Dr. Terry Correll and Dr. Andrew Correll

OPERATIONALIZING LIFESTYLE PSYCHIATRY PRINCIPLES

with highlights from APA 2025

SLIDO R0SKIN

SLIDES AND HANDOUT


Treatment resistant
schizophrenia
DankPsychiatryMemes
Clozapine

2025 Meeting Theme



Registration About Blog Credit Claim Educational Program Exhibits & Sponsorships Hotel & Travel

About

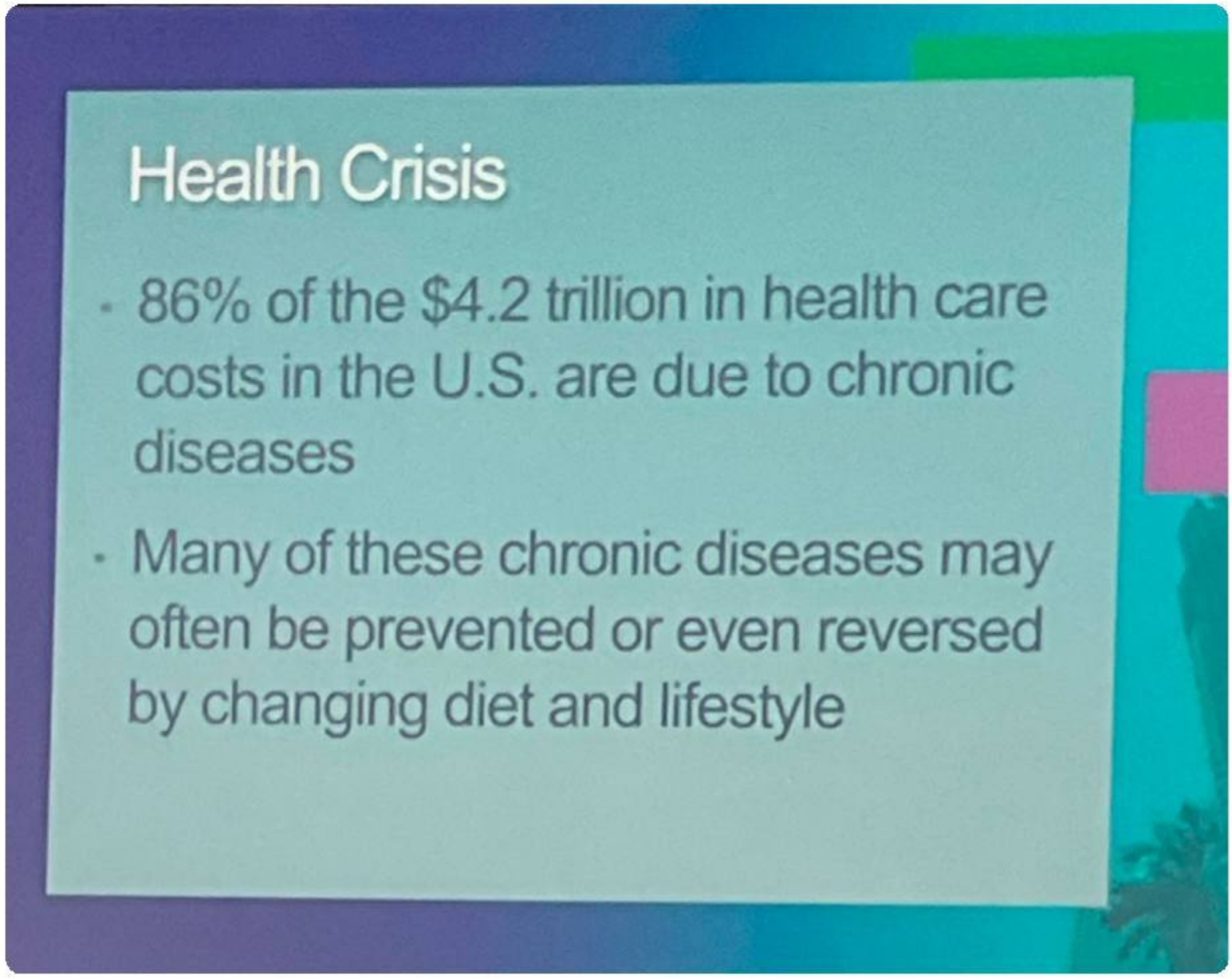
2025 Meeting Theme →

Lifestyle for Positive Mental and Physical Health




12th St
ECT
BAN

Poll about lifestyle interventions


Health Crisis
86% of the $4.2 trillion in health care costs in the U.S. are due to chronic diseases
Many of these chronic diseases may often be prevented or even reversed by changing diet and lifestyle

Lifestyle Medicine Saves Money Quickly

- 50-80% of U.S. total health care costs are due to 5% of the population.
- 22% of U.S. total health care costs are due to 1% of the population.
- Heart disease = #1 most expensive condition in terms of total health care spending.

source: Conwell LJ, Cohen JW. Statistical Brief #73. March 2005. Agency for Healthcare Quality and Research, Rockville, MD.

Common causes of death (US) by age

	<1 YR	1–14 YR	15–34 YR	35–44 YR	45–64 YR	65+ YR[a]
#1	Congenital malformations	Unintentional injury	Unintentional injury	Unintentional injury	Cancer	Heart disease
#2	Preterm birth	Cancer	Suicide	Cancer	Heart disease	Cancer
#3	Sudden unexpected infant death	Congenital malformations	Homicide	Heart disease	Unintentional injury	Chronic lower respiratory disease

[a]With the ongoing pandemic, COVID-19 has been included as one of the most common causes of death among people 65+ years old.

6 WAYS TO TAKE CONTROL OF YOUR HEALTH

AMERICAN COLLEGE OF Lifestyle Medicine

Lifestyle medicine is the therapeutic use of six lifestyle pillars—a whole-food, plant-predominant eating pattern, regular physical activity, restorative sleep, stress

DICINE

1 **NUTRITION**

Extensive scientific evidence supports the use of a whole-food, predominantly plant-based diet as an important strategy in prevention of chronic disease, treatment of chronic conditions and, in intensive therapeutic doses, remission of chronic illness. This eating pattern is fiber-filled, nutrient-dense, and antioxidant-rich. It consists of a variety of minimally processed vegetables, fruits, whole grains, legumes, nuts and seeds.

2 **PHYSICAL ACTIVITY**

Regular and consistent physical activity combats the negative effects of sedentary behavior. It is important that adults engage in both general physical activity as well as purposeful exercise on a weekly basis as part of overall health and resiliency. Aim for at least 150 minutes per week.

3 **RESTORATIVE SLEEP**

Sleep is necessary for human life. Adults with chronically insufficient or fragmented sleep can experience impaired memory, cognitive processing, mood, reaction time, a high risk of dementia onset, weight gain, glucose dysregulation, and cardiovascular issues. Most adults should get 7-9 hours of quality sleep per night.

whole-food, plant-predominant eating pattern, regular physical activity, restorative sleep, stress management, positive social connections, and the avoidance of risky substances—to prevent, treat and put into remission chronic conditions such as heart disease, type-2 diabetes, obesity and more.



LIFESTYLE MEDICINE

onset, weight gain, glucose dysregulation, and cardiovascular issues. Most adults should get 7-9 hours of quality sleep per night.

4 **STRESS MANAGEMENT**

The chronic stress of modern society has made it more difficult to practice healthy lifestyle habits and can exacerbate health issues such as cardiovascular disease, insulin resistance, sleep deprivation, depression, anxiety, weight gain, and more. Recognizing and replacing negative stress responses with healthy coping mechanisms and stress reduction techniques leads to improved wellbeing.

5 **SOCIAL CONNECTION**

Positive social connections affect our physical, mental and emotional health. Leveraging the power of relationships and social networks can bring meaning and purpose to life, while also helping to reinforce healthy behaviors.

6 **AVOIDANCE OF RISKY SUBSTANCES**

Use of tobacco and excessive alcohol consumption have been shown to increase the risk of chronic diseases and death. Treatments often take time, different approaches and many attempts. Patience and support are an important part of breaking risky substance habits.

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lifestylemedicine.org



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Lifestyle Medicine

Psychiatric Problem

SSRIs, antipsychotics, mood stabilizers

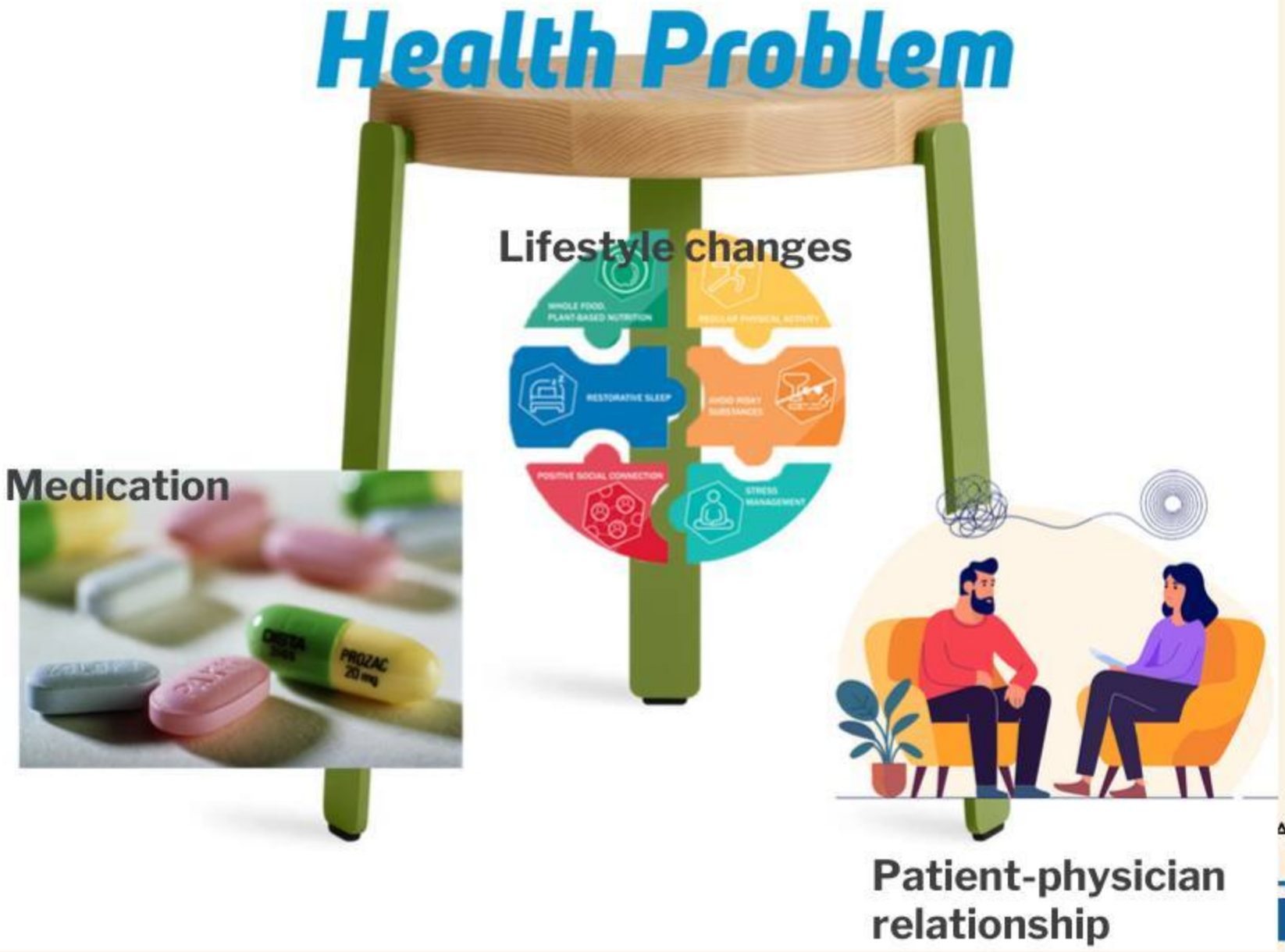




Psychotherapy

AMERICAN COLLEGE OF Lifestyle Medicine

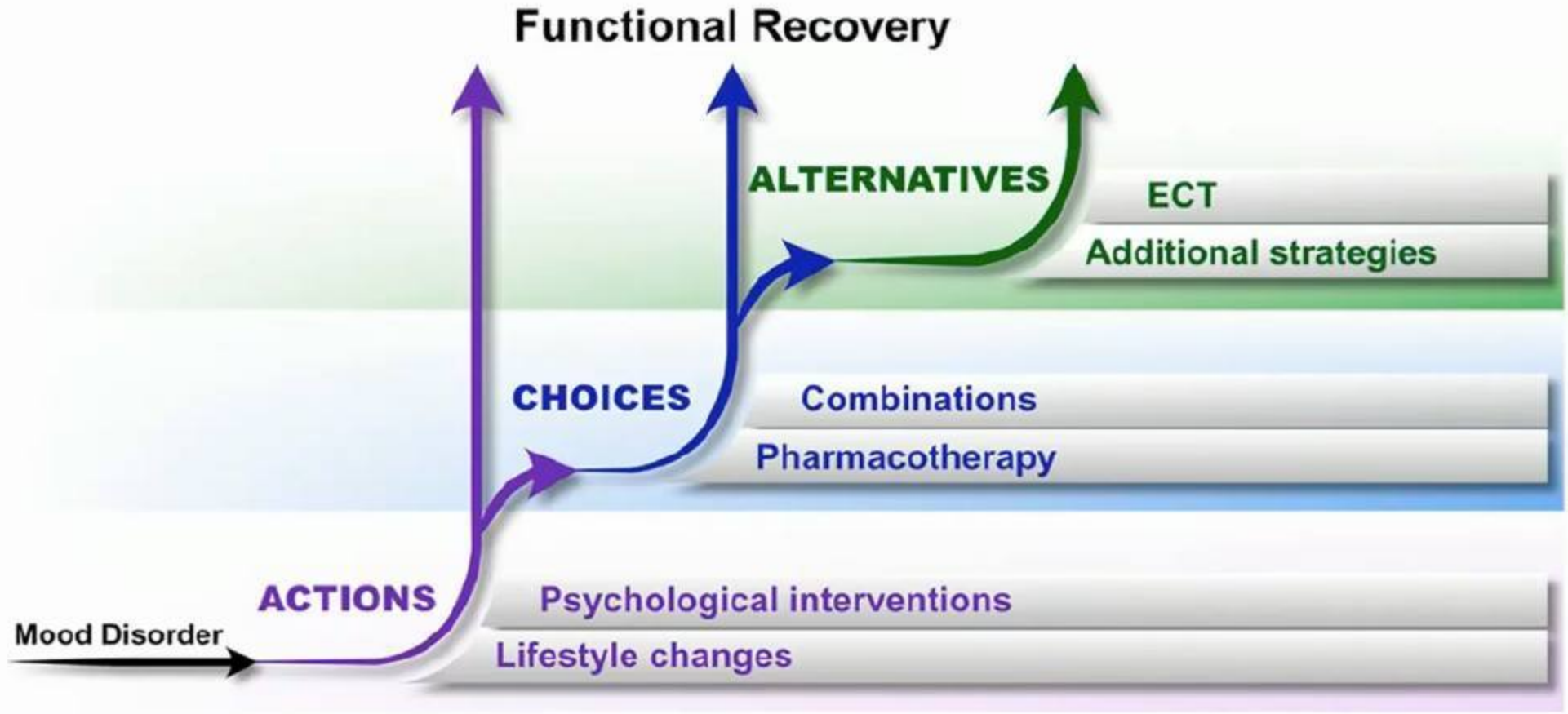
Health Problem



AMERICAN COLLEGE OF Lifestyle Medicine

ROYAL AUSTRALIAN AND NEW ZEALAND COLLEGE OF PSYCHIATRISTS 2020 GUIDELINES FOR MOOD DISORDERS

NYU Langone Health



Malhi et al., 2020; The 2020 Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for mood disorders - Gin S Malhi, Erica Bell, Darryl Bassett, Philip Boyce, Richard Bryant, Philip Hazell, Malcolm Hopwood, Bill Lyndon, Roger Mulder, Richard Porter, Ajeet B Singh, Gr... Murray, 2021 (sagepub.com)

AMERICAN PSYCHIATRIC ASSOCIATION ANNUAL MEETING

17:20 / 01:33:08



Handout

Maximizing Therapeutic Effectiveness

Miserable -- Mediocre -- Flourishing

Congratulations for seeking help to improve your life. Most people do not. EDIFYING ("Edy" - building up) FOCUS.

We are created as mind, body, and spirit (holistic approach best) and have amazing abilities to self-correct and heal.

We will take a collaborative approach to treating your symptoms (YOU are the expert on YOU). Learn from success.

You are empowered – "in charge" - in the "driver's seat" – and capable of improving your physical and mental health.

A multi-dimensional, comprehensive, integrative approach will be most effective (i.e., medications are not the "silver bullet" to fix all things). Healthy Lifestyle Interventions are equally efficacious compared to psychotherapy and meds.

Regular mental health care and exercise promotes new brain cell growth (neurogenesis-increase IQ). Anxiety, depression, mania, psychosis, and substance use kills vast numbers of brain cells (neurodegeneration-brain atrophy).

Psychotherapy (talk therapy) is powerful. It promotes lifelong learning, improvement, success, and is a permanent fix.

Healthy Lifestyle Interventions are very important: healthy eating (ADD fruits/vegetables, move towards whole foods and less processed), multivitamin/multimineral, fish oil (omega 3 fatty acids), ENJOY exercise (mind, body, and spirit), get outdoors, sunlight/bright light, meditation, mindfulness, prayer, solitude, relaxation, deep breathing, sleep.

Read educational materials (Flourish/Feeling Good Book/sacred works/Bible/YOUR CHOICE), articles, and online information about your symptoms and how to improve your life. EDUCATE yourself & share with others (providers). AWARENESS plus INTENTIONALITY equals IMPROVEMENT. (https://www.authentichappiness.sas.upenn.edu)

Act the way you want to feel. Express yourself with art, music, movement, or dance. Consider journaling or blogging.

Participate in healthy spiritual beliefs, practices, social relations, and meaningful/significant pursuits in life.

Decide to create and cultivate positive situations that fulfill your personal needs, encourage growth, and promote self-esteem and self-development. Become involved with people who have a positive attitude, who share in giving and receiving, and who show their love. Have "real" and trustworthy friends that you can have healthy discussions with.

Meaningful Activity/Work/Education/Volunteering: Find a form of service that contributes to your sense of purpose and identity. "Giving your life away" (altruism) is a proven way to have the most satisfying experience and journey.

Goals and Visions for the Future: Envision and set your sights on your Best Possible Self (BPS), today, next week, next month, next year. Visualize desirable changes in your life and make goals to work toward them. Write your goals down and review them regularly. Most people plan more for their vacations than they do for the rest of their lives.

AVOID TOXINS: alcohol, drugs, tobacco, excessive caffeine/food/ANYTHING, negative circumstances and people.

PRACTICE thankfulness, gratitude, and grit (doing hard things). Aim for a balanced life – all things in moderation.

Schedule humorous and FUN times – PLAYFUL times - they are very therapeutic – I PRESCRIBE them for you.

Please prioritize yourself. Regularly attend to practices which are therapeutic and healthy for you. Regularly taking psychiatric medications helps prevent the return of symptoms and keeps you at your natural best functioning state.

Nutrition

"Eat real food, not too much, mostly plants"

- ❍ Colorful vegetables
- ❍ Leafy greens (Kale, Spinach, Collard Greens)
- ❍ Cruciferous (Broccoli, Brussel sprouts)
- ❍ Defrosted frozen blueberries
- ❍ Oatmeal and raisins
- ❍ Quinoa (with water and microwave for ~12 mins)
- ❍ Frozen sweet potatoes
- ❍ Beans/ Legumes
- ❍ Whole grain bread (carbs 30gm; should be around 5 or less)
- ❍ Nuts/seeds
- ❍ Water (>64oz/day)
- ❍ Fiber > 30 g/day
- ❍ Turmeric
- ❍ Ground flax seed
- ❍ Multivitamin/ multimineral
- ❍ Omega 3 fatty acids
- ❍ Download Daily Dozen App (free)

Nutrition Rx
Type: _____
Amount: _____
Frequency: _____

Physical Activity

Aerobic/Cardio
30, 15, 20, 30, 40 min/day

- ❍ Casual walk
- ❍ Brisk walk
- ❍ 5,000 steps/day
- ❍ 10,000 steps/day
- ❍ Run or jog
- ❍ Biking or Swimming
- ❍ High-intensity intervals
- ❍ Tennis/ pickle ball
- ❍ Mowing/gardening
- ❍ Heavy chores/ NEAT
- ❍ Stand 1x per hour
- ❍ Treadmill w/ fans & TV shows
- ❍ Canoeing? Dancing? Playing frisbee? Shooting baskets? Backpacking? Soccer?
- ❍ Muscle strengthening two times / week
- ❍ Body weight exercise
- ❍ Gym membership
- ❍ Home gym equipment

VA Apps – FREE
❍ MOVE! Coach

Adjunctive devices
❍ Pedometers
❍ "Fit Bits", HR trackers, Apple Watch
❍ Running plan at trainingpeaks.com ($)
❍ Home exercise videos on Youtube.

Exercise / FITT Rx:
Frequency: _____
Intensity: _____
Type: _____
Time: _____

Sleep

- ❍ 7-9 hr / night
- ❍ Consistent schedule
  Bedtime _____
  Wake_____
- ❍ 20 min sunlight or bright light in am
- ❍ No caffeine after 1pm
- ❍ Adopt the mindset that "Any time in bed is as good as sleep"
- ❍ No TV or blue light < 1hr before bed
- ❍ Establish a relaxing bedtime routine
- ❍ Take a warm bath before bed
- ❍ Do something boring before bed (fold clothes?)
- ❍ Frontload calories during day
- ❍ Light calm music
- ❍ Journaling
- ❍ Meditation
- ❍ Self-massage / stretch
- ❍ Light-blocking curtains
- ❍ Ear plugs/quiet space /white noise/fan
- ❍ Clean and cool bedroom

Sleep requirements
Adults = 7-9 hrs
Teens 13-17 = 8-10 hrs
Child 6-12 = 9-12 hrs
Child 3-5 = 10-13 hrs
Child 1-2 = 11-14 hrs
Infant 4-12 mo = 12-16 hrs

- ❍ VA apps – FREE
- ❍ CBT-i Coach
- ❍ Insomnia Coach
- ❍ Breathe2Relax
- ❍_____

Mind/Stress

- ❍ 2, 5, 10, 20 min of meditation/mindfulness
- ❍ Write about one's best possible self in the future after everything has gone as well as it possibly could
- ❍ Stretching / Yoga / Range of Motion
- ❍ Dance to good music
- ❍ Deep breathing for 1-3 min (3 doses / day)
- ❍ 5-min walk into nature
- ❍ Playing with a pet
- ❍ Sketching or painting
- ❍ Listening to music
- ❍ Repeat (+) affirmations
- ❍ Write / Review goals 2x / day
- ❍ Watch a comedian in-person or online
- ❍ Write down jokes/funny ways of looking at a problem of yours

VA Apps - FREE
- ❍ COVID Coach
- ❍ Mindfulness Coach

Smartphone Apps
- ❍ Calm (free, $)
- ❍ Breathwrk (free)
- ❍ Headspace (free, $)
- ❍ Bloom ($)
- ❍ Unwinding Anxiety ($$)

Bibliotherapy
- ❍_____
- ❍ Educational material (Great Courses Plus, Curiosity Stream, Wikipedia, Youtube)
- ❍ *Feeling Great* by David Burns
- ❍ *Flourish* by Martin Seligman
- ❍ *The How of Happiness* by Lyubomirsky

Social Connections

- ❍ Call/text a friend
- ❍ Reconnect with an old friend
- ❍ Attend a community festival, farmers' market, or cultural celebration
- ❍ Join an interest group (book club, sports team, gardening club, or crafting group, etc.)
- ❍ Walk in the mall with a friend
- ❍ Play board games
- ❍ Meet up for coffee
- ❍ Be a tourist in your own town
- ❍ Join a fitness class
- ❍ Perform a random act of kindness for someone
- ❍ Become a formal or informal mentor for an elementary school student or colleague
- ❍ VA apps – FREE Couples Coach
- ❍ Go to a couple's seminar



Toxic Exposures

- ❍ Excessive caffeine
- ❍ Minimal to no alcohol intake (no inebriations)
- ❍ Reduce negative circumstances and people
- ❍ Commit to enjoying all things in moderation
- ❍ Donate money to an unsavory charity if a habit reappears or you don't meet the goal, OR donate money to a charity of your choice if you achieve the goal
- ❍ Join an AA/NA group meeting
- ❍ Join a Celebrate Recovery group for "hurts, habits, or hangups"
- ❍ Reduce smoking tobacco
- ❍ Quit smoking tobacco
- ❍ Quit chewing tobacco
- ❍ Quit vaping nicotine
- ❍ Quit _____ (habit/drug)

What do you like about _____?
1. _____
2. _____

What don't you like about _____?
1. _____
2. _____

If I didn't _____, then I could spend the money/time on _____

Spirituality

- ❍ Volunteer at a food bank, community center, local charity, or animal shelter
- ❍ Read a sacred work
- ❍ Pray to a Higher Power
- ❍ Volunteering or serving others
- ❍ Attending a spiritual or religious group gathering
- ❍ Grow with a friend who has similar beliefs
- ❍ Attend a spiritual study group (e.g. Bible study)
- ❍ Write down ___ (5, 10, 15, 20) things that you are grateful for each day
- ❍ Write a gratitude letter to someone and read the letter to them
- ❍_____

Positive emotions

- ❍ Try purposely smiling more
- ❍ Go to a museum/zoo/entertainment
- ❍ Plan a trip big or small and enjoy anticipating it
- ❍_____

Engagement

- ❍ Get extra involved in a new project at work, and enjoy it!
- ❍ Do an activity/hobby where you lose track of time and are in a "flow"
- ❍_____

Relationships (see social connections section)

- ❍_____

Meaning (see spirituality section)

- ❍ Spend 5 mins each morning reflecting on your personal values and how they guide your actions
- ❍ Review goals/purpose in life regularly
- ❍_____

Achievement

- ❍ Write a doable goal for today and the next week, month, and 3mos. and go for it!
- ❍ Donate money to a charity of your choice when successful
- ❍_____

DIET INTERVENTIONS







Poll about ideas for diet interventions

QUESTION #1 ABOUT UPTODATE RECS

UpToDate®

Healthy diet in adults



SPECIFIC HEALTHY DIETARY PATTERNS

Dietary guidelines: Recommended dietary patterns

- Mediterranean diet
- DASH diet
- Plant-based and vegetarian diets
- Low-fat diet
- Low-cholesterol diet

DIETARY COMPONENTS ASSOCIATED WITH HEALTH BENEFITS

Fruits and vegetables

Whole grains

Fiber

Reduced-fat dairy

Protein-rich foods

- Nuts
- Fish

Healthy fats

DIETARY PATTERNS WITH LIMITED OR DEVELOPING EVIDENCE

Low-carbohydrate diet

Organic diet

Anti-inflammatory diet

Gluten-free diet

DIETARY PATTERNS AND COMPONENTS TO LIMIT OR AVOID

"Western" diet

Unhealthy fats

Added sugars and sugar-sweetened beverages

Artificial sweeteners

Red and processed meats

Highly processed foods

Alcohol

SPECIFIC HEALTHY DIETARY PATTERNS

Dietary guidelines: Recommended dietary patterns

- Mediterranean diet
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DIETARY PATTERNS WITH LIMITED OR DEVELOPING EVIDENCE

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DIETARY PATTERNS AND COMPONENTS TO LIMIT OR AVOID

"Western" diet

Unhealthy fats

Added sugars and sugar-sweetened beverages

Artificial sweeteners

Red and processed meats

Highly processed foods

Alcohol

QUESTION #2 ABOUT UPTODATE RECS


@dankpsychiatrymemes
A panic attack
Hydroxyzine

QUESTION ABOUT ENDOTHELIAL IMPAIRMENT

HEALTHIER FATS THAN OTHERS?





Methods and results: Ten healthy young volunteers were included in the study. After performing a baseline evaluation of cardiovascular risk factors and drawing a fasting blood sample, subjects were exposed to a randomly assigned potato soup meal containing 60 mL of one of three different vegetable oils (olive, soybean and palm), either fresh or at one of two different deep-fry levels (10 and 20 fries, respectively). Flow-mediated vasodilation (FMD) was performed in fasting conditions and 3h after the intake of the oil rich meal. Furthermore, blood samples were taken at these stages for the lipid profiles and plasma glucose determinations. All the meals resulted in a similar acute endothelial impairment (FMD decrease of 32.1%, confidence interval [CI] 95%, 28.0-36.2) and

Finally, using a crossover design in an acute study, the effect of walnut consumption on postprandial FMD was studied after 2 high-fat meal sequences (separated by 1 week) to which 25 g of olive oil or 40 g of walnuts were added. In this study, the authors showed that, in comparison to olive oil, walnuts reversed the impairment of FMD associated to a fatty meal [72].

flow mediated vasodilatation (FMD)

Randomized Controlled Trial > Nutr Metab Cardiovasc Dis. 2007 Jan;17(1):50-7. doi: 10.1016/j.numecd.2005.08.008. Epub 2006 Mar 20.

Olive, soybean and palm oils intake have a similar acute detrimental effect over the endothelial function in healthy young subjects

Christian F Rueda-Clausen [1], Federico A Silva, Manuel A Lindarte, Cristina Villa-Roel, Eleth Gomez, Roberto Gutierrez, Carlos Cure-Cure, Patricio López-Jaramillo

Nutrition, Metabolism and Cardiovascular Diseases

Volume 21, Supplement 1, June 2011, Pages S21-S33

Nuts, hypertension and endothelial function

P. Casas-Agustench [a, b], P. López-Uriarte [a, b], E. Ros [b, c], M. Bulló [a, b], J. Salas-Salvadó [a, b]

B. Cortes, I. Nunez, M. Cofan, R. Gilabert, A. Perez-Heras, E. Casals, *et al.*
Acute effects of high-fat meals enriched with walnuts or olive oil on postprandial endothelial function
J Am Coll Cardiol, 48 (8) (2006), pp. 1666-1671

QUESTION ABOUT WHY BERRIES ARE HEALTHIER

QUESTION ABOUT PASTA!

Nutrition Facts

Serving Size about 2oz (56g)
Servings Per Container: 8

Amount Per Serving

Calories	200
	% Daily Value*
Total Fat 1g	**1%**
Saturated Fat 0g	**0%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 0mg	**0%**
Total Carbohydrate 42g	**15%**
Dietary Fiber 3g	**11%**
Soluble Fiber 2g	
Insoluble Fiber 1g	
Total Sugars 1g	
Protein 7g	

Vitamin D	0mcg	0%
Calcium	12mg	0%
Iron	2mg	10%
Potassium	118mg	2%

*The % daily value tells you how much a nutrient in a serving of food co
to a daily diet. 2,000 calories a day is used for general nutrition advice.

Nutrition Facts

8 servings per container
Serving size **2 oz (56g)**

Amount Per Serving

Calories **180**

	% Daily Value*
Total Fat 1.5g	**2%**
Saturated Fat 0g	**0%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 0mg	**0%**
Total Carbohydrate 39g	**14%**
Dietary Fiber 7g	**25%**
Soluble Fiber 2g	
Insoluble Fiber 5g	
Total Sugars 1g	
Protein 8g	

Vitamin D 0mcg	0%
Calcium 17mg	2%
Iron 2mg	10%
Potassium 274mg	6%
Thiamin 0.5mg	40%
Riboflavin 0.3mg	25%
Niacin 7mg	45%
Folate 71mcg DFE	20%
Phosphorus 224mg	20%
Magnesium 54mg	15%
Zinc 2mg	20%
Manganese 1.5mg	70%

Not a significant source of added sugars.

* The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet.
2,000 calories a day is used for general nutrition advice.


BARILLA CLASSIC
THIN SPAGHETTI
DAL 1877
Barilla
CAREFULLY SELECTED
PREMIUM DURUM WHEAT
AL DENTE PERFECTION IN 6-7 MINUTES
ENRICHED
MACARONI PRODUCT
NET WT. 1 LB (454 g)


GREAT TASTE & RICH IN FIBER
WHOLE GRAIN
PENNE
WHOLE WHEAT PASTA
DAL 1877
Barilla
AL DENTE PERFECTION IN 9–10 MINUTES
NET WT.
16 OZ (1 LB)
454 g

Nutrition Facts

Serving Size 1 Serving (100 g)

Per Serving	% Daily Value*
Calories 80	
Calories from Fat 5	
Total Fat 0.5g	1%
Sodium 75mg	3%
Carbohydrates 15g	5%
Dietary Fiber 3g	12%
Protein 4g	

Nutrition Facts

Serving Size 2 slices (75 g)

Per Serving	% Daily Value*
Calories 190	
Calories from Fat 18	
Total Fat 2g	3%
Sodium 300mg	13%
Carbohydrates 37g	12%
Dietary Fiber 2g	8%
Protein 6g	



Nutrition Facts

Serving Size 2oz (57g) dry
Servings Per Container 4

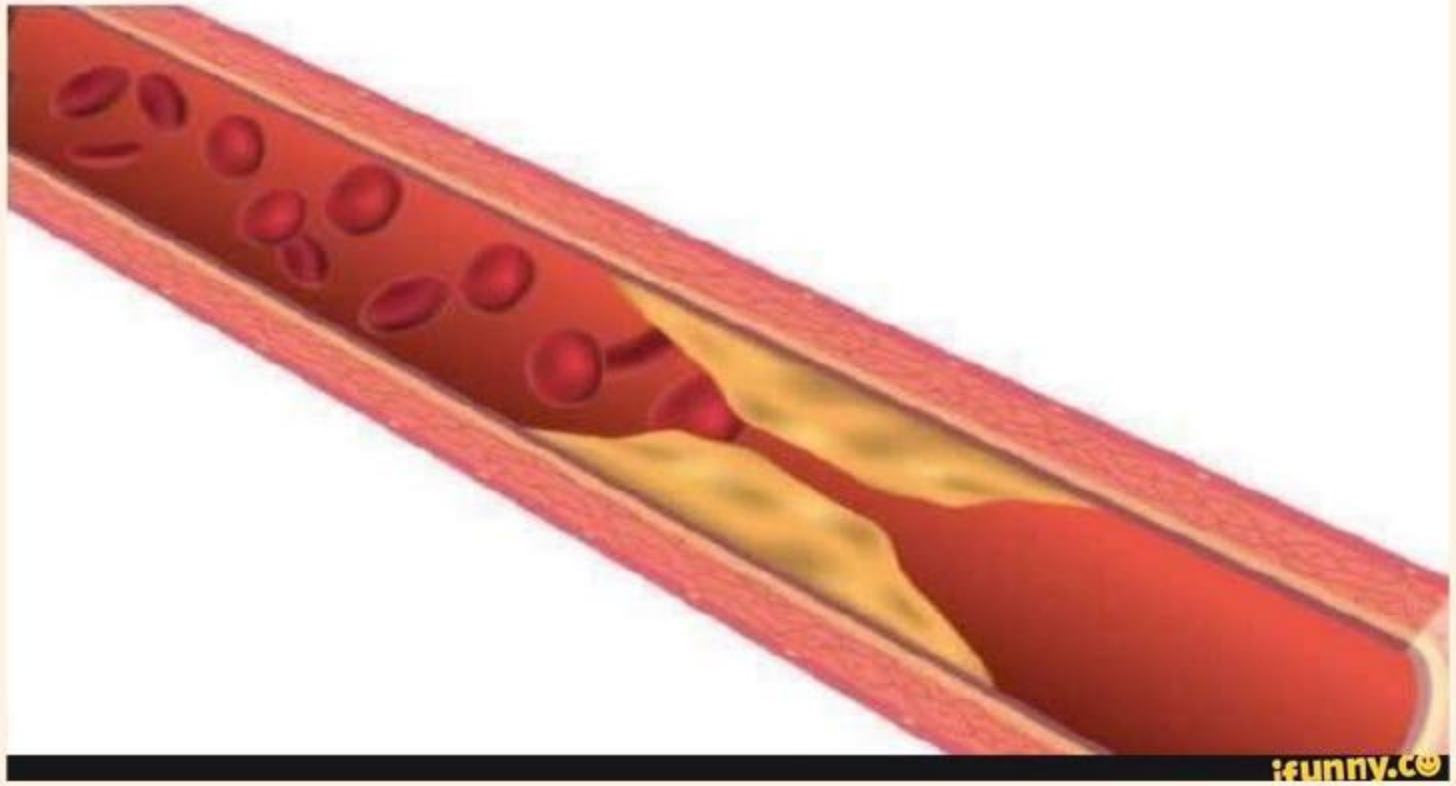
Amount Per Serving	2oz Serving	3.5oz Serving
Calories	190	340
Calories from Fat	35	60
	% Daily Value*	% Daily Value*
Total Fat	3.5g **6%**	6g **10%**
Saturated Fat	0g **0%**	0.5g **4%**
Trans Fat	0g	0g
Cholesterol	0mg **0%**	0mg **0%**
Sodium	60mg **3%**	110mg **4%**
Total Carb	32g **11%**	56g **19%**
Dietary Fiber	8g **30%**	13g **53%**
Sol Fiber	3g	5g
Insol Fiber	5g	8g
Sugars	5g	9g
Protein	14g **28%**	25g **50%**
Vitamin A	0%	0%
Vitamin C	0%	0%
Calcium	4%	6%
Iron	30%	50%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg

My concerned friend: “Food won’t fill that void in your heart”

Me, a person of science:



Question about which foods have cholesterol

Question about weight loss



ORIGINAL RESEARCH

Annals of Internal Medicine

The Effect of 4:3 Intermittent Fasting on Weight Loss at 12 Months

A Randomized Clinical Trial

Victoria A. Catenacci, MD*; Danielle M. Ostendorf, PhD*; Zhaoxing Pan, PhD; Laura K. Kaizer, MPH; Seth A. Creasy, PhD; Adnin Zaman, MD; Ann E. Caldwell, PhD; Jared Dahle, PhD; Bryan Swanson, BA; Matthew J. Breit, MS, RD; Kristen Bing, RD; Liza T. Wayland, MA; Shelby L. Panter, MS; Jared J. Scorsone; Daniel H. Bessesen, MD; Paul MacLean, PhD; and Edward L. Melanson, PhD

Background: Long-term (≥12 months) randomized trials evaluating the efficacy of intermittent fasting (IMF) as a dietary weight loss strategy are limited. Furthermore, no studies have compared IMF versus daily caloric restriction (DCR) when both interventions are provided in the context of a guidelines-based behavioral weight loss program.

Objective: To compare the effects of 4:3 IMF versus DCR on changes in weight at 12 months, with comprehensive behavioral support provided to both groups.

Design: Randomized clinical trial. (ClinicalTrials.gov: NCT03411356)

Setting: Denver, Colorado, and surrounding metropolitan area.

Participants: Adults aged 18 to 60 years with body mass index (BMI) of 27 to 46 kg/m^2.

Intervention: The IMF group was instructed to restrict energy intake by 80% on 3 nonconsecutive days per week, with ad libitum intake (no restriction) the other 4 days (4:3 IMF). The DCR group was instructed to reduce daily energy intake by 34% to match the weekly energy deficit of 4:3 IMF. Both groups received a high-intensity comprehensive behavioral weight loss program that included group-based behavioral support and a recommendation to increase moderate-intensity physical activity to 300 minutes per week.

Measurements: The primary outcome was change in body weight (in kilograms) at 12 months.

Results: Of the 165 (4:3 IMF, $n = 84$; DCR, $n = 81$) randomly assigned participants (mean age, 42 years [SD, 9]; mean BMI, 34.1 kg/m^2 [SD, 4.4]; 73.9% female), 125 completed the trial. In an intention-to-treat analysis, 4:3 IMF showed greater reductions in weight than DCR at 12 months (mean difference, 2.89 kg [95% CI, 5.65 to 0.14 kg]; $P = 0.040$).

Limitation: Limited generalizability.

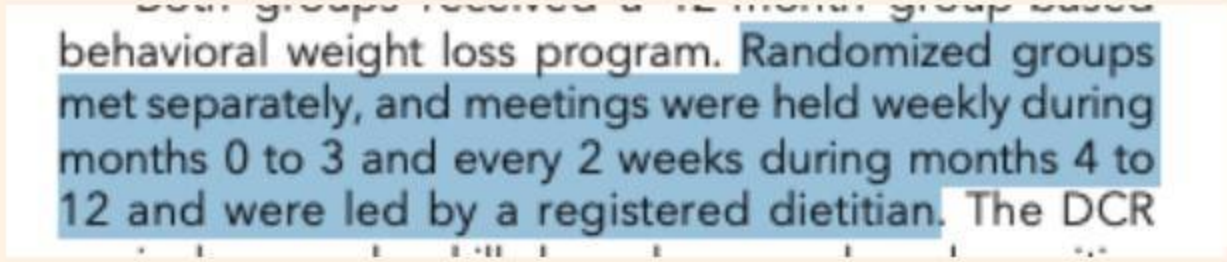
Conclusion: Compared with DCR, 4:3 IMF resulted in modestly greater weight loss among adults with overweight or obesity enrolled in a 12-month, high-intensity, comprehensive behavioral weight loss program.

Primary Funding Source: National Institute of Diabetes and Digestive and Kidney Diseases.

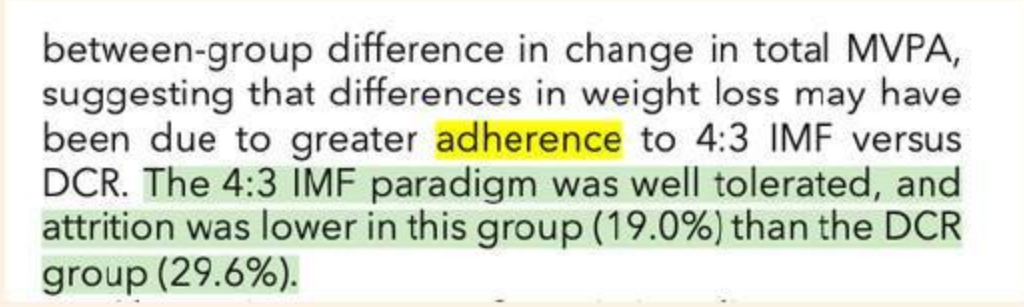
Ann Intern Med. 2025;178:634-644. doi:10.7326/ANNALS-24-01631
For author, article, and disclosure information, see end of text.
This article was published at Annals.org on 1 April 2025.

* Drs. Catenacci and Ostendorf contributed equally to this work.

- Study Design: 12-month randomized controlled trial in adults with overweight/obesity (n = 165; mean age 42 y; mean BMI 34.1 kg/m^2; 73.9% female)
- Interventions:
  - IMF (4:3): 80% energy restriction on three nonconsecutive “fast” days/week; healthy, ad libitum eating on the other four days
  - DCR: Daily 34.3% calorie deficit
- Support Provided:
  - Individual dietary counseling
  - Free gym membership
  - Exercise goal ≥ 300 min/week


behavioral weight loss program. Randomized groups met separately, and meetings were held weekly during months 0 to 3 and every 2 weeks during months 4 to 12 and were led by a registered dietitian. The DCR

- Primary Outcome (12 mo Weight Loss):
  - IMF: 7.6% mean body-weight reduction
  - DCR: 5.0% mean body-weight reduction
  - Mean difference = 2.9 kg (P = 0.04)


between-group difference in change in total MVPA, suggesting that differences in weight loss may have been due to greater adherence to 4:3 IMF versus DCR. The 4:3 IMF paradigm was well tolerated, and attrition was lower in this group (19.0%) than the DCR group (29.6%).

- Limitations:
  - Predominantly female, single-center sample
  - Intensive, dietitian-led behavioral support may limit generalizability
- Conclusion: Within a high-support program, a 4:3 intermittent-fasting regimen yields modestly greater 12-month weight loss compared to standard daily calorie restriction.

The Effects of Dietary Improvement on Symptoms of Depression and Anxiety: A Meta-Analysis of Randomized Controlled Trials

Joseph Firth, PhD, Wolfgang Marx, PhD, Sarah Dash, PhD, Rebekah Carney, PhD, Scott B. Teasdale, PhD, Marco Solmi, MD, Brendon Stubbs, PhD, Felipe B. Schuch, PhD, André F. Carvalho, MD, Felice Jacka, PhD, and Jerome Sarris, PhD

ABSTRACT

Objective: Poor diet can be detrimental to mental health. However, the overall evidence for the effects of dietary interventions on mood and mental well-being has yet to be assessed. We conducted a systematic review and meta-analysis examining effects of dietary interventions on symptoms of depression and anxiety.

Methods: Major electronic databases were searched through March 2018 for all randomized controlled trials of dietary interventions reporting changes in symptoms of depression and/or anxiety in clinical and nonclinical populations. Random-effects meta-analyses were conducted to determine effect sizes (Hedges' g with 95% confidence intervals [CI]) for dietary interventions compared with control conditions. Potential sources of heterogeneity were explored using subgroups and meta-regression analyses.

Results: Sixteen eligible randomized controlled trials (published in English) with outcome data for 45,826 participants were included; the majority of which examined samples with nonclinical depression ($n = 15$ studies). Nonetheless, dietary interventions significantly reduced depressive symptoms ($g = 0.275$, 95% CI = 0.10 to 0.45, $p = .002$). Similar effects were observed among high-quality trials ($g = 0.321$, 95% CI = 0.12 to 0.53, $p = .002$) and when compared with both inactive ($g = 0.308$, 95% CI = 0.02 to 0.60, $p = .038$) and active controls ($g = 0.174$, 95% CI = 0.01 to 0.34, $p = .035$). No effect of dietary interventions was observed for anxiety ($k = 11$, $n = 2270$, $g = 0.100$, 95% CI −0.04 to 0.24, $p = .148$). Studies with female samples observed significantly greater benefits from dietary interventions, for symptom both depression and anxiety.



The Effects of Dietary Improvement on Symptoms of Depression and Anxiety: A Meta-Analysis of Randomized Controlled Trials

Eligible studies were RCTs comparing the effect of dietary interventions to nondietary control conditions. All "whole-of-diet" dietary interventions were eligible, delivered via any format, including individualized dietary counseling, group dietary classes, and standardized dietary prescription. In addition, all "types" of

Objective: Poor diet can be detrimental to mental health. However, the overall evidence for the effects of dietary interventions on mood and mental well-being has yet to be assessed. We conducted a systematic review and meta-analysis examining effects of dietary interventions on symptoms of depression and anxiety.

Results: Sixteen eligible randomized controlled trials (published in English) with outcome data for 45,826 participants were included; the majority of which examined samples with nonclinical depression ($n = 15$ studies). Nonetheless, dietary interventions significantly reduced depressive symptoms ($g = 0.275$, 95% CI = 0.10 to 0.45, $p = .002$). Similar effects were observed among high-quality trials ($g = 0.321$, 95% CI = 0.12 to 0.53, $p = .002$) and when compared with both inactive ($g = 0.308$, 95% CI = 0.02 to 0.60, $p = .038$) and active controls ($g = 0.174$, 95% CI = 0.01 to 0.34, $p = .035$). No effect of dietary interventions was observed for anxiety ($k = 11$, $n = 2270$, $g = 0.100$, 95% CI = −0.04 to 0.24, $p = .148$). Studies with female samples observed significantly greater benefits from dietary interventions, for symptoms of both depression and anxiety.

−0.04 to 0.24, $p = .148$). Studies with female samples observed significantly greater benefits from dietary interventions, for symptoms of both depression and anxiety.

AMERICAN COLLEGE OF Lifestyle Medicine


WAYMO




Dodgers
17

Plenary

CEO Plenary

Schedule Notes

Tue May 20 West Hall A - Los Angeles Convention Center

10:30 AM-12:00 PM (PDT)

Marketa Wills, M.D., M.B.A.
CEO & Medical Director

Dean Ornish, M.D.
Clinical Professor of Medicine at UCSF and at UCSD.

Session Eval

APA CEO and Medical Director Marketa M. Wills, M.D., M.B.A., will host the CEO plenary, featuring the presentation of the inaugural Viswanathan Family Lifestyle Medicine and Psychiatry Award to Dean Ornish, M.D., and the accompanying award lecture by Dr. Ornish, and a conversation with Dr. Wills.

Related Sessions Match

Emerging Voices: DEIB Innovation, and Leaders

Format

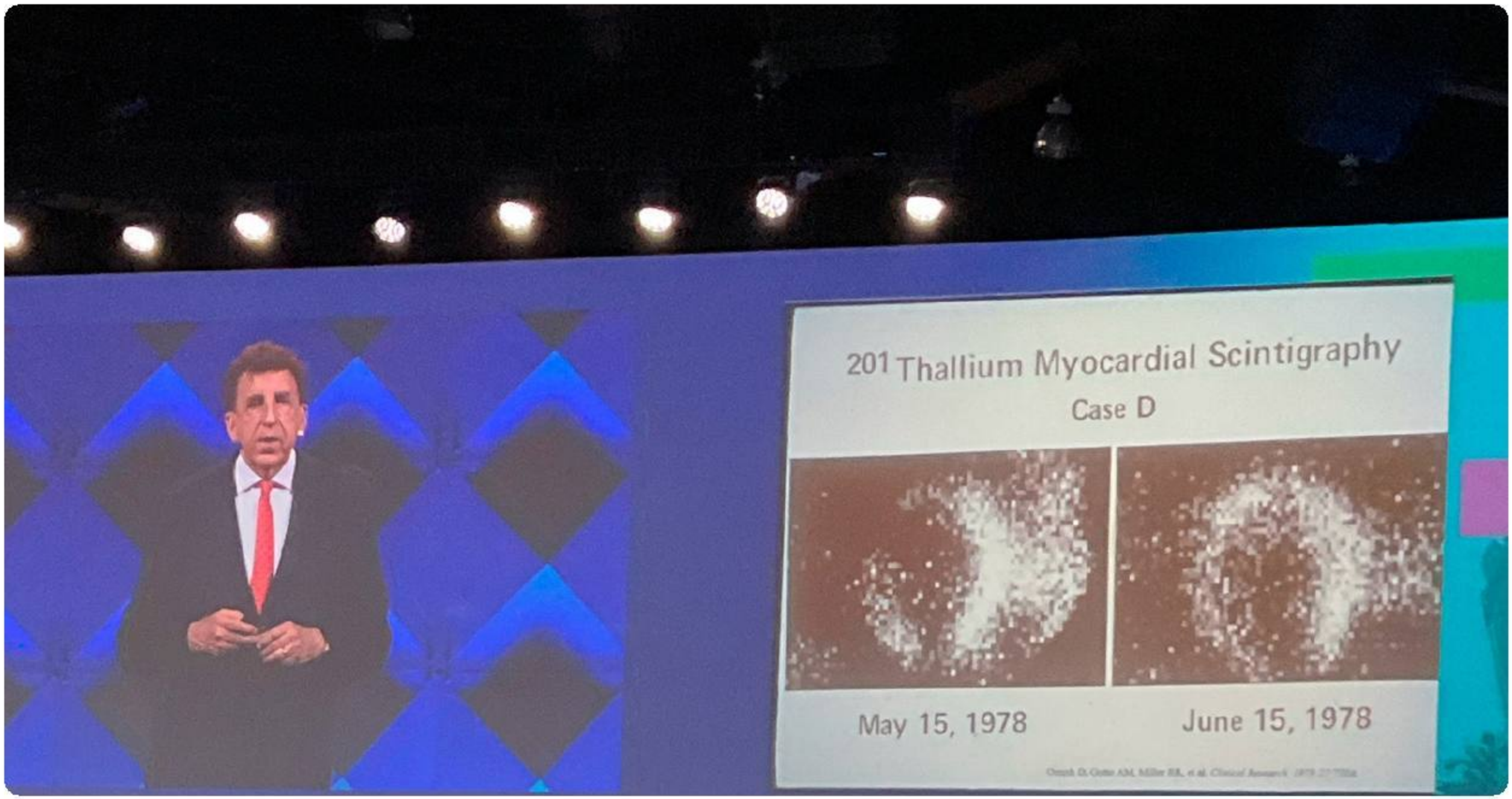
Four components of ornish intervention

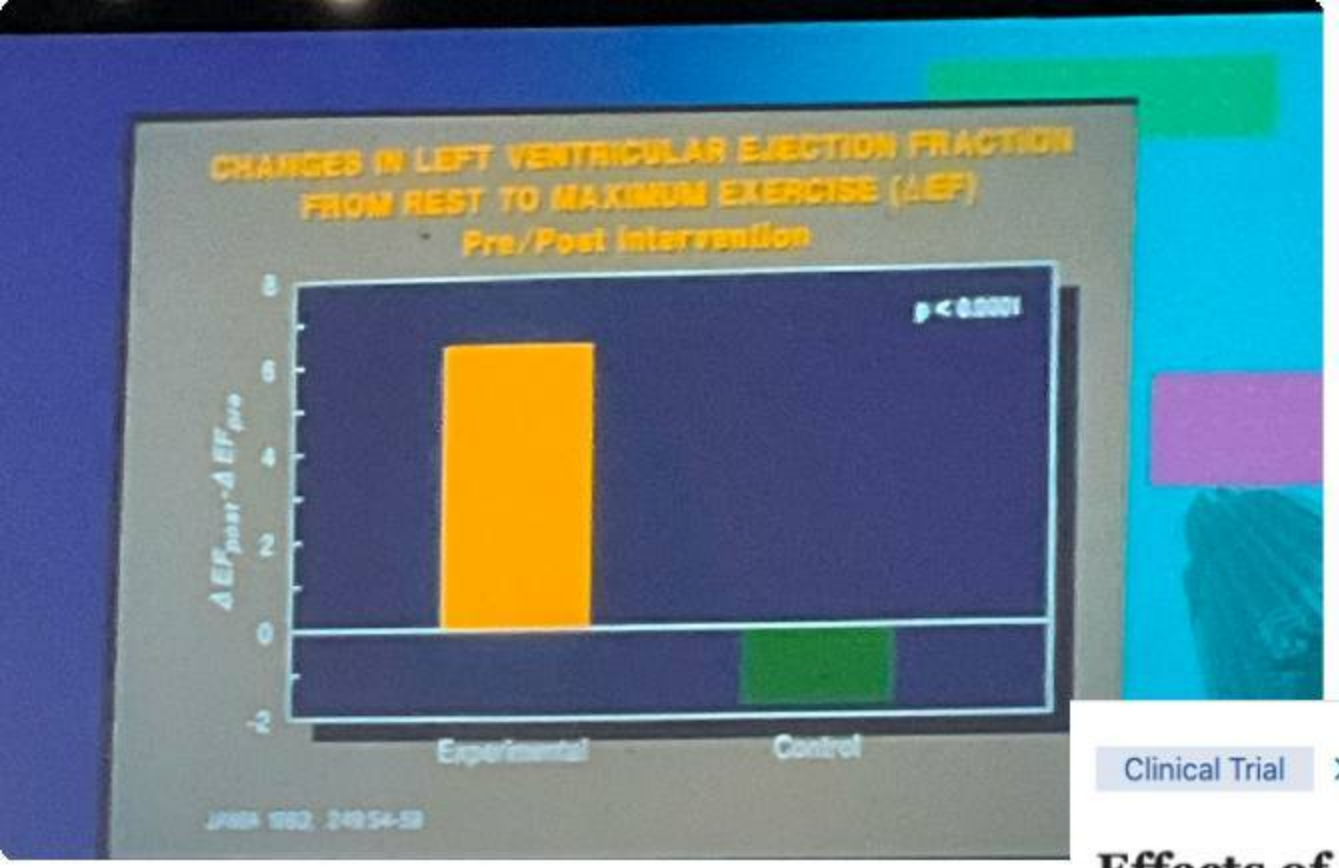
The **four components of the Ornish intervention** (developed by Dr. Dean Ornish) are:

1. **Nutrition** – A low-fat, whole-food, plant-based diet that is vegetarian and emphasizes fruits, vegetables, whole grains, legumes, and soy products. It limits fats (especially saturated fats), cholesterol, and refined carbohydrates.
2. **Exercise** – Moderate physical activity such as walking, cycling, or other aerobic activities for at least 30 minutes per day, or one hour every other day.
3. **Stress Management** – Daily stress reduction techniques, including yoga, stretching, breathing exercises, meditation, and progressive relaxation.
4. **Love and Support** – Regular participation in group support sessions to foster emotional support, communication, and a sense of community.

This comprehensive lifestyle program is designed to prevent and reverse chronic (↓)ases, especially heart disease.




201 Thallium Myocardial Scintigraphy
Case D
May 15, 1978
June 15, 1978



Clinical Trial > JAMA. 1983 Jan 7;249(1):54-9.

Effects of stress management training and dietary changes in treating ischemic heart disease

D Ornish, L W Scherwitz, R S Doody, D Kesten, S M McLanahan, S E Brown, E DePuey, R Sonnemaker, C Haynes, J Lester, G K McAllister, R J Hall, J A Burdine, A M Gotto Jr

PMID: 6336794

Abstract

To evaluate the short-term effects of an intervention that consists of stress management training and dietary changes in patients with ischemic heart disease (IHD), we compared the cardiovascular status of 23 patients who received this intervention with a randomized control group of 23 patient who did not. After 24 days, patients in the experimental group demonstrated a 44% mean increase in duration of exercise, a 55% mean increase in total work performed, somewhat improved left ventricular regional wall motion during peak exercise, and a net change in the left ventricular ejection fraction from rest to maximum exercise of +6.4%. Also, we measured a 20.5% mean decrease in plasma cholesterol levels and a 91.0% mean reduction in frequency of anginal episodes. In this selected sample, short-term improvements in cardiovascular status seem to result from these adjuncts to conventional treatments of IHD.

PubMed Disclaimer

Intensive Lifestyle Changes for Reversal of Coronary Heart Disease

Dean Ornish, MD; Larry W. Scherwitz, PhD; James H. Billings, PhD, MPH; K. Lance Gould, MD; Terri A. Merritt, MS; Stephen Sparler, MA; William T. Armstrong, MD; Thomas A. Ports, MD; Richard L. Kirkeeide, PhD; Charissa Hogeboom, PhD; Richard J. Brand, PhD

Context.—The Lifestyle Heart Trial demonstrated that intensive lifestyle changes may lead to regression of coronary atherosclerosis after 1 year.

Objectives.—To determine the feasibility of patients to sustain intensive lifestyle changes for a total of 5 years and the effects of these lifestyle changes (without lipid-lowering drugs) on coronary heart disease.

Design.—Randomized controlled trial conducted from 1986 to 1992 using a randomized invitatio

Patients.—Forty- were randomized to group, and 35 comp

Setting.—Two te

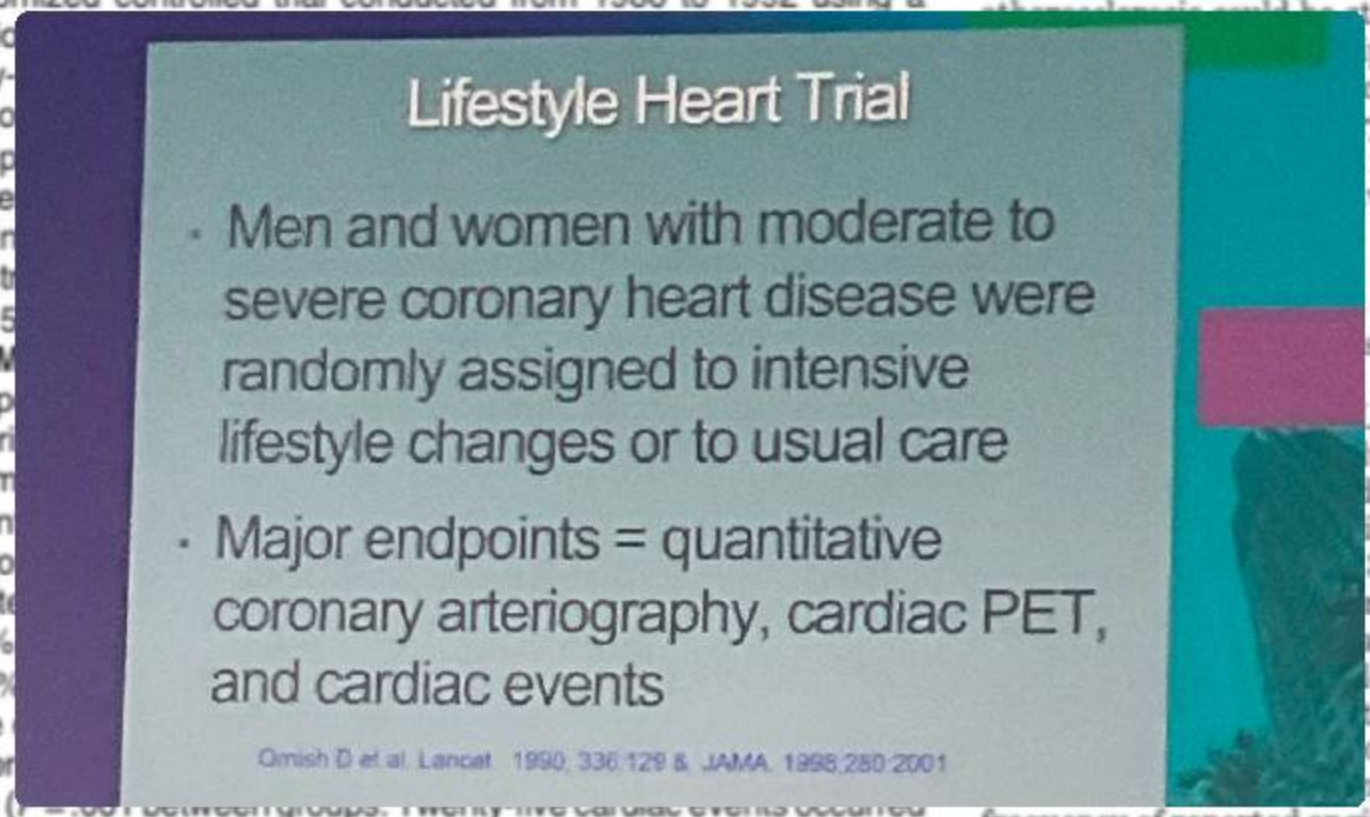
Intervention.—In aerobic exercise, st social support) for 5

Main Outcome M in coronary artery p

Results.—Experi 5-year follow-up) m years, whereas con follow-up) made mo percent diameter st after 1 year (a 4.5% after 5 years (a 7.9% eter stenosis in the (a 5.4% relative wor relative worsening) (between groups. Twenty-five cardiac events occurred in 28 experimental group patients vs 45 events in 20 control group patients during the 5-year follow-up (risk ratio for any event for the control group, 2.47 [95% confidence interval, 1.48-4.20]).

Conclusions.—More regression of coronary atherosclerosis occurred after 5 years than after 1 year in the experimental group. In contrast, in the control group, coronary atherosclerosis continued to progress and more than twice as many cardiac events occurred.

JAMA. 1998;280:2001-2007

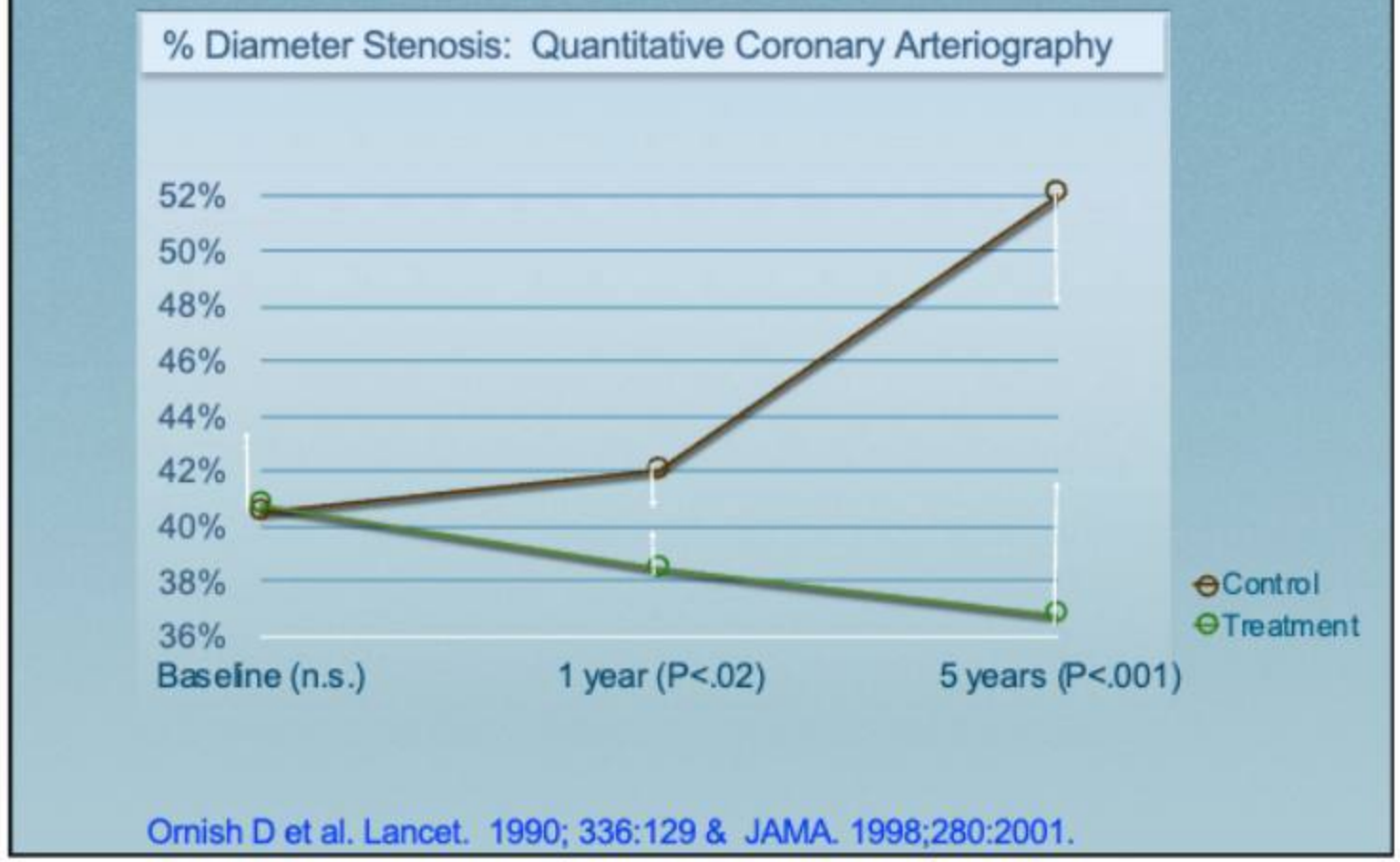


THE LIFESTYLE Heart Trial was the first randomized clinical trial to investigate whether ambulatory patients could be motivated to make and sustain comprehensive lifestyle changes and, if so, whether the progression of coronary atherosclerosis could be stopped or re- pid-lowering computer-as- y arteriogra- from earlier vasive mea-

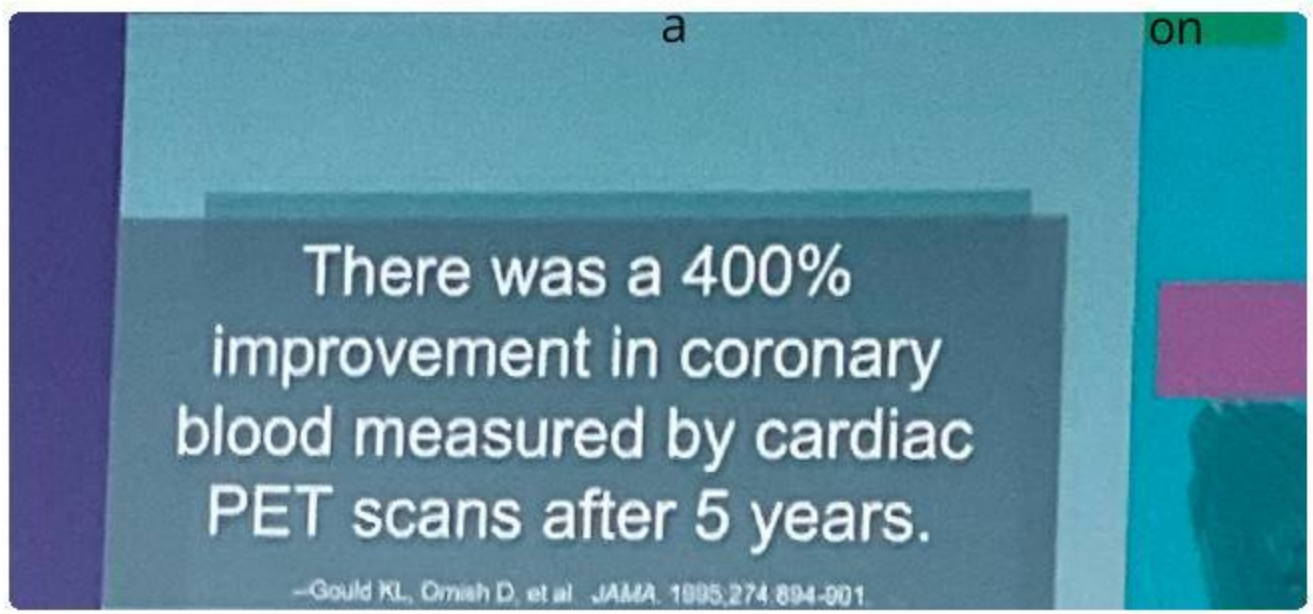
that experi- were able to sive lifestyle reduction in LDL) choles- uction in the les.[2] Average is regressed 37.8% 1 year rrelated with nge. In con- -care control e changes in olesterol lev- crease in the frequency of reported anginal episodes. Average percent diameter stenosis progressed from 42.7% to 46.1%.

Given these encouraging findings, we extended the study for an additional 4 years to determine (1) the feasibility of patients sustaining intensive changes in diet and lifestyle for a much longer time, and (2) the effects of these changes

Lifestyle Heart Trial



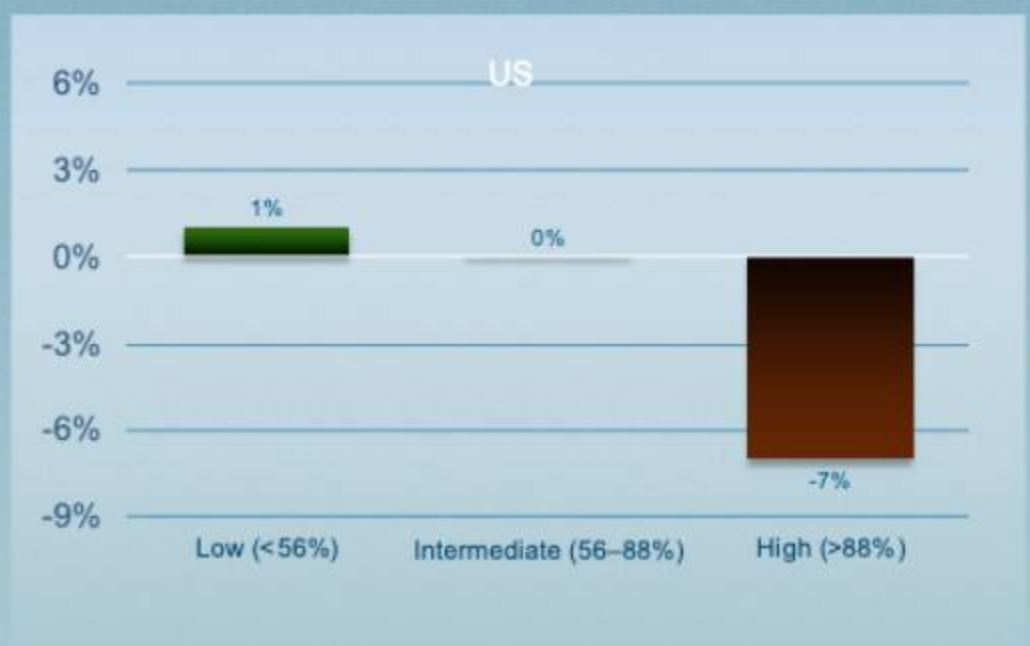
Ornish D et al. Lancet. 1990; 336:129 & JAMA. 1998;280:2001.



99% of patients stopped or reversed their heart disease as measured by cardiac PET scans after 5 years.
In contrast, 45% of controls got worse, 50% showed no change, and only 5% improved (p = 0.03).

–Gould KL, Ornish D, et al. *JAMA*. 1995;274:894-901.

Adherence and Change in Coronary Atherosclerosis after Five Years



Ornish D et al. JAMA. 1998;280:2001

Lifestyle Heart Trial

- None of the experimental group patients took lipid-lowering drugs; more than 50% of the control group patients began taking them during the study.
- Progression was significantly greater in control group patients not taking lipid-lowering drugs (40.7 to 59.7%) than those who were (45.7 to 51.7%).

Ornish D et al. Lancet. 1990; 336:129 & JAMA. 1998;280:2001.

There was a 40% reduction in LDL-cholesterol in the first year without cholesterol-lowering drugs.

--Ornish D et al. JAMA. 1998;280:2001.

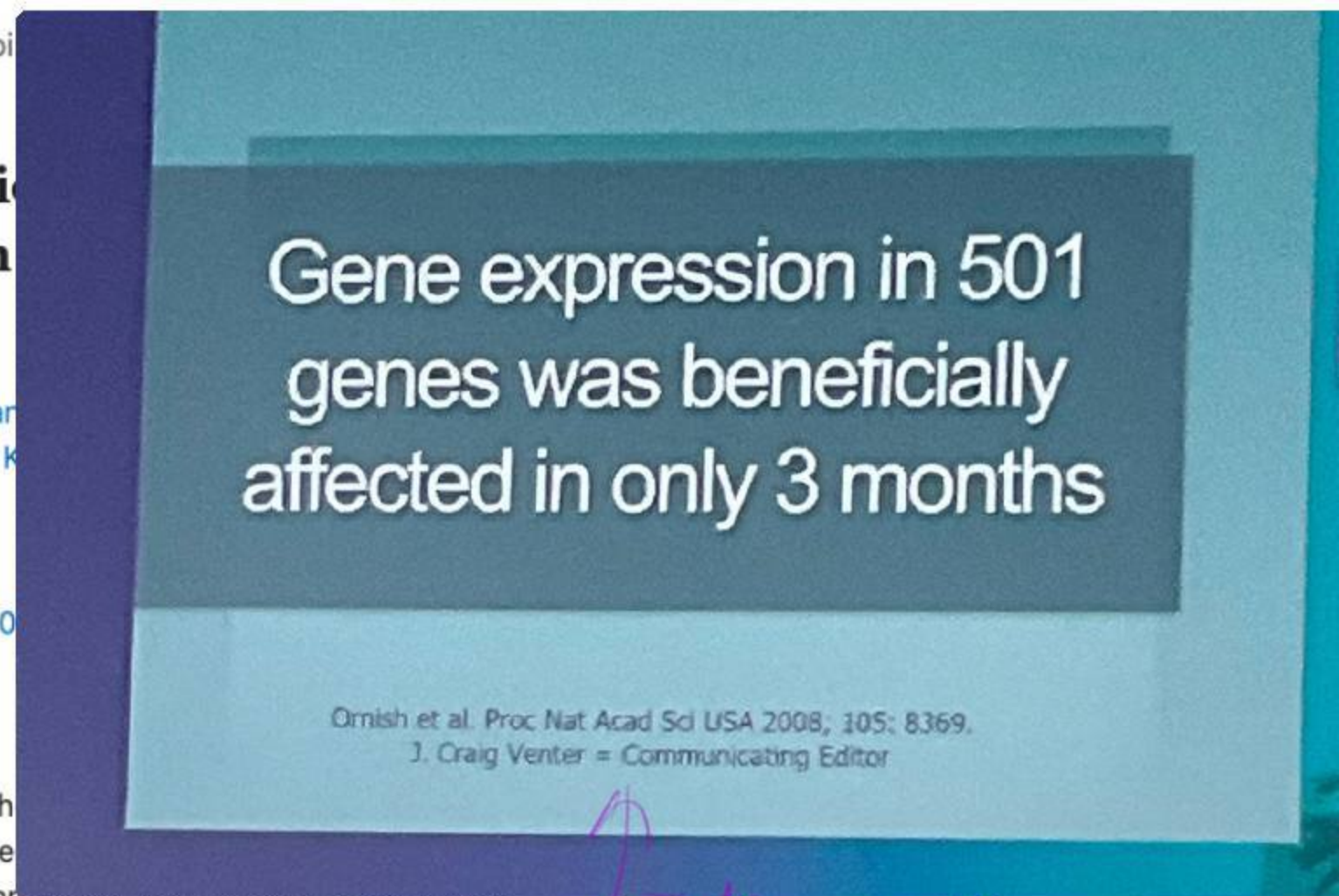
> Proc Natl Acad Sci U S A. 2008 Jun 17;105(24):8369-74. doi
Epub 2008 Jun 16.

Changes in prostate gene expressi
undergoing an intensive nutrition
intervention

Dean Ornish [1], Mark Jesus M Magbanua, Gerdi Weidner, Vivian
Christopher Green, Michael D Mattie, Ruth Marlin, Jeff Simko, K
Christopher M Haqq, Peter R Carroll

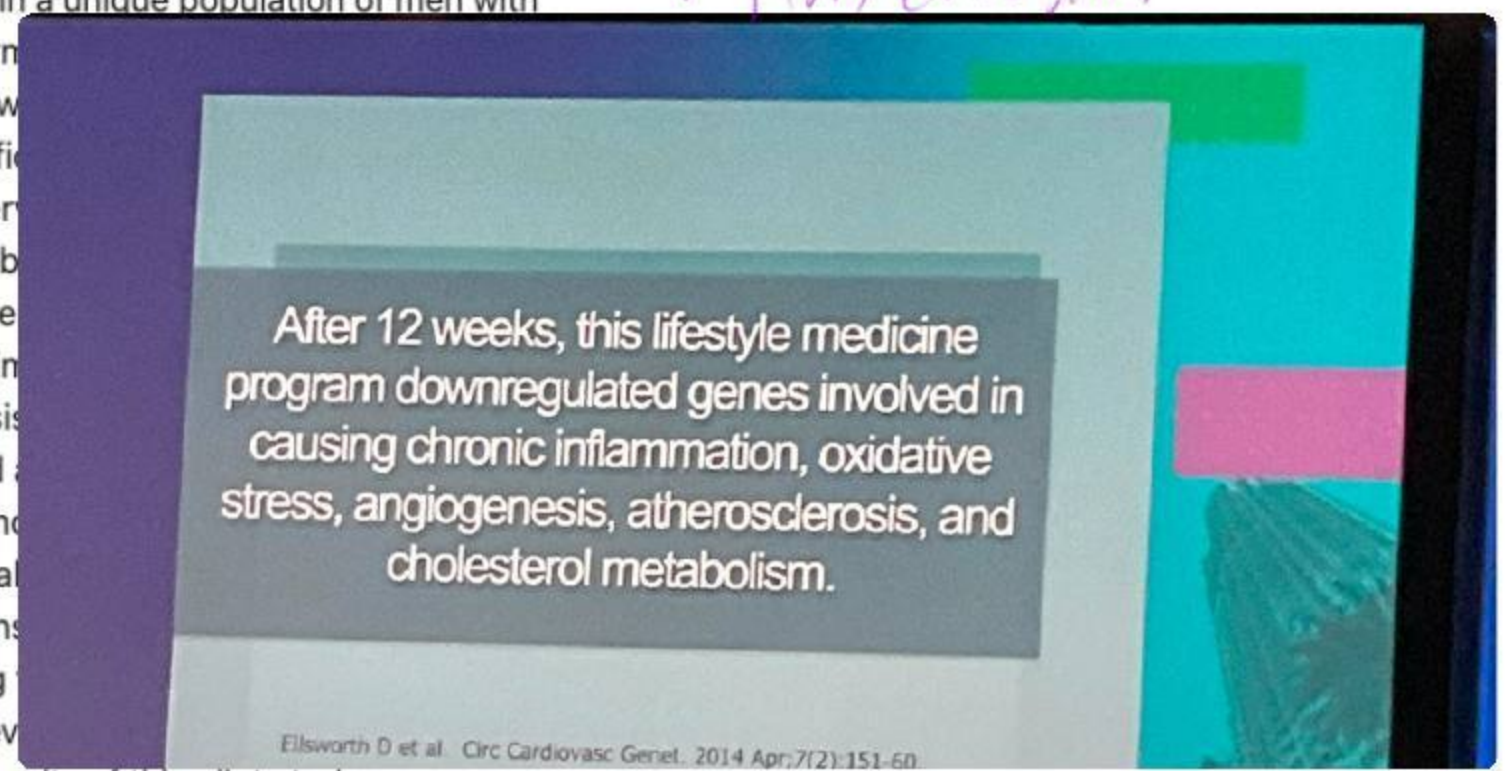
Affiliations + expand

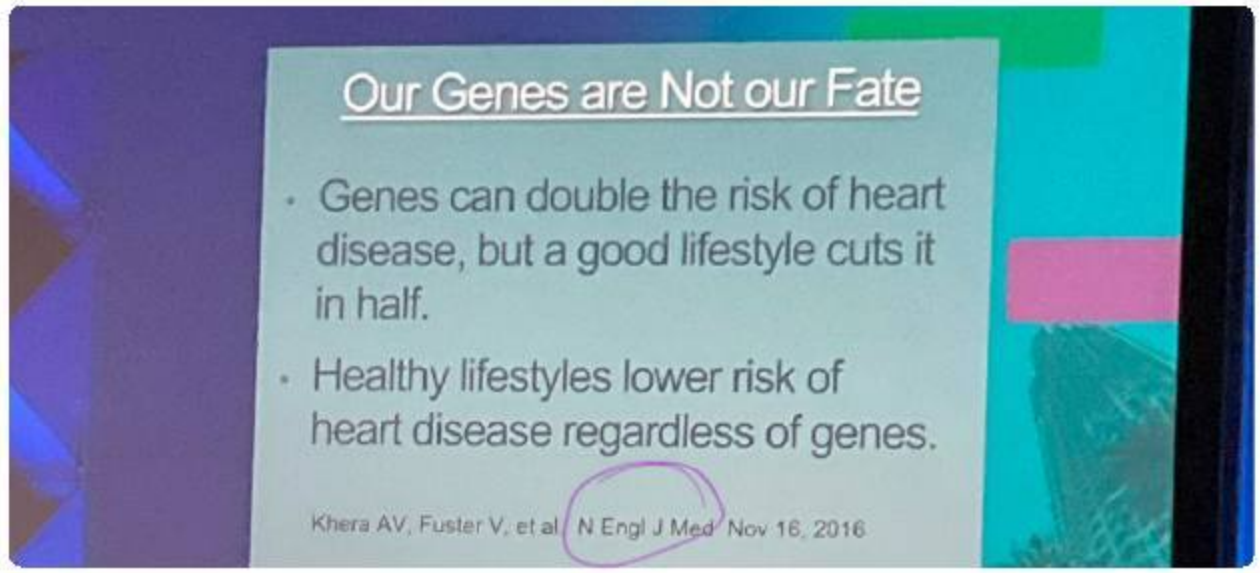
PMID: 18559852 PMCID: PMC2430265 DOI: 10.1073/pnas.0

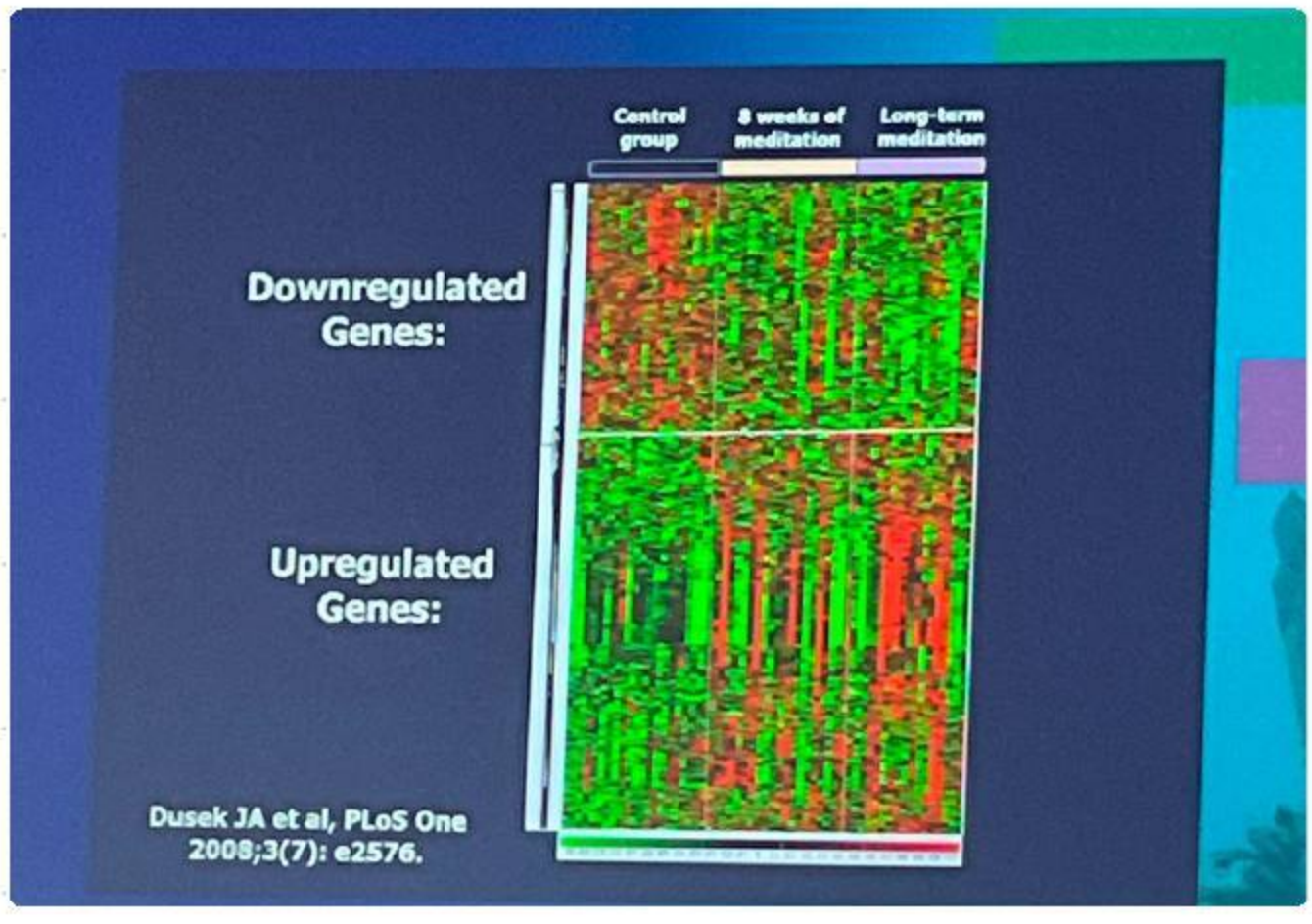


Abstract

Epidemiological and prospective studies indicate that compreh
the progression of prostate cancer. However, the molecular me
diet and lifestyle might affect the prostate microenvironment ar
a pilot study to examine changes in prostate gene expression in a unique population of men with
low-risk prostate cancer who declined immediate surgery, horm
participated in an intensive nutrition and lifestyle intervention w
for tumor progression. Consistent with previous studies, signifi
abdominal obesity, blood pressure, and lipid profile were obser
of low-risk patients was safe. Gene expression profiles were ob
RNA samples from control prostate needle biopsy taken before
patient's 3-month postintervention biopsy. Quantitative real-tim
observations for selected transcripts. Two-class paired analysis
significance analysis of microarrays detected 48 up-regulated
after the intervention. Pathway analysis identified significant mo
that have critical roles in tumorigenesis, including protein metal
protein traffic, and protein phosphorylation (all $P < 0.05$). Intens
may modulate gene expression in the prostate. Understanding
comprehensive lifestyle changes may strengthen efforts to dev
treatment. Larger clinical trials are warranted to confirm the results of this pilot study.




Our Genes are Not our Fate
• Genes can double the risk of heart disease, but a good lifestyle cuts it in half.
• Healthy lifestyles lower risk of heart disease regardless of genes.
Khera AV, Fuster V, et al. N Engl J Med Nov 16, 2016


Control group
8 weeks of meditation
Long-term meditation
Downregulated Genes:
Upregulated Genes:
Dusek JA et al, PLoS One 2008;3(7): e2576.

Effect of comprehensive lifestyle changes on telomerase activity and telomere length in men with biopsy-proven low-risk prostate cancer: 5-year follow-up of a descriptive pilot study

Dean Ornish, Jue Lin, June M Chan, Elissa Epel, Colleen Kemp, Gerdi Weidner, Ruth Marlin, Steven J Frenda, Mark Jesus M Magbanua, Jennifer Daubenmier, Ivette Estay, Nancy K Hills, Nita Chainani-Wu, Peter R Carroll, Elizabeth H Blackburn

Summary

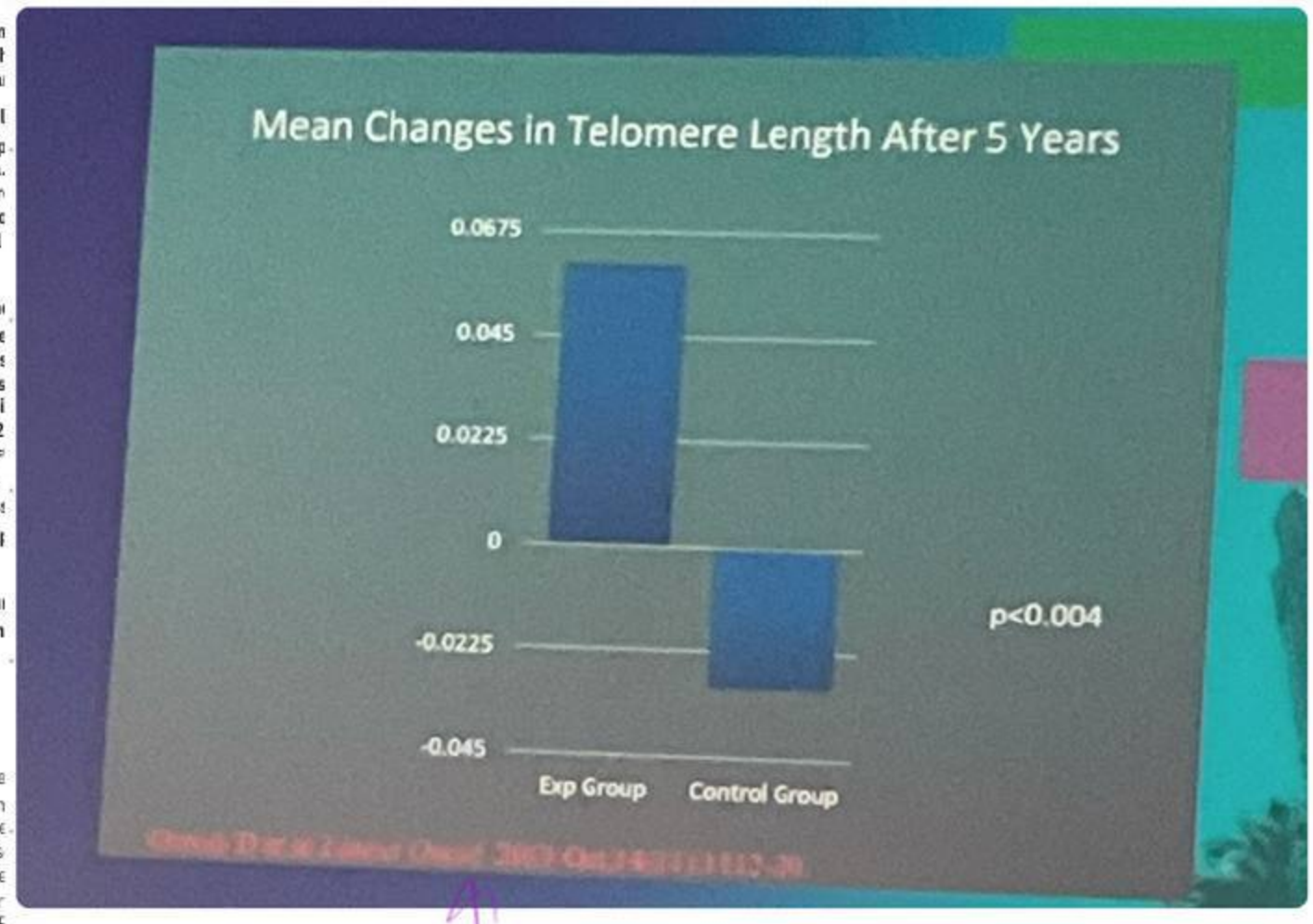
Background Telomere shortness in human beings is a prognostic n
We previously found an association between 3 months of compreh
activity in human immune-system cells. We followed up participa

Methods This follow-up study compared ten men and 25 external
cancer and had chosen to undergo active surveillance. Eligible p
from previous studies and selected according to the same criteria.
programme of comprehensive lifestyle changes (diet, activity, str
in the control group underwent active surveillance alone. We toc
telomere length and telomerase enzymatic activity per viable cell
the degree of lifestyle changes.

Findings Relative telomere length increased from baseline by a m
units (IQR −0·05 to 0·11) in the lifestyle intervention group, but de
−0·05 to 0·03, difference p=0·03). When data from the two groups
significantly associated with relative telomere length after adjus
percentage point increase in lifestyle adherence score, T/S units i
5 years, telomerase activity had decreased from baseline by 0·2
group, and by 1·08 (−3·25 to 1·86) units in the control group (p=
lifestyle changes (relative risk 0·93, 95% CI 0·72–1·20, p=0·57).

Interpretation Our comprehensive lifestyle intervention was as
after 5 years of follow-up, compared with controls, in this small p
warranted to confirm this finding.

Funding US Department of Defense, NIH/NCI, Furlotti Family Fou
Walton Family Foundation, Resnick Foundation, Greenbaum Foun
Prostate Cancer Foundation.



Introduction

Telomeres are protective DNA and protein complexes at the end of linear chromosomes that promote chromosomal stability. Telomere maintenance is required for the complete replication of DNA and protection of chromosomes from nuclease degradation, end-to-end fusion, and cellular senescence.1 Telomeres typically shorten during normal cell divisions and, therefore, telomere length and rate of shortening are indicators of mitotic-cell age.2 Telomere shortening is counteracted by the cellular enzyme telomerase.3 In human beings, telomere shortening is a potential prognostic marker for disease risk and progression and for premature death.4

Cellular ageing conferred by diminished telomere maintenance seems to be an important precursor to the development of many types of cancer.5 Shortened telome
outcon
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rearrangement characteristic of prostate cancer.10 Men with variable telomere length in prostate-cancer cells and short telomere length in prostate-cancer-associated stromal cells are at a substantially increased risk of metastasis or dying from prostate cancer.11

In Lancet

RESEARCH Open Access

Effects of intensive lifestyle changes on the progression of mild cognitive impairment or early dementia due to Alzheimer's disease: a randomized, controlled clinical trial

Dean Ornish[1,2*], Catherine Madison[1,3], Miia Kivipelto[4,5,6,7], Colleen Kemp[8], Charles E. McCulloch[9], Douglas Galasko[10], Jon Artz[11,12], Dorene Rentz[13,14,15], Jue Lin[16], Kim Norman[17], Anne Ornish[1], Sarah Tranter[8], Nancy DeLamarter[1], Noel Wingers[1], Carra Richling[1], Rima Kaddurah-Daouk[18], Rob Knight[19], Daniel McDonald[20], Lucas Patel[21], Eric Verdin[22,23], Rudolph E. Tanzi[13,24,25,26] and Steven E. Arnold[13,27]

Abstract

Background Evidence links lifestyle factors with Alzheimer's disease (AD). We report the first randomized, controlled clinical trial to determine if intensive lifestyle changes may beneficially affect the progression of mild cognitive impairment (MCI) or early dementia due to AD.

Methods A 1:1 multicenter randomized controlled phase 2 trial, ages 45-90 with MCI or early dementia due to AD and a Montreal Cognitive Assessment (MoCA) score of 18 or higher. The primary outcome measures were changes in cognition and function tests: Clinical Global Impression of Change (CGIC), Alzheimer's Disease Assessment Scale (ADAS-Cog), Clinical Dementia Rating–Sum of Boxes (CDR-SB), and Clinical Dementia Rating Global (CDR-G) after 20 weeks of an intensive multidomain lifestyle intervention compared to a wait-list usual care control group. ADAS-Cog, CDR-SB, and CDR-Global scales were compared using a Mann-Whitney-Wilcoxon rank-sum test, and CGIC was compared using Fisher's exact test. Secondary outcomes included plasma Aβ42/40 ratio, other biomarkers, and correlating lifestyle with the degree of change in these measures.

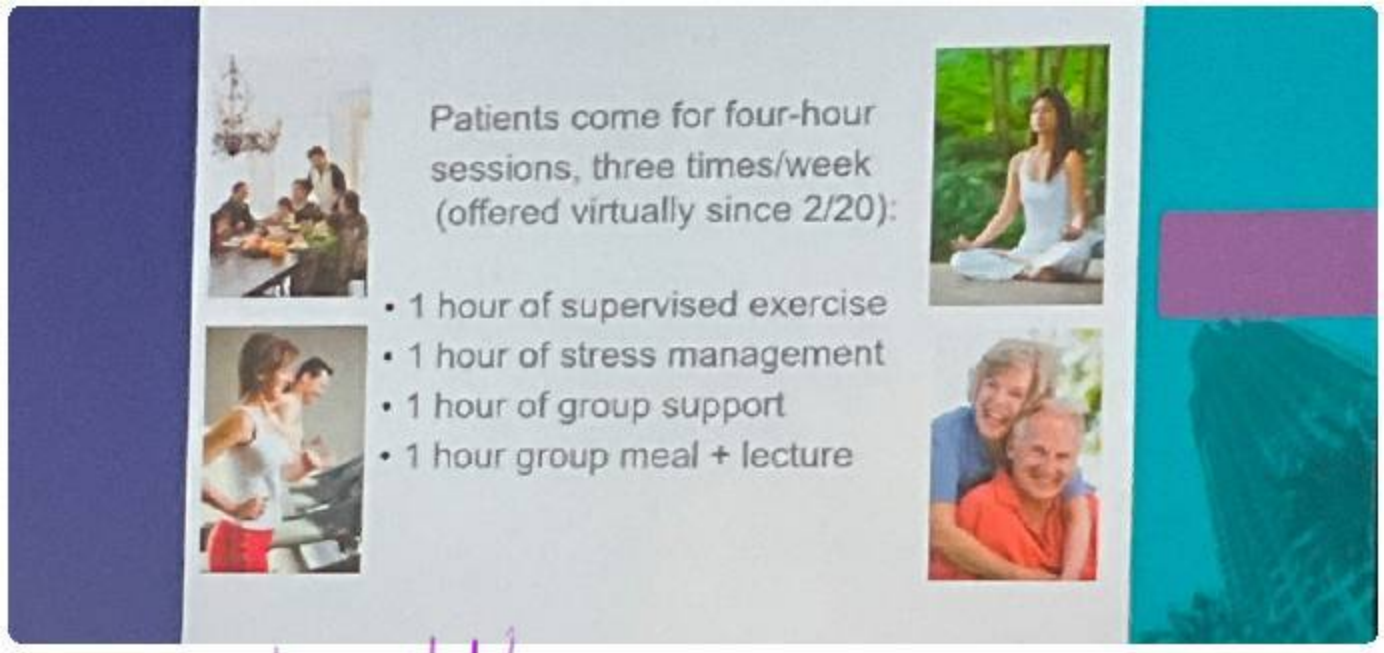
Results Fifty-one AD patients enrolled, mean age 73.5. No significant differences in any measures at baseline. Only two patients withdrew. All patients had plasma Aβ42/40 ratios <0.0672 at baseline, strongly supporting AD diagnosis. After 20 weeks, significant between-group differences in the CGIC (p= 0.001), CDR-SB (p= 0.032), and CDR Global (p= 0.037) tests and borderline significance in the ADAS-Cog test (p= 0.053). CGIC, CDR Global, and ADAS-Cog showed improvement in cognition and function and CDR-SB showed significantly less progression, compared to the control group which worsened in all four measures. Aβ42/40 ratio increased in the intervention group and decreased

Specific Aims

- Can multimodal intensive lifestyle changes beneficially affect the progression of early-stage Alzheimer's disease using four standard measures of cognitive function?
- Are these lifestyle changes correlated with measured changes in cognitive function?
- What are the effects of these lifestyle changes on biomarkers, including the plasma Aβ42/40 ratio?

Study Design

- Randomly assigned to two groups.
- Both groups tested at baseline; one receives the intervention for 20 weeks and the other usual care. Both groups are then retested—a classical RCT for the first 20 weeks.



– all meals provided!

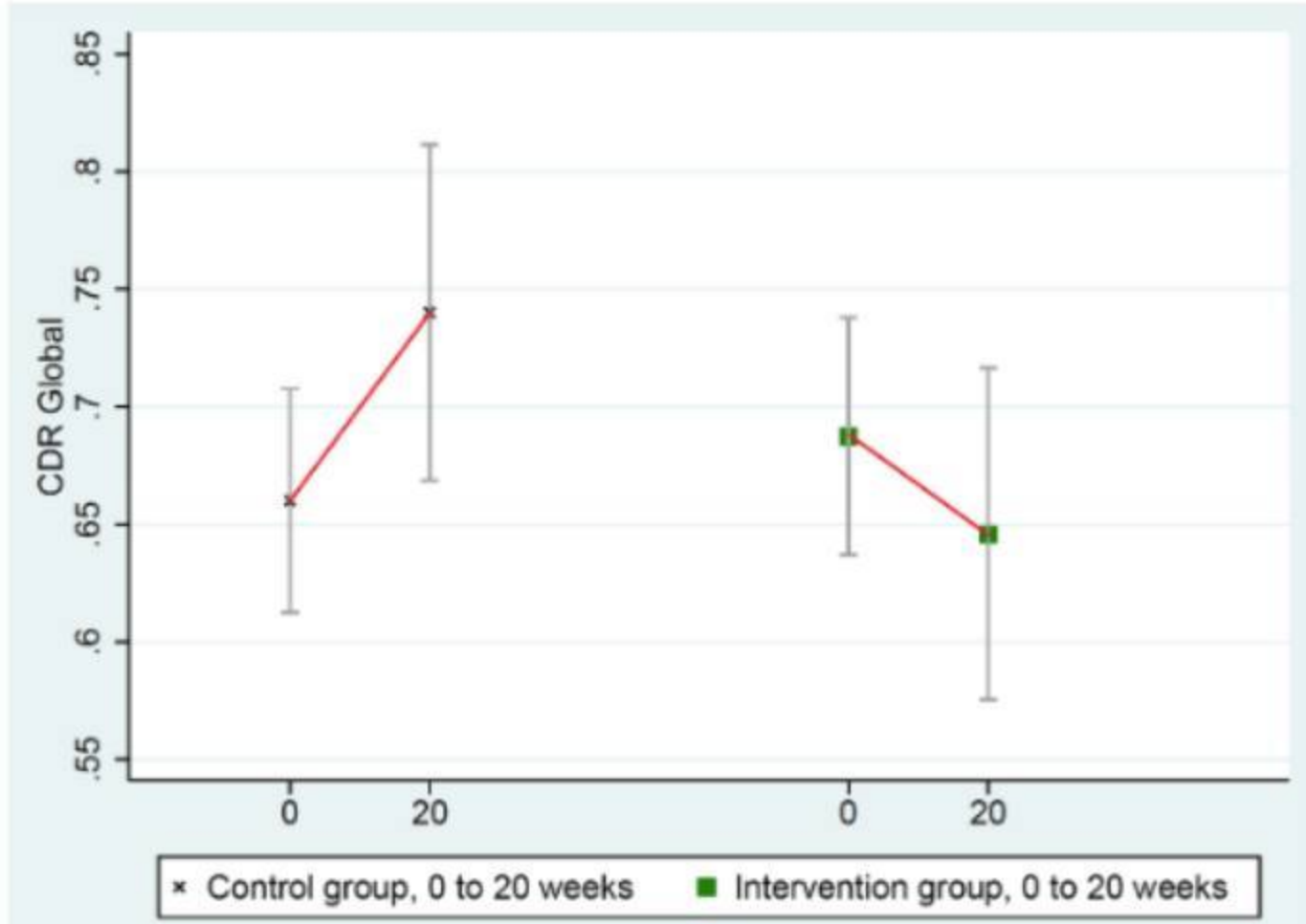
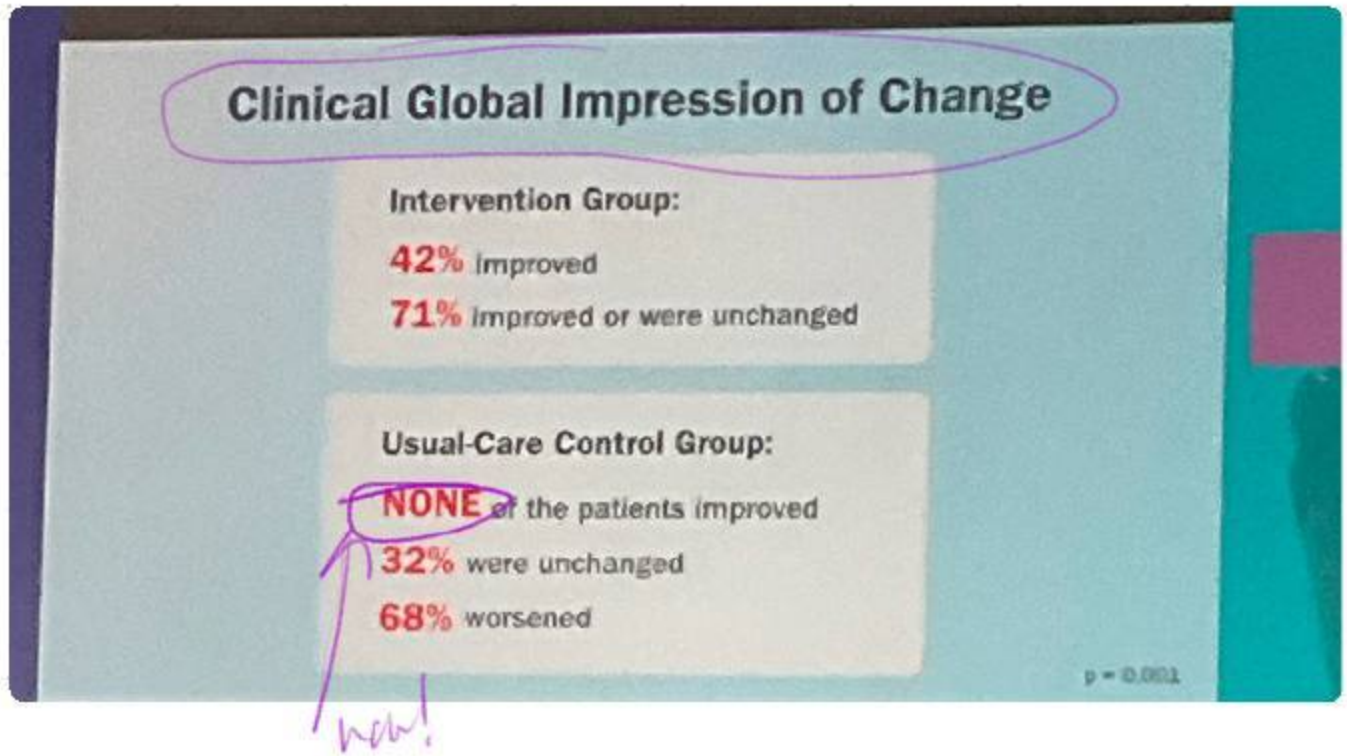
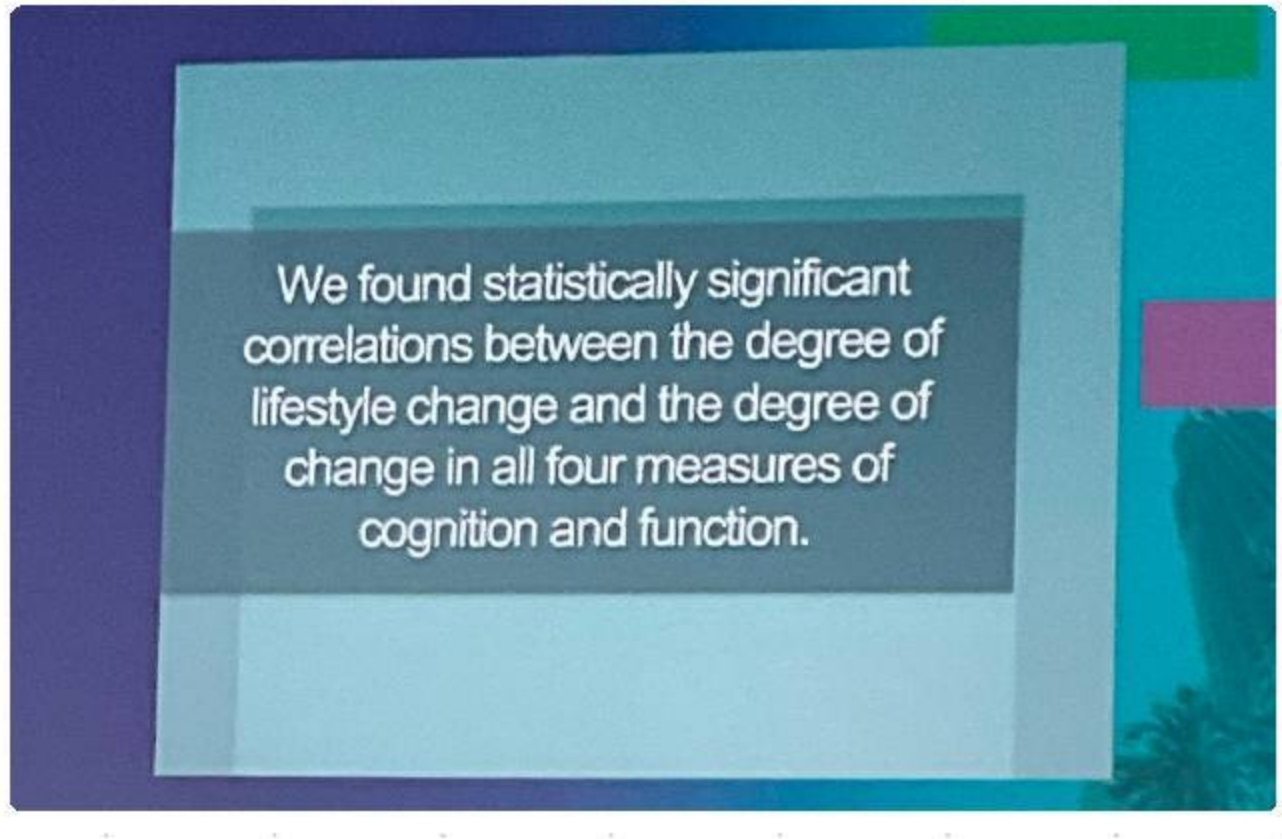


Fig. 2 Changes in CDR-Global (lower = improved)


Clinical Global Impression of Change
Intervention Group:
42% improved
71% improved or were unchanged
Usual-Care Control Group:
NONE of the patients improved
32% were unchanged
68% worsened
p = 0.001


We found statistically significant correlations between the degree of lifestyle change and the degree of change in all four measures of cognition and function.

Biomarkers

- The plasma Aβ42/40 ratio went up in the intervention group and down in the control group (p= 0.003). This finding was also seen in drug trials.
- Insulin levels decreased significantly more in the intervention group than control group (p= 0.048).
- Beta-hydroxybutyrate (ketones) increased in the intervention group and decreased in the control group (p= 0.021).
- Glycoprotein acetylation (GlycA) decreased 8 times more in the intervention group (p=0.005).

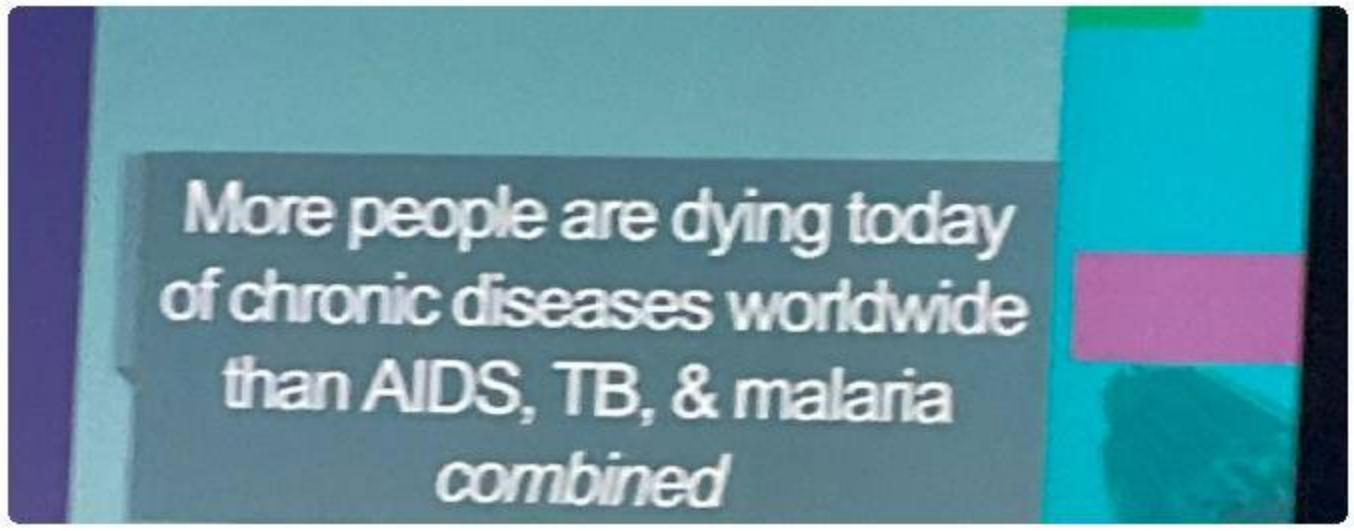
We found statistically significant correlations between the degree of lifestyle change and the degree of change in the plasma Aβ42/40 ratio, GlycA, and beta-hydroxybutyrate.

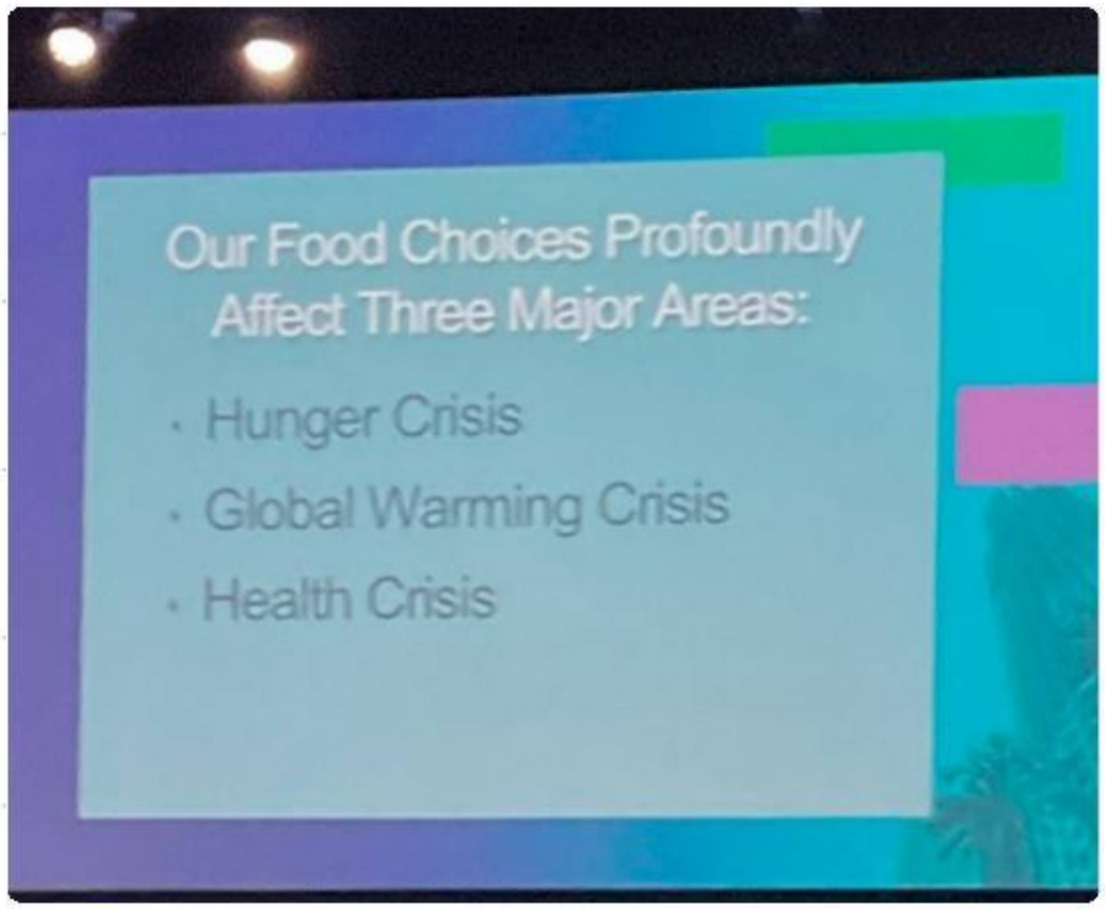
Microbiome

- There was a significant and beneficial change in the microbiome configuration in the intervention group but not in the control group.
- Several taxa (groups of microorganisms) that increased only in the intervention group were involved in reduced AD risk in other studies.
- Also, there was a decrease in relative abundance of taxa involved in increased AD risk in the intervention group.
- Thus, lifestyle changes increase the number of beneficial organisms and decrease the number of harmful ones in the microbiome.

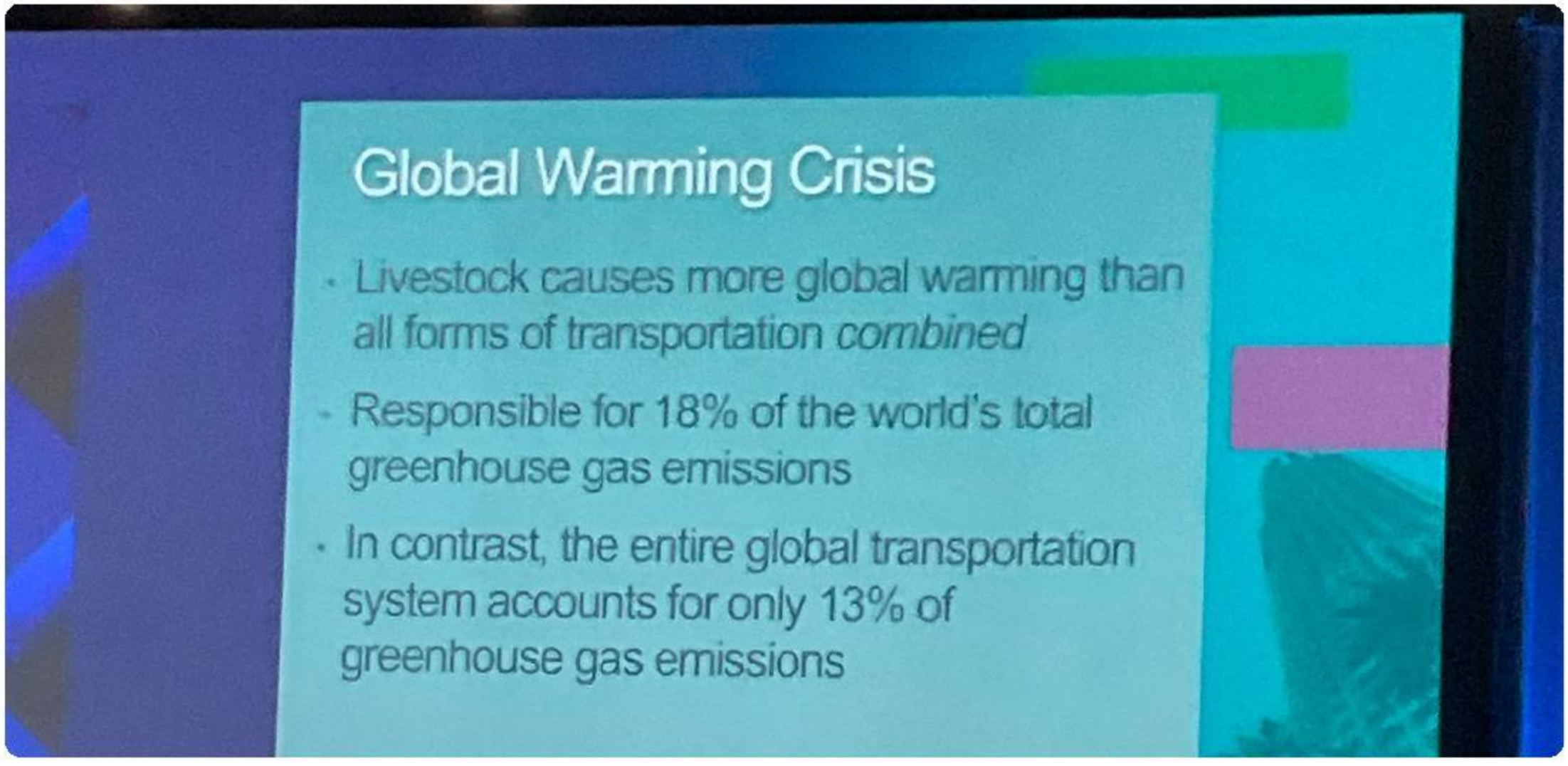
Conclusions

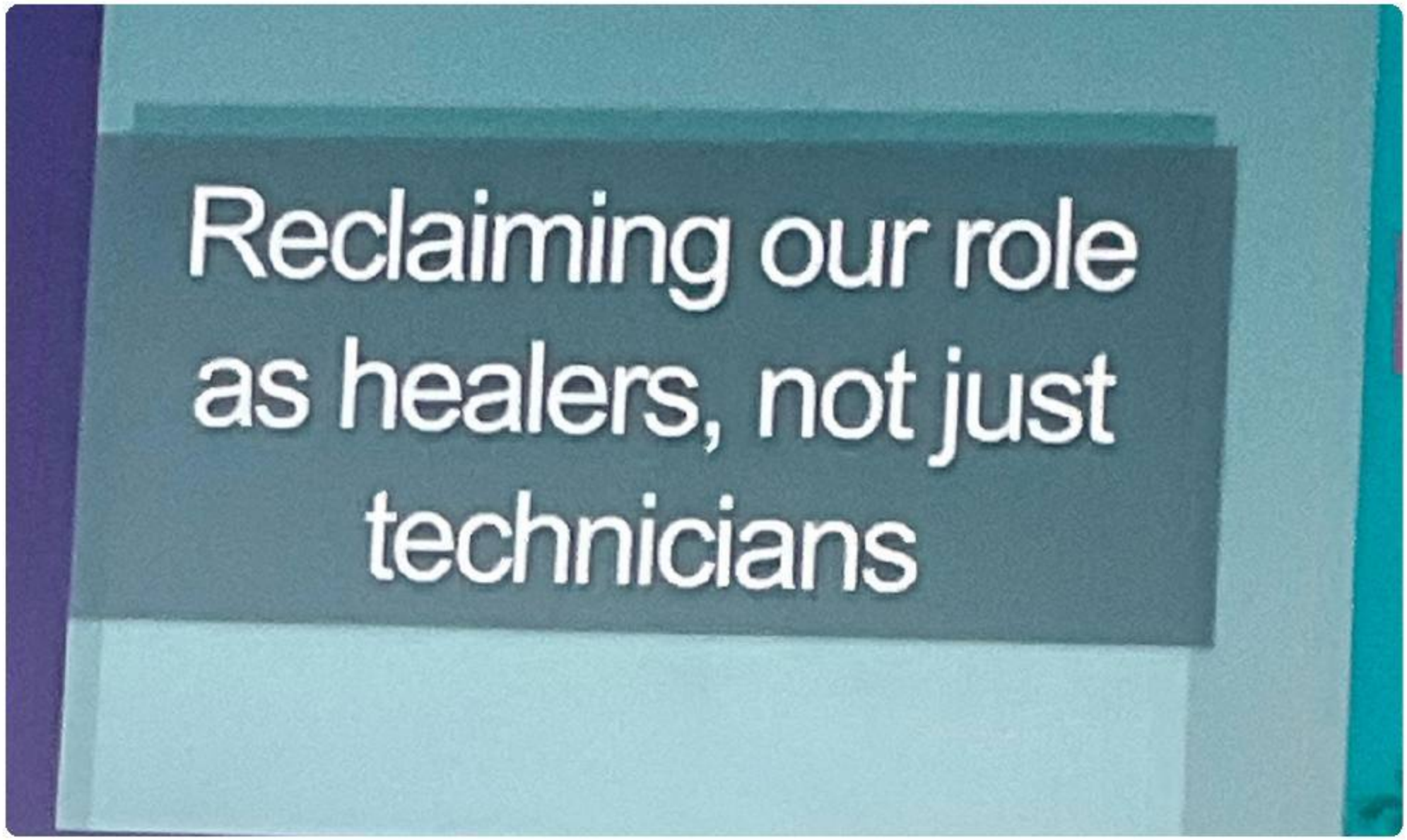
- Comprehensive lifestyle changes improved cognition and function in several standard measures after 20 weeks.
- In contrast, patients in the randomized control group showed overall worsening in all four measures of cognition and function.
- The validity of these findings was supported by the observed changes in plasma biomarkers and microbiome; the dose-response correlation of the degree of lifestyle change with the degree of improvement in all four measures of cognition and function; and the correlation between the degree of lifestyle change and the degree of changes in the Aβ42/40 ratio and other relevant biomarkers in a beneficial direction.


More people are dying today
of chronic diseases worldwide
than AIDS, TB, & malaria
combined


Our Food Choices Profoundly
Affect Three Major Areas:
Hunger Crisis
Global Warming Crisis
Health Crisis

14x more resources to make a pound of meat protein than plant protein




Reclaiming our role
as healers, not just
technicians

EXERCISE INTERVENTIONS







What is the number needed to treat for SSRIs for depression?



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What is the number needed to treat for SSRIs for depression?

The numbers needed to treat (NNT) for TCAs ranged from 7 to 16 {median NNT 9} patient expected event rate ranged from 63% to 26% respectively) and for SSRIs from 7 to 8 {median NNT 7} (patient expected event rate ranged from 48% to 42% respectively) . Jul 8, 2009

National Institutes of Health (NIH) (.gov)
https://pubmed.ncbi.nlm.nih.gov › ...

Antidepressants versus placebo for depression in primary care

American Academy of Family Physicians | AAFP
https://www.aafp.org › pubs › afp › issues

Effectiveness of Antidepressants Compared with Placebo ...

by J GUIRGUIS-BLAKE · 2010 · Cited by 9 — **SSRIs** showed a clinical benefit for improvement in **depression** scores (**NNT** = 7; 95% CI, 7 to 8).

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How about psychotherapy NNT for depression?



Was Eysenck right after all? A reassessment of the effects of psychotherapy for adult depression P. Cuijpers +3 Epidemiology and Psychiatric Sciences 2018 · 112 citations DOI	The number needed to treat for psychotherapy for adult depression is 4.18, but this effect size drops to 0.31 when adjusting for bias.
Relapse rates after psychotherapy for depression - stable long-term effects? A meta-analysis. Christiane Steinert +3 Journal of Affective Disorders 2014 · 114 citations DOI	Psychotherapy for depression has a lower relapse rate compared to non-psychotherapeutic treatments, with a number needed to treat of 5.55.
Comparison of psychotherapies for adult depression to pill placebo control groups: a meta-analysis P. Cuijpers +6 Psychological Medicine 2013 · 84 citations DOI	Psychotherapy for adult depression has a number needed to treat of 7.14, comparable to antidepressant medications.

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American Academy of Family Physicians | AAFP
https://www.aafp.org › pubs › afp › issues

Aerobic Exercise Effective for Mild to Moderate Depression

by D SLAWSON · 2005 · Cited by 11 — ... percent; numbe needed to treat [NNT] = five). No significant differences occurred between the two high-dose exercise groups. Patients in ...

National Institutes of Health (NIH) (.gov)
https://www.ncbi.nlm.nih.gov › articles › PMC6137526

Association of Efficacy of Resistance Exercise Training ...

by BR Gordon · 2018 · Cited by 530 — The **number needed to treat** was 4. Total volume of prescribed RET, participant health status, and strength improvements were not significantly ...

BMC Medical Research Methodology
https://bmcmedresmethodol.biomedcentral.com › articles

Estimating the number needed to treat from continuous

by R Froud · 2009 · Cited by 58 — At three months, **NNT** estimates ranged from 5.1 (95% CI 3.4 to 10.7) to 9.0 (5.0 to 45.5) for **exercise**, 5.0 (3.4 to 9.8) to 5.4 (3.8 to 9.9) for ...

American Academy of Family Physicians | AAFP
https://www.aafp.org › pubs › afp › issues › fpin-ci-exer...

Exercise for Depression in Older Adults

High-intensity resistance **exercise** also improves **depression** in older patients (**number needed to treat [NNT]** = 3) (SOR: B, systematic review of an RCT ...

EVIDENCE matching the patient's circumstance/condition/diagnosis to the strength of a particular lifestyle intervention

Number Needed to Treat (NNT) The Number Needed to Treat (NNT) is the number of patients you need to treat to prevent one additional bad outcome (death, stroke, etc.). For example, if a drug has an NNT of 5, it means you need to treat 5 people with the drug to prevent one additional bad outcome. (Greater detail can be found in journal, Evidence-Based Medicine 1997;2:103-4.)

Example

WHAT IS THE NUMBER NEEDED TO TREAT (NNT) FOR MAJOR DEPRESSIVE DISORDER?

- TCAs – **6 to 16** (median 9)
- SSRI – **7 to 8** (median 8)
- Psychotherapy – **2.5** (3.5 in low risk of bias studies)
- **Exercise – 2** (2.8 in low-risk bias studies)
  - MDD only – 1.9
  - Supervised – 1.6

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41 Randomised Controlled Trials including participants 18 years or older with a diagnosis of major depressive disorder (MDD) or depressive symptoms determined by validated screening measures

2.264 participants postintervention

Review

Exercise as medicine for depressive symptoms? A systematic review and meta-ar

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Numbers needed to treat (NNT)



NNT is the number of patients needed to treat to have at least one with a large reduction in depressive symptoms. A lower NNT indicates that treatment is more effective

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2.00

PHYSICAL EXERCISE ENHANCES R ANTIDEPRESSANT MEDS

- N=121 primary care patients with MDD
- 65 and older
- 24 weeks sertraline titrated to response
- Augmented with PBO, non-progressive exercise progressive exercise
- Primary outcome remission on Ham-D (<10)
- Sert 45%
- Sert + NPE 73%
- Sert + PAE 81%

Murri et al. Physical exercise for late-life major depre

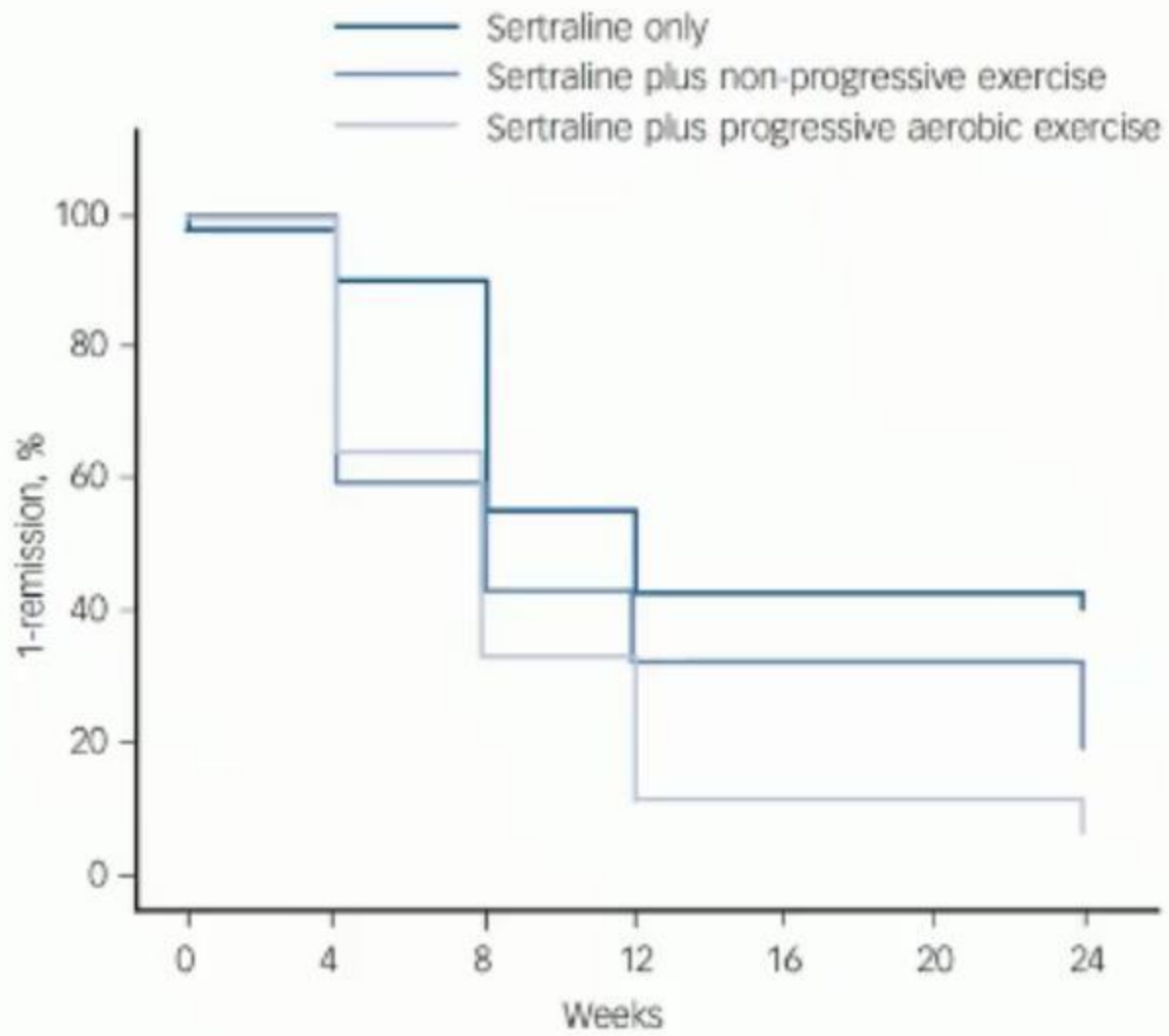

Fig. 2 Kaplan–Meier survival curves for remission of depression according to intervention group.



Research

Effect of exercise for depression: systematic review and network meta-analysis of randomised controlled trials

BMJ 2024 ; 384 doi: https://doi-org.ezproxy.libraries.wright.edu/10.1136/bmj-2023-075847 (Published 14 February 2024)
Cite this as: *BMJ* 2024;384:e075847



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thebmj Visual abstract

Effect of exercise for depression

A systematic review and network meta-analysis of randomised controlled trials

Summary

For treating depression, various exercise modalities are well tolerated and effective, particularly walking or jogging, yoga, and strength training. Effects were comparable to psychotherapy and pharmacotherapy. Exercise worked better when more intense

Population

14 170 participants | Participants with depression (ie, meeting clinical thresholds or diagnosed by a clinician) | No other exclusion criteria, so participants are from any age, and with any comorbidities

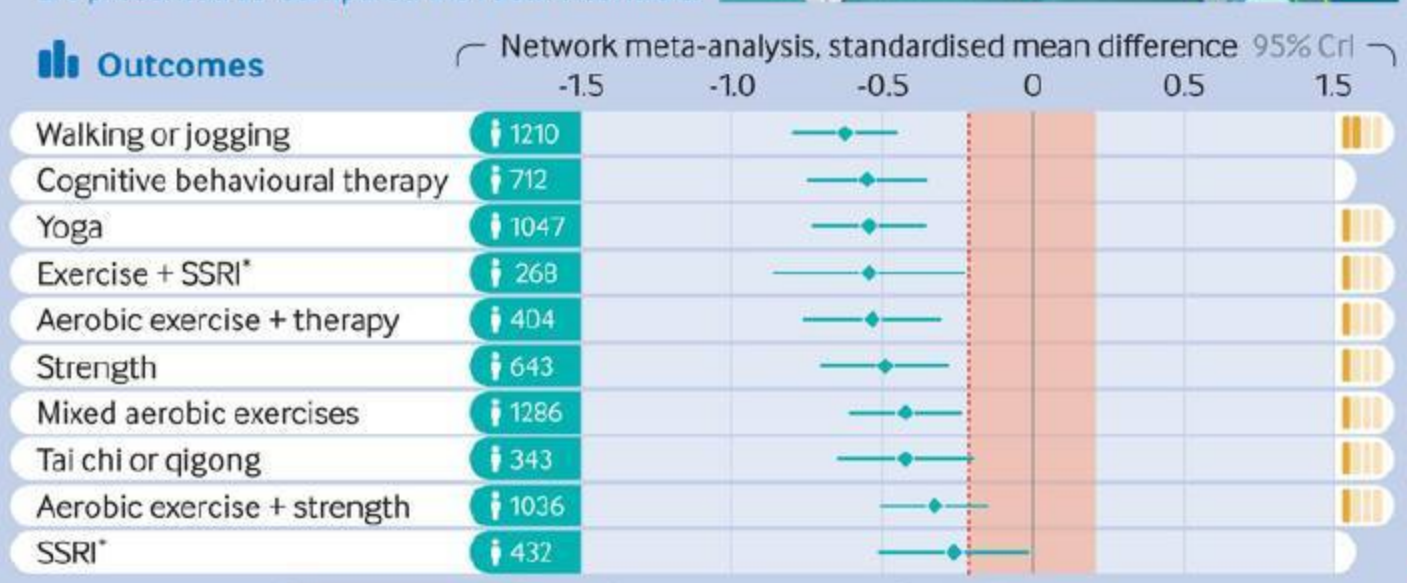
Study design 218 studies | 495 unique arms



Comparison

Different forms of exercise compared with other common treatments for depression. All results are presented as 'compared with active controls.'

Outcomes



Certainty rating: Low, Very low

Clinically important benefit

Equivalent to active control

*Selective serotonin reuptake inhibitor

https://bit.ly/BMJ-exedep

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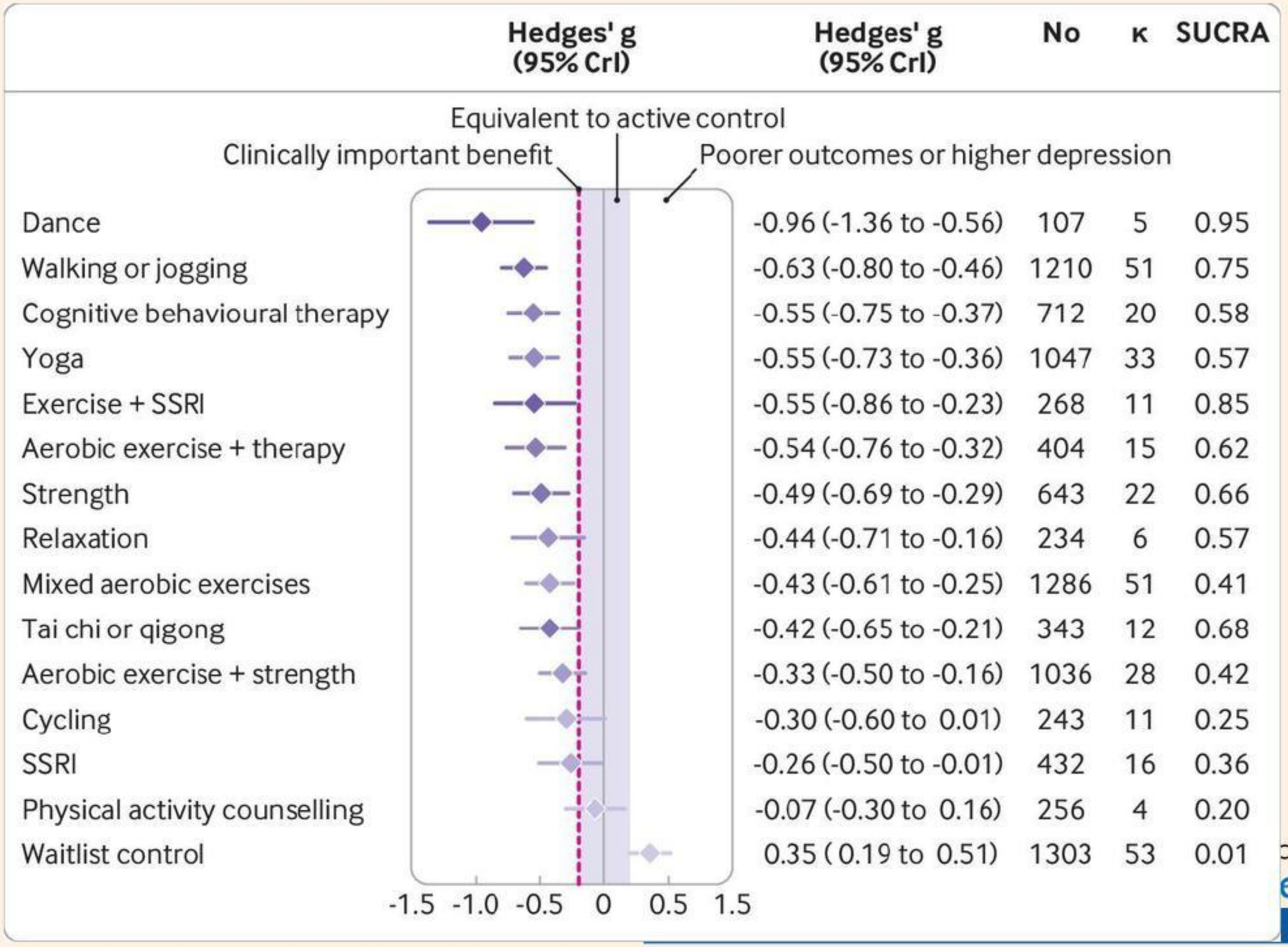

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What’s happening in your brain when you exercise that makes the dark clouds start to lift?

- Exercise modulates neurotransmitter levels, including serotonin and norepinephrine, and increases brain-derived neurotrophic factor (Ross et al., 2022).
- Exercise also improves sleep patterns, reduces stress, and enhances self-esteem (Hossain et al., 2024).
- Structurally, exercise may target brain regions affected by depression, such as the prefrontal cortex, anterior cingulate cortex, and hippocampus (Gujral et al., 2017).



Association between physical exercise and mental health in 1·2 million individuals in the USA between 2011 and 2015: a cross-sectional study

Sammi R Chekroud, Ralitza Gueorguieva, Amanda B Zheutlin, Martin Paulus, Harlan M Krumholz, John H Krystal, Adam M Chekroud

Summary

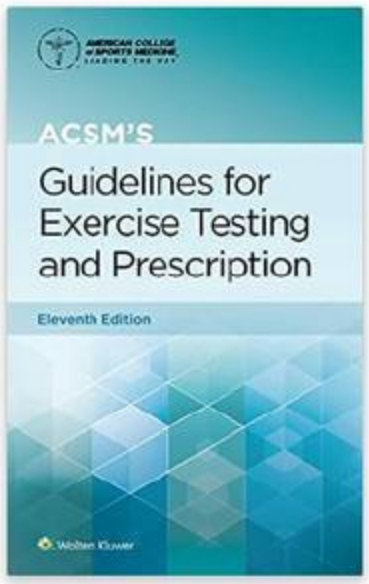
Background Exercise is known to be associated with reduced risk of all-cause mortality, cardiovascular disease, stroke, and diabetes, but its association with mental health remains unclear. We aimed to examine the association between exercise and mental health burden in a large sample, and to better understand the influence of exercise type, frequency, duration, and intensity.

Lancet Psychiatry 2018
5: 739–46

Published Online
August 8, 2018
http://dx.doi.org/10.1016/S2215-0366(18)30227-X

that people engage in. These data suggest that the argument that more is better fails to hold beyond certain volumes, and that exercising beyond 6 h per week is associated with worse mental health (appendix p 50).

Incredible book to refer to



ACSM's Guidelines for Exercise Testing and Prescription (American College of Sports Medicine) Eleventh, Spiral Edition

by Gary Liguori (Author), American College of Sports Medicine (ACSM) (Author)

4.7 ★★★★½ 563 ratings

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Poll for what are some ideas for how you can implement exercise interventions into your practice?

MINDFULNESS INTERVENTIONS





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Journal of Integrative and Complementary Medicine > Vol. 28, No. 1

Review Article | NO ACCESS | Published Online: 12 January 2022

Effects of Mindfulness Meditation Intervention on Depressive Symptoms in Emerging Adults: A Systematic Review and Meta-Analysis

Authors: Chuntana Reangsing, Christina Lauderman, and Joanne Kraenzle Schneider | AUTHORS INFO & AFFILIATIONS

Publication: Journal of Integrative and Complementary Medicine • https://doi-org.ezproxy.libraries.wright.edu/10.1089/jicm.2021.0036

Results: Forty-five studies resulted in 49 comparisons, including 3479 participants (23.0–2.7 years old); 1826 participants practiced mindfulness and 1653 served as controls. Overall, mindfulness interventions showed significant reduction in depression compared with controls ($g = 0.44$, 95% confidence interval: 0.33–0.55). Mindfulness interventions conducted in Asian countries had a greater decrease in depression ($g = 0.69$) than studies conducted in North America ($g = 0.44$) or Europe ($g = 0.23$). Mindfulness interventions showed greater reductions in depression in studies with higher proportion of females ($Slope = 0.010$, $\tau^2 = 0.07$, $Q_{between} = 7.10$, $p = 0.008$). Mindfulness interventions conducted in emerging adults with depressive disorders reduced depression more ($g = 1.12$) than in emerging adults without ($g = 0.40$). Providing mindfulness intervention in a group setting had a greater reduction of depression ($g = 0.54$) than on an individual basis ($g = 0.30$). More minutes of unstructured mindfulness practice per session showed a greater reduction in depressive symptoms (Slope = 0.016, $Q_{between} = 1.34$, $p = 0.035$). Using intention-to-treat analyses showed a lower ES ($g = 0.14$) than not using it ($g = 0.55$). Other quality indicators were not significant moderators. Primary researchers did not report the adverse effects of mindfulness interventions.

What is the most studied length of time for meditation interventions?

Psychological Medicine

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Meditation techniques *v.* relaxation therapies when treating anxiety: a meta-analytic review

Jesus Montero-Marin[1], Javier Garcia-Campayo[1,2,3], Mari Cruz Pérez-Yus[1,3,4], Edurne Zabaleta-del-Olmo[5] and Pim Cuijpers[6]

[1]Primary Care Prevention and Health Promotion Research Network (RedIAPP), Zaragoza, Spain; [2]Miguel Servet University Hospital, University of Zaragoza, Zaragoza, Spain; [3]Aragon Institute of Health Research, Zaragoza, Spain; [4]Department of Psychology and Sociology, University of Zaragoza, Zaragoza, Spain; [5]Fundació Institut Universitari per a la recerca a l'Atenció Primària de Salut Jordi Gol i Gurina (IDIAPJGol), Barcelona, Spain and [6]Department of Psychology, VU University, Amsterdam, The Netherlands

Review Article

Cite this article: Montero-Marin J, Garcia-Campayo J, Pérez-Yus MC, Zabaleta-del-Olmo E, Cuijpers P (2019). Meditation techniques *v.* relaxation therapies when treating anxiety: a meta-analytic review. *Psychological Medicine* **49**, 2118–2133. https://doi.org/10.1017/S0033291719001600

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Key words:
Anxiety disorders; meditation techniques; meta-analysis; relaxation therapy

Author for correspondence:
Jesus Montero-Marin, E-mail: jmonteromarin@hotmail.com

Abstract

To what extent meditation techniques (which incorporate practices to regulate attention, construct individual values, or deconstruct self-related assumptions), are more or less effective than relaxation therapy in the treatment of anxiety, is not clear. The aim of this study was to examine the effectiveness of meditation compared to relaxation in reducing anxiety. A systematic review from PubMed, Embase, PsycInfo and the Cochrane Central was conducted. A meta-analysis of 14 RCTs ($n = 862$ participants suffering from anxiety disorders or high trait anxiety) was performed. Effect sizes (ESs) were determined by Hedges' g. Heterogeneity, risk of publication bias, quality of studies/interventions, and researcher allegiance, were evaluated. Meditation techniques incorporated attentional elements, and five of them also added constructive practices. No studies were found using deconstructive exercises. The overall ES was $g = -0.23$ [95% confidence interval (CI) −0.40 to −0.07], favouring meditation (number needed to treat = 7.74). Heterogeneity was low ($I^2 = 2$; 95% CI 0 to 56). There was no evidence of publication bias, but few studies and interventions were of high quality, and allegiance might be moderating results. Meditation seems to be a bit more effective than relaxation in the treatment of anxiety, and it might also remain more effective at 12-month follow-up. However, more research using the full spectrum of meditation practices to treat different anxiety disorders, including independent studies to avoid researcher allegiance, is needed if we are to have a precise idea of the potential of these techniques compared to relaxation therapy.

Background

Anxiety is a highly prevalent condition, with lifetime rates for its derived mental disorders between 14.5% and 33.7% in Western countries (Alonso and Lepine, 2007; Kessler *et al.*, 2012), and global estimates across countries between 3.8% to 25.0% (Remes *et al.*, 2016). Anxiety can manifest in different ways depending on the underlying disorder subtype, to configure a heterogeneous group of conditions. Nevertheless, all of these conditions are typically characterized by states of hyper-arousal, cognitive beliefs that focus on risk and danger, and excessive fear and worry, all of which are symptoms that allow anxiety to be distinguished from other psychopathologies (Olthuis *et al.*, 2016). Anxiety symptoms have a debilitating impact on wellbeing, quality of life and general functioning, and involve considerable costs to individuals and to society at large (Simpson *et al.*, 2010).

Psychological treatments of anxiety frequently include relaxation therapy, which is considered a behavioural approach that emphasizes the development of a specific response that counteract anxiety (Manzoni *et al.*, 2008). This response – i.e. relaxation response – is characterized by a set of physiological adjustments that are elicited in the absence of tension in the body and mind, and they are often accompanied by reduced neurological arousal together with a decrease in sympathetic activity and a sense of being physically rested (Esch *et al.*, 2003; Klainin *et al.*, 2015). The rationale of relaxation interventions seems to be mainly physiological so that persons suffering from anxiety would have elevated activation of the sympathetic nervous system and relaxation would have a direct impact in its reduction [Taylor *et al.*, 2003; Conrad and Roth, 2007; Chiang *et al.*, 2009). In addition, when people learn to relax, they learn a psychological coping strategy, and a sense of control. Relaxation interventions incorporate several techniques, all of which are particularly focused on changing physiological responses to anxiety with relaxing and stabilizing effects on the autonomic nervous system. They cover different procedures such as abdominal or diaphragmatic breathing, e.g. slow,

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FA + acceptance + compas. (n = 18)

- Attention to the body, body scan, breathing as an anchor, awareness and acceptance of mental and emotional states, labelling experience, empathic compassion
- Therapist and self-applied
- 5 weeks: 2 h/week

AR (n = 15)

- Cue controlled exhalation, progressive, deep muscle relaxation
- Therapist-applied
- 5 sessions: 1.5 h/session

PR (n = 26)

- Isometric Squeeze Muscle relaxation
- Therapist and audio-applied
- 1 session: 60-min

MBI groups

ACT (adapted) (n = 121)

- Attention training, metacognitions, acceptance/ mindfulness, screening behaviour, and values-based goals
- Therapist
- 10 weeks: 1.5 h/week

FA (n = 49)

- Breathing meditation, body scan, informal practices, mindful of needs and positive mindful practices.
- Self-applied (online files and audio)
- 6 weeks (14.12 Mn days of practice)

AR (n = 41)

- Muscle relaxation, cue-controlled, differential, rapid relaxation, diaphragmatic breathing, and applying skills
- Therapist-applied
- 16 weeks: 1.13 h/week

Relaxation groups

- Muscle relaxation and relaxation by recall and counting alone (cueing)
- Therapist-applied
- 8 weeks:1 h/week

Other (n = 25)

- Slow breathing
- Therapist and self-applied
- 6 weeks (0.33 h/week)

were found using deconstructive exercises. The overall ES was g = -0.23 [95% confidence interval (CI) -0.40 to -0.07], favouring meditation (number needed to treat = 7.74). Heterogeneity was low

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Meditation techniques *v.* relaxation therapies when treating anxiety: a meta-analytic review

SLEEP INTERVENTIONS



Sleep Medicine Reviews 43 (2019) 118–128

Contents lists available at ScienceDirect

Sleep Medicine Reviews

SUMMARY

Poor sleep is a significant risk factor for depression across the lifespan and sleep problems have been hypothesised to contribute to the onset and maintenance of depression symptoms. However, sleep problems are usually not a direct target of interventions for depression. A range of non-pharmacological treatments can reduce sleep problems but it is unclear whether these interventions also reduce other depression symptoms. The aim of this review was to examine whether non-pharmacological interventions for sleep problems are effective in reducing symptoms of depression. We carried out a systematic search for randomised controlled trials of non-pharmacological sleep interventions that measured depression symptoms as an outcome. Forty-nine trials (n = 5908) were included in a random effects meta-analysis. The pooled standardised mean difference for depression symptoms after treatment for sleep problems was −0.45 (95% CI: −0.55,−0.36). The size of the effect on depression symptoms was moderated by the size of the effect on subjective sleep quality. In studies of participants with mental health problems, sleep interventions had a large effect on depression symptoms (d = −0.81, 95% CI: −1.13,−0.49). The findings indicate that non-pharmacological sleep interventions are effective in reducing the severity of depression, particularly in clinical populations. This suggests that non-pharmacological sleep interventions could be offered as a treatment for depression, potentially improving access to treatment.

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POSITIVE PSYCHIATRY INTERVENTIONS

P E R M A

Positive emotion

Engagement

Relationships

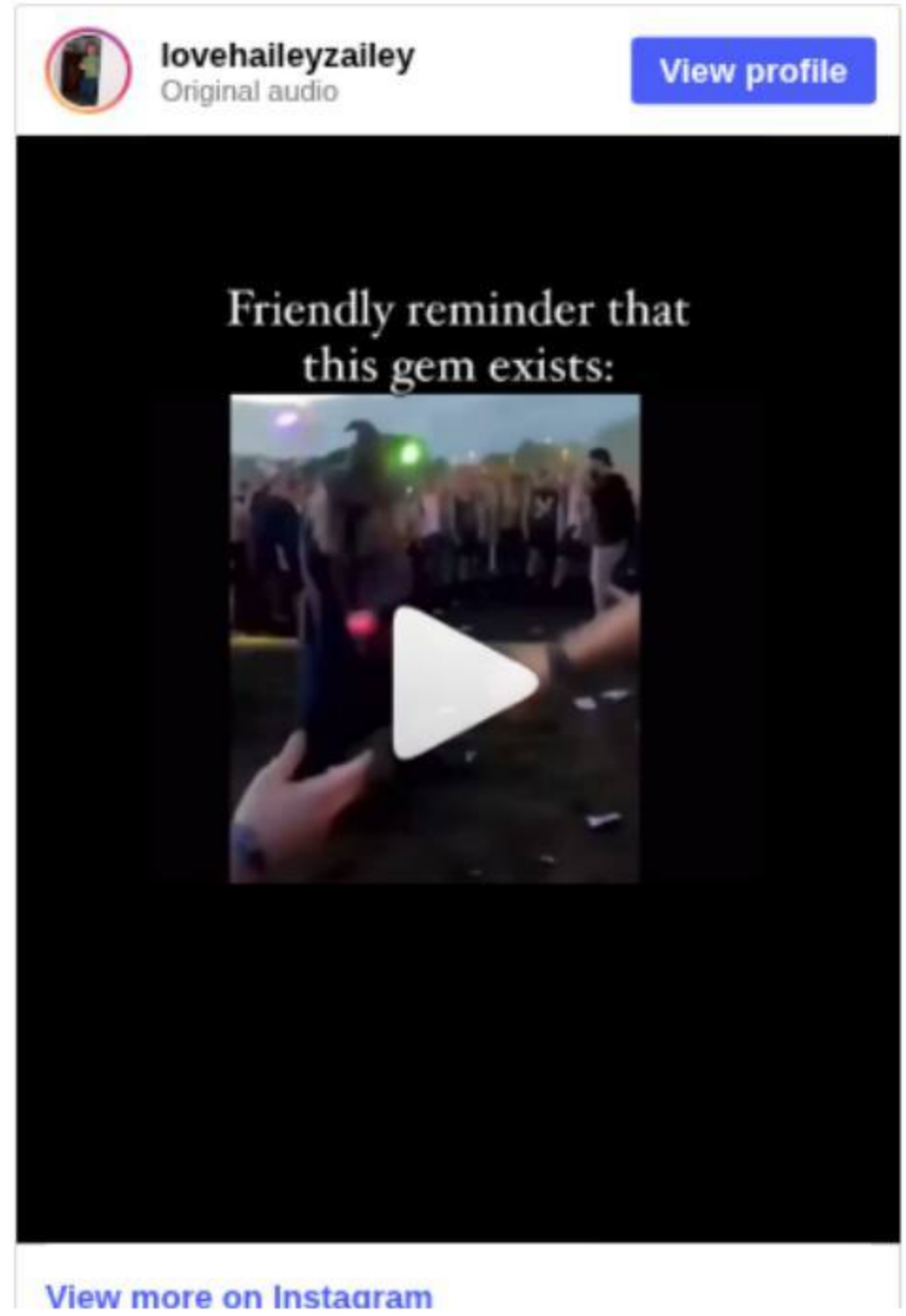
Meaning

Achievement

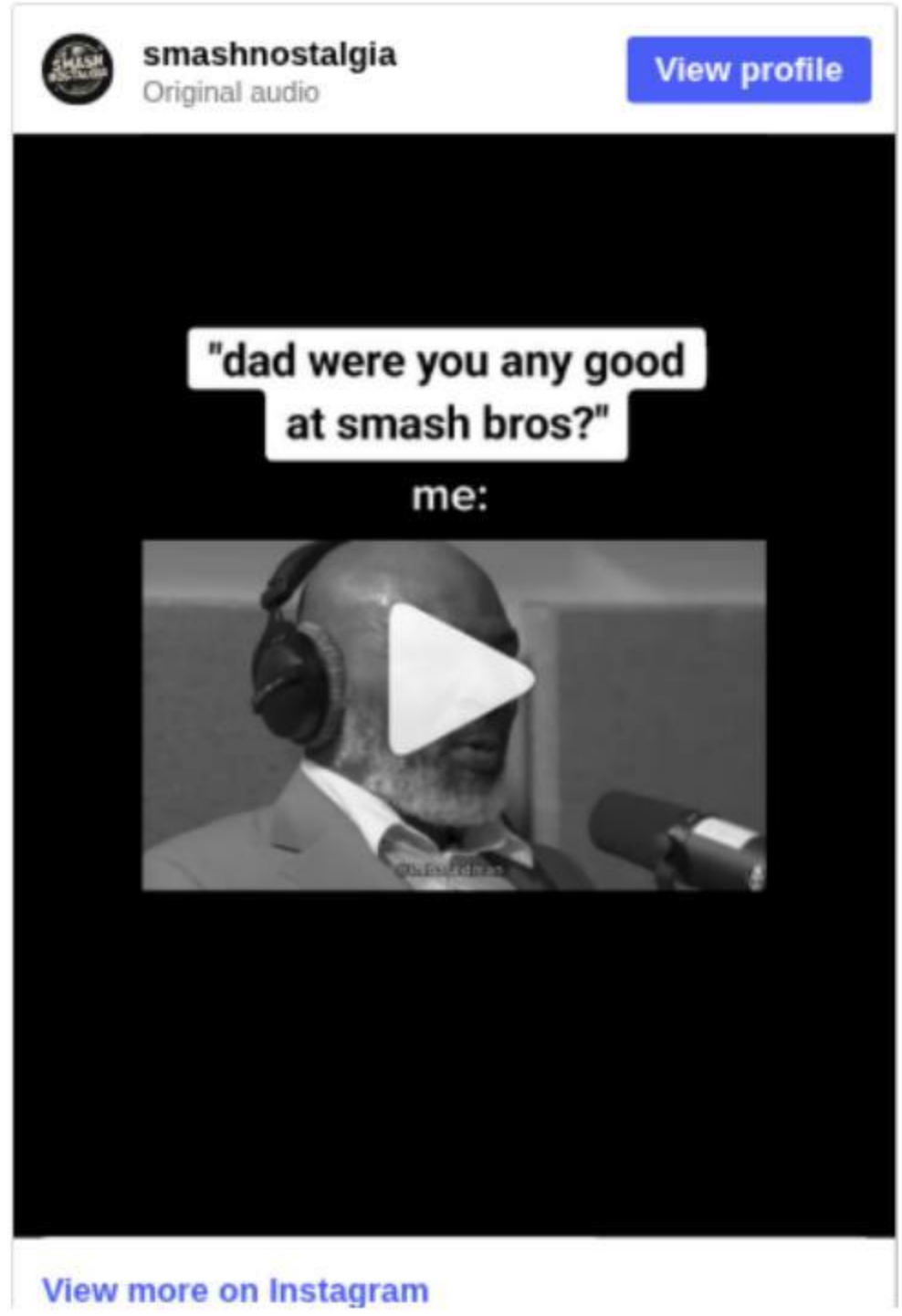


Best possible selves/ optimism	Participants are instructed to imagine a future life, and what it will ideally look like. They typically focus on different domains per period (for example, day or week) and often gain insight into the domains at the start of the intervention. Example domains are: love, hobbies, employment, physical and mental health. Other interventions focusing on optimism are grouped under this classifier.	42,104,373–394
Character strengths	Participants do a strengths assessment (for example, values in action character strengths) and use their top strengths in a new way, as a one-off or over a period of time. Suggestions are typically provided to explain how strengths can be used. Variations of this task are included (for example, set goals in relationship to best or preferred strengths).	42,113,340,360, 391,395–404
Gratitude	Participants are asked to reflect on experiences, events or people they are grateful for. May involve expressing gratitude to other people.	42,57,113,249,327,360,374, 376,382,383,390–393, 396,399,403,405–429
Pleasurable experiences	Participants are asked to reflect on or think about experiences that were fun, amusing or joyful, or that are bringing happiness to their life.	166,188,318,319,413
Three good things	Participants are asked to write or think about three good things that happened over a period (typically reflecting back on the same day) and reflect on why those things occurred. The activity is typically repeated for a number of days.	42,113,360,375, 378,381,391,396, 400,403,415,430–433
Other PPIs	A variety of different takes on the PPIs mentioned above were further tested, including acts of novelty and acts of kindness, gift of time, savouring interventions, meaning making, humour interventions and alternate forms of character strength interventions.	56,132,318,319,360, 374,384,396, 397,422,431–448
Reminiscence interventions	Interventions that focus on reviewing past experiences. Includes life review therapy focusing on integration of difficult life events from the past, development of agentic life stories and retrieval of specific positive memories.	169,172,305,400, 431,449–466

Pleasurable experiences



Reminiscing



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AMERICAN PSYCHIATRIC ASSOCIATION
ANNUAL MEETING
May 17-21, 2025 • Los Angeles
Lifestyle for Positive Mental & Physical Health

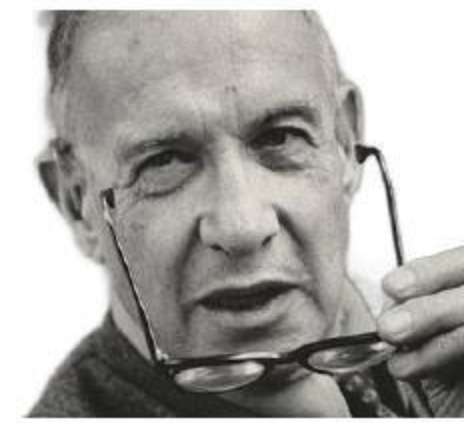


Evidence and Innovation in Positive Psychiatry

Karen Reimers, MD
Adjunct Faculty, UMN/UCF

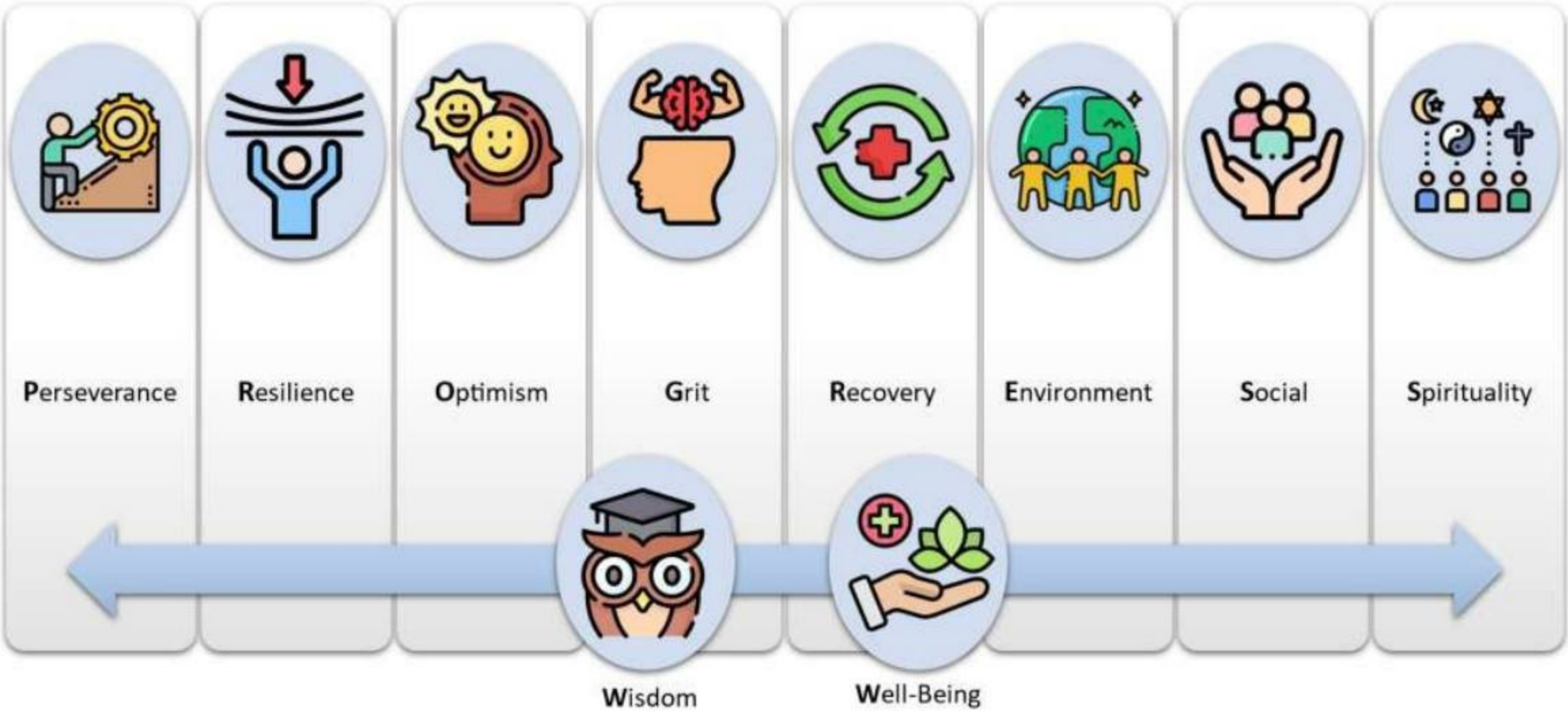


"what gets measured gets managed" is widely attributed to management guru Peter Drucker

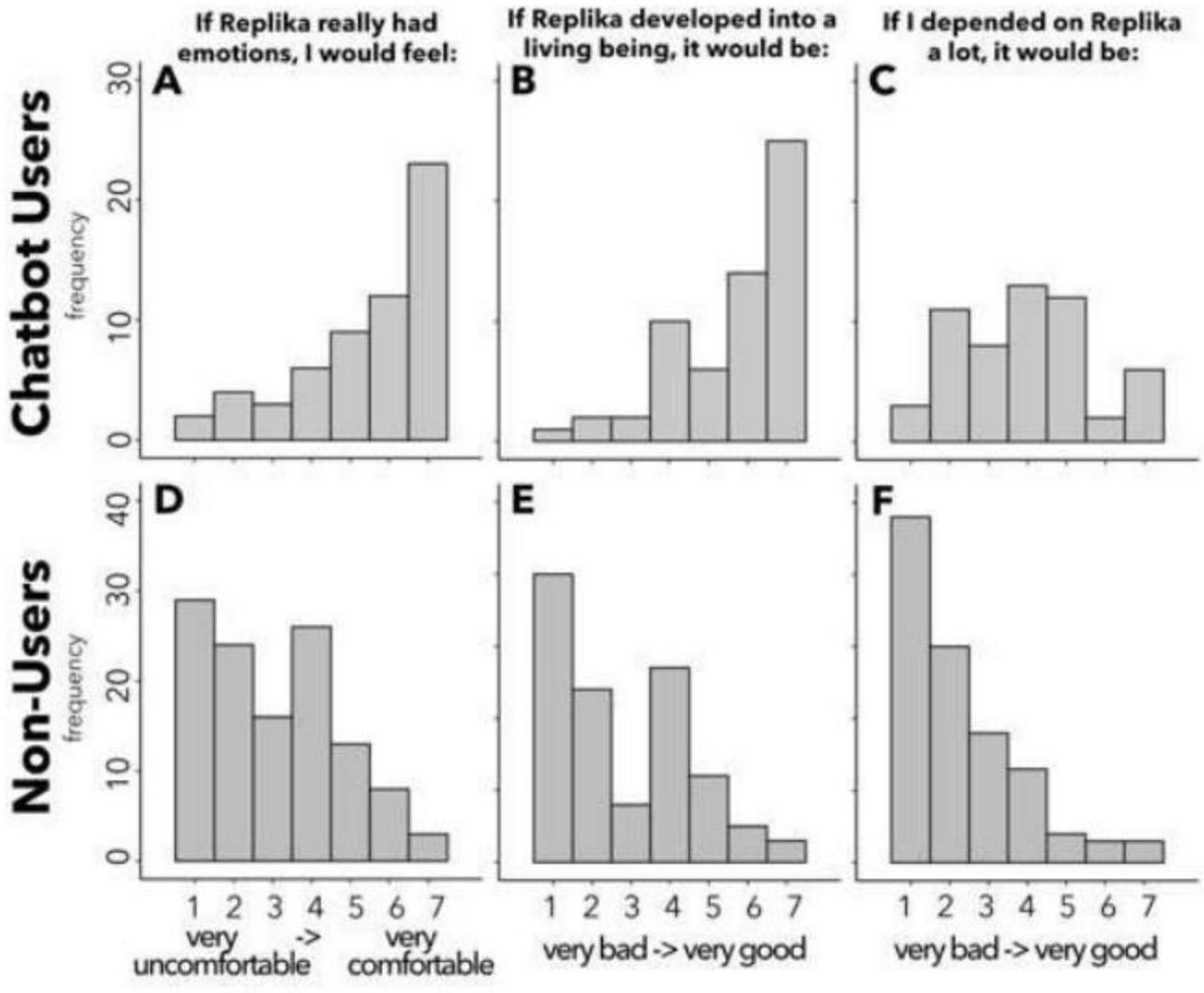


Positive Psychiatry

A Decade of PROGRESS, Wisdom, and Well-Being



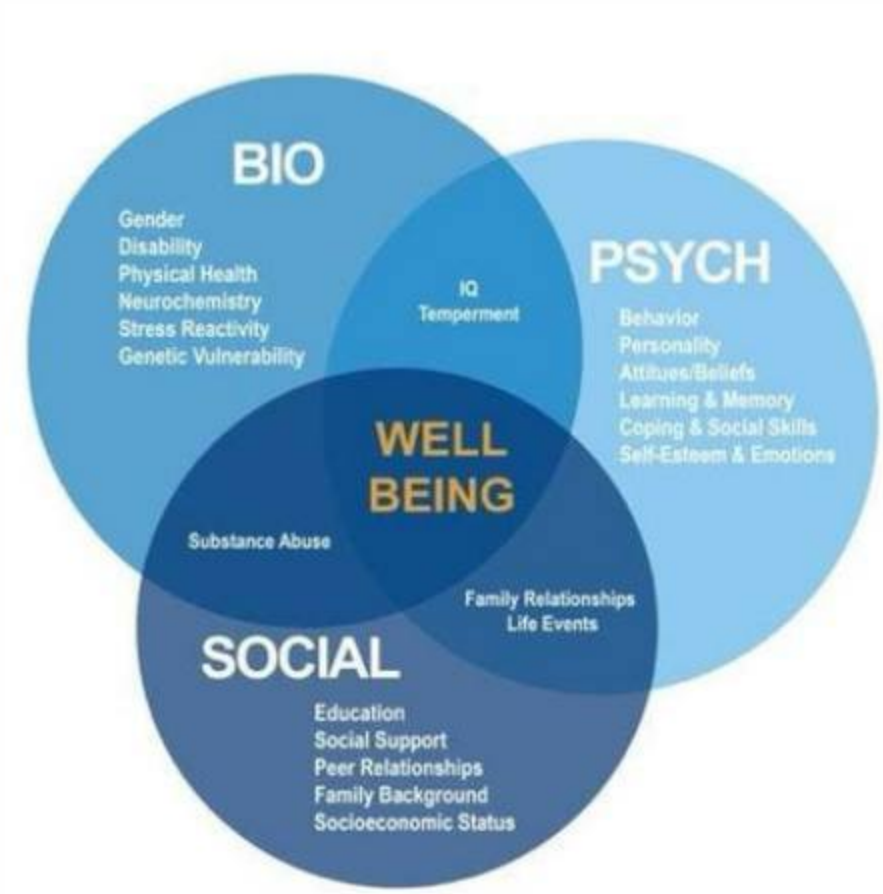
Positive mental health outcomes (social engagement)

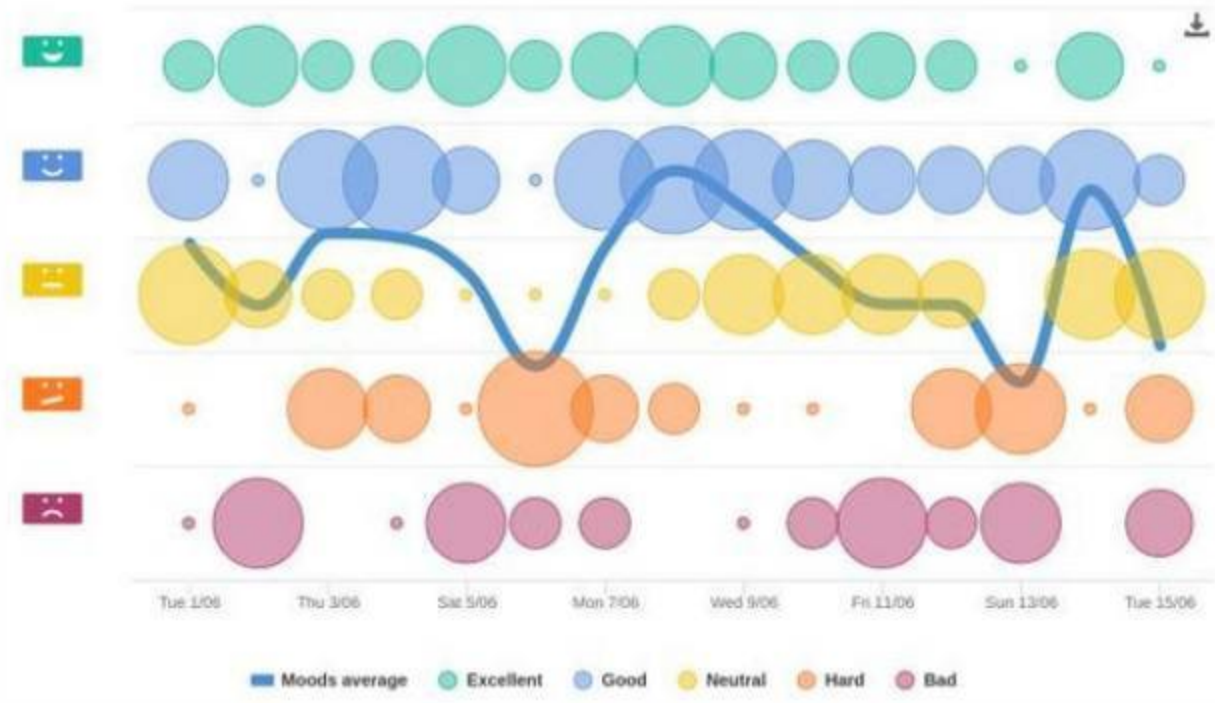


- "Contrary to expectations, companion chatbot users indicated that these relationships were beneficial to their social health, whereas non-users viewed them as harmful."

Guingrich, Rose E, and Michael S A Graziano,'Chatbots as Social Companions: How People Perceive Consciousness, H
Health Benefits in Machines',in Philipp Hacker (ed.),*Oxford Intersections: AI in Society*(Oxford,online edn,Oxford Acade
),https://doi.org/10.1093/9780198945215.003.0011,accessed 12 May 2025.

PPCs that comprise psychological traits and environmental factors





Poll about how to implement positive psychiatry interventions





THANK YOU





