

# Integrative Medicine

Evidence-based summaries and critical reviews on  
the latest developments in integrative therapies [ALERT]

## COGNITION

### ABSTRACT & COMMENTARY

## An RCT Looking at the Effects of *Panax ginseng* and *Ginkgo biloba*

By David Kiefer, MD, Editor

Clinical Assistant Professor, Department of Family Medicine, University of Wisconsin; Clinical Assistant Professor of Medicine, Arizona Center for Integrative Medicine, University of Arizona, Tucson

Dr. Kiefer reports no financial relationships relevant to this field of study.

**SYNOPSIS:** Cognitive improvement in women after treatment with *Ginkgo biloba* may be mediated by changes in cardiovascular reactivity.

**SOURCE:** Ong Lai Teik D, Lee XS, Lim CJ, et al. Ginseng and *Ginkgo biloba* effects on cognition as modulated by cardiovascular reactivity: A randomised trial. *PLoS One* 2016;11:e0150447.

**W**hat's the magic bullet to stave off cognitive decline or help people with dementia to regain some of their mental function?

There is likely no such cure, but research from many different disciplines has found treatments of varying efficacy for sufferers of dementia. This study examined two herbal medicines, *Ginkgo biloba* (ginkgo) and *Panax ginseng* ("ginseng," Asian or Korean ginseng), with a history of use for improvement of mental function in the context of both health and disease; the authors provided

numerous references to these effects. Specifically trying to establish a mechanism of action for these two plants, the authors used changes to the cardiovascular system as a proxy for stress and stress management to connect those effects to concomitantly administered cognitive analyses. They provided a methodological framework for the connection between stress and adverse cognitive effects, as well as cardiovascular changes (i.e., heart rate variability and blood pressure reactivity) that purportedly tie into stress and stress management.

Financial Disclosure: *Integrative Medicine Alert's* executive editor David Kiefer, MD, peer reviewer Suhani Bora, MD, AHC Media executive editor Leslie Coplin, and associate managing editor Jonathan Springston report no financial relationships relevant to this field of study.

[INSIDE]

Changing Gut Microbiota  
to Prevent Type 2 Diabetes  
page 124

Acupressure  
for Cancer-Related Fatigue  
in Breast Cancer Survivors  
page 126

How Much More Physical  
Activity Helps Patients Avoid  
Chronic Diseases?  
page 129

**Integrative Medicine Alert** (ISSN 1096-942X) is published monthly by AHC Media LLC, One Atlanta Plaza, 950 East Paces Ferry Road NE, Suite 2850, Atlanta, GA 30326.

Periodicals Postage Paid at Atlanta, GA, and at additional mailing offices.

GST Registration Number: R128870672.  
**POSTMASTER: Send address changes to Integrative Medicine Alert, P.O. Box 550669, Atlanta, GA 30355.**

Copyright © 2016 by AHC Media. All rights reserved. No part of this newsletter may be reproduced in any form or incorporated into any information-retrieval system without the written permission of the copyright owner.

This is an educational publication designed to present scientific information and opinion to health professionals, to stimulate thought, and further investigation. It does not provide advice regarding medical diagnosis or treatment for any individual case. Opinions expressed are not necessarily those of this publication. Mention of products or services does not constitute endorsement. Professional counsel should be sought for specific situations. This publication is not intended for use by the layman.

**SUBSCRIBER INFORMATION**

(800) 688-2421  
Customer.Service@AHCMedia.com  
AHCMedia.com

**Questions & Comments:**

Please contact Executive Editor Leslie Coplin, at Leslie.Coplin@AHCMedia.com

**Subscription Prices**

United States  
Print: 1 year with free AMA PRA Category 1 Credits™, \$319  
Add \$19.99 for shipping & handling.  
**Online only: 1 year (Single user) with free AMA PRA Category 1 Credits™, \$269**

**Multiple Copies:** Discounts are available for group subscriptions, multiple copies, site-licenses, or electronic distribution.

