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Metabolic Shifts and Menopause: The Role of Diet in Women's Midlife Health

Wednesday, September 17, 2025

Presented by Hannah Cabré, PhD, RDN

Moderator:
Lisa Diewald, MS, RDN, LDN
Associate Director
MacDonald Center for Nutrition Education and Research

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- Go to 9/17/25 webinar presented by Hannah Cabré, PhD, RDN

Continuing Professional Development Details

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- Villanova University M. Louise Fitzpatrick College of Nursing is accredited as a provider of nursing continuing professional development by the American Nurses Credentialing Center's Commission on Accreditation. This activity awards 1 contact hour for nursing professionals.

- This activity awards 1 CPEU in accordance with the Commission on Dietetic Registration's CPEU Prior Approval Program

    - Level 2 activity
    - Suggested CDR Performance Indicators: 7.1.1, 7.2.3, 9.1.1, and 9.1.5
    - To receive CE credit, you must attend the entire program.

The Q&A Box is Open!

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- Questions are welcome!
- Please send through the Q&A Box during the presentation.
- Q&A session will follow the program.

Disclosures

Dr. Cabré has received research funding from the National Pork Board. The relevant financial relationships listed for this individual have been mitigated.

Planners will review participant feedback to evaluate for real or perceived commercial bias in any activity.

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Metabolic Shifts and Menopause: The Role of Diet in Women's Midlife Health

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Metabolic Shifts and Menopause: The Role of Diet in Women's Midlife Health

Hannah E. Cabre, PhD, RDN
Postdoctoral Research Fellow
Pennington Biomedical Research Center

Disclosures

- Funding from the National Pork Board

Objectives

- Understand the physiological and behavioral changes that surround the transition from normal menstrual cycle function to menopause
- Describe the impact of estrogen loss from clinical studies on female metabolism and weight gain.
- Summarize the specific nutritional and health needs to optimize health post-menopause and the interventions with established efficacy
- Introduce precision nutrition approaches tailored to midlife women

The New York Times Magazine | https://www.nytimes.com/2023/02/01/magazine/menopause-hot-flashes-hormone-therapy.html

Women Have Been Misled About Menopause

Hot flashes, sleeplessness, pain during sex: For some of menopause's worst symptoms, there's an established treatment. Why aren't more women offered it?

By Susan Dominus
Feb. 1, 2023

'Menopause has the worst P.R. campaign in the history of the universe, because it's not just hot flashes and night sweats.'

'It suggests that we have a high cultural tolerance for women's suffering. It's not regarded as important.'

Administration Priorities

NOVEMBER 17, 2023

Launch of White House Initiative on Women's Health Research

April 6, 2021

"We get 'the talk' before we start our periods around the end of grade school, but nobody gives you 'the talk' when you're about to enter perimenopause."

— *Dr. Stephanie S. Faubion, medical director for the North American Menopause Society*

Study Shows the Staggering Cost of Menopause for Women in the Work Force

The New York Times Magazine

Some are taking sick days. Others are cutting back their hours. Still others end up quitting altogether.

$1.8 Billion in lost working time per year

A New Match for Menopausal Weight Gain: Ozempic

The New York Times Magazine

Weight gain is one of the most common concerns among women going through menopause. New drugs could change that.

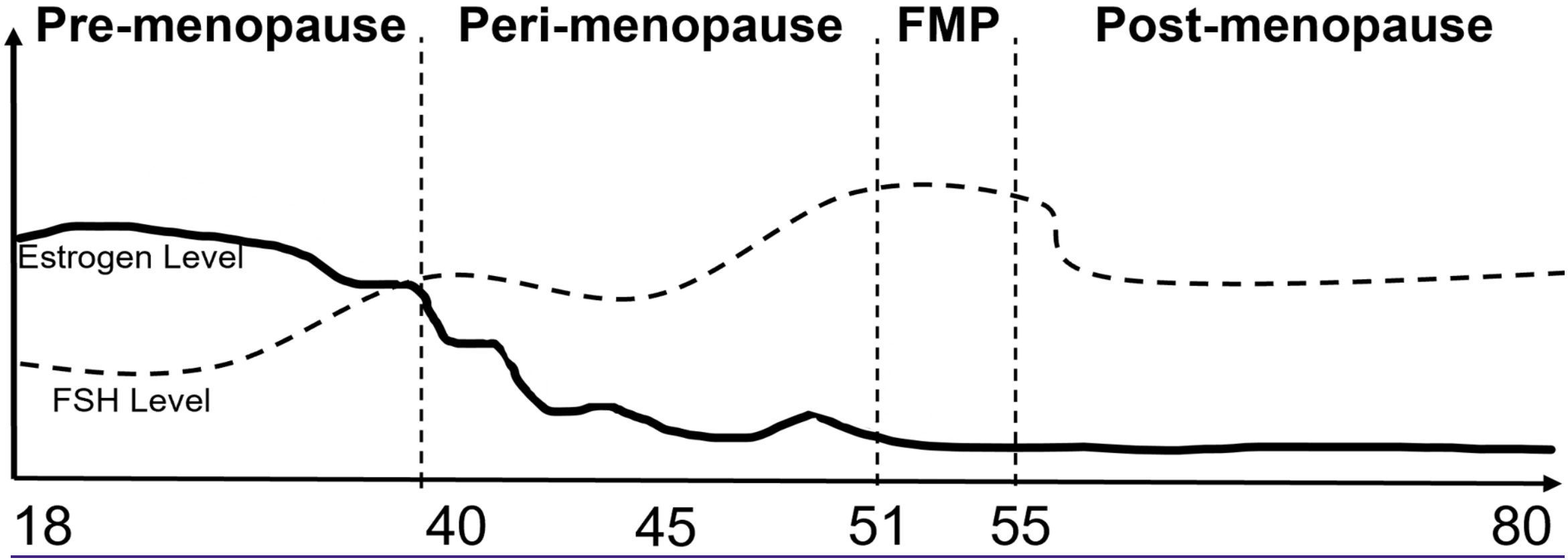
Pennington Biomedical Research Center
Louisiana State University


Reproductive age
Females have diverse hormonal profile across their lifespan
Pregnancy = varying hormonal concentrations
Transition to menopause = varying hormonal concentrations
Women spend up to **40%** of their lives post-menopause

How do hormones change across the lifespan?

↑ Risk of Osteoporosis

Pre-menopause: regular menstrual cycles
Peri-menopause: irregular menstrual cycles (but not amenorrheic for <12 months); **mean onset: 44 yrs**
Post-menopause: amenorrheic for ≥ 12 months; **mean age 51 yrs**



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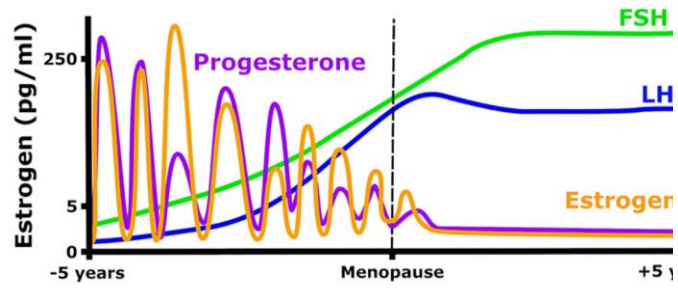
Adapted from Greendale et al. (2019), Lovejoy et al. (2008), Randolph et al. (2010), Gould LM et al. 2022

Reproductive Endocrine Changes



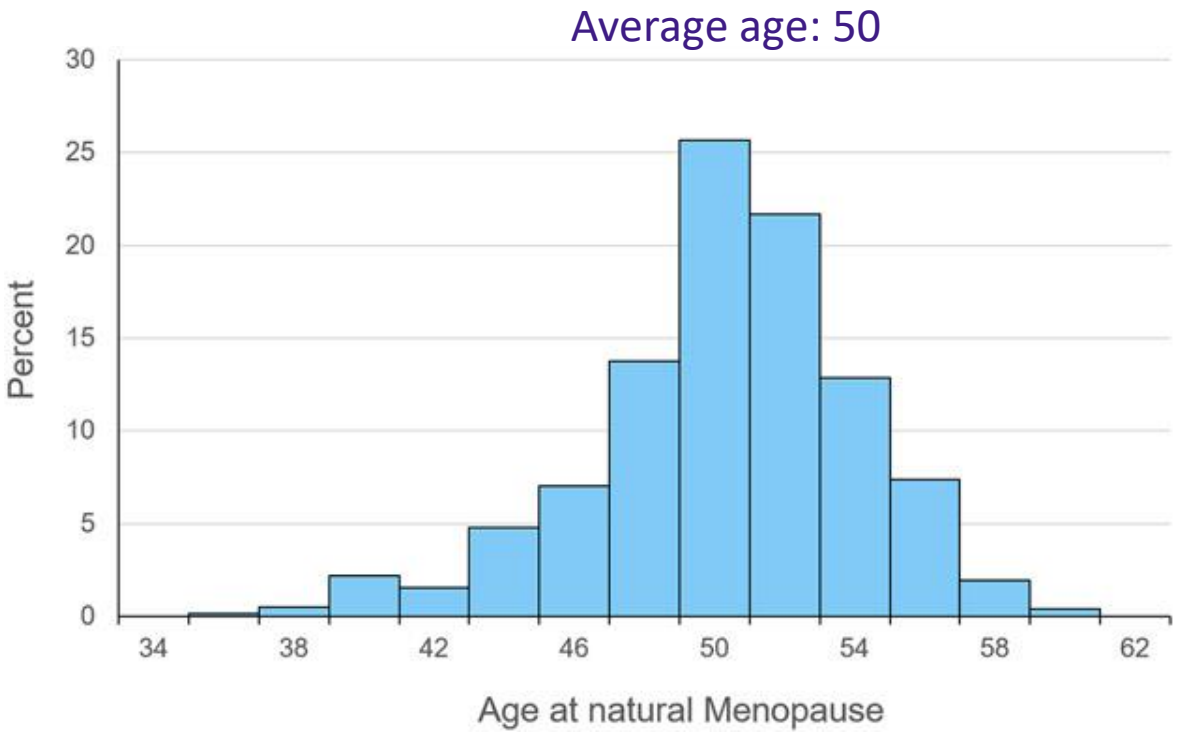
	Menarche						FMP (0)			
Stage	-5	-4	-3b	-3a	-2	-1	+1a	+1b	+1c	+2
Terminology	REPRODUCTIVE				MENOPAUSAL TRANSITION		POSTMENOPAUSE			
	Early	Peak	Late		Early	Late	Early			Late
					Perimenopause					
Duration	*variable*				*variable*	1-3 years	2 years (1+1)		3-6 years	*Remaining lifespan*
PRINCIPAL CRITERIA										
Menstrual Cycle	Variable to regular	Regular	Regular	Subtle changes in Flow/ Length	*Variable Length:* Persistent ≥7-day difference in length of consecutive cycles	Interval of amenorrhea of ≥60 days				
SUPPORTIVE CRITERIA										
Endocrine FSH AMH Inhibin B			Low Low	Variable * Low Low	↑ Variable * Low Low	↑ >25 IU/L ** Low Low	↑ Variable * Low Low	Stabilizes Very Low Very Low		
Antral Follicle Count			Low	Low	Low	Low	Very Low	Very Low		
DESCRIPTIVE CHARACTERISTICS										
Symptoms						Vasomotor symptoms *Likely*	Vasomotor symptoms *Most Likely*			*Increasing* symptoms of urogenital atrophy

Greendale GA et al. Changes in body composition and weight during the menopause transition. JCI Insight. 2019 7;4(5):e124865. doi: 10.1172/jci.insight.124865.

