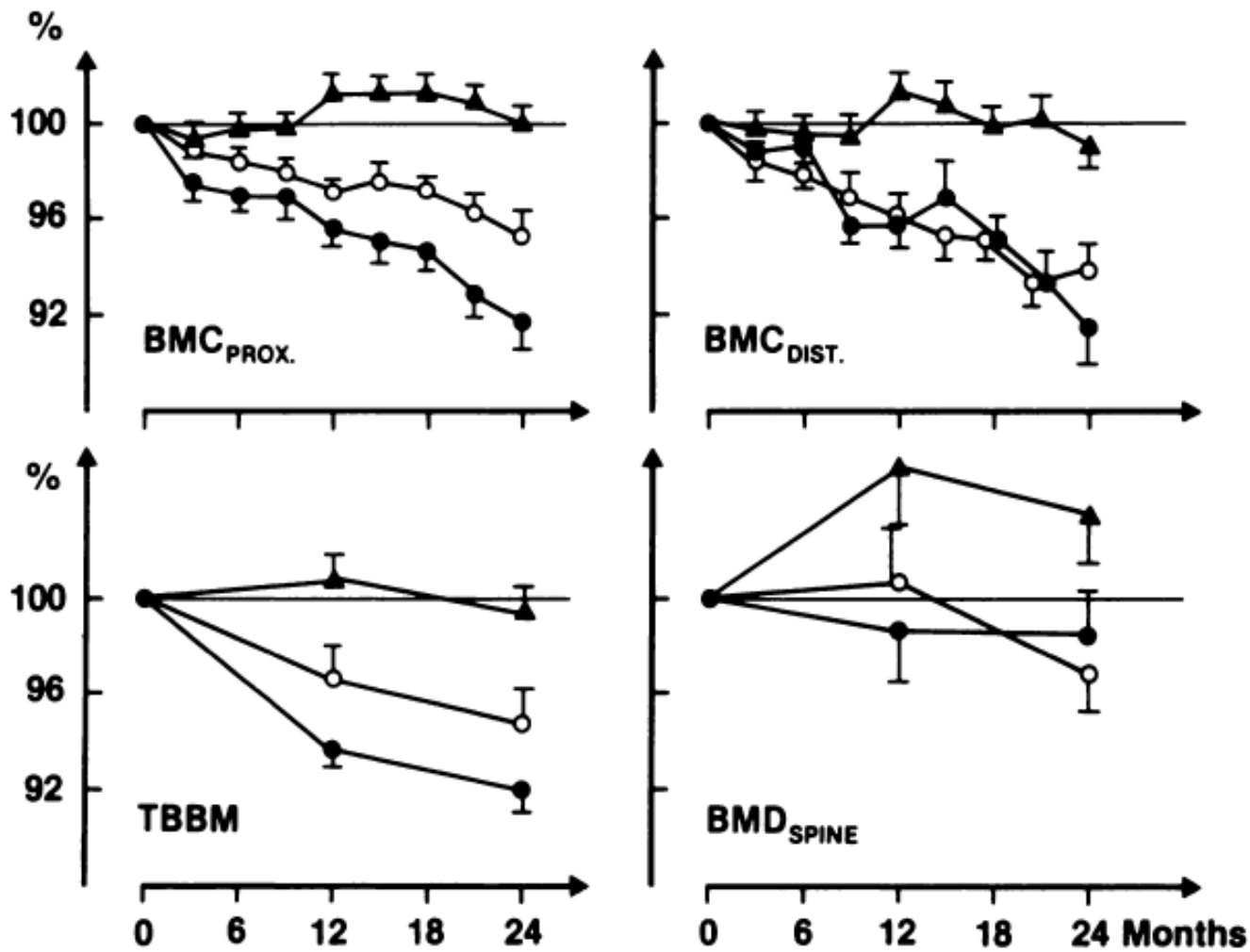
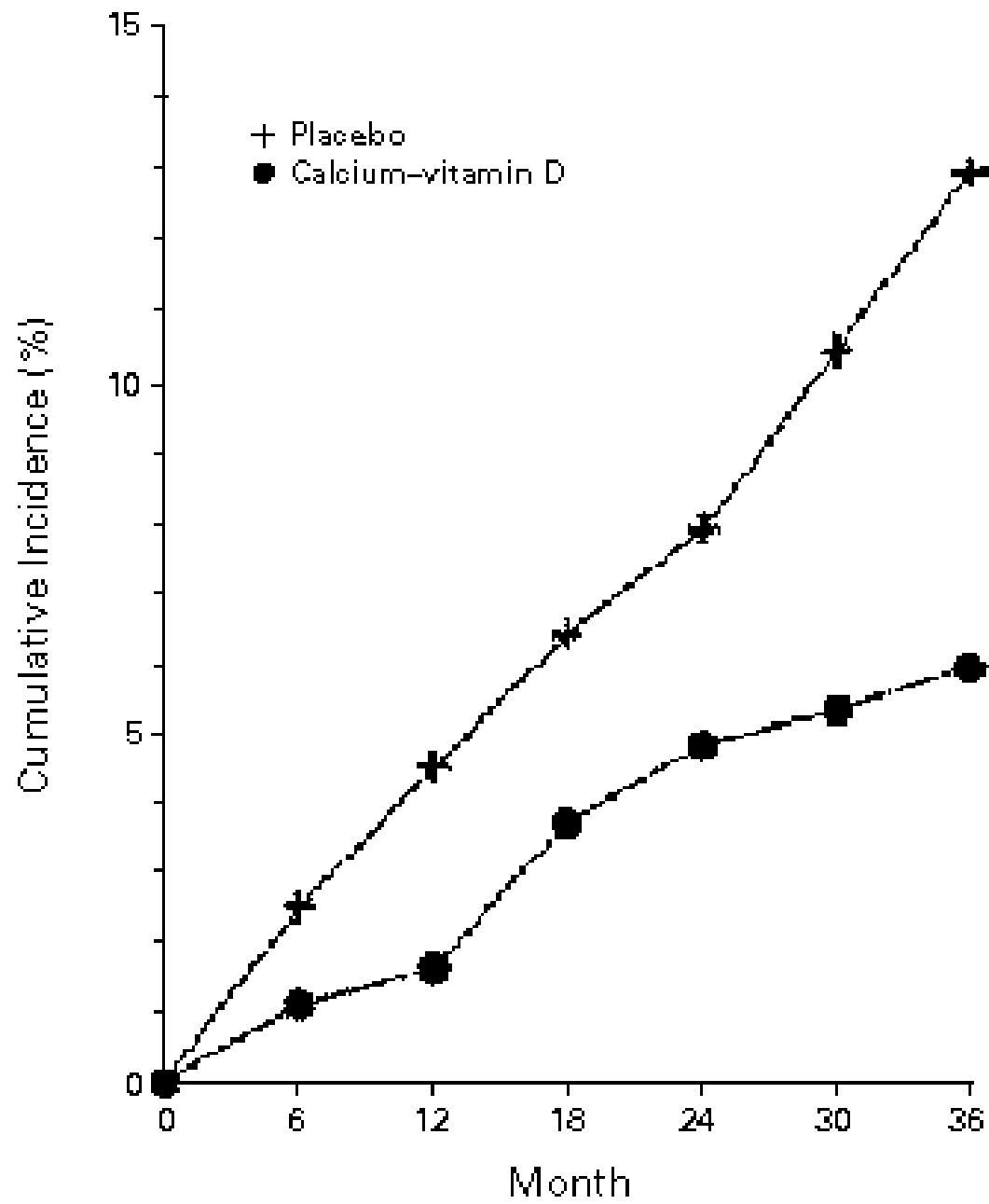
