

2007 MIND-BODY RESEARCH UPDATE: FROM A TO ZEN

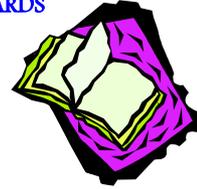
Lawrence Biscontini, M.A.

Special thanks to:
Len Kravitz, Ph.D.



EXPLORING RESEARCH....

- * INTRODUCTION AND PURPOSE
- * BACKGROUND REVIEW ON MIND-BODY: S. & D.
- * INCLUDE BREATHING, MUSIC, & DISCIPLINES
- * RESEARCH REVIEW STANDARDS
- * RESEARCH PRACTICUM
- * CONCLUSIONS



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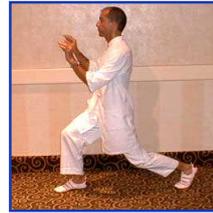
Let's Establish the Mind-Body Connection From Research



Study of Depression Clearly Shows The Mind and Body
Are 'Linked' into a Single System.

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Depression: The Mind Can Affect the Body



The Body Can Affect the Mind

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The Facts: Clinical Depression

- * Symptoms
 - ◇ Sadness, sleep problems, inability to feel pleasure
- * Treatment (clinical)
 - ◇ Antidepressants, medications, psychotherapy, stress reduction
- * Prognosis
 - ◇ Comes/goes in cycles: controllable if treated
- * People affected in U.S.: 20 million

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Time Magazine, Jan. 20, 2008

The Mind-Body Connection



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The Mind-Body Connection

- * Positive mental states = physical well-being
- * Unhealthy body = Unhealthy mind
- * Illness in mind may trigger illness of body
- * Mind and body: "part of single system"
- * **Brain chemistry** affects body physiology
- * The mechanism: **inspiring clues**
 - ◇ Neurotransmitters
 - ◇ C-reactive protein (CRP)
 - ◇ Cortisol

Time magazine, Jan. 20, 2008



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Depression

An Independent risk factor for CAD!



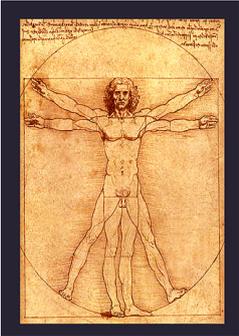
Daily Experiences → Neurotransmitters Released → Toxic To Body

Prof. Dwight Evans (2008) University of Pennsylvania

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Disease-Depression Connection

- Cancer
- Diabetes
- Epilepsy
- Heart disease
- Osteoporosis



Prof. Dwight Evans (2008) University of Pennsylvania

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Stress



Like its more severe cousin "depression," stress can be harmful to the body!

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Stress: Harmful to Mind & Body

- * **Acute**
 - ◇ Response to "imminent threat"
 - ◇ Flood of hormones: affects CV system
- * **Chronic**
 - ◇ Constant 'uncontrollable' pressure
 - ◇ **Hormones weaken immune system; damage bones**
- * Americans spend \$27 billion dollars/yr on alternative medicine options

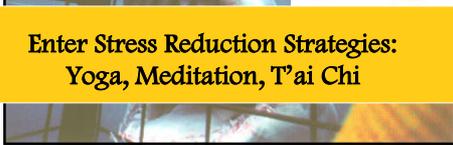
Time Magazine, Jan. 20, 2008

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Fight-or-Flight

Body Unleashes a Flood of Hormones!
Useful in the short-term
Become Toxic if Persist

Enter Stress Reduction Strategies:
Yoga, Meditation, T'ai Chi



Has Not Changed for Thousands of Years!

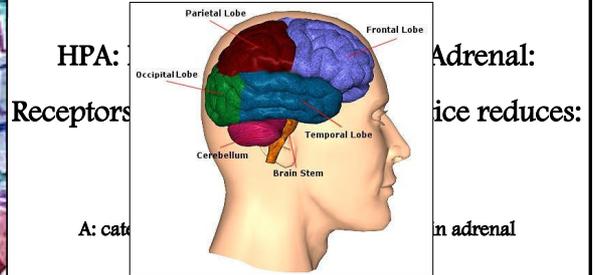
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Stop! How Do You Explain to Your Clients How Mind/Body Exercises Combat Stress and Depression?

“Mind/Body exercise appears to act as a **buffer** in many stress-illness relationships, through biochemical interactions linking mind and body.”