Chidi-Ogbolu N and Baar K (2019). Effect of Estrogen on Musculoskeletal Performance and Injury Risk. Front. Physiol. 9:1834. doi: 10.3389/fphys.2018.01834

Timing of Menopause Onset & Health Consequences

Menopause
The Journal of The Menopause Society



Characteristics of the 771 participants at baseline and at the end of follow-up, CARDIA study 1990-1991 to 2015-2016

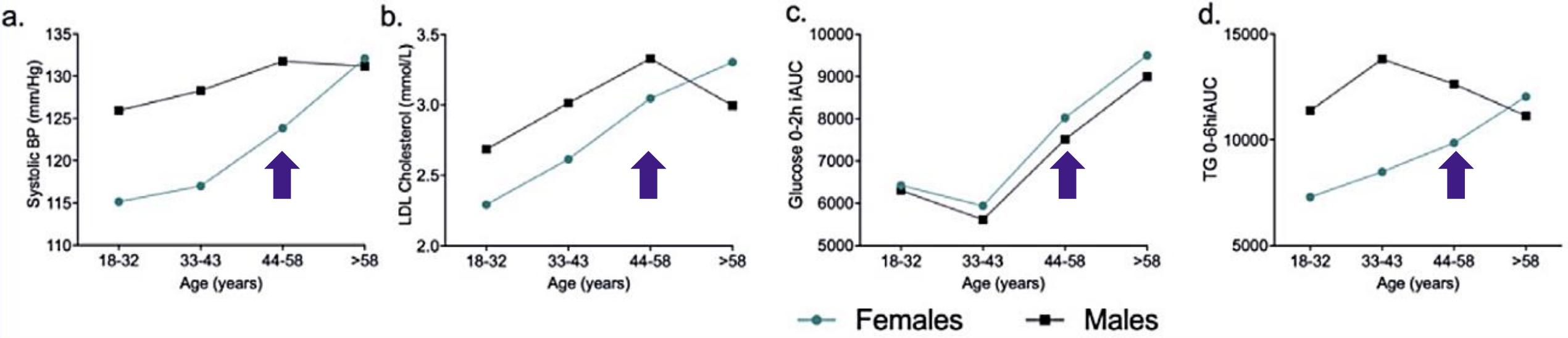
Characteristics	Baseline (Premenopausal)	End of follow-up (Postmenopausal)
Age, years	31.8 (2.9)	56.4 (3.1)
Systolic blood pressure, mmHg	103.4 (10.4)	117.7 (17.2)
Anti-hypertensive medication use, %	1.7	28.5
Diabetes, %	0.1	11.8
Physical activity, exercise units	330 (250)	292 (241)
Body mass Index, kg/m^2	25.5 (6.4)	29.9 (7.8)
Waist circumference, com	76.9 (12.5)	90.8 (16.9)
Lipid-lowering medication use, %	0.3	17.8
HDL cholesterol, mg/dL	58.4 (13.6)	67.8 (18.7)
Total cholesterol, mg/dL	176.5 (30.6)	201.1 (35.6)

Exponential Increase in Diseases

Appiah D et al. The association of age at natural menopause with pre- to postmenopausal changes in left ventricular structure and function: the Coronary Artery Risk Development in Young Adults (CARDIA) study. Menopause. 2022;29(5):564-572. doi: 10.1097/GME.0000000000001950.

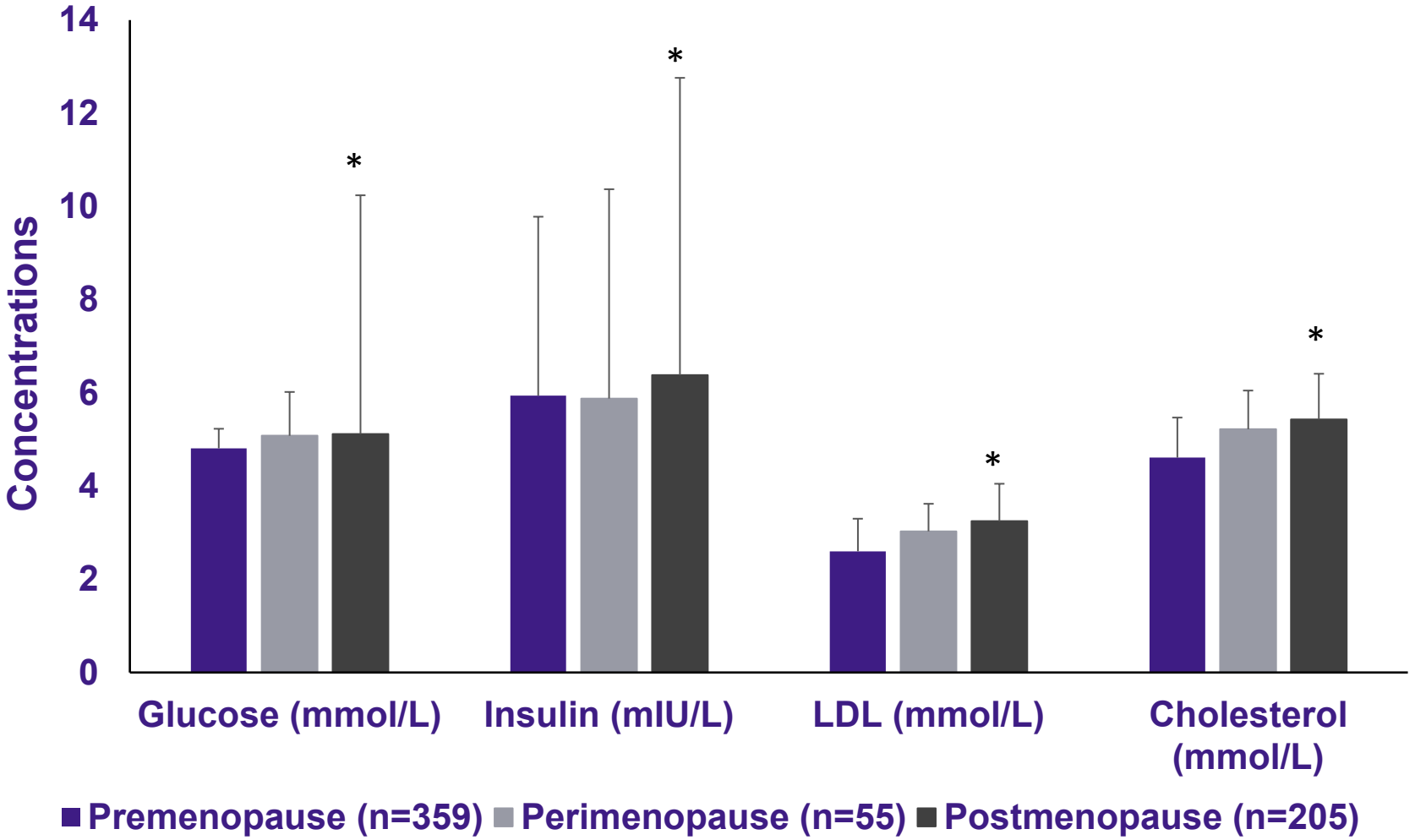
Sex Differences Across Age Groups

- The ZOE PREDICT I UK study **(1,002 females and 247 males)**
- Phenotypic characteristics, diet, and cardiometabolic measurements



Bermingham KM, et al.. Menopause is associated with postprandial metabolism, metabolic health and lifestyle: The ZOE PREDICT study. EBioMedicine. 2022 Nov;85:104303. doi: 10.1016/j.ebiom.2022.104303.

Menopause is Associated with Metabolic Health



- The ZOE PREDICT I UK study **(n=1,002)**
- Postmenopausal women demonstrated **unfavorable outcomes** compared to premenopausal women

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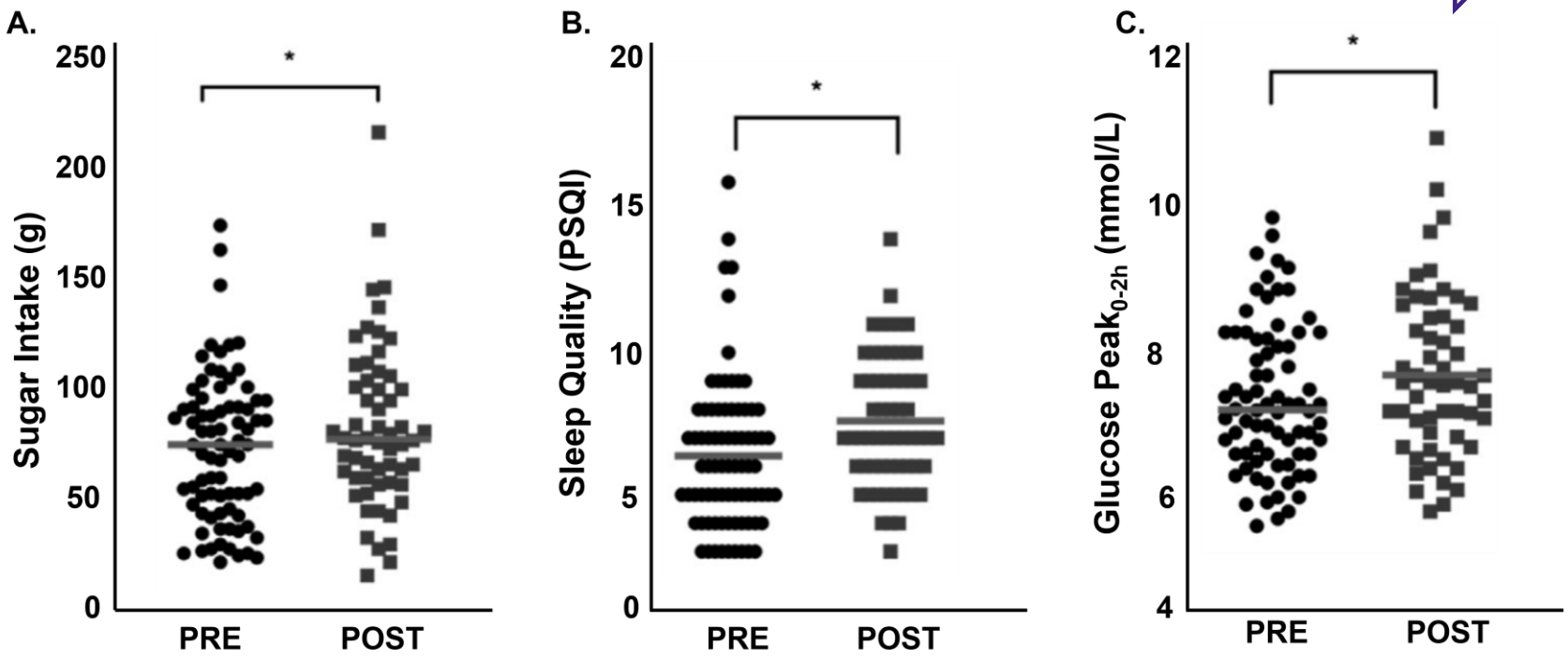
Bermingham KM, et al.EBioMedicine. 2022

Age-Matched Inter-Individuality

Age-matched subgroup (47-56 years)

Premenopausal Women (n=86)

Postmenopausal Women (n=64)



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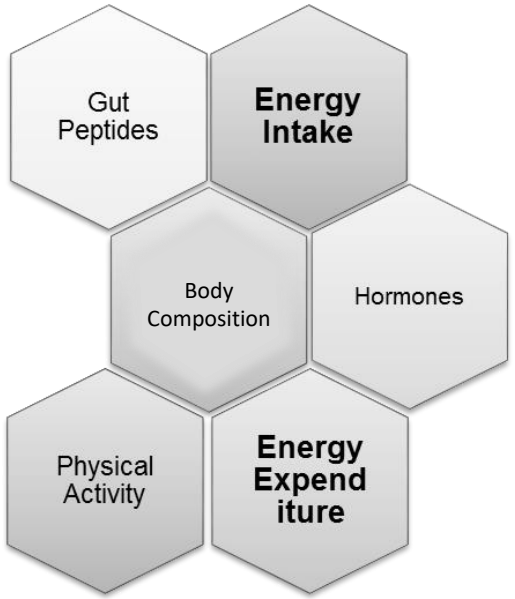
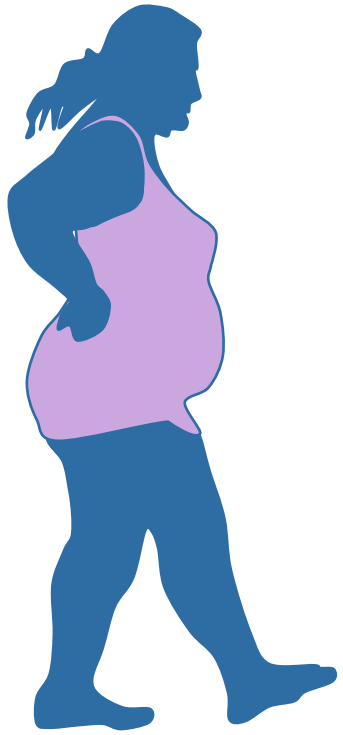
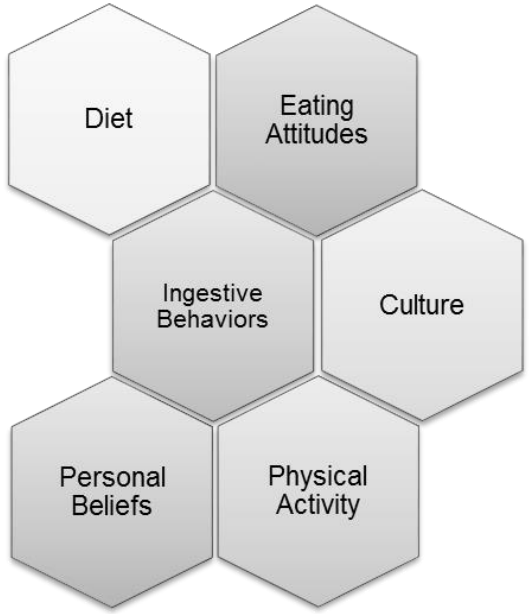
Bermingham KM, et al.EBioMedicine. 2022

