

## Integrative Approaches to Headache Management

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## Objectives

- Discuss the *rationale* and *prevalence* for incorporating integrative therapies
- Review common integrative therapies used in headache management
- Discuss incorporation of integrative / CAM therapies into an pain management plan

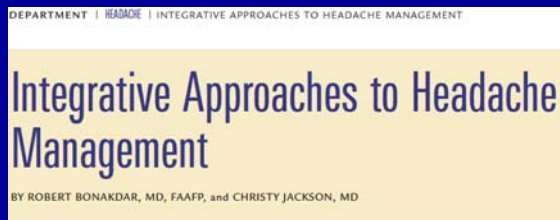
## Disclosure

- Research Support
  - Johnson & Johnson
- Consultant:
  - McNeil Consumer Health
  - Purdue
  - Nu-Life Technologies

## Overview

- Rationale
- **Prevalence of Treatment**
- Goals of Therapy
- **Overview of Treatment Approach**
- Integrative Approach: Putting it all together
- **Conclusions**

## Approach to the Therapies / Therapists



Bonakdar RA, Jackson, K. Integrative Approaches to Headache Management. *Pain Practitioner*; 2010; 20(1):43-54.

## **Burden of illness and satisfaction with care among patients with headache seen in a primary care setting**

- “These patients have significant problems with headache management, disability, pain, worry, and dissatisfaction with care.
- ..we observed across the sites a consistent need for improvement in headache management.”
- Migraine patients are satisfied or very satisfied with current care options **21%** of the time

Headache. 2005 Sep;45(8):1048-55. Burden of illness and satisfaction with care among patients with headache seen in a primary care setting. Harpole LH et al.  
Lake AE. Psychological impact: the personal burden of migraine. *Am J Man Care* 1999; 5: S11

## Integrative Team



- FPs
- Neurologists
- N.P.s / Nurses
- Psychologists
- Biofeedback
- Physical, massage & yoga therapists
- Dieticians
- Acupuncturists
- Pharmacy...

Mental/  
Emotional

- Depression
- Anxiety
- Panic

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Headache  
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 ISSN 0017-8748  
 doi: 10.1111/j.1526-4610.2007.01084.x  
 Published by Blackwell Publishing

### Review Article

#### The Migraine Cycle: Patient Burden of Migraine During and Between Migraine Attacks

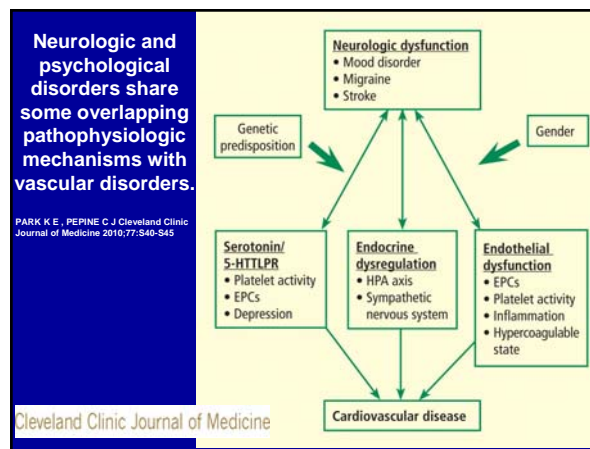
Jan Lewis Brandes, MD

Functional  
QOL

- ~~Work~~
- Loss Productivity
- Worry about next Headache

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•Dahlof CG. *Eur J Neurol*. 1998;5:525-533.  
 •Lipton RB. *Neurology*. 2005;65(12 Suppl. 2):S50-S58.  
 •Merganeer G. *Cephalalgia*. 2006 Apr;26(4):451-6.



### Lifting The Burden

The Global Campaign to Reduce the Burden of Headache Worldwide

Home | Contact | Press Kit | Accessibility | Register | Log in

You are here: [home](#) > [media](#) > [press release - headache among top ten disabling medical conditions](#)

History | **PRESS RELEASE - Headache among top ten disabling medical conditions**

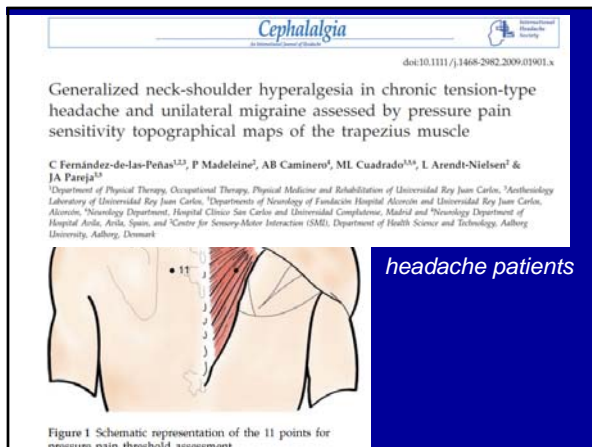
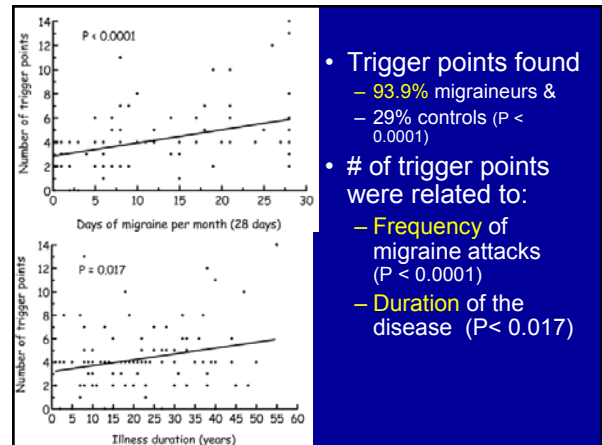
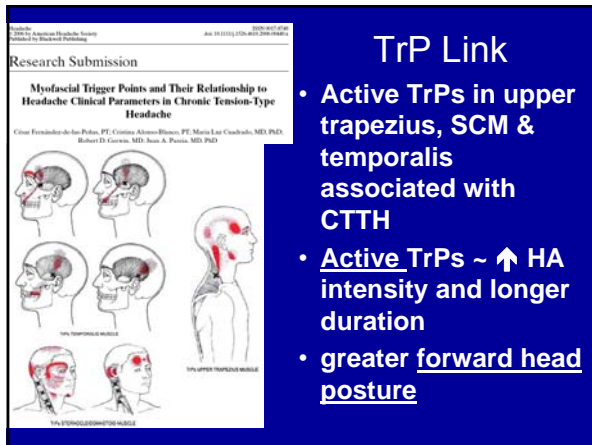
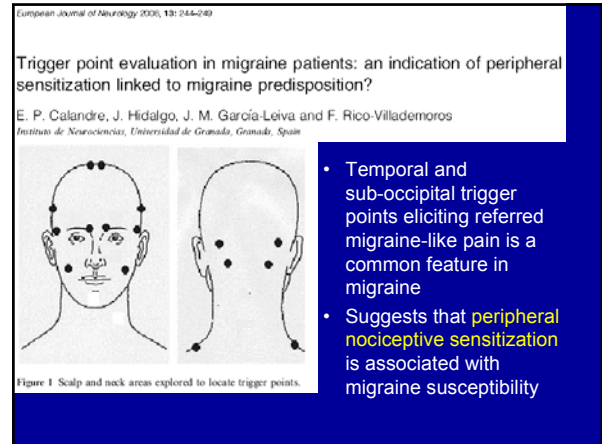
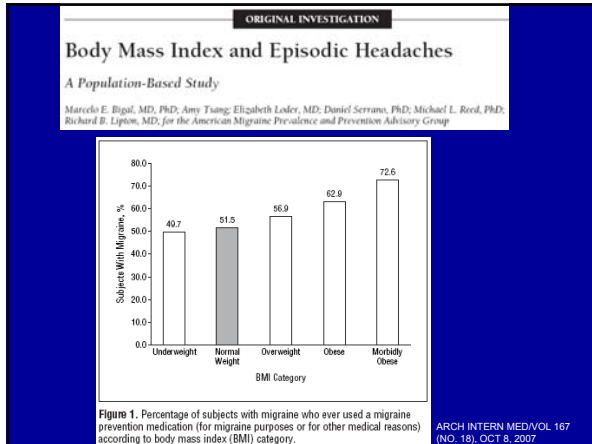
- Migraine causes ~ **400,000 lost days** of work or school every year/ million population
- Migraine sufferers experience **more pain and restrictions in daily activities** than people with
  - Osteoarthritis
  - Diabetes
  - Depression

<http://www.lt-b.org>

## Migraine - Depression Link

- Major depression at baseline predicts the first-onset of migraine during the next 2-years
- Migraine at baseline predicted the first-onset of major depression during follow-up

Breslau N, Lipton RB, Stewart WF, Schultz LR, Welch KM. Comorbidity of migraine and depression: Investigating potential etiology and prognosis. *Neurology*. 2003;60:1308-1312.



