Primary Prevention of Cardiovascular Disease in 2017

Harvey S. Hahn, MD, FACC
Ohio ACP, Oct. 20, 2017
Director, Cardiovascular Fellowship Training Program &
Director, Noninvasive Laboratory Kettering Medical Center
Associate Professor of Clinical Medicine, Wright State
Univ & Loma Linda Univ
Which way do you choose?

VS

Really healthy

Medicated “healthy”
The “EASY” or “HARD” way?
What way is easier?
Case study:

- L-knee pain. MRI-torn meniscus. Scope.
- Gained 40 lb since HS.
- Wife, 2 kids, busy job…
- “95%” vegan, portion control, exercise…
- Lost 45 lbs. 5 inches off of waist. % body fat went from 28% to 16%. LDL 143 to 71 (off of lipitor). Got off BP med. Feeling great!
- This is me. Lifestyle works!
My personal choice!
# Coronary Heart Disease Risk Calculator

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Your Answer</th>
<th>Points</th>
<th>Relative Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>43 years</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Smoker</td>
<td>Yes</td>
<td>2</td>
<td>High</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Yes</td>
<td>2</td>
<td>High</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>150 / 90 mm Hg</td>
<td>2</td>
<td>High</td>
</tr>
<tr>
<td>Total Cholesterol</td>
<td>220 mg/dl</td>
<td>1</td>
<td>Moderate</td>
</tr>
<tr>
<td>HDL Cholesterol</td>
<td>35 mg/dl</td>
<td>1</td>
<td>High</td>
</tr>
</tbody>
</table>

Calculate, with Incomplete Values

**Total Points:** 9

- **20%** risk of heart disease in 10 years
- **7%** (for others in your age group)
- **4%** (for others in your age group)
## Coronary Heart Disease Risk Calculator

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Your Answer</th>
<th>Points</th>
<th>Relative Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex:</strong></td>
<td>Male</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age:</strong></td>
<td>43 years</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Smoker:</strong></td>
<td>Yes</td>
<td>0</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Diabetes:</strong></td>
<td>Yes</td>
<td>0</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blood Pressure:</strong></td>
<td>120 / 70 mm Hg</td>
<td>0</td>
<td>Low</td>
</tr>
<tr>
<td><strong>Total Cholesterol</strong></td>
<td>150 mg/dl</td>
<td>-3</td>
<td>Very Low</td>
</tr>
<tr>
<td><strong>HDL Cholesterol:</strong></td>
<td>39 mg/dl</td>
<td>1</td>
<td>High</td>
</tr>
</tbody>
</table>

Calculate, with Incomplete Values

Calculate

Total Points: -1

- 2% risk of heart disease in 10 years
- 7% (for others in your age group)
- 4% (for others in your age group)
Treatment vs prevention...

In Search of Vulnerable Patients™

1,400,000 Annual Heart Attacks (ACS + SCD)

2-3 million
Invasive Dx with Rx

Intravascular Ultrasound, Thermography, OCT, NIR Spectroscopy...

40-50 million
Non-Invasive Imaging
Non-Invasive Molecular Imaging for Plaque and Myocardium Characterization
Non-Invasive Angiography

50-60 million
Office-Based Screening
CT Calcium and Cholesterol Imaging
Non-Invasive Home-Based Biomarkers (Glucose, Cholesterol, CRP, etc.)
Self-Screening Questionnaire

140,000,000 Americans over the age of 35

Association for Eradication of Heart Attack - AEHA © 2003
The Pyramid of Heart Failure and Potential Impact of a Range of Preventive and Treatment Strategies in Lowering Age-Specific Mortality

<table>
<thead>
<tr>
<th>Type of Subject</th>
<th>Percentage of Those in the Population &gt;40 Years of Age Affected</th>
<th>Type of Intervention</th>
<th>Population-Level Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Class IV HF + low ejection fraction</td>
<td>&lt;0.2</td>
<td>Transplantation; left ventricular assist device, implantable cardiac defibrillator</td>
<td>Tiny</td>
</tr>
<tr>
<td>(B) Any congestive HF</td>
<td>&lt;2</td>
<td>ACE inhibitors, β-blockers, spironolactone</td>
<td>Modest</td>
</tr>
<tr>
<td>(C) High-risk individuals (eg, those with hypertension or who have had a myocardial infarction)</td>
<td>&lt;20</td>
<td>Antihypertensive therapy; drugs to lower cholesterol, ACE inhibitors, smoking cessation</td>
<td>Moderate</td>
</tr>
<tr>
<td>(D) Obese or overweight individual (eg, body mass index &gt;25), plus those in above category</td>
<td>&gt;40</td>
<td>Weight loss, plus above measures</td>
<td>Large</td>
</tr>
</tbody>
</table>

NCD’s.  

Yusuf and Pitt, Circ 2002
Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study

Salim Yusuf, Steven Hawken, Stephanie Ounpuu, Tony Dans, Alvaro Avezum, Fernando Lanas, Matthew McQueen, Andrzej Budaj, Prem Pais, John Varigos, Liu Lisheng, on behalf of the INTERHEART Study Investigators

PAR (Population attributable risk; 99% CI)

- Men (<55 yrs)
- Women (<65 yrs)

- Lifestyle factors: 55.8% and 63.3%
- Diabetes: 8.7% and 19.3%
- Hypertension: 12.8% and 31.9%
- Abdominal obesity: 18.3% and 24.9%
- Psychosocial: 23.7% and 31.9%
- High apoB/apoA-1 ratio: 53.0% and 59.7%
- All risk factors: 93.1% and 96.5%

Source: Lancet
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\textsuperscript{1,2*}, Kris Rogers\textsuperscript{1,3}, Hidde van der Ploeg\textsuperscript{1,4}, Emmanuel Stamatakis\textsuperscript{2,5}, Adrian E. Bauman\textsuperscript{1,2}

\textsuperscript{1} Prevention Research Collaboration, Sydney School of Public Health, University of Sydney, Camperdown, New South Wales, Australia, \textsuperscript{2} Charles Perkins Centre, University of Sydney, Camperdown, New South Wales, Australia, \textsuperscript{3} George Institute for Global Health, Sydney, New South Wales, Australia, \textsuperscript{4} Department of Public and Occupational Health, EMGO Institute for Health and Care Research, VU University Medical Centre, Amsterdam, the Netherlands, \textsuperscript{5} Exercise and Sports Science, Faculty of Health Sciences, University of Sydney, Camperdown, New South Wales, Australia
Table 1. Scoring of risk factors in the lifestyle risk index based on the 45 and Up Study.