For pricing information, please contact our Group Account Managers at Groups@AHCMedia.com or (866) 213-0844.

**Back issues: \$42.** Missing issues will be fulfilled by customer service free of charge when contacted within one month of the missing issue's date.

Canada: Add 7% GST and \$30 shipping.  
Elsewhere: Add \$30 shipping.

**ACCREDITATION**

AHC Media is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

AHC Media designates this enduring material for a maximum of 36 AMA PRA Category 1 Credits™. Each issue has been designated for a maximum of 3.0 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

The American Osteopathic Association has approved this continuing education activity for up to 24 AOA Category 2-B credits.

This CME activity is intended for physicians and researchers interested in integrative medicine. It is in effect for 36 months from the date of the publication.

**Summary Points**

- Two different doses of *Panax ginseng* did not affect cognition.
- *Ginkgo biloba* affected some aspects of cognition (executive functioning), but only in women.
- It appears that some of *Ginkgo biloba*'s cognitive effects can be explained due to changes in cardiovascular measurements, a correlate for cardiovascular reactivity.

This model seems like a viable way to comment on each plant's mechanism of action, even if it has not been corroborated previously. The research question is compelling: Essentially, could these two plants moderate stress, which then could improve executive functioning?

Undergraduate student volunteers were recruited in Helsinki for this study, but were excluded if they regularly consumed caffeine, ginkgo, or ginseng; if they took medications that interacted with ginkgo or ginseng; or if they had hormone-sensitive conditions, autoimmune disorders, diabetes, heart conditions, or bleeding disorders. A total of 48 participants (28 women, 20 men) then were included in this study, and were randomized in a crossover, double-blind, placebo-controlled fashion to ginkgo (n = 24) or ginseng (n = 24). Within each herbal arm, the study participants received two different doses of the herbal medicine or placebo over three different days. The ginkgo dose was either 120 mg or 240 mg of a patented ginkgo extract (GBE24/6) standardized to 24% flavone glycosides and 6% terpene lactones. The ginseng dose was either 500 mg or 1,000 mg

of an extract (GNC) standardized to 3% ginsenosides. On the three testing days, the authors administered a battery of tests. (See Table 1.) To analyze the results, the researchers used a complicated procedure that repeated the cognitive tests until improvement was less than 5% on a subsequent test. This allowed the researchers, as per validated prior research, to ascribe changes in testing to ginkgo or ginseng, rather than learning of the testing regimen. In addition, blood pressure and heart rate were measured both before and after the cognitive testing during each testing day.

With respect to results, for all of the cognitive tests, there was no difference compared to placebo for either of the doses of ginseng. In the case of ginkgo, there was a statistically significant decrease in the number of errors committed in the Berg's and Stroop tests ( $P = 0.004-0.011$ , and  $P = 0.017$ , respectively), for both doses, but only for women. In men taking ginkgo, either there was no effect (for most cognitive measures), or, in one subset of the Berg's card sorting test, a small *increase* in errors ( $P = 0.004$ ).

Table 1: Testing of Study Participants	
Given on three separate testing days for the three treatment arms (placebo, herbal dose 1, herbal dose 2)	
Cognitive Tests (Function Analyzed)	Cardiovascular Testing
Visual search (selective attention, working memory) Psychomotor vigilance task (selective attention, simple reaction time) Stroop task (selective attention, impulsivity, cognitive flexibility) Bechara's gambling task (decision making, impulsivity) Berg's card sorting test (complex executive functioning) Tower of London (overlapping cognitive domains)	Blood pressure Heart rate

**Table 2: The Effect of Ginkgo and Ginseng on Blood Pressure and Heart Rate**

The effect of ginkgo and ginseng, both doses, on blood pressure and heart rate when compared to placebo, 60 minutes after treatment but before the cognitive testing (considered a “baseline”). Only statistically significant effects are mentioned.