- ## Overview
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## CAM Prevalence in Headache

Country and first author	CAM users (%)	CAM therapies	%
USA Von Peter et al. 2002	84	Massage	42
		Exercises	30
		Acupuncture	19
Swiss Kozak et al. 2005	30	Acupuncture	21
		Homoeopathy	7
Italy Rossi et al. 2005	31	Acupuncture	27
		Homoeopathy	22
		Massage	10
Italy Rossi et al. 2006	40	Chiropractic	22
		Acupuncture	18
		Massage	18
Germany own data, Gaul et al. 2008	82	Acupuncture	58
		Physical therapy	57
		Relaxation training	42

CAM, complementary and al

Gaul. Use of complementary and alternative medicine in patients suffering from primary headache disorders. Cephalgia. 2009

## The US Headache Consortium

Nonpharmacologic Tx well suited for those with:

1. **Preference** for such Tx
2. **Poor tolerance** for pharma Tx
3. **Contraindications** for specific pharma Tx
4. **Insufficient** or no response to pharma Tx
5. (planning to be) **pregnant** or **nursing**
6. H/O long-term, frequent, or **excessive** analgesic or acute **medications**
7. **Exhibit significant stress** or **deficient stress-coping skills**

Campbell JK, Penzien DB, Wall EM. Evidence-based guidelines for migraine headache: behavioral and physical treatments. US Headache Consortium 2000. Available at: <http://www.aan.com>.

## Prevalence, pattern and predictors of use of CAM in migraine patients

- Therapies perceived beneficial by **39.5%**
- Most common reason for CAM use:  
– “potential improvement” (**47.7%**)
- Most common source of information:  
– **a friend or relative** (52.7%)
- **61%** of CAM users had not informed clinician

Rossi P, Di Lorenzo G, Malpezzi MG, et al. Prevalence, pattern and predictors of use of CAM in migraine patients attending a headache clinic in Italy. Cephalgia. 2005 Jul;25(7):493-506.

## Goals of Behavioral & Preventive Treatments

1. ↓ Frequency and severity of headache
2. ↓ Headache-related disability
3. ↓ Reliance on poorly tolerated or unwanted pharmacotherapies
4. ↑ **Personal control of migraine**
5. ↓ Headache-related distress and psychologic symptoms

Campbell JK, Penzien DB, Wall EM. Evidence-based guidelines for migraine headache: behavioral and physical treatments. US Headache Consortium 2000. Available at: <http://www.aan.com>.

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## Integrative Considerations

- Trigger management
  - S
  - H
  - E
  - D
- Dietary Supplements
  - Riboflavin
  - Magnesium
  - CoQ10
  - Feverfew
  - Butterbur
  - Ginger . . .
- Mind-Body & Behavioral Therapies
  - Biofeedback
  - CBT
  - Guided Imagery
  - Visualization
  - Relaxation / Breathing
- Modalities
  - Exercise
  - Manual therapy / Manipulation
  - Yoga / MBSR
  - Acupuncture
  - Healing Touch

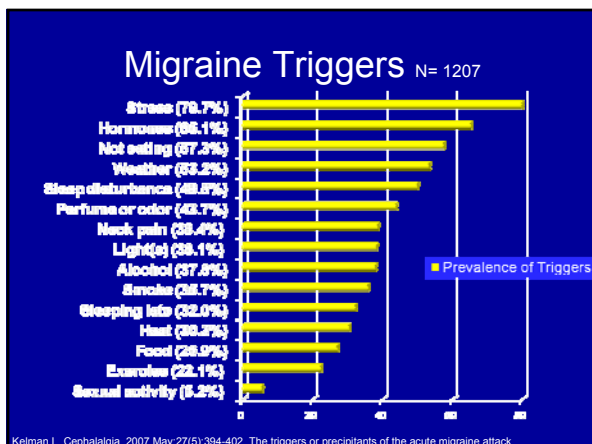
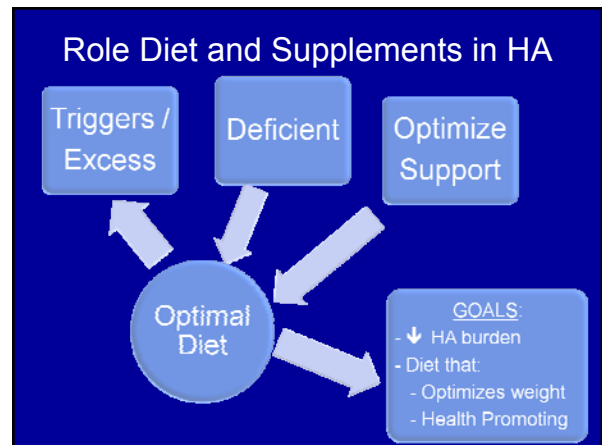
## SHED Your Triggers

- **S**
  - Stress & Tension
  - Stimuli (lights, sound, odors)
  - Sleep dysfunction
- **H**
  - Hormones
- **E**
  - Exercise
  - Environmental (weather, mealtime) change
- **D**
  - Diet
  - Deficiency
  - Drugs

## Triggers & Headache

- N= 1207 Migraine sufferers
- Prevalence **75.9%** reported triggers
  - 40.4% infrequently, 26.7% frequently and 8.8% very frequently
  - Triggers were more likely to be associated with a more severe headache

Kelman L. Cephalalgia. 2007 May;27(5):394-402. The triggers or precipitants of the acute migraine attack.



## Dietary Triggers & Headache (individual)

### A - Foods

- Allergy (gluten)
- **Allergenic** Trigger (histaminic response)
- Additives (MSG, . . . )
  - Fast food, frozen, canned, processed, packaged
- Artificial (sweetners)
- Aged
  - Tyramine (cheese, wine, sauerkraut)
- Alcohol
- Other (chocolate, caffeine, etc)

## Fat in the Diet – Amount and Type

AMOUNT	TYPE
• N=54	• ↓ Trans
• ↓ Dietary fat from 66 G/day to 28 g/day	• ↓ Omega-6
• Significant reduction (P < 0.0001) in:	• ↑ Omega-3
– Frequency	• ↑ Polyunsaturated
– Intensity	• ↑ Monounsaturated
– Duration	
– Medication Use	

Bic Z, Blix GG, Hopp HP. J Womens Health Gen Based Med. 1999 Jun;8(5):623-30. The influence of a low-fat diet on incidence and severity of migraine headaches.

**MyPyramid.gov**

United States Department of Agriculture

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**Top of the Day**

Use whole grains to meet dietary goals. Choose whole grains, such as whole wheat, oat, or barley, instead of refined grains like white bread or white rice.