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Luskin, F. M. (2000). Alternative Therapies, 6, 46-56

Stop! How Do You Explain to Your Clients How Mind/Body Exercises Combat Stress and Depression?



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Luskin, F. M. (2000). Alternative Therapies, 6, 46-56

Stop! And What Can Be Manipulated? Proven Therapy for....

- Musculoskeletal disorders including MD, MS
- Type II diabetes
- Eating Disorders, Weight Control
- HIV, AIDS, and related treatment
- Menopause
- Cancer symptoms
- Anger and Stress Management
- Sleep, Stress, Anxiety, Depression disorders
- Migraines
- Stress-related cardiac dysrhythmias
- Cardiac, pulmonary rehabilitation

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Luskin, F. M. (2000). Alternative Therapies, 6, 46-56

Yoga



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The Power of Yoga

- * “Union between mind and body”
 - ◇ Dates back 5,000 years
- * 15 million Americans do yoga regularly
- * 75% of U.S. health clubs offer yoga classes
- * Eastern tradition meets Western lifestyle
 - ◇ Life forces & energy centers from within
 - ◇ View the body: inside out vs. outside in
 - ◇ Holistic versus parts
 - ★ Integration of body, mind, and breath

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Why Does Yoga Work?



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Overview: Why Yoga Works

- * Autonomic nervous system basics
 - ◇ Sympathetic nervous system (SNS)
 - ◇ Parasympathetic nervous system (PNS)
- * Yoga: deep breathing, stretching, contracting & relaxing muscles, focus on 'presence in body'

Yoga turns the Fight-or-Flight off (SNS)
Yoga turns the Relaxation Response on (PNS)

respiration

- ◇ **Body enhances healing mechanisms**

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ARE YOU READY?



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RESEARCH PROTOCOLS Dean Ornish, M.D. Research



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Is Yoga a Natural Health System?

- * Most cited study: Ornish 1990
 - ◇ 94 patients with coronary heart disease
 - ◇ 53 patients prescribed yoga, group support and vegetarian diet (10% fat)
 - ◇ Cholesterol decrease similar to drug intervention
 - ◇ After 1 year: significant regression of atherosclerosis
 - ◇ Control: significant progression of disease

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Is Yoga a Natural Health System? (cont)

- * Ornish, 1998; American Journal of Cardiology
- * 194 patients in experimental group (coronary heart disease)
- * Main Result: 80% avoided bypass or angioplasty
- * Lifestyle changes of patients included yoga
- * Ornish: "adherence to the yoga and meditation program was as strongly correlated with the changes in the amount of blockage as was the adherence to diet"

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Yoga and Health-Related Fitness



Impact Research

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Effects of Hatha Yoga Practice on Health-Related Aspects of Physical Fitness
 Tran et al., Preventative Cardiology, Vol. 4, 165-170, 2001

- * 10 subjects, 18- 27 yr
- * 2 yoga classes/wk for 8 weeks
- * Class: 10 min pranayama, 15 min warm-up, 50 min of asanas, 10 min supine relaxation
- * Strength: elbow extension (+31%), elbow flexion (+19%), knee extension (+28%)
- * Flexibility: ankle (+13%), shoulder elevation (+155%), trunk extension (+188%), trunk flexion (+14%)
- * Aerobic capacity: +6-7%

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Yoga and Hypertension



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Effect of Selected Yogic Practices on the Management of Hypertension

Murugesan et al., Indian Journal of Physiological Pharmacology, Vol. 44, 207-210, 2000

- * 33 hypertensive (mild-moderate) subjects 35- 65 yrs
- * Yoga group, medical treatment group, control group
- * Yoga in morning and evening (1 hr/session), 11 weeks
- * Medical treatment group on anti-hypertensive drugs
- * **Results**

◆ Yoga more effective than drugs

	Yoga	Drugs	Control
Pretest (DBP)	108 mmHg	106 mmHg	109 mmHg
Posttest (DBP)	82 mmHg	96 mmHg	107 mmHg

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- * Medical treatment group on anti-hypertensive drugs
- * **Results**

◆ Yoga more effective than drugs

	Yoga	Drugs	Control
Pretest (SBP)	156 mmHg	158 mmHg	155 mmHg
Posttest (SBP)	123 mmHg	134 mmHg	151 mmHg

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Beneficial effects of yoga lifestyle on reversibility of ischemic heart disease: Project Care of International Board of Yoga

