

PRÄVENTION BEI KHK: SPORT, MEDIKAMENTE, DIÄT – WAS HILFT AM BESTEN?

**PROF. DR. MED. CHRISTIAN MARC SCHMIED
FACHARZT FÜR KARDIOLOGIE UND FÜR ALLGEMEINE
INNERE MEDIZIN, SPORTARZT SEMS**

DISCLOSURES

Consultancies and advisory board memberships

MSD, Pfizer, BMS, Amgen, Grünenthal, Bayer

Lecture fees and honoraria

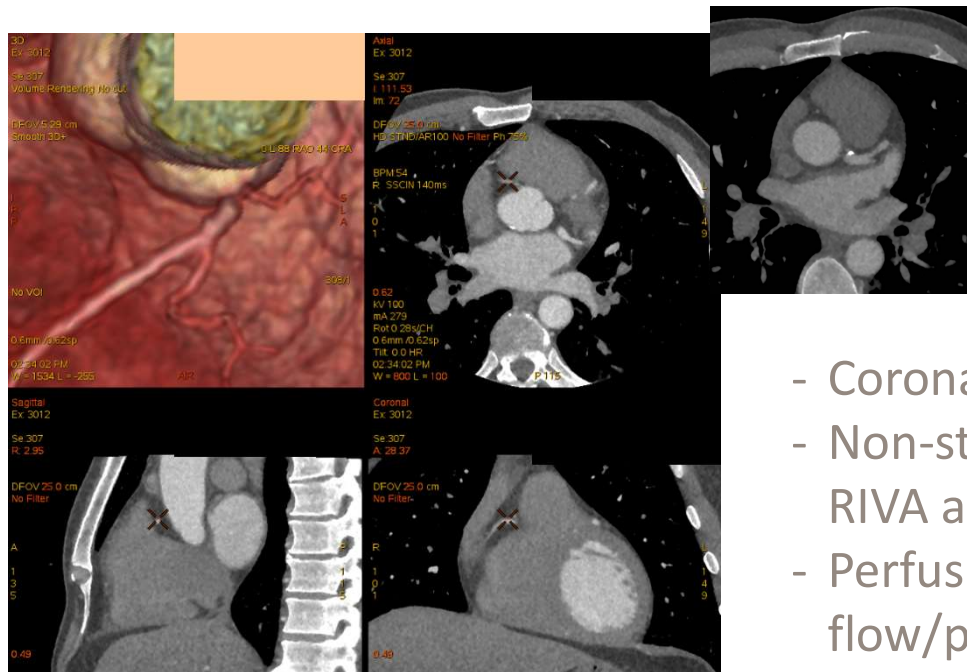
MSD, Pfizer, BMS, Amgen, Sanofi, Servier, Edwards,
Medtronic, Novartis, Daiichi Sankyo

Expert witness for a commercial entity

Boeringer Ingelheim, Astra Zeneca

31 YEAR PRO ATHLETE

Asymptomatic, positive family history (CAD)

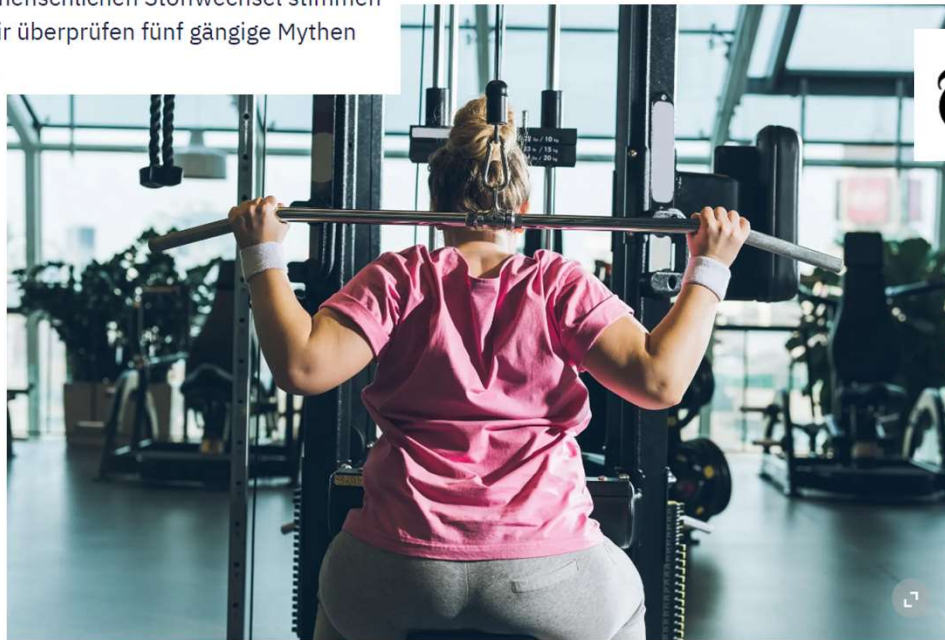


- Coronary calcification
- Non-stenotic coronary sclerosis with LMA, RIVA and Ramus marginalis plaques
- Perfusion-PET: no ischemia. Normal flow/perfusion reserve

Abo Kalorien zählen

Warum Sport nicht schlank macht

Viele populäre Vorstellungen zum menschlichen Stoffwechsel stimmen nur bedingt oder sind gar falsch. Wir überprüfen fünf gängige Mythen mithilfe neuer Forschungsarbeiten.



Sport treiben ist wichtig für die Gesundheit, auf die Gewichtsabnahme hat Sport aber kaum einen Einfluss.

Foto: Getty Images

HIRSLANDEN 
KLINIK LINDE
CLINIQUE DES TILLEULS

TA

SONNTAGSZEITUNG

18.2.2023



HIRSLANDEN 
KLINIK IM PARK

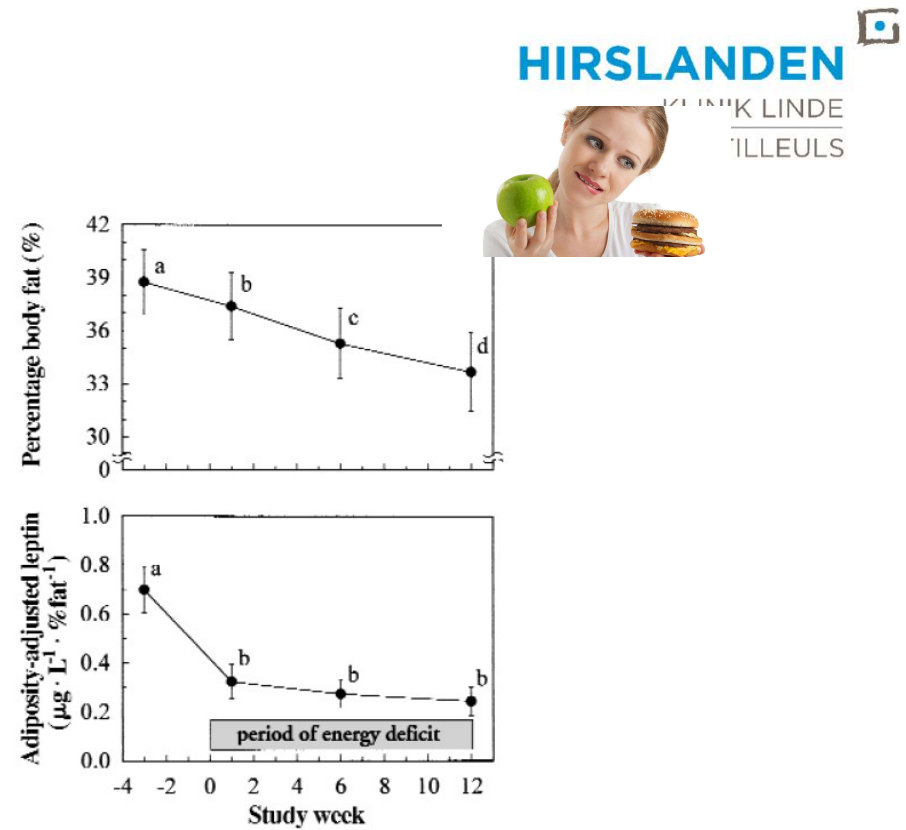
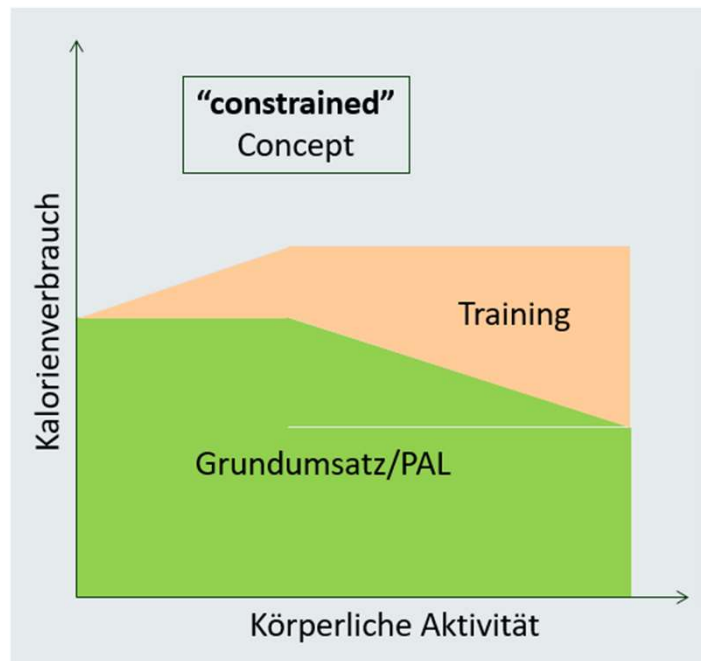
ETH zürich