The Menopause Transition is Complex

Demographic Factors





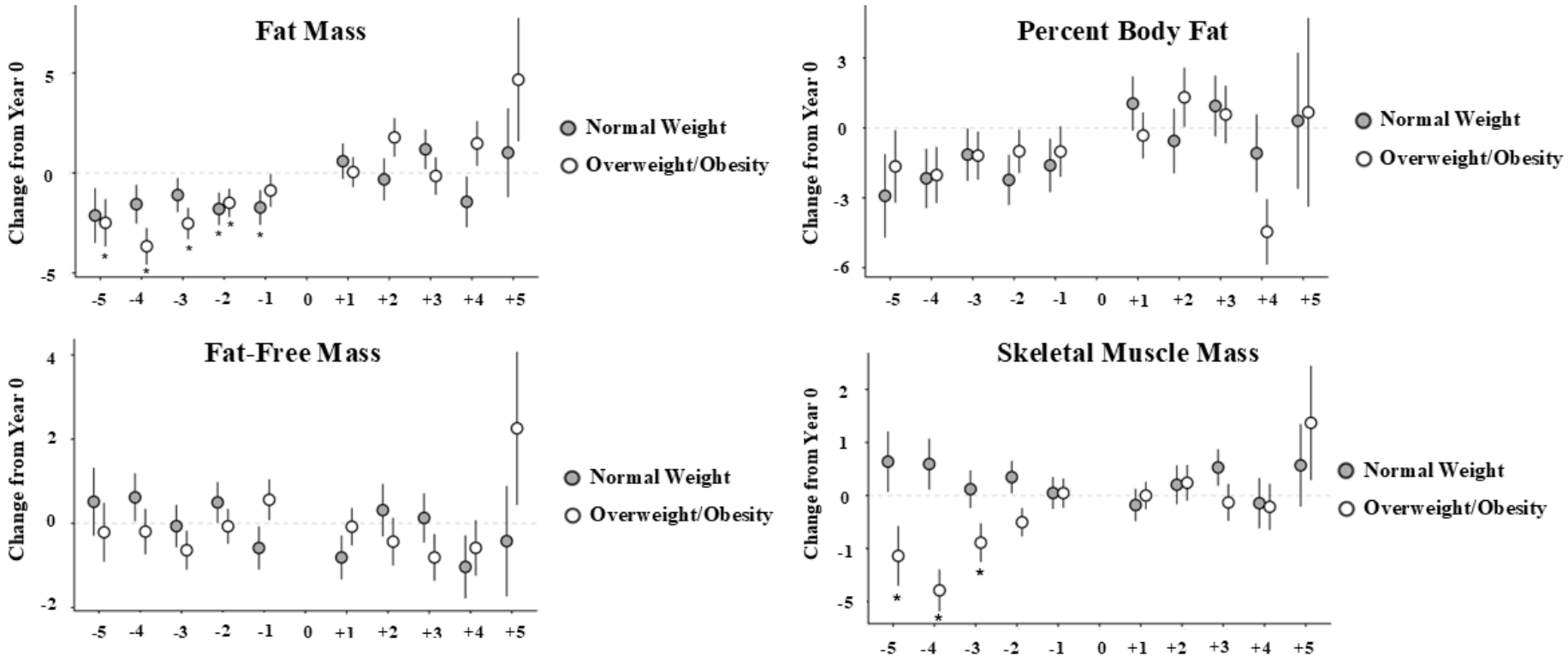


Physiological Factors

Behavioral Factors

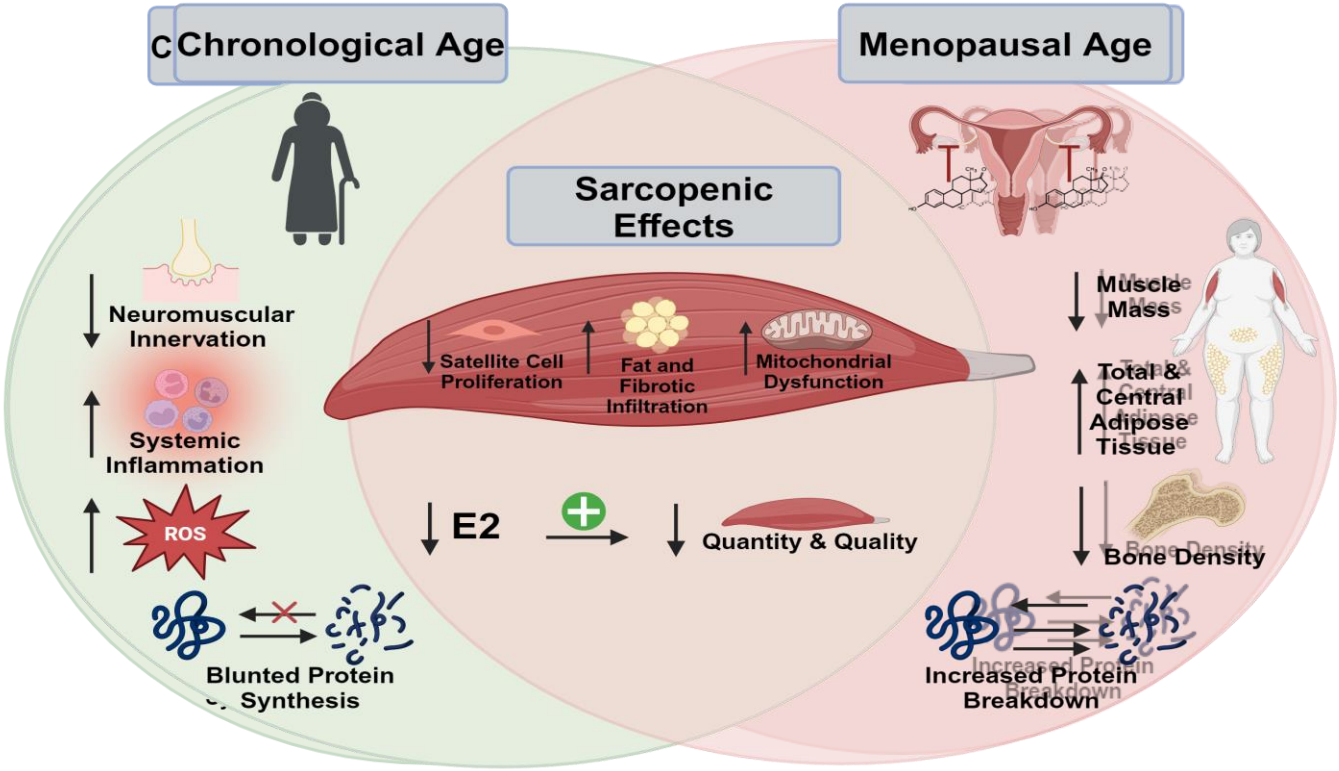
Time of Transition

Change in percent body fat is reflected by loss of fat-free mass



Cabre, HE et al. 2025 In Review

Body Composition Changes Across Age



Role of Estrogen

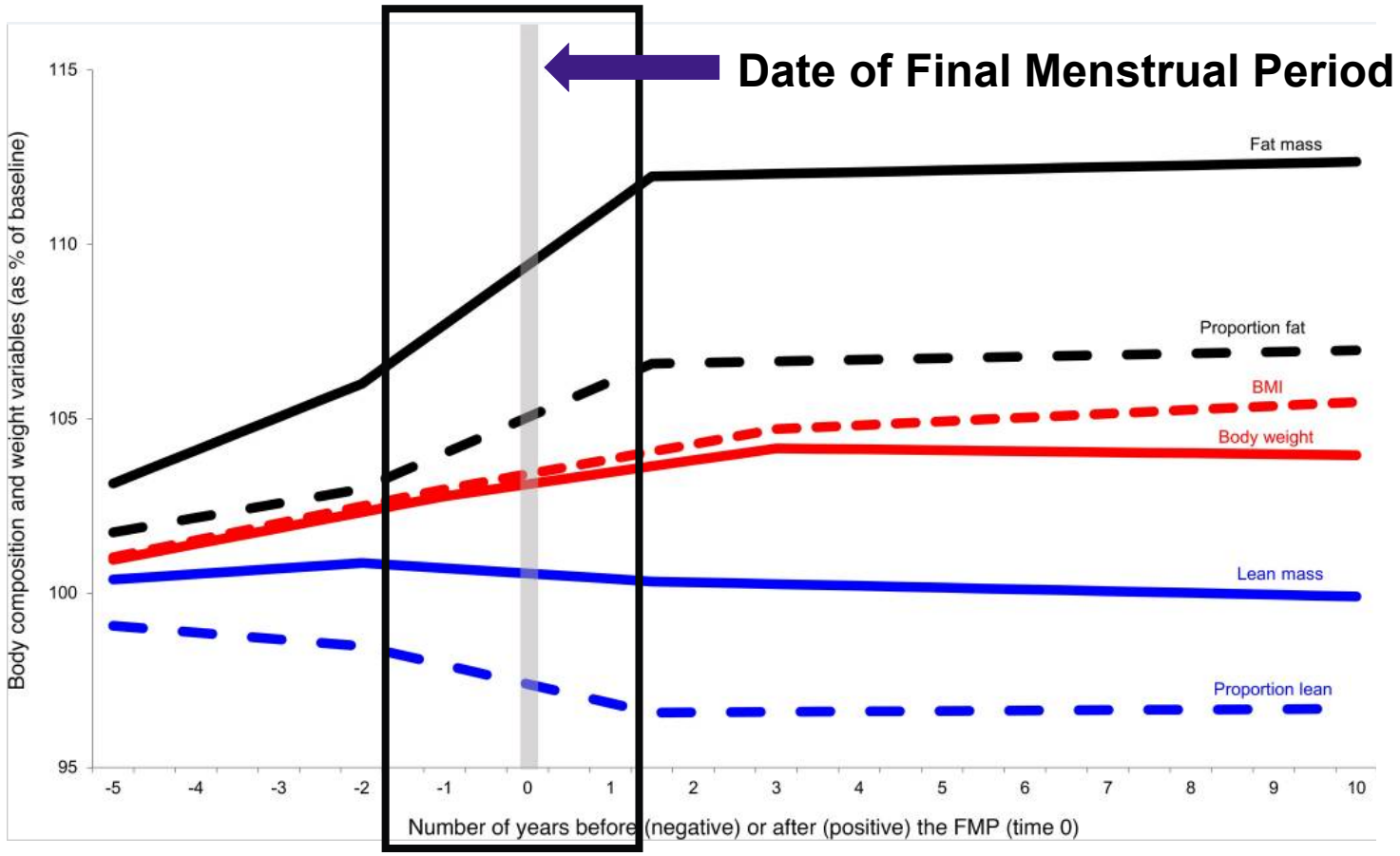
Hormone replacement therapy research suggests that the delivery of **estrogen** may attenuate or even reverse the age-related decline in lean mass in postmenopausal women

Enns DL, Tiidus PM. The influence of estrogen on skeletal muscle: sex matters. Sports Med. 2010 Jan 1;40(1):41-58. doi: 10.2165/11319760-000000000-00000.