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Patient Resources

## The Diet Factor in Pediatric and Adolescent Migraine

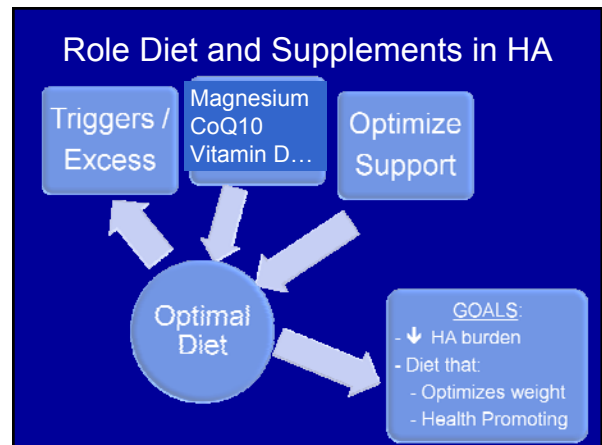
J. Gordon Millichap, MD, and Michelle M. Yee, CPNP

### Heart-Healthy Diet Study Bolsters Weak Literature on Nutrition-Headache Link

Alice Goodman

- 13,673 people as part of National Health and Nutrition Examination Survey (NHANES)
- Those with significant headache with
  - ↓ Fiber, Thiamine, Vitamin C intake

Millichap JG, Yee MM. The diet factor in pediatric and adolescent migraine. *Pediatr Neurol* 2003;29:9-15. Buettner et al. 2010 annual meeting of the American Academy of Neurology (P06.275)



## Summary HA Diet Suggestions

↓ Amount of fat (30 Grams/day)

↓ Saturated fat

↓ A – Foods

↓ Excess Refined Calories

↑ Mono & Poly Un. Fats

↑ Nutrient rich fruits/veg.

↑ Unrefined Carbs / Fiber

↑ Adequate Protein

SUPPLEMENT	TYPICAL DAILY DOSE
Magnesium	100-600 mg
Riboflavin (Vitamin B-2)	400 mg
Co-enzyme Q10 (COQ10)	150 mg
Butterbur (Petasites Hybridus)	100 mg-150 mg
Feverfew (Tanacetum parthenium)	50-100 mg standardized extract
Ginger ( <i>Zingiber officinale</i> )	250-1000mg





## Magnesium – Diverse Functions

- Anti-Inflammatory mediator ( $\downarrow$ Mg =  $\uparrow$ CRP)
- Calcium channel blocker
- Muscle contraction/relaxation
- Energy reactions
- Platelet aggregation
- -----
- $\downarrow$ CSF Mg levels associated poor neurovascular tone
- $\downarrow$ Mg and  $\uparrow$ Ca/Mg ratio may modulate cerebral serotonin receptors

\*Alura BM. Calcium Antagonist Properties of Magnesium: Implications for Anti-migraine Actions. *Magnesium* 1985; 4:169-75.  
 \*Baranadan NM, Halvorson H, Vande-Linde A, et al. Low Brain Magnesium in Migraine. *Headache* 1985; 25:590-93.  
 \*Kivaver K. Magnesium and Migraine. *Headache* 1990; 30:188.  
 \*Jaconetti P, Santos G, Borella P, et al. Magnesium Prophylaxis of Menstrual Migraine: Effects on Intra-cellular Magnesium. *Headache* 1991; 31:298-304.  
 \*Rohrer A, Wilmanns C, Kohne-Volland R. Prophylaxis of Migraine with Oral Magnesium: Results from a Prospective, Multi-Center, Placebo-Controlled and Double-Blind Randomized Study. *Cephalalgia* 1996; 16:257-63.  
 \*Paffenrath V, Wessely P, Meyer C, et al. Magnesium in the Prophylaxis of Migraine—A Double-Blind, Placebo-Controlled Study. *Cephalalgia* 1996; 16:436-440.

## Oral Magnesium - Studies

- Menstrual migraine
  - 360 mg/day **Mg pyrrolidone carboxylic acid**
  - HA days  $\downarrow$  4.7 to 2.4 & Menstrual symp. ( $p < 0.03$ )
- Chronic Migraine X 12 wks
  - **600 mg/day trimagnesium dicitrate** (24 mmol )
  - Freq. HA  $\downarrow$ : **42% Mg vs. 16%** ( $P < 0.05$ )
  - Days with migraine  $\downarrow$ : **52.3% vs 19.5%** ( $p < 0.05$ )
- - Chronic Migraine:
  - 20 mmol **Magnesium-u-aspartate-hydrochloride-trihydrate**
  - Stopped early GI symptoms

Sun-Edelstein C. Role of magnesium in the pathogenesis and treatment of migraine. *Expert Rev. of Neurotherapeutics* 2009.  
 F. Facchinetti, G. Santos, A.R. Genazzani, G. Nappi. *Cephalalgia* 1996; 16:257-263.  
 Peikert, C, Wilmanns, R, Kohne-Volland, *Cephalalgia* 1996; 16:257-263.  
 Paffenrath V, Wessely P, Meyer C, et al. *Cephalalgia* 1996; 16:436-440.

### Original Research

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

Dana E. King, MD, Arch G. Mainous III, PhD, Mark E. Geesey, MS, and Robert F. Woodson, PhD  
 Department of Family Medicine (D.E.K., A.G.M., M.E.G.), Department of Biometry, Biostatistics, 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**

Journal of the American College of Nutrition, Vol. 24, No. 3, 166–171 (2005)

## Oral Magnesium - Studies

- Magnesium in Children - DBPCT
  - (N=118) 9 mg/kg Magnesium Oxide / day
    - Frequency of HA  $\downarrow$  pre-post:
      - Mg ( $P = 0.0037$ )
      - Placebo ( $P = 0.086$ )
    - HA severity  $\downarrow$  in Mg vs. Placebo ( $P < 0.003$ )

Wang F, Van Den Eiden S, Ackerson L, et al. *Headache* 2003;43:601-610.

## Magnesium - Studies

- IV Mg sulfate (1 g) for acute migraine
  - 80% with significant improvement w/in 15 min.
  - **85% of responders = low ionized Mg level <0.54 mmol/L**
  - **85% of nonresponders = normal ionized Mg level**
  - No correlation with serum Mg
  - Better for migraine with aura

Mauskop A, et al. *Clin Sci* 1995  
 Mauskop A, et al. *Headache* 1996,

Demirkaya S, et al. *Headache* 2001  
 Bigal ME et al. *Cephalgia* 2002.

## Oral Magnesium – key points

- Appears to work best in:
  - Those with  $\downarrow$  ionized / intracellular Mg
  - Migraine with aura
  - Reducing frequency > severity of migraine
- Absorption is key
  - ? Best formulation (trimg dicitrate, pidolate, glycinate . . .)
- Side Effects: Diarrhea & loose stools
  - Consume with food and split dosage
  - ? Chelated formulation
- Full efficacy may take several months
- Synergistic – Antidepressant / antispasmodic

Szewczyk B, Poleszak E, Sowa-Kulma M et al. Antidepressant activity of zinc and magnesium in view of the current hypotheses of antidepressant action. *Pharmacol Rep.* 2008 Sep-Oct;60(5):588-9.

## Vitamin D and HA?

Headache ISSN 0017-8748  
 © 2009 the Authors doi: 10.1111/j.1526-4610.2009.01483.x  
 Journal compilation © 2009 American Headache Society Published by Wiley Periodicals, Inc.

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### Brief Communications

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### Chronic Tension-Type Headache With Vitamin D Deficiency: Casual or Causal Association?

Sanjay Prakash, DM; Nilima D. Shah, MD

Mental/Emotional

- Depression
- Anxiety
- Panic

Physical

- Fibromyalgia
- IBS
- TMJ
- TrPs
- Myofascial Pain
- BMI
- CV Health

Functional QOL

- Missed School/Work
- Loss Productivity
- Worry about next Headache

• Dahlöf CG. Eur J Neurol. 1998;5:525-533.  
 • Lipton RB. Neurology. 2005;65(12 Suppl. 2):SS0-SS8.  
 • Merganeer G. Cephalalgia. 2006 Apr;26(4):451-6.