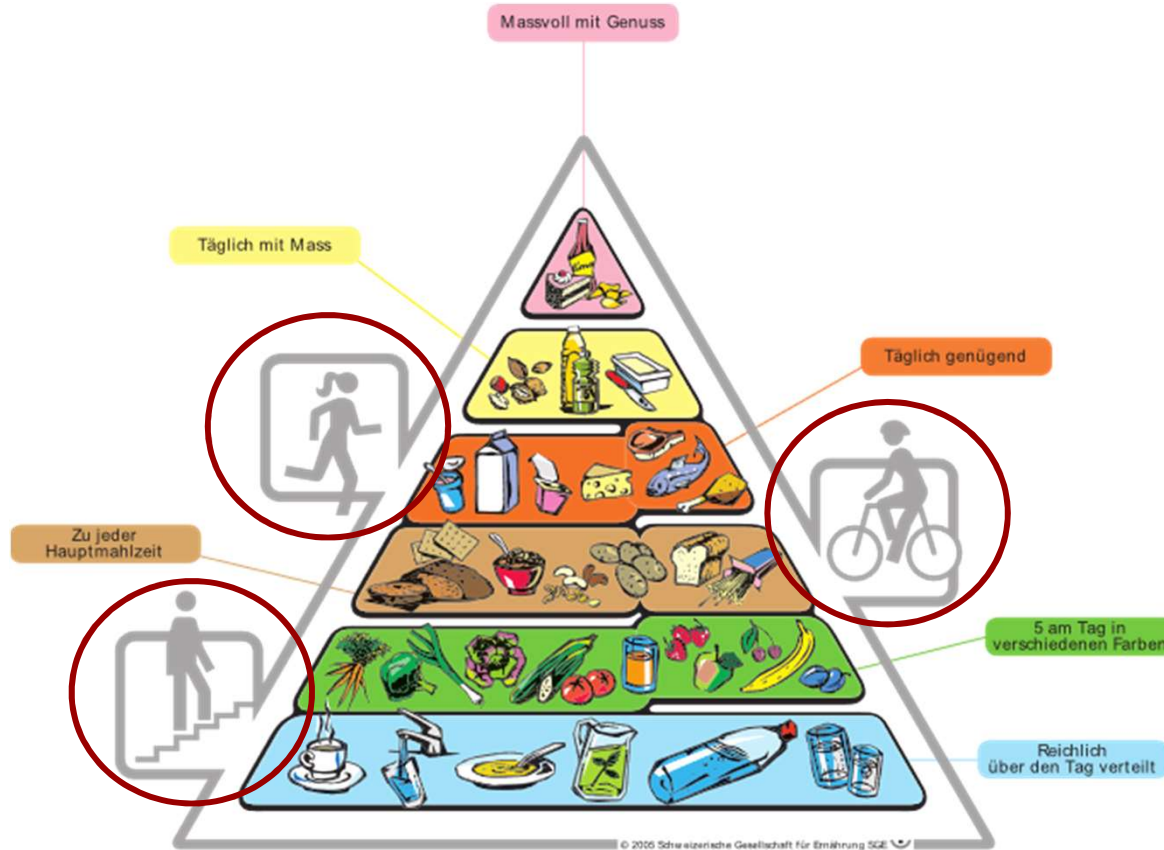
LINDE
TILLEULS **ACADEMY**

Exercise and nutrition

Always go together!

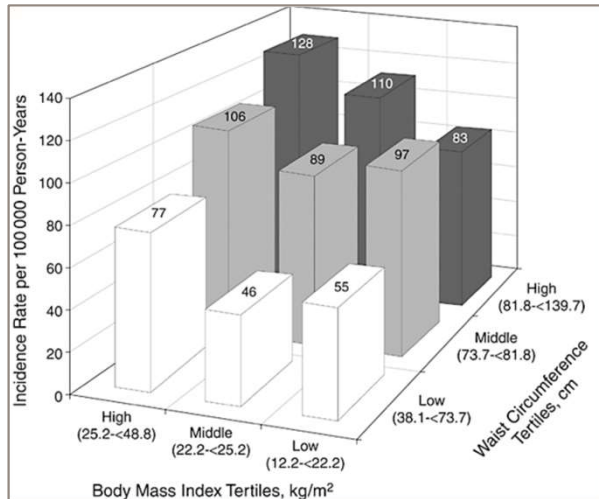


Am J Clin Nutr October 1998 vol. 68 no. 4 794-801

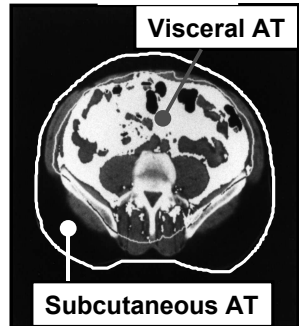


WAIST CIRCUMFERENCE

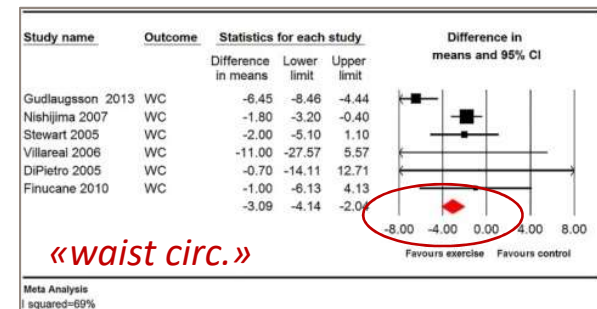
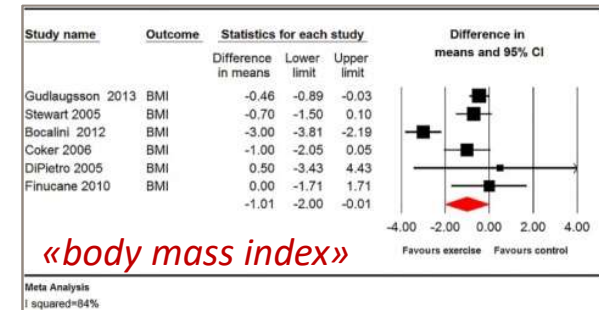
An independent but crucial risk factor



JAMA. 1998 Dec 2;280(21):1843-8.

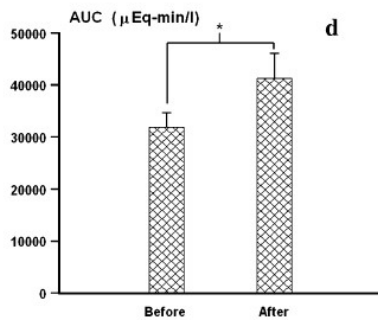
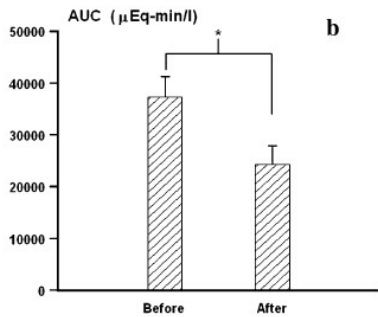


Males <94-102cm
Females <80-88cm



DOES A „FAT BURNING“ ZONE EXIST?

Free Fatty Acids (FFA)

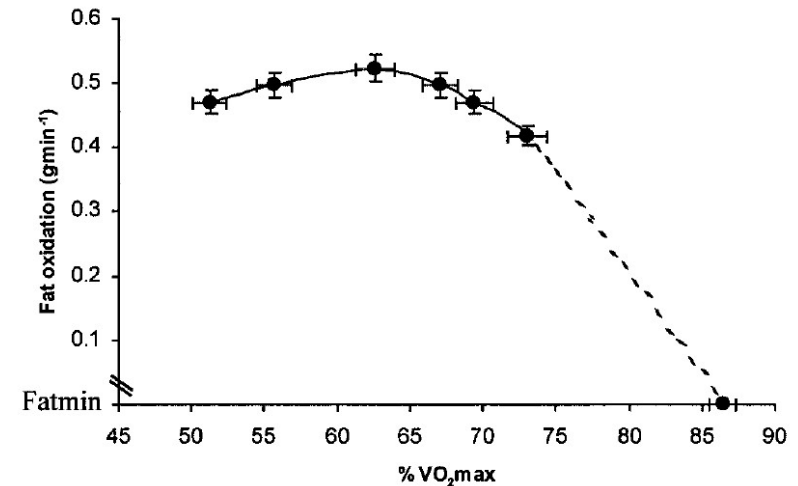
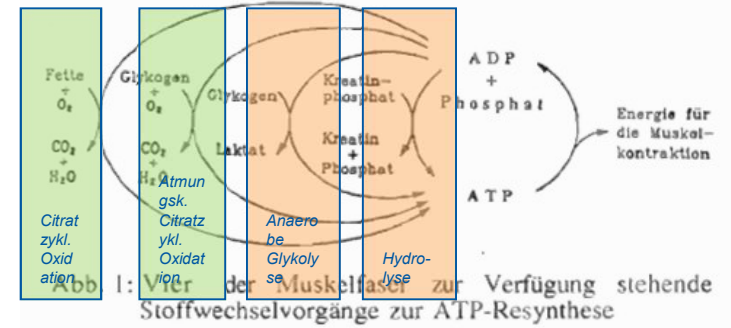


All metabolic pathways work in synchrony!