Sorensen MB, Rosenfalck AM, Hojgaard L, et al. Obesity and sarcopenia after menopause are reversed by sex hormone replacement therapy. Obes Res 2001; 9: 622-6

Estrogen & Body Composition Changes

JCI insight



- Nationwide multi-ethnic study **(n=1,246)** (Greendale et al. 2019)
- Approximately 10 years of annual testing via **DXA**
- A 4-compartment study across age

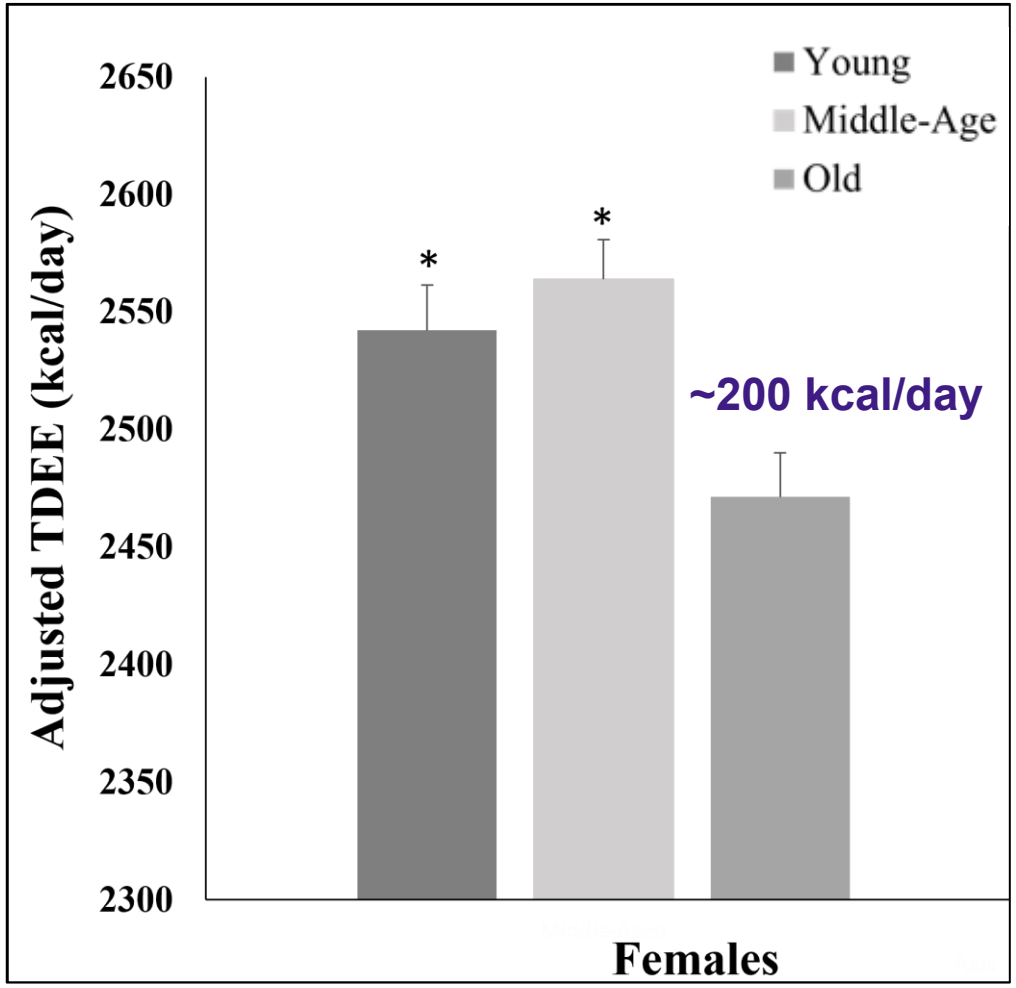
Table 2. Body Composition by Decade of Age (kg, mean ± SD)

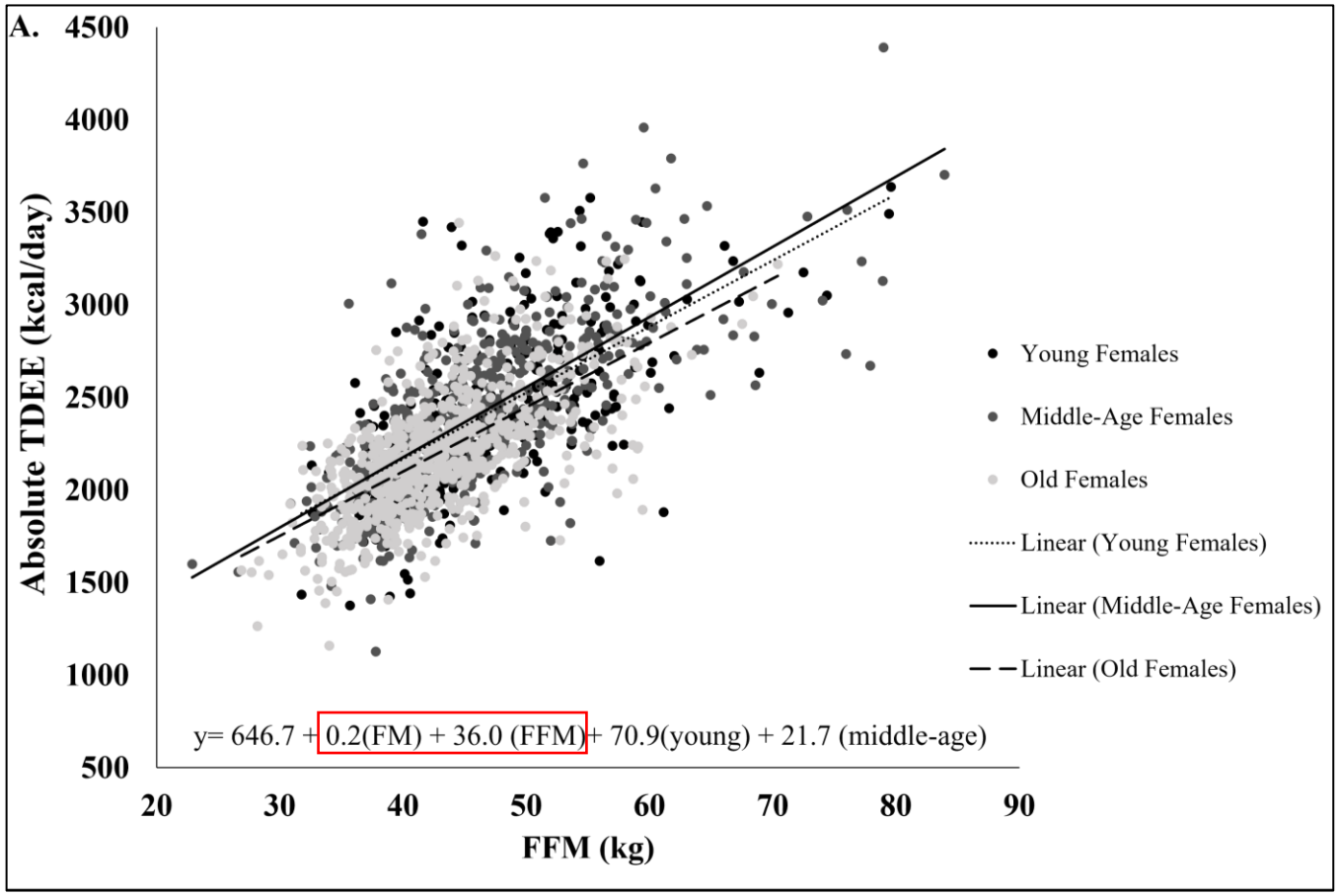
Age	No. of Subjects	Protein	Water	Mineral	Fat
20-30	8	9.9 ± 0.8	33.2 ± 2.0	2.9 ± 0.3	14.6 ± 5.5
31-40	29	9.2 ± 0.8	31.5 ± 2.8	2.8 ± 0.3	19.7 ± 6.7
41-50	44	9.1 ± 0.8	31.4 ± 3.6	2.8 ± 0.3	24.2 ± 7.1
51-60	25	8.8 ± 1.0	30.4 ± 3.8	2.6 ± 0.4	23.4 ± 7.2
61-70	35	8.4 ± 1.0	30.0 ± 3.9	2.4 ± 0.3	24.8 ± 7.3
71-80	14	8.4 ± 0.9	29.3 ± 3.8	2.2 ± 0.3	21.5 ± 6.8
Overall	155	8.9 ± 1.0	30.9 ± 3.5	2.6 ± 0.4	22.6 ± 7.3

pb

Greendale GA, Sternfeld B, Huang M, Han W, Karvonen-Gutierrez C, Ruppert K, Cauley JA, Finkelstein JS, Jiang SF, Karlamangla AS. Changes in body composition and weight during the menopause transition. JCI Insight. 2019 Mar 7;4(5):e124865. doi: 10.1172/jci.insight.124865.

Aging Effects Total Daily Energy Expenditure





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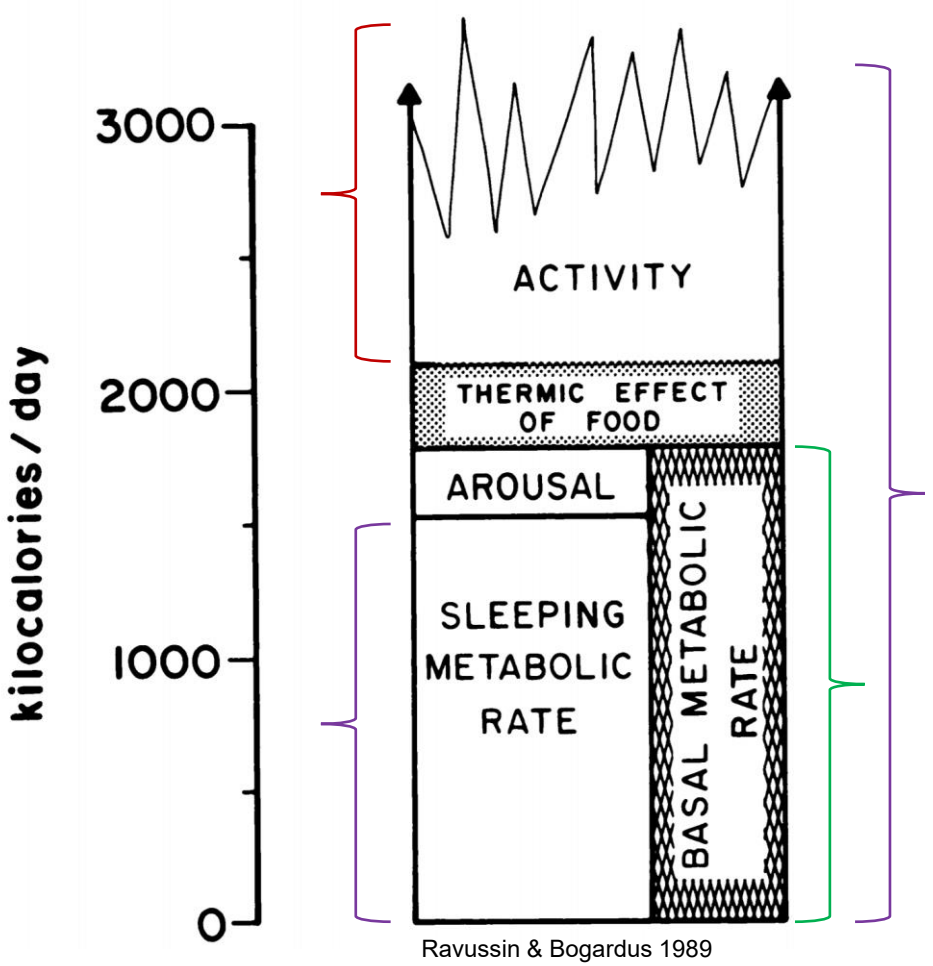
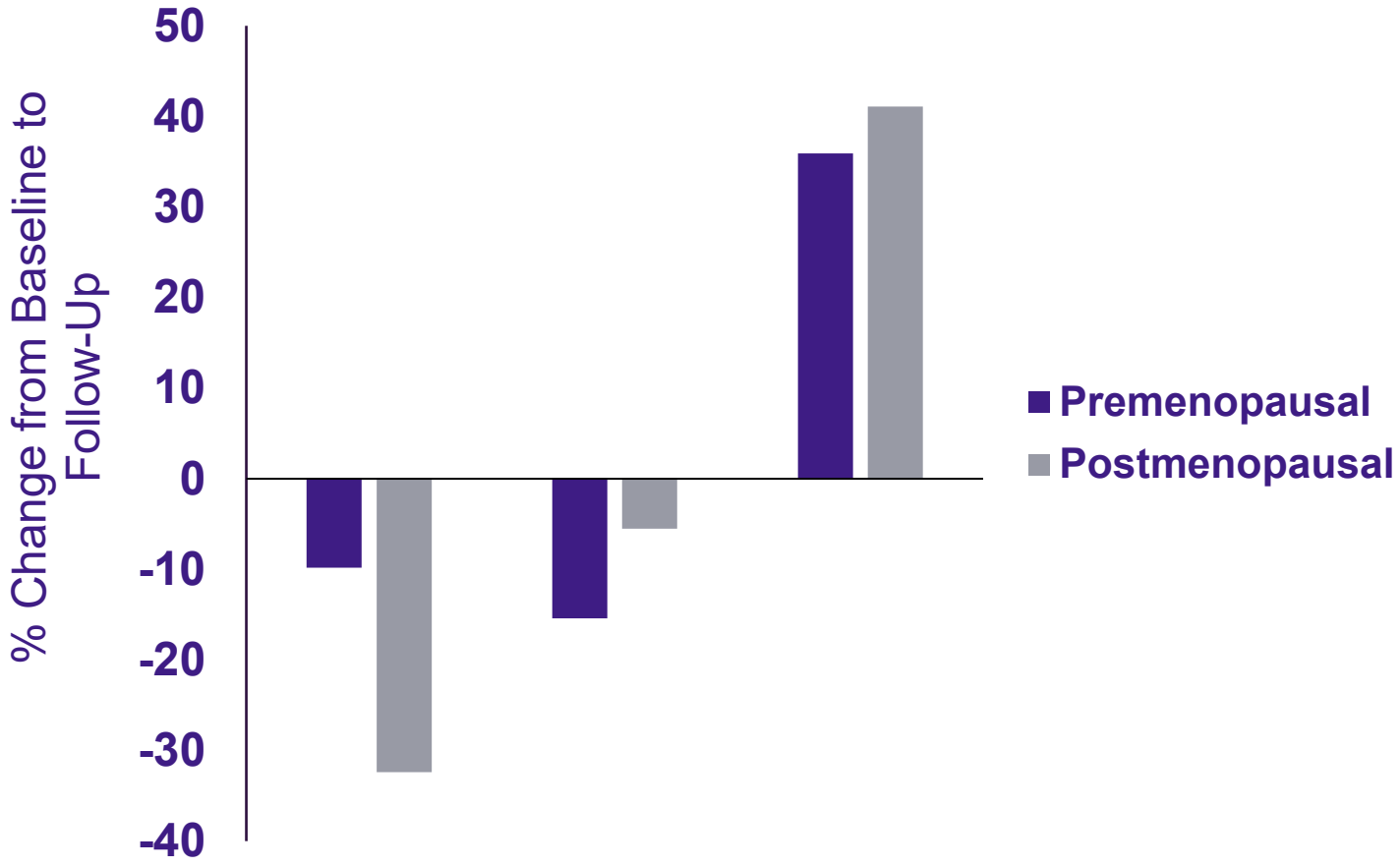
Cabre et al. Exploration of the changes in daily energy expenditure across the menopausal years. 2024. In Review.