Yogendra J et. al. J Assoc of Physicians India; 52:283, The Yoga Institute, Mumbai, 2004

- * 71 patients with CAD (29 yoga and 42 control)
- * Yoga based lifestyle modifications of 8 limbs
- * Heart imaging and angiographic studies
- * Main Results: LDL decreased 26% vs 2.4% in control
- * Heart imaging showed 44% improvement vs 31% in controls
- * Angiographies: CHD progression: 30% of study group vs 60% of control

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Aerobic capacity and perceived exertion after yoga practice

Ray, U, et. al., Indian J Medical Registry 114, December, 215-221, New Delhi, 2001

- * 40 men from Indian army (18-25y/o) given intense VO2max testing w/perceived exertion
- * 29 yoga group and 20 conventional exercise
- * Main Results: yoga group had greater PE drop after intense exercise than control
- * Conclusions?

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Yoga and NIDDM



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A Study of Response Pattern of Non-Insulin Dependent Diabetics to Yoga Therapy

Jain et al., Diabetes Research and Clinical Practice, Vol. 19, 69-74, 1993

- * 149 NIDDM subjects (very large study)
- * Yoga 1.5 hr in morning and 1 hr in evening: shatkriyas, asanas, pranayama
- * 40 consecutive days treatment
- * Results
 - ◆ NIDDM patients with disease less than 10 yr & fasting glucose levels of 140 mg/dl could be controlled by yoga alone

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Yoga and Epilepsy



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Yoga and Epilepsy

Journal of Alternative and Complementary Medicine: 12 [4], 267-71, 2006

- * 1 year study
- * 20 male, 20 female (avg age 27 y/o) w/epilepsy
- * 2 x daily yoga meditation of 27 minutes
- * Control group consisted of 2 other therapies
- * Main results: in first 3 months, 39 subjects decreased seizures by 53%
- * Patients who continued meditating after 3 months improved better than either drug intervention or vagus nerve stimulation techniques

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Special Comment: Breathing



“Breathing patterns have an important effect on physiological and psychological functioning.”

findLawrence.com The science of breathing - the yogic view 2000 wellness without walks™

Pranayama: ujjayi

- * Inhalation phase: stretch receptors in pulmonary tissue stimulate parasympathetic system via vagus nerve
- * Exhalation phase: further enhancement of inhibitory tone and PNS
- * Self-study: spirometers

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What About T'ai Chi Ch'uan?



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The Effect of T'ai Chi on Cardiorespiratory Function in Patients with Coronary Artery Bypass Surgery

Lan et al., *Medicine and Science in Sports and Exercise*, Vol. 31, 634-638, 1999

- * 20 patients, average age = 56.5 yrs, coronary artery bypass surgery & completed phase II of cardiac rehab, 1-year study
- * T'ai Chi Ch'uan (TCC) group, control group
- * TCC: 20 min warm-up, 24 min TCC (108 movements), 10 min cool-down (3 days/week)
- * Control group: 10 min warm-up, 50 min walk, 10 min cool-down (3 days/week) (Home-based program!)
- * Main results:
 - ◇ TCC 10.3% improvement in aerobic capacity
 - ◇ Significant increase in VO_2 at VT
 - ◇ No change in the control group!

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12-Month T'ai Chi Training in the Elderly: Its Effect on Health Fitness

Lan et al., *Medicine and Science in Sports and Exercise*, Vol. 30, 345-351, 1998

- * 38 subjects, 58-70 yrs of age
- * T'ai Chi Ch'uan (TCC) group (9m, 11f), control group (9m, 9f)
- * TCC: 20 min warm-up, 24 min TCC (108 postures), 10 min cool-down (4 days/week) (Control = just active lifestyle)
- * Main results:
 - ◇ Male: 16.1% increase in VO_{2max}
 - ◇ Female: 21.3% increase in VO_{2max}
 - ◇ Male: knee extensor/flexor strength: 18.1%/15.4%
 - ◇ Female: knee extensor/flexor strength: 20.3%/15.9%
 - ◇ No CHANGE in control group!