(Fat burning can occur at rest)

Exercise Program 4 weeks:

- Group A: aerobic cycle workout (2x/day 30 min; 6 days per week)
- Group B: aerobic cycle workout (2x/day 25 min) PLUS 5 min anaerobic workout)



„LIFESTYLE MANAGEMENT“

Recommendations on lifestyle management

| Recommendations | Class ^a | Level ^b |
|--|--------------------|--------------------|
| Improvement of lifestyle factors in addition to appropriate pharmacological management is recommended. ^{119–122,124,148–153} | I | A |
| Cognitive behavioural interventions are recommended to help individuals achieve a healthy lifestyle. ^{181–183} | I | A |
| Exercise-based cardiac rehabilitation is recommended as an effective means for patients with CCS to achieve a healthy lifestyle and manage risk factors. ^{151–153} | I | A |
| Involvement of multidisciplinary healthcare professionals (e.g. cardiologists, GPs, nurses, dieticians, physiotherapists, psychologists, and pharmacists) is recommended. ^{121,123,181,184} | I | A |
| Psychological interventions are recommended to improve symptoms of depression in patients with CCS. ^{126,157} | I | B |
| Annual influenza vaccination is recommended for patients with CCS, especially in the elderly. ^{175,176,178,179,185–187} | I | B |

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Alter
Geschlecht
Familiäre Belastung

nicht beeinflussbar

Dyslipidämie
Diabetes mellitus
Übergewicht/vermehrter Bauchumfang
Rauchen
Sedentarität
Ungesunde Ernährung
Distress
Bluthochdruck

beeinflussbar



Standardised case-control study of acute myocardial infarction in 52 countries (15'152 cases and 14'820 controls)

...in relation (odds ratios/PAR: «population attributable risk») to 9 cardiovascular risk factors:

smoking, hypertension, diabetes, waist/hip ratio, dietary patterns, activity, alcohol consumption, blood apo-lipoproteins, psychological

Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study

THE LANCET

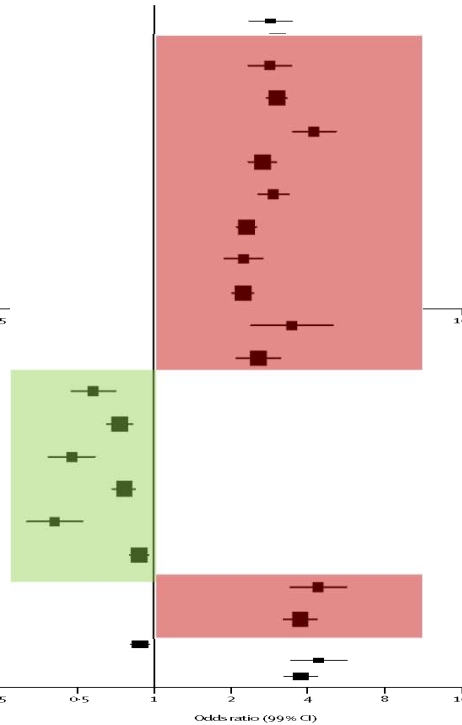
Control of all 9 (influencable) cardiovascular risk factors leads to a reduction of 90 to 94% of all heart attacks.

Pratt, Pois,

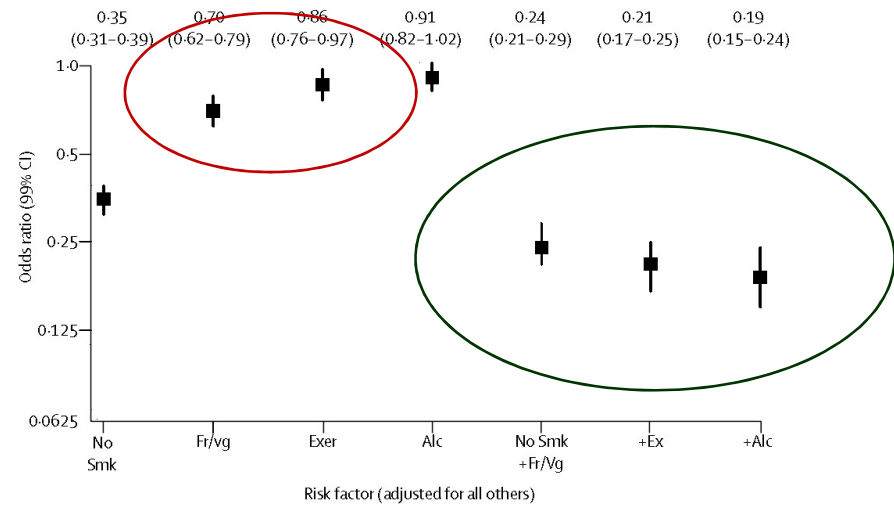
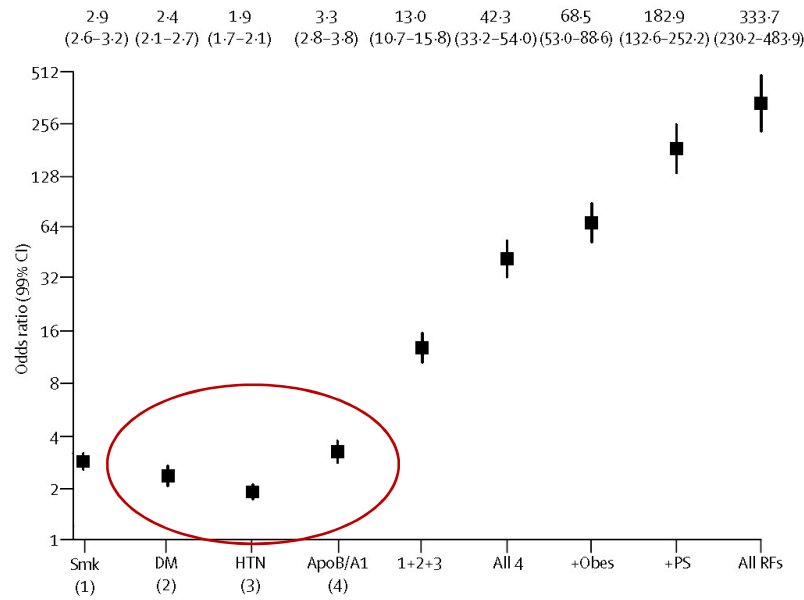
THE INTERHEART STUDY

| Risk factor | Sex | Control (%) | Case (%) | Odds ratio (99% CI) | PAR (99% CI) |
|--------------------|-----|-------------|----------|---------------------|-------------------|
| Current smoking | F | 9.3 | 20.1 | 2.86 (2.36-3.48) | 15.8% (12.9-19.3) |
| | M | 33.0 | 53.1 | 3.05 (2.78-3.33) | 44.0% (40.9-47.2) |
| Diabetes | F | 7.9 | 25.5 | 4.26 (3.51-5.18) | 19.1% (16.8-21.7) |
| | M | 7.4 | 16.2 | 2.67 (2.36-3.02) | 10.1% (8.9-11.4) |
| Hypertension | F | 28.3 | 53.0 | 2.95 (2.57-3.39) | 35.8% (32.1-39.6) |
| | M | 19.7 | 34.6 | 2.32 (2.12-2.53) | 19.5% (17.7-21.5) |
| Abdominal obesity | F | 33.3 | 45.6 | 2.26 (1.90-2.68) | 35.9% (28.9-43.6) |
| | M | 33.3 | 46.5 | 2.24 (2.03-2.47) | 32.1% (28.0-36.5) |
| Psychosocial index | F | - | - | 3.49 (2.41-5.04) | 40.0% (28.6-52.6) |
| | M | - | - | 2.58 (2.11-3.14) | 25.3% (18.2-34.0) |
| Fruits/veg | F | 50.3 | 39.4 | 0.58 (0.48-0.71) | 17.8% (12.9-24.1) |
| | M | 39.6 | 34.7 | 0.74 (0.66-0.83) | 10.3% (6.9-15.2) |
| Exercise | F | 16.5 | 9.3 | 0.48 (0.39-0.59) | 37.3% (26.1-50.0) |
| | M | 20.3 | 15.8 | 0.77 (0.69-0.85) | 22.9% (16.9-30.2) |
| Alcohol | F | 11.2 | 6.3 | 0.41 (0.32-0.53) | 46.9% (34.3-60.0) |
| | M | 29.1 | 29.6 | 0.88 (0.81-0.96) | 10.5% (6.1-17.5) |
| ApoB/ApoA1 ratio | F | 14.1 | 27.0 | 4.42 (3.43-5.70) | 52.1% (44.0-60.2) |
| | M | 21.9 | 35.5 | 3.76 (3.23-4.38) | 53.8% (48.3-59.2) |