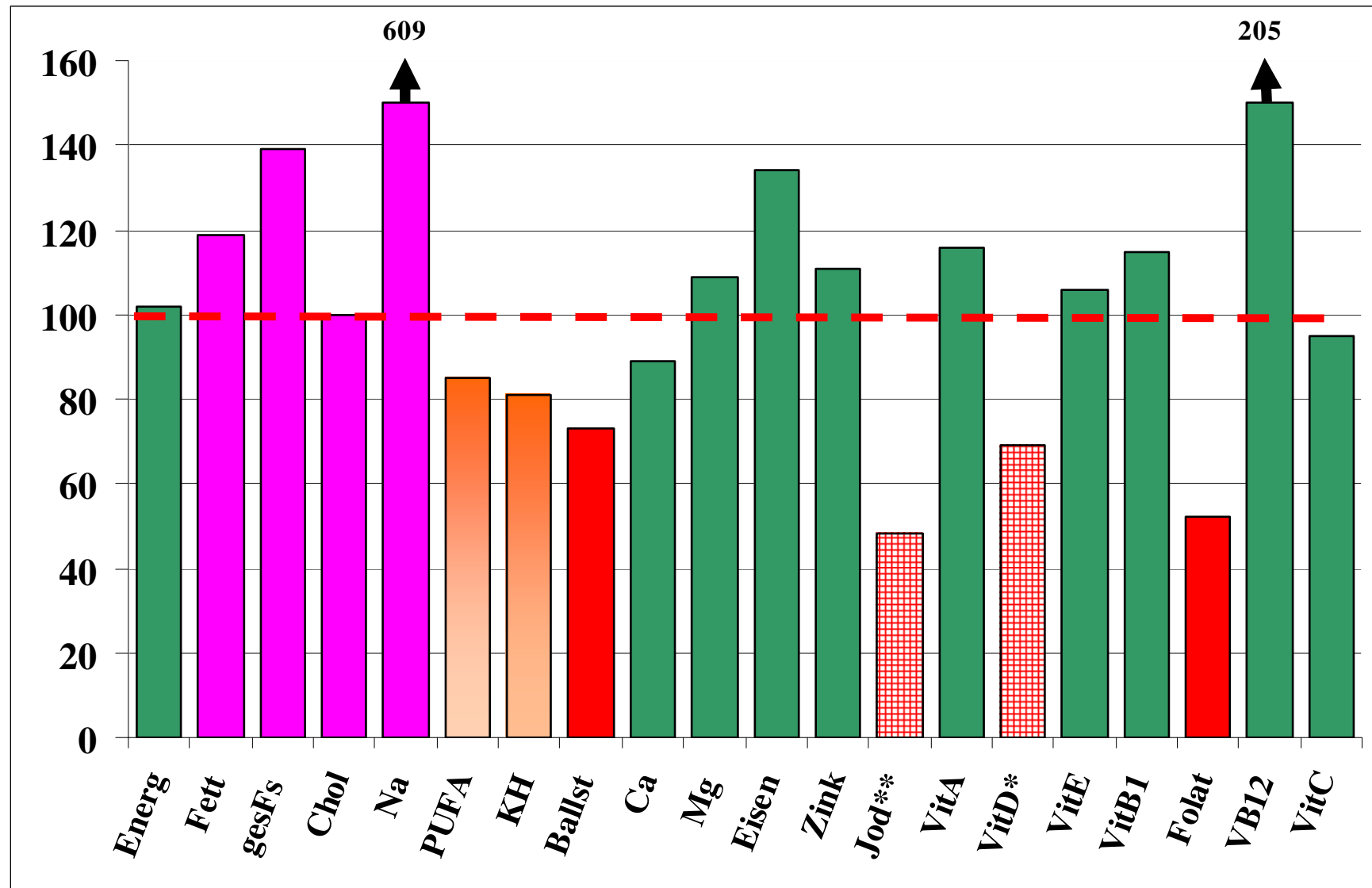