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Self-efficacy as mediator of fear of falling in an exercise intervention for older adults

Li F, et. al. *Journal of Gerontology B Psychology Soc Sci.*: 60: 34-40, Oregon Res. Inst., 2005

- * 256 community-dwelling older adults 70-95 y/o
- * 125 in T'ai Chi group or 131 in Stretching/Control group
- * 3x week/6 months
- * Subjective measurements of fear of falling
- * Main results: T'ai Chi participants reported greater reductions in fear of falling over control group

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Qi Gong and Depression

International Journal of Geriatric Psychiatry: 21 [9], 890-97, 2006

- * 82 subjects, avg age 65 y/o
- * 3 x week for 16 weeks
- * Control group read newspaper
- * Main results:
 - ◇ No change in control group
 - ◇ Qi Gong group increased mood improvement, higher self-efficacy, more physical strength & endurance, more success in social relationships
- * Doctors hypothesize that practice stimulates neuroendocrine and immune systems

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Qi Gong and Diabetes

Journal of Alternative and Complementary Medicine: 11 [1]: 29-39, 2005

- * 3 month Australian study
- * 11 participants
- * Daily 60 minute T'ai Chi and/or Qi Gong
- * Main results:
 - ◇ Waist circumference reduction and better BMI #s
 - ◇ More consistent fasting glucose levels
 - ◇ No control group

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Qi Gong and Hypertension

International Journal of Neuroscience: 114 [7], 777-86, 2004

- * 36 hypertensive men and women
- * Half in Qi Gong and half Control
- * 8 week study of 60 mins daily practice or slow walking
- * Main results:
 - ◇ Qi gong group significantly reduced blood pressure and LDL levels (18% or better)
 - ◇ Control group: slight improvement (3-4%)

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Qi Gong and Hypertension

Journal of Human Hypertension [May 19], 1-8, 2005

- * 88 Hong Kong subjects
- * 15 week period
- * Qi Gong or Conventional Callisthenic exercise
- * 2 2-hour Qi Gong practices/week for 4 weeks to learn, then last 12 weeks alone daily for 75 minutes
- * Both groups received instruction including relaxation techniques. Conventional exercise included: walking, and stepping daily for 75 minutes
- * Main results:
 - ◇ Heart rate, bmi, body mass, circumference benefits were comparable in both groups
 - ◇ Summary: Qi Gong is a reasonable alternative to conventional Western exercise, with documented equivalent benefits.

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What About Pilates Research

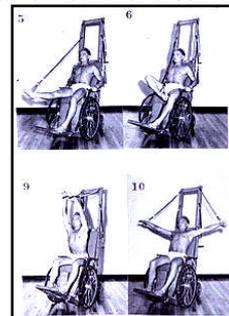
Research Findings From
Michele Olson, Ph.D., Auburn University



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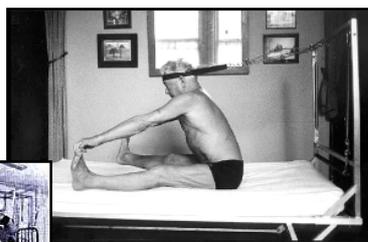
PILATES

Pioneer in Rehabilitation & Exercise



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The First Cadillac - A Hospital Bed Trapeze Table



What Dr. Olson's Team Did...

- * Determined the metabolic/caloric cost of three 40 minute Mat routines:
 - ◇ Basic/Beginner Pilates Mat Workout
 - ◇ Intermediate Pilates Mat Workout
 - ◇ Advanced Pilates Mat Workout

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Methods



- * 1) Had 12 Subjects
- * 2) Performed B, I, A in Random Order
- * 3) Workouts Pre- Video Recorded
- * 4) Used Oxygen/Metabolic Chart (1 L O₂ = 5 Kcal)
- * 5) Monitored HR and RPE

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Metabolic Tests



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Metabolic Tests



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Metabolic Tests



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Conclusions

- * Basic/Beginner*
 - ◆ 4.0 Kcal per minute
 - ◆ 160 Kcal in 40 min
- Intensity Classification
 Low-Mod Intensity
 Calisthenics Class / Dynamic Stretching

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Conclusions

- * Basic/Beginner*
 - ◆ 4.0 Kcal per minute
 - ◆ 160 Kcal in 40 min
 - * Intermediate**
 - ◆ 6.0 Kcal per minute
 - ◆ 240 Kcal in 40 min
- Intensity Classification
 Low-Mod Intensity
 Calisthenics Class / Dynamic Stretching
- Moderate Intensity
 Low-Impact Dance Ex / Hatha Yoga