<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>All participants (n = 231,048)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</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>
Effect Size Estimates of Lifestyle and Dietary Changes on All-Cause Mortality in Coronary Artery Disease Patients
A Systematic Review

J.A. Iestra, RD; D. Kromhout, MPH, PhD; Y.T. van der Schouw, PhD; D.E. Grobbee, MD, PhD;
H.C. Boshuizen, PhD; W.A. van Staveren, PhD
TABLE 4. Approximate Mortality Reduction Potential of Lifestyle and Dietary Changes Estimated From Studies in CAD Patients and the General Population

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Mortality Risk Reduction Estimated From Studies in CAD Patients</th>
<th>Mortality Risk Reduction Estimated From Cohort Studies in General Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking cessation</td>
<td>35%</td>
<td>50%</td>
</tr>
<tr>
<td>Physical activity</td>
<td>25%</td>
<td>20%–30%</td>
</tr>
<tr>
<td>Moderate alcohol</td>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>Combined dietary changes</td>
<td>45%</td>
<td>15%–40%</td>
</tr>
</tbody>
</table>

TABLE 5. Approximate Mortality Reduction Potential of Preventive Drug Interventions After MI

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Mortality Risk Reduction, Mean (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-dose aspirin</td>
<td>18% (1%–30%)</td>
</tr>
<tr>
<td>Statins</td>
<td>21% (14%–28%)</td>
</tr>
<tr>
<td>β-Blockers</td>
<td>23% (15%–31%)</td>
</tr>
<tr>
<td>ACE inhibitors</td>
<td>26% (16%–35%)</td>
</tr>
</tbody>
</table>
Myth-”I can’t fight my genes...”
“Genetics loads the gun, but behavior pulls the trigger!”
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%.
YOU shape YOUR destiny with every choice YOU make...
Eat Smart!
S.A.D.

[Image of a sad smiley face]

Standard American Diet...
U.S. Food Consumption as a % of Calories

**Plant Food:**
Vegetables, Fruits, Legumes, Nuts & Seeds, Whole Grains
Fiber is only found in plant foods.

**Note:** Up to half of this category may be processed, for example almonds in candy bars, apples in apple pies or spinach in frozen spinach soufflé, and of course these would not be healthy choices. The focus should be on whole unprocessed vegetables, fruits, legumes, nuts and seeds and whole grains.

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

**Animal Food:**
Meat, Dairy, Eggs, Fish, Seafood
Cholesterol is only found in animal foods. Animal foods are the PRIMARY source of saturated fat.

**Guide to Healthy Eating:**
Much easier to understand than the USDA Food Pyramid, with no food industry influence.

Eat LESS from the animal and processed food groups and MORE whole foods from the plant food group.

In general, food from the animal and processed food group contribute to disease, while WHOLE foods from the plant group contribute to good health.

New York Coalition for Healthy School Food * www.healthy.schoolfood.org
Special thanks to Joel Fuhrman, MD, author of Disease Proof Your Child: Feeding Kids Right * Graphics by MichelleBando.com
© 2009, New York Coalition for Healthy School Food
**HEALTHY EATING PLATE**

- **Use healthy oils** (like olive and canola oil) for cooking, on salad, and at the table. Limit butter. Avoid trans fat.

- **The more veggies—and the greater the variety—the better.** Potatoes and french fries don’t count.

- **Eat plenty of fruits of all colors.**

- **Drink water, tea, or coffee** (with little or no sugar). Limit milk/dairy (1-2 servings/day) and juice (1 small glass/day). Avoid sugary drinks.

- **Eat whole grains** (like brown rice, whole-wheat bread, and whole-grain pasta). Limit refined grains (like white rice and white bread).

- **Choose fish, poultry, beans, and nuts; limit red meat; avoid bacon, cold cuts, and other processed meats.**

**Stay Active!**

© Harvard University

Harvard School of Public Health
The Nutrition Source
www.hsph.harvard.edu/nutritionsource

Harvard Medical School
Harvard Health Publications
www.health.harvard.edu
“Eating healthy costs too much!”

BMJ Open  Do healthier foods and diet patterns cost more than less healthy options?  
A systematic review and meta-analysis

Mayuree Rao,1,2  Ashkan Afshin,2  Gitanjali Singh,3  Dariush Mozaffarian2,3,4

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!
Direct comparison of a dietary portfolio of cholesterol-lowering foods with a statin in hypercholesterolemic participants¹–³

David JA Jenkins, Cyril WC Kendall, Augustine Marchie, Dorothea A Faulkner, Julia MW Wong, Russell de Souza, Azadeh Emam, Tina L Parker, Edward Vidgen, Elke A Trautwein, Karen G Lapsley, Robert G Josse, Lawrence A Leiter, William Singer, and Philip W Connelly
FIGURE 2. Mean (±SE) percentage change from baseline in LDL-cholesterol concentrations with the portfolio (▲; n = 34), control (●; n = 34), and statin ( ■; n = 34) diets. Data for the 3 time points were analyzed with a two-factor repeated-measures ANOVA, with interaction based on actual data and not on the change from baseline. The diet effect and the diet-by-time interaction were significant (P < 0.001). Values at the same time point with different lowercase letters are significantly different, P < 0.020 (paired comparison by least-squares-means procedures with Tukey’s adjustment).

FIGURE 3. Percentages of the 34 subjects who achieved LDL-cholesterol treatment goals for primary prevention (very high concentrations: >190 mg/dL; high concentrations: 160–189 mg/dL; borderline high concentrations: 130–159 mg/dL; near or above optimal concentrations: 100–129 mg/dL; optimal concentrations: <100 mg/dL).
Intestinal microbiota metabolism of L-carnitine, a nutrient in red meat, promotes atherosclerosis

Robert A. Koeth¹,², Zeneng Wang¹,², Bruce S. Levison¹,², Jennifer A. Buffa¹,², Elin Org³, Brendan T. Sheehy¹, Earl B. Britt¹,², Xiaoming Fu¹,², Yuping Wu⁴, Lin Li¹,², Jonathan D. Smith¹,²,⁵, Joseph A. DiDonato¹,², Jun Chen⁶, Hongzhe Li⁶, Gary D. Wu⁷, James D. Lewis⁶,⁸, Manya Warrier⁹, J. Mark Brown⁹, Ronald M. Krauss¹⁰, W. H. Wilson Tang¹,²,⁵, Frederic D. Bushman⁵, Aldons J. Lusis³, and Stanley L. Hazen¹,²,⁵


Gut Microbial Metabolite TMAO Enhances Platelet Hyperreactivity and Thrombosis Risk

Weifei Zhu,¹,⁷ Jill C. Gregory,¹,⁷ Elin Org,² Jennifer A. Buffa,¹ Nilaksh Gupta,¹ Zeneng Wang,¹ Lin Li,¹ Xiaoming Fu,¹ Yuping Wu,⁵ Margarete Mehrabian,² R. Balfour Sartor,³ Thomas M. McIntyre,¹ Roy L. Silverstein,⁴ W.H. Wilson Tang,¹,⁶ Joseph A. DiDonato,¹ J. Mark Brown,¹ Aldons J. Lusis,² and Stanley L. Hazen¹,⁶,*

Zhu et al., 2016, Cell 165, 1–14
March 24, 2016 ©2016 Elsevier Inc.
http://dx.doi.org/10.1016/j.cell.2016.02.011
A

Phosphatidylcholine → Gut microbiota → TMA → Hepatic FMOs → Altered bile acid and sterol metabolism