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| | M | - | - | 2.58 (2.11-3.14) | 25.3% (18.2-34.0) |
| Fruits/veg | F | 50.3 | 39.4 | 0.58 (0.48-0.71) | 17.8% (12.9-24.1) |
| | M | 39.6 | 34.7 | 0.74 (0.66-0.83) | 10.3% (6.9-15.2) |
| Exercise | F | 16.5 | 9.3 | 0.48 (0.39-0.59) | 37.3% (26.1-50.0) |
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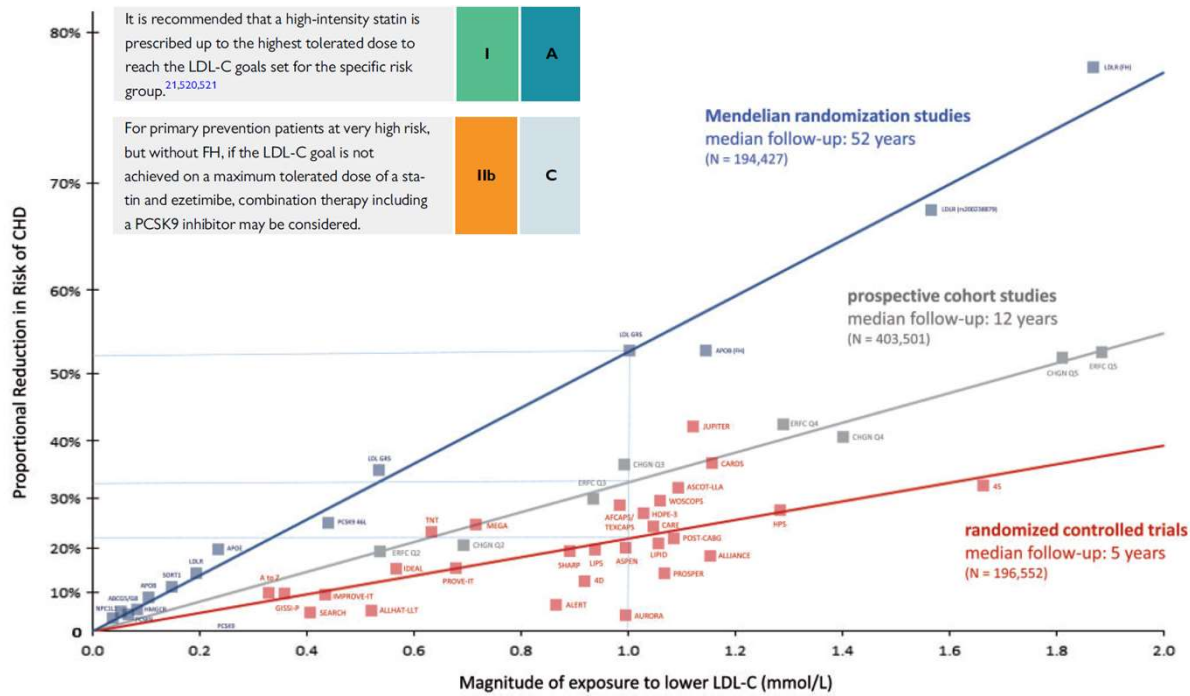
THE INTERHEART STUDY



HYPERCHOLESTEROLEMIA

«The lower, the better»

**LDL-
Cholesterol**



MUSCULAR SIDE EFFECTS OF STATINS

Fact or Fiction?

CTT meta-analysis of the effects of statins on muscle symptoms

Professor Colin Baigent on behalf of the CTT Collaboration
Monday August 29th 2022

ESC CONGRESS 2022
Barcelona & Online

During the first year only about 1 in 15 reported cases of muscle pain or weakness were attributable to statin therapy.

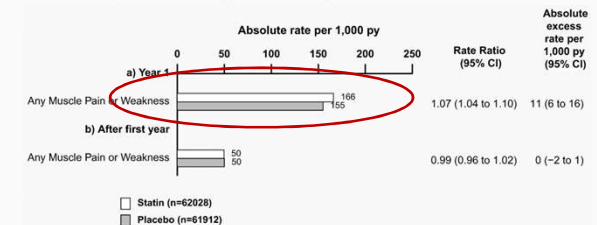
Individual participant data meta-analysis of all recorded muscle symptoms in large-scale randomised blinded double-blind trials of statin therapy. **Data from 23 trials from the Cholesterol Treatment Trialists' (CTT) Collaboration (155,000 patients)**

Effect on muscle adverse events in trials of any statin regimen vs placebo

| Endpoint | Events (%) | | Observed (O)-Expected (E) | | Rate Ratio (95% or 99% CI) |
|------------------------------------|---------------------|---------------------|---------------------------|---------------|----------------------------|
| | Statin (n=62028) | Placebo (n=61912) | O-E | Var(O-E) | |
| Myalgia | 7446 (12.0) | 7269 (11.7) | 120.1 | 3657.4 | 1.03 (0.99 - 1.07) |
| Limb Pain | 1850 (3.0) | 1836 (3.0) | 3.6 | 921.3 | 1.00 (0.92 - 1.09) |
| Other Musculoskeletal Pain | 8245 (13.3) | 8037 (13.0) | 131.3 | 4066.1 | 1.03 (0.99 - 1.07) |
| Muscle Cramp/Spasm | 1697 (2.7) | 1553 (2.5) | 71.2 | 812.4 | 1.09 (1.00 - 1.19) |
| Any Muscle Pain | 16556 (26.8) | 16281 (26.3) | 274.8 | 8206.8 | 1.03 (1.01 - 1.05) |
| Muscle Fatigue/Weakness | 445 (0.7) | 406 (0.7) | 19.4 | 212.7 | 1.10 (0.92 - 1.31) |
| Any Muscle Pain or Weakness | 16835 (27.1) | 16446 (26.6) | 283.1 | 8292.7 | 1.03 (1.01 - 1.05) |

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Relative and absolute rate differences for muscle pain or weakness, by duration of treatment, in trials of any statin regimen vs placebo



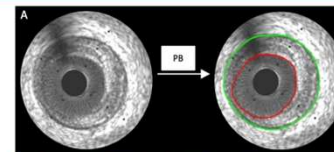
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CORONARY PLAQUE MODIFICATION

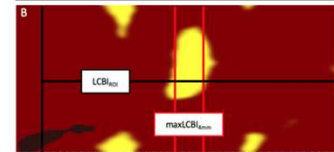
Lessons from Glagov, huygens, pacman

| Drug | CLINICAL | | INTRACORONARY IMAGING | |
|--------------------------------|--------------------|------------------------------|-------------------------|---------------------------|
| | CV Event Reduction | Limitation | Plaque burden Reduction | Plaque composition change |
| Antithrombotics (P2Y12, NOACs) | + | Bleeding | NA | NA |
| PCSK9i | ++ | Cost | + | + |
| Inclisaran | - | Cost | - | - |
| Anti-inflammatory | + | Infections/side effects/cost | - | - |

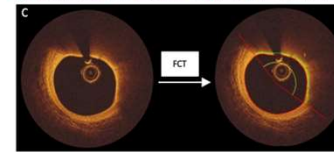
IVUS



NIRS



OCT



Change in percent atheroma volume

Mean change in percent atheroma volume was -2.13% with alirocumab vs -0.92% with placebo (difference, -1.21% [95% CI, -1.78% to -0.65%], $P < .001$).

Change in lipid core burden index

Mean change in maximum lipid core burden index within 4 mm was -79.42 with alirocumab vs -37.60 with placebo (difference, -41.24 [95% CI, -70.71 to -11.77]; $P = .006$).

Change in minimal cap thickness

Mean change in minimal fibrous cap thickness was 62.67 μm with alirocumab vs 33.19 μm with placebo (difference, 29.65 μm [95% CI, 11.75-47.55]; $P = .001$).

SGLT2-I UND GLP-1 AGONISTS

New fountains of youth?

Hollywood-Stars schwören auf Ozempic. Doch die Spritze hat viele Nebenwirkungen. ... bild: shutterstock



Anita* nahm dank Ozempic 20 Kilo ab – doch die Spritze birgt Gefahren

Tabelle 1: Vorteile der GLP-1-Rezeptor-Agonisten und SGLT2-Hemmer.

| Vorteil | GLP-1-RA | SGLT2-Hemmer |
|---------------------------------------|----------|--------------|
| Reduktion 3-Punkte-MACE | + | + |
| Nephroprotektion | + | ++ |
| Reduktion Schlaganfälle | + | - |
| Verzögerung/Therapie Herzinsuffizienz | - | + |
| Gewichtsverlust | ++ | + |
| Perorale Gabe | + | + |

GLP-1-RA: «Glucagon-like peptide-1»-Rezeptor-Agonisten; SGLT2: «sodium-glucose cotransporter 2»; MACE: «major adverse cardiovascular events» (schwere kardiovaskuläre Komplikationen).