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Conclusions

<ul style="list-style-type: none"> * Basic/Beginner* <ul style="list-style-type: none"> ◆ 4.0 Kcal per minute ◆ 160 Kcal in 40 min * Intermediate** <ul style="list-style-type: none"> ◆ 6.0 Kcal per minute ◆ 240 Kcal in 40 min * Advanced <ul style="list-style-type: none"> ◆ 7.5 Kcal per minute ◆ 300 Kcal in 40 min 	<p><u>Intensity Classification</u></p> <p><i>Low-Mod Intensity</i> Calisthenics Class / Dynamic Stretching</p> <p><i>Moderate Intensity</i> Low-Impact Dance Ex / Hatha Yoga</p> <p><i>Mod-High Intensity</i> Core Board / Power Yoga</p>
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Conclusions

<ul style="list-style-type: none"> * Basic/Beginner* <ul style="list-style-type: none"> ◆ 4.0 Kcal per minute ◆ 160 Kcal in 40 min * Intermediate** <ul style="list-style-type: none"> ◆ 6.0 Kcal per minute ◆ 240 Kcal in 40 min * Advanced <ul style="list-style-type: none"> ◆ 7.5 Kcal per minute ◆ 300 Kcal in 40 min 	<p><u>Intensity Classification</u></p> <p><i>Low-Mod Intensity</i> Calisthenics Class / Dynamic Stretching</p> <p><i>Moderate Intensity</i> Low-Impact Dance Ex / Hatha Yoga</p> <p><i>Mod-High Intensity</i> Core Board / Power Yoga</p>
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*CDC - 150 kcal/day most days of the week reduces health risks

**30 min = 140 kcal 45 min = 270 kcal 60 min = 360

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PILATES FOR LOW-BACK DISORDERS

Journal of Orthopedic & Sports Physical Therapy: 36 [7], 472-84), 2006

- * Study recognized by the National Institute of Neurological Disorders and Strokes
- * 50 participants
- * 4 week study
- * Main Results:
- * Study members who practiced Pilates experienced more relief from their symptoms than those who went through typical treatment programs (drug intervention, lower back care)
- * Control group: No change in symptoms

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Any Research on the Therapeutic Potential of Music?

The Research Indicates Consistent Positive Effects on Physiological and Psychological States

Music appears to contribute to healing through its power to stimulate, calm, soothe and inspire (pp. 400-410)

?? What are the BEST Music Forms For Specific Therapeutic Interventions??

Biley et al. (2000). Journal of Clinical Nursing

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COMPARATIVE SAMPLE

LEVEL 1: 3 METS	LEVEL 2: 4 METS	LEVEL 3: >6 METS
YOGA: PRANAYAMA	YOGA: SOME VINYASA, ASANA, BIKRAM, IYENGAR	YOGA: ASTHANGA SEQUENCES
QI GONG EXERCISES	T'AI CHI CHUAN SECTIONS	T'AI CHI CHUAN SHORT/LONG FORM
PILATES: MAT STARTING EXERCISES	PILATES INTERMEDIATE MAT EXERCISES	PILATES ADVANCED MAT EXERCISES W/RING OR BALL

Ralph LaForge, Inner IDEA 2006

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Comparative Sample

	HATHA YOGA	POWER YOGA
HR BPM	89 +	115
VO2 M	18.7	24
RPE	10.6	14.3
Kcal/Min	3.1	6
Total	144	237

Procari and Spilde, ACE F Matters, 2005

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Research Summary

There is substantial evidence that hypertension, insulin resistance, pain, cardiovascular disease, depression, stress, and anxiety respond favorably to regular participation in Mindful exercise! Core benefits from these programs include improved balance, strength and flexibility.

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- 6 Tried and True Tips
- * 1. Stress & Breathing:
 - ◆ Yoga: A. Ujjayi B. Bhastrika (front, abduct, adduct)
 - ◆ Tai Chi A. Pursed Lip Breathing
 - ◆ Pilates: "forced expiration"
 - * 2. Yoga and Strength: *Utkanasana*
 - * 3. Yoga and Flexibility: *Ardha Uttanasana*
 - * 4. Tai Chi and Cardiovascular: "*Sinking th Chi*"
 - * 5. Tai Chi and Strength: "*Rooster Stands on One Leg*"
 - * 6. Pilates and Lower Back Strength: "*Standing Leg Circles*"
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- EXPLORING RESEARCH....
- * INTRODUCTION AND PURPOSE
 - * BACKGROUND REVIEW ON MIND-BODY: S. & D.
 - * RESEARCH REVIEW
 - * RESEARCH PRACTICUM
 - * CONCLUSIONS
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