	Low-dose Ginkgo	High-dose Ginkgo	Low-dose Ginseng	High-dose Ginseng
Diastolic blood pressure		Higher		Lower
Systolic blood pressure		Higher		
Heart Rate				

The next set of analyses addresses the primary aim of the study, namely “...to understand whether the effects of [ginseng] and [ginkgo] on cognitive performance may be associated with changes in cardiovascular reactivity.” As a start, the authors noted that during some of the cognitive tests (mostly the Stroop and Bechara’s gambling tasks), the placebo group showed an increase in systolic blood pressure, likely due to the difficulty of the tests. During these same tests, high-dose ginkgo was shown to reduce diastolic and systolic blood pressure. Also, in women, high-dose ginkgo reduced diastolic blood pressure after Berg’s testing. In contrast, for high-dose ginseng, after visual search and the psychomotor vigilance task, there was an increase in diastolic blood pressure and an increase in heart rate (considered “somewhat surprising” by the authors.) These latter tests are considered less difficult, and, as such, had less of an increase in cardiovascular parameters from baseline; the authors weren’t surprised that there wasn’t an improvement in these values with herbal treatment, although the ginseng-caused increase in blood pressure was a surprise (see below).

Of note, the above-mentioned effects are relative, not absolute, changes in cardiovascular reactivity. The authors noted surprise “baseline” herbal cardiovascular effects that varied for ginkgo compared to ginseng. (See Table 2.) For example, 60 minutes after treatment but before the cognitive effects, the higher dose of ginkgo raised blood pressure (diastolic and systolic), whereas the higher dose of ginseng lowered only diastolic blood pressure. Compared to placebo, other parameters remained unchanged.

#### ■ COMMENTARY

The interpretation of this study, and teasing out possible cause-effect explanations is difficult. What we can say for sure is that both plants had cardiovascular effects (see Table 2), which were not generally observed in prior studies, although it is unclear why ginkgo raised blood pressure at baseline. The authors venture detailed, and referenced, mechanism of action research about ginkgo, not unlike reviews on the topic.<sup>1</sup> The positive effects for dementia and memory

better support another conclusion found in this paper: ginkgo improved subsets of cognitive testing and reduced blood pressure after some, but not all, cognitive tests.

We also know that ginseng did not fare well in this study. A well-known adaptogen that affects the hypothalamus-pituitary-adrenal axis, and its resultant “stress hormones,”<sup>2</sup> ginseng would be expected to improve post-testing cardiovascular reactivity, just as it did during the baseline testing (lower diastolic blood pressure). However, not only did ginseng have no effect on the cognitive tests when compared to placebo, but it increased cardiovascular reactivity after some of the less anxiety-provoking tasks. This “surprising” finding could be due simply to the minimal overall change documented; less difficult tasks caused less of a response in the placebo group, making it difficult to elicit a treatment effect with the herbal medicines. These subtleties might need more extreme conditions to generate positive effects. Also, rarely would single doses of herbal medicine be expected to change symptoms in a clinical practice. The next step for these researchers, hopefully, will be to expand the length of the trial to weeks or months, more in line with how these medicines are prescribed typically, as well as to recruit patients of a variety of ages perhaps to examine the plants’ preventive effects.

The gender effect deserves mentioning, not only because the authors correctly state that it is the first published study of a gender difference in cognitive effects to ginkgo treatment. But why did this happen? The authors mention different gender responses to psychological stressors as one possible explanation for the herbal effects and the cardiovascular reactivity. Their references to prior work, as well as cerebral foci correlates, support this. Overall, it seems like there was a lot of discussion for a few data points (and low study participant numbers) that will be much more convincing, and clinically interesting, when this is repeated on a larger scale, perhaps with a less-complicated study design. Overall, these results are interesting in the context of stress management and

cognitive performance, but the herbal medicine effects are too piecemeal to generate much clinical optimism. It does tie herbal medicine effects to both cognition and cardiovascular effects, which partly corroborates their traditional and more modern clinical use. A cure-all for dementia? Probably not. Something to be recommended to all women patients? Not yet, but wait for follow-up research to refine this. And, for men? Talk to your patients about individualized integrative therapeutics that may be better suited (in

this study we saw a worsening of symptoms) to their cognitive symptoms than ginkgo or ginseng, but, again, for now. ■