FIG 3. Bone-mass measurements in the groups treated with percutaneous estrogens (▲), calcium (○), and placebo (●). BMC_{prox} and BMC_{dist} denote bone mineral content in the proximal and distal forearm, respectively. TBBM denotes total-body bone mineral, and BMD_{spine} bone mineral density in the lumbar spine. From Riis (58), with permission of the *New England Journal of Medicine*.



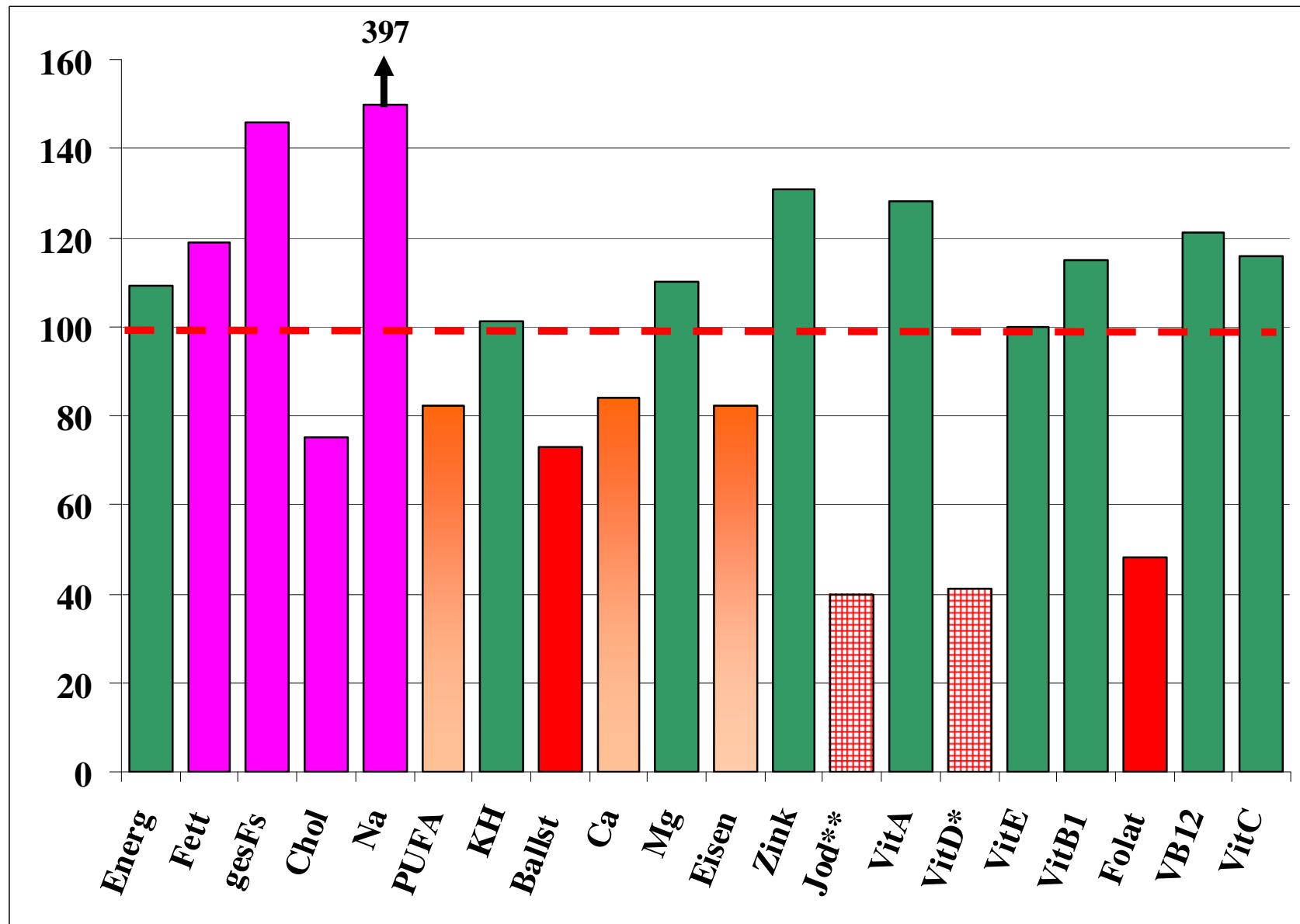
Nährstoffversorgung von Männern 25-<51 J. in % der DACH-Referenzwerte (Ernährungsbericht 2004)