Altered bile acid and cholesterol transport → Resting platelets → Platelet hyper-reactivity → Vulnerable plaque

Mφ scavenger receptors and foam cell formation

Reverse cholesterol transport

Enhanced thrombosis

EC activation

Adverse cardiac event

Stroke

Heart Attack

Intracoronary thrombus

Adverse ventricular remodeling

Heart Failure

Vulnerable Patient
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
Dietary patterns and major adverse cardiovascular events in patients with stable coronary artery disease

Ralph A. H. Stewart¹*, Emil Hagström², Claudiu Ionescu-Brada³, Karen Chiswell⁶, Olav Hetland⁻, for the STABILITY Investigators

¹Green Lane Cardiovascular Service, Auckland City Hospital, Auckland, New Zealand; ²Department of Medical Sciences, Cardiology, Uppsala Clinical Research Center (UCR), Uppsala University, Uppsala, Sweden; ³Department of Cardiology, Université Paris Descartes, Paris, France; ⁴McMaster University, Hamilton, ON, Canada; ⁵Therapeutic Area, GlaxoSmithKline, Research Triangle Park, NC, USA; ⁶St creitas, New York, NY, USA

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.
Add Color
Sugar is addictive!
The ‘Bitter’ Truth...
The ‘Bitter’ Truth...
Original Investigation

Added Sugar Intake and Cardiovascular Diseases Mortality Among US Adults

Quanhe Yang, PhD; Zefeng Zhang, MD, PhD; Edward W. Gregg, PhD; W. Dana Flanders, MD, ScD; Robert Merritt, MA; Frank B. Hu, MD, PhD

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Q1 (7.4%)</th>
<th>Q2 (11.4%)</th>
<th>Q3 (14.8%)</th>
<th>Q4 (18.7%)</th>
<th>Q5 (25.2%)</th>
<th>P Valueb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range (0-100)/usual percentage, %</td>
<td>0 to &lt;9.6</td>
<td>9.6 to &lt;13.1</td>
<td>13.1 to &lt;16.7</td>
<td>16.7 to &lt;21.3</td>
<td>≥21.3</td>
<td></td>
</tr>
<tr>
<td>HR (95% CI)</td>
<td>1 [Ref]</td>
<td>1.09 (1.05 to 1.13)</td>
<td>1.23 (1.12 to 1.34)</td>
<td>1.49 (1.24 to 1.78)</td>
<td>2.43 (1.63 to 3.62)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Adjusted only for age, sex, race/ethnicity</td>
<td>1 [Ref]</td>
<td>1.07 (1.02 to 1.12)</td>
<td>1.18 (1.06 to 1.31)</td>
<td>1.38 (1.11 to 1.70)</td>
<td>2.03 (1.26 to 3.27)</td>
<td>.004</td>
</tr>
<tr>
<td>Fully adjustedc</td>
<td>1 [Ref]</td>
<td>265 (166 to 715)</td>
<td>109 (67 to 297)</td>
<td>53 (33 to 152)</td>
<td>22 (13 to 66)</td>
<td></td>
</tr>
<tr>
<td>Adjusted NNH at 15-y follow-upd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 2. Adjusted HR of CVD Mortality According to Usual Percentage of Calories From Added Sugara*

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.
Death by Soda!
Sugar- and Artificially Sweetened Beverages and the Risks of Incident Stroke and Dementia
A Prospective Cohort Study

Matthew P. Pase, PhD; Jayandra J. Himali, PhD; Alexa S. Beiser, PhD; Hugo J. Aparicio, MD; Claudia L. Satizabal, PhD; Ramachandran S. Vasan, MD; Sudha Seshadri, MD*; Paul F. Jacques, DSc*
Before you take another bite...

It’s time to get real about food.

IN THEATERS MAY 9
Move more
Instant 6 pack!
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/
Case Study - Biggest Loser!

Runner up on Season 10 of Biggest Loser.
Persistent Metabolic Adaptation 6 Years After “The Biggest Loser” Competition

Erin Fothergill, Juen Guo, Lilian Howard, Jennifer C. Kerns, Nicolas D. Knuth, Robert Brychta, Kong Y. Chen, Monica C. Skarulis, Mary Walter, Peter J. Walter, and Kevin D. Hall

Obesity (2016) 00, 00-00. doi:10.1002/oby.21538
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.
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, Tina Yuan David Chena, Mena-Chih Lee, Hui Tina Chan, Chwen Keng Tsao,

*Corresponding authors.

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

Time and intensity matter!
CLEVER Trial

Primary Endpoint: Peak Walking Time

Change from Baseline to Six (6) Months

<table>
<thead>
<tr>
<th>Pair-Wise Comparisons</th>
<th>Difference (minutes)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise vs. OMC</td>
<td>4.6 (95% CI, 2.7-6.5)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Stenting vs. OMC</td>
<td>2.5 (95% CI, 0.6-4.4)</td>
<td>0.02</td>
</tr>
<tr>
<td>Exercise vs. Stenting</td>
<td>2.1 (95% CI, 0.0-4.2)</td>
<td>0.04</td>
</tr>
</tbody>
</table>
“Can I exercise TOO much?”

<table>
<thead>
<tr>
<th>Degree of exercise</th>
<th>Copenhagen Heart</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>N=3,950</td>
<td>570</td>
</tr>
<tr>
<td>Moderate</td>
<td>-34%</td>
<td>252</td>
</tr>
<tr>
<td>Vigorous</td>
<td>+97%</td>
<td>36</td>
</tr>
</tbody>
</table>

Begel et al. JAMA Intern Med. Epub April 2015
### “Can I exercise TOO much?”

<table>
<thead>
<tr>
<th>Degree of exercise</th>
<th>Copenhagen Heart</th>
<th>Australian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>-78%</td>
<td>-34%</td>
</tr>
<tr>
<td>Moderate</td>
<td>-34%</td>
<td>-47%</td>
</tr>
<tr>
<td>Vigorous</td>
<td>+97%</td>
<td>-54%</td>
</tr>
</tbody>
</table>

N=3,950

Begel et al. JAMA Intern Med. Epub April 2015
**CENTRAL ILLUSTRATION:** Habitual Physical Activity and Mortality in Patients With Stable Coronary Artery Disease

All-cause mortality risk associated with each doubling of habitual physical activity volume, and by linear increase in physical activity.

![Graph showing mortality risk vs. amount of physical activity](image)

**Characteristics associated with greatest potential to benefit from increase in physical activity**

- Sedentary
- Limited by dyspnea
- ↑ ABC-CHD risk score
  - ↑ Age
  - Smoker
  - Diabetes
  - Peripheral artery disease
  - ↑ Troponin T
  - ↑ NT-proBNP
  - ↑ LDL cholesterol

Be well

I run because punching people is frowned upon
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.
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.
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 94114; †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
Relation between stress and cardiovascular events


A

HRR=4.2 (95% CI 1.6-11.1); p=0.0012

B

HRR=4.8 (95% CI 1.8-12.5); p=0.0004

Published Online
January 11, 2017
http://dx.doi.org/10.1016/S0140-6736(16)31714-7
Largest Connected Subcomponent of the Social Network in the Framingham Heart Study in the Year 2000.