#### REFERENCES

1. Hashiguchi M, Ohta Y, Shimizu M, et al. Meta-analysis of the efficacy and safety of *Ginkgo biloba* extract for the treatment of dementia. *J Pharm Health Care Sci* 2015;1:14. doi: 10.1186/s40780-015-0014-7.
2. Kiefer D, Pantuso T. Herbal medicines: *Panax ginseng*. *Am Fam Physician* 2003;68:1539-1542.

## DIABETES

### ABSTRACT & COMMENTARY

# Changing Gut Microbiota to Prevent Type 2 Diabetes

By *Atreyi Mukherji, MD, MPH, FRCPC*

*Private Practice, Integrative Internal Medicine & Infectious Diseases, Stoney Creek, Ontario*

Dr. Mukherji reports no financial relationships relevant to this field of study.

**SYNOPSIS:** The long-term consumption of a healthy diet, such as the Mediterranean diet or low-fat/high complex carbohydrate diets, may exert a protective effect on the development of type 2 diabetes by changing the gut microbiota, increasing the abundance of *Roseburia* genera and *Faecalibacterium prausnitzii*, respectively.

**SOURCE:** Haro C, Montes-Borrego M, Rangel-Zuniga OA, et al. Two healthy diets modulate gut microbial community improving insulin sensitivity in a human obese population. *J Clin Endocrinol Metab* 2016;101:233-242.

Obesity is a chronic disease and its pathophysiology has been linked to changes in the gut microbiota.<sup>1</sup> Gut microbiota are a complex and diverse ecosystem of microorganisms in the human colon that act collectively as a fully integrated organ. Gut microbiota are involved in extracting nutrients, regulating innate and adaptive immunity, and helping control energy balance.<sup>2</sup> Animal model studies show that obesity is associated with an increase in the *Firmicutes/Bacteroides* bacteria ratio.<sup>1</sup> In addition, the intestinal absorption of bacterial components, such as endotoxin lipopolysaccharides, bacterial DNA, and flagellins, activate Toll-like receptors that favor insulin resistance.<sup>3</sup> A few studies show changes in gut microbiota by dietary intervention.<sup>4,5</sup> The Western diet increases endotoxemia, suggesting a disruption in the intestinal barrier and an increase in gram-negative bacteria content in the microbiota.<sup>4,6</sup> A high-fat, high-carbohydrate diet induces endotoxemia and inflammation,<sup>4,7</sup> whereas a high-fruit and high-fiber meal or intake of a polyphenol preparation, such as resveratrol, does not induce such changes.<sup>8,9</sup>

The objective of the Haro et al trial was to study the changes in gut microbiota after one year of consumption of two healthy diets: the Mediterranean

diet (MedDiet) or the low-fat, high complex carbohydrate (LFHCC) diet in 20 obese patients with coronary heart disease (CHD). The study was conducted in a subgroup of the CORDIOPREV study, an ongoing prospective, randomized, open, controlled trial in patients with stable CHD (event-free for six months prior to enrollment). Patients ranged from 20-74 years of age and were excluded if they had severe CHD with life expectancy of less than five years. All patients were on standardized treatments for CHD. The MedDiet composition was 35% fat with 22% monounsaturated fat and the LFHCC diet contained 28% fat with 12% monounsaturated fat. To ensure consistency of diet, all patients in the MedDiet group were provided olive oil. Food packs, including low-fat foods (cereal, biscuits, pasta) of similar costs, were provided to patients in the low-fat group. Plasma and fecal samples were analyzed using various molecular technologies to assess change in microbiota and metabolomic analysis.