Estrogen & Energy Expenditure

- **9% ↓** in TEE in postmenopausal women (Lovejoy et al. 2008)
  - **9% ↓ in SEE (~111 kcal/day)**
  - **↓ in fat oxidation**

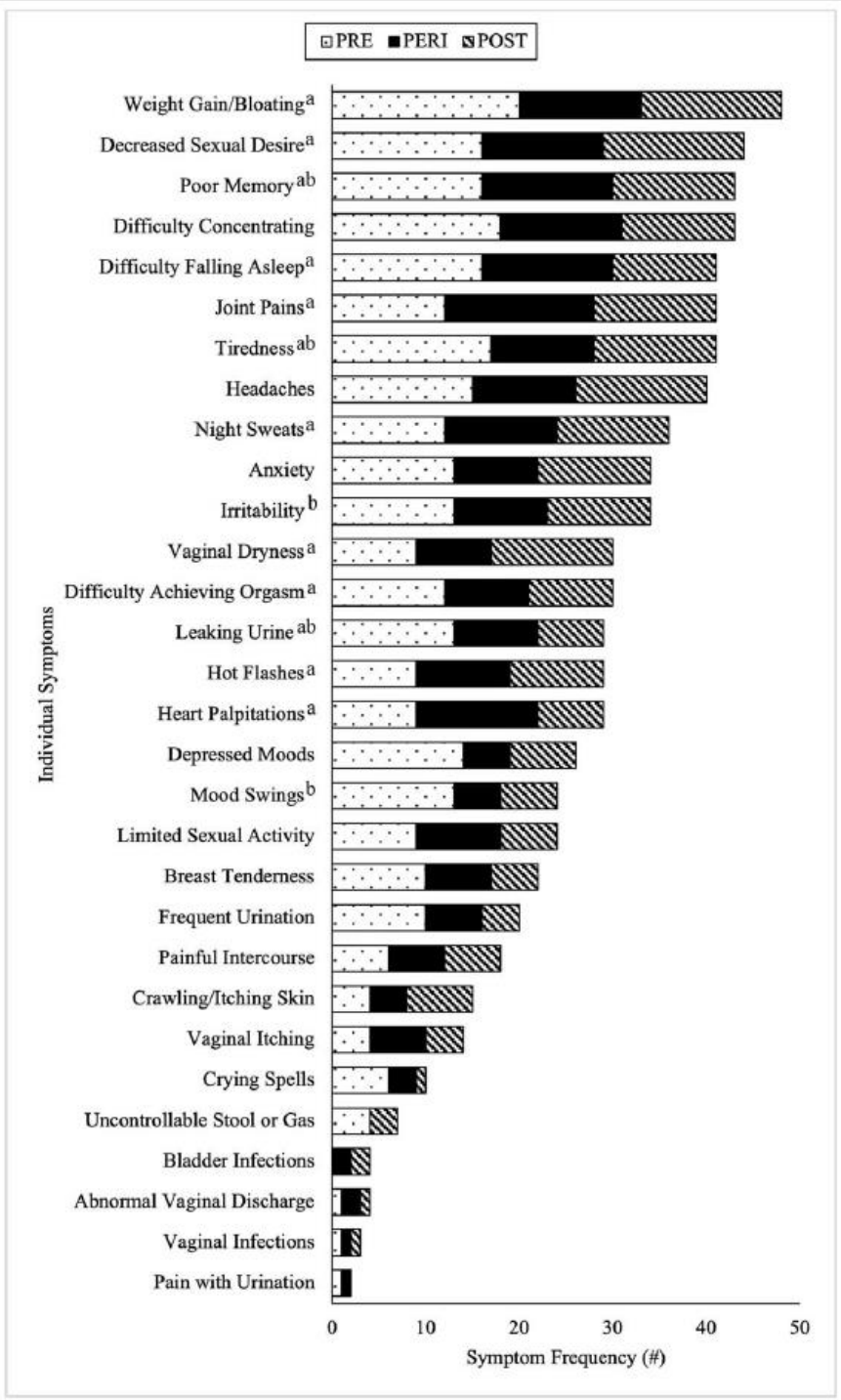


Ravussin & Bogardus 1989



Lovejoy JC, Champagne CM, de Jonge L, Xie H, Smith SR. Increased visceral fat and decreased energy expenditure during the menopausal transition. Int J Obes (Lond). 2008 Jun;32(6):949-58. doi: 10.1038/ijo.2008.25.

Menopause symptoms impact health outcomes



% body fat was significantly *positive* correlation with **menopause symptoms** (*r*=0.464) and *inversely* correlated with **steps** (*r*=-0.364) and **vigorous activity** (*r*=-0.239)

Moore SR, Cabre HE, Smith-Ryan AE. Body composition, physical activity, and menopause symptoms: how do they relate? Menopause. 2024 Apr 1;31(4):336-341. doi: 10.1097/GME.0000000000002334.

Lifestyle Behaviors

Physical Activity

- 50% ↓ in PA through the menopause transition
- PA ↑ in **30%** of women who entered menopause
- Higher PA resulted in better physical function at 15-year follow up

Diet

- ↓ energy intake by **250-800 kcal/day** at menopause onset (food logs)
- ↑ saturated fat & ↑ cholesterol and ↓ carbohydrates

Sleep Quality

- ↑ use of sleep medications in post-menopause
- **40-60%** of menopausal women struggle with sleep problems
- Greater vasomotor symptoms → poorer sleep quality

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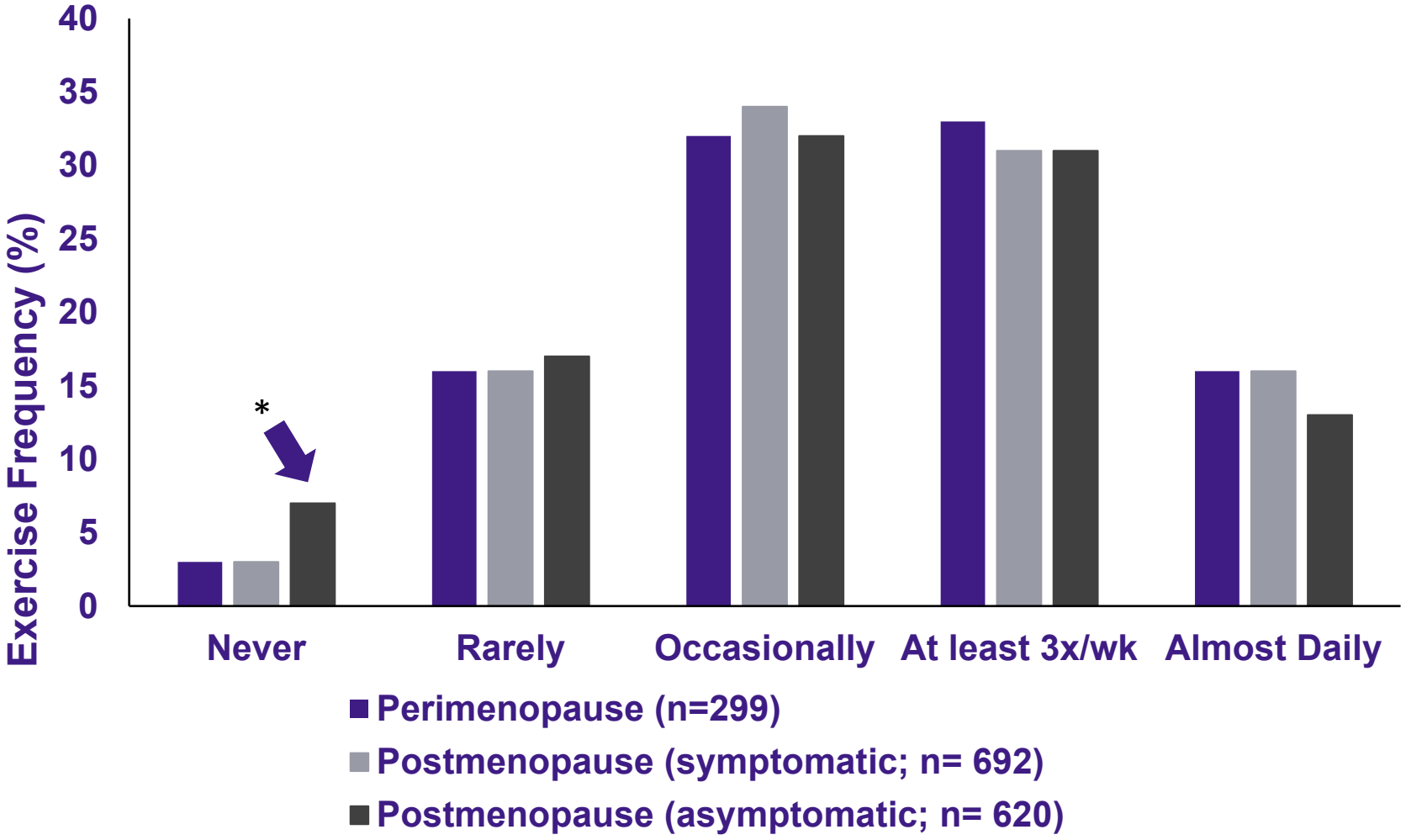
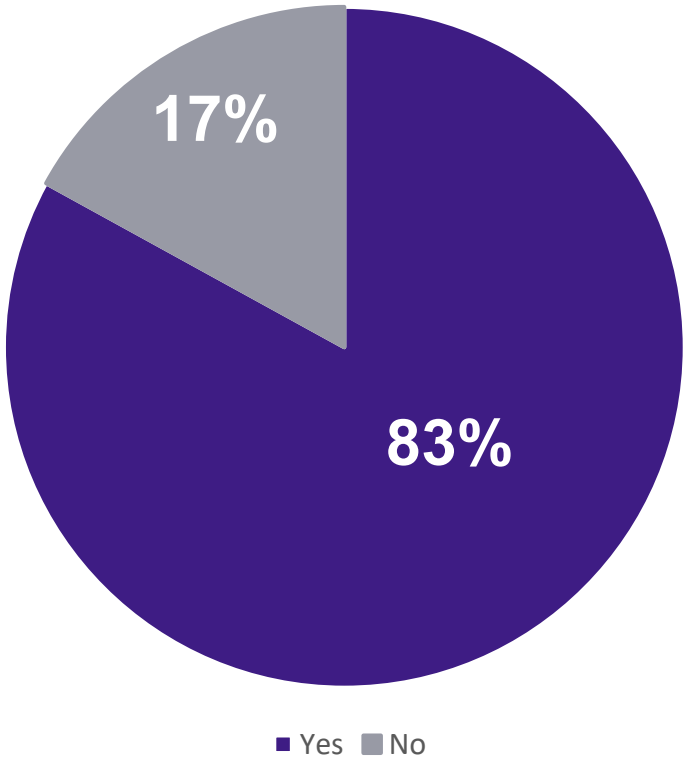
Adapted from Lovejoy et al. 2008, Hulteen et al. 2023, Moilanen et al. 2012, Duval et al. 2014, Soares et al. 2024, Maki et al. 2024,

Exercise Preferences Vary



Interest in Structured Lifestyle Program



Marlatt KL, Beyl RA, Redman LM. A qualitative assessment of health behaviors and experiences during menopause: A cross-sectional, observational study. Maturitas. 2018 Oct;116:36-42. doi: 10.1016/j.maturitas.2018.07.014.

