Cardiovascular Disease (CVD) Statistics

- 2200 Americans die of CVD each day
- Coronary heart disease caused 1 in 6 deaths
- Each year ≈795,000 experience a new or recurrent stroke
- 42.7 million women are currently living with some form of CVD

Adipose Tissue Distribution

Before

Subcutaneous Fat

Visceral Fat

After

Subcutaneous Fat

ADIPOKINES

Resistin

Angiotensin II

TNF-α

IL-6

Leptin

Resistin

CRP

Adiponectin

PAI-1

FFA
Atherosclerosis Is an Inflammatory Disease


More than 72 million U.S. adults, are now obese.

Diabetes and pre-diabetes will account for an estimated 10 percent of total health care spending by the end of the decade at \textbf{an annual cost of almost $500 billion.}

Clinical interventions are costly and not in keeping with successful public health strategies.

CDC: Diabetes and Obesity Is A "Major Public Health Threat"
Diseases Associated with Obesity

- Type 2 Diabetes
- Atherosclerosis
- High cholesterol
- High BP
- Erectile Dysfunction
- Muscle loss
- High BP
- Sleep Apnea
- Gout
- Metabolic Syndrome
- NASH
- Osteoporosis
- Cognitive Decline / Alzheimer’s Disease
- PCOS

PEDiATRIC OBESITY EPIDEMIC
Percent of Children and Adolescents Overweight in US

Prevalence of OBESE children in the US

<table>
<thead>
<tr>
<th>Age Range</th>
<th>1980</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-11 years</td>
<td>7%</td>
<td>16%</td>
</tr>
<tr>
<td>12-19 years</td>
<td>5%</td>
<td>16%</td>
</tr>
</tbody>
</table>

Quadrupled since 1963

More Than Doubled

More Than Tripled

DATA WATCH

North America Makes Up Almost Half of All Global Pharmaceutical Sales

North America 47.7%

Europe 29.9%

Japan 9.3%

Asia, Africa, and Australia 8.6%

Latin America 4.5%

Source: 2006 data, IMS Health Inc.
Each individual diagnosis becomes a distinct entity unto itself.
Unsustainable Costs
Unacceptable Outcomes

- 2.5 trillion spent in the current healthcare system (70% of spending) on lifestyle-related diseases
- 4.3 trillion by 2023
- 16% of nation’s GDP
- Double the amount of other developed nations
- US ranked 37th in the world in health outcomes

Interheart

European Society of Cardiology (ESC) Congress, Yusef et al, The Lancet, 2004

- INTERHEART was a standardized case-control study
- The aim of INTERHEART was to determine the risk factors for AMI within populations defined by ethnicity and/or geographic region.
- To assess the relative importance of these risk factors across these populations
- 262 participating centers in 52 countries
- Africa, Asia, Australia, Europe, the Middle East, and North and South America.
Total of 15,152 incident cases of AMI
14,820 controls matched by age (± 5 years) and sex with no history of heart disease
Final analysis was carried out for 12,461 cases and 9459 controls
Conclusion: Smoking, dyslipidemia, hypertension, diabetes, obesity, diet, physical activity, alcohol consumption, and psychosocial factors account for over 90% of the risk of acute myocardial infarction (AMI)

50% of AMI is predicted by apoB/apoA1 and 36% by current smoking
These 2 risk factors together predict 66.4% of all AMIs, worldwide.
Psychosocial factors may contribute less than that for smoking, but comparable with hypertension and abdominal obesity
What Really Determines Health or Disease for Most of Us?

70 - 90% of chronic disease

Genetics

Physiology / Biochemistry

Environment

Lifestyle

Yellow Mouse

- High risk cancer, diabetes, obesity
- Reduced lifespan

Maternal Supplements with
- zinc
- methionine
- choline
- folate
- B12

LTR Hypomethylated

Agouti Mouse

- Lower risk of cancer, diabetes, obesity
- Prolonged life

LTR Hypermethylated

In the archives of IM in 2008 FTO Obesity Gene Trumped by Physical Activity


Start at the Beginning

• SAD & Lifestyle
• Childhood obesity
• Middle-age obesity
• Aging obesity

40% of American adults over age 60
projected to be
60%
From Framingham offspring data

**NCEP ATP III DIAGNOSIS**

Any 3 of the following 5:

- **Increased waist circumference**
  (>35” women, >40” men)
- **↑ Blood Pressure**
  (>130/85 or on HTN meds)
- **↑ Fasting Blood Sugar**
  (>110 mg/dl)
- **↑ Triglycerides (>150)**
- **↓ HDL Cholesterol**
  (<50 women, <40 men)
<table>
<thead>
<tr>
<th>Ethnic South and Central Americans</th>
<th>Use South Asian recommendations until more specific data are available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Saharan Africans</td>
<td>Use European data until more specific data are available</td>
</tr>
<tr>
<td>Eastern Mediterranean and Middle East (Arab) populations</td>
<td>Use European data until more specific data are available</td>
</tr>
</tbody>
</table>

* In future epidemiological studies of populations of European origin, prevalence should be given using both European and North American cut-points to allow better comparisons.

** Originally different values were proposed for Japanese people but new data support the use of the values shown above.
The Problem with the Scale

The Problem with the Scale

1. What did she lose?
2. Fat, Muscle, Water?
3. Which kind of fat?
4. Which kind of water?

B poorer than Scale

The Higher your BMI the higher your health

<table>
<thead>
<tr>
<th>BMI</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
<th>25</th>
<th>26</th>
<th>27</th>
<th>28</th>
<th>29</th>
<th>30</th>
<th>31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy</td>
<td>29</td>
<td>28</td>
<td>27</td>
<td>26</td>
<td>25</td>
<td>24</td>
<td>23</td>
<td>22</td>
<td>21</td>
<td>20</td>
<td>19</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td>Overweight</td>
<td>30</td>
<td>31</td>
<td>32</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>40</td>
<td>41</td>
<td>42</td>
</tr>
<tr>
<td>Obesity</td>
<td>30</td>
<td>31</td>
<td>32</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>40</td>
<td>41</td>
<td>42</td>
</tr>
</tbody>
</table>

(Better than Scale)

Healthy Body Composition Reduces the risk of developing high blood pressure, high cholesterol, cardiovascular disease, insulin resistance, type 2 diabetes, hormone imbalance, and more.

Unhealthy body composition Increases the risk of developing high blood pressure, high cholesterol, cardiovascular disease, insulin resistance, type 2 diabetes, hormone imbalance, and more.
**BioImpedance Analysis**

- Hydration status
- Fluid Distribution:
  - Intracellular water 😊
  - Extracellular water 😂/😊
- Fat Mass
- Lean Body Mass
- Basal Metabolic Rate

---

**WAIST CIRCUMFERENCE as a VITAL SIGN**

- Waist circumference is not routinely checked in most offices
- BUT we manage cardiovascular risk factors with great passion!
- WC is a VITAL SIGN in the world of insulin and glycemic dysregulation.
Measure at the bottom of the 10th Rib
Top of the Iliac Crest

Measure the Hips Over the Greater Trochanter
Health Risk Based on Waist to Hip Ratio

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
<th>Health Risk Based Solely on WHR</th>
</tr>
</thead>
<tbody>
<tr>
<td>= or &lt; 0.90</td>
<td>= or &lt; 0.80</td>
<td>Low Risk</td>
</tr>
<tr>
<td>0.90 to 1.0</td>
<td>0.81 to 0.85</td>
<td>Moderate Risk</td>
</tr>
<tr>
<td>&gt;1.0</td>
<td>&gt;0.85</td>
<td>High Risk</td>
</tr>
</tbody>
</table>


Conventional Treatment Guidelines

- **Treat hypertension**
  - Goal blood pressures < 130/80 mm Hg
- **Treat hyperlipidemia**
  - LDL-C goal: <100 mg/dl (primary prevention)
  - Statins
- **Optimize triglycerides and HDL goals**
  - Goal trigs <100 mg/dl; HDL >50F, >40M
  - Fibrates, Niacin, and/or Omega 3 Fatty Acids
- **Treat diabetes**
  - Goal FBG < 100 mg/dl
  - Metformin as first-line drug therapy
- **Consider aspirin therapy**

These are ENDPOINTS along the spectrum...
Understanding The Origin Of Chronic Disease

Environment

Genomic Instability

Expression of Inflammation and Preclinical Symptoms

Chronic Disease

Body

Decreased Energy Production
Oxidative Stress

Toxic Chemical Exposure
Radiation

Drugs, Alcohol
Smoking

Poor Diet
Stress, Negative Emotions

Trauma
Lack of Exercise

Structural Stresses
Prevention is the Best Intervention

- Emotional & Mental Balance
- Stress Resilience
- Sleep & Restoration
- Physical Activity & Structural Balance
- Environmental Protection
- Energy System Balance
- Spiritual & Social Balance
- Emotional & Mental Balance and Stress Resilience

LYON Heart STUDY

5 Yr. RCT 605 CHD
More fruit
More beans
More Veggies
More Fish
Less Meat
No Cream
No Butter
Canola Oil
“Consumption of fruits and vegetables, particularly green leafy vegetables appears to have a protective effect against heart disease”. 
Arch Inter Med 2001; 134: 1106-14.

“Intake of fruits and vegetables protect the development of stroke in man”. 

“Among individuals aged 70 to 90 years, adherence to a Mediterranean diet and healthful lifestyle is associated with a more than 50% lower rate of all-causes and cause-specific mortality”. 
Substantial evidence indicates that diets using nonhydrogenated fats as the predominant dietary fat, whole grains as the main form of carbohydrates, an abundance of fruit and vegetables, and adequate omega-3 fatty acids can offer significant protection against CHD.


Compared with patients consuming the control diet, patients consuming the intervention diet had significantly reduced serum concentrations of hs-CRP, IL-6, IL-7, and IL-18, as well as decreased insulin resistance.

A Mediterranean-style diet might be effective in reducing the prevalence of the metabolic syndrome and its associated cardiovascular risk.

Esposito et al., JAMA 2004; 292:1440-1446
**Nutritional Antiinflammatory Inflammatory Signal molecules**

**Dietary Signal molecules**

**Nutritional Antiinflammatory**

**Food Allergen**

**Proinflammatory Signal (trauma, stress)**

**Cell membrane**

**ROS**

**Protein ROS**

**NFkB/IkB Complex**

**Protein Phosphorylation**

**mRNA**

**Inflammation (PGE2)**

**Inflammatory**

**DNA**

**Antiinflammation**

**Diabetes Prevention Program**

3234 overweight subjects (Ages 25-85 years) with IGT

**High-Risk for Diabetes**

- 45% Non-white
- Women with history of gestational DM
- Subjects with first-degree-relative with DM

3 years

**Lifestyle intervention to reduce weight by 7%**

- Diet
- Exercise

**Metformin 850 mg bid**

**Placebo**
Blood Pressure and Weight

- **Direct dose-response relationship**

- **Meta-analysis 11 Clinical Trials**
  - SBP: 1.6 mmHg / Kg weight loss
  - DBP: 1.1 mmHg / Kg weight loss

- **Total Body Fat < 22% woman, 16% male**

**References**

- NEJM 1981; 304: 930-3
- Prog Cardiovas Disease 1999; 41: 451-60
- NEJM 1978; 298: 1-6
- Current Atherosclerosis Report 2000; 2: 521-8
- J Hypertens 1998; 7: S19-S23
- JAMA 1993; 279: 839-46
- JAMA 1993; 270: 713-24
DASH I and DASH II

- Participants were randomly assigned to one of the three eating plans. The SAD With sodium intake of about 3,300
- An intermediate intake of about 2,300 milligrams per day,
- Lower intake of about 1,500 milligrams per day.

- The DASH-II Diet in subjects with hypertension on 1500mg NA diet can lower Systolic BP-11.5 mmHg and diastolic - 6.8 mmHg
**Walking!**

- Decreases stress
- Increases longevity
- Decreases risk of heart disease, cancer and stroke
- Decreases blood pressure
- Decreases LDL cholesterol and triglycerides
- Increases HDL
- Decreases weight
- Energizes!

---

**Nutritional Supplementation**

- Antioxidants
- Chelated Magnesium
- B-Vitamins Niacin, B12, B6, L-Methyl Folate
- Omega Three Fatty Acids
- Citrus Bergamot
- Plant Sterols/Stanols
- Vitamin D
- Soluble Fiber
- Artichoke Extract
- Anti-inflammatory Agents
Antioxidant Vitamins and CV Disease

Observational Studies

Nurses Health Study
121,700 U.S. females 30-55 yrs
Dietary History
34% risk reduction in CV disease with Vitamin E supplements

Advances CV Medicine
1995

Vitamin E Primary Prevention

- ATBC
- Health Professional Follow up Study (37% RR)
- Nurses Health Study
- Iowa Women’s Study
- Primary Prevention Project: 4495 pts. 3.6 years F/U 300IU Vitamin E failed to demonstrate a reduced risk of CVD events
Vitamin E Secondary Prevention

- CHAOS: Reduced risk of non-fatal MI by 75%
- HOPE: No benefit
- GISSI-P: No benefit
- VEAPS: No benefit
- SPACE: Decreased CV death and non-fatal MI
- Meta-analysis of 81,788 pts. No benefit in mortality.

Concerns of trial design:
1. Not using the right type of supplement
2. Not using a high enough dose
3. Not using a complex antioxidant mixture
4. Not choosing the right population for study
5. Need to look at functional biomarkers
6. Not recognizing that antioxidants work as a system in gene expression

Met ATP III criteria for primary prevention using statin therapy
- Simvastatin 40 mg/day, or
- Mediterranean diet & exercise encouraged
- Fish oil (~2 grams),
- Red Yeast Rice 2.4-3.6 Gm

Results: Lifestyle vs Simvastatin

<table>
<thead>
<tr>
<th>Results</th>
<th>Lifestyle / RYR /03</th>
<th>Statin</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDL-C</td>
<td>42.4%</td>
<td>39.6%</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>29%</td>
<td>9.3%</td>
</tr>
<tr>
<td>Weight</td>
<td>5.5%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Safety</td>
<td>1 pt with ↑ CK, 2 heartburn</td>
<td>5 pts with ↑ myalgia, LFTs</td>
</tr>
</tbody>
</table>
**GISSI-Prevenzione (GISSI-P)**

- N=11,324; < 3 mo after Acute Myocardial Infarct
- 850 mg Omega3
- ↓ risk of death from any cause by 21%;
- ↓ sudden cardiac death by 45%

---

**Figure 1:** Time course of clinical events in the Gruppo Italiano per lo Studio della Sopravvivenza nell’Infarto Miocardico (GISSI)-Prevenzione study. Treatment with 850 mg/day of omega-3 acid ethyl esters reduced total mortality (death) by 21% and sudden cardiac death (death) by 45% vs.

---

**Original Research**

**Dietary Magnesium and C-reactive Protein Levels**

Dana E. King, MD, Arch G. Mainous III, PhD, Mark E. Gesey, MS, and Robert F. Woolson, PhD

*Department of Family Medicine (D.E.K., A.G.M., M.E.G.), Department of Biometry, Bioinformatics, and Epidemiology (R.F.W.), Medical University of South Carolina, Charleston, South Carolina*

*Key words: dietary magnesium, CRP, cardiovascular, inflammation*

- Among US adults, 68% consumed less than the recommended daily allowance (RDA) of magnesium, and 19% consumed less than 50% of the RDA.
- Adults who consumed <RDA of magnesium were 1.48 – 1.75 times more likely to have elevated CRP

Total Hyperinsulinemic Response to Glucose loading in relation to the basal fasting intracellular free Mg++ level

As Intracellular Mg++ drops, Insulin resistance develops

Source: The American Journal of Medicine, August 31, 1992; Vol. 93 (Suppl 2A)

As Intracellular Mg++ drops, Systolic and Diastolic blood pressure elevate

SBP (mmHg)

DBP (mmHg)
# Imbalances Determine Treatment

<table>
<thead>
<tr>
<th>Disorder</th>
<th>% Population</th>
<th>Treatment</th>
<th>RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small LDL</td>
<td>50% Men</td>
<td>Niacin-Fib-Omega3, wt.loss Low Gly. Diet ApoE</td>
<td>3X</td>
</tr>
<tr>
<td>Lp(a)</td>
<td>33%</td>
<td>Niacin-Estrogen L-Carnitine 2gms</td>
<td>3X</td>
</tr>
<tr>
<td>Homocysteine</td>
<td>20-30%</td>
<td>B vitamins</td>
<td>2-3X</td>
</tr>
<tr>
<td>Elevated LDL/APOB</td>
<td>20%</td>
<td>Statin, Zetia Resin, RYR, Stanols, Fiber, Artichoke extract, Ultraceal Plus</td>
<td>2-3X</td>
</tr>
<tr>
<td>High TG</td>
<td>15%</td>
<td>Niacin, Fibrates Omega 3</td>
<td>2-3X</td>
</tr>
<tr>
<td>Low HDL 2B</td>
<td>63%</td>
<td>Niacin, omega3 Fibrates</td>
<td>3X</td>
</tr>
<tr>
<td>Inflammation</td>
<td></td>
<td>Omega 3, Boswellia, Turmeric, Holy basil</td>
<td></td>
</tr>
</tbody>
</table>
Stress

75 to 90% of all visits to health care providers result from stress-related disorders

American Institute of Stress

ACPR Survey 2006

- 1200 practicing physicians surveyed
- 6 in 10 doctors have considered leaving medicine
- 77% experience fatigue
- 67% experience burnout
- 33% depression & family discord
- Contributing causes;
  - Low reimbursement
  - Low autonomy
  - Patient overload
  - Lack of respect

November • December 2006 The Physician Executive
So What Is Stress?

- Stress can be defined as a state one experiences when there is a mismatch between perceived demands and our perceived ability to cope.

- Stress can be acute or chronic.

The Stress Response

- Response
- Perception
- Initiating Event
- Effect
The Los Angeles County Coroner reported a sharp increase (5x) in cardiovascular disease-related sudden deaths on the day of the Northridge earthquake. N Engl J Med. 1996;334:413-419.
25% increase in myocardial infarction admissions in London on the day of the match when England lost to Argentina in a penalty shootout during the 1998 World Cup. BMJ. 2002;325:1439-1442.

**Warning signs**

- Loss of focus and mental clarity
- Lack of ability to relax and sleep
- Loss of self esteem
- Feeling tired and on edge/Anger
“The microbe is nothing, the soil is everything.”
- Louis Pasteur

STRESS SLOWS WOUND HEALING

Caregivers took an average of 24% longer than well-matched controls to heal the same small, standardized wound.

Replication with caregivers published by Vedhara et al. in *Lancet*, 1999

**Accelerated aging** (Kerr et al., 1991; Namiki, 1994)
**Brain cell death** (Kerr et al., 1991; Sapolsky, 1992)
**Impaired memory and learning** (Kerr et al., 1991; Sapolsky, 1992)
**Decreased bone density; increased osteoporosis** (Manolagas, 1979)
**Reduced muscle mass** (Beme, 1993)
**Reduced skin growth and regeneration** (Beme, 1993)
**Impaired immune function** (Hiemke, 1994)
**Increased blood sugar** (DeFeo, 1989)
**Increased fat accumulation around waist / hips** (Marin, 1992)

**High Cortisol: Low DHEA**

Chronic stress = excess cortisol = accelerated aging.
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**

- 58 premenopausal women
- Caregivers of chronically ill children versus controls

How do they perceive stress in their lives?
Does stress impact health by affecting the rate of cellular aging?
Telomere length and the enzyme telomerase were measured

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*

- Perceived psychological stress - and the number of years of caring for their chronically ill children - was associated with shorter telomere length and less telomerase activity providing the first indication that stress may have an impact on telomere maintenance
Telomere Shortening in Formerly Abused and Never Abused Women

Humphreys J, Epel ES, Cooper BA, Lin J, Blackburn EH

- Telomere length was significantly shorter in the 61 formerly abused women compared to the 41 controls ($t = 2.4$, $p = 0.02$). Length of time in the abusive relationship and having children were associated with telomere length after controlling for age and body mass index (BMI) ($F(2, 99) = 10.23$, $p < .001$).

Intensive Meditation Training, Immune Cell Telomerase Activity, and Psychological Mediators.

Jacobs TL, Epel ES, Lin J, Blackburn EH, Wolkowitz OM, Bridgette DS, Zanesco AI, Aichele SB, Sahdra BK, MacLean KA, King BG, Shriver PR, Rosenberg EL, Ferrer E, Wallace BA, Saron

- Telomerase activity was significantly greater in retreat participants than in controls at the end of the retreat ($p<0.05$).
- Increases in Perceived Control, decreases in Neuroticism, and increases in both Mindfulness and Purpose in Life were greater in the retreat group ($p<0.01$).
**Meta-Analysis I: Decreased Blood Pressure**

*THROUGH TRANSCENDENTAL MEDITATION*

![Bar chart showing the decrease in systolic and diastolic blood pressure through transcendental meditation.](chart1)

- **Systolic Blood Pressure**: p < .05
- **Diastolic Blood Pressure**: p < .05

*American Journal of Hypertension, 21:310-316, 2008*

---

**Decreased Cigarette Smoking**

*THROUGH TRANSCENDENTAL MEDITATION*

![Bar chart showing the decrease in cigarette smoking through different interventions.](chart2)

- **Standard Treatments**
- **Standard Prevention Programmes**
- **Transcendental Meditation**: p = .0006

*Alcoholism Treatment Quarterly 11: 13–87, 1994*
Decreased Alcohol Use
THROUGH TRANSCENDENTAL MEDITATION

<table>
<thead>
<tr>
<th>Amount of change (standard deviations)</th>
<th>Standard Treatments</th>
<th>Standard Prevention Programmes</th>
<th>Transcendental Meditation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-0.2</td>
<td>-0.4</td>
<td>-0.6</td>
</tr>
</tbody>
</table>

p = .009

Alcoholism Treatment Quarterly 11: 13–87, 1994
Improvement in Medical Risk Factors and Quality of Life in Women and Men With Coronary Artery Disease in the Multicenter Lifestyle Demonstration Project

Jenny Koertge, MSc, Gerdi Weidner, PhD, Melanie Elliott-Eller, RN, MSN, Larry Scherwitz, PhD, Terri A. Merritt-Worden, MS, Ruth Marlin, MD, Lee Lipsenthal, MD, Mimi Guarneri, MD, Robert Finkel, MD, Donald E. Saunders, Jr, MD, Patty McCormack, RN, Judith M. Scheer, MPH, RN, Richard E. Collins, MD, and Dean Ornish, MD

This study examined medical and psychosocial characteristics of 440 patients (mean age 58 years, 21% women) with coronary artery disease at baseline and at 3-month and 12-month follow-ups. All patients were participants in the Multicenter Lifestyle Demonstration Project, aimed at improving diet (low fat, whole foods, plant-based), exercise, stress management, and social support. Spousal participation was encouraged. Both genders evidenced significant improvements in their diet, exercise, and stress management practices, which they maintained over the course of the study. Both women and men also showed significant medical (e.g., plasma lipids, blood pressure, body weight, exercise capacity) and psychosocial (e.g., quality of life) improvement. Despite their worse medical, psychosocial, and sociodemographic status at baseline, women's improvement was similar to that of men's. These results demonstrate that a multi-component lifestyle change program focusing on diet, exercise, stress management, and social support can be successfully implemented at hospitals in diverse regions of the United States. Furthermore, this program may be particularly beneficial for women with coronary artery disease who generally have higher mortality and morbidity than men after a heart attack, angioplasty, or bypass surgery. ©2003 by Excerpta Medica, Inc.

(Am J Cardiol 2003;91:1316–1322)
Biofeedback treatment increases heart rate variability in patients with known coronary artery disease

Jessica M. Del Pozo, PhD,† Richard N. Gevitz, PhD,‡ Bree Scher, MD,§ and Erminia Guarneri, MD, FACC‖ San Diego, Calif

Objectives To determine if cardiorespiratory biofeedback increases heart rate variability (HRV) in patients with documented coronary artery disease (CAD).

Background Diminished HRV has been associated with increased cardiac morbidity and mortality. Evidence suggests that various lifestyle changes and pharmacologic therapies can improve HRV. The objective of this study was to determine if biofeedback increases HRV in patients with CAD.

Methods Patients with established CAD (n = 63, mean age, 67 years) were randomly assigned to conventional therapy or to 6 biofeedback sessions consisting of abdominal breath training, heart and respiratory physiologic feedback, and daily breathing practice. HRV was measured by the standard deviation of normal-to-normal QRS complexes (SDNN) at week 1 (pretreatment), week 6 (after treatment), and week 18 (follow-up).

Results Baseline characteristics were similar for the treatment and control groups. The SDNN for the biofeedback and control groups did not differ at baseline or at week 6 but were significantly different at week 18. The biofeedback group showed a significant increase in SDNN from baseline to week 6 (P < .001) and to week 18 (P = .003). The control subjects had no change from baseline to week 6 (P = .214) and week 18 (P = .27).

Conclusions Biofeedback increases HRV in patients with CAD and therefore may be an integral tool for improving cardiac morbidity and mortality rates. [Am Heart J 2004;147:x11.]

Evaluation of a holistic cardiatic rehabilitation in the reduction of biopsychosocial risk factors among patients with coronary heart disease

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The purpose of this pilot study is to evaluate the effectiveness of the Lifestyle Change Program (LSCP). LSCP was a holistic cardiac rehabilitation (CR) intervention focusing on several psychosocial and biological predictors of coronary heart disease including depression, hostility, low social support, high perceived stress, low spirituality, low life satisfaction, overall health status and cholesterol levels. Utilizing a quasi-experimental design, overall health scores of LSCP patients were compared with those of a control group. To assess differences within-and between-groups, two programme type × 2 (age) × 2 (gender) × 2 (time) mixed design ANOVAs were used. Within-group relationships for psychosocial assessments and cholesterol levels were analysed using paired-samples t-tests. Results suggest that there were no significant differences between the LSCP group and the control group with regard to overall health status. However, the LSCP participants reported significantly lower levels of depression and perceived stress, as well as significantly higher levels of life satisfaction and spirituality upon programme completion. In addition, lipid panels changed significantly. A significant decrease in total cholesterol, low-density lipoproteins and triglycerides, as well as a significant increase in high-density lipoproteins. These trends suggest that holistic CR may be effective at reducing biopsychosocial risk factors for future cardiac events. Future studies, utilizing an experimental design, are necessary to determine whether holistic programmes are more effective than traditional programmes in the reduction of cardiac risk factors.

Keywords: cardiac rehabilitation; depression; hostility; support; stress
Healing Touch & Guided Imagery Trial
Guarneri et al, MILITARY MEDICINE, 177, 9:1015, 2012

Title: Complementary Medicine for PTSD and Related Symptoms in Returning Active Duty Military:
A Randomized Controlled Trial

A collaboration between
- Scripps Center for Integrative Medicine, San Diego, CA
- Marine Corp Base Camp, Camp Pendleton, CA
- Samueli Institute, Alexandria, VA

MILITARY MEDICINE, 177, 9:1015, 2012

Clinical & Statistical Significance

PCL-Military cutoff is 50
- Changes of 10 to 20 points are clinically significant
- Intervention group: a 14 point drop, which is clinically & statistically significant

BDI Score of 18 is significant for depression
- Intervention group: baseline score of 26.1 dropped to 16.4, suggesting a meaningful reduction

Cynicism
- Decrease of 14 % in Cynicism in the Intervention Group is particularly noteworthy
We Spend 2.5 Trillion Dollars per Year

- The question becomes: how do we spend it??
- According to Interheart our money should be spent on smoking cessation, lipid management, nutrition counseling, stress reduction, weight loss and physical activity
- Is it possible that we see prevention and health as an economic strategy?

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