Critical Review

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### Magnesium Absorption: Mechanisms and the Influence of Vitamin D, Calcium and Phosphate<sup>1</sup>

LAURIE L. HARDWICK, MICHAEL R. JONES,<sup>2</sup> NACHMAN BRAUTBAR<sup>3</sup> AND DAVID B. N. LEE<sup>4</sup>  
 Division of Nephrology (111R), Veterans Administration Medical Center, Sepulveda, CA 91343

- Pharmacological doses of vitamin D increase Mg absorption in both vitamin D-deficient and vitamin D-replete animals

## Riboflavin (Vitamin B-2)

Riboflavin (B-2)  
 ↓  
 Flavin Adenine Dinucleotide (FAD)

FAD deficiency has been linked to poor cerebrovascular tone

## Vitamin D – Depression - CV

- ↑ rate of depression in those <40 nmol/L
- RCT of 20 - 40,000 IU Vitamin D/wk x 1 yr
- Significant improvement in BDI scores versus placebo after 1 year

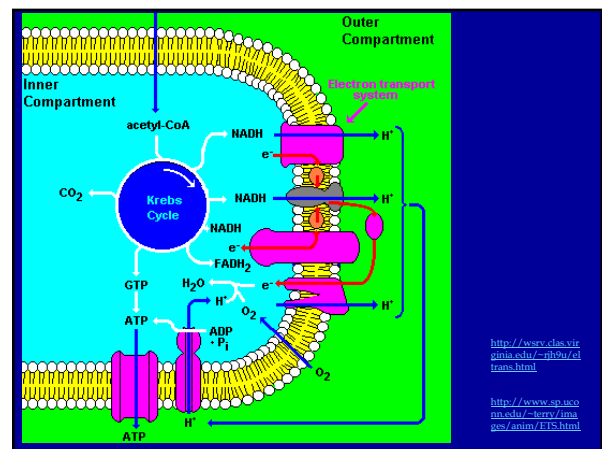
ORIGINAL INVESTIGATION

### Prevalence of Cardiovascular Risk Factors and the Serum Levels of 25-Hydroxyvitamin D in the United States

Data From the Third National Health and Nutrition Examination Survey

David Martinez, MD, MS, Miles Wolf, MD, MMSc, Deyu Pan, MS, Ashraf Zaidi, MD, Naureen Tareem, MD, Ravi Thadhani, MD, MPH, Arnold Feltenfeld, MD, Barton Levine, MD, Rajnish Mehrotra, MD, Keith Norris, MD

Jorde et al. Effects of vitamin D supplementation on symptoms of depression in overweight and obese subjects: randomized double-blind trial. J Intern Med. 2008 Dec;264(6):590-609.





## Riboflavin (Vitamin B-2)

- N=55 (RDBPCT intention to treat analysis)
- 400 mg/day of B2 vs. placebo for 3 months
- Those subjects who ↓ HA days by > 50%  
 = 15% placebo  
 = 59% B-2 (p = .002)
- **NNT=2.3** Side effects= rare diarrhea
- No significant change in intensity and duration
- **Valproate NNT=1.6**
- Valproate NNT for ADVERSE EFFECT = 2.4  
 riboflavin's NNT for ADVERSE EFFECT = 33.3

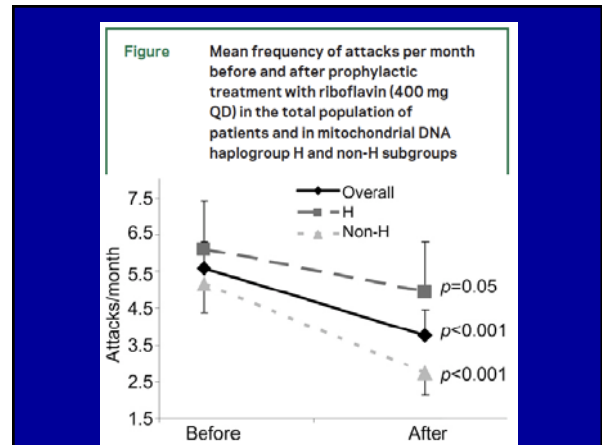
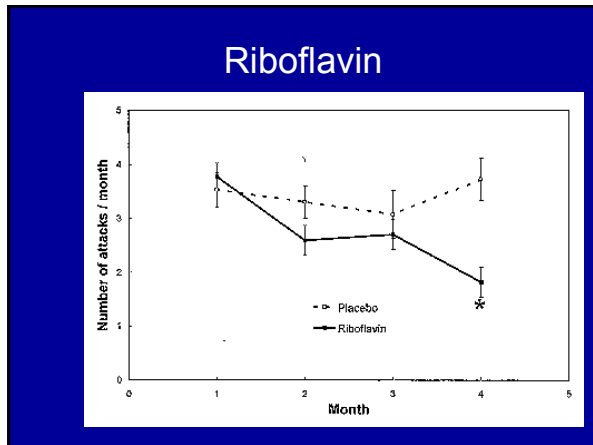
Schoenen J et al. Neurology. 1998; 50: 466-70.  
 Boehrke C et al Eur J Neurol. 2004; 11(7): 475-7  
 Schoenen J, et al. Cephalgia 1994  
 Sandor PSet al. Headache. 2000

## Mitochondrial DNA haplogroups influence the therapeutic response to riboflavin in migraineurs

C. Di Lorenzo, MD ABSTRACT

- “Riboflavin appears to be more effective in patients with migraine with *non-H* mitochondrial DNA haplotypes
- ...could be related to the association of haplogroup H with increased activity in complex I, a major target for riboflavin
- Haplogroup H is chiefly found in the European population.

Neurology® 2009;72:1588-1594



## The effects of vitamin supplementation and MTHFR (C677T) genotype on homocysteine-lowering and migraine disability

Rod Lea<sup>1,2</sup>, Natalie Colson<sup>1</sup>, Sharon Quinlan<sup>1</sup>, John Macmillan<sup>1</sup> and Lyn Griffiths<sup>1</sup>

- This study provides some early evidence that lowering homocysteine through vitamin supplementation reduces migraine disability in a subgroup of patients.

Group	Baseline	6 months
Placebo	~50	~45
Vitamin	~50	~35

Pharmacogenet Genomics. 2009 Jun;19(6):422-8

## Research Submission

### Coenzyme Q10 Deficiency and Response to Supplementation in Pediatric and Adolescent Migraine

Andrew D. Hershey, MD, PhD; Scott W. Powers, PhD; Anna-Liisa R. Vickell, RN, MSN, CPNP; Susan L. LaCruz, RN, MSN, CPNP; Priscilla L. Ellnor, RN, MSN, CPNP; Ann Segers, RN; Danny Burdine, BA; Paula Manning, RN; Marielle A. Kabouchie, MD

- CoQ10 level of 1550 patients (avg. age=13.3)
- 32.9% were below the reference range  
 – Recommended 1 to 3 mg/kg per day of CoQ10 in liquid gel capsule
- ~ 3 mo. f/u: CoQ10 level ↑ to 1.20 (P < .0001)
- HA frequency ↓ from 19.2 → 12.5 (P < .001)
- Headache disability (PedMIDAS) improved from 47.4 → 22.8 (P < .001)

**Antifatigue effects of coenzyme Q10 during physical fatigue**

- Oral administration of coenzyme Q10 (300 mg) improved subjective fatigue sensation and physical performance during fatigue-inducing workload trials
- ....might prevent unfavorable conditions as a result of physical fatigue.