GLP-1 receptor agonists

Effects on CV outcomes
(HR; 95%CI)

- MACE 0.86 (0.80 to 0.93)
- MI 0.90 (0.83 to 0.98)
- Stroke 0.83 (0.76 to 0.92)
- CV death 0.87 (0.80 to 0.94)

Effects on risk factors

glucose weight blood pressure

HbA1c ~ 1.5% - 4% - 3 mmHg

Side effects

- GI side effect
- Local reaction at injection site
- Use with caution in patients with history of pancreatitis

Patient profile

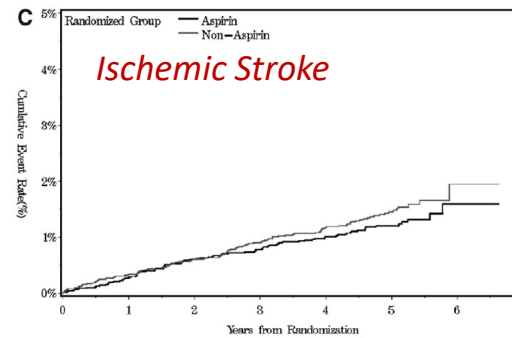
- ASCVD
- Overweight / obese
- High risk of stroke

Treatments aspects

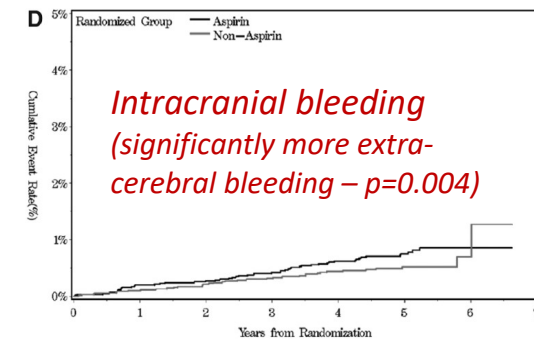
- Start with low dose
- Increase dose slowly
- Use ≤ 32 gauge needle
- Adjust insulin / SU dose
- Recommend small meals

ASPIRIN IN PRIMARY PREVENTION

| Recommendations | Class ^a | Level ^b |
|--|--------------------|--------------------|
| Aspirin 75 - 100 mg daily is recommended for secondary prevention of CVD. ⁶¹⁹ | I | A |
| In patients with DM at high or very high CVD risk, low-dose aspirin may be considered for primary prevention in the absence of clear contraindications. ^{5,624,625} | IIb | A |
| Antiplatelet therapy is not recommended in individuals with low/moderate CV risk due to the increased risk of major bleeding. ^{624,626-630} | III | A |



Ikeda Y, et al. Low-dose aspirin for primary prevention of cardiovascular events in Japanese patients 60 years or older with atherosclerotic risk factors: a randomized clinical trial. *Stroke*. 2016;47:1605-1611



PSYCHOLOGICAL DISORDERS

An underestimated cardiovascular risk factor

| Risk factor | Prevalence | | Odds ratio (99% CI) adjusted for age, sex, and smoking (OR 1) | PAR (99% CI) | Odds ratio (99% CI) adjusted additionally for all other risk factors (OR 2) | PAR 2 (99% CI) |
|----------------------------------|--------------|-----------|---|-------------------|---|-------------------|
| | Controls (%) | Cases (%) | | | | |
| Current smoking* | 26.76 | 45.17 | 2.95 (2.72-3.20) | - | 2.87 (2.58-3.19) | - |
| Current and former smoking* | 48.12 | 65.19 | 2.27 (2.11-2.44) | 36.4% (33.9-39.0) | 2.04 (1.86-2.25) | 35.7% (32.5-39.1) |
| Diabetes | 7.52 | 18.45 | 3.08 (2.77-3.42) | 12.3% (11.2-13.5) | 2.37 (2.07-2.71) | 9.9% (8.5-11.5) |
| Hypertension | 21.91 | 39.02 | 2.48 (2.30-2.68) | 23.4% (21.7-25.1) | 1.91 (1.74-2.10) | 17.9% (15.7-20.4) |
| Abdominal obesity (2 vs 1)† | 33.40 | 30.21 | 1.36 (1.24-1.48) | - | 1.12 (1.01-1.25) | - |
| Abdominal obesity (3 vs 1)† | 33.32 | 46.31 | 2.24 (2.06-2.45) | 33.7% (30.2-37.4) | 1.62 (1.45-1.80) | 20.1% (15.3-26.0) |
| All psychosocial‡ | - | - | 2.51 (2.15-2.93) | 28.8% (22.6-35.8) | 2.67 (2.21-3.22) | 32.5% (25.1-40.8) |
| Vegetables and fruit daily* | 42.36 | 35.79 | 0.70 (0.64-0.77) | 12.9% (10.0-16.6) | 0.70 (0.62-0.79) | 13.7% (9.9-18.6) |
| Exercise* | 19.28 | 14.27 | 0.72 (0.65-0.79) | 25.5% (20.1-31.8) | 0.86 (0.76-0.97) | 12.2% (5.5-25.1) |
| Alcohol intake* | 24.45 | 24.01 | 0.79 (0.73-0.86) | 13.9% (9.3-20.2) | 0.91 (0.82-1.02) | 6.7% (2.0-20.2) |
| ApoB/ApoA1 ratio (2 vs 1)§ | 19.99 | 14.26 | 1.47 (1.28-1.68) | - | 1.42 (1.22-1.65) | - |
| ApoB/ApoA1 ratio (3 vs 1)§ | 20.02 | 18.05 | 2.00 (1.74-2.29) | - | 1.84 (1.58-2.13) | - |
| ApoB/ApoA1 ratio (4 vs 1)§ | 19.99 | 24.22 | 2.72 (2.38-3.10) | - | 2.41 (2.09-2.79) | - |
| ApoB/ApoA1 ratio (5 vs 1)§ | 20.00 | 33.49 | 3.87 (3.39-4.42) | 54.1% (49.6-58.6) | 3.25 (2.81-3.76) | 49.2% (43.8-54.5) |
| All above risk factors combined¶ | - | - | 129.20 (90.24-184.99) | 90.4% (88.1-92.4) | 129.20 (90.24-184.99) | 90.4% (88.1-92.4) |

Lancet 2004;364:937-52

Increased risk and worse prognosis:

- Depression **RR 1.6 to 1.9**
- Panic- and anxiety disorders **RR 4.2 bzw. 1.3**
- Schizophrenia: **1.5 times increased risk for cardiovascular disease**

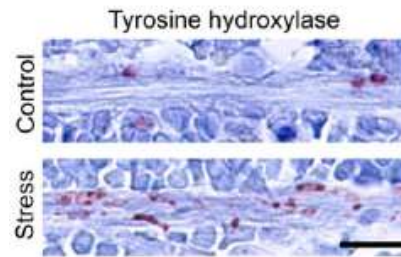
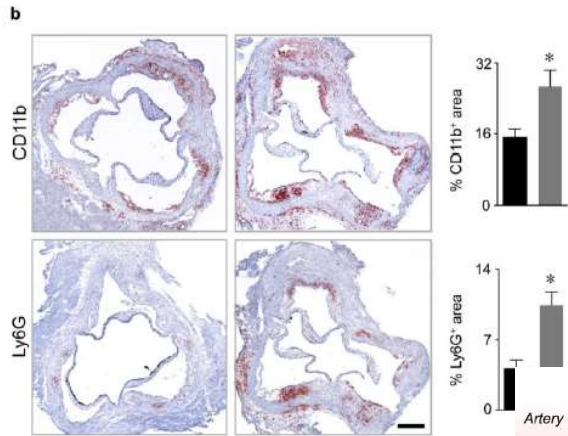
Caveat: Depression is an independant risk factor for (cardiac) medication malcompliance (risk doubled!)

| Recommendations for psychosocial factors | | | |
|--|--------------------|--------------------|------------------|
| Recommendations | Class ^a | Level ^b | Ref ^c |
| Multimodal behavioural interventions, integrating health education, physical exercise and psychological therapy, for psychosocial risk factors and coping with illness are recommended in patients with established CVD and psychosocial symptoms in order to improve psychosocial health. | I | A | 242 |
| Referral for psychotherapy, medication or collaborative care should be considered in the case of clinically significant symptoms of depression, anxiety or hostility. | IIa | A | 243, 244 |
| Treatment of psychosocial risk factors with the aim of preventing CAD should be considered when the risk factor itself is a diagnosable disorder (e.g. depression) or when the factor worsens classical risk factors. | IIa | B | 245, 246 |

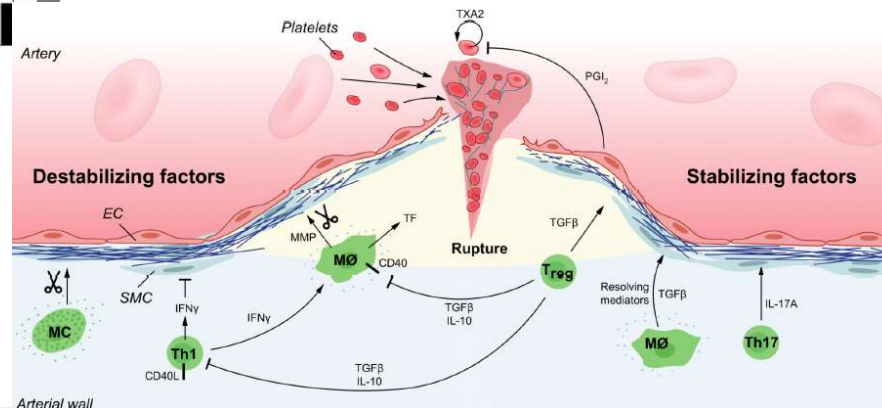
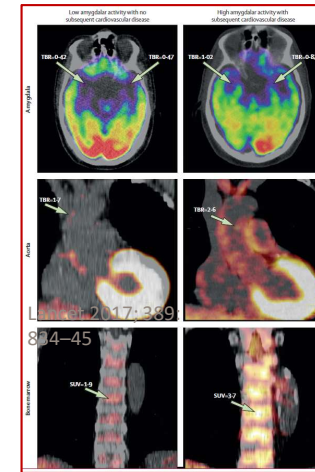
CAD = coronary artery disease; CVD = cardiovascular disease.
^aClass of recommendation.
^bLevel of evidence.
^cReference(s) supporting recommendations.