The secret to living well and longer is:

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

Tibetan Proverb
END-back up slides
The ‘impact’ of a typical stent

- The human body has about 40,000 km of artery.
- The average stent is 30 mm in length.
- The coverage of a single stent is ~0.00000008% of the arterial system.
Case Study—small changes…

- Marlon Gibson weighed 405 pounds at his heaviest.
- He lost 245 pounds by gradually reducing unhealthy food and exercising.
“Best-Buy” Interventions for Tackling Risk Factors for Noncommunicable Diseases ("a slow moving disaster").

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Interventions and Actions</th>
<th>Avoidable Burden</th>
<th>Cost-Effectiveness</th>
<th>Implementation Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco use (≥50 million DALYs; 3.7% of global burden)</td>
<td>Protect people from tobacco smoke, warn about the dangers of tobacco, enforce bans on tobacco advertising, raise taxes on tobacco†</td>
<td>Combined effect: 25–30 million DALYs averted (≥50% of tobacco burden)</td>
<td>Very cost-effective</td>
<td>Very low</td>
</tr>
<tr>
<td></td>
<td>Offer counseling to smokers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harmful use of alcohol (≥50 million DALYs; 4.5% of global burden)</td>
<td>Restrict access to alcohol sold at retail, enforce bans on alcohol advertising, raise taxes on alcohol†</td>
<td>Combined effect: 5–10 million DALYs averted (10–20% of alcohol burden)</td>
<td>Very cost-effective</td>
<td>Very low</td>
</tr>
<tr>
<td></td>
<td>Enforce drunk-driving laws (breath-testing), and offer brief advice on the hazards of drinking alcohol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unhealthy diet (15–30 million DALYs; 1–2% of global burden)</td>
<td>Reduce salt intake, replace trans fat with polyunsaturated fat, promote public awareness about diet†</td>
<td>Effect of salt reduction: 5 million DALYs averted; effects of type of fat consumed and public awareness not yet assessed globally</td>
<td>Very cost-effective</td>
<td>Very low</td>
</tr>
<tr>
<td></td>
<td>Restrict marketing of food and beverages to children, replace saturated fat with unsaturated fat, manage food taxes and subsidies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Offer counseling in primary care, provide health education at worksites</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical inactivity (≥30 million DALYs; 2.1% of global burden)</td>
<td>Promote healthy eating in schools</td>
<td>Not yet assessed globally</td>
<td>May be very cost-effective (more studies needed)</td>
<td>Very low</td>
</tr>
<tr>
<td></td>
<td>Promote physical activity (mass media)†</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Promote physical activity, (communities), support active transport strategies</td>
<td>Not yet assessed globally</td>
<td>Not assessed globally</td>
<td>Not assessed globally</td>
</tr>
<tr>
<td></td>
<td>Offer counseling in primary care, promote physical activity in worksites</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infection</td>
<td>Prevent liver cancer through vaccination against hepatitis B†</td>
<td>Effect not yet assessed</td>
<td>Very cost-effective</td>
<td>Very low</td>
</tr>
</tbody>
</table>

An intervention was defined as very cost-effective if its cost per disability-adjusted life-year (DALY, or lost year of healthy life) prevented was less than the gross domestic product (GDP) per person, quite cost-effective if its cost was less than three times the GDP per person, and less cost-effective if its cost was greater than that. Implementation costs were considered very low if they were below 50 cents per capita, quite low if they were between 50 cents and $1 per capita, and higher if they were more than $1 per capita. FCTC denotes Framework Convention on Tobacco Control. Adapted from the World Health Organization.†

† These interventions are considered part of the core set of best buys.

Why care?


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

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/nvsr/nvsr64/nvsr64_02.pdf

© 2016 BMJ Publishing group Ltd.

Consider statins:
- Cost of med.
- Cost of lab monitoring.
- Time costs.
- Side effects.
  - Rhabo ~1%
  - Liver tox ~1%
  - Muscle aches ~10%
  - Muscle weakness?
  - Memory issues?

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

The River...
Mission CRITICAL!

Childhood obesity.
The 80% rule!

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

~Ancient Ayurvedic Proverb
Runners live about 3 years MORE than non-runners.

Every 1 hour of running adds 7 hours to your life.

Every hour of TV takes 21 minutes of your life!
The secret to living well and longer is:

Eat Half.
Walk Double.
Laugh Triple.
And love without measure.

Tibetan Proverb

SUMMARY

- Eat smart(er).
- K.I.S.S.-Add color-more fruits and veggies, not wrappers!
- Be well. De-stress.
- Move MORE.
- Good luck!
SMART
Specific
Measurable
Achievable
Realistic
Timely
Priorities—set them. 1st things 1st!

Time Management Matrix

<table>
<thead>
<tr>
<th>Urgent</th>
<th>Not Urgent</th>
</tr>
</thead>
<tbody>
<tr>
<td>(time pressure)</td>
<td>(no time pressure)</td>
</tr>
</tbody>
</table>

1. Important (significant impact on your plan)
   - These activities usually get done
   - Make them a priority.

2. Not Important (no significant impact on your plan)
   - These activities are high impact. Minimize these.

3. These activities are deceptive—don't confuse urgent & important.
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>
<thead>
<tr>
<th>Variable</th>
<th>Entire sample</th>
<th>Men</th>
<th>Women</th>
<th>20-39 y</th>
<th>40-59 y</th>
<th>≥60 y</th>
<th>Mexican American</th>
<th>Non-Hispanic white</th>
<th>Non-Hispanic black</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonsmoker</td>
<td>71.5</td>
<td>63.2</td>
<td>79.8</td>
<td>68.8</td>
<td>70.4</td>
<td>80.2</td>
<td>79.5</td>
<td>70.4</td>
<td>69.1</td>
<td>76.6</td>
</tr>
<tr>
<td>Healthy diet</td>
<td>37.9</td>
<td>32.0</td>
<td>43.8</td>
<td>30.4</td>
<td>38.3</td>
<td>54.1</td>
<td>39.4</td>
<td>38.6</td>
<td>24.2</td>
<td>48.0</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>
<td>7.4</td>
<td>2.4</td>
<td>5.0</td>
<td>10.0</td>
<td>10.7</td>
<td>9.8</td>
</tr>
<tr>
<td>Sufficient physical activity</td>
<td>46.5</td>
<td>58.9</td>
<td>34.1</td>
<td>59.7</td>
<td>45.9</td>
<td>18.0</td>
<td>54.5</td>
<td>46.4</td>
<td>43.5</td>
<td>42.9</td>
</tr>
<tr>
<td>Positive health behaviors (No.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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>
<td>12.6</td>
<td>11.0</td>
<td>6.3</td>
<td>11.6</td>
<td>12.7</td>
<td>8.9</td>
</tr>
<tr>
<td>1</td>
<td>33.5</td>
<td>32.7</td>
<td>34.3</td>
<td>32.3</td>
<td>33.8</td>
<td>35.7</td>
<td>29.9</td>
<td>33.3</td>
<td>38.1</td>
<td>32.7</td>
</tr>
<tr>
<td>2</td>
<td>36.6</td>
<td>36.7</td>
<td>36.9</td>
<td>36.6</td>
<td>35.0</td>
<td>41.5</td>
<td>43.9</td>
<td>36.0</td>
<td>38.8</td>
<td>33.9</td>
</tr>
<tr>
<td>3</td>
<td>16.6</td>
<td>16.5</td>
<td>15.4</td>
<td>17.7</td>
<td>16.3</td>
<td>11.2</td>
<td>18.8</td>
<td>16.0</td>
<td>9.5</td>
<td>21.3</td>
</tr>
<tr>
<td>4</td>
<td>2.7</td>
<td>2.2</td>
<td>3.1</td>
<td>3.9</td>
<td>2.4</td>
<td>0.6</td>
<td>1.1</td>
<td>3.0</td>
<td>0.8</td>
<td>3.3</td>
</tr>
<tr>
<td>Mean</td>
<td>1.6</td>
<td>1.6</td>
<td>1.6</td>
<td>1.7</td>
<td>1.6</td>
<td>1.5</td>
<td>1.7</td>
<td>1.6</td>
<td>1.5</td>
<td>1.8</td>
</tr>
</tbody>
</table>

*NHANES = National Health and Nutrition Examination Survey.

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).
Community Prevalence of Ideal Cardiovascular Health, by the American Heart Association Definition, and Relationship With Cardiovascular Disease Incidence

Aaron R. Folsom, MD,* Hiroshi Yatsuya, MD,*† Jennifer A. Nettleton, PhD,‡ Pamela L. Lutsey, PhD,* Mary Cushman, MD,§ Wayne D. Rosamond, PhD,|| for the ARIC Study Investigators

Minneapolis, Minnesota; Nagoya, Japan; Houston, Texas; Burlington, Vermont; and Chapel Hill, North Carolina
<table>
<thead>
<tr>
<th>Health Metric</th>
<th>Definition</th>
<th>Total Sample, % (n = 12,744)</th>
<th>African Americans, % (n = 3,107)</th>
<th>Whites, % (n = 9,637)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>Ideal, Never or quit &gt;12 months</td>
<td>72.2</td>
<td>68.5</td>
<td>73.4</td>
</tr>
<tr>
<td></td>
<td>Intermediate, Former ≤12 months</td>
<td>2.7</td>
<td>2.4</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>Poor, Current</td>
<td>25.1</td>
<td>29.1</td>
<td>23.9</td>
</tr>
<tr>
<td>Body mass index</td>
<td>Ideal, &lt;25 kg/m²</td>
<td>34.5</td>
<td>22.7</td>
<td>38.3</td>
</tr>
<tr>
<td></td>
<td>Intermediate, 25–29.99 kg/m²</td>
<td>39.7</td>
<td>38.2</td>
<td>40.2</td>
</tr>
<tr>
<td></td>
<td>Poor, ≥30 kg/m²</td>
<td>25.7</td>
<td>39.1</td>
<td>21.5</td>
</tr>
<tr>
<td>Physical activity</td>
<td>Ideal, ≥150 min/week moderate or ≥75 min/week vigorous or ≥150 min/week moderate + vigorous</td>
<td>37.7</td>
<td>22.0</td>
<td>42.8</td>
</tr>
<tr>
<td></td>
<td>Intermediate, 1–149 min/week moderate or 1–74 min/week vigorous or 1–149 min/week moderate + vigorous</td>
<td>25.8</td>
<td>21.5</td>
<td>27.2</td>
</tr>
<tr>
<td></td>
<td>Poor, None</td>
<td>36.5</td>
<td>56.6</td>
<td>30.1</td>
</tr>
<tr>
<td>Healthy diet score</td>
<td>Ideal, 4–5 components</td>
<td>5.3</td>
<td>4.4</td>
<td>5.6</td>
</tr>
<tr>
<td></td>
<td>Intermediate, 2–3 components</td>
<td>63.5</td>
<td>59.2</td>
<td>64.8</td>
</tr>
<tr>
<td></td>
<td>Poor, 0–1 components</td>
<td>31.3</td>
<td>36.5</td>
<td>29.6</td>
</tr>
<tr>
<td>Total cholesterol</td>
<td>Ideal, &lt;200 mg/dl, without medication</td>
<td>37.5</td>
<td>40.5</td>
<td>36.6</td>
</tr>
<tr>
<td></td>
<td>Intermediate, 200–239 mg/dl or treated to &lt;200 mg/dl</td>
<td>37.2</td>
<td>33.0</td>
<td>38.6</td>
</tr>
<tr>
<td></td>
<td>Poor, ≥240 mg/dl</td>
<td>25.2</td>
<td>26.6</td>
<td>24.8</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>Ideal, &lt;120/&lt;80 mm Hg, without medication</td>
<td>43.8</td>
<td>23.8</td>
<td>50.2</td>
</tr>
<tr>
<td></td>
<td>Intermediate, SBP 120–139 or DBP 80–89 mm Hg or treated to &lt;120/&lt;80 mm Hg</td>
<td>30.7</td>
<td>32.2</td>
<td>30.2</td>
</tr>
<tr>
<td></td>
<td>Poor, SBP ≥140 or DBP ≥90 mm Hg</td>
<td>25.5</td>
<td>44.0</td>
<td>19.6</td>
</tr>
<tr>
<td>Fasting serum glucose</td>
<td>Ideal, &lt;100 mg/dl, without medication</td>
<td>53.2</td>
<td>48.5</td>
<td>54.8</td>
</tr>
<tr>
<td></td>
<td>Intermediate, 100–125 mg/dl or treated to &lt;100 mg/dl</td>
<td>38.7</td>
<td>38.3</td>
<td>38.8</td>
</tr>
<tr>
<td></td>
<td>Poor, ≥126 mg/dl</td>
<td>8.1</td>
<td>13.2</td>
<td>6.4</td>
</tr>
</tbody>
</table>

*Per Lloyd-Jones et al. (9).

DBP = diastolic blood pressure; SBP = systolic blood pressure.
We are sitting on a huge BOMB!

Table 2
Distribution (Prevalence, %) of Ideal Cardiovascular Health Metrics in Various Subgroups of the ARIC Study Participants Free of Cardiovascular Disease, 1987 to 1989

<table>
<thead>
<tr>
<th>No. of Ideal Health Metrics Present</th>
<th>Total Sample, % (n = 12,744)</th>
<th>45–54, % (n = 6,899)</th>
<th>55–64, % (n = 5,845)</th>
<th>Men African American, % (n = 1,191)</th>
<th>Men White, % (n = 4,398)</th>
<th>Women African American, % (n = 1,916)</th>
<th>Women White, % (n = 5,229)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>6</td>
<td>2.8</td>
<td>3.6</td>
<td>1.9</td>
<td>1.1</td>
<td>2.3</td>
<td>0.5</td>
<td>4.5</td>
</tr>
<tr>
<td>5</td>
<td>9.3</td>
<td>11.5</td>
<td>6.8</td>
<td>2.5</td>
<td>8.1</td>
<td>3.6</td>
<td>14.0</td>
</tr>
<tr>
<td>4</td>
<td>18.6</td>
<td>20.7</td>
<td>16.2</td>
<td>12.4</td>
<td>17.8</td>
<td>11.3</td>
<td>23.4</td>
</tr>
<tr>
<td>3</td>
<td>26.7</td>
<td>26.0</td>
<td>27.6</td>
<td>25.9</td>
<td>28.9</td>
<td>24.7</td>
<td>25.8</td>
</tr>
<tr>
<td>2</td>
<td>25.3</td>
<td>22.8</td>
<td>28.4</td>
<td>33.2</td>
<td>26.7</td>
<td>31.9</td>
<td>20.0</td>
</tr>
<tr>
<td>1</td>
<td>14.5</td>
<td>13.1</td>
<td>16.2</td>
<td>21.1</td>
<td>13.6</td>
<td>23.4</td>
<td>10.6</td>
</tr>
<tr>
<td>0</td>
<td>2.5</td>
<td>2.3</td>
<td>2.8</td>
<td>3.8</td>
<td>2.4</td>
<td>4.5</td>
<td>1.6</td>
</tr>
<tr>
<td>All</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
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

News & Media
Photo Slideshow
News

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

Copyright © 2012, The Culinary Institute of America. All Rights Reserved.

Shoe Shine Design & Development
“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”?

Medical/Nutritional Experts and Epigeneticists

Culinary Experts (Chefs)

Exercise and Movement Experts

IT Experts and Entrepreneurs

Mindfulness Trainers

Behavioral Change Experts

Agricultural Experts

Sustainability Experts

Better Food Health Economy Future

© Eisenberg, HKHL 2016
It's not that diabetes, heart disease and obesity runs in your family. It's that no one runs in your family.
TOFI....
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>Men Low</th>
<th>Men Moderate</th>
<th>Men High</th>
<th>Women Low</th>
<th>Women Moderate</th>
<th>Women High</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Blood Pressure</td>
<td>15.3%</td>
<td>20.1%</td>
<td>28.6%</td>
<td>13.6%</td>
<td>17.1%</td>
<td>22.4%</td>
<td>17.4%</td>
</tr>
<tr>
<td>High Cholesterol</td>
<td>4.2%</td>
<td>9.1%</td>
<td>16.6%</td>
<td>2.3%</td>
<td>3.4%</td>
<td>4.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Metabolic Syndrome</td>
<td>1.9%</td>
<td>2.2%</td>
<td>4.0%</td>
<td></td>
<td></td>
<td></td>
<td>2.5%</td>
</tr>
<tr>
<td>Heart Disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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.
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%

Processed foods: 9.4%

Ultra-processed foods: 57.9%

- 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%
“Your father is the head of the household, but I am the NECK…”

Women run the house.

Women are typically responsible for 3.9 people per family!

Women have the opportunity / responsibility to improve the health of their families.

Bad health is a STD!
510-350= Jacqueline Adan

The ‘impact’ of a typical stent

- The human body has about 40,000 km of artery.
- The average stent is 30 mm in length.
- The coverage of a single stent is ~0.00000008% of the arterial system.
- Is this the level of impact we want to have?
Don’t press send...

Zach Ahlstedt from 0.0 to 140.6!

I RAN IT OFF!

ZACHARY AHLSTEDT
BEFORE 350 LBS (ABOVE)
The miracle isn't that I finished. The miracle is that I had the courage to start.

John Bingham
From zero to hero in 9 months...

http://www.pbs.org/wgbh/nova/body/marathon-challenge.html
Myth - weights make you BIG and bulky and unfeminine!

- How long do you have to run to really burn fat?
- How long does your metabolism stay up post vigorous exercise?
- How long post weight lifting?
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!

How many times have we lost the same 20 lbs?

It is very hard to move off of / adjust your set point.

What is the biggest, most glaring message for us?

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.

Henry Le Chatelier
Math problems are weird;
"I had 10 chocolate bars and ate 9.
What do I have now?"
Math problems are weird; "I had 10 chocolate bars and ate 9. What do I have now?" "Oh, I don't know, diabetes maybe?"
It's not that diabetes, heart disease and obesity runs in your family. It's that no one runs in your family.
Where should you live if you want to be healthy?
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
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 winner is…
Evolution, not revolution…
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
Weight creep

Foods
- Potato chips
- Potatoes or fries
- Processed meats
- Unprocessed red meats
- Butter
- Sweets and desserts
- Refined grains
- Cheese
- Vegetables
- Nuts
- Whole grains
- Fruits
- Yogurt

Beverages
- Sugar-sweetened beverages
- 100% Fruit juice
- Low-fat or skim milk
- Whole milk
- Diet (zero-calorie) soda

Weight Change Associated with Each Increased Daily Serving, per 4-Year Period (lb)
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.

Myth-”I can’t fight my genes...”
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. Sevits\textsuperscript{1}, Edward L. Melanson\textsuperscript{2,3}, Tracy Swibas\textsuperscript{3}, Scott E. Binns\textsuperscript{4}, Anna L. Klochak\textsuperscript{4}, Mark C. Lonac\textsuperscript{4}, Garrett L. Peltonen\textsuperscript{4}, Rebecca L. Scalzo\textsuperscript{4}, Melani M. Schweder\textsuperscript{4}, Amy M. Smith\textsuperscript{1}, Lacey M. Wood\textsuperscript{4}, Christopher L. Melby\textsuperscript{1} & Christopher Bell\textsuperscript{4}

\textsuperscript{1} Department of Food Science and Human Nutrition, Colorado State University, Fort Collins, Colorado
\textsuperscript{2} Division of Endocrinology Metabolism and Diabetes, University of Colorado Anschutz Medical Campus, Denver, Colorado
\textsuperscript{3} Division of Geriatrics, University of Colorado Anschutz Medical Campus, Denver, Colorado
\textsuperscript{4} Department of Health and Exercise Science, Colorado State University, Fort Collins, Colorado

Relation of Muscle Mass and Fat Mass to Cardiovascular Disease Mortality

Preethi Srikanthan, MD, MS\(^{a,g}\), Tamara B. Horwich, MD, MS\(^{b}\), and Chi Hong Tseng, PhD\(^{c}\)

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)
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!
 WHETHER YOU THINK YOU CAN OR WHETHER YOU THINK YOU CAN'T, YOU'RE RIGHT
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?
Priorities-set them. 1st things 1st!

Time Management Matrix

- **Urgent** (time pressure)
  - Important (significant impact on your plan)
    - These activities usually get done
  - Not Important (no significant impact on your plan)
    - These activities are deceptive - don't confuse urgent & important. Minimize these.
- **Not Urgent** (no time pressure)
  - Important (significant impact on your plan)
    - 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
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.
Sleep-the new cross training!

EAT  SLEEP  RUN

REPEAT

TRAIN LIKE AN ATHLETE,
EAT LIKE A NUTRITIONIST,
SLEEP LIKE A BABY,
WIN... LIKE A CHAMPION
Relaxation Response Induces Temporal Transcriptome Changes in Energy Metabolism, Insulin Secretion and Inflammatory Pathways

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

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
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
- **Cheeseburger**
  - Calorie difference: 257 calories
- **Soda**
  - Calorie difference: 165 calories
- **French Fries**
  - Calorie difference: 400 calories

**Bagel**
- 3-inch diameter: 140 calories
- 6-inch diameter: 350 calories

**Cheeseburger**
- 333 calories
- 590 calories

**Soda**
- 6.5 ounces: 85 calories
- 20 ounces: 250 calories

**French Fries**
- 2.4 ounces: 210 calories
- 6.9 ounces: 610 calories
Now is that gratitude???

The Role of Gratitude in Spiritual Well-Being in Asymptomatic Heart Failure Patients

Paul J. Mills, Laura Redwine, Kathleen Wilson, Meredith A. Pung, Kelly Chinh, Barry H. Greenberg, Ottar Lunde, Alan Maisel, and Ajit Raisinghani
University of California, San Diego

Alex Wood
University of Stirling

Deepak Chopra
University of California, San Diego, and
Chopra Center for Wellbeing, Carlsbad, California

Gratitude improved, sleep, mood, self-sufficiency, and inflammatory biomarkers.
THE STRUGGLE ENDS WHEN GRATITUDE BEGINS.

NEALE DONALD WALSH

VALUES.COM®
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 before and after training](image_url)

Weight Training, Aerobic Physical Activities, and Long-Term Waist Circumference Change in Men

Rania A. Mekary¹,², Anders Grøntved¹,³, Jean-Pierre Despres⁴, Leandro Pereira De Moura⁵,⁶, Morteza Asgarzadeh¹, Walter C. Willett¹,⁷,⁸, Eric B. Rimm¹,⁷,⁸, Edward Giovannucci¹,⁷,⁸, and Frank B. Hu¹,⁷,⁸

[Graph showing relative waist circumference change (1996-2008) vs. adherence to recommendations to aerobic exercise.]

*Adherence to Recommendations to Aerobic Exercise a*

*Weight training categories:*
- None
- >0-25 min/d
- >25 min/d

*Obesity (2014) 00, 00-00. doi:10.1002/oby.20949*
A 45-Minute Vigorous Exercise Bout Increases Metabolic Rate for 14 Hours

FIGURE 1—Average 24-h energy expenditure on rest and exercise days. Forty-five minutes of cycling resulted in 519 ± 60.9 kcal of energy expended above rest day (P < 0.001), whereas 190 ± 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 ± 39.3 kcal (P = 0.030).
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!
YOU MUST OWN EVERYTHING IN YOUR WORLD. THERE IS NO ONE ELSE TO BLAME.

JOCKO WILLINK, NAVY SEAL
“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.
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!
- 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.
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.

**Erinn Egbert**

- Body burns 200 more cal. a day
- Lost weight:
  - 50 lbs.
  - 100 lbs.
  - 150 lbs.

**Rudy Pauls**

- Lost weight:
  - 200 lbs.
  - 400 lbs.
  - 600 lbs.

**Danny Cahill**

- Now burns 800 fewer calories a day than expected.
- Six years later:
  - Body burns 800 fewer cal. a day
  - Lost weight:
  - 250 lbs.

---

*Sources: Obesity; individual contestants*

By The New York Times
The BIGGEST myth / excuse -

- “I can’t do that! That’s too hard!”
- You’re right. You can’t. Positive attitude doesn’t always work, but a negative attitude is a self-fulfilling prophecy.
- “Do, or do not. There is no try!”
Plan your work, work your plan!

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.
Diet soda is ok? Right…

ARTICLE

doi:10.1038/nature13793

Artificial sweeteners induce glucose intolerance by altering the gut microbiota

Jotham Suez\textsuperscript{1}, Tal Korem\textsuperscript{2\textcopyright}, David Zeevi\textsuperscript{2\textcopyright}, Gili Zilberman-Schapira\textsuperscript{1\textcopyright}, Christoph A. Thaiss\textsuperscript{1}, Ori Maza\textsuperscript{1}, David Israeli\textsuperscript{3}, Niv Zmora\textsuperscript{4,5,6}, Shlomit Gilad\textsuperscript{7}, Adina Weinberger\textsuperscript{2}, Yael Kuperman\textsuperscript{8}, Alon Harmelin\textsuperscript{8}, Ilana Kolodkin-Gal\textsuperscript{9}, Hagit Shapiro\textsuperscript{1}, Zamir Halpern\textsuperscript{5,6}, Eran Segal\textsuperscript{2} & Eran Elinav\textsuperscript{1}
FIGURE 3-6. Sources of Added Sugars in the Diets of the U.S. Population Ages 2 Years and Older, NHANES 2005–2006ª

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.

Sitting is the NEW smoking...
Use it or LOSE it!

or

JUST DO IT.

EVEN IF YOU SUCK.
Every 60 min of TV cuts 21.8 min off of your life...
Television-Related Injuries to Children in the United States, 1990–2011

What’s Known On This Subject: Previous research has demonstrated that pediatric injuries associated with television (TV) tip-overs are increasing, children aged ≤4 years are at highest risk for injury, and the head and neck are most commonly injured.

What This Study Adds: We analyzed a nationally representative sample comprising 22 years of data. On average, 17,313 children receive emergency treatment of a TV-related injury annually in the United States. The rate of injury attributable to falling TVs increased by 95% over 22 years.

What’s so bad about TV...
Quick tips

- Keep a food journal
- Meatless Mondays
- No seconds
- Make nuts your snack
- Eat 1 more fruit a day
- Take the stairs
- Park far, far away
- Drop 1 soda a day
- Better yet drink only water
- Drink 1 glass of water each meal
- Cut snack size in half
- Share the entrée when eating out
- Better yet cut back on eating out
- Reduce frequency of desserts by 1x/wk
- Sleep 1 hour earlier
- Eat breakfast
- Exercise 1x more per wk
Exercise Progression

- Just start moving.
- 1st goal 15 min a day.
- Slowly increase to goal of 30-45 min a day.
- Intensity matters!
- High intensity interval training.
- Weights-8 movements, 1 set each, 8-12 reps
- Success through failure…
- Change program at least every 3 months or sooner.
Eating Progression

- Don’t diet-change your lifestyle-
sustainability is key.
- Cut the junk. Drive by the drive through.
- Trade soda for water.
- Portion control. Can eat what you like,
just less of it.
- Watch out for bread and cheese.
- Consider going veggie or vegan.
- Get good sleep.
- ‘Cheat day/meal’ to keep your sanity.
Remember you can use up your
willpower reserve.
- Small changes make a big difference.
Barrier: I don’t know how to cook healthy....

- This is a knowledge issue. Solution?
- QR codes that take you to videos showing you how to cook.
- Websites, YouTube.
- Preplan-find recipes you like and rotate them for dinner.
- [www.lifeandhealth.org](http://www.lifeandhealth.org)
Myopia has emerged as a major health issue in east Asia, because of its increasingly high prevalence in the past few decades (now 80–90% in school-leavers), and because of the sight-threatening pathologies associated with high myopia, which now affects 10–20% of those completing secondary schooling in this part of the world. Similar, but less marked, changes are occurring in other parts of the world. The higher prevalence of myopia in east Asian cities seems to be associated with increasing educational pressures, combined with life-style changes, which have reduced the time children spend outside. There are no reported major genes for school myopia, although there are several genes associated with high myopia. Any genetic contribution to ethnic differences may be small. However, to what extent many genes of small effect and gene-environment interactions contribute to variations in school myopia within populations remains to be established. There are promising optical and pharmacological interventions for preventing the development of myopia or slowing its progression, which require further validation, and promising vision-sparing treatments for pathological myopia.

- Your mother was right!
- Not just from watching TV to close or playing on the computer all the time, but
- Eyes need sunlight to stimulate growth.
- Kids need to play outside!
“The reason most people never reach their goals is that they don’t define them, or ever seriously consider them as believable or achievable. Winners can tell you where they are going, what they plan to do along the way, and who will be sharing the adventure with them.”

-Denis Waitley
Get UP Montgomery County!

5-1-2 Almost None!

We Support

GET UP.
Montgomery County
www.getupmc.org

FIVE-TWO-ONE
ALMOST NONE
5-2-1-almost none...

- 5 servings of fruits and veggies a day.
- < 2 hours TV time.
- At least 1 hr of play.
- Almost NONE sugary drinks (soda or juice).

Montgomery County Dept of Health
Childhood Obesity:  
Kids Will Grow Out of It … or Will They?

Obese child $\Rightarrow$ Obese adult
- Obese 4 year old
  - 20% risk of being obese adult
- Obese adolescent
  - 80% risk of being obese adult

Child of Obese parents $\Rightarrow$ Obese adult
- Obese or Non-Obese child
  - 1 obese parent:
    - 3 X odds of being an obese adult
- 2 obese parents:
  - 10 X odds of being an obese adult

(NEJM, Whitaker et al, 1997)
What are the risks to kids?

- **Obesity can lead to**
  - Lower self-esteem
  - Early puberty
  - More risk taking behaviors (smoking, drinking, tanning, and drugs)

- **Which is set up for**
  - Premarital sex
  - Teenage pregnancy
  - Dropping out of school
Red light, green light...
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
Have you assessed yourself?

- Do you know your numbers?
- Have you done a food journal?
- Have you recorded how much you really exercise?
- How much do you sleep?
Data from the National Health and Nutrition Examination Survey, 2005–2012

- Approximately 81% of overweight boys and 71% of overweight girls believe they are about the right weight.
- Nearly 48% of obese boys and 36% of obese girls consider themselves to be about the right weight.

- About 30% of children and adolescents aged 8–15 years in the United States misperceive their weight status. Weight status misperception is more common among boys (32.3%) than girls (28.0%).
# Norway Activity Study

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference in reported vs measured activity times</td>
<td>-56 min</td>
<td>-52 min</td>
</tr>
<tr>
<td>Self-reported VIGOROUS activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measured VIGOROUS activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reported sedentary time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measured sedentary time</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1,751 pt, 47% obese/overweight, free accelerometers.

http://getsane.org/2014/01/07/dont-lie-to-yourself-it-only-hurts-you/
# Norway Activity Study

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference in reported vs</td>
<td>-56 min</td>
<td>-52 min</td>
</tr>
<tr>
<td>measured activity times</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-reported VIGOROUS</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measured VIGOROUS activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reported sedentary time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measured sedentary time</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1751 pt, 47% obese/overweight, free accelerometers.  
http://getsane.org/2014/01/07/dont-lie-to-yourself-it-only-hurts-you/
## Norway Activity Study

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference in reported vs measured activity times</td>
<td>-56 min</td>
<td>-52 min</td>
</tr>
<tr>
<td>Self-reported VIGOROUS activity</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>Measured VIGOROUS activity</td>
<td>2.9</td>
<td>2.4</td>
</tr>
<tr>
<td>Reported sedentary time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measured sedentary time</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1751 pt, 47% obese/overweight, free accelerometers.

http://getsane.org/2014/01/07/dont-lie-to-yourself-it-only-hurts-you/
## Norway Activity Study

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference in reported vs made activity times</td>
<td>-56 min</td>
<td>-52 min</td>
</tr>
<tr>
<td>Self-reported VIGOROUS activity</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>Measured VIGOROUS activity</td>
<td>2.9</td>
<td>2.4</td>
</tr>
<tr>
<td>Reported sedentary time</td>
<td>439</td>
<td>401</td>
</tr>
<tr>
<td>Measured sedentary time</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1751 pt, 47% obese/overweight, free accelerometers. [Link](http://getsane.org/2014/01/07/dont-lie-to-yourself-it-only-hurts-you/)
### Norway Activity Study

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference in reported vs measured activity times</td>
<td>-56 min</td>
<td>-52 min</td>
</tr>
<tr>
<td>Self-reported VIGOROUS activity</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>Measured VIGOROUS activity</td>
<td>2.9</td>
<td>2.4</td>
</tr>
<tr>
<td>Reported sedentary time</td>
<td>439</td>
<td>401</td>
</tr>
<tr>
<td>Measured sedentary time</td>
<td>565</td>
<td>535</td>
</tr>
</tbody>
</table>

1751 pt, 47% obese/overweight, free accelerometers.

[http://getsane.org/2014/01/07/dont-lie-to-yourself-it-only-hurts-you/](http://getsane.org/2014/01/07/dont-lie-to-yourself-it-only-hurts-you/)
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!

A statin a day keeps the doctor away: comparative proverb assessment modelling study

Adam D M Briggs academic clinical fellow, Anja Mizdrak researcher, Peter Scarborough senior researcher

BHF Health Promotion Research Group, Nuffield Department of Population Health, University of Oxford, Headington, Oxford OX3 7LF, UK

- Assumes 17.6 million people eligible for statins.
- Assumes 22 million people are over 50 (apple group).
- Assumes 70% compliance for meds and apples.
## Comparing Apples to Oranges?

<table>
<thead>
<tr>
<th></th>
<th>Apple</th>
<th>Statin</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual death reduction</strong></td>
<td>8500 deaths</td>
<td>9400 deaths</td>
</tr>
<tr>
<td><strong>95% CI</strong></td>
<td>6200-10800</td>
<td>7000-12500</td>
</tr>
<tr>
<td><strong>Annual costs</strong></td>
<td>$426 million</td>
<td>$295 million/yr</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>?</td>
<td>1200 more cases of myopathy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>200 more cases of rhabdo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12300 more cases of DM</td>
</tr>
</tbody>
</table>