**GINGER (ZINGIBER OFFICINALE) IN MIGRAINE HEADACHE**

*eCAM 2009: Page 1 of 11  
doi:10.1093/eam/ep060*

Original Article

**Gastroprotective Effect of Ginger Rhizome (*Zingiber officinale*)  
 Extract: Role of Gallic Acid and Cinnamic Acid in H<sup>+</sup>, K<sup>+</sup>-ATPase/*H. pylori* Inhibition and Anti-oxidative Mechanism**

- Traditional Use
- Properties:
  - Serotonin Receptor Modulation
  - Anti-nausea effects (on a regular basis)
  - Anti-inflammatory
  - GI-protective
- Sublingual ginger for acute use
- 250-1000 mg/day

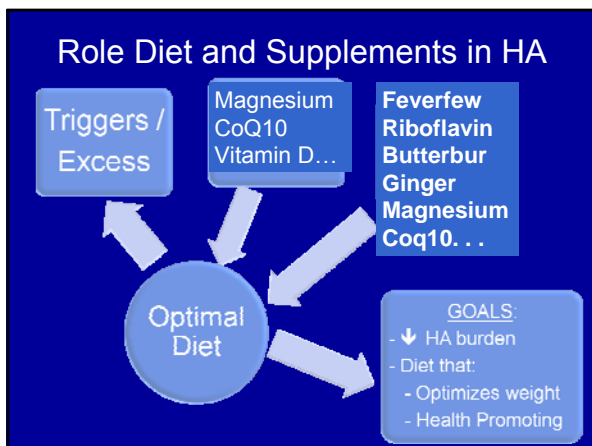
**Coq10 – Depression**

- CoQ10 was significantly ( $p=0.0002$ ) lower in depressed patients than in controls.
- 51.4% of depressed patients had CoQ10 values that were lower than the lowest plasma CoQ10 value detected in controls.
- CoQ10 was significantly lower in patients with Treatment Resistant Depression.

Maes M. Lower plasma Coenzyme Q10 in depression: a marker for treatment resistance and chronic fatigue in depression and a risk factor to cardiovascular disorder in that illness. *Neuro Endocrinol Lett.* 2009;30(4):462-9.

**Feverfew  
 (*Tanacetum parthenium*)**

- Daisy like plant recognized by first century Greek physicians
  - Analgesic
  - Pyretic
  - Dysmenorrhea
- Active Ingredients:
  - Parthenolide
  - Tanetin and many other bioflavonoids



**Feverfew Studies**

- 3 (+): Reduced severity, duration, and frequency (↓ ~ 24%) of migraine headaches.<sup>1-3</sup> (employed dried, powdered leaves).
- 1 (-): study which used an alcohol extract<sup>4</sup>
- Cochrane: "Results from these trials were mixed and did not convincingly establish that feverfew is efficacious for preventing migraine."<sup>5</sup>

1. Johnson ES. *Br Med J* 1985;291:569-73.  
 2. Murphy JJ. *Lancet* 1988;2:189-92.  
 3. Palevitch D. *Phytother Res* 1997;11:508-11.  
 4. De Weerd CJ. *Phytother* 1996;3:225-30.5.  
 5. Cochrane Database Syst Rev. 2004;(1):CD002286.

## Feverfew More Recent Formulations


- Efficacy and safety of 6.25 mg t.i.d. feverfew CO<sub>2</sub>-extract in migraine prevention—a randomized, double-blind, multicentre, placebo-controlled study.
- Sublingually administered feverfew and ginger compound for acute treatment of migraine when administered during the mild pain phase

Cephalgia. 2005 Nov;25(11):1031-41.  
 Med Sci Monit. 2005 Sep;11(9):PI85-9

## Butterbur dosing

- Petadolex brand
- Dosing
- Adults: 150 mg/day
- Peds: 6-9 years 25 mg twice daily  
 Older Peds: 50 mg twice daily
- S.E.: Mild GI events (eructation)
- ? Hepatic

## Butterbur (*Petasites hybridus* root)



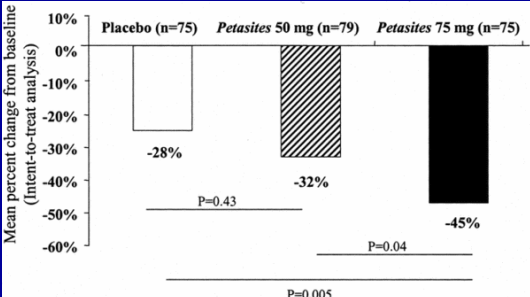
- Constituents
  - Sesquiterpene
  - Petasin
  - Isopetasin
  - Volatile oils
  - Flavonoids
  - Tannins
  - Pyrrrolizidine alkaloids\*
- Activity
  - Antispasmodic effects on smooth muscle
  - ↓ leukotriene & histamine synthesis
  - Used traditionally for allergy disorders

## Comparison of RX vs Herbal Therapies

Results 16 RCT	N	Avg ↓ in HA/Mo; Absolute attack reduction	The % of therapy responders*
Propranolol	(n = 2,075)	~2	18.5%–48%
Topiramate	(n = 1,792)	~2	35%–63%
Butterbur (Petadolex)	(n = 60) (n = 233)	1.6 1.7	45% & 68%
Feverfew (CO <sub>2</sub> extract)	(n = 147) (n = 218)	1.8 1.9**	37% & 30%

\*at least 50% migraine reduction  
 \*\* reduction seen in subjects with > 4 HAV month at baseline  
 Migraine prophylaxis with herbal extracts from petasites and tanacetum versus propranolol and topiramate – a comparative review of DBRCT. Diener HC 2009 American Headache Society

## Butterbur (Petadolex)



Group	n	Mean % Change
Placebo	75	-28%
Petasites 50 mg	79	-32%
Petasites 75 mg	75	-45%

P-values: Placebo vs 50mg = 0.43; 50mg vs 75mg = 0.04; Placebo vs 75mg = 0.005

Lipton RB, Coble H, Eisehaug KM, et al. Petasites hybridus root (butterbur) is an effective preventive treatment for migraine. Neurology 2004;63(12):2240-2244.

## AAN Practice Parameters

NSAIDs				
Aspirin	B	+	+	Infrequent
Fenoprofen				
Flurbiprofen				
Mefenamic acid				
Ibuprofen	C	?	+	Infrequent
Ketoprofen	B	+	+	Infrequent
Naproxen/naprox	B	+	+	Infrequent
Serotonin antagonists				
Cyproheptadine	C	?	+	Frequent
Methysergide	A	+++	+++	Frequent
Other				
Feverfew	B	++	+	Infrequent
Magnesium	B	+	+	Infrequent
Vitamin B2	B	+++	++	Infrequent

Silberstein SD. Practice parameter: evidence-based guidelines for migraine headache (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. Neurology. 2000 Sep 26;55(6):754-62.

European Federation of Neurological Societies (EFNS) guideline on the drug treatment of migraine S. Evers et al. 2009

Substances	Daily dose (mg)	Level
<b>Betablockers</b>		
Metoprolol	50-200	A
Propranolol	40-240	A
<b>Calcium channel blockers</b>		
Flunarizine	5-10	A
<b>Antiepileptic drugs</b>		
Valproic acid	500-1800	A
Topiramate	25-100	A
Amitriptyline	50-150	B
Venlafaxine	75-150	B
Naproxen	2 x 250-500	B
Petasites	2 x 75	B
Bisoprolol	5-10	B
Acetylsalicylic acid	300 mg	C
Gabapentin	1200-1600 mg	C
Magnesium	24 mmol	C
Tanacetum parthenium	3 x 6.25 mg	C
Riboflavin	400 mg	C
Coenzyme Q10	300 mg	C
Candesartan	16 mg	C
Lisinopril	20 mg	C
Methysergide	4-12 mg	C

## Other Supplements

- Melatonin start at 1-3 mg
- Alpha Lipoic Acid 600 -1200 mg/day
- Ginkgo Biloba 120 mg/day
- Ginger 250 -1000 mg/day
- Omega-3 (EPA/DHA) 1-3 grams/day
- Topical and Intranasal options
  - Capsicum
  - Peppermint...

