



## Return on Investment White Paper

May, 2009

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## Return on Investment

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## *INTRODUCTION*

Unlike most health interventions, HeartMath programs are geared to bring quick results, rapidly improve and sustain performance and produce a significant return on investment (ROI) on a number of levels.

Individuals using HeartMath programs consistently report almost immediate relief from stress and anxiety. They further report higher levels of energy, greater satisfaction on the job and in their personal lives. Employers who sponsor HeartMath programs in the workplace have reported a significant drop in turnover rates, higher employee satisfaction, greater productivity from HeartMath trained workers and a considerable increase in the company bottom line due to lower health care costs, less absenteeism, and greater presenteeism (which includes improved individual output).

Here, in a simple question and answer format, is how HeartMath programs improve the corporate bottom line and show a significant return on investment.

## **MEASURING THE RETURN ON INVESTMENT (ROI)**

**Q:** *Let's start with the concept of Return on Investment (ROI). How can we truly know the value of our investment in health improvement programs?*

**A:** Unlike a capital investment in a new piece of factory equipment, ROI for a health improvement investment is often harder to measure. With a machine, a manufacturer knows that its output will be the cost of servicing it, the cost of operating it, the expected life of the machine and factors all that into setting the final price of the product involved. In a short time the true return on the manufacturer's investment can be easily calculated.

However, with an investment in an employee health improvement program, the ROI calculation is not as straightforward. For example, paying for a program that helps employees lower their blood pressure may not have an immediate or even short term impact on the company's ROI. That's because it is almost impossible to predict when the ravages of high blood pressure will lead to heart problems, stroke or other maladies associated with the condition. In some cases, the beneficial effects of such a program can only be "guesstimated" because the preventive effect of the program cannot be known for sure. Companies that provide these types of *disease management* programs have had to sell their products often based on the notion that such programs lower the "likelihood" of a negative event. So an easily calculated ROI on such programs is hard to determine.

**Q:** *That's true, but aren't there some studies that show certain types of disease management programs have a significant ROI to the bottomline?*

**A:** Yes there are. For some very specific conditions, such as diabetes, metabolic syndrome, depression and a variety of heart conditions, there are studies that show very quick dollar savings utilizing disease management programs. For example, employers with diabetic employees enrolled in such programs have found a significant reduction in health care costs associated with their condition, through fewer emergency rooms visits, less inpatient admissions to hospitals and lower pharmaceutical costs. They have also seen a significant reduction in absenteeism and increases in job alertness and performance.

**Q:** *What other data is there related to the ROI on such programs?*

**A:** There is quite a bit. One very important study was done by one of the largest health insurance companies HighMark, Inc. of their own employees. Between 2001-2005 they compared the health care costs of the 1,900 employees who participated in their wellness/disease management programs to an equal number of employees with the same health risks, but who had not enrolled in their programs. The analysis showed the company saved \$1.3 million during the time of the study, mainly because its annual health care expenses for participating employees were \$176 lower per employee. HighMark's total expenses for its programs were \$808,958. That was an ROI of \$1.65 for every dollar spent! Other studies, from many other companies, show similar results.

**Q: *Is there another way to look at ROI?***

**A:** Yes. Aside from measuring ROI by how health care costs decline when people are in health improvement programs, there are two other measurements that are important to factor into any health-related ROI. The first is the absenteeism/presenteeism factor.

Being absent from the job due to illness or injury is a significant cost to both an employee and an employer. For the employee, absence from work can be costly in terms of wages, job viability and even loss of benefits. For an employer, an absent employee might mean paying another employee overtime to do the other person's work. It may mean a decrease in production, resulting in lower output, less product to sell and thus less revenue. An absent employee is a negative to the bottomline.

But even if an employee suffering from illness or injury comes to work, they are often not able to perform up to standard. Recent studies of *presenteeism*, defined as the level of performance while on the job, show that people suffering from untreated chronic conditions produce significantly less than those being treated for similar conditions or those with no issues at all.<sup>1</sup>

Combining costs across 25 health conditions show on average, for every \$1 of medical plus pharmacy costs there are an additional \$2.3 of lowered productivity costs in lost work time from absenteeism and presenteeism.<sup>2</sup>

So the issue of how productive a person with a health condition is must be factored into the ROI.

**Q: *You said there were two additional factors to figure into the ROI? What's the other one?***

**A:** The second factor is employee satisfaction. Too often, employers take employee satisfaction too lightly. In fact, very few companies actually survey or monitor employee satisfaction on a regular basis. Obviously, a number of factors must be reviewed in order to adequately determine employee satisfaction including wage level, opportunities for promotion, working environment, management/worker relations and stress on the job.

Including overall employee satisfaction into any ROI calculation is vital. Disgruntled employees have been shown to be less productive, absent in higher numbers and are more likely to leave the company on short notice.