**ohne Eigensynthese durch UV-Bestrahlung; **ohne Zufuhr über Jodsalz*



Nährstoffversorgung von Frauen 19-<25 J. in % der DACH-Referenzwerte (Ernährungsbericht 2004)

**ohne Eigensynthese durch UV-Bestrahlung; **ohne Zufuhr über Jodsalz*



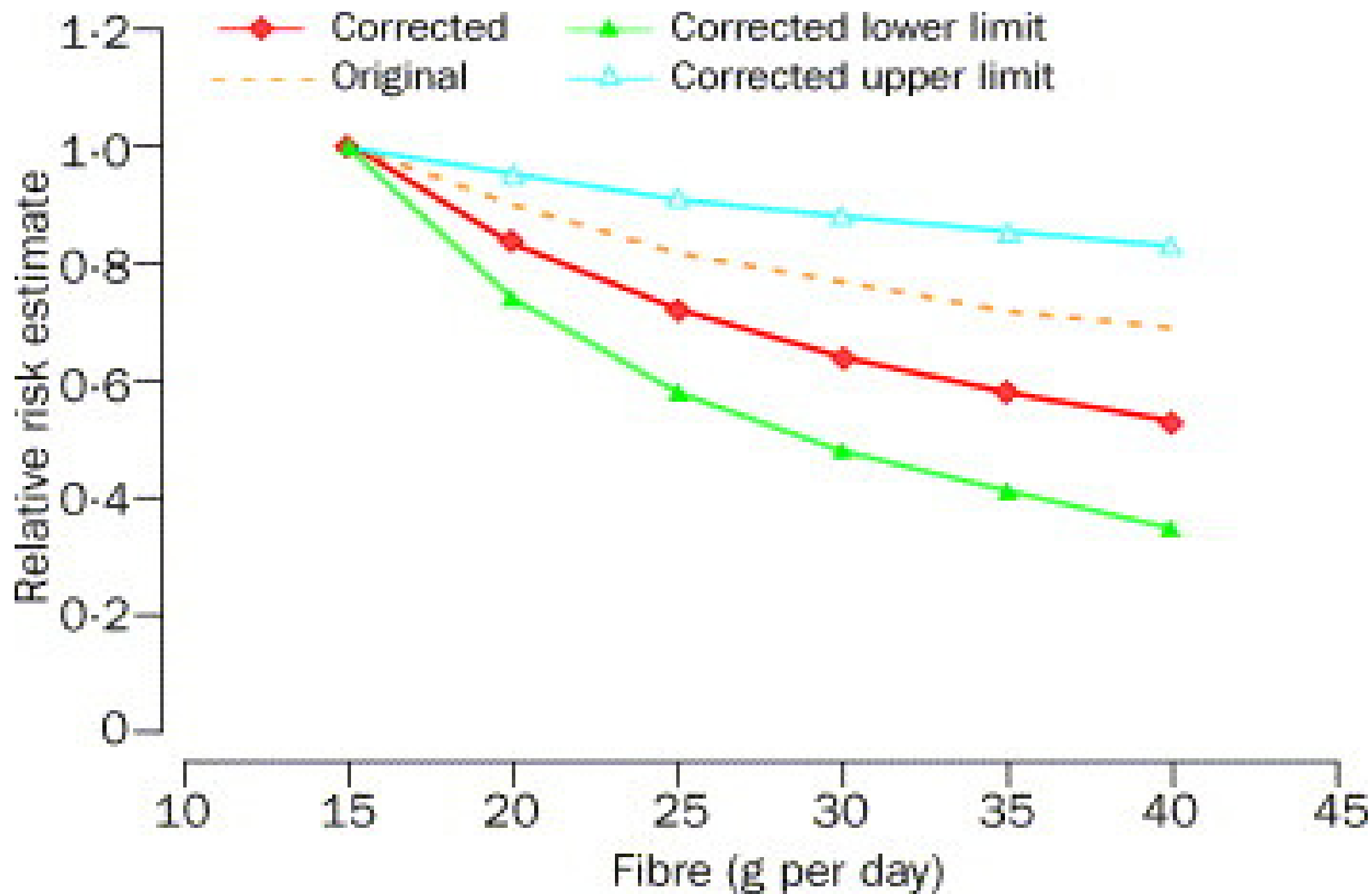
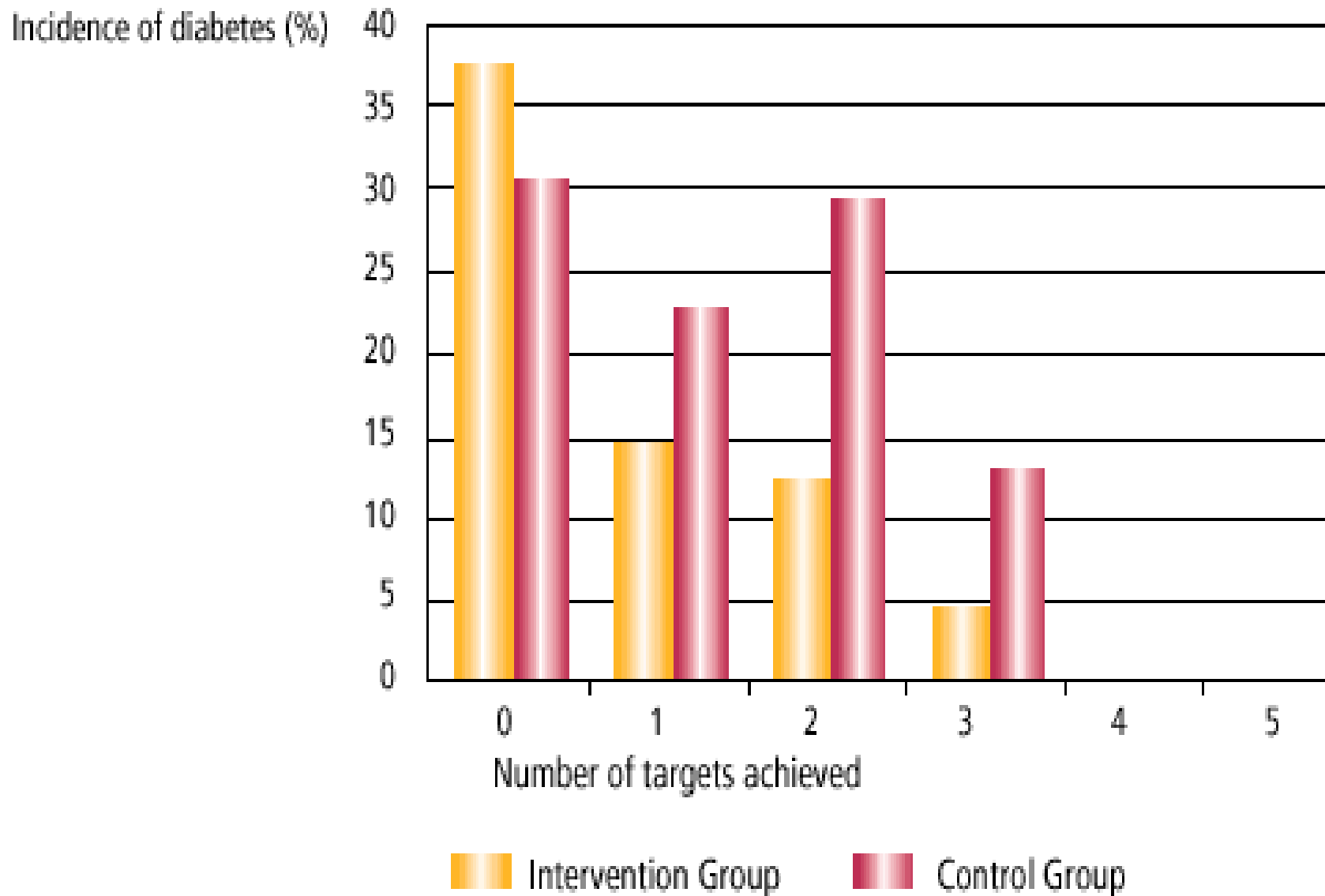