Fusco BM. Preventative effect of repeated nasal applications of capsaicin in cluster headache. Pain. 1994 Dec;59(3):321-5.

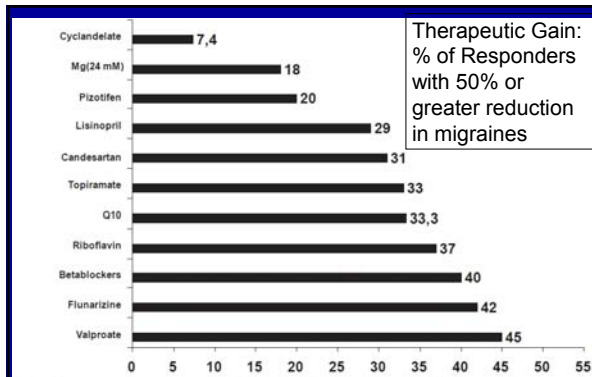


Figure 2 Therapeutic gain in migraine preventive treatment (% of "responders", with a reduction of minimum 50% of attacks).

Figure 3 An algorithm for "stratified" and "step-wise" preventive anti-migraine treatment based on available data on efficacy/tolerance ratios and on personal experience.

## Optimizing Care

- Supplement guidance
- Monitoring

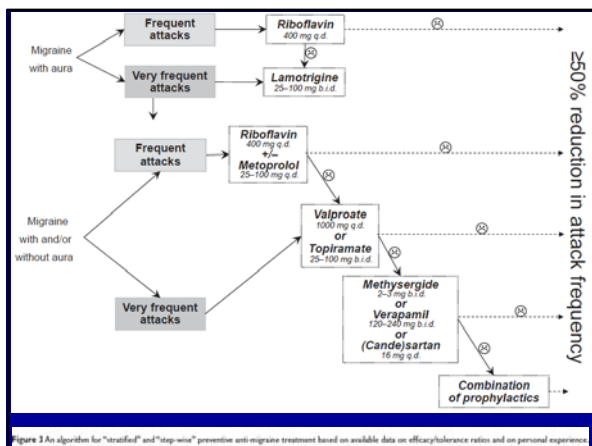
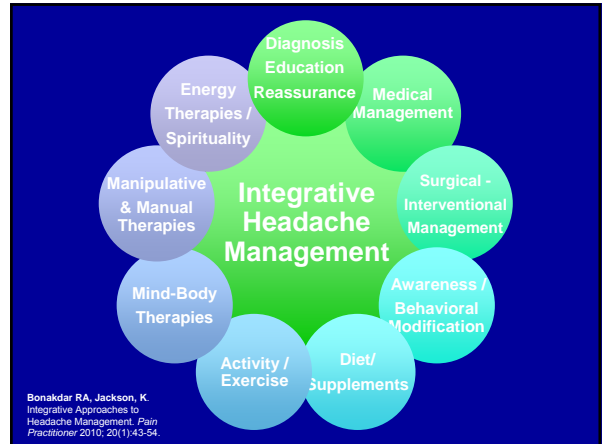
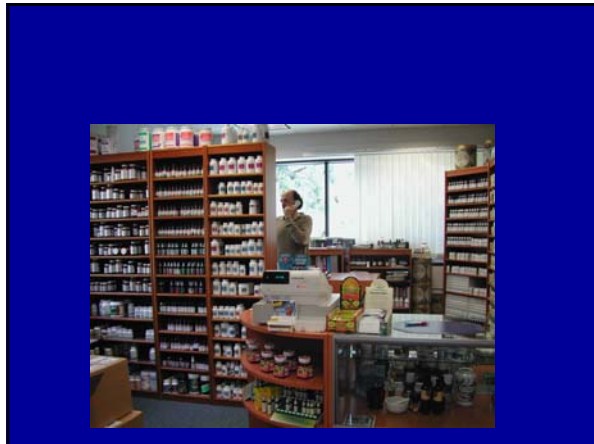


Figure 3 An algorithm for "stratified" and "step-wise" preventive anti-migraine treatment based on available data on efficacy/tolerance ratios and on personal experience.

## SUPPLEMENT STARE





**Mind-Body Therapies for Headache**

VICTOR SIERPINA, MD, University of Texas Medical Center, Galveston, Texas  
 JOHN ASTIN, PhD, California Pacific Medical Center, San Francisco, California  
 JAMES GIORDANO, PhD, Georgetown University Medical Center, Washington, D.C.

**Behavioral Medicine for Migraine**

Dawn C. Buse, MD<sup>a,b,c,\*</sup>, Frank Andrasik, MD<sup>d</sup>

- Biofeedback
- Guided Imagery
- Hypnosis
- Cognitive Behavioral Therapy
- Meditation / Breathing
- Relaxation training
- Stress Management

Am Fam Physician 2007;76:1518-22, 1523-4.

**Monitoring / Journaling**

- National Headache Foundation  
 – [www.Headaches.org](http://www.Headaches.org)
- [www.reliefinsite.com](http://www.reliefinsite.com)
- [www.iheadacheapp.com](http://www.iheadacheapp.com)

**Biofeedback - The Feedback and Tools**

Feedback	Tool
Skin Temperature	Digital Thermal Gauge
Galvonic Skin Response	GSR meter
SEMG	Electromyography
Heart Rate variability	Pulse / Respiratory Monitor
Respiratory rate	

## Mind-Body Therapies in Migraine AHRQ Meta-analysis

- 39 Trials
  - Thermal and EMG BF
  - Relaxation training
  - Stress management training
  - Cognitive Behavioral training
- 32% to 49% improvement versus control
- American Academy of Neurology recommends mind-body therapies be considered **Grade A or B** level evidence

Agency for Health Care Policy and Research, Duke University, Center for Clinical Health Policy Research. Behavioral and physical treatments for migraine headache, technical review 2.2. Rockville, Md.: U.S. Dept. of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research, 1999.

## Self-Hypnosis Training for Headaches in Children and Adolescents

DAVID P. KOHN, MD, AND ROBERT ZANIC, MD

**Objective** To describe the effect of treatment with self-hypnosis for youth with recurrent headaches.

**Study design** A retrospective review was conducted of outpatient clinical records of 178 consecutive youth referred to the Behavioral Pediatrics Program (University of Minnesota) from 1988 to 2001 for recurrent headaches. All patients were taught self-hypnosis for self-regulation, intensity, frequency, and duration of headaches before, during, and after treatment were measured. Outcomes included number and frequency of visits, types of medication, and nature of self-hypnosis practice.

**Results** Data were available for 144 patients in this patient self-selected and uncontrolled observation. Compared with self-reports before learning self-hypnosis, children and youths who learned self-hypnosis for recurrent headaches reported reduction in frequency of headache from an average of 4.8 per week to 1.4 per week ( $P < .01$ ), reduction in intensity (on a self-rating scale of 0 to 12) from an average of 10.3 to 4.2,  $P < .01$ , and reduction in average duration from 23.6 hours to 3.0 hours, ( $P < .01$ ). There were no adverse side effects of self-hypnosis.

**Conclusions** Training in self-hypnosis is associated with significant improvement of chronic recurrent headaches in children and adolescents. (*J Pediatr*. 2007;150:635-9)

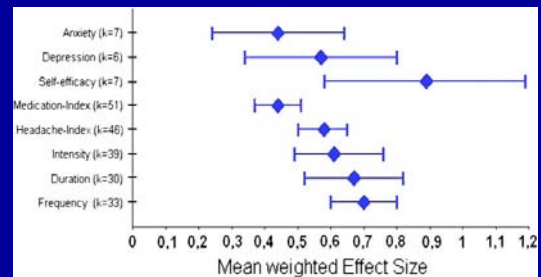
- Univ. Of Minnesota; N=178
- Average 3-4 weekly training visits →
- ↓ in HA/ week: 4.5 to 1.4 ( $P < 0.01$ )

## Mind-body in Tension type Headaches

- 35 trials
  - EMG BF
  - Relaxation training
  - EMG BF + relaxation therapy
  - Stress management training
  - Cognitive Behavioral training
- 37 to 50% reduction compared to 2-9% with control

McCrory DC, Penzien DB, Hasselblad V, Gray RN, for the Duke University Evidence-based Practice Center, Center for Clinical Health Policy Research, Foundation for Chiropractic Education and Research. Evidence report: behavioral and physical treatments for tension-type and cervicogenic headache. Des Moines, Iowa: Foundation for Chiropractic Education and Research, 2001.