Employee satisfaction may well be termed **Social** Return on Investment. And while dollar figures may not be easy to attach to the Social ROI, it must be a vital part of any calculation related to the overall return on dollars expended by a company.

## **STRESS REDUCTION ON THE BOTTOMLINE**

**“If we knew nothing about a store except that employee attitudes had improved 5%, we could predict that its revenue would rise 0.5% above what it otherwise would have been.”**

- A 5% increase in employee attitude ...drives... 1.3% increase in customer satisfaction, and a 0.5% increase in store revenues.
- A 4% increase in employee satisfaction ... was linked to... \$200 million increase in revenues.  
— *Sears executives, Harvard Business Review, January, 1998*

**Q: Tell me about the impact of stress in the workplace. What exactly is stress?**

**A:** If you look up the definition of stress in the dictionary you’ll find this definition. “A mentally or emotionally disruptive or upsetting condition occurring in response to adverse external influences and capable of affecting physical health, usually characterized by increased heart rate, a rise in blood pressure, muscular tension, irritability, and depression.” But as Paul J. Rosch, M.D., President of the American Institute of Stress, points out, if you ask a dozen people to define stress you are likely to get 12 different answers.

**Q: Does stress affect people in the same way?**

**A:** No matter what the “official” definitions of stress may be, stress manifests in how we feel. For each of us, stress can manifest in different ways. For some, a symptom of stress may be a headache or upset stomach. For others the symptoms may be anxiety or depression. Symptoms of stress may prevent a person from engaging with friends, reduce productivity at work or develop feelings of anger, isolation or fear. Stress can result from a perception or attitude. It can make a person yell at their children, want to punch their boss in the nose, or even cause a worker to make bad decisions that could affect the safety of himself or those around him. In other words, stress seriously affects the way people function. It can negatively affect a person’s health. And, it can badly erode relationships with family, friends and co-workers.

**Q: Wait a minute! I’ve heard that stress isn’t always bad. Isn’t that true?**

**A:** That is true. Some people confuse challenge with stress. Science has shown that some stress can motivate or increase your performance, if it’s perceived as a positive challenge. For example, a baseball player coming up to bat in the bottom of the ninth inning with two outs, his team behind by three runs and the bases loaded, is under great pressure to hit a homerun. The challenge of the moment can actually create a chemical reaction that heightens his ability to concentrate on the ball, strengthen his swing and belt one out of the park. But, science also has proven that too much challenge or a sustained challenging situation becomes stressful and quickly depletes one’s ability to operate at peak performance. So if that batter had been in a similar situation every time he came to bat that day, he would be more likely to get distressed

and strike out than be the hero.

So while some challenges can be helpful, too much is harmful. It's finding the right balance that becomes the important goal. And each person's balance is different. A lot has to do with attitude, perception and resilience.

**Q:     *So how does stress affect productivity in the workplace?***

**A:**     You've probably heard high blood pressure referred to as the "silent killer" because its symptoms are not obvious and over 32% of American adults suffer from it. But stress is equally as silent and has far more significant ramifications in the workplace.

For example, a 2007 study by the American Psychological Association found that 33% of all Americans are suffering from extreme stress<sup>3</sup>. Half of those people report that high levels of stress affect them at least 15 days per month.

For employers this is significant because half of those surveyed reported that their stress made them **much less productive at the workplace**. It is well established that stress interferes with mental processes such as memory, concentration, judgments and decision making.<sup>4</sup>

One of the most significant ways stress affects productivity in the workplace is in absenteeism. The federal Centers for Disease Control reports that **stress is the single highest cause of worker absenteeism**, double that of all other non-fatal injuries and illnesses.<sup>5</sup>

Workers under stress have been shown to produce less. They have less productive interaction with fellow employees. Highly stressed personnel in customer service positions are often cited for their shortness with customers or unresponsiveness to customers with problems.

Several studies of customer call centers report an almost 100% turnover in personnel annually due to the stress of their jobs and little ability to remediate their stress from day-to-day.

**Q:     *What other ways does stress affect the workplace?***

**A:**     The average **health care costs for people suffering from chronic, extreme stress are 46% higher** than their fellow workers not suffering stress. That directly affects the corporate bottom line.

In 2007, the Journal of the American Medical Association reported that, "Workplace stress is as bad for your heart as smoking and high cholesterol."<sup>6</sup>

In fact, data derived from a study involving 47,500 employed individuals representing 22 companies and governments, who were followed for three years, showed increased adjusted

annual health care expenditures from the following health risks, with depression and stress being the most costly:

### ***Health Risk Assessments and Costs<sup>7</sup>***

- Depression – 70% greater cost
- Stress – 46% greater cost
- Diabetes – 35% greater cost
- Obesity – 21% greater cost
- Smoking – 20% greater cost
- High blood pressure – 12% greater cost
- Lack of exercise – 10% greater cost

A 2008 *Cost Benefit Analysis* done at the University of Michigan determined that even one psychological/ lifestyle risk factor has an associated medical cost factor of around \$4,000 per year; and **each** additional psychological/ lifestyle risk adds an associated medical cost factor of \$1,000 - \$1,500 per year. The *Cost Benefit Analysis* identifies cohort groups based on standard HRA assessment. Those identified with emotional stress are at a significantly higher overall health/cost risk than any other cohort group. Psychological risk factor may be the most important measure to determine health and correlated health cost.