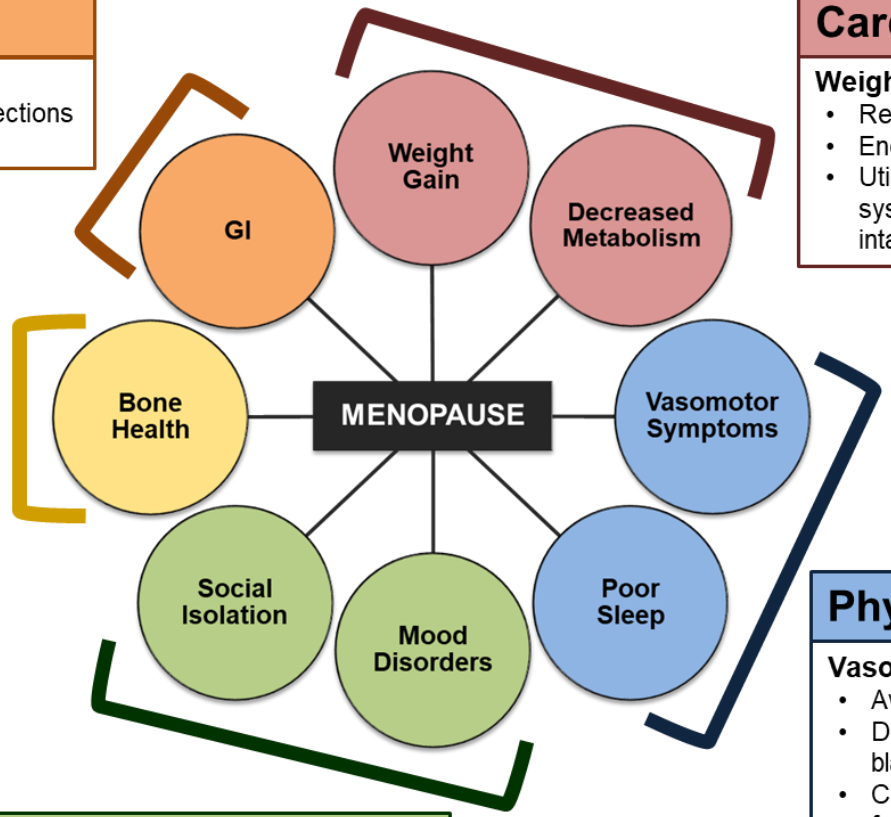
Menopausal women are a high-priority population requiring specialized interventions

Gastrointestinal Health

- Magnesium-containing supplements
- Supplementing calcium and vitamin B12 injections (if warranted)

Bone Health

- Promote dietary consumption of calcium-rich foods, vitamins D and K, magnesium, and phosphorous
- Consider supplementing calcium and vitamin D when intake is insufficient



Cardiometabolic Health

Weight Gain & Decreased Metabolism

- Reduce calorie intake, increase physical activity
- Encourage healthy eating and portion control
- Utilize behavioral modifications (e.g., support system, self-monitoring of weight and calorie intake ≥5 days/week)

Physical Symptoms

Vasomotor Symptoms (VMS) & Poor Sleep

- Avoid caffeine, alcohol, and spicy foods
- Dietary remedies may help with VMS (e.g., soy, black cohosh, and vitamin E)
- Consuming a Mediterranean diet and other foods may promote sleep (e.g., milk, fish, and cherry juice).

Psychosocial Symptoms

Social Isolation

- Identify food insecurities
- Refer to local resources and services

Mood Disorders

- Educate women on mental health
- Discuss emotional eating
- Encourage calorie-controlled diet

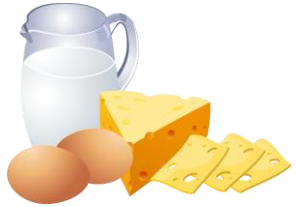
Marlatt KL, Gilmore LA, Flanagan EW, Redman LM. Dietary Considerations for Postmenopausal Women. Nutrient Guide for Physicians and Related Healthcare Professions. 2020. Nutrition and Health.

Mediterranean Diet

- The FLAMENCO project in perimenopausal women **(n=176)**
- Mediterranean Diet Score on food frequency questionnaire

↓ BMI and %body fat

↓ BMI, waist circumference, total and android fat mass, %body fat, android to gynoid fat mass ratio, VAT



↓ Body weight, BMI, waist circumference, total and android fat mass, VAT

↓ Waist circumference and %body fat

↑ Body weight, BMI, waist circumference, %body fat, total and android fat mass, VAT

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Flor-Alemany M, Marín-Jiménez N, Nestares T, Borges-Cosic M, Aranda P, Aparicio VA. Mediterranean diet, tobacco consumption and body composition during perimenopause. The FLAMENCO project. Maturitas. 2020 Jul;137:30-36. doi: 10.1016/j.maturitas.2020.04.002.

Treatment Strategies

Caloric Reduction

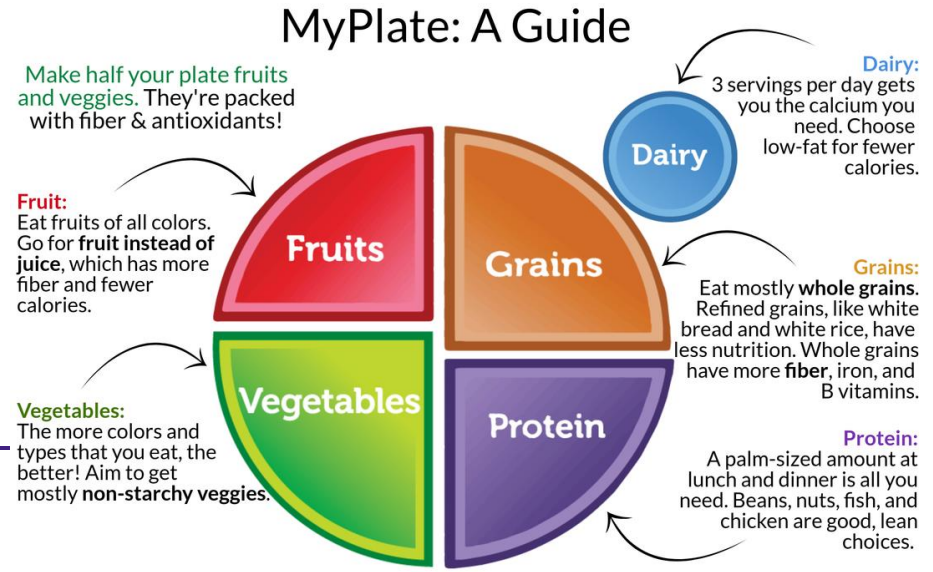
- Declines in calories expended, physical activity, and fat burning capacity
- Reduce energy intake by focusing on **portion sizes** and **nutrient dense foods**
- Calorie deficit of **400-600 kcal/day** is a general recommendation

Estimated Energy Requirement

- Women 19 years and older:
  EER = 354 – (6.91 × age [y]) + PA × (9.36 × weight [kg] + 726 × height [m]),
  where PA is the estimated physical activity level ranging from 1 to 2.5 (sedentary to very active).
- No differences in energy needs based on race and menopause stage

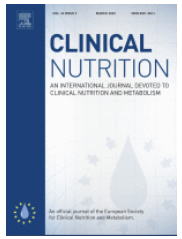
Diet Quality and Exercise

- MyPlate for healthy eating pattern, Mediterranean Diet, and DASH diet
- Exercise is important for muscle mass and bone mineral retention



Marlatt KL, Gilmore LA, Flanagan EW, Redman LM. Dietary Considerations for Postmenopausal Women. Nutrient Guide for Physicians and Related Healthcare Professions. 2020. Nutrition and Health.

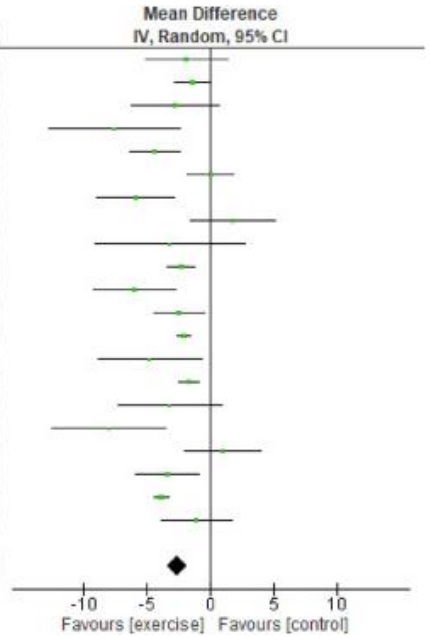
Exercise and Metabolic Profiles



Waist Circumference (cm)

Study or Subgroup	Exercise Training Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Azadpour 2017	-1.4	4.4	12	0.5	3.66	12	3.5%	-1.90 [-5.14, 1.34]
Bergström 2009	-1.6	3.61	48	-0.2	3.35	44	7.1%	-1.40 [-2.82, 0.02]
Biteli 2021a	-3.5	5.9	24	-0.7	6.23	22	3.2%	-2.80 [-6.31, 0.71]
Biteli 2021b	-7.3	6.71	11	0.3	6.21	13	1.8%	-7.60 [-12.81, -2.39]
Chagas 2017	-4.7	0.92	35	-0.3	5.85	35	5.9%	-4.40 [-6.36, -2.44]
Church 2007	-1.4	6.42	103	-1.4	6.59	102	6.3%	0.00 [-1.78, 1.78]
Colado 2009	-3.6	4.19	21	2.3	4.08	10	3.7%	-5.90 [-9.00, -2.80]
Conceicao 2013	1.5	2	10	-0.3	5.02	10	3.4%	1.80 [-1.55, 5.15]
Dalleck 2009	-2.5	6.99	8	0.7	5.58	10	1.4%	-3.20 [-9.15, 2.75]
Friedenreich 2011	-2.2	4.8	160	0.1	5.12	160	8.0%	-2.30 [-3.39, -1.21]
Gomez-Tomas 2018	-2.7	4.5	18	3.3	5.81	20	3.5%	-6.00 [-9.29, -2.71]
Hettchen 2021	-2.9	3.9	27	-0.4	3.6	27	5.8%	-2.50 [-4.50, -0.50]
Kim and Kim 2012	-1.2	0.72	15	0.9	0.84	15	9.0%	-2.10 [-2.66, -1.54]
Latosik 2014	-3.8	5.77	15	1	4.65	10	2.6%	-4.80 [-8.90, -0.70]
Lee 2012	-1.3	0.72	8	0.4	0.96	8	8.5%	-1.70 [-2.53, -0.87]
Lesser 2016	-4	7.37	23	-0.8	7.34	26	2.5%	-3.20 [-7.33, 0.93]
Nunes 2016	-4	5.44	11	4	5.31	11	2.2%	-8.00 [-12.49, -3.51]
Senechal 2012	-0.7	4.9	10	-1.7	0.3	10	3.8%	1.00 [-2.04, 4.04]
Seo 2010	-4.3	2.58	8	-0.9	2.38	7	4.7%	-3.40 [-5.91, -0.89]
Son and Park 2021	-3.4	0.3	18	0.5	1.1	17	9.0%	-3.90 [-4.44, -3.36]
Trabka 2014	-1	4.82	23	0.1	4.71	21	4.2%	-1.10 [-3.92, 1.72]
Total (95% CI)			**608**			**590**	**100.0%**	**-2.62 [-3.39, -1.86]**

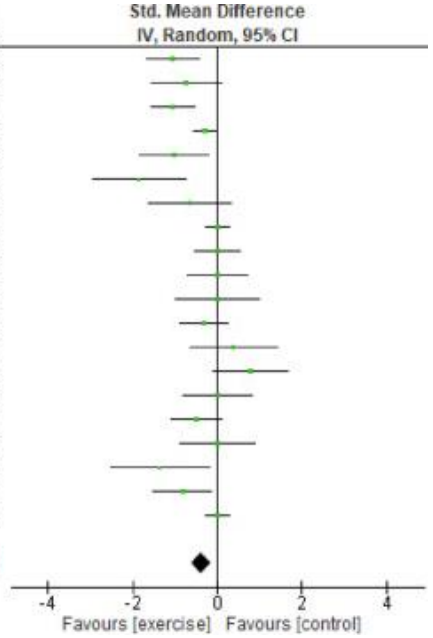
Heterogeneity: Tau² = 1.62; Chi² = 76.49, df = 20 (P < 0.00001); I² = 74%
Test for overall effect: Z = 6.70 (P < 0.00001)