## The Benefits of Biofeedback



From Nestorovic Y, Martin A, RiefW, et al. Biofeedback treatment for headache disorders: a comprehensive efficacy review. *Applied Psychophysiol Biofeedback* 2008;33:125-40

## Meta-analysis of Integrative Approach

- *Management of chronic tension-type headache with TCA, stress management therapy, and their combination: a randomized controlled trial*
  - TCA alone (38%;  $P=.006$ )
  - Stress mgmt/BF alone (35%;  $P=.003$ )
  - Combined therapy 64% response rate

Holroyd et al. *JAMA*. 2001;285:2209-2215 (A); Holroyd et al. *Pain*. 1990;42:1-13 (A).






## Movement & Headache

- Exercise
- Stretching
- Massage & Manual Therapy
- Physical Therapy
- Manipulation / Cranial Sacral Therapy

Study protocol Open

**Craniosacral therapy for migraine: Protocol development for an exploratory controlled clinical trial**  
 John D Mann<sup>\*1</sup>, Keturah R Faurot<sup>2</sup>, Laurel Wilkinson<sup>3</sup>, Peter Curtis<sup>4</sup>, Remy R Coeytaux<sup>3,4</sup>, Chirayath Suchindran<sup>5</sup> and Susan A Gaylord<sup>2</sup>

Research Submission  
 Effectiveness of Yoga Therapy in the Treatment of Migraine Without Aura: A Randomized Controlled Trial  
 P.J. John, PhD, Neha Sharma, MSc, Chandra M. Sharma, MD, DM, Arvind Kulkarni, MD



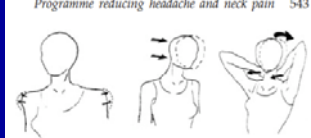
- **N = 72 migraine without aura**
- **Yoga therapy or self-care x 3 months**
  - Yoga postures & breathing (Pranayama)
  - Relaxation exercises, meditation, Neti Pot cleansing
  - 5x/week + at prodromal stage (relaxation exercises and deep relaxation)
  - At f/u: ↓ in HA frequency, duration & severity; medication use, McGill Pain and HADS (anxiety and depression) (P<0.001)

P.J. John, Effectiveness of Yoga Therapy in the Treatment of Migraine Without Aura- A Randomized Controlled Trial. Headache. 2007

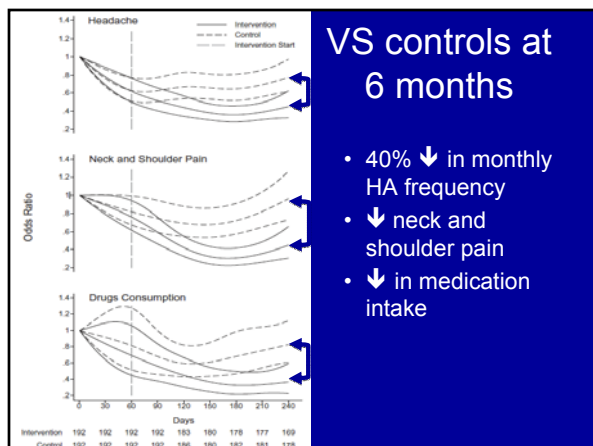
### Effectiveness of an educational and physical programme in reducing headache, neck and shoulder pain: a workplace controlled trial

Cephalalgia

- N= 384 office workers with chronic HA/ neck pain, randomized to UC vs:
  - Relaxation exercises
  - Stretches
  - Awareness



Morigini F, Ciccone G, Rola E et al. Effectiveness of an educational and physical program in reducing headache, neck and shoulder pain: a workplace controlled trial. Cephalalgia 2008; 28:541–552. London. ISSN 0333-1024



## Healing Touch – Pilot Study

Original Article

THE JOURNAL OF ALTERNATIVE AND COMPLEMENTARY MEDICINE  
 Volume 15, Number 6, 2009, pp. 619-626  
 © Mary Ann Liebert, Inc.  
 DOI: 10.1089/jam.2008.0562

**An HMO-Based Prospective Pilot Study of Energy Medicine for Chronic Headaches: Whole-Person Outcomes Point to the Need for New Instrumentation**

Elizabeth G. Sutherland, N.D.,<sup>1</sup> Cheryl Rittenbaugh, Ph.D., M.P.H.,<sup>2</sup> Susan J. Kiley, L.S.C.W., L.M.T.,<sup>3</sup>  
 Nancy Vuckovic, Ph.D.,<sup>4</sup> and Charles Elder, M.D.<sup>5</sup>

- 3 Healing Touch Sessions
- Majority of patients had improvement lasting 24 hours up to 6 months after treatments

## Acupuncture



- Acupuncture involves stimulation, typically with a needle, of specific points that have traditional and biophysiological properties

Acupuncture for chronic headache in primary care: large, pragmatic, randomised trial  
 Andrew J Vickers, Rebecca W Rees, Catherine E Zollman, Rob McCarney, Claire Smith, Nadia Ellis, Peter Fisher, Robert Van Haselen

Cost effectiveness analysis of a randomised trial of acupuncture for chronic headache in primary care  
 David Wonderling, Andrew J Vickers, Richard Griese, Rob McCarney

- N = 401 chronic headaches
- 12 ACP TXs + usual care vs. usual care
  - Daily diaries of headache & med use
  - **Primary outcome = HA score at 1-year follow-up**
- HA scores ↓ **34%** with ACP  
 ↓ **16%** in controls (P = 0.0002)
- **Larger effects were seen in patients with more severe symptoms**

## NIH Consensus 1997

"Acupuncture may be useful as an adjunct treatment or an acceptable alternative or be included in a comprehensive management program"

- Myofascial pain
- Osteoarthritis
- Low back pain
- **Headache**
- Menstrual cramps
- Tennis elbow
- Fibromyalgia
- Carpal tunnel syndrome
- Addiction
- Stroke rehabilitation
- Asthma


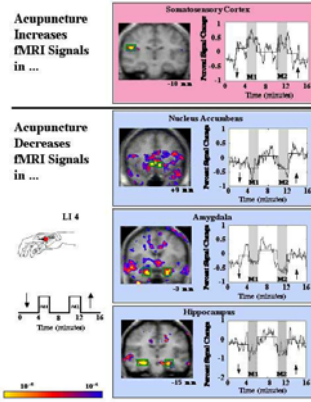
The NIH Consensus Development Program. Available at:  
<http://consensus.nih.gov/1997/1997Acupuncture107.html.htm>.

## Conclusions

- "Acupuncture leads to persisting, clinically relevant benefits for primary care patients with chronic headache, particularly migraine."
- Compared with controls, patients having ACP:
  - 22 fewer headaches/ year
  - Improved quality of life (SF-36)
- Treatments were cost effective:
  - 15% ↓ medication (P = 0.02)
  - 25% ↓ office visits (P = 0.10)
  - 15% ↓ sick days (P = 0.2)
  - Cost of treatment similar to sumatriptan

## Acupuncture - Modern

- Needle manipulation at LI-4:
- Control: tactile stimulation only effected somatosensory

Hui et al. *Hum Brain Mapp.* 2000;9:13-25 (B).