(NEGATIVE) STRESS

...prompts coronary sclerosis



Stress leads to inflammation through activation of the bone marrow (e.g. IL-6)



PREVENTIVE PHYSICAL ACTIVITY



Mild:

Slow walking, easy work <75 Watt/3-4 METS, <4 kcal/min, <54% Hfmax.



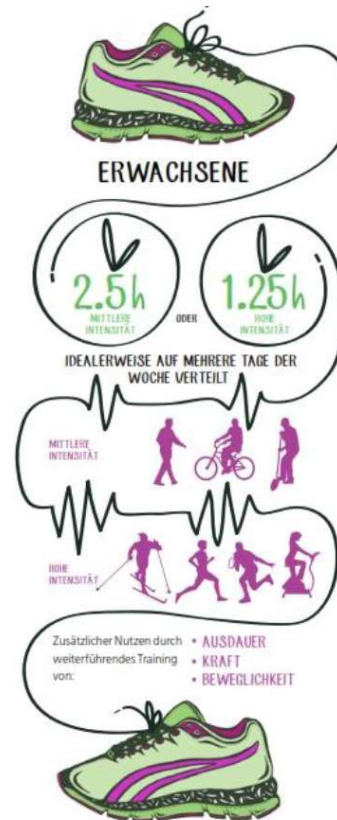
Moderate:

Brisk walking, „Velotour“, harder work at home and garden, „slightly out of breath“, mild sweating 75-100 Watt/4-6 METS, 4-7kcal/min, 55-68% HFmax.



Intensive:

Sweating, no regular verbal conversation >100 Watt/ab 6 METS, >7 kcal/min, >70% HFmax.

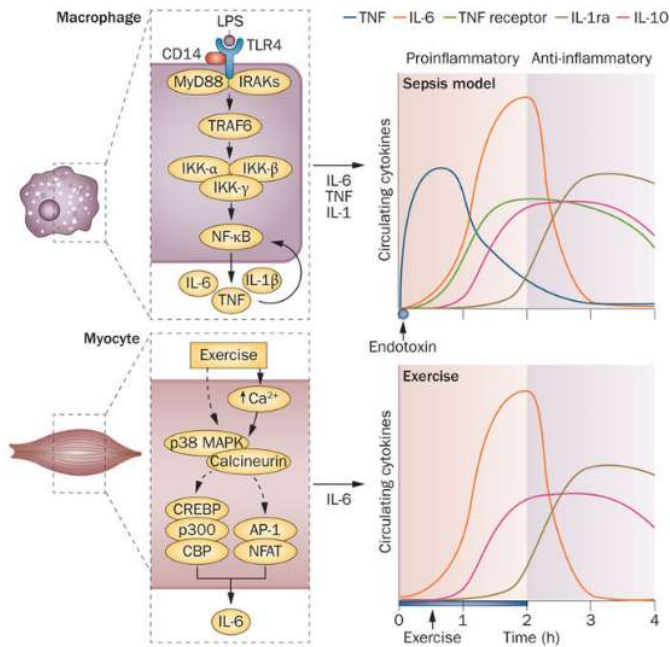


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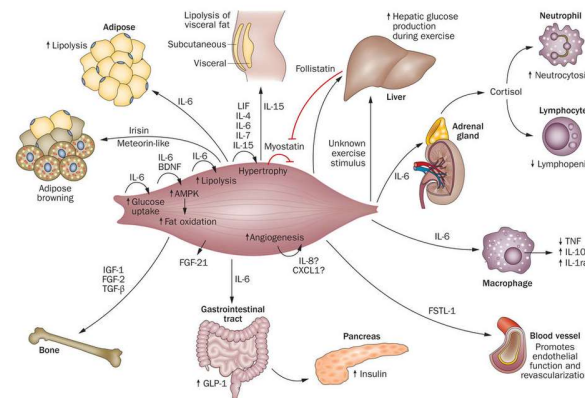
THE IMPACT OF STRENGTH TRAINING

The muscle as our largest endocrine organ

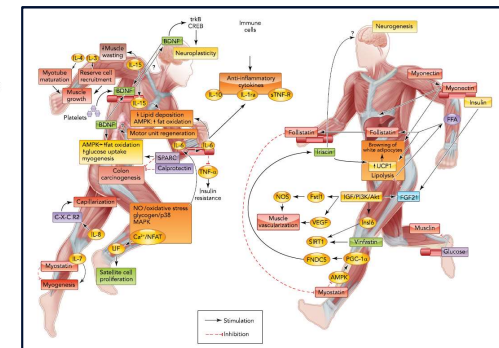


Nature Reviews Rheumatology volume 11, 86–97 (2015)

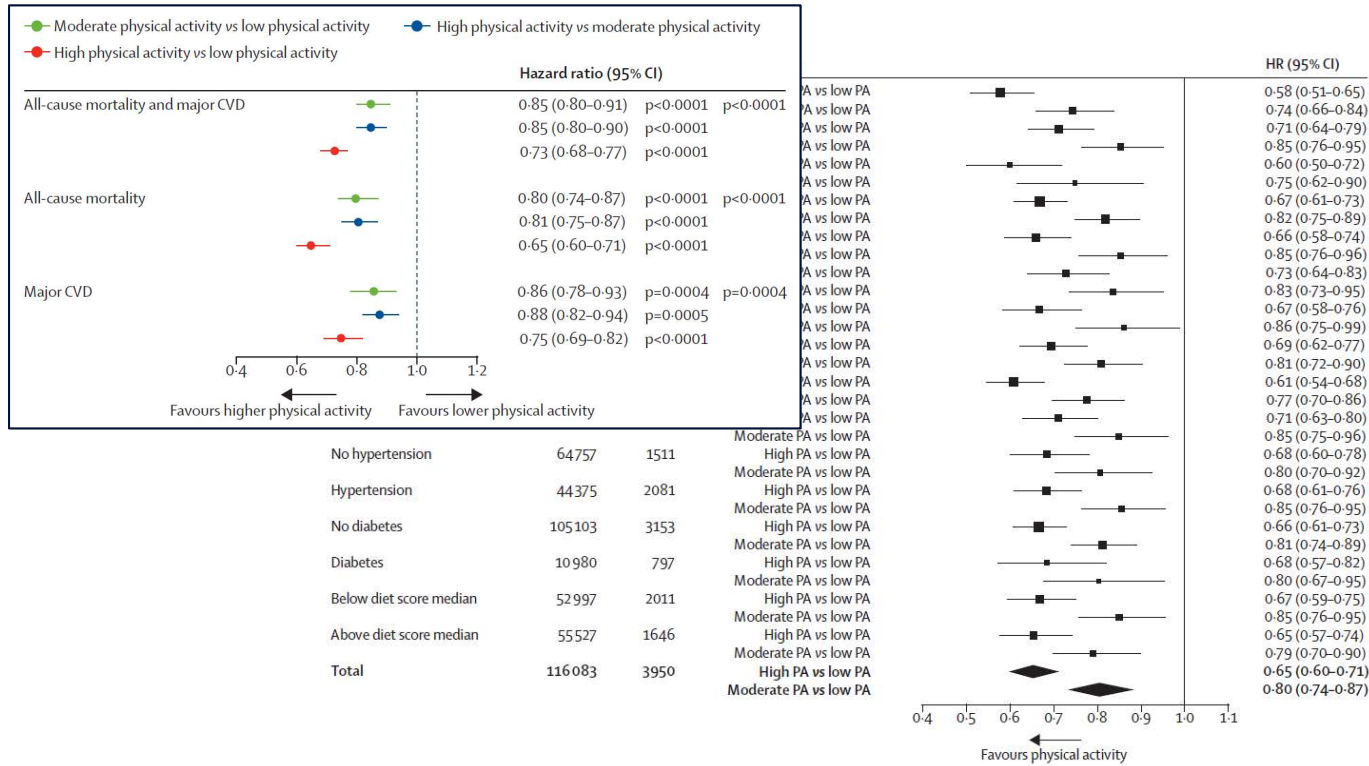
Secretion of hundreds of myokines (peptides)



Nature Reviews Rheumatology volume 11, 86–97 (2015)



SPORT – THE MORE, THE BETTER



Lancet 2017; 390: 2643–54

SPORT IN THE (VERY) ELDERLY

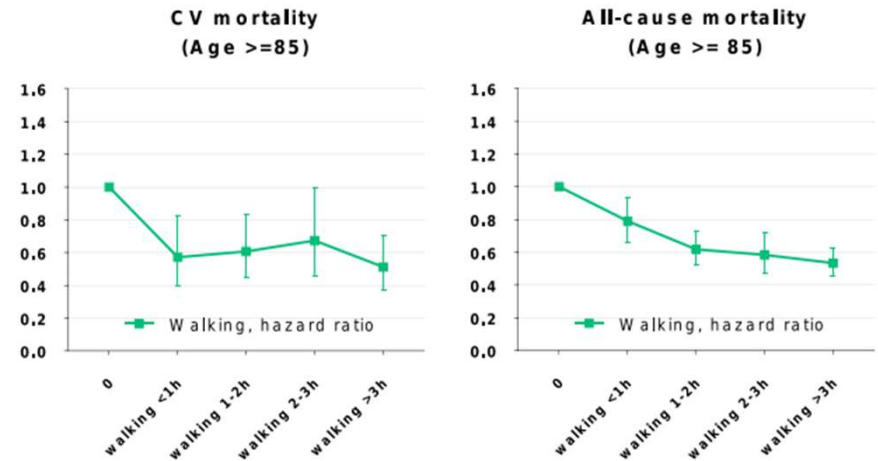
Association of usual walking with mortality in oldest old adults aged 85 years and older: a nationwide senior cohort study

Moo-Nyun J in, MD¹; Pil-Sung Yang, MD²; Hee Tae Yu, MD, PhD³; Tae-Hoon Kim, MD³; Hye Young Lee, MD, PhD¹; Hui-Nam Pak, MD, PhD³; Moon Hyoung Lee, MD, PhD³; Boyoung Joung, MD, PhD³

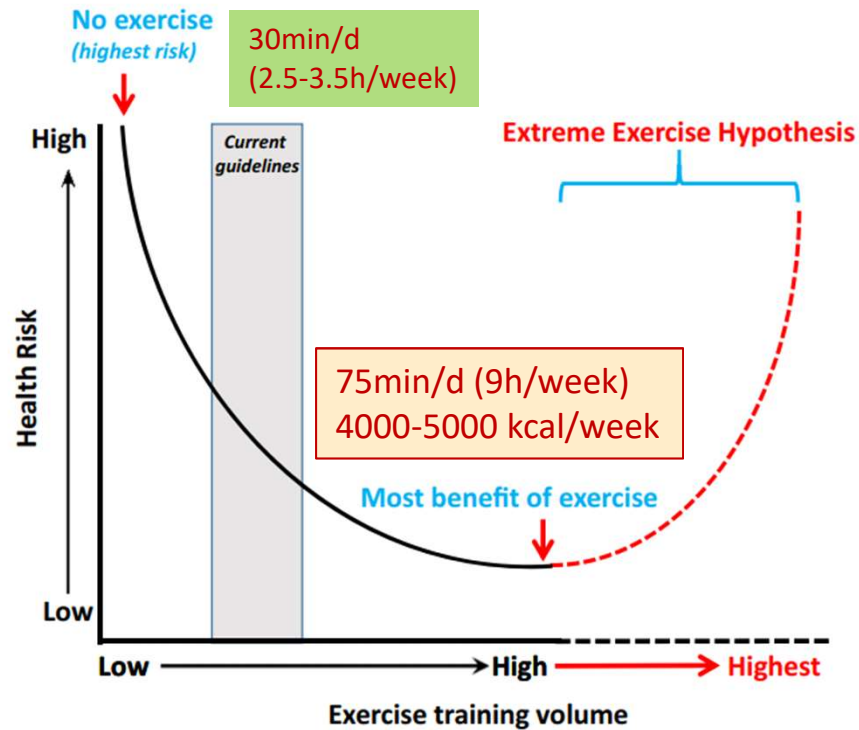
¹Division of Cardiology, Inje University College of Medicine, Seoul, Republic of Korea; ²Division of Cardiology, CHA Medical Center, Seongnam, Republic of Korea; ³Division of Cardiology, Yonsei University College of Medicine, Seoul, Republic of Korea

Initially, only 538 participants (7.6%) met the guideline recommendations for physical activity. 1,037 (14.7%) participants with moderate intensity physical activity, 773 (10.9%) vigorous activity. Control of 1.997 participants who walked at a slow pace every week

Compared to inactive individuals, those who walked *at least one hour per week* had 40% and 39% lower relative risks of all-cause and cardiovascular mortality, respectively.



SPORT – THE MORE THE BETTER...?



Curr Treat Options Cardio Med (2018) 20: 84

WHICH DIET TO RECOMMEND?

| Dietary Exposure | Total No. of Patients | No. of Subcohorts | Strength, Summary RR (95% CI) ^b | | Criteria Met (of 4) |
|-----------------------------------|-----------------------|-------------------|--|---|---------------------|
| | | | Coronary Outcomes ^c | Coronary Outcomes and Secondary Events ^c | |
| “Mediterranean” diet ^d | 66 337 | 4 | 0.63 (0.53-0.72) ^e | 0.66 (0.57-0.75) ^e | 4 |
| High-quality diet | 192 737 | 4 | 0.63 (0.45-0.81) ^e | 0.63 (0.45-0.81) ^e | 4 |
| Vegetables | 220 564 | 9 | 0.77 (0.68-0.87) ^e | 0.77 (0.68-0.87) ^e | 4 |
| Nuts | 184 194 | 6 | 0.70 (0.57-0.82) ^e | 0.67 (0.57-0.77) ^e | 4 |
| <i>Trans</i> -fatty acids | 145 132 | 4 | 1.32 (1.16-1.48) ^e | 1.32 (1.16-1.48) ^e | 4 |
| Glycemic index or load | 338 410 | 8 | 1.32 (1.10-1.54) ^e | 1.33 (1.13-1.52) ^e | 4 |

The “Mediterranean” dietary pattern emphasizes a higher intake of vegetables, legumes, fruits, nuts, whole grains, cheese or yogurt, fish, and monounsaturated relative to saturated fatty acids.

Fat: **42 Energy%** (as a «dietary pattern,,») Kafatos et al, JADA 100: 1487-93, 2000)

See corresponding editorial on page 497.

Meta-analysis of prospective cohort studies evaluating the association of saturated fat with cardiovascular disease¹⁻⁵

Patty W Siri-Tarino, Qi Sun, Frank B Hu, and Ronald M Krauss

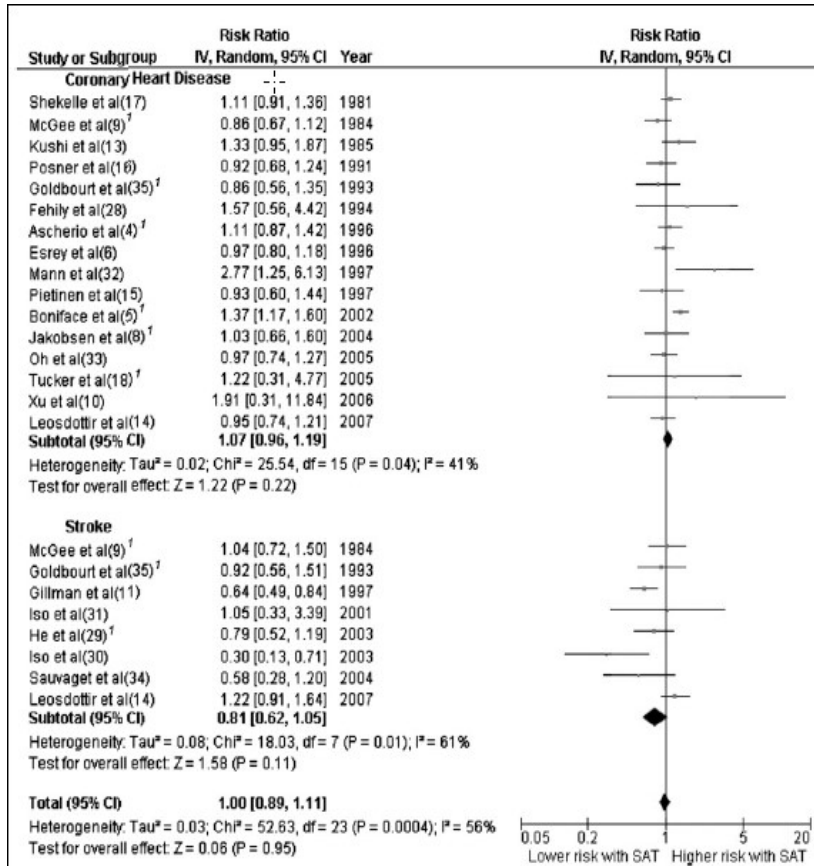
ABSTRACT

Background: A reduction in dietary saturated fat has generally been thought to improve cardiovascular health.

Objective: The objective of this meta-analysis was to summarize the evidence related to the association of dietary saturated fat with risk of coronary heart disease (CHD), stroke, and cardiovascular

fat to saturated fat (P:S), a hypothesis supported by a recent pooling analysis conducted by Jakobsen et al (24).

