

Präventionsstrategie bei hochnormalem Blutdruck

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Gliederung

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- Definitionen: pre-hypertension, hochnormaler Blutdruck
- Therapieempfehlungen bei hochnormalem Blutdruck in den Leitlinien
- Progression des hochnormalen Blutdrucks zur Hypertonie (Epidemiologie)
- Risikofaktoren für die Progression
- Körperliche Fitness als Schutzfaktor?
- Blutdrucksenkung durch körperliche Aktivität bei hochnormalem Blutdruck
- Hochnormaler Blutdruck und Ernährung
- Fazit

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Definitionen

- Prehypertension
- Elevated blood pressure
- Hochnormaler Blutdruck

2003: JNC 7

1. The risk of CVD, beginning at 115/75 mmHg, increases with each increment of 20/10 mmHg
2. Individuals who are normotensive after 3 measurements on 3 different days of age have a 90% lifetime risk for developing hypertension
3. Individuals with a systolic BP of 130-139 mmHg or a diastolic BP of 80-89 mmHg should be considered prehypertensive and require (...) lifestyle modifications

Prehypertension: A Little Too Much Pressure, A Lot of Trouble

Chobanian, et al. National Heart, Lung, and Blood Institute Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, & National High Blood Pressure Education Program Coordinating Committee (2003). *JAMA*, 289(19), 2560-2572.

Neue Definition USA AHA/ACC 2017

Ab systolischem BD 120 mmHg "elevated".
Pre-hypertension als Kategorie nicht mehr gebräuchlich, syst. BD 130-139 mmHg oder diast. BD 80-89 mmHg Hypertension stage 1

Blood Pressure Categories



BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 - 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 - 139	or	80 - 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

Whelton PK et al. *J Am Coll Cardiol*. 2018 May 15;71(19):e127-e248.

Dazu im Gegensatz in Europa: Definition hochnormaler Blutdruck (ESC/ESH/DHL 2018)


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Table 1 Blood pressure categories according to ESH/ESC guidelines 2018

Category	Systolic (mmHg)		Diastolic (mmHg)
Optimal	< 120	and	< 80
Normal	120–129	and/or	80–84
High normal	130–139	and/or	85–89
Grade 1 hypertension	140–159	and/or	90–99
Grade 2 hypertension	160–179	and/or	100–109
Grade 3 hypertension	≥ 180	and/or	≥ 110

When a subject's systolic and diastolic blood pressures fall into different categories, the higher category is applied

Williams B, Mancia G et al. Eur Heart J (2018) 39; 3021-3104


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Gliederung

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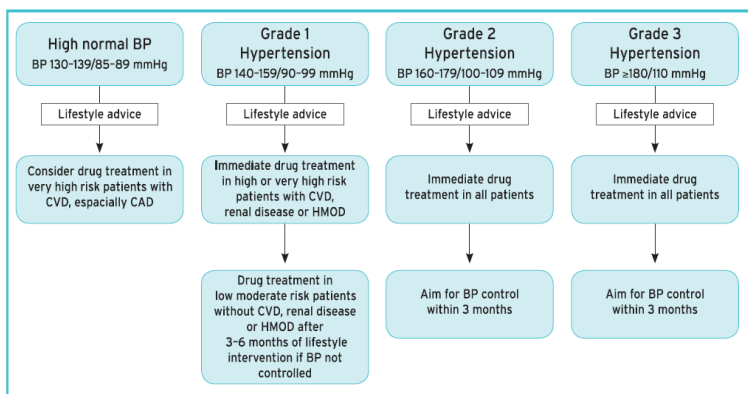
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Therapie hochnormaler Blutdruck: ESH/ESC 2018 Guidelines

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Hypertonie und Lifestyle-Empfehlungen: neue 2023 ESH-Leitlinien

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ESH Guidelines

2023 ESH Guidelines for the management of arterial hypertension

The Task Force for the management of arterial hypertension of the European Society of Hypertension

Endorsed by the European Renal Association (ERA) and the International Society of Hypertension (ISH)

Authors/Task Force Members: Giuseppe Mancia(Chairperson)^{h,*,} Reinhold Kreutz(Co-Chair)^{h,*,} Mattias Brunstrom^{g,} Michel Burnier^{g,} Guido Grassi^{g,} Andrzej Januszewicz^{g,} Maria Lorenza Muesan^{g,} Konstantinos Tsioufis^{g,} Enrico Agabiti-Rosei^{g,} Engi Abd Elhady Algharabaly^{g,} Michel Azizi^{g,} Athanase Benetos^{g,} Claudio Borghi^{g,} Jana Brguljan Hitič^{g,} Renata Cirkvařová^{g,} Antonio Coca^{g,} Veronique Cornelissen^{g,} Kennedy Cruickshank^{g,} Pedro G. Cunha^{g,} A.H. Jan Dansie^{g,} Rosa Maria de Pinho^{g,} Christian Delles^{g,} Anna F. Dominiczak^{g,} Maria Dorobantu^{g,} Michalis Doumas^{g,} Maria S. Fernández-Alfonso^{h,b,c,c,} Jean-Michel Hallin^{g,i,ee,ff,} Zoltán Járai^{gg,} Bojan Jelakovic^{hh,} Jens Jordan^{ii,jj,} Tatiana Kuznetsova^{kk,} Stephane Laurent^{ll,} Dragan Lovic^{mm,} Empar Lurbe^{nn,oo,pp,} Felix Mahfoud^{qq,rr,} Athanasios Manolis^{ss,} Marius Miglinas^{tt,uu,} Krzysztof Narkiewicz^{vv,} Teemu Niiranen^{www,xx,} Paolo Palatini^{yy,} Gianfranco Parati^{zz,aaa,} Atul Pathak^{bbb,} Alexandre Persu^{ccc,} Jorge Polonia^{ddd,} Josep Redon^{eee,fff,} Pajritelis Sarafidis^{ggg,} Roland Schmieder^{hhh,} Bart Spronck^{iii,} Stella Stabouli^{jjj,} George Stergiou^{kkk,} Stefano Taddei^{lll,} Costas Thomopoulos^{mmm,} Maciej Tomaszewski^{nnn,ooo,} Philippe Van de Borne^{ppp,} Christoph Wanner^{qqq,} Thomas Weber^{rrr,} Bryan Williams^{sss,} Zhen-Yu Zhang^{ttt,} and Sverre E. Kjeldsen^{uuu}