## ACP in Headache

- Acupuncture for patients with migraine: a randomized controlled trial. N=302
  - Reduction in headache days ≥ 50%:
    - 51% in the acupuncture group
    - 53% in the sham acupuncture group,
    - 15% in the waiting list group
- Acupuncture for chronic headaches--an epidemiological study N=2022
  - In 52.6% of patients, HA frequency ↓ by at least 50% compared to baseline.
  - "Effect may largely be due to potent "unspecific needling effects"

1. Linde K. *JAMA.* 2005 May 4;293(17):2118-25.  
 2. Melchard D. et al. *Headache.* 2006 Apr;46(4):632-41.

## Cochrane Review – ACP for HA

- 22 trials (n=4419)
- *Effective for prevention of migraine HA, & may be slightly better than pharmacotherapy; strength of evidence=A*
- 4 trials vs. beta blockers, calcium channel blockers, or valproic acid, ACP demonstrated slightly better outcomes at 2, 4, and 6 months after randomization, with fewer adverse effects.

Linde K, Allais G, Brinkhaus B, Manheimer E, Vickers A, White AR. Acupuncture for migraine prophylaxis. *Cochrane Database Syst Rev*. 2009;(1):CD001218.

## Integrative Overview

- Rationale
- **Prevalence of Treatments**
- Goals of Therapy
- **Overview of Treatment Approach**
- Integrative Approach: Putting it all together
- **Conclusions**

Headache  
 © 2009 the Authors  
 Journal compilation © 2009 American Headache Society  
 ISSN 0017-4749  
 doi:10.1111/j.1526-4610.2009.01424.x  
 Published by Wiley Periodicals, Inc.

### Research Submissions

**Acupuncture for Treating Acute Attacks of Migraine: A Randomized Controlled Trial**

Li Ying, MD, PhD, Liang Fu  
 Sun Guojie, MD, Chang Xianxi

*Journal of Internal Medicine* 2009; 253: 181-188

**Acupuncture versus placebo versus sumatriptan for early treatment of migraine attacks: a randomized controlled trial**

D. MELCHART<sup>1,2</sup>, J. THORMARHUEN<sup>3</sup>, S. HAGER<sup>3</sup>, J. LIAO<sup>3</sup>, K. LINDE<sup>1</sup>  
 & W. WEIDENHAMMER<sup>1</sup>

From the <sup>1</sup>Department of Internal Medicine II, Center for Complementary Medicine Research, Technical University, Munich, Germany; <sup>2</sup>Division of Complementary Medicine (D.M.), Department of Internal Medicine, University Zurich, Switzerland; and <sup>3</sup>Hospital for Traditional Chinese Medicine, Kantonsspital, Glarus, Switzerland

- **“...at the second hour after treatment, only patients treated with ...acupuncture showed significant decreases in VAS (P < .001).”**



Neuro Sci (2005) 26:5158-5161  
 DOI 10.1007/s10072-005-0434-5

**ORAL COMMUNICATION**

M. Romoli • G. Allais • G. Airola • C. Benedetto

**Ear acupuncture in the control of migraine pain: selecting the right acupoints by the “needle-contact test”**

**Effectiveness of Multidisciplinary Intervention in the Treatment of Migraine: A Randomized Clinical Trial**

Mark Lemstra, MSc; Brad Stewart, MD, FRCP(C); W. P. Olszynski, MD, PhD, FRCP(C)

- Group program for migraine 6 weeks with
  - 18 group-supervised exercise therapy sessions
  - 2 group stress management and relaxation therapy lectures
  - 2 massage therapy sessions
  - 1 group dietary lecture session

Lemstra M, et al. Effectiveness of multidisciplinary intervention in the treatment of migraine: a randomized clinical trial. *Headache*. 2002;42:845-854.

## Integrative Management in Headache

- At 6 weeks and 3 months follow-up with intention to treat analysis, statistically significant ( $P < 0.001$ ) benefit in:
  - Self-perceived pain frequency, intensity, and duration
  - Functional status, quality of life, health status, pain-related disability, and depression
- *“Positive health related outcomes in migraine can be obtained with a low cost, group, multidisciplinary intervention in a community based nonclinical setting”*

Lemstra M, et al. Effectiveness of multidisciplinary intervention in the treatment of migraine: a randomized clinical trial. *Headache*. 2002;42:845-854.

## Dietary Supplement Resources

- Office of Dietary Supplements
  - <http://dietary-supplements.info.nih.gov>
- Consumer -
  - Medline Plus <http://medlineplus.gov>
  - USDA <http://www.nutrition.gov>
- Natural Medicine Comprehensive Database
  - [WWW.NaturalDatabase.com](http://WWW.NaturalDatabase.com)

### Headache Management Program Improves Outcome for Chronic Headache

Linda H. Harpole, MD, MPH; Gregory P. Samsa, PhD; Annette E. Jurgelski, MAT; Janice L. Shipley, FNP, MSN, MEd; Allan Bernstein, MD; David B. Matchar, MD

#### Research Submission

#### Effectiveness of an Intensive Multidisciplinary Headache Treatment Program

Birgit Gunreben-Stempfle, MS; Norbert Griebinger, MD; Eberhard Lang, MD; Barbara Muehlhans, MS; Reinhard Sittl, MD; Kathrin Ulrich, MD

#### The Headache Management Trial: A Randomized Study of Coordinated Care

David B. Matchar, MD; Linda Harpole, MD, MPH\*; Gregory P. Samsa, PhD; Annette Jurgelski, MAT; Richard B. Lipton, MD; Stephen D. Silberstein, MD; William Young, MD; Shashidhar Kori, MD\*; Andrew Blumenfeld, MD

## Dietary Supplement Independent Testing and Safety

- GMP (Good Manufacturing Practice)
- Consumer Lab [www.consumerlab.com](http://www.consumerlab.com)
- NSF [www.nsf.org](http://www.nsf.org)
- USP [www.uspverified.org](http://www.uspverified.org)
  - Dietary Supplement Verification Program
- Clinical Trial / “Prescription” brands

## Headache Resources

- National Headache Foundation
  - <http://www.headaches.org>
- University of Minnesota
  - <http://www.takingcharge.csh.umn.edu/conditions/migraine>
- American Committee for Headache Education
  - <http://www.achenet.org/news/guidelines.php>
- American Headache Council
  - [www.americanheadachecouncil.com](http://www.americanheadachecouncil.com)
- National Institutes of Health
  - <http://www.nlm.nih.gov/medlineplus/migraine.html>
- MedicineNet, Inc.
  - [http://www.medicinenet.com/migraine\\_headache/article.htm](http://www.medicinenet.com/migraine_headache/article.htm)

Scripps Center for Integrative Medicine

8TH ANNUAL  
**Natural Supplements:**  
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## Integrative Approaches to Headache Conclusions

- Headache represents a high burden illness
- Integrative treatments may provide viable treatment options for:
  - Reducing headache triggers
  - Correcting nutrient deficiency
  - Providing synergistic treatment options
  - Managing collateral symptoms/conditions
  - Improving patient self-efficacy

## Integrative Approaches to Headache Management

Robert A. Bonakdar, MD  
Director of Pain Management  
Scripps Center for Integrative Medicine

Assistant Clinical Professor  
Department of Family and Preventative Medicine  
U.C. San Diego, School of Medicine (Vol)

## Integrative Treatments Optimizing Outcomes

- Clinician Input is essential to provide
  - Balanced discussion of options and resources
  - Coordination of safe, evidence-based options
    - Supplements: dose, brand, instructions
  - On-going guidance and follow-up
    - Provide a time-frame for potential benefit
- Additional well-done trials required to
  - Advance understanding of individual and comparative efficacy and safety
  - Synergistic potential of integrated treatments

## Integrative Team



FPs  
Neurologists  
N.P.s / Nurses  
Psychologists  
Biofeedback  
Physical,  
massage &  
yoga  
therapists  
Dieticians  
Acupuncturists  
Pharmacy...