Blood Glucose (mmol/L)

Study or Subgroup	Exercise Training Mean	SD	Total	Control Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
Biteli 2021a	-0.2	0.54	24	0.7	1.09	22	5.5%	-1.04 [-1.66, -0.42]
Biteli 2021b	0.4	0.49	11	0.9	0.77	13	4.1%	-0.73 [-1.57, 0.10]
Chagas 2017	0.1	0.78	35	0.9	0.73	35	6.4%	-1.05 [-1.55, -0.55]
Church 2007	-0.1	0.3	103	0	0.37	102	8.3%	-0.30 [-0.57, -0.02]
Colado 2009	0.1	0.3	21	0.4	0.25	10	4.3%	-1.02 [-1.82, -0.22]
Conceicao 2013	-0.8	0.45	10	-0.1	0.25	10	2.9%	-1.84 [-2.93, -0.76]
Dalleck 2009	-0.2	0.32	8	0.1	0.51	10	3.5%	-0.65 [-1.61, 0.31]
Frank 2005	0.1	3.04	87	0.1	2.66	86	8.1%	0.00 [-0.30, 0.30]
Hettchen 2021	0.2	0.45	27	0.2	0.46	27	6.2%	0.00 [-0.53, 0.53]
Kim and Kim 2012	-0.3	0.36	15	-0.3	0.38	15	4.8%	0.00 [-0.72, 0.72]
Lee 2012	-0.3	0.36	8	-0.3	0.38	8	3.4%	0.00 [-0.98, 0.98]
Lesser 2016	-0.3	0.68	23	-0.1	0.54	26	5.9%	-0.32 [-0.89, 0.24]
Marcus 2009	0	0.24	10	-0.1	0.25	6	3.2%	0.39 [-0.64, 1.41]
Miyaki 2012	0.2	0.24	11	0	0.25	11	3.9%	0.79 [-0.09, 1.66]
Moreau 2001	-0.1	0.74	15	-0.1	0.72	9	4.1%	0.00 [-0.83, 0.83]
Neves 2017	-0.1	1.05	27	0.4	0.91	19	5.7%	-0.49 [-1.09, 0.10]
Senechal 2012	0.1	0.42	10	0.1	0.3	10	3.9%	0.00 [-0.88, 0.88]
Seo 2010	-0.3	0.24	8	0.1	0.32	7	2.7%	-1.35 [-2.50, -0.19]
Son and Park 2021	-0.2	0.12	18	0.1	0.5	17	5.0%	-0.82 [-1.51, -0.12]
van Gemert 2015	0	0.25	96	0	0.25	93	8.2%	0.00 [-0.29, 0.29]
Total (95% CI)			**567**			**536**	**100.0%**	**-0.38 [-0.60, -0.16]**

Heterogeneity: Tau² = 0.14; Chi² = 51.13, df = 19 (P < 0.0001); I² = 63%
Test for overall effect: Z = 3.33 (P = 0.0009)



Regular physical activity can be a non-pharmacological tool in reduction of metabolic syndrome in postmenopausal women

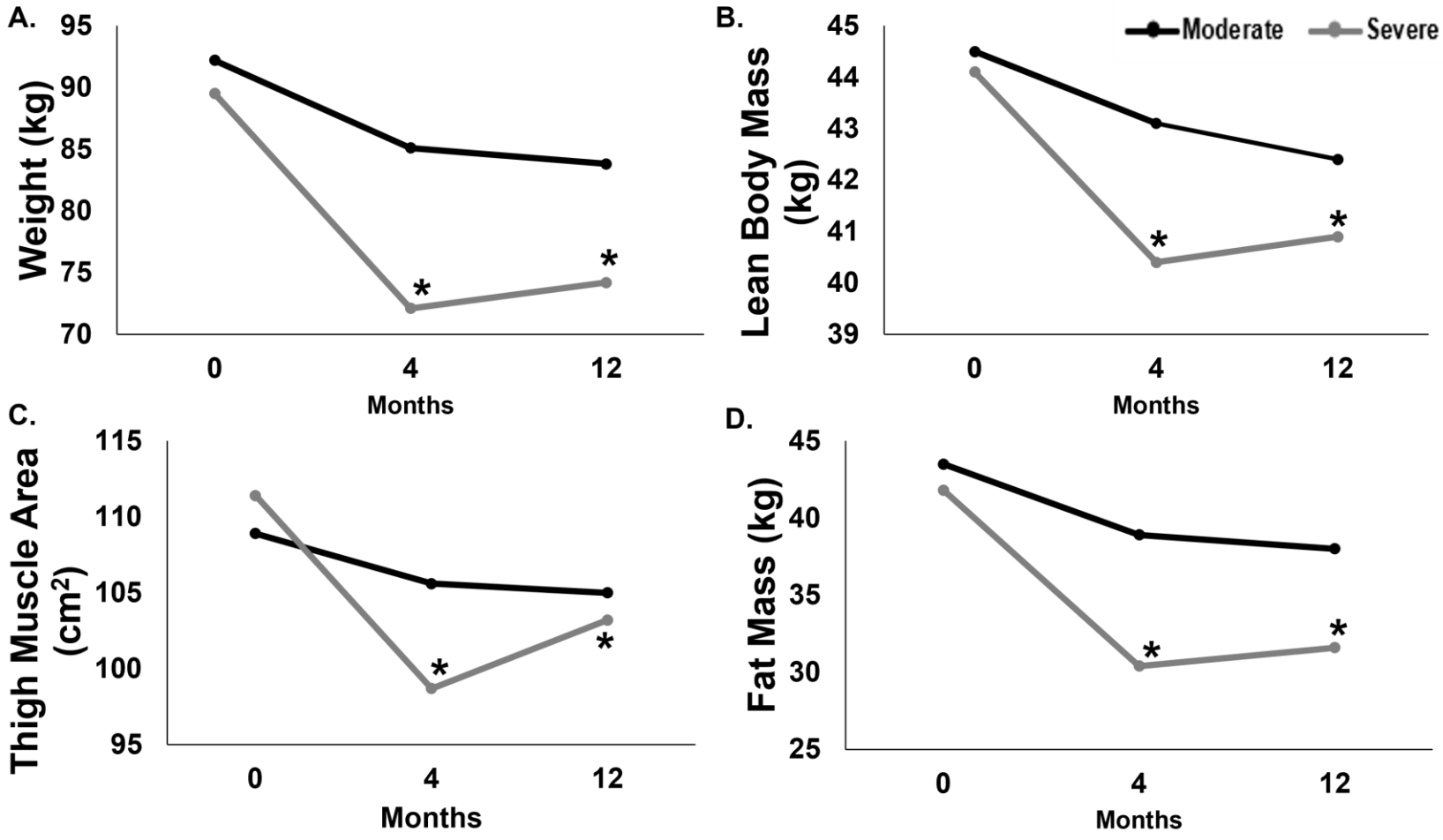
pb

Tan A, Thomas RL, Campbell MD, Prior SL, Bracken RM, Churm R. Effects of exercise training on metabolic syndrome risk factors in post-menopausal women - A systematic review and meta-analysis of randomised controlled trials. Clin Nutr. 2023 Mar;42(3):337-351. doi: 10.1016/j.clnu.2023.01.008.

Caloric Restriction

JAMA Network Open

- The TEMPO Diet Trial in postmenopausal women **(n=101)**
- 12-month diet intervention
  - Moderate CR (25-35%)
  - 4-mo. severe CR (65-75%) + 8-mo. Moderate
  - Both groups 1.0 g/kg protein
- Both interventions were effective for weight loss, but sever CR decreased lean body mass and bone mineral density to a greater extent

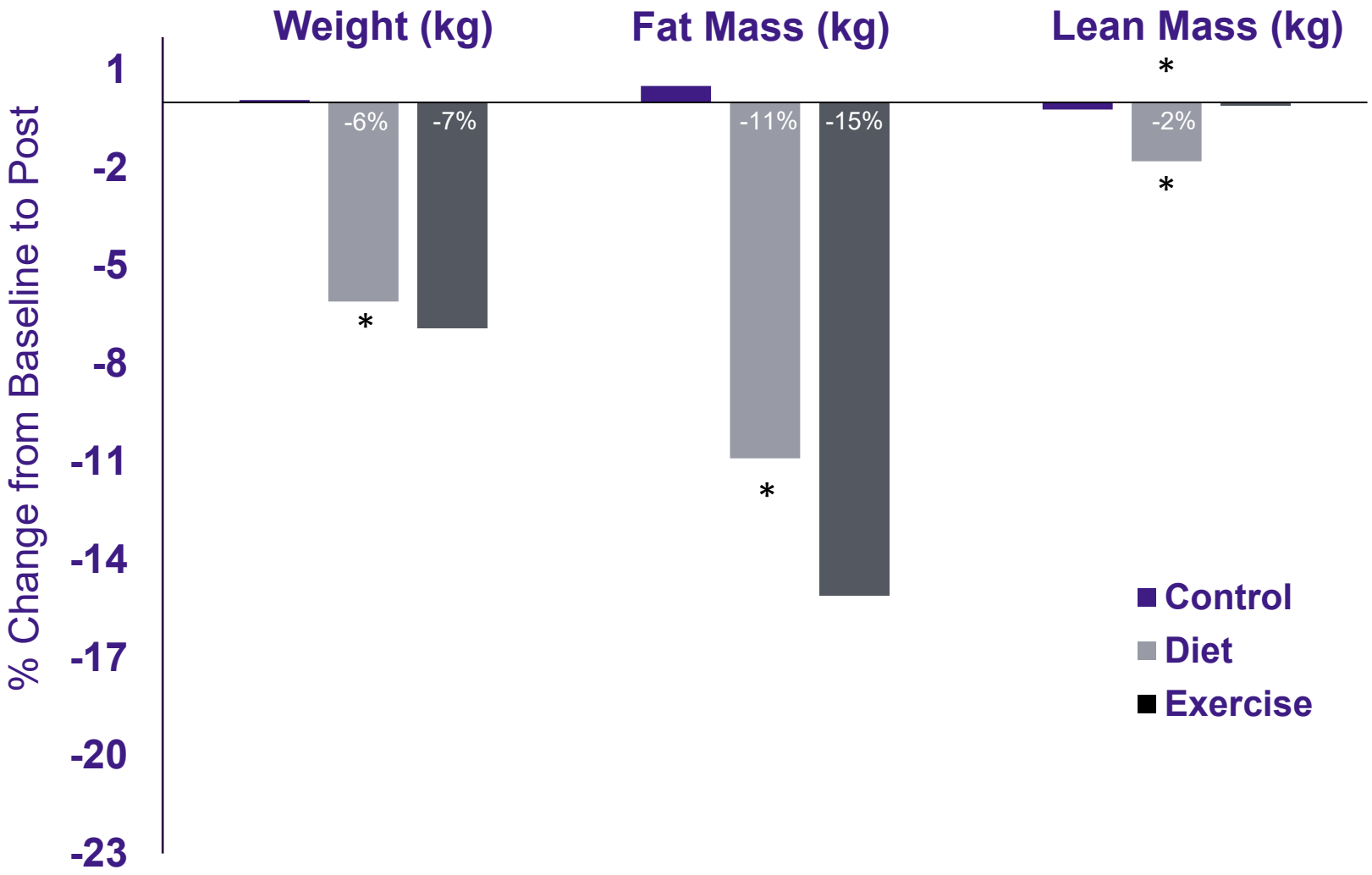


Seimon RV et al. Effect of Weight Loss via Severe vs Moderate Energy Restriction on Lean Mass and Body Composition Among Postmenopausal Women With Obesity: The TEMPO Diet Randomized Clinical Trial. JAMA Netw Open. 2019 Oct 2;2(10):e1913733. doi: 10.1001/jamanetworkopen.2019.13733.