**Q:** *Are there other ways that stress hurts the employer's bottomline?*

**A:** Consider these statistics supplied by the American Institute of Stress.

- 40% of job turnover is due to stress.
- Xerox estimated that it cost them \$1 million to \$1.5 million to replace a top executive -- and that was two decades ago.
- Replacing an average employee now costs between \$3,000 and \$13,000.
- 60 to 80% of accidents on the job are stress-related and some, like the Three Mile Island and Exxon Valdez disasters, can affect thousands many miles away.
- In California, the number of Workers' compensation claims for mental stress increased by almost 700 percent over eight years and ninety percent were successful with an average award of \$15,000 compared to a national average of \$3,420.
- In 1987, California shelled out almost \$1 billion for medical and legal fees alone, more than what most states spend on actual awards.
- Double digit increases in Workers' compensation premiums every year as a result of mental stress claims threaten to bankrupt the system in several states.
- A jury in New York awarded nearly \$6 million in 1996 to three women for repetitive stress injury allegedly due to faulty computer keyboards.
- Repetitive musculoskeletal injuries like carpal tunnel syndrome have become the nation's leading workplace health cost and account for almost a third of all Workers' compensation awards.
- Studies show that keyboard entry operators who are under stress (due to being



uncertain whether their activities are being monitored for performance evaluation), have a significantly higher incidence of such complaints and injuries.<sup>8</sup>

## **THE HEARTMATH ROI**

**Q: *It's quite obvious that stress has a major impact on both the individual and the employer. But what makes HeartMath different from other health improvement interventions and programs?***

**A:** The simple answer is that HeartMath programs work!

And they work quickly. HeartMath programs are based on physiology and science. Studies performed over the last 20 years by both HeartMath's independent nonprofit arm, The Institute of HeartMath, as well as by leading stress and medical researchers, and at leading academic institutions, have verified that HeartMath techniques deliver what they promise. And that's important.

On an individual level, HeartMath programs have shown that they reduce personal stress, improve performance and help individuals reach their maximum emotional and physical potential.

In the workplace, HeartMath stress reduction training programs have helped companies and health care systems lower their health care costs, improve production, increase presenteeism, lower absenteeism, and improve employee, as well as, customer satisfaction.

But what truly sets the HeartMath programs apart from any other stress reduction or disease management program is that **HeartMath programs bring almost immediate results**. And, studies and reports show that those results are sustainable and in most cases get even better.

**Q: *What do you mean by "almost immediate results?"***

**A:** As discussed earlier, most disease management and health intervention programs often take years to measure their effectiveness. And even then, the results are often hard to quantify. But HeartMath programs are designed to bring immediate relief to the person using HeartMath techniques and technologies. As a result, their stress levels decrease within minutes, they quickly regain control of their emotions and their performance levels remain high or improve.

In addition, because HeartMath programs focus on teaching the individual to control their own stress and emotional wellbeing, the results are sustainable.

This is quite different from most disease management programs, including other stress reduction programs. These programs often require professional interventions or on-going prompting from physicians, nurses, social workers and other health care professionals. That is not the case with HeartMath programs.

**Q:     *So translate that into ROI.***

**A:**     Because HeartMath programs are designed to help a person immediately regain control, reduce stress and focus on improved performance, employers can easily measure the impact of HeartMath training of their employees on multiple levels, in both the short and long term. An employer can readily see what the return on their investment is yielding by measuring the health care costs of trained versus untrained personnel. The employer can compare absenteeism rates between HeartMath trained versus untrained employees. Production output can be compared between trained and untrained personnel. Staff turnover, a major problem especially in health care systems, can be easily measured.

And, using the HeartMath exclusive employee survey, employers are able to determine not only employee job and workplace satisfaction, but also the privacy-protected effect of HeartMath learned stress reduction techniques on their personal lives and relationships as well.

Thus, in a matter of months, employers using HeartMath training programs with their employees will have measurable financial and satisfaction results to use to calculate the ROI.

**Q:     *So give me some examples of ROI from organizations that have used HeartMath training programs?***

**A:** Of course. Here are a few examples:

***Corporate:***

- Reduced Turnover: The customer service department of a Fortune 50 high tech firm cut stress 50% and improved customer listening 33%. Employee well-being increased, job satisfaction was enhanced, turnover decreased and productivity increased.

- Total estimate savings -- \$632,539
- ROI More than 12x

- A California government agency saw significant reductions in overall psychological distress, anger, fatigue, hostility, anxiety, and Type A behavior; accompanied by significant reductions in total cholesterol, glucose, diastolic and systolic blood pressure. In addition, they saw increases in productivity, motivation, goal clarity and perceived

manager support. As a result, the agency projected reductions in both health care and absentee costs, yielding a total projected annual cost savings of \$1179 per employee.<sup>9</sup>

- Boeing, Seattle WA brought in HeartMath training to reduce costs and improve productivity on their 767-400ER program. Pre and post HeartMath training assessments showed reductions in annoyance, exhaustion and sleeplessness, along with improvements in being clear-headed, energetic, happy and calm. Steve Stephenson,

Senior Manager OD of Boeing's Engineering & Product Integrity wrote: "HeartMath gave our team the coherence we needed to come in under budget, on time, and with productivity gains of up to 12%."

- The Southern California office of a large computer reseller was struggling. The staff had seen revenues and customer satisfaction plummet, going from \$5 million per month to \$1million per month. Things were so bad that the sales team had a streak of 34 consecutive proposals lost!

The HeartMath program was introduced to address several key issues

- Reduce stress on the over-worked, under-appreciated staff
- Improve communication within the staff and, especially, with customers
- Re-ignite the staff's passion for excellence and growth
- Help the new management team create their vision and strategy and create the dynamics of working together
- Increase personal and organizational coherence so the company could attract and keep good customers

Throughout the months, special focus was put on improving the internal communication, keeping stress to a minimum while giving genuine care to customers and prospects. Morale began to grow and the spirit of the place was picking up. But even the most optimistic were unprepared for the dramatic results. **Within a three-week period, the firm won \$45 million dollars in new contracts!**

#### **Healthcare:**

Hospitals have a difficult time retaining nurses due to the high stress inherent in their job. VHA estimates the average cost to rehire and train one staff person is between \$40,000 and \$60,000. Here are some examples of the results of just five hospitals that use HeartMath training for both nurse and non-nursing personnel.

- **Cape Fear Valley Health System, NC**
  - 100 nurses trained. First year turnover rate reduced from 24% to 13%
  - Cost savings from reduced turnover = \$550,000
- **Delnor Community Hospital, IL**
  - First year retention savings = \$800,000
  - Turnover for HeartMath -trained staff held at 6% over 5 years
  - Overall turnover went from 27% to 14 % since HeartMath

- Delnor ranked #1 nationally in employee satisfaction the last four consecutive years, and patient satisfaction consistently exceeded the 90<sup>th</sup> percentile range.
- **Duke University Health System (Emergency Services), NC**
  - Turnover improved from 38% to 5% for 250 HeartMath -trained staff
  - Estimated savings: \$1 million
- **Sierra Providence Health Network, TX**
  - First year HeartMath trained reduced turnover among nurses from 24% to 3%.
  - Total savings =\$912,000
  - Reduced overall staff turnover from 21% to 5%
  - Total savings = \$2.16 million
- **Swedish Hospital, CO**
  - Turnover improved from 22% - 9% for 600 staff trained
  - Estimated savings: \$3.9 million

**Q: *What about how HeartMath training has been effective in helping reduce health problems and, therefore, health care costs to employers?***

**A:** Employers who have utilized HeartMath training have reported excellent results in this regard. For example:

- In a pilot study at Motorola, 26% of those trained were hypertensive before training. Six months after training all had blood pressure at normal levels. That translates into lower medication costs to the company, avoidance of disease treatment that often results from high blood pressure and fewer days away from the job due to medical treatment and testing.
- At another Fortune 500 company, a controlled study showed employees using HeartMath averaged 10.6 mm reductions in systolic blood pressure and 6.3 mm reductions in diastolic blood pressure in just 3 months. This degree of improvement is equivalent to a forty-pound weight loss, and double the effect of a sodium-restricted diet.<sup>10</sup>
- A pilot study to promote emotional and physical health at an energy company found that HeartMath significantly reduced both psychological and biometric health risk factors associated with chronic disease. The pilot study data showed significant reductions in poor health perception, body aches, headaches, indigestion, muscle tension and inadequate sleep as a result of the HeartMath stress management intervention. Simultaneously, cholesterol levels went down significantly. Elevated total cholesterol went from 41% to 22%; elevated LDL from 68% to 40% and elevated cholesterol ratio went from 29% to 17%.<sup>11</sup>

- A three-year controlled study with a self-insured group of 1000 ministers found that HeartMath participants dropped 1 to 1.5 behavioral lifestyle risk factors between their first and second health risk assessment (HRA). Using data from University of Michigan's *Cost Risk Assessment*, this would correlate to an approximate \$390,000 reduction in claim cost, due to 20% reduction in those participants at high risk for blood pressure and 22% reduction in those participants at high risk for blood glucose. In fact, the annual claim/premium increase for this group over the last three years was only 2.5%, compared to a national average 9-12% annual increase for the last three years.

Some hospitals are offering the HeartMath program as part of employer wellness programs.

"We are putting HeartMath directly into the center of our employee health and wellness program in addition to our corporate wellness programs. What we are finding is that if we are able to help people better control the stress in their lives, they actually get more engaged in other healthy behaviors like diet, exercise and tobacco cessation and with better outcomes. For example average per employee cost for conditions related to overweight or obese is approximately \$4300. For employees who participated in our 'I Choose Health' wellness program, the average cost was \$82 per employee. We feel that HeartMath's unique science-based approach to stress management with emWave® is the foundation of preventative health."

— Todd C Linden, CEO, Grinnell Regional Medical Center

**Q: That's impressive. What are some other examples?**

**A:** Here are important findings from a **major health insurer** now implementing HeartMath training with their employees.

- Through a comprehensive survey/analysis they found that *42% of their 5900 employees suffered from moderate to severe stress.*
- The company determined that 80% of their employees' visits to physicians were related to stress.
- The company's overall expenditure for employee physician services was \$7,360,928.
- After stress reduction/wellness training, physician visits were predicted to drop by 34% representing a **\$2,002,172** annual cost savings.

The company went further in its analysis and projections. The company predicted, based on its research and the 3 years they have been using HeartMath programs with 1000 employees, that:

- **Their estimated ROI was 3.3:1 (or \$3.30 savings for every \$1.00 spent)**
- **These savings were directly related to direct and indirect costs of depression, anxiety and other mental disorders often associated with stress.**

**Q: Those really are significant savings. But what about the employee satisfaction/social return on the investment for this major health insurer? Were the results equally as impressive?**

**A:** Indeed they were. Using HeartMath’s survey/assessment instrument here were some findings from a representative sample of employees trained in HeartMath. The first two columns below show the percentage of employees who reported having the symptom **often to always** before and 6-9 weeks after HeartMath training. The third column shows the improvement (percent reduction in number of employees reporting a chronic level of the symptom).

<u>Symptom Reported</u>	<u>Before HeartMath</u>	<u>After HeartMath</u>	<u>Improvement</u>
<u>Often to Always</u>			
Exhausted	35%	17%	51%
Anxious	22%	9%	59%
Depressed	12%	5%	58%
Angry	11%	4%	64%
My sleep is inadequate	43%	24%	44%
Body Aches	33%	20%	39%
Rapid heartbeats	11%	1%	91%
Headaches	29%	10%	66%

In addition, these following important questions indicating a direct impact to the workplace showed significant changes. The first two columns below show the percentage of employees **agreeing or strongly agreeing** with the statement before and 6-9 weeks after HeartMath training. The third column shows the improvement (percent change in number of employees agreeing or strongly agreeing).

<u>Agree or Strongly Agree</u>	<u>Before HeartMath</u>	<u>After HeartMath</u>	<u>Improvement</u>
We listen carefully to each other at work.	32%	44%	38%
There is tension between management and staff	21%	13%	38%
I feel like quitting my job	7%	5%	29%
I work with people who don't get along with each other	31%	22%	29%
I feel there is never enough time	49%	35%	29%
The pace of life is too fast and I can't keep up	15%	7%	53%

**Q: It's clear that HeartMath training can have a significant impact in the workplace in terms of both the bottomline and employee health and satisfaction. Do you have some collective employee data from your years of experience?**

**A:** Yes, we do and any manager will quickly see how it impacts the bottom line. Using our Personal and Organizational Quality Assessment (POQA) tool which we described in the earlier workplace example, we have assembled an impressive data base of results. Here are results from **over 3000** employees from over **100 companies** whom we have assessed before and after HeartMath training (usually 6 to 9 weeks post-training).

<u>Symptom Reported</u>	<u>Before HeartMath</u>	<u>After HeartMath</u>	<u>Improvement</u>
<u>Often to Always</u>			
Anxious	20%	11%	46%
Worried	30%	15%	49%
Depressed	8%	3%	61%
Exhausted	26%	14%	46%
I get upset easily	15%	8%	49%
It's difficult for me to calm down after I've been upset	12%	7%	47%
Annoyed	22%	10%	55%
Angry	9%	4%	50%

*Table continued from previous page*

<u>Symptom Reported</u>	<u>Before HeartMath</u>	<u>After HeartMath</u>	<u>Improvement</u>
<u>Often to Always</u>			
My sleep is inadequate	34%	23%	31%
Body aches	30%	18%	41%
Indigestion, heartburn, stomach upset	13%	7%	44%
Rapid heartbeats	6%	3%	46%
Muscle tension	30%	18%	42%
Headaches	15%	8%	44%
I feel conflict between work and personal priorities	26%	19%	28%

***Q: While these results are impressive in the short term, what about sustainability? Are there any studies showing long-term sustainability?***

**A:** Yes. Canada’s second largest bank, the Canadian Imperial Bank of Commerce (CIBC), did an independent internal study. They had five staff certified to teach HeartMath to 1200 middle and senior-level employees, representing a cross section of age, background and education. The results showed an extremely high level of retention and consistent application of HeartMath tools both in business and personal life **one year** after the training. Among the 71% of employees who continued to use HeartMath after 1 year, 73% reported positive behavior changes and 82% reported improved overall health and well being. The impact that HeartMath had on the company was summed up by the Director of the Bank’s Leadership Center: “As a result [of HeartMath], we are seeing tremendous growth in our team focus, communication and effectiveness. Overall there is a greater sense of coherence within our team.”

***Q: HeartMath certainly has the credentials and the data to help employers improve the bottomline with a very impressive ROI. What are the next steps?***

**A:** If you are an employer, the next step is to meet with a HeartMath Account Executive to help create a program for you. We are confident, as the data above demonstrates, that your ROI will be significant on many levels.

If you are a service provider already using HeartMath with your clients, or desiring to do so, we believe the impressive results HeartMath can deliver will help you grow your client base and bring significant improvement to your client’s bottomline.



## CONTACT INFORMATION



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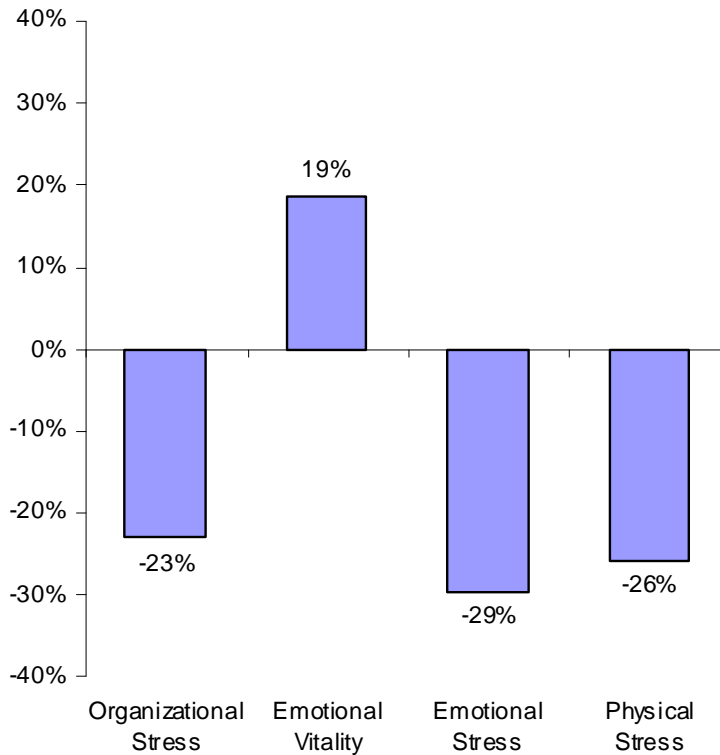
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## APPENDIX A – Energy Company Survey Results

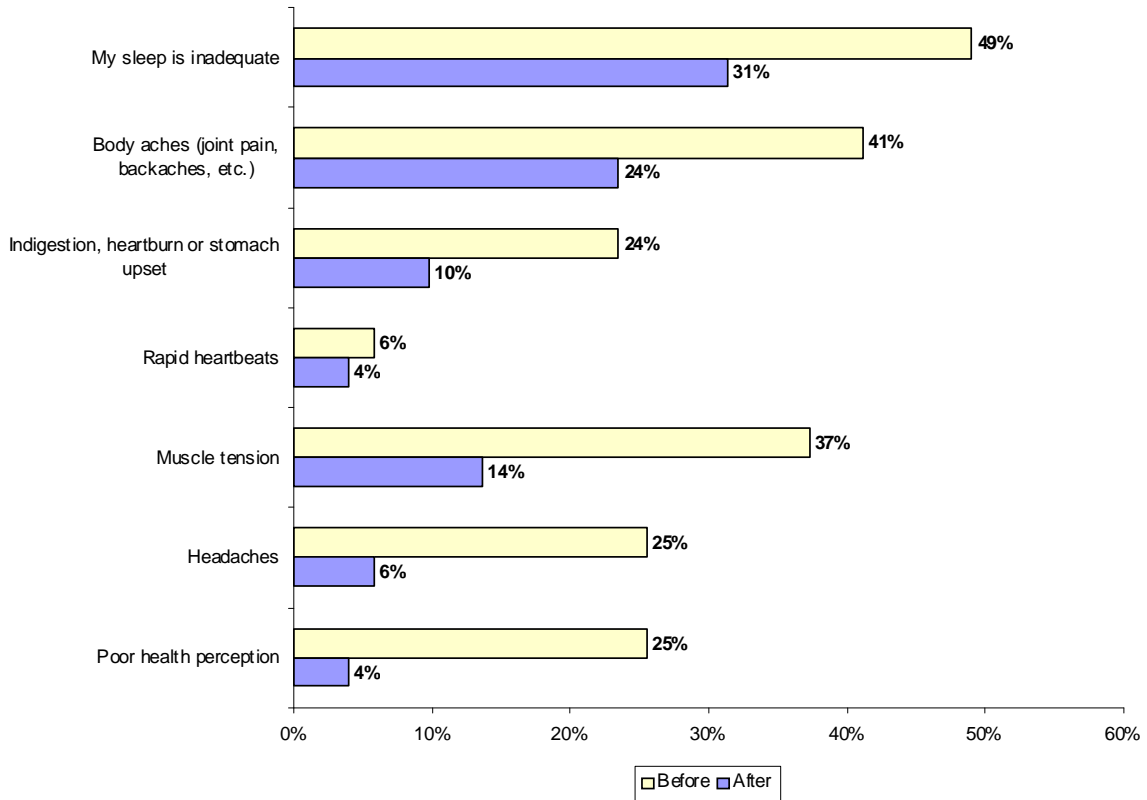
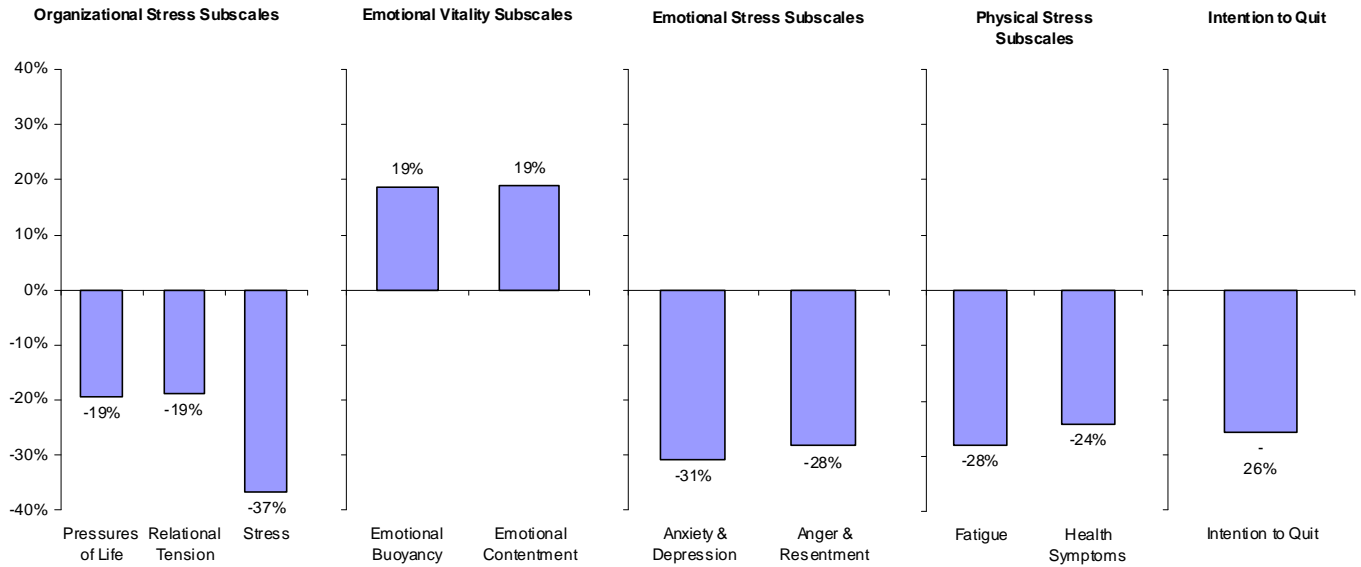
An uncontrolled pilot study utilizing HeartMath to promote emotional and physical health in an energy company (Company Y) was completed in April 2009. Based on pilot data before and 10 weeks after HeartMath training (see graphs following), HeartMath significantly reduced both psychological and biometric health risk factors associated with chronic disease.

<b>Cost Follows Risk</b>	
Number of Lifestyle Risks Per Participant	Medical Cost Associated with Lifestyle Risk
1	\$3,932
2	\$5,097
3	\$6,324
4	\$7,741
5	\$9,086
6	\$10,541
Increase in one risk equals approx. \$1K per Risk	

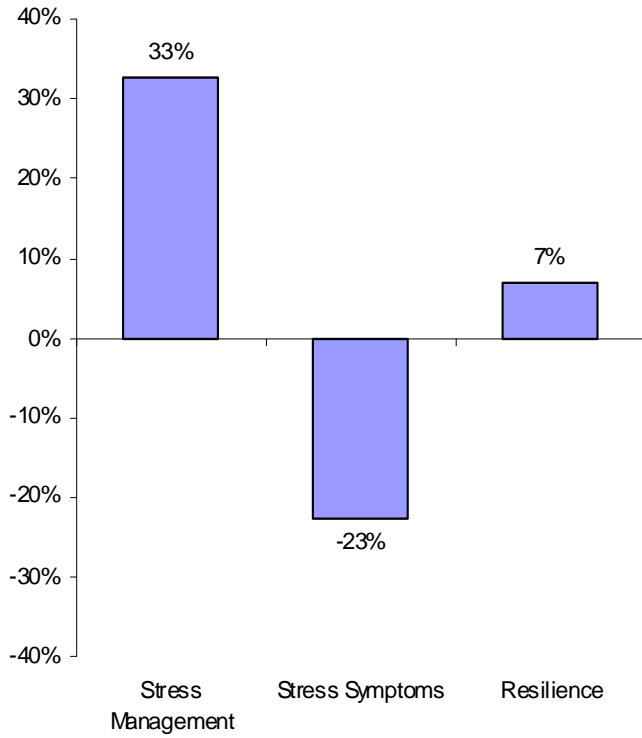
POQA-R4 Primary Scales



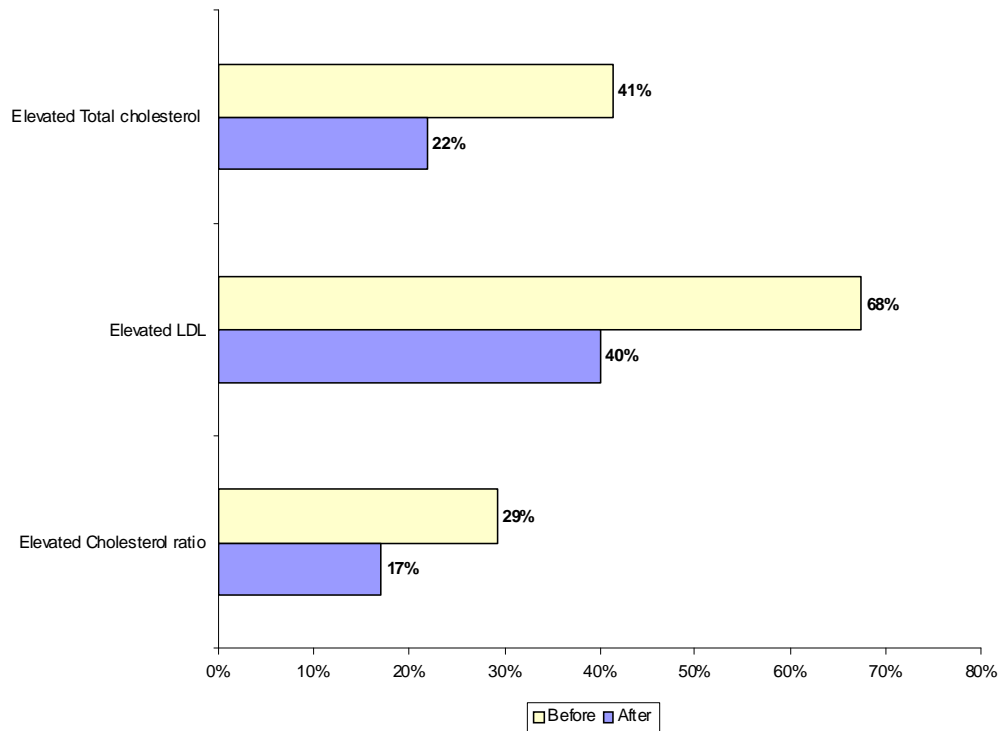
## POQA-R4 Sub Scales



### Additional Measures



### Biometrics



## APPENDIX B – End Notes

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<sup>1</sup> Health and Productivity as a Business Strategy: A Multiemployer Study, JOEM Vol. 51, No. 4, April 2009

<sup>2</sup> Health and Productivity as a Business Strategy: A Multiemployer Study

<sup>3</sup> Stress in America Report. American Psychological Association, October 24, 2007

<sup>4</sup> Society for Neuroscience, 2008: L. Jones

<sup>5</sup> NIOSH Worker Health Chartbook, 2004, CDC

<sup>6</sup> JAMA: 2007;298:1652-1660. Corine Aboa-Eboule, MD, et.al

<sup>7</sup> *Cost Benefit Analysis - University of Michigan – 2008*

<sup>8</sup> American Institute of Stress website

<sup>9</sup> Impact of the Power to Change Performance Programs on Stress and Health Risks in Correctional officers, November 2003: Rollin McCraty, Ph.D., Mike Atkinson, Lee Lipsenthal, M.D. and Lourdes Arguelles, Ph.D.

<sup>10</sup> The Journal Of Alternative And Complementary Medicine **Volume 9, Number 3, 2003, pp. 355–369**

Impact of a Workplace Stress Reduction Program on Blood Pressure and Emotional Health in Hypertensive Employees ROLLIN MCCRATY, Ph.D., MIKE ATKINSON, and DANA TOMASINO, B.A.

<sup>11</sup> Reference Appendix A for survey results.

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