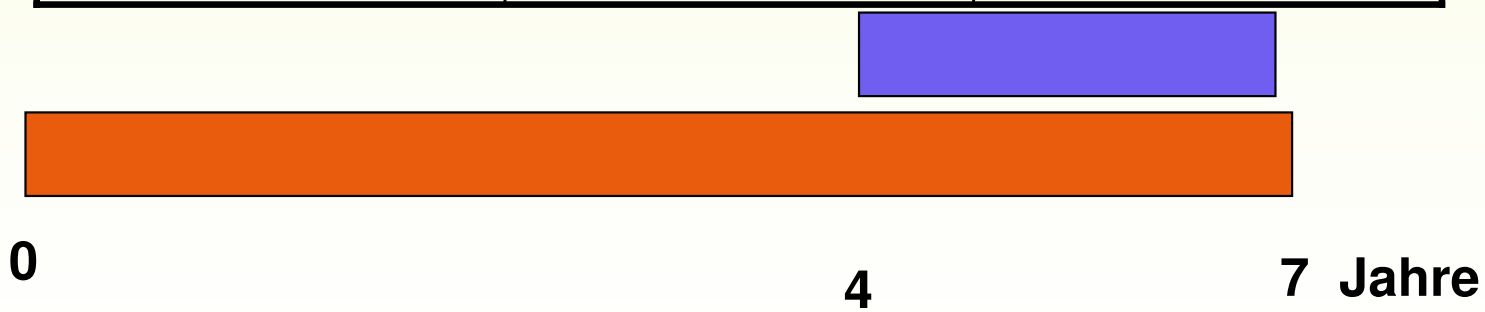
Figure 1. Relative risk for colorectal cancer according to dietary fibre intake