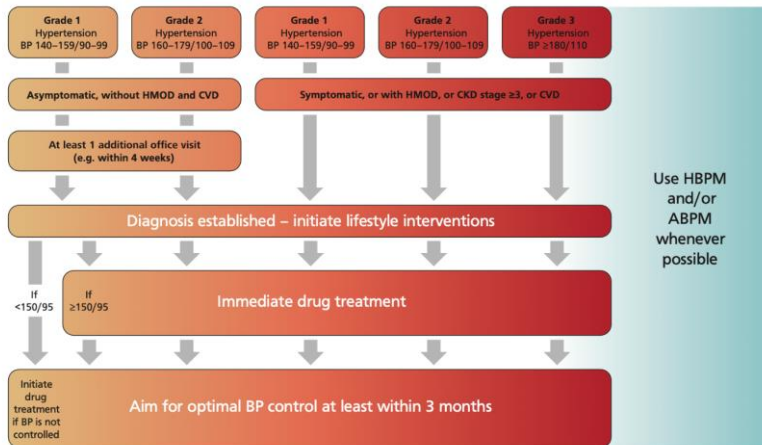
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Journal of Hypertension 2023, 41:000–000

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Hypertonie und Therapie-Algorithmen: 2023 ESH Leitlinien

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Hochnormaler Blutdruck und Therapie-Empfehlungen in den 2023 ESH-Leitlinien: Lifestyle-Advice!

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9.3 Should BP-lowering treatment be initiated in patients with office BP <140/90 mmHg?

Previous guidelines [4,492] recommended avoiding antihypertensive treatment in people with high-normal BP and low CV risk. This decision was based on the following findings: (i) in the RCTs and meta-analyses that reported a reduction of CV outcomes by lowering an initial high-normal BP, all or many patients were already under antihypertensive treatment and had thus an original BP higher than that measured in the trials [467]. This has been the case, for example, in the SPRINT trial, in which patients had a baseline SBP slightly below 140 mmHg on a background of almost two antihypertensive drugs per patient [11], (ii) the HOPE-3 trial [491] showed that BP-lowering treatment did not reduce the risk of CV events in people with low-moderate CV risk and SBP values in the high-normal range and (iii) a meta-analysis of 13 RCTs or RCT subgroups of patients at low-moderate CV risk and an untreated baseline BP in the high-normal or normal range showed [467] ($n = 21\,128$ patients) no effect of BP-lowering treatment on any CV outcomes [493]. The present guidelines reconfirm the recommendation not to initiate antihypertensive drug treatment in low-to-moderate risk patients with a BP in the high-normal range. In these patients, intervention should be limited to lifestyle advice, because this reduces their risk of progression to established hypertension and increased CV risk. It is important to note that the recommendation not to offer drug treatment to people with a high-normal and

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Hypertonie und Lifestyle Empfehlungen: 2023 ESH Leitlinien

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2023 ESH Guidelines for the management of arterial hypertension

Recommendations and statements	CoR	LoE
In adults with elevated BP who are overweight or obese, weight reduction is recommended to reduce BP and improve CV outcomes.	I	A
Preferred dietary products include vegetables, fruits, beans, nuts, seeds, vegetable oils, and fish and poultry among meat products. Fatty meats, full-fat dairy, sugar, sweetened beverages, and sweets should be limited. Overall, a healthy dietary pattern including more plant-based and less animal-based food is recommended.	I	B
In adults with hypertension consuming a high sodium diet (most Europeans), salt substitutes replacing part of the NaCl with KCl is recommended to reduce BP and the risk for CVD.	I	A
Dietary salt (NaCl) restriction is recommended for adults with elevated BP to reduce BP. Salt (NaCl) restriction to < 5 g (1-2g sodium) per day is recommended.	I	B
Increased potassium consumption, preferably via dietary modification, is recommended for adults with elevated BP, except for patients with advanced CKD.	I	B
Daily physical activity and structured exercise is recommended for adults with elevated BP to reduce BP and improve cardiovascular risk profile. It is recommended to strive for at least 150-300 minutes of aerobic exercise a week of moderate intensity, or 75-150 minutes a week of aerobic exercise of vigorous intensity or an equivalent combination. Sedentary time should also be reduced and supplemented with dynamic resistance exercise (2-3 times per week).	I	B
Adult men and women with elevated BP for hypertension who currently consume alcohol (33 drinks/week) should be advised that reduction of alcohol intake close to abstinence may lower their BP.	I	B
Alcohol should not be recommended for CVD prevention, as previous studies linked moderate consumption to lower CV risk are likely confounded.	III	B
It is recommended to avoid excessive (binge) drinking to reduce BP, and the health severity for haemorrhagic stroke and premature death.	III	B
Smoking cessation, supportive care and referral to smoking cessation programs are recommended for all smokers to avoid ambulatory BP increases, reduce the risk of masked hypertension, and improve CV health outcome.	I	B
Reduced stress via controlled breathing exercises, mindfulness-based exercise and meditation may be considered.	II	C

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Medikamentöse Therapie zur Verhinderung der Progression von hochnormalem Blutdruck zur Hypertonie: TROPHY Studie

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The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

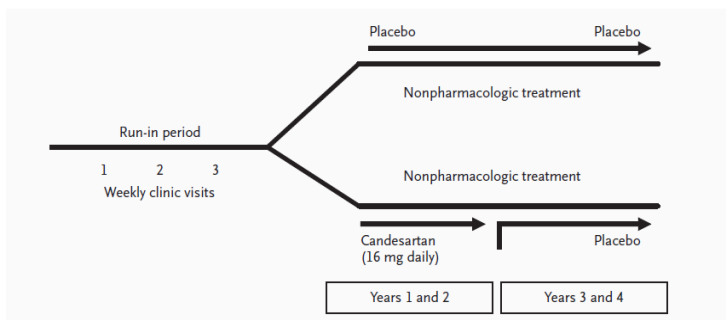
Feasibility of Treating Prehypertension with an Angiotensin-Receptor Blocker

Stevio Julius, M.D., Sc.D., Shawna D. Nesbitt, M.D., Brent M. Egan, M.D., Michael A. Weber, M.D., Eric L. Michelson, M.D., Niko Kaciroti, Ph.D., Henry R. Black, M.D., Richard H. Grimm, Jr., M.D., Ph.D., Franz H. Messerli, M.D., Suzanne Oparil, M.D., and M. Anthony Schork, Ph.D., for the Trial of Preventing Hypertension (TROPHY) Study Investigators*

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Studendesign: TROPHY Studie

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N ENGL J MED 354:16 www.NEJM.ORG APRIL 20,2006

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Reduzierte Progression von hochnormalem Blutdruck zur Hypertonie auch 2 Jahre nach Absetzen von Candesartan noch nachweisbar

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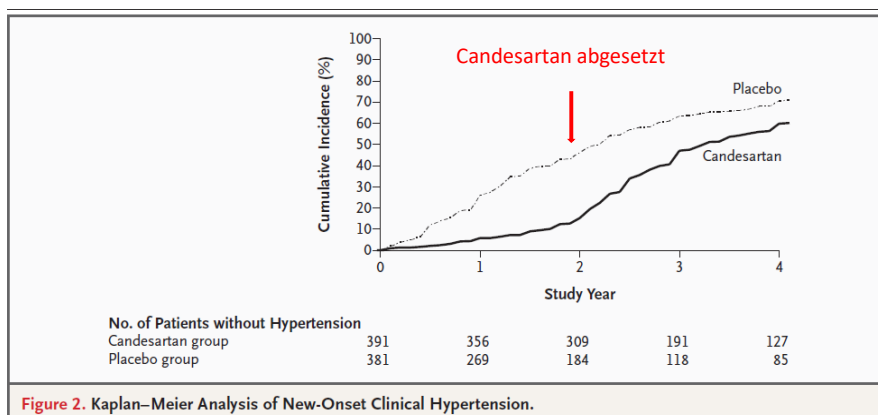


Figure 2. Kaplan–Meier Analysis of New-Onset Clinical Hypertension.

N ENGL J MED 354:16 www.NEJM.ORG APRIL 20,2006

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Progression von hochnormalem Blutdruck zu manifester Hypertonie in der Framingham Heart Study: Frauen

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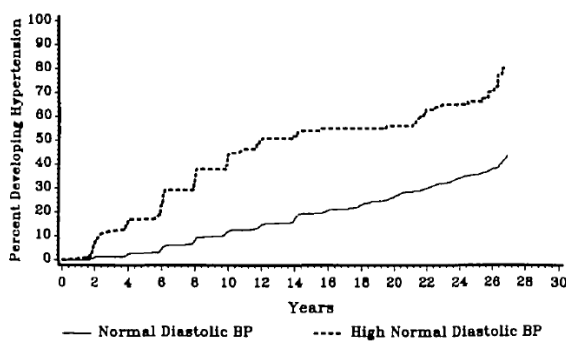


FIGURE 2. Line graph showing age-adjusted risk of hypertension developing in women over time according to initial diastolic blood pressure. Relative risk for high-normal group is 3.37.

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Progression von hochnormalem Blutdruck zu manifester Hypertonie in der Framingham Heart Study: Männer

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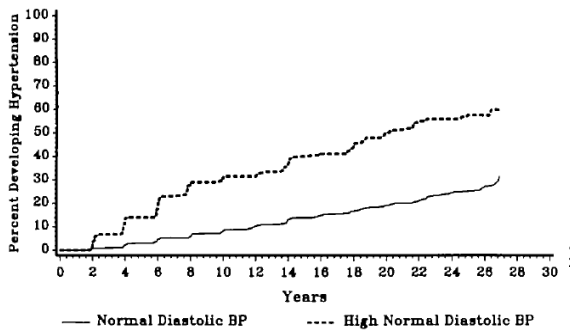


FIGURE 1. Line graph showing age-adjusted risk of hypertension developing in men over time according to initial diastolic blood pressure group. Relative risk for high-normal group is 3.36.

M. Leitschuh, L. A. Cupples, W. Kannel, D. Gagnon, A. Chobanian; Hypertension Vol 17, No 1, January 1991

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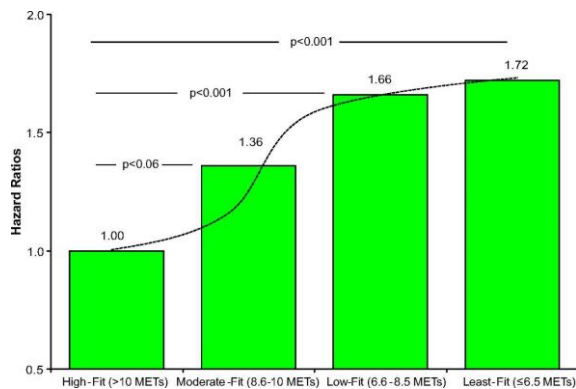
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Exercise Capacity and Progression From Prehypertension to Hypertension: Schutzfaktor Fitness!

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Charles Faselis. Hypertension. Exercise Capacity and Progression From Prehypertension to Hypertension, Volume: 60, Issue: 2, Pages: 333-338, DOI: (10.1161/HYPERTENSIONAHA.112.196493)

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Welche Risikofaktoren waren bei hochnormalem Blutdruck neben der Fitness mit der Entwicklung einer Hypertonie assoziiert?

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- Alter
- BMI
- History of diabetes
- Baseline SBP

Charles Faselis. Hypertension. Exercise Capacity and Progression From Prehypertension to Hypertension, Volume: 60, Issue: 2, Pages: 333-338, DOI: (10.1161/HYPERTENSIONAHA.112.196493)



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Hypertonie und Sport: Meta-Analyse

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ORIGINAL RESEARCH



Exercise Training for Blood Pressure: A Systematic Review and Meta-analysis

Veronique A. Cornelissen, PhD; Neil A. Smart, PhD

Background—We conducted meta-analyses examining the effects of endurance, dynamic resistance, combined endurance and resistance training, and isometric resistance training on resting blood pressure (BP) in adults. The aims were to quantify and compare BP changes for each training modality and identify patient subgroups exhibiting the largest BP changes.

Methods and Results—Randomized controlled trials lasting ≥ 4 weeks investigating the effects of exercise on BP in healthy adults (age ≥ 18 years) and published in a peer-reviewed journal up to February 2012 were included. Random effects models were used for analyses, with data reported as weighted means and 95% confidence interval. We included 93 trials, involving 105 endurance, 29 dynamic resistance, 14 combined, and 5 isometric resistance groups, totaling 5223 participants (3401 exercise and 1822 control). Systolic BP (SBP) was reduced after endurance (-3.5 mm Hg [confidence limits -4.6 to -2.3]), dynamic resistance (-1.8 mm Hg [-3.7 to -0.01]), and isometric resistance (-10.9 mm Hg [-14.5 to -7.4]) but not after combined training. Reductions in diastolic BP (DBP) were observed after endurance (-2.5 mm Hg [-3.2 to -1.7]), dynamic resistance (-3.2 mm Hg [-4.5 to -2.0]), isometric resistance (-6.2 mm Hg [-10.3 to -2.0]), and combined (-2.2 mm Hg [-3.9 to -0.48]) training. BP reductions after endurance training were greater ($P < 0.0001$) in 26 study groups of hypertensive subjects (-8.3 [-10.7 to -6.0]/ -5.2 [-6.8 to -3.4] mm Hg) than in 50 groups of prehypertensive subjects (-2.1 [-3.3 to -0.83]/ -1.7 [-2.7 to -0.68]) and 29 groups of subjects with normal BP levels (-0.75 [-2.2 to $+0.69$]/ -1.1 [-2.2 to -0.068]). BP reductions after dynamic resistance training were largest for prehypertensive participants (-4.0 [-7.4 to -0.5]/ -3.8 [-5.7 to -1.9] mm Hg) compared with patients with hypertension or normal BP.

Conclusion—Endurance, dynamic resistance, and isometric resistance training lower SBP and DBP, whereas combined training lowers only DBP. Data from a small number of isometric resistance training studies suggest this form of training has the potential for the largest reductions in SBP. (*J Am Heart Assoc.* 2013;2:e004473 doi: 10.1161/JAHA.112.004473)

(J Am Heart Assoc. 2013; 2:e004473 doi: 10.1161/JAHA.112.004473)



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Hypertonie und Sport: Meta-Analyse (Cornelissen & Smart)

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5223 Personen > 18 Jahre
 153 Trainingsgruppen (TG): 105 Ausdauer – 29 dyn. Kräftigungstraining – 5 isom. Kräftigungstraining
 -14 kombiniert

47 TG: normaler BD
 73 TG: Prehypertension
 33 TG: Hypertension

Interventionsdauer: 4-52 Wochen – 1-7 x Woche
 Intensität: low-high intensity

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Hypertonie und Sport: Meta-Analyse

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ORIGINAL RESEARCH



Exercise Training for Blood Pressure: A Systematic Review and Meta-analysis

Veronique A. Cornelissen, PhD; Neil A. Smart, PhD

Hypertensive status	Systolic BP		Diastolic BP	
	N	Effect Size (95% CI)	N	Effect Size (95% CI)
Normal BP	29	-0.75 (-2.2 to +0.69)	29	-1.1 (-2.2 to -0.068)
Prehypertension	50	-2.1 (-3.3 to -0.83)	47	-1.7 (-2.7 to -0.68)
Hypertension	26	-8.3 (-10.7 to -6.0)	26	-5.2 (-6.9 to -3.4)

Fazit: Der blutdrucksenkende Effekt hängt vom Ausgangsblutdruck ab. Pat. mit „Prehypertension“ (Publikation 2013) hatten eine geringere BD-Reduktion als bei etablierter Diagnose Hypertonie

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Hypertonie und Sport: Meta-Analyse Edwards J et al. 2023

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Review

Exercise training and resting blood pressure: a large-scale pairwise and network meta-analysis of randomised controlled trials

Jamie J Edwards , ¹Algis H P Deenmamode, ¹Megan Griffiths, ¹Oliver Arnold, ¹Nicola J Cooper, ²Jonathan D Wiles, ¹Jamie M O'Driscoll 

► Additional supplemental material is published online only. To view, please visit the journal online (<http://dx.doi.org/10.1136/bjsports-2022-106503>).

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Accepted 16 June 2023

ABSTRACT

Objective To perform a large-scale pairwise and network meta-analysis on the effects of all relevant exercise training modes on resting blood pressure to establish optimal antihypertensive exercise prescription practices.

Design Systematic review and network meta-analysis.

Data sources PubMed (Medline), the Cochrane library and Web of Science were systematically searched.

Eligibility criteria Randomised controlled trials published between 1990 and February 2023. All relevant work reporting reductions in systolic blood pressure (SBP) and/or diastolic blood pressure (DBP) following an exercise intervention of ≥2 weeks, with an eligible non-intervention control group, were included.

Results 270 randomised controlled trials were ultimately included in the final analysis, with a pooled sample size of 15 827 participants. Pairwise analyses demonstrated significant reductions in resting SBP and DBP following aerobic exercise training ($p < 0.001$).

WHAT IS ALREADY KNOWN?

⇒ The role of exercise training as an effective non-pharmacological antihypertensive intervention is generally well-established.

⇒ Traditional aerobic exercise training remains the primarily recommended exercise approach for the management of high blood pressure.

⇒ Current exercise guidelines for blood pressure control are largely based on older data, requiring an updated analysis with the inclusion of more novel exercise modes, including high-intensity interval training and isometric exercise training.

WHAT ARE THE NEW FINDINGS?

⇒ This large-scale systematic review and network meta-analysis of 270 randomised controlled trials demonstrates the optimal exercise prescription practices in the management of

Edwards JJ et al. Exercise training and resting blood pressure: a large-scale pairwise and network meta-analysis of randomised controlled trials. *Br J Sports Med.* 2023 Jul 25; *bjsports-2022-106503*. doi: 10.1136/bjsports-2022-106503. Epub ahead of print. PMID: 37491419.

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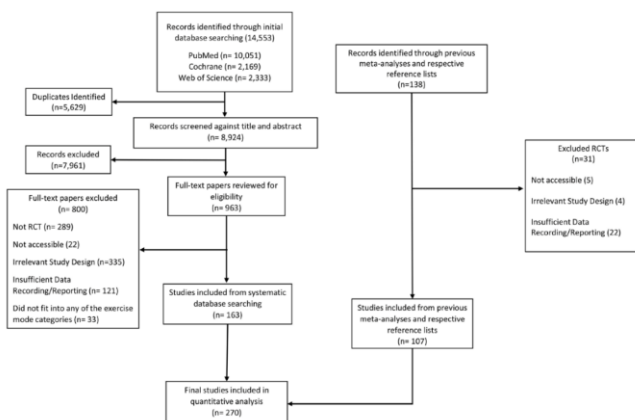



Figure 1 PRISMA systematic review and meta-analysis flow chart. RCT, randomised controlled trial.

Edwards JJ et al. *Br J Sports Med* 2023;0:1–11. doi:10.1136/bjsports-2022-106503

Edwards JJ et al. Exercise training and resting blood pressure: a large-scale pairwise and network meta-analysis of randomised controlled trials. *Br J Sports Med.* 2023 Jul 25; *bjsports-2022-106503*. doi: 10.1136/bjsports-2022-106503. Epub ahead of print. PMID: 37491419.

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Pairwise Analysis, sBP (mmHg) Weighted Mean Difference, 95% CI

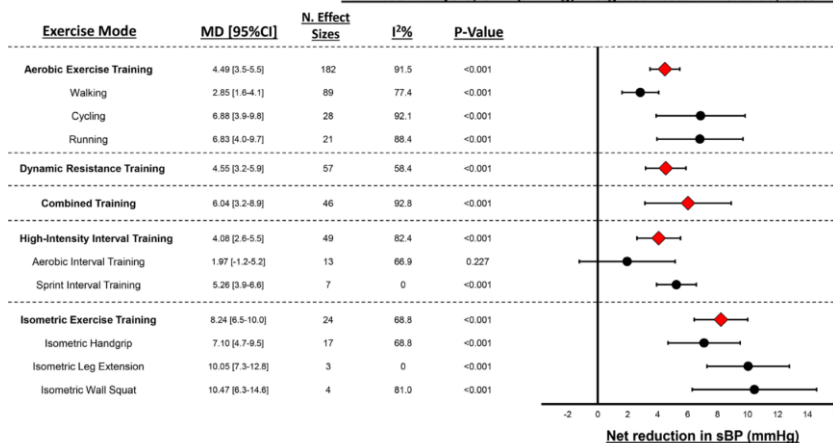


Figure 2 Forest plot depicting overall effects of each primary and secondary exercise mode on systolic blood pressure (SBP).

Edwards JJ et al. Exercise training and resting blood pressure: a large-scale pairwise and network meta-analysis of randomised controlled trials. Br J Sports Med. 2023 Jul 25;bjssports-2022-106503. doi: 10.1136/bjssports-2022-106503. Epub ahead of print. PMID: 37491419.

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dBP (mmHg) Weighted Mean Difference, 95% CI

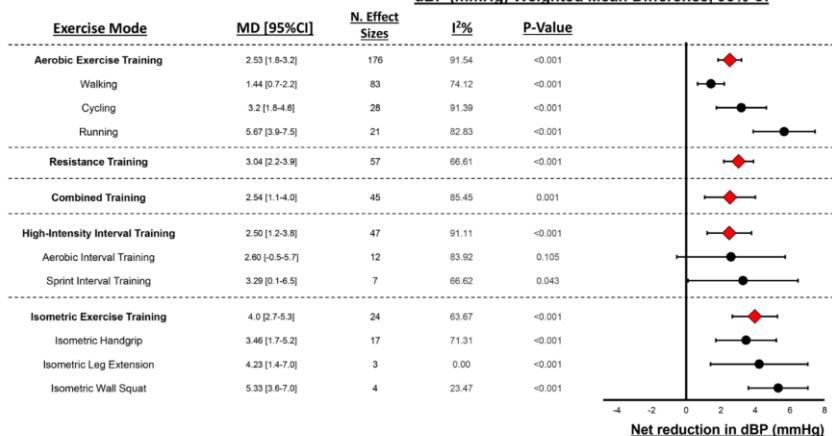


Figure 3 Forest plot depicting overall effects of each primary and secondary exercise mode on diastolic blood pressure (DBP).

Edwards JJ et al. Exercise training and resting blood pressure: a large-scale pairwise and network meta-analysis of randomised controlled trials. Br J Sports Med. 2023 Jul 25;bjssports-2022-106503. doi: 10.1136/bjssports-2022-106503. Epub ahead of print. PMID: 37491419.

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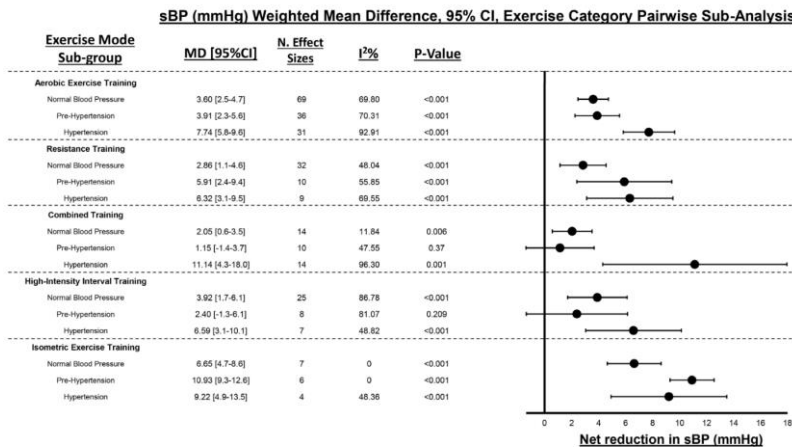


Figure 4 Forest plot depicting overall effects of each primary exercise mode on systolic blood pressure (SBP) stratified via baseline blood pressure category.