The main findings of the study were changes in microbiota. The LFHCC diet increased *Prevotella* genera and decreased the *Roseburia* genera, whereas the MedDiet decreased the *Prevotella* and increased the *Roseburia* and *Oscillospira* genera ( $P = 0.028$ ,

## Summary Points

- Gut microbiota are a complex integrated organ that modulate host metabolism and extraction of nutrients, and help control energy balance.
- Changes in gut microbiota composition have been linked to the pathophysiology of obesity.
- The long-term (one-year) consumption of the Mediterranean diet and low-fat/high complex carbohydrate diet (LFHCC) both led to changes in microbiota and improvement in insulin resistance.
- The LFHCC diet increased *Prevotella* genera and decreased *Roseburia* genera, whereas the Mediterranean diet decreased the *Prevotella* and increased the *Roseburia* and *Oscillospira* genera.
- Although further study is required, this preliminary study raises an interesting hypothesis that changes in microbiota may be one mechanism by which diets can be a useful therapeutic tool for preventing chronic diseases, such as type 2 diabetes.

0.002, and 0.016, respectively). *Parabacteroides distasonis* ( $P = 0.025$ ) and *Faecalibacterium prausnitzii* ( $P = 0.020$ ) were more abundant after consumption of the MedDiet and LFHCC diet, respectively. The increase in *Roseburia* in the MedDiet group and the increase in *F. prausnitzii* in the LFHCC diet group also were accompanied by an increase in insulin sensitivity index for both diets ( $P = 0.019$

and  $P = 0.005$ , respectively) when measured by oral glucose tolerance test performed at baseline and after one year of dietary intervention. The main metabolic changes noted in the fecal analysis were the profiles of the amino acids, peptides, and sphingolipid metabolism, which could be linked to changes in the gut microbiota. (See Table 1.)

### ■ COMMENTARY

This preliminary study showed that long-term (one-year) consumption of two healthy diets (MedDiet and LFHCC diet) was associated with changes in gut microbiota population in the colon, as well as changes in some aspects of the metabolic profile. An improvement in insulin sensitivity also was observed, as measured by the glucose tolerance test in the LFHCC diet, suggesting that these diet patterns may have a protective effect on development of type 2 diabetes.

*Roseburia* genera and *F. prausnitzii* are butyrate-producing bacteria that are found to be low in patients with type 2 diabetes. *Roseburia* could play an important role in gut health<sup>10</sup> and is known to have an anti-inflammatory effect on the gut.<sup>10-12</sup> An antimicrobial effect through inhibiting *Bacillus subtilis* in the colon is another mechanism by which *Roseburia* genera have been shown to affect the gut microbial population in the colon.<sup>13</sup> *F. prausnitzii*, along with other butyrate-producing bacteria, previously have been shown to increase in people with metabolic syndrome on the MedDiet, but not the LFHCC diet.<sup>14</sup> The increase in *Prevotella* in the LFHCC diet is thought to be an adaptation of the microbiota to enhance extraction of calories from carbohydrates that escape digestion in the small intestine and are fermented in the gut.<sup>15</sup> This also is born out in a study with *Prevotella* abundance with long-term diets rich in carbohydrates.<sup>16</sup>

**Table 1: Changes in Gut Microbiota**

Bacteria	Low-fat/High Complex Carbohydrate Diet			Mediterranean Diet		
	Increased	Decreased	No change	Increased	Decreased	No change
<i>Parabacteroides distasonis</i>				+		
				( $P = 0.025$ )		
<i>Faecalibacterium prausnitzii</i>	+					
	( $P = 0.20$ )					
<i>Oscillospira</i>			+	+		
				( $P = 0.001$ )		
<i>Roseburia</i>			+	+		
				( $P = 0.017$ )		
<i>Prevotella</i>	+				+	
Time X diet interaction						
$P = 0.028$						

In conclusion, the observations in this present study findings are provocative and suggest the development of a new hypothesis about changes in gut microbