BEAST MODE!!!!!
He practices what he preaches...
The New Science on Weight Loss Maintenance: out of equilibrium, the problem of homeostasis!

Harvey S. Hahn, MD, FACC
KMC Grand Rounds, August 2016
Objectives

- Discuss WHY it’s important to be healthy.
- Learn how to be healthy.
- Understand the issues to losing weight and keeping it off.
Why care?


- Cancer: 585k
- Medical error: 251k
- Heart disease: 611k
- COPD: 149k
- Suicide: 41k
- Motor vehicles: 34k
- Firearms: 34k

All causes: 2,597k

Based on our estimate, medical error is the 3rd most common cause of death in the US.

However, we’re not even counting this - medical error is not recorded on US death certificates.

Data source:
http://www.cdc.gov/nchs/data/nvdr/nvdr64/nvdr64_02.pdf

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Where should you live if you want to burn more calories?
In reality...

Majority of California Adults Have Prediabetes or Diabetes
A Third of Young Adults Prediabetic, Putting a Generation in Jeopardy

DAVIS, CALIF., MARCH 10, 2016 ... Nearly half of California adults – including one out of every three young adults – have prediabetes, a precursor to life-threatening type 2 diabetes, or undiagnosed diabetes, according to a UCLA study released today. The research provides the first analysis and breakdown of California
It’s not just California…

“This is the clearest indication to date that the type 2 diabetes epidemic is out of control and getting worse. With limited availability of healthy food in low income communities, a preponderance of soda and junk food marketing, and urban neighborhoods lacking safe places to play, we have created a world where diabetes is the natural consequence.”

- Dr. Harold Goldstein, Executive Director of the California Center for Public Health Advocacy
Healthy Lifestyle Characteristics and Their Joint Association With Cardiovascular Disease Biomarkers in US Adults

Paul D. Loprinzi, PhD; Adam Branscum, PhD; June Hanks, PhD, DPT, PT; and Ellen Smit, PhD
### TABLE 1. Weighted Mean Proportions (95% CIs) of Healthy Lifestyle Characteristics in US Adults, NHANES 2003-2006 (N=4745)\(^{a,b}\)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Entire sample (n=4745)</th>
<th>Sex</th>
<th>Age</th>
<th>Race/ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Men (n=2446)</td>
<td>Women (n=2299)</td>
<td>20-39 y (n=1460)</td>
</tr>
<tr>
<td>Nonsmoker</td>
<td>71.5</td>
<td>63.2</td>
<td>79.8</td>
<td>68.8</td>
</tr>
<tr>
<td>Healthy diet</td>
<td>37.9</td>
<td>32.0</td>
<td>43.8</td>
<td>30.4</td>
</tr>
<tr>
<td>Normal body fat percentage</td>
<td>9.6</td>
<td>10.5</td>
<td>8.8</td>
<td>15.2</td>
</tr>
<tr>
<td>Sufficient physical activity</td>
<td>46.5</td>
<td>58.9</td>
<td>34.1</td>
<td>59.7</td>
</tr>
<tr>
<td>Positive health behaviors (No.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>11.1</td>
<td>11.8</td>
<td>10.4</td>
<td>9.6</td>
</tr>
<tr>
<td>1</td>
<td>33.5</td>
<td>32.7</td>
<td>34.3</td>
<td>32.3</td>
</tr>
<tr>
<td>2</td>
<td>36.8</td>
<td>36.7</td>
<td>36.9</td>
<td>36.6</td>
</tr>
<tr>
<td>3</td>
<td>16.0</td>
<td>16.5</td>
<td>15.4</td>
<td>17.7</td>
</tr>
<tr>
<td>4</td>
<td>2.7</td>
<td>2.2</td>
<td>3.1</td>
<td>3.9</td>
</tr>
<tr>
<td>Mean</td>
<td>1.6</td>
<td>1.6</td>
<td>1.6</td>
<td>1.7</td>
</tr>
</tbody>
</table>

*NHANES = National Health and Nutrition Examination Survey.

\(^{a}\)Bold indicates statistical significance (P<.004). Design-based likelihood ratio tests were used to examine differences for all comparisons except mean number of positive health behaviors, for which a linear regression was computed with men, age 18 to 39 years, and non-Hispanic white individuals serving as the referent groups. For example, the weighted proportion values for sex and nonsmoker are bolded, indicating that the design-based likelihood ratio test showed there was a statistically significant difference in sex across smoking status. Similarly, for the mean number of health behaviors variable, non-Hispanic black individuals (1.5) had significantly fewer positive health characteristics than non-Hispanic white individuals (1.6).
Traditional and Emerging Lifestyle Risk Behaviors and All-Cause Mortality in Middle-Aged and Older Adults: Evidence from a Large Population-Based Australian Cohort

Ding Ding\(^1,2\)*, Kris Rogers\(^1,3\), Hidde van der Ploeg\(^1,4\), Emmanuel Stamatakis\(^2,5\), Adrian E. Bauman\(^1,2\)

1 Prevention Research Collaboration, Sydney School of Public Health, University of Sydney, Camperdown, New South Wales, Australia, 2 Charles Perkins Centre, University of Sydney, Camperdown, New South Wales, Australia, 3 George Institute for Global Health, Sydney, New South Wales, Australia, 4 Department of Public and Occupational Health, EMGO Institute for Health and Care Research, VU University Medical Centre, Amsterdam, the Netherlands, 5 Exercise and Sports Science, Faculty of Health Sciences, University of Sydney, Camperdown, New South Wales, Australia
<table>
<thead>
<tr>
<th>Health Behavior</th>
<th>Scoring Method (1 = At Risk, 0 = Not at Risk)</th>
<th>Percentage “At Risk”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>1 = current smoker</td>
<td>7.2%</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>1 = consuming &gt;14 drinks per week (one drink = one glass of wine, one half pint of beer, or one shot of spirits)</td>
<td>19.1%</td>
</tr>
<tr>
<td>Dietary behavior</td>
<td>1 = scoring &lt;6 in a dietary index (0–10) consisting of five food items (vegetable, fruit, fish, processed meat, and types of milk)</td>
<td>17.2%</td>
</tr>
<tr>
<td>Physical activity</td>
<td>1 = engaging in &lt;150 min/wk of moderate-to-vigorous-intensity physical activity</td>
<td>22.9%</td>
</tr>
<tr>
<td>Sedentary behavior</td>
<td>1 = sitting for &gt;7 h/d</td>
<td>25.0%</td>
</tr>
<tr>
<td>Sleep duration</td>
<td>1 = sleeping for &lt;7 or &gt;9 h/d</td>
<td>23.1%</td>
</tr>
</tbody>
</table>

Table 3. Crude cumulative death rates and adjusted hazard ratios for all-cause mortality by lifestyle risk index score among a population-based Australian sample of adults from the 45 and Up Study (2006–2014, n = 231,048).

<table>
<thead>
<tr>
<th>Sample</th>
<th>Lifestyle Risk Index Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>All participants (n = 231,048)</td>
<td></td>
</tr>
<tr>
<td>Cumulative death rate</td>
<td>4.15%</td>
</tr>
<tr>
<td>HR (95% CI)</td>
<td>Reference</td>
</tr>
</tbody>
</table>
S.A.D.

Standard American Diet...
Here's what Americans eat every day
(All percentages represent portion of daily total consumption)

- **Unprocessed or minimally processed foods**
  - 32.6%

- **Processed foods**
  - 9.4%

- **Ultra-processed foods**
  - 57.9%

### Unprocessed or minimally processed foods
- Meat and poultry: 7.9%
- Fruit: 5.2%
- Milk and plain yogurt: 5.1%
- Fish and seafood: 0.8%

### Processed foods
- Processed fish/meat: 1.2%
- Cheese: 3.7%
- Processed sauces: 2.4%
- Fries: 1.7%
- Ultra-processed fish/meat: 2.4%
- Milk-based drinks: 1.8%

### Ultra-processed foods
- Breads and cereal: 12.3%
- Cake, ice cream and other sweets: 12.2%
- Soda and fruit drinks: 7%
- Frozen and packaged meals: 4.02%
- Pizza: 3.5%
The Good...

Here's what Americans eat every day (All percentages represent portion of daily total consumption)

- Meat and poultry: 7.9%
- Fruit: 5.2%
- Milk and plain yogurt: 5.1%
- Fish and seafood: 0.8%
- Vegetables: 0.7%

Unprocessed or minimally processed foods: 32.6%
# The Bad & the UGLY!

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultra-processed foods</td>
<td>57.9%</td>
</tr>
<tr>
<td>Breads and cereal</td>
<td>12.3%</td>
</tr>
<tr>
<td>Cake, ice cream and other sweets</td>
<td>12.2%</td>
</tr>
<tr>
<td>Soda and fruit drinks</td>
<td>7%</td>
</tr>
<tr>
<td>Frozen and packaged meals</td>
<td>4.02%</td>
</tr>
<tr>
<td>Pizza</td>
<td>3.5%</td>
</tr>
</tbody>
</table>

Other: 3.8%
U.S. Food Consumption as a % of Calories

**Plant Food:**
Vegetables, Fruits, Legumes, Nuts & Seeds, Whole Grains

*Fiber* is only found in plant foods.

**Animal Food:**
Meat, Dairy, Eggs, Fish, Seafood

*Cholesterol* is only found in animal foods. Animal foods are the PRIMARY source of saturated fat.

**Processed Food:**
Added Fats & Oils, Sugars, Refined Grains

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New York Coalition for Healthy School Food; www.healthySchoolFood.org
Special thanks to Joel Fuhrman, MD, author of *Disease Proof Your Child: Feeding Kids Right*; Graphics by MichelleSando.com
© 2009, New York Coalition for Healthy School Food
The Hunger Games...

- NEJM article about hunger hormones being up 1 yr post weight loss.

Long-Term Persistence of Hormonal Adaptations to Weight Loss

“I’ll just work it off…”

1 MEDIUM FRENCH FRY

equals

APPROXIMATELY
1 HOUR AND
12 MINUTES
OF SWIMMING
The Law of Diminishing Returns...

Constrained Total Energy Expenditure and Metabolic Adaptation to Physical Activity in Adult Humans

Herman Pontzer,1,2,* Ramon Durazo-Arvizu,3 Lara R. Dugas,3 Jacob Plange-Rhule,4 Pascal Bovet,5,6 Terrence E. Forrester,7 Estelle V. Lambert,8 Richard S. Cooper,3 Dale A. Schoeller,9 and Amy Luke3

1Department of Anthropology, Hunter College, City University of New York, 695 Park Avenue, New York, NY 10065, USA
2New York Consortium for Evolutionary Primatology, New York, NY 10065, USA
3Public Health Sciences, Stritch School of Medicine, Loyola University Chicago, 2160 South First Avenue, Maywood, IL 60153, USA
4Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
5Institute of Social & Preventive Medicine, Lausanne University Hospital, Rue de la Corniche 10, 1010 Lausanne, Switzerland
6Ministry of Health, PO Box 52, Victoria, Mahé, Seychelles
7UWI Solutions for Developing Countries, The University of the West Indies, 25 West Road, UWI Mona Campus, Kingston 7, Jamaica
8Research Unit for Exercise Science and Sports Medicine, University of Cape Town, PO Box 115, Newlands 7725, Cape Town, South Africa
9Nutritional Sciences, Biotechnology Center, University of Wisconsin–Madison, 425 Henry Mall, Madison, WI 53705, USA

*Correspondence: herman.pontzer@hunter.cuny.edu
http://dx.doi.org/10.1016/j.cub.2015.12.046
Two theories...

Figure 1. Schematic of Additive Total Energy Expenditure and Constrained Total Energy Expenditure Models

In Additive total energy expenditure models, total energy expenditure is a simple linear function of physical activity, and variation in physical activity energy expenditure (PA) determines variation in total energy expenditure. In Constrained total energy expenditure models, the body adapts to increased physical activity by reducing energy spent on other physiological activity, maintaining total energy expenditure within a narrow range.
The 40% Rule!

- Navy SEAL mantra.
- When you think you’re physically done, you actually have about 40% more to give.
- Your body wants to hold energy in reserve ‘just in case’.
- Your mind gives up well before your body needs to!
The winner is...

Figure 1. Schematic of Additive Total Energy Expenditure and Constrained Total Energy Expenditure Models
In Additive total energy expenditure models, total energy expenditure is a simple linear function of physical activity, and variation in physical activity energy expenditure (PA) determines variation in total energy expenditure. In Constrained total energy expenditure models, the body adapts to increased physical activity by reducing energy spent on other physiological activity, maintaining total energy expenditure within a narrow range.

Figure 3. The Effect of Physical Activity on Total Energy Expenditure and Its Components
And the loser is...
Persistent Metabolic Adaptation 6 Years After “The Biggest Loser” Competition

Erin Fothergill¹, Juen Guo¹, Lilian Howard¹, Jennifer C. Kerns², Nicolas D. Knuth³, Robert Brychta¹, Kong Y. Chen¹, Monica C. Skarulis¹, Mary Walter¹, Peter J. Walter¹, and Kevin D. Hall¹
Biggest Losers Fight a Slower Metabolism

A study of contestants from “The Biggest Loser” found their metabolisms slowed during and after the competition, making it difficult to maintain weight loss.

REGAINING LOST WEIGHT
13 of the 14 contestants studied regained weight in the six years after the competition. Four contestants are heavier now than before the competition.

Erinn Egbert is the only contestant who weighs less today than six years ago.

Rudy Pauls regained 80 percent of his lost weight, then had surgery to reduce the size of his stomach.

Danny Cahill lost 239 pounds and won the competition, but has regained over 100 pounds.

A SLOWING METABOLISM
Nearly all the contestants have slower metabolisms today than they did six years ago, and burn fewer calories than expected when at rest.

Danny Cahill now burns 800 fewer calories a day than expected.

Body burns 200 more cal. a day

Erinn Egbert

Rudy Pauls

“The Biggest Loser” Season 8 (2009) Six years later

“The Biggest Loser” Season 8 (2009) Six years later

Sources: Obesity; individual contestants
By The New York Times
Figure 4 Individual (•) and mean (gray rectangles) changes in (A) resting metabolic rate and (B) metabolic adaptation at the end of "The Biggest Loser" 30-week weight loss competition and after 6 years. Horizontal bars and corresponding P values indicate comparisons between 30 weeks and 6 years. *P < 0.001 compared with baseline.
Figure 2 Individual (•) and mean (gray rectangles) changes in (A) body weight, (B) fat-free mass, and (C) fat mass at the end of "The Biggest Loser" 30-week weight loss competition and after 6 years. Horizontal bars and corresponding P values indicate comparisons between 30 weeks and 6 years. *P < 0.05 compared with baseline.
Why did they fail to keep it off?

- “Reality TV” is NOT real.
- No real gain in muscle mass.
- Serious drop off in exercise program.
- And their metabolic rate dropped significantly.
- Without exercise you can’t cut calories enough!
TO WIN, WE HAVE TO LOSE.

THE WEIGHT OF THE NATION

PREMIERING MAY 14TH & 15TH

CONFRONTING AMERICA’S OBESITY EPIDEMIC

Take Action / Host a Screening
Equilibrium – homeostasis sucks!

LeChatelier's Principle

When a system at equilibrium is placed under stress, the system will undergo a change in such a way as to relieve that stress.

- It is very hard to move off of / adjust your set point.
- What does all these studies really tell us?
- What is the biggest, most glaring message for us?
Mission CRITICAL!

Childhood obesity.
Myth-”I can’t fight my genes...”
“Genetics loads the gun, but behavior pulls the trigger!”
Darwin vs Lamarck - Round #2
Same genes, difference choices.
Same genes, difference choices.
FITFATTWIN Study

Physical Activity, Fitness, Glucose Homeostasis, and Brain Morphology in Twins

MIRVA ROTTENSTEINER¹, TUIJA LESKINEN¹, EINI NISKANEN², SARI AALTONEN¹, SARA MUTIKAINEN¹, JAN WIKGREN³, KAUKO HEIKKILÄ⁴, VUOKKO KOVANEN¹, HEIKKI KAINULAINEN⁵, JAAKKO KAPrio⁴,⁶,⁷, INA M. TARKKA¹, and URHO M. KUJALA¹

¹Department of Health Sciences, University of Jyväskylä, Jyväskylä, FINLAND; ²Department of Applied Physics, University of Eastern Finland, Kuopio, FINLAND; ³Department of Psychology, University of Jyväskylä, Jyväskylä, FINLAND; ⁴Department of Public Health, Hjelt Institute, University of Helsinki, Helsinki, FINLAND; ⁵Department of Biology of Physical Activity, University of Jyväskylä, Jyväskylä, FINLAND; ⁶Department of Mental Health and Substance Abuse Services, National Institute for Health and Welfare, Helsinki, FINLAND; and ⁷Institute for Molecular Medicine, University of Helsinki, Helsinki, FINLAND
FIT-FAT-TWIN study

- 10 pairs of identical twins.
- 1 twin exercises, the other does not.
- Changes tracked over only 3 yrs.
- Decreased % body fat.
- Improved glucose metabolism.
- Brain growth!

10 genes were up-regulated with training.
53 genes were down-regulated with training.
Exercise training reduces resting heart rate via downregulation of the funny channel HCN4

Alicia D’Souza¹,*, Annalisa Bucchi²,*, Anne Berit Johnsen³,*, Sunil Jit R.J. Logantha¹,*, Oliver Monfredi¹, Joseph Yanni¹, Sukhpal Prehar¹, George Hart¹, Elizabeth Cartwright¹, Ulrik Wisloff³, Halina Dobrynski¹, Dario DiFrancesco², Gwilym M. Morris¹ & Mark R. Boyett¹
Diet can modify your genetic risk of heart attack by 66-98%!
Physical Activity Attenuates the Genetic Predisposition to Obesity in 20,000 Men and Women from EPIC-Norfolk Prospective Population Study

Shengxu Li¹, Jing Hua Zhao¹, Jian’an Luan¹, Ulf Ekelund¹, Robert N. Luben², Kay-Tee Khaw², Nicholas J. Wareham¹, Ruth J. F. Loos¹*

¹MRC Epidemiology Unit, Institute of Metabolic Science, Cambridge, United Kingdom, ²Department of Public Health and Primary Care, Institute of Public Health, University of Cambridge, Cambridge, United Kingdom

Physical Activity Attenuates the Influence of FTO Variants on Obesity Risk: A Meta-Analysis of 218,166 Adults and 19,268 Children

Exercise modifies the genetic risk by 27-40%.
The 80% rule!

When diet is wrong, medicine is of no use.
When diet is correct, medicine is of no need.

~Ancient Ayurvedic Proverb
CALERIE Study

- Comprehensive Assessment of Long-term Effects of Reducing Intake of Energy
- Reduced caloric intake by 25%.
- Average caloric reduction was ~12%.
- Resulted in 10% wt loss.
- BP dropped by 4%, total cholesterol 6%, CRP 47%.
A.D.F. or 5:2 plan

- Fasting may help prevent dementia by causing a low level stress that stimulates brain stem cell activation!
YOU WONT LIKE ME WHEN IM HANGRY
“That’s too much of a change!”

- Doesn’t have to be a total life makeover.
- 1 single change, over time can make a huge difference.
- Change 1 habit at a time.
- Evolution, not revolution.
Meal No. 1
Cheese Pizza
Breadsticks
Marinara Sauce

Meal No. 2
Cheese Pizza
Breadstick
Marinara Sauce
Salad
Fat-Free Dressing

Meal No. 3
Cheese Pizza
Salad
Fat-Free Dressing
Minestrone Soup
Fruit Salad
Meal No. 1
1/2 lb. Hamburger w/Cheese on White Bun
Potato Chips
Cookies

Meal No. 2
1/4 lb. Hamburger w/Fat-Free Cheese on Whole Wheat Bun
Coleslaw
Baked Beans
Cookies

Meal No. 3
One Half
1/4 lb. Hamburger on Whole Wheat Bun
Roasted Vegetables
Baked Beans, Low Fat
Pear
Meal No. 1
3 cups White Spaghetti
2 cups Meat Sauce
Garlic Bread

Meal No. 2
2 cups Whole Wheat Spaghetti
1 cup Meat Sauce
Whole Wheat Bread
Broccoli

Meal No. 3
1 cup Whole Wheat Spaghetti
1/2 cup Marinara Sauce
Lentil Soup
Broccoli
Raspberries w/Whipped Topping
Marlon Gibson weighed 405 pounds at his heaviest.
He lost 245 pounds by gradually reducing unhealthy food and exercising.
PREDIMED: Primary Prevention of CVD with a Mediterranean Diet: Primary End Point

Acute myocardial infarction, stroke, or death from cardiovascular causes

Control diet
Med diet, nuts
Med diet, EVOO

Incidence of Composite CV Endpoint

Years

0.06
0.05
0.04
0.03
0.02
0.01
0.00
0
1
2
3
4
5

Med diet, EVOO: hazard ratio, 0.70 (95% CI, 0.53–0.91); P=0.009
Med diet, nuts: hazard ratio, 0.70 (95% CI, 0.53–0.94); P=0.02

European Primary Care Cardiovascular Society
Dietary patterns and cardiovascular events in patients with coronary artery disease

Ralph A. H. Stewart¹*, Emil Hagström², Claude B.ucquet³, Karen Chiswell⁶, Ola H. Johnsen⁵, Nicolas Danchin⁴, and Linda Stebbins⁶, on behalf of the STABILITY Investigators

¹Green Lane Cardiovascular Service, Auckland City Hospital, Auckland, New Zealand; ²Uppsala Clinical Research Center (UCR), Uppsala University Hospital, Uppsala, Sweden; ³University Paris Descartes, Paris, France; ⁴McMaster University, Hamilton, ON, Canada; ⁵Research Therapeutic Area, GlaxoSmithKline, Research Triangle Park, NC, USA; ⁶Metabolic Pathways and Cardiovascular Disease Laboratory, Boston University School of Medicine and Population Health Research Institute, London, ON, Canada.

Received 22 April 2015; revised 9 December 2015

Figure 2 Kaplan–Meier plots of major adverse cardiovascular events by Mediterranean diet score group. CV, cardiovascular; MI, myocardial infarction; MDS, Mediterranean diet score.
Higher compared with lower dietary protein during an energy deficit combined with intense exercise promotes greater lean mass gain and fat mass loss: a randomized trial\textsuperscript{1,2}

*Thomas M Longland, Sara Y Oikawa, Cameron J Mitchell, Michaela C Devries, and Stuart M Phillips*

Department of Kinesiology, Exercise Metabolism Research Group, McMaster University, Hamilton, Canada

![Graph showing changes in BM, LBM, and FM](image_url)

**FIGURE 2** Four-compartment model-derived changes in BM, LBM, and FM during the intervention in both PRO and CON groups; data were analyzed with the use of an unpaired $t$ test. Values are means ± SDs; $n = 40$ (20/group). *Significantly different from CON ($P < 0.05$). BM, body mass; CON, lower-protein (1.2 g $\cdot$ kg$^{-1} \cdot$ d$^{-1}$) control diet; FM, fat mass; LBM, lean body mass; PRO, higher-protein (2.4 g $\cdot$ kg$^{-1} \cdot$ d$^{-1}$) diet.

Ada Wong - not a Loser!

Runner up on Season 10 of Biggest Loser.
National Weight Control Registry

- Lost >30 lbs, maintained > 3 yrs.
- Ave of 66 lbs lost, ave of 5.5 yrs.
- 98% modified diet.
- 94% increased exercise
  - 90% exercise for ~1 hour a day.
  - >60% just walked.

http://www.nwcr.ws/
Energy Expenditure of Walking and Running: Comparison with Prediction Equations

CAMERON HALL, ARTURO FIGUEROA, BO FERNHALL, and JILL A. KANALEY

Department of Exercise Science, Syracuse University, Syracuse, NY

FIGURE 1—Total energy expenditures for 1600 m of walking and running in males and females on the track and treadmill, expressed in total expenditure (a), and normalized to fat-free mass (b). * P < 0.05 versus walking; † P < 0.05 versus females.
FIGURE 2—Actual total energy expenditure (solid) compared with energy expenditure predictions by ACSM (diagonal lines), McArdle (M) (dotted), van der Walt (horizontal lines), Léger (checkered), and Pandolf (vertical lines) for 1600 m. Values reported in means ± SE. * $P < 0.05$ between actual expenditures and predicted.
Myth: Cardio is the best way to drop weight…

- What do you call doing cardio 5 days a wk?
  - The road to nowhere!
- Fat burning zone doesn’t work-intensity and time matter!
- Can’t spot reduce.
- Need to lose % body fat.
- Best way to do this?
- Resistance training.
- Muscles burn/need/use more calories. Increases your metabolism.
Minimum amount of physical activity for reduced mortality and extended life expectancy: a prospective cohort study

Chi Pana Wen*, Jackson Pui Man Wai*, Min Kuana Tsai, Yi Chen Yana, Tino Yuan David Chena, Mena-Chih Lee, Hui Tinda Chan, Chwen Keng Tsao,

Figure 2: Daily physical activity duration and all-cause mortality reduction

Time and intensity matter!
HIIT it!

- High Intensity Interval Training.
- Short bouts of near max effort (really max effort) with longer recovery periods.
- Many different programs, but most studies show that you only need 4-5 cycles to get the benefit!
Two weeks of high-intensity aerobic interval training increases the capacity for fat oxidation during exercise in women

Jason L. Talanian,1 Stuart D. R. Galloway,2 George J. F. Heigenhauser,3 Arend Bonen,1 and Lawrence L. Spriet1
1Department of Human Health and Nutritional Sciences, University of Guelph, Guelph, Ontario, Canada, 2Department of Sport Studies, University of Stirling, Stirling, Scotland; and 3Department of Medicine, McMaster University, Hamilton, Ontario, Canada

![Graph showing fat oxidation over time with pre-training and post-training comparisons.](image-url)
2.5 mins a day vs 45?

Physiological Reports

ORIGINAL RESEARCH

Total daily energy expenditure is increased following a single bout of sprint interval training

Kyle J. Sevits¹, Edward L. Melanson²,³, Tracy Swibas³, Scott E. Binns⁴, Anna L. Klochak⁴, Mark C. Lonac⁴, Garrett L. Peltonen⁴, Rebecca L. Scalzo⁴, Melani M. Schweder⁴, Amy M. Smith¹, Lacey M. Wood⁴, Christopher L. Melby¹ & Christopher Bell⁴

¹ Department of Food Science and Human Nutrition, Colorado State University, Fort Collins, Colorado
² Division of Endocrinology Metabolism and Diabetes, University of Colorado Anschutz Medical Campus, Denver, Colorado
³ Division of Geriatrics, University of Colorado Anschutz Medical Campus, Denver, Colorado
⁴ Department of Health and Exercise Science, Colorado State University, Fort Collins, Colorado
Barry Brokaw-nurse!

BARRY BROKAW
BEFORE 420 LB. (ABOVE)
TODAY 160 LB. (BELOW)
We all need some LSD...
We all need some LSD…

- Long Slow Distance!
- To really start using fat as your energy source (burn fat) you need to go at least 45 min, sometimes 60, but most need 90 mins + to get your glycogen levels low enough to shift to fat.
- This is why the ‘fat burning zone’ does NOT work.
- What’s another reason to run long?
ZOMBIE LAND
SURVIVAL RULE #1
CARDIO
COMING SOON
Zombieland.net
Myth-weights make you BIG and bulky and unfeminine!
Figure 1  Muscular Strength, Cardiorespiratory Fitness, and Mortality in Hypertension

Combined association of muscular strength (thirds) and cardiiorespiratory fitness (low fitness, high fitness) with hazard ratio of all-cause mortality after adjustment for age, physical activity, current smoking, alcohol intake, body mass index, systolic and diastolic blood pressure, total cholesterol, diabetes, abnormal electrocardiogram, and family history of cardiovascular disease. Error bars represent 95% confidence interval.
Weight Training, Aerobic Physical Activities, and Long-Term Waist Circumference Change in Men

Rania A. Mekary\textsuperscript{1,2}, Anders Grøntved\textsuperscript{1,3}, Jean-Pierre Despres\textsuperscript{4}, Leandro Pereira De Moura\textsuperscript{5,6}, Morteza Asgarzadeh\textsuperscript{1}, Walter C. Willett\textsuperscript{1,7,8}, Eric B. Rimm\textsuperscript{1,7,8}, Edward Giovannucci\textsuperscript{1,7,8}, and Frank B. Hu\textsuperscript{1,7,8}
Relation of Muscle Mass and Fat Mass to Cardiovascular Disease Mortality

Preethi Srikantan, MD, MS\textsuperscript{a-g}, Tamara B. Horwich, MD, MS\textsuperscript{b}, and Chi Hong Tseng, PhD\textsuperscript{c}

Figure 2. Kaplan-Meier plot of all-cause mortality for the 4 body composition types based on AMMI and TRFI.

(Am J Cardiol 2016;117:1355–1360)
Risk by % fat

Being Thin May Not Be Enough
Even people of normal weight, as measured by body mass index, can have excess fat, putting them at higher health risk. (Models are for illustration only.)

RISK OF:
Percentage of participants in each group who developed these conditions during the study.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Low (Below 18.6%)</th>
<th>Moderate (18.6%-23.2%)</th>
<th>High (Above 23.2%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Blood Pressure</td>
<td>15.3%</td>
<td>20.1%</td>
<td>28.6%</td>
</tr>
<tr>
<td>High Cholesterol</td>
<td>13.6%</td>
<td>17.1%</td>
<td>22.4%</td>
</tr>
<tr>
<td>Metabolic Syndrome</td>
<td>4.2%</td>
<td>9.1%</td>
<td>16.6%</td>
</tr>
<tr>
<td>Heart Disease</td>
<td>2.3%</td>
<td>3.4%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>1.9%</td>
<td>2.2%</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

Source: Mayo Clinic
Note: Fat categories are not clinical thresholds but were determined by dividing the 6,171 study participants into three equal groups.

*Represents normal weight.

Photos by Alamy
Instant 6 pack!
No one is happy...

The Large
I wish I looked normal like that guy.
I bet he’s happy.

The Normal
I wish I could lose these love handles like that guy.
I bet he feels secure.
NO ONE!

The Lean

I wish I had gymnastic, meaty muscles like that guy.
I bet girls line up around the block.

The Meaty

I wish I could say smart, clever things like that guy.
I bet people respect him at work.

If I had a nickel for every time a girl told me she wanted to make love to my beard,
well... I'd have a quarter.

hee-hee! It's funny because that's five times.
EPOC, not EPIC

- excess post-exercise oxygen consumption.
- This is the Holy Grail of weight loss.
- Can it be done?
- How?
Figure 1—Average 24-h energy expenditure on rest and exercise days. Forty-five minutes of cycling resulted in $519 \pm 60.9$ kcal of energy expended above rest day ($P < 0.001$), whereas $190 \pm 71.4$ kcal was expended above levels on the rest day for 14.2 h after exercise ($P < 0.001$). Net energy expenditure difference from the start of sleep to 18 h after exercise was $32.0 \pm 39.3$ kcal ($P = 0.030$).
Mark D. Schuenke · Richard P. Mikat · Jeffrey M. McBride

Effect of an acute period of resistance exercise on excess post-exercise oxygen consumption: implications for body mass management
Muscle burns more calories than fat!

![Graph showing VO2 (ml/kg/min) over time with significant peaks post-activity.](image-url)
Summary

- Your body wants to maintain its set point (homeostasis).
- Don’t worry about weight, worry about fat.
- As you lose weight your metabolism goes down.
- To fight that you need to:
  - Build muscle-lift!
  - Go hard or go long or BOTH!
- Good luck!
The secret to living well and longer is:

Eat half,
Walk double,
Laugh triple,
And love without measure.

Tibetan Proverb
Pick your morphology.
Low Protein, High Glycemic Index

High Protein, Low GI

WHETHER YOU THINK YOU CAN OR WHETHER YOU THINK YOU CAN’T, YOU’RE RIGHT
set on the body

MOOD AND SURGERY OUTCOMES:
If a person is in a bad mood, their medical procedure may not go as smoothly, a December 2015 study showed. In the study, the researchers looked at 230 people who underwent procedures in which a catheter was inserted into a blood vessel. Before the procedure, people filled out a questionnaire that asked them to rate various adjectives describing how they felt emotionally. The study authors found that people with more negative feelings had a greater incidence of adverse events from the procedure, like slow heart rate or abnormal blood pressure. The research is early, but it’s not the first time scientists have seen physical changes from a negative mood.

MINDFULNESS AND BODY FAT:
In an October 2015 study, people with mindful dispositions—an ability to stay focused on the present moment—were found to have less body fat. Men and women with lower levels of mindfulness had a 34% higher prevalence of obesity compared with people with high levels of mindfulness. Though it’s only an association, researchers suggest people who are more aware may be more likely to eat healthier and exercise more.

OUTLOOK AND ALZHEIMER’S DISEASE:
The stereotypes a person holds about old age can affect how their brain ages, found a new Yale School of Public Health study. Men and women who viewed aging negatively had a greater loss of hippocampus volume and significantly higher scores of plaques—both indicators of Alzheimer’s disease. The researchers say it’s the first time this type of risk factor has been linked to the development of brain changes associated with Alzheimer’s.

ANGER ATTACK:
A 2015 study linked greater anger to a heart attack two hours after the students ate most fatty snacks.
IN LIGHT OF NEW EVIDENCE THAT HAPPY PEOPLE DON'T LIVE longer than their grumpy peers, one might be tempted to drop the pursuit altogether. A recent study published in the Lancet followed nearly 750,000 middle-aged women for several years and reported that while those who were happier tended to be healthier, they had no edge when it came to longevity. (Similarly, while unhappiness may be a side effect of illness, research shows that it is not alone capable of making you sick.) On the other hand, evidence shows that attitude can have meaningful—and in some cases measurable—effects on health, even if it can't outright extend one's life. Here's the latest on the mind-body connection.

**Surprising effects of mindset on the body**

**Mood and Surgery Outcomes:**
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**Anger and Heart Attack Risk:**
A 2015 study found having an episode of intense anger was associated with an 8.5 times greater likelihood of having a heart attack in the next two hours. Exactly how anger could contribute to a heart attack remains unknown, but the researchers speculate that stress triggers increased heart rate and blood pressure, blood-vessel constriction and clotting, which raise risk.

**Awe and Reduced Inflammation:**
Awe was found in a January 2015 study to reduce compounds that promote inflammation, which is linked to diseases ranging from Type 2 diabetes to arthritis. In the small study, college students filled out questionnaires about how often they experienced certain emotions. They found that happy moods in general were associated with lower inflammation, but the students who experienced awe most often had especially lower levels.

**Mindfulness and Body Fat**
In an October 2016 study, people with mind dispositions—ar stay focused on moment—we have less be and women levels of mi a 34% high of obesity c people with mindfullness, an association, suggest people aware may be more healthier and ex

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**Think positive!**

**TABLE 2  Optimism and Pessimism as Predictors of Clinical Outcomes**

<table>
<thead>
<tr>
<th>First Author (Ref. #)</th>
<th>Year</th>
<th>n</th>
<th>Follow-Up (yrs)</th>
<th>Endpoints</th>
<th>Adjusted RR (95% CI)*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pessimism as a risk factor</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brummet et al. (13)</td>
<td>2006</td>
<td>6,958</td>
<td>40.0</td>
<td>ACM</td>
<td>1.42 (1.13-1.77)</td>
</tr>
<tr>
<td>Grossbart et al. (14)</td>
<td>2009</td>
<td>7,216</td>
<td>32.0</td>
<td>ACM</td>
<td>1.32 (1.13-1.77)</td>
</tr>
<tr>
<td><strong>Optimism as a buffer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kuzbansky et al. (15)</td>
<td>2004</td>
<td>1,306</td>
<td>10.0</td>
<td>MI/CV death</td>
<td>0.44 (0.26-0.74)</td>
</tr>
<tr>
<td>Giltay et al. (16)</td>
<td>2004</td>
<td>941</td>
<td>9.1</td>
<td>CV death</td>
<td>0.27 (0.12-0.57)</td>
</tr>
<tr>
<td>Giltay et al. (17)</td>
<td>2006</td>
<td>554</td>
<td>15.0</td>
<td>CV death</td>
<td>0.45 (0.29-0.68)</td>
</tr>
<tr>
<td>Tindle et al. (18)</td>
<td>2009</td>
<td>97,253</td>
<td>8.0</td>
<td>CV death</td>
<td>0.76 (0.64-0.90)</td>
</tr>
<tr>
<td>Nabi et al. (19)</td>
<td>2010</td>
<td>23,216</td>
<td>7.0</td>
<td>Stroke</td>
<td>0.52 (0.29-0.93)</td>
</tr>
<tr>
<td>Kim et al. (20)</td>
<td>2011</td>
<td>6,044</td>
<td>2.0</td>
<td>Stroke</td>
<td>0.90 (0.84-0.97)†</td>
</tr>
</tbody>
</table>

*Risk ratios are primarily for first versus third tertile or fourth quartile. †For each unit increase in optimism.

ACM = all-cause mortality; CI = confidence interval; CV = cardiovascular; RR = risk ratio; MI = myocardial infarction.
Don’t press send...

Mood matters—just like attitude...
Impact of cinematic viewing on endothelial function

M Miller, C Mangano, Y Park, R Goel, G D Plotnick, R A Vogel

Figure 1 Brachial artery flow mediated vasodilatation at baseline and after a 15–30 minute movie segment causing laughter or mental stress.
The Effects of an Injected Placebo on Endurance Running Performance

Ramzy Ross¹, Cindy M. Gray², and Jason M. R. Gill¹

¹Institute of Cardiovascular and Medical Sciences, College of Medical, Veterinary and Life Sciences, University of Glasgow, Glasgow, United Kingdom; ²Institute of Health and Wellbeing, College of Social Sciences, University of Glasgow, Glasgow, United Kingdom
Placebo effect! Jedi mind tricks?

- OxyRBX placebo trial.
- Told it was a weak EPO analog.
- It was just saline.
- Self injected.
The Unburdening Effects of Forgiveness: Effects on Slant Perception and Jumping Height

Xue Zheng¹, Ryan Fehr², Kenneth Tai³, Jayanth Narayanan⁴, and Michele J. Gelfand⁵

Figure 3. Mean slant estimates in the two conditions in Study 1. Error bars indicate standard errors of means.
Figure 4. Mean jumping height in the three conditions in Study 2. Error bars indicate standard errors of means.
Fig. 2. Expression of the CTRA gene set. (A) Linear model-based estimates of mean difference (±SEM) in expression in a 53-gene CTRA contrast score in PBMCs from individuals with low levels (−2 SD relative to sample mean) vs. high levels (+2 SD) of hedonic well-being and eudaimonic well-being (each adjusting for the other and for demographic and behavioral covariates). (B) Differential expression of CTRA subcomponents: 19 proinflammatory genes, 31 type I IFN response genes, and three antibody synthesis genes.
Case Study: Vegans are wimps

- Winner of Ultimate Fighter 6.
- Vegan.
- Started due to his allergies.
- PETA spokesperson?
Case Study: Vegans are wimps-2

- 2 x winner of Badwater.
- 135 miles ultramarathon…
- In Death Valley!
- Ran 165 miles in 24 hours—that’s 6.5 marathons!
- Vegan!
Patrik Baboumian - Vegans are NOT wimps.

- World’s Strongest Man
- Carried 550 kg x 10m
- Lifted a 180 kg log
- Vegetarian since 2005
- Vegan since 2011
Measures of adiposity predict interleukin-6 responses to repeated psychosocial stress

Christine M. McInnis, Myriam V. Thoma, Danielle Gianferante, Luke Hanlin, Xuejie Chen, Juliana G. Breines, Suzi Hong, Nicolas Rohleder

*Department of Psychology and Volen National Center for Complex Systems, Brandeis University, Waltham, MA, United States
b Department of Psychiatry, University of California San Diego, La Jolla, CA, United States

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ABSTRACT

Objective: Overweight and obese individuals, who comprise approximately two-thirds of the U.S. population, are at increased risk for developing a range of diseases. This increased risk may be due in part to maladaptive stress responses within this group, including heightened low-grade inflammation and HPA axis non-habituation. In this study we tested the relationship between adiposity, plasma interleukin-6 (IL-6) and HPA axis responses to repeated stress.
Fig. 3. No difference in IL-6 response to TSST1 and TSST2 in lean individuals, but overweight (OW) individuals had a significantly greater increase in IL-6 in response to TSST2 than TSST1 in overweight individuals.
For those that hate ‘rules’…

‘In teaching health principles, keep before the mind the great object of reform—that it’s purpose is to secure the highest development of body and mind and soul. Show that the laws of nature, being the laws of God, are designed for our good; that obedience to them promotes happiness in this life, and aids in the preparation for the life to come.’

Ministry of Healing page 146, EG. White

No one likes rules or limitations, but they are in place to actually make our life better, easier.

Is it better to spend a lot and go into debt early or be rich later?

Is it better to eat whatever you want now and have a heart attack or avoid bad foods?
Imagine

Medical Schools

Cooking Schools

Public Health Schools

Food – Business – Innovations

© Eisenberg, HKHL 2016
Priorities-set them.  1\textsuperscript{st} things 1\textsuperscript{st}!

**Time Management Matrix**

<table>
<thead>
<tr>
<th>Urgent (time pressure)</th>
<th>Not Urgent (no time pressure)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Important (significant impact on your plan)</td>
<td></td>
</tr>
<tr>
<td>Not Important (no significant impact on your plan)</td>
<td></td>
</tr>
</tbody>
</table>

1. Important

These activities usually get done

Make them a priority.

2. Not Important

These activities are deceptive - don't confuse urgent & important. Minimize these.

3. Not Urgent

These activities are high impact. Make them a priority.
Rationalization...

“next to breathing, the ability to rationalize is the most important thing we do. Otherwise how could we live with ourselves?”

MS Park

Is the enemy of Accountability!
How to get 2 goal

The tragedy in life doesn’t lie in not reaching your goal. The tragedy lies in having no goal to reach.

Benjamin Mays
Everything is permissible for me”—but not everything is beneficial.

Everything is permissible for me”—but I will not be mastered by anything.

1 Cor. 6:12.
Food is FUEL!
What are you going to put into your tank?

You are what you eat. So don’t be fast, cheap, easy or fake.

rawforbeauty.com
Change your habits, change your life!

- **Winning is a habit.**
  - Watch your thoughts, they become your beliefs.
  - Watch your beliefs, they become your words.
  - Watch your words, they become your actions.
  - Watch your actions, they become your habits.
  - Watch your habits, they become your character.

- “Gentlemen, we will chase perfection, and we will chase it relentlessly, **knowing all the while we can never attain it**. But along the way, we shall catch excellence.”

- **We can change.**
YOU shape YOUR destiny with every choice YOU make...
Half of women…

In the 1011 pt Women’s Health Alliance study about ½ the women admitted that they cancel or postphone doctor visits in order to give themselves more time to LOSE WEIGHT!

ACC 2016.
Association of skirt size and postmenopausal breast cancer risk

Figure 2  Distribution for skirt size (SS) at 20 s, skirt size at current entry-study, BMI at recruitment and change of skirt size (CSS) every 10 years.

200%  
Increase in likelihood that a woman divorced twice or more will have a heart attack, compared with her stably married peers

8.5%  
Increase in risk that spouses who say more negative than positive things to each other will have a heart event

+2.3%  
Difference in average BMI of married vs. unmarried European men of the same age
The “EASY” way?

- “Just give me a pill doc”
- “Can’t you just put one of those stents in me?”
- “I don’t want to change. That’s too HARD!”
The “HARD” way?

- Eat a little less & a little better.
- Move around more.
- Sleep more.
- Relax!
Which way do you choose?

“Hard”

VS

“Easy”
My personal choice!
Lack of knowledge.
Lack of skill.
Lack of time.
Fear of wasting time.
Fear of wasting money.
Calorie density?
Only in America…

could you make cooking into a spectator sport!
Cookbooks…video cookbooks!

www.lifeandhealth.org
Scratch Food

Meals from scratch
Let Food Be Thy Medicine
- Hippocrates
<table>
<thead>
<tr>
<th>Meal Description</th>
<th>Calories</th>
<th>WW Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homestyle Meatloaf</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with Fresh Green Beans</td>
<td>760</td>
<td>12</td>
</tr>
<tr>
<td>Mom's Mac 'n' Cheese</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with Cinnamon Apples</td>
<td>810</td>
<td>16</td>
</tr>
<tr>
<td>Old World Chicken Cake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with Succotash</td>
<td>340</td>
<td>8</td>
</tr>
<tr>
<td>Orange Chicken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with Grains &amp; Rice Blend and Broccoli</td>
<td>410</td>
<td>14</td>
</tr>
<tr>
<td>Kids Meat Lasagna</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with Fresh Green Beans</td>
<td>420</td>
<td>12</td>
</tr>
<tr>
<td>Mom's Mac 'n' Cheese</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with Cinnamon Apples</td>
<td>610</td>
<td>16</td>
</tr>
<tr>
<td>Chicken Parmesan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with Pasta and Fresh Green Beans</td>
<td>810</td>
<td>16</td>
</tr>
<tr>
<td>Black Cherry Teriyaki Chicken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with Fresh Broccoli and House Grains &amp; Rice</td>
<td>340</td>
<td>8</td>
</tr>
<tr>
<td>Steak and Green Bean Stew</td>
<td></td>
<td></td>
</tr>
<tr>
<td>to meet the classic Southern Taste of our youth</td>
<td>240</td>
<td>6</td>
</tr>
<tr>
<td>Carved Chicken and Roasted Vegetables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>served with House Grains and Rice</td>
<td>290</td>
<td>5</td>
</tr>
<tr>
<td>Spaghetti Squash with Marinara</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with Tuscan Vegetables</td>
<td>230</td>
<td>6</td>
</tr>
<tr>
<td>Asian Chicken Bowl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with House Grains &amp; Rice and Avocado</td>
<td>380</td>
<td>9</td>
</tr>
<tr>
<td>Sesame Flat Iron Steak</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with Broccoli &amp; Kale Slaw</td>
<td>370</td>
<td>10</td>
</tr>
<tr>
<td>Roma Chicken Bowl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with House Grains &amp; Italian Green Bean Mashup</td>
<td>370</td>
<td>10</td>
</tr>
<tr>
<td>Japanese Chicken Bowl</td>
<td></td>
<td></td>
</tr>
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<tr>
<td>American Heart Association®</td>
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<tr>
<td>My Heart. My Life.®</td>
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</tbody>
</table>
By the numbers...
Cooking by numbers…

Inside the kit
Standard dinners from Plated cost $12 per meal. Here are the ingredients you get for Pork Tacos al Pastor With Pineapple Salsa

ONIONS
They come whole and require slicing

PORK CUTLETS
All meat is antibiotic-free

WHITE VINEGAR
No need to measure

CORN TORTILLAS
Premade, thank goodness

How I taught myself to cook—with a kit
By Bryan Walsh

There were many reasons why I, like a third of Americans, was a non-cooker for so long. I didn’t see the point in spending time in the kitchen when I could be exercising, or going out, or staying in and watching shows about cooking on TV. There were also those two years when I didn’t realize my landlord hadn’t hooked up the gas to my skills and fear marital dissolution. They’re called dinner kits, and they provide everything you need to cook, other than a sous-chef to berate. The industry is exploding. According to the consultancy Technomic, the global meal-kit market topped $1 billion in 2015 and is projected to hit $10 billion by 2020. Companies like Plated, Hello Classes, and Blue Apron—

I didn’t nail every recipe from the start. When I was done with the beef in the Beef Gyritos on Mini Pitas With Tzatziki—the third meal kit I tried—it had a texture best described as shoe-leathery. And this isn’t the cheapest way to make dinner. Expect to pay $8 to $12 per person per meal.

But the break—
Plated and Blue Apron
Healthy Kitchens, Healthy Lives®
Caring for Our Patients and Ourselves

READ ABOUT THE CONFERENCE IN THE NEW YORK TIMES
Read Now

REGISTER FOR THE CONFERENCE

A Leadership Conference Bridging Nutrition Science, Healthcare, and the Culinary Arts

STAY CONNECTED
Sign up to receive conference updates:
Contact Us

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Photo Slideshow
News

HISTORY & ABOUT
History of the Conference
About Harvard T. H. Chan School of Public Health
About The Culinary Institute of America

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Hospital Tertiary Care

Basic Science Research

Outpatient Centers

Genetic Evaluation to Predict Risks

Exercise Therapy Centers

Mindfulness Centers

Teaching Kitchens and New Food Business Innovations

Psychotherapy/Pharm

Adapted from Eisenberg, D Burgess, J Academic Med 2015
“Identify experts from disciplines different from your own, with whom you do not share a common language, but with whom you share a common question. **Join them to build a bridge.** From this bridge you will make your greatest professional contributions and experience some of your greatest personal satisfaction.”

Howard Hiatt, MD, Former Dean, Harvard School of Public Health
Who Will Build this Futuristic “Bridge”?

Better Food Health Economy Future

Medical/Nutritional Experts and Epigeneticists
IT Experts and Entrepreneurs
Culinary Experts (Chefs)
Mindfulness Trainers
Exercise and Movement Experts
Behavioral Change Experts
Agricultural Experts
Sustainability Experts

© Eisenberg, HKHL 2016
Solution? Let’s Google it...

Our mission
To inspire and enable the Google community to make food choices and enjoy food experiences that support them in being their best.

Michelle Hatzis, PhD
Google Food: Global Health & Wellness

Liv Wu
Google Food: Teaching Kitchen
Google’s Food program fuels Google’s sustainable high performance

- Support Googlers to be at their best, both short as well as long term
- Support and contribute to Google’s culture, environment, and work dynamics
- Support Google teams in achieving team specific results
- Helping Google attract and retain happy and healthy top talent
Initial Outcomes: Pre/Post/6-months (N=84)

84% increased confidence in cooking skills
93% Class helped me “detach” from work
58% Now cook from scratch 3-5 times a week
83% Extremely likely to refer program to co-worker
I can't cure diabetes in my office. It has to be done in the kitchen, in restaurants and schools.
“Eating healthy costs too much!”

 Costs an extra $550 per person per year (so $2200 a year for a family of four).

 *This works out to only $1.50 per person per day!*
ACE

- NOT angiotensin converting enzyme.
- Adverse Childhood Experiences

"Adverse childhood experiences are the single greatest unaddressed public health threat facing our nation today."

- Dr. Robert Block, the former President of the American Academy of Pediatrics
See “it” for real...

### ACE Prevalence (%)

#### Abuse
- Emotional: 12.8%
- Physical: 17.6%
- Sexual: 16.3%

#### Neglect
- Emotional: 11.4%
- Physical: 9.4%

#### Household Dysfunction
- Substance abuse: 26.9%
- Mental illness: 25.1%
- Domestic violence: 20.8%
- Criminal household member: 16%
- Parental marital discord: 38.1%

#### ACE score
- 0: 30.9%
- 1-2: 37.8%
- 3: 12.4%
- 4+: 18.8%
ACE

- Large 17k study from Kaiser and CDC.
- If ACE>4 chance of COPD 2.5x, hepatitis 2.5x, suicide 12x.
- ACE>7 3x risk of lung CA and 3.5x risk of CAD.
- http://acestudy.org/
Sugar is addictive!
The ‘Bitter’ Truth...
The ‘Bitter’ Truth...
Mountain of sugar...

Figure 1. Adjusted Hazard Ratio (HR) of the Usual Percentage of Calories From Added Sugar for Cardiovascular Disease Mortality Among US Adults 20 Years or Older: National Health and Nutrition Examination Survey Linked Mortality Files, 1988-2006

Histogram of the distribution of usual percentage of calories from added sugar in the population. Lines show the adjusted HRs from Cox models. Midvalue of quintile 1 (7.4%) was the reference standard. The model was adjusted for age, sex, race/ethnicity, educational attainment, smoking status, alcohol consumption, physical activity level, family history of cardiovascular disease, antihypertensive medication use, Healthy Eating Index score, body mass index, systolic blood pressure, total serum cholesterol, and total calories. Solid line indicates point estimates; dashed lines indicate 95% CIs.
FIGURE 3-6. Sources of Added Sugars in the Diets of the U.S. Population Ages 2 Years and Older, NHANES 2005-2006

- Don’t drink Your calories!


a. Data are drawn from analyses of usual dietary intake conducted by the National Cancer Institute. Foods and beverages consumed were divided into 97 categories and ranked according to added sugars contribution to the diet. “All other food categories” represents food categories that each contributes less than 2% of the total added sugar intake.
Death by Soda!

Death by sugary drink
DEATH RATE FROM SUGARY DRINKS, PER MILLION ADULTS

<table>
<thead>
<tr>
<th>Country</th>
<th>Death Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>404.5</td>
</tr>
<tr>
<td>South Africa</td>
<td>153.3</td>
</tr>
<tr>
<td>Morocco</td>
<td>137.8</td>
</tr>
<tr>
<td>United States</td>
<td>124.9</td>
</tr>
<tr>
<td>Colombia</td>
<td>112.3</td>
</tr>
<tr>
<td>Venezuela</td>
<td>101.8</td>
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<tr>
<td>Brazil</td>
<td>82.1</td>
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<tr>
<td>Taiwan</td>
<td>79.6</td>
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<tr>
<td>Philippines</td>
<td>75.6</td>
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<tr>
<td>Argentina</td>
<td>73.9</td>
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<tr>
<td>Ukraine</td>
<td>72.3</td>
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<tr>
<td>Indonesia</td>
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<tr>
<td>Canada</td>
<td>68.1</td>
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<tr>
<td>Thailand</td>
<td>67.2</td>
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<tr>
<td>Russia</td>
<td>66.2</td>
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<tr>
<td>Algeria</td>
<td>62.6</td>
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<tr>
<td>Egypt</td>
<td>61.1</td>
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<tr>
<td>Burma</td>
<td>57.7</td>
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<tr>
<td>Romania</td>
<td>53.2</td>
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<tr>
<td>Pakistan</td>
<td>51.3</td>
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<td>Germany</td>
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<td>Tanzania</td>
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<tr>
<td>Italy</td>
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<td>Turkey</td>
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<td>Poland</td>
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<td>Nigeria</td>
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<td>Sudan</td>
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<td>Britain</td>
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<td>Spain</td>
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<td>France</td>
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<td>Iran</td>
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<td>South Korea</td>
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<td>Congo</td>
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<td>China</td>
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<tr>
<td>India</td>
<td>15.7</td>
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<td>Japan</td>
<td>11.2</td>
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<td>Vietnam</td>
<td>6.2</td>
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<td>Ethiopia</td>
<td>5.6</td>
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<tr>
<td>Bangladesh</td>
<td>1.0</td>
</tr>
</tbody>
</table>

SOURCE: Circulation
THE WASHINGTON POST
Drink Water!

How much sugar is in your drink?

- Monster Energy 16 oz.: 200 calories
- vitaminwater 20 oz.: 125 calories
- Mountain Dew 20 oz.: 290 calories
- Snapple Lemon Tea 16 oz.: 160 calories
- Gatorade 20 oz.: 130 calories
- Nantucket Nectars Cranberry 17.5 oz.: 280 calories

- 13.5 teaspoons
- 8 teaspoons
- 19.25 teaspoons
- 10.5 teaspoons
- 8.5 teaspoons
- 17.5 teaspoons
Diet soda is ok? Right...

Artificial sweeteners induce glucose intolerance by altering the gut microbiota

Jotham Suez, Tal Korem, David Zeevi, Gili Zilberman-Schapira, Christoph A. Thaiss, Ori Maza, David Israeli, Niv Zmora, Shlomit Gilad, Adina Weinberger, Yael Kuperman, Alon Harmelin, Ilana Kolodkin-Gal, Hagit Shapiro, Zamir Halpern, Eran Segal & Eran Elinav
Before you take another bite...

It's time to get real about food.

IN THEATERS MAY 9
"Everyone in the field of nutrition science stands on the shoulders of Dr. Campbell, who is one of the giants in the field. This is one of the most important books about nutrition ever written—reading it may save your life."

—Dean Ornish, MD

THE MOST COMPREHENSIVE STUDY OF NUTRITION EVER CONDUCTED

THE CHINA STUDY

STARTLING IMPLICATIONS FOR DIET, WEIGHT LOSS AND LONG-TERM HEALTH

T. ColiN Campbell, PhD
AND THOMAS M. Campbell II

FOREWORD BY JOHN ROBBINS, AUTHOR, DIET FOR A NEW AMERICA

FORKS OVER KNIVES
The DASH diet (Dietary Approaches to Stop Hypertension) has been shown to help lower blood pressure and prevent heart disease, stroke, diabetes and even some forms of cancer. It focuses on eating more fresh fruits and vegetables.

This is a guide to how much of each food group you should eat every day, based on eating 2,000 calories per day.
Public’s Report about Most Stressful Event/Experience in the Past Year

% saying, in their own words, they had a major stressful event in the past year and it was related to...

- Illness & Disease: 27%
- Death of a loved one: 16%
- Problems with work: 13%
- Life changes/Transitions: 9%
- Family events/issues: 9%
- Problems with personal relationships: 6%

Health-related problems: 43%

NPR/Robert Wood Johnson Foundation/Harvard School of Public Health: The Burden of Stress in America, March 5- April 8, 2014
Groups Experiencing High Stress Levels in the Past Month

% saying they experienced 'a great deal of stress' in the past month...

- Poor health condition: 60%
- Disabled: 45%
- Have a chronic illness: 36%
- Income < $20,000: 36%
- Often experiences dangerous situations at work: 36%
- Single parents: 35%
- Parent of a teen: 34%

Showing groups with more than a third (33%) of respondents reporting "a great deal of stress" in the past month.

NPR/ Robert Wood Johnson Foundation/ Harvard School of Public Health: The Burden of Stress In America. March 5- April 8, 2014
Most Common Experiences That Contributed to Stress Among People with ‘A Great Deal of Stress’

% experiencing ‘a great deal of stress in the past month’ saying experienced each and ‘yes’ contributed to stress...

- Too many responsibilities overall: 54%
- Problems with finances: 53%
- Work problems*: 53%
- Health problems: 38%
- Health problems for people in immediate family: 37%
- Problems with family members: 32%
- Being unhappy with the way you look: 28%

*Asked only of employed, n=309

NPR/ Robert Wood Johnson Foundation/ Harvard School of Public Health: The Burden of Stress In America, March 5- April 8, 2014
Top 10 Daily Events that Contribute to Stress in the Past Month Among Those Experiencing ‘A Great Deal of Stress’

% experiencing ‘a great deal of stress in the past month’ saying ‘yes’ contributed to stress...

- Juggling schedules of family members: 48%
- Hearing about what the government or politicians are doing: 44%
- Watching, reading, or listening to the news: 40%
- Household tasks, such as cooking and cleaning: 39%
- Running errands: 38%
- Handling car problems: 36%
- Commuting to work: 35%
- Handling household repairs: 32%
- Losing something important like your keys or cell phone: 30%
- Using social media: 14%

NPR/ Robert Wood Johnson Foundation / Harvard School of Public Health: The Burden of Stress in America, March 5- April 8, 2014
<table>
<thead>
<tr>
<th>Activity</th>
<th>Effectiveness</th>
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<tr>
<td>Regularly spent time outdoors</td>
<td>94%</td>
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<tr>
<td>Regularly spent time on a hobby</td>
<td>93%</td>
</tr>
<tr>
<td>Regularly exercised</td>
<td>89%</td>
</tr>
<tr>
<td>Regularly spent time with a pet</td>
<td>87%</td>
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<tr>
<td>Regularly meditated or prayed</td>
<td>85%</td>
</tr>
<tr>
<td>Regularly spent time with family or friends</td>
<td>83%</td>
</tr>
<tr>
<td>Took time off work</td>
<td>79%</td>
</tr>
<tr>
<td>Regularly got a full night’s sleep</td>
<td>76%</td>
</tr>
<tr>
<td>Used prescription medication</td>
<td>70%</td>
</tr>
<tr>
<td>Received professional help</td>
<td>65%</td>
</tr>
<tr>
<td>Regularly ate healthfully</td>
<td>63%</td>
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</table>

Information not available due to small sample size for the following: paid a person/service to handle household tasks, and followed a formal self-help program.
Dose–Response Relation Between Work Hours and Cardiovascular Disease Risk

Findings From the Panel Study of Income Dynamics

Sadie H. Conway, PhD, Lisa A. Pompeii, PhD, Robert E. Roberts, PhD, Jack L. Follis, PhD, and David Gimeno, PhD

Does the Perception that Stress Affects Health Matter? The Association with Health and Mortality

Abiola Keller, Kristin Litzelman, Lauren E. Wisk, Torsheika Maddox, Erika Rose Cheng, Paul D. Creswell, and Whitney P. Witt
University of Wisconsin - Madison
<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Frequency of Stress, Perceived Health Impact, and Stress Reduction among U.S. Adults, 1998 NHIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL: Weighted N [in thousands] (unweighted N) %</td>
<td>185,983 (28,753) 100%</td>
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</table>

**Frequency of Stress**

Amount of stress experienced by U.S. adults in the last 12 months

<table>
<thead>
<tr>
<th>Amount</th>
<th>Weighted N [in thousands] (unweighted N) %</th>
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</thead>
<tbody>
<tr>
<td>A lot</td>
<td>37,628 (6,026) 20.2%</td>
</tr>
<tr>
<td>Moderate</td>
<td>65,627 (9,663) 35.3%</td>
</tr>
<tr>
<td>Relatively little</td>
<td>44,642 (6,871) 24.0%</td>
</tr>
<tr>
<td>Almost none</td>
<td>38,087 (6,193) 20.5%</td>
</tr>
</tbody>
</table>

**Perceived Health Impact**

How much did stress affect your health?

<table>
<thead>
<tr>
<th>Amount</th>
<th>Weighted N [in thousands] (unweighted N) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>A lot</td>
<td>14,500 (2,468) 7.8%</td>
</tr>
<tr>
<td>Some</td>
<td>48,176 (7,522) 25.9%</td>
</tr>
<tr>
<td>Hardly any, or none</td>
<td>123,306 (18,763) 66.3%</td>
</tr>
</tbody>
</table>

**Stress Reduction**

(During the past 12 months), have you taken any steps to control or reduce stress in your life?

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<thead>
<tr>
<th>Answer</th>
<th>Weighted N [in thousands] (unweighted N) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>61,193 (9,489) 32.9%</td>
</tr>
<tr>
<td>No</td>
<td>124,790 (19,264) 67.1%</td>
</tr>
<tr>
<td>Stress Level</td>
<td>All-Cause Mortality</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td></td>
<td>HR</td>
</tr>
<tr>
<td>Almost no stress in last 12 months</td>
<td></td>
</tr>
<tr>
<td>Hardly any, or No perception that stress affects health</td>
<td>1.00</td>
</tr>
<tr>
<td>Some perception that stress affects health</td>
<td>0.96</td>
</tr>
<tr>
<td>Perception that stress affects health a lot</td>
<td>1.04</td>
</tr>
<tr>
<td>Little stress in last 12 months</td>
<td></td>
</tr>
<tr>
<td>Hardly any, or No perception that stress affects health</td>
<td>1.00</td>
</tr>
<tr>
<td>Some perception that stress affects health</td>
<td>0.90</td>
</tr>
<tr>
<td>Perception that stress affects health a lot</td>
<td>1.10</td>
</tr>
<tr>
<td>Moderate stress in last 12 months</td>
<td></td>
</tr>
<tr>
<td>Hardly any, or No perception that stress affects health</td>
<td>1.00</td>
</tr>
<tr>
<td>Some perception that stress affects health</td>
<td>1.15</td>
</tr>
<tr>
<td>Perception that stress affects health a lot</td>
<td>0.85</td>
</tr>
<tr>
<td>A lot of stress in last 12 months</td>
<td></td>
</tr>
<tr>
<td>Hardly any, or No perception that stress affects health</td>
<td>0.83</td>
</tr>
<tr>
<td>Some perception that stress affects health</td>
<td>0.91</td>
</tr>
<tr>
<td>Perception that stress affects health a lot</td>
<td>1.43</td>
</tr>
</tbody>
</table>
Sleep-the new cross training!

Train like an athlete,
Eat like a nutritionist,
Sleep like a baby,
Win... like a champion.
More Than A Third Of U.S. Adults Don’t Get Enough Sleep

Percent of adults by self-reported sleep duration

<table>
<thead>
<tr>
<th>Sleep Duration</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 hours</td>
<td>11.8%</td>
</tr>
<tr>
<td>6 hours</td>
<td>23%</td>
</tr>
<tr>
<td>7 hours</td>
<td>29.5%</td>
</tr>
<tr>
<td>8 hours</td>
<td>27.7%</td>
</tr>
<tr>
<td>9 hours</td>
<td>4.4%</td>
</tr>
<tr>
<td>More than 10 hours</td>
<td>3.6%</td>
</tr>
</tbody>
</table>

*Adults should get 7 or more hours of sleep.*

Source: CDC
Where Americans Need More Sleep

The CDC recommends adults get at least seven hours a night.

Age-adjusted percentage of adults who reported ≥7 hours sleep per 24-hour period, 2014

- <60%
- 60-62.5%
- 62.5-65%
- 65-67.5%
- 67.5-70%
- >70%

Source: CDC

The Huffington Post
Poor sleep lowers will power.

It also increases caloric consumption, fat intake, etc the next day.

How / why?
Think about childhood trauma (ACE scores).

Actually seeing “Saving Private Ryan”!
Fig. 2. Expression of the CTRA gene set. (A) Linear model-based estimates of mean difference (±SEM) in expression in a 53-gene CTRA contrast score in PBMCs from individuals with low levels (−2 SD relative to sample mean) vs. high levels (+2 SD) of hedonic well-being and eudaimonic well-being (each adjusting for the other and for demographic and behavioral covariates). (B) Differential expression of CTRA subcomponents: 19 proinflammatory genes, 31 type I IFN response genes, and three antibody synthesis genes.
In light of new evidence that happy people don’t live longer than their grumpy peers, one might be tempted to drop the pursuit altogether. A recent study published in the *Lancet* followed nearly 700,000 middle-aged women for several years and reported that while those who were happier tended to be healthier, they had no edge when it came to longevity. (Similarly, while unhappiness may be a side effect of illness, research shows that it is not alone capable of making you sick.) On the other hand, evidence shows that attitude can have meaningful—and in some cases measurable—effects on health, even if it can’t outright extend one’s life. Here’s the latest on the mind-body connection.

### Surprising effects of mindset on the body

#### Mood and Surgery Outcomes:
If a person is in a bad mood, their medical procedure may not go as smoothly, according to a December 2015 study showed. In the study, the researchers looked at 230 people who underwent procedures in which a catheter was inserted into a blood vessel. Before the procedure, people filled out a questionnaire that asked them to rate various adjectives describing how they felt emotionally. The study authors found that people with more negative feelings had a greater incidence of adverse events from the procedure, like slow heart rate or abnormal blood pressure. The research is early, but it’s not the first time scientists have seen physical changes from a negative mood.

#### Anger and Heart-Attack Risk:
A 2015 study found having an episode of intense anger was associated with an 8.5 times greater likelihood of having a heart attack in the next two hours. Exactly how anger could contribute to a heart attack remains unknown, but the researchers speculate that stress triggers increased heart rate and blood pressure, blood-vessel constriction and clotting, which raise risk.

#### Awe and Reduced Inflammation:
Awe was found in a January 2015 study to reduce compounds that promote inflammation, which is linked to diseases ranging from Type 2 diabetes to arthritis. In the small study, college students filled out questionnaires about how often they experienced certain emotions. They found that happy moods in general were associated with lower inflammation, but the students who experienced awe most often had especially lower levels.

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**Mindfulness and Body Fat:**
In an October 2015 study people with mindful dispositions—an ability to stay focused on the present moment—were found to have less body fat. Men and women with low levels of mindfulness had a 34% higher prevalence of obesity compared people with high levels of mindfulness. Though an association, research suggests people who are aware may be more likely to be healthier and exercise more.
Outbursts of anger as a trigger of acute cardiovascular events: a systematic review and meta-analysis†

Elizabeth Mostofsky¹,², Elizabeth Anne Penner³, and Murray A. Mittleman¹,²,*

¹Cardiovascular Epidemiology Research Unit, Department of Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School, 375 Longwood Avenue, Room 423, Boston, MA 02215, USA; ²Department of Epidemiology, Harvard School of Public Health, Boston, MA, USA; and ³Department of Internal Medicine, New York-Presbyterian Hospital/Weill Cornell Medical Center, New York, NY, USA

Received 9 July 2013; revised 8 January 2014; accepted 20 January 2014
Figure 2 Meta-analysis of the nine studies examining the short-term risk of cardiovascular events in the 2 h following outbursts of anger. The solid vertical line indicates no association; the diamonds indicate the combined estimates. * = One study (Lipovetzky) reported separate estimates for each hour prior to MI onset. We meta-analyzed these two estimates and included this pooled estimate in our meta-analysis of MI/ACS.
Conflict

~10,000 pt Danish study.

Rare arguments/conflict lead to a 50-100% increase in death from any cause.

Frequent arguments/conflict lead to a 2-3x risk of death from any cause.

They thought that this was so strong because of the results of the underlying stress compounded by the arguments themselves.

Dr. Rikke Lund et al. May 2014. Journal of Epidemiology & Community Health
Dean Ornish and CHIP
Cellular age
Accelerated telomere shortening in response to life stress

Elissa S. Epel*,†, Elizabeth H. Blackburn‡, Jue Lin‡, Firdaus S. Dhabhar§, Nancy E. Adler*, Jason D. Morrow¶, and Richard M. Cawthon‖

*Department of Psychiatry, University of California, 3333 California Street, Suite 465, San Francisco, CA 94143; ‡Department of Biochemistry and Biophysics, University of California, San Francisco, CA 94143; §Department of Oral Biology, College of Dentistry, and Department of Molecular Virology, Immunology, and Medical Genetics, College of Medicine, Ohio State University, Columbus, OH 43210; ¶Department of Medicine and Pharmacology, Vanderbilt University School of Medicine, Nashville, TN 37232; and ‖Department of Human Genetics, University of Utah, 15 North 2030 E Street, Room 2100, Salt Lake City, UT 84112

Contributed by Elizabeth H. Blackburn, September 28, 2004
Relaxation Response Induces Temporal Transcriptome Changes in Energy Metabolism, Insulin Secretion and Inflammatory Pathways

Manoj K. Bhasin¹,4,5*, Jeffery A. Dusek⁶*, Bei-Hung Chang⁷,8,9, Marie G. Joseph⁵, John W. Denninger¹,2, Gregory L. Fricchione¹,2, Herbert Benson¹,3, Towia A. Libermann¹,4,5,*

¹ Benson-Henry Institute for Mind Body Medicine at Massachusetts General Hospital, Boston, Massachusetts, United States of America, ² Department of Psychiatry, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts, United States of America, ³ Department of Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts, United States of America, ⁴ Department of Medicine, Division of Interdisciplinary Medicine and Biotechnology, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, Massachusetts, United States of America, ⁵ BIDMC Genomics and Proteomics Center, Beth Israel Deaconess Medical Center, Boston, Massachusetts, United States of America, ⁶ Institute for Health and Healing, Abbott Northwestern Hospital, Minneapolis, Minnesota, United States of America, ⁷ VA Boston Healthcare System, Boston, Massachusetts, United States of America, ⁸ Department of Health Policy and Management, Boston University School of Public Health, Boston, Massachusetts, United States of America
**FIGURE 3** Sense of Purpose and Mortality Risk

Kaplan Meier curve of all-cause mortality associated with a high, uncertain, and low sense of life purpose. Adapted with permission from Sone et al. (31).
“The cave you fear to enter holds the treasure that you seek”  Anonymous
“The cave you fear to enter holds the treasure that you seek”  Anonymous
What would Grok do?

![Grok Diagram]

- **Herbs, spices, extracts, supplements**
- **Nuts, seeds, nut butters, approved fats and oils**
- **Meat, fish, fowl, eggs**
  - Best to select organic sources.
  - Represents bulk of calories.
- **Vegetables**
  - Organic and/or locally grown. Bulk of meal emphasis and nutrients.
- **Fruits**
- **Sprint**
  - “All-out” efforts
  - < 10 minutes total duration
  - Once every 7-10 days
- **Lift Heavy Things**
  - Brief, intense sessions of full-body functional movements.
  - 1-3x per week for 7-60 minutes
- **Move Frequently at a Slow Pace**
  - Walking, hiking, cycling, easy cardio
  - at 55-75% of maximum heart rate for 2-5 hours per week
## Compare and contrast

<table>
<thead>
<tr>
<th>Differences</th>
<th>Similarities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat.</td>
<td>More fruits and veggies.</td>
</tr>
<tr>
<td>Oils.</td>
<td>Less sugar.</td>
</tr>
<tr>
<td>Fats.</td>
<td>Less processed foods.</td>
</tr>
</tbody>
</table>
Red Meat Consumption and Mortality

Have nuts instead
Substituting for a serving of red meat* daily ...

... lowers mortality risk by
Nuts -19%       Whole grains -14%
Poultry -14%    Legumes -10%
Low-fat dairy -10%  Fish -7%

Having an additional serving of red meat daily ...

... increases mortality risk by
Unprocessed red meat +13%
Processed red meat +20%

*Combines unprocessed and processed red meat consumption categories.
Note: A serving of unprocessed red meat includes beef, lamb or pork as main dish. Processed meat includes bacon, salami, sausage, bologna and others.
Source: American Medical Assn.
Intestinal microbiota metabolism of L-carnitine, a nutrient in red meat, promotes atherosclerosis

Robert A. Koeth\textsuperscript{1,2}, Zeneng Wang\textsuperscript{1,2}, Bruce S. Levison\textsuperscript{1,2}, Jennifer A. Buffa\textsuperscript{1,2}, Elin Org\textsuperscript{3}, Brendan T. Sheehy\textsuperscript{1}, Earl B. Britt\textsuperscript{1,2}, Xiaoming Fu\textsuperscript{1,2}, Yuping Wu\textsuperscript{4}, Lin Li\textsuperscript{1,2}, Jonathan D. Smith\textsuperscript{1,2,5}, Joseph A. DiDonato\textsuperscript{1,2}, Jun Chen\textsuperscript{6}, Hongzhe Li\textsuperscript{6}, Gary D. Wu\textsuperscript{7}, James D. Lewis\textsuperscript{6,8}, Manya Warrier\textsuperscript{9}, J. Mark Brown\textsuperscript{9}, Ronald M. Krauss\textsuperscript{10}, W. H. Wilson Tang\textsuperscript{1,2,5}, Frederic D. Bushman\textsuperscript{5}, Aldons J. Lusis\textsuperscript{3}, and Stanley L. Hazen\textsuperscript{1,2,5}
Figure a: Graph showing the plasma levels of TMAO and d3-TMAO over time in Omnivores and Vegans.

Figure b: Graph showing the TMAO/Cr and d3-TMAO/Cr levels in Urine from Vegans and Omnivores.

Figure f: Kaplan-Meier curve showing event-free survival over time for different combinations of carnitine and TMAO levels. The table shows unadjusted and adjusted hazard ratios (HR) with 95% confidence intervals (CI) for high and low levels of carnitine and TMAO. P < 0.001.
THE NEW (AB)NORMAL

Portion sizes have been growing. So have we. The average restaurant meal today is more than four times larger than in the 1950s. And adults are, on average, 26 pounds heavier. If we want to eat healthy, there are things we can do for ourselves and our community: Order the smaller meals on the menu, split a meal with a friend, or eat half and take the rest home. We can also ask the managers at our favorite restaurants to offer smaller meals.

FOR MORE INFORMATION, VISIT MakingHealthEasier.org/NewAbNormal
Portion distortion!

**Bagel**
Calorie difference: 210 calories
- 3-inch diameter: 140 calories
- 6-inch diameter: 350 calories

**Cheeseburger**
Calorie difference: 257 calories
- 333 calories
- 590 calories

**Soda**
Calorie difference: 165 calories
- 6.5 ounces: 85 calories
- 20 ounces: 250 calories

**French Fries**
Calorie difference: 400 calories
- 2.4 ounces: 210 calories
- 6.9 ounces: 610 calories