The goal of this study was to conduct a meta-analysis of well-designed prospective epidemiologic studies to estimate the risk of CHD and stroke and a composite risk score for both CHD and



Stroke

RR: 0.81

**Overall
Relative Risk: 1.00
= not significant**

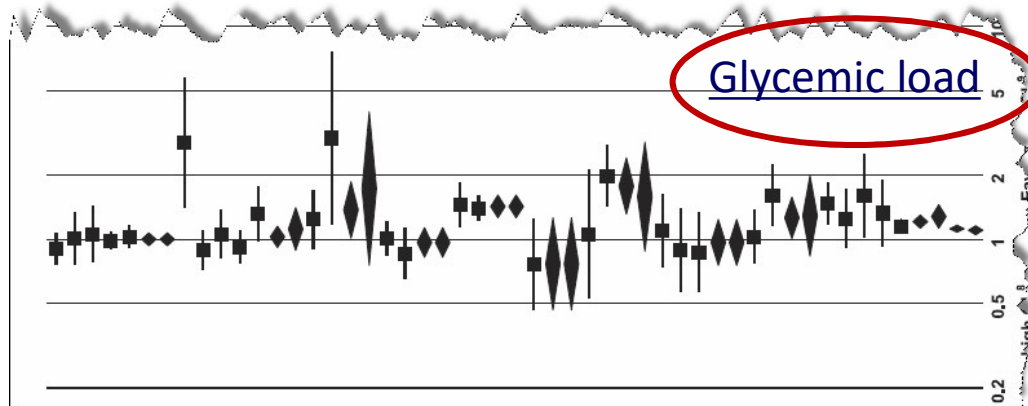
and 95% CIs for fully adjusted random-effects models showing the association between saturated fat intake and



Glycemic index, glycemic load, and chronic disease risk—a meta-analysis of observational studies^{1,2}

Alan W Barclay, Peter Petocz, Joanna McMillan-Price, Victoria M Flood, Tania Prvan, Paul Mitchell, and Jennie C Brand-Miller

ABSTRACT cereal products have replaced more traditionally processed



Gall bladder disease

+25 to 40 %

Diabetes type 2

+30 to 40 %

Cardiovascular disease

+25 to 55 %

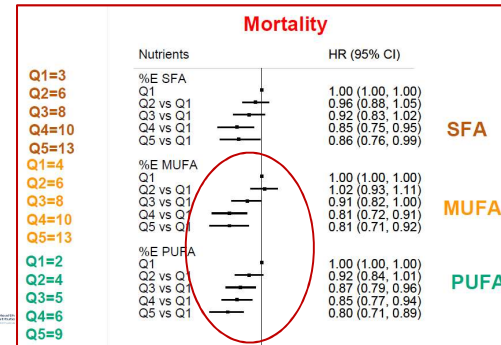
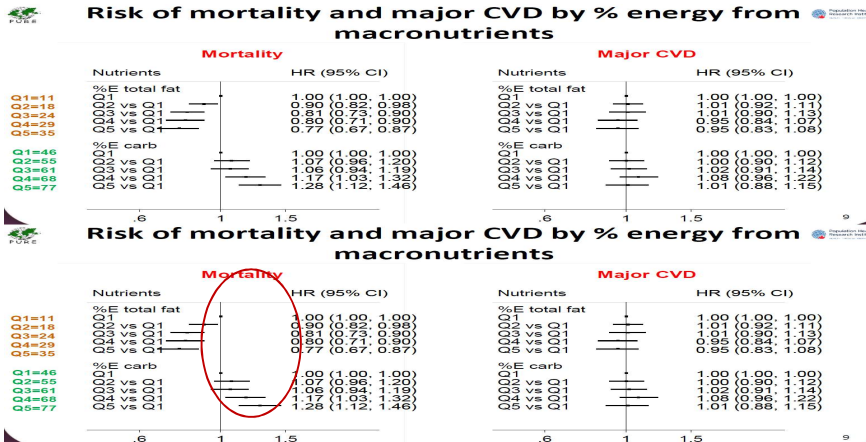
+10 to 15 %

overall morbidity

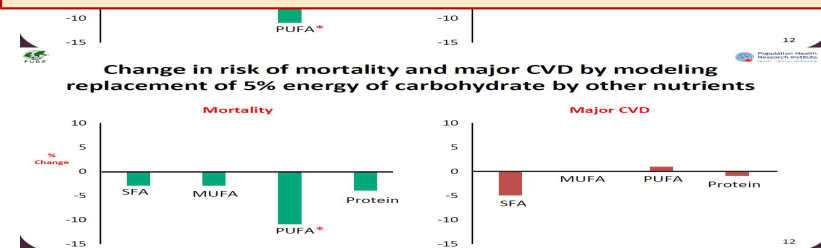


Associations of fats and carbohydrate intake with cardiovascular disease and mortality in 18 countries from 5 continents: The PURE study

Mahshid Dehghan, On behalf of the PURE investigators



Current guidelines restricting total fat to <30%E and saturated fat to <10%E are not supported by this global study



- A high carbohydrate diet (>60%E) is associated with higher risk of mortality
- Higher intake of fats, including saturated and unsaturated fats, are associated with lower risk of mortality
- No association between total fat, types of fat and CVD events



CURRENT ESC RECOMMENDATIONS

| | | |
|--|---|---|
| It is recommended to adopt a Mediterranean or similar diet to lower risk of CVD. ^{403,404} | I | A |
| It is recommended to replace saturated with unsaturated fats to lower the risk of CVD. ^{405–409} | I | A |
| It is recommended to reduce salt intake to lower BP and risk of CVD. ⁴¹⁰ | I | A |
| It is recommended to choose a more plant-based food pattern, rich in fibre, that includes whole grains, fruits, vegetables, pulses, and nuts. ^{411,412} | I | B |
| It is recommended to restrict alcohol consumption to a maximum of 100 g per week. ^{413–415} | I | B |
| It is recommended to eat fish, preferably fatty, at least once a week and restrict (processed) meat. ^{406,416–418} | I | B |
| It is recommended to restrict free sugar consumption, in particular sugar-sweetened beverages, to a maximum of 10% of energy intake. ^{419,420} | I | B |

Table 8 Healthy diet characteristics

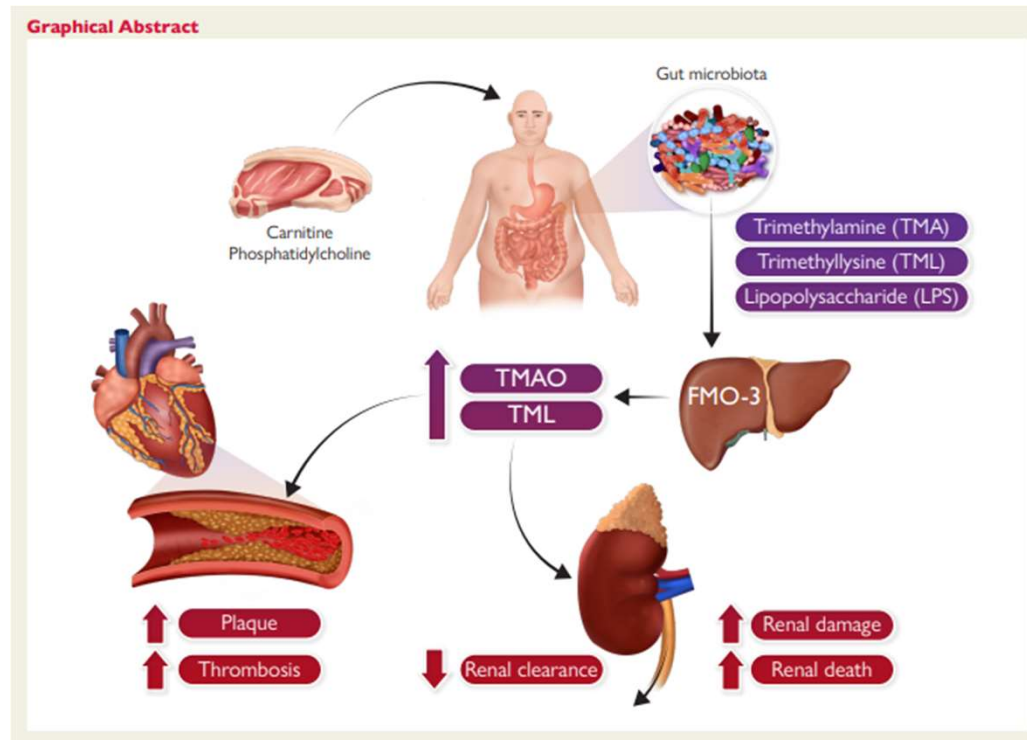
| |
|--|
| Adopt a more plant- and less animal-based food pattern |
| Saturated fatty acids should account for <10% of total energy intake, through replacement by PUFAs, MUFAs, and carbohydrates from whole grains |
| Trans unsaturated fatty acids should be minimized as far as possible, with none from processed foods |
| <5 g total salt intake per day |
| 30–45 g of fibre of per day, preferably from wholegrains |
| ≥200 g of fruit per day (≥2–3 servings) |
| ≥200 g of vegetables per day (≥2–3 servings) |
| Red meat should be reduced to a maximum of 350 - 500 g a week, in particular processed meat should be minimized |
| Fish is recommended 1–2 times per week, in particular fatty fish |
| 30 g unsalted nuts per day |
| Consumption of alcohol should be limited to a maximum of 100 g per week |
| Sugar-sweetened beverages, such as soft drinks and fruit juices, must be discouraged |

MUFA = monounsaturated fatty acid; PUFA = polyunsaturated fatty acid.

© ESC 2021

European Heart Journal (2021) 42, 32273337

THE MICROBIOM



European Heart Journal (2023) 00, 1–3

CONCLUSION I

- Sport, diet, pharmacological treatment – it should not be asked which single therapy is best. The combination of all three therapeutic tools, varying in every individual situation, is most successful (in primary and secondary prevention).
- Tremendous evidence exists for an early and risk-dependent pharmacologic decrease of LDL-cholesterol, anti-diabetic therapy, as well as adequate treatment with psycho-pharmacological drugs, if indicated.
- Aspirin (in primary) prevention has to be outbalanced with a significantly increased bleeding risk.

CONCLUSION II

- The lower «cut-off» for beneficial physical exercise is very low, but nevertheless, still seems to high for almost half of the Swiss population.
- Cardio-/Coronaro-protective nutrition is «mediterranean» and poor of carbohydrates (but relatively more fatty acids and proteins).

Caveat: The Mikrobiom!



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Thank you for your attention

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Klinik für Kardiologie, Kantonsspital Aarau