Incidence of diabetes according to the number of targets achieved



Reference: Tuomilehto et al 2001

	Konversion zu Diabetes	
	Personen - Jahre	
Kontrolle	7,4	7,2
Intervention	4,3	4,6
Relatives Risiko (%)	- 43	- 36



RR: New Cases of Gout by Intake of Purine-rich Foods

	Relative Risk/additional daily serving
Total Meat Intake	<u>1.37</u> (1.08-1.58)
Seafood	<u>1.07</u> (1.02-1.12)*
Purine-rich Vegetable	0.95 (0.78-1.16)
Dairy Products	0.79 (0.73-0.86)

* per week

Choi et al 2004)

Conclusions Higher levels of meat and seafood consumption are associated with an increased risk of gout, whereas a higher level of consumption of dairy products is associated with a decreased risk. Moderate intake of purine-rich vegetables or protein is not associated with an increased risk of gout.

Inhaltstoffe

Qualifizierende

N-3 Fettsäuren

Ballaststoffe

Calcium + Vit.D

Folat

Disqualifizierende

Gesamtfett

Ges. Fettsäuren

t-Fettsäuren

Zucker

Kochsalz

Purine

Legenden zu Folien Vortrag Barth

Folie Nummer

7: Empfehlung der WHO (2003) für Nahrungszusammensetzung

C = The term “free sugars” refers to all monosaccharides and disaccharides added to foods by the manufacturer, cook or consumer, plus sugars naturally present in honey, syrups and fruit juices.

8: Noack, Karst, Gerrstmann und Barth (unveröffentlicht)

10: Differences in weight loss (change in intervention minus change in control; kg) with 95% confidence intervals for 19 studies included in meta-analysis.

13: The Effect on Systolic Blood Pressure (Panel A) and Diastolic Blood Pressure (Panel B) of Reduced Sodium Intake and the DASH Diet

14: Calciumsupplementation bewirkt Erhöhung des Mineralstoffgehalts im proximalen Unterarm.

Frauen innerhalb 5 Jahren nach Sistieren der Menses, 1000 mg Calcium habituell. Supplementation mit 2000 mg Ca / d.

15: Cumulative Percentage of All 389 Subjects with a First Nonvertebral Fracture.

Geschlossene Kreise=Supplement mit 17,5 µg Vit D + 500 mg Calcium /d.

19: Prevention of type 2 diabetes mellitus by changes in life-style in subjects with impaired glucose tolerance.

20: Nachhaltige Verhinderung der Diabetesmanifestation bis 7 Jahre, auch 3 Jahre nach Ende der 4-jährigen Lebensstilintervention.

22: Tabellarische Zusammenfassung