Edwards JJ et al. Exercise training and resting blood pressure: a large-scale pairwise and network meta-analysis of randomised controlled trials. Br J Sports Med. 2023 Jul 25;bjssports-2022-106503. doi: 10.1136/bjssports-2022-106503. Epub ahead of print. PMID: 37491419.

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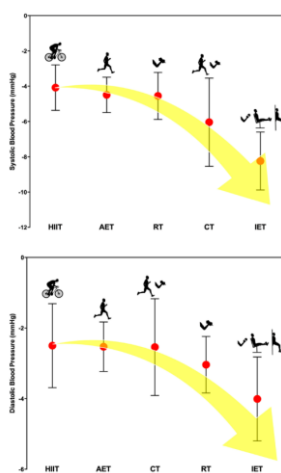


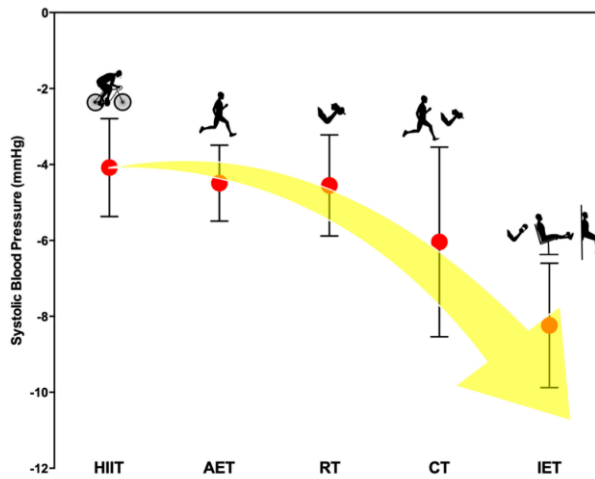
Figure 6 Central illustration. AET aerobic exercise training; CT combined training; HIT high intensity interval training; IET isometric exercise training; RT dynamic resistance training.

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Edwards JJ et al. Exercise training and resting blood pressure: a large-scale pairwise and network meta-analysis of randomised controlled trials. *Br J Sports Med.* 2023 Jul 25;bjssports-2022-106503. doi: 10.1136/bjssports-2022-106503. Epub ahead of print. PMID: 37491419.

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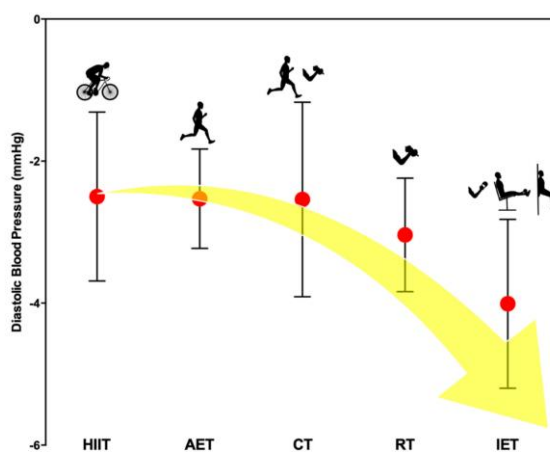


Figure 6 Central illustration. AET, aerobic exercise training; CT, combined training; HIIT, high-intensity interval training; IET, isometric exercise training; RT, dynamic resistance training.

Edwards JJ et al. Exercise training and resting blood pressure: a large-scale pairwise and network meta-analysis of randomised controlled trials. *Br J Sports Med.* 2023 Jul 25;bjssports-2022-106503. doi: 10.1136/bjssports-2022-106503. Epub ahead of print. PMID: 37491419.

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Exercise training and resting blood pressure: a large-scale pairwise and network meta-analysis of randomised controlled trials

Jamie J Edwards,¹
Nicola J Cooper,²

WHAT ARE THE NEW FINDINGS?

- ⇒ This large-scale systematic review and network meta-analysis of 270 randomised controlled trials demonstrates the optimal exercise prescription practices in the management of resting blood pressure.
- ⇒ Aerobic exercise training, dynamic resistance training, combined training, high-intensity interval training and isometric exercise training are all significantly effective in reducing resting systolic and diastolic blood pressure. Overall, isometric exercise training is the most effective mode in reducing both systolic and diastolic blood pressure.
- ⇒ These findings provide a comprehensive data-driven framework to support the development of new exercise guideline recommendations for the prevention and treatment of arterial hypertension.

Review

Exercise training and resting blood pressure: a large-scale pairwise and network meta-analysis of randomised controlled trials

Oliver Arnold,¹

Edwards JJ et al. Exercise training and resting blood pressure: a large-scale pairwise and network meta-analysis of randomised controlled trials. Br J Sports Med. 2023 Jul 25;bjssports-2022-106503. doi: 10.1136/bjssports-2022-106503. Epub ahead of print. PMID: 37491419.



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Gliederung

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- Definitionen: pre-hypertension, hochnormaler Blutdruck
- Therapieempfehlungen bei hochnormalem Blutdruck in den Leitlinien
- Progression des hochnormalen BD zur Hypertonie (Epidemiologie)
- Risikofaktoren für die Progression
- Körperliche Fitness Schutzfaktor?
- Blutdrucksenkung durch körperliche Aktivität bei hochnormalem Blutdruck
- Hochnormaler Blutdruck und Ernährung
- Fazit



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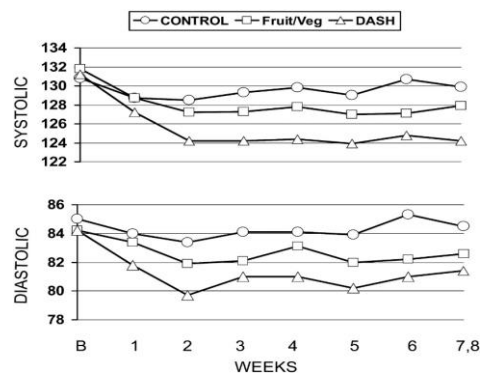
Blutdrucksenkung durch gesunde Ernährung?

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Blutdrucksenkung durch "DASH" Diät:
Obst und Gemüse

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Pre-Hypertonie und Ernährungsmodifikation

Author Manuscript



HHS Public Access

Author manuscript

J Am Coll Cardiol. Author manuscript; available in PMC 2018 December 12.

Published in final edited form as:

J Am Coll Cardiol. 2017 December 12; 70(23): 2841–2848. doi:10.1016/j.jacc.2017.10.011.

Effects of Sodium Reduction and the DASH Diet in Relation to Baseline Blood Pressure

Stephen P Juraschek, MD, PhD^{a,b}, Edgar R Miller III, MD, PhD^b, Connie M Weaver, PhD^c, and Lawrence J Appel, MD, MPH^b

Juraschek SP, Miller ER 3rd, Weaver CM, Appel LJ. Effects of Sodium Reduction and the DASH Diet in Relation to Baseline Blood Pressure. *J Am Coll Cardiol.* 2017 Dec 12;70(23):2841-2848.

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Hochnormaler Blutdruck und Ernährungsmodifikation

Juraschek et al.

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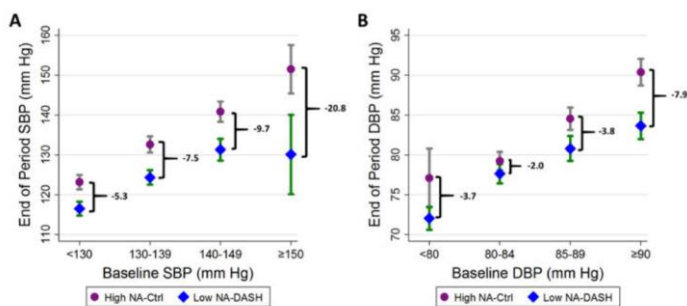


Figure 1. The Combined Effects of Low Sodium and the DASH Diet according to Blood Pressure

Juraschek SP, Miller ER 3rd, Weaver CM, Appel LJ. Effects of Sodium Reduction and the DASH Diet in Relation to Baseline Blood Pressure. *J Am Coll Cardiol.* 2017 Dec 12;70(23):2841-2848.

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Mediterrane Diät und BD-Senkung: PREDIMED-Studie

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THE NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Primary Prevention of Cardiovascular Disease with a Mediterranean Diet

Ramón Estruch, M.D., Ph.D., Emilio Ros, M.D., Ph.D., Jordi Salas-Salvadó, M.D., Ph.D., Maria-Isabel Covas, D.Pharm., Ph.D., Dolores Corella, D.Pharm., Ph.D., Fernando Arós, M.D., Ph.D., Enrique Gómez-Gracia, M.D., Ph.D., Valentina Ruiz-Gutiérrez, Ph.D., Miquel Fiol, M.D., Ph.D., José Lapetra, M.D., Ph.D., Rosa Maria Lamuela-Raventós, D.Pharm., Ph.D., Lluís Serra-Majem, M.D., Ph.D., Xavier Pintó, M.D., Ph.D., Josep Basora, M.D., Ph.D., Miguel Angel Muñoz, M.D., Ph.D., José V. Sorli, M.D., Ph.D., José Alfredo Martínez, D.Pharm., M.D., Ph.D., and Miguel Angel Martínez-González, M.D., Ph.D., for the PREDIMED Study Investigators*

ABSTRACT

BACKGROUND

Observational cohort studies and a secondary prevention trial have shown an inverse association between adherence to the Mediterranean diet and cardiovascular risk. We conducted a randomized trial of this diet pattern for the primary prevention of cardiovascular events.

The authors' affiliations are listed in the Appendix. Address reprint requests to Dr. Estruch at the Department of Internal Medicine, Hospital Clinic, Villarroel 170, 08036 Barcelona, Spain, or at restruch@clinic.ub.es, or to Dr. Martínez-González

Estruch R et al. Retraction and Republication: Primary Prevention of Cardiovascular Disease with a Mediterranean Diet. N Engl J Med 2013;368:1279-90. N Engl J Med. 2018 Jun 21;378(25):2441-2442. doi: 10.1056/NEJMc1806491. Epub 2018 Jun 13.



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Kernelemente einer traditionellen Mediterranen Ernährung: Kalium/Mg-reich

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1. Saisonales, regionales Obst & Gemüse, Beeren, Nüsse
2. Ausgewählte Getreideprodukte
3. Viel Olivenöl!
4. Großzügig Kräuter, wenig Salz!
5. Wenig tierische Fette
6. reichlich Fisch
7. Wein während der Mahlzeit
8. Dolce mit wenig Zucker, aber einer Vielfalt von Früchten mit Espresso
9. Ein paar tausend Jahre Erfahrung und Zeit zum Kochen
10. ... sowie eine entspannte Atmosphäre bei Tisch - anschließend Siesta oder Bewegung!

Estruch R et al. Retraction and Republication: Primary Prevention of Cardiovascular Disease with a Mediterranean Diet. N Engl J Med 2013;368:1279-90. N Engl J Med. 2018 Jun 21;378(25):2441-2442. doi: 10.1056/NEJMc1806491. Epub 2018 Jun 13.

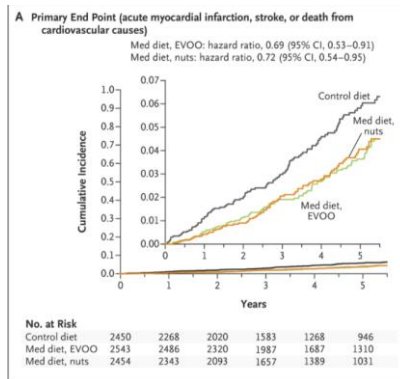


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Mediterrane Diät in der Primärprävention: PREDIMED-Studie: 30% weniger HK-Ereignisse

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Estruch R et al. Retraction and Replication: Primary Prevention of Cardiovascular Disease with a Mediterranean Diet. N Engl J Med 2013;368:1279-90. N Engl J Med. 2018 Jun 21;378(25):2441-2442. doi: 10.1056/NEJMc1806491. Epub 2018 Jun 13.

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PREDIMED-Studie: BD-Senkung – 6.4 mmHg nach 5 Jahren

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	MD+EVOO (n = 55)		MD+Nuts (n = 55)		Low-fat diet (n = 54)
	Mean	p ^a	Mean	p ^a	Mean
Baseline ¹	75.5 ± 1.6		76.9 ± 1.6		75.3 ± 1.7
1y. ¹	74.9 ± 1.6		76.7 ± 1.7		75.0 ± 1.7
Mean changes ²	-0.6 (-1.4 to 0.1)	0.09	-0.2 (-1.0 to 0.5)	0.54	-0.3 (-1.1 to 0.5)
Baseline	29.2 ± 0.5		28.9 ± 0.5		29.3 ± 0.5
1y.	29.1 ± 0.5		28.8 ± 0.5		29.2 ± 0.6
Mean changes	-0.1 (-0.4 to 0.2)	0.99	-0.1 (-0.4 to 0.2)	0.90	-0.1 (-0.5 to 0.2)
Baseline	102 ± 1.3		102 ± 1.3		100 ± 1.4
1y.	98.6 ± 1.4		99.2 ± 1.4		99.4 ± 1.5
Mean changes	-3.2 (-4.6 to -1.7)	<0.001	-2.8 (-4.3 to -1.4)	<0.001	-0.6 (-2.1 to 0.9)
Baseline	152 ± 2.6		148 ± 2.6		153 ± 2.7
1y.	146 ± 2.6		141 ± 2.5		155 ± 2.7
Mean changes	-6.0 (-10.1 to -2.0) ^a	0.004	-6.4 (-10.5 to -2.4) ^a	0.002	2.2 (-2.1 to 6.5)
Baseline	85.0 ± 1.3		85.1 ± 1.3		86.8 ± 1.4
1y.	81.8 ± 1.2		82.5 ± 1.2		88.4 ± 1.3
Mean changes	-3.2 (-5.4 to -0.9) ^a	0.07	-2.6 (-4.9 to -0.4) ^a	0.02	1.6 (-0.8 to 4.0)

Estruch R et al. Retraction and Replication: Primary Prevention of Cardiovascular Disease with a Mediterranean Diet. N Engl J Med 2013;368:1279-90. N Engl J Med. 2018 Jun 21;378(25):2441-2442. doi: 10.1056/NEJMc1806491. Epub 2018 Jun 13.

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SuperWin-Study: DASH-Diet - ACC April 2022

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From theheart.org on Medscape
COVERAGE FROM THE

American College of Cardiology (ACC) 2022 Scientific Session



Supermarket Diet Advice Improves DASH Adherence: SuperWIN

Medscape Medical News, April 3, 2022 3

Couch SC et al. Design and rationale for the supermarket and web-based intervention targeting nutrition (SuperWIN) for cardiovascular risk reduction trial. *Am Heart J.* 2022 Jun;248:21-34. doi: 10.1016/j.ahj.2022.02.011. Epub 2022 Feb 24. PMID: 35218725.



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SuperWin-Study: ACC April 2022

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SuperWin-Study - ACC April 2022: DASH-Advice im Supermarkt

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Couch SC et al. Design and rationale for the supermarket and web-based intervention targeting nutrition (SuperWIN) for cardiovascular risk reduction trial. Am Heart J. 2022 Jun;248:21-34. doi: 10.1016/j.ahj.2022.02.011. Epub 2022 Feb 24. PMID: 35218725.



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SuperWin-Study - ACC April 2022: DASH-Advice im Supermarkt

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Did changes in dietary impact improve other health measures?

	Control (n=46)	Strategy 1 (n=100)	Strategy 2 (n=101)	Strategies 1 and 2 vs. Control	P- value	Strategy 2 vs. 1	P- value
Systolic BP – mmHg							
At baseline	125.9 (119.1, 132.7)	125.6 (119.7, 131.5)	125.0 (119.0, 130.9)				
At 3 months	123.2 (116.2, 130.1)	118.9 (113.0, 124.9)	119.2 (113.3, 125.2)				
Change	-2.8 (-7.1, 1.6)	-6.6 (-9.8, -3.4)	-5.7 (-8.7, -2.8)	-3.4 (-8.4, 1.6)	0.18	0.9 (-3.2, 5.0)	0.66
Diastolic BP – mmHg							
At baseline	82.8 (78.2, 87.5)	79.2 (75.1, 83.2)	81.4 (77.3, 85.6)				
At 3 months	80.2 (75.5, 84.9)	76.7 (72.6, 80.9)	79.4 (75.1, 83.7)				
Change	-2.6 (-5.5, 0.2)	-2.4 (-4.2, -0.6)	-2.0 (-3.9, -0.1)	0.4 (-2.7, 3.6)	0.79	0.4 (-2.1, 2.9)	0.76



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Präventionsstrategie bei hochnormalem Blutdruck

Fazit

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- Bei hochnormalem Blutdruck besteht ein sehr hohes lebenslanges Risiko für eine Progression zur manifesten art. Hypertonie
- Risikofaktoren für die Progression zur Hypertonie sind niedrige körperliche Aktivität und Leistungsfähigkeit, Übergewicht, Diabetes, Alter
- In den aktuellen 2023 ESH-Leitlinien werden im Wesentlichen Lebensstilmaßnahmen empfohlen. Diese sind bei konsequenter Umsetzung effektiv in der Prävention einer manifesten art. Hypertonie
- Die zusätzliche medikamentöse Therapie bei hochnormalem Blutdruck wird von den 2023 ESH-Leitlinien generell **nicht** empfohlen

Präventionsstrategie bei hochnormalem Blutdruck

Fazit

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- Bei hochnormalem Blutdruck besteht ein sehr hohes lebenslanges Risiko für eine Progression zur Hypertonie
- Aktuell werden im Wesentlichen Lebensstilmaßnahmen empfohlen. Diese sind bei konsequenter Umsetzung effektiv
- Risikofaktoren für die Progression zur Hypertonie sind niedrige körperliche Aktivität und Leistungsfähigkeit, Übergewicht, Diabetes, Alter
- Bei sehr hohem kardiovaskulärem Risiko kann eine medikamentöse Therapie des hochnormalen Blutdrucks erwogen werden (z.B. mit Candesartan, TROPHY-Studie)

Kontakt

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Vielen Dank für Ihre
Aufmerksamkeit!