Diet or Exercise

Breast Cancer Research
BMC

- The SHAPE-2 Trial in postmenopausal women **(n=243)**
- 16-week intervention
  - Calorie-reduced (-500 kcal/d)
  - Intensive aerobic + resistance training program (-250 kcal/d)
  - Control group
- Aerobic exercise paired with resistance training and slight caloric restriction preserves lean mass while decreasing weight and fat mass

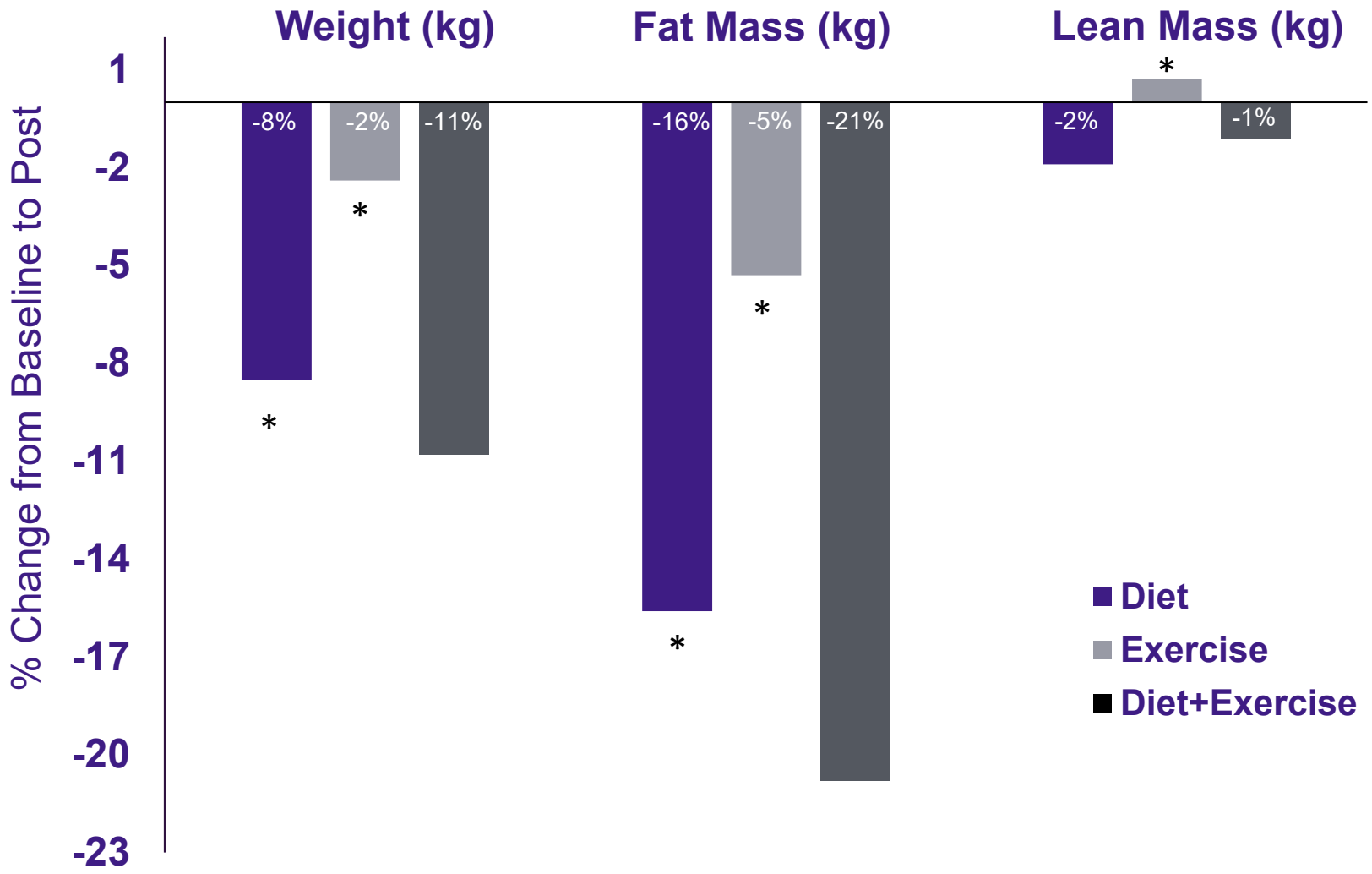


van Gemert WA, Schuit AJ, van der Palen J, May AM, Iestra JA, Wittink H, Peeters PH, Monninkhof EM. Effect of weight loss, with or without exercise, on body composition and sex hormones in postmenopausal women: the SHAPE-2 trial. Breast Cancer Res. 2015 Sep 2;17(1):120. doi: 10.1186/s13058-015-0633-9.

Caloric Restriction + Exercise

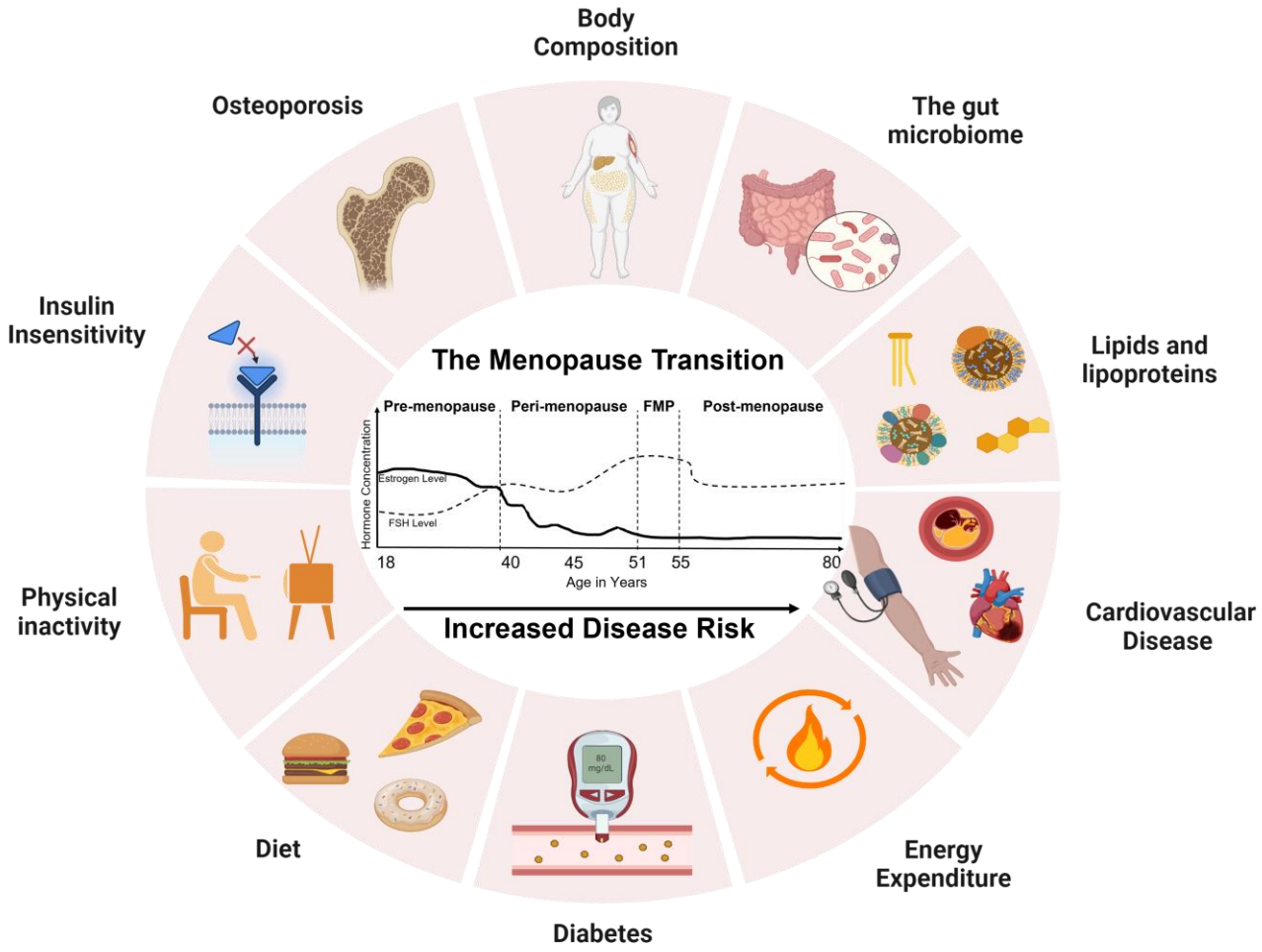
Obesity A Research Journal

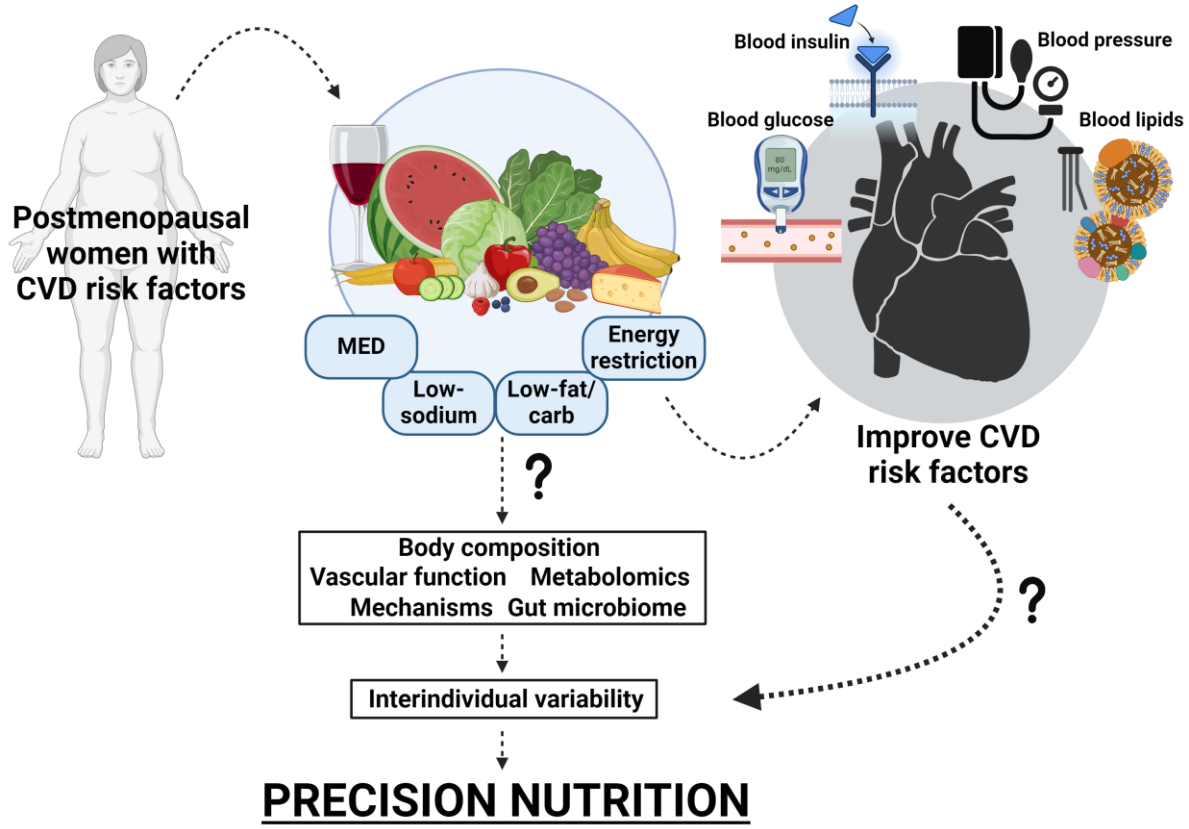
- Postmenopausal women **(n=439)**
- 12-month diet intervention
  - Calorie-reduced, low-fat diet
  - Moderate-intensity aerobic exercise
  - Combination of diet + exercise
- Changes in diet drive body composition changes
- The addition of exercise maximizes intervention efficacy



Foster-Schubert KE, Alfano CM, Duggan CR, Xiao L, Campbell KL, Kong A, Bain CE, Wang CY, Blackburn GL, McTiernan A. Effect of diet and exercise, alone or combined, on weight and body composition in overweight-to-obese postmenopausal women. Obesity (Silver Spring). 2012 Aug;20(8):1628-38. doi: 10.1038/oby.2011.76.

The New Frontier: Precision Nutrition





Cabre HE, Woolf EK, Redman LM. Precision Nutrition for Management of Cardiovascular Disease Risk during Menopause. Lifestyle Genom. 2024;17(1):93-101. doi: 10.1159/000540337. Epub 2024 Jul 24. PMID: 39047690; PMCID: PMC11394930.

Summary

- The loss of estrogen leads to body composition changes which drive adverse metabolic outcomes in postmenopausal women
- Menopausal symptoms impact quality of life and are related to body composition and exercise habits
- Caloric restriction with exercise can attenuate negative body composition changes and improve metabolic profiles

Reproductive age

Menopause

Let’s help women live stronger, healthier lives

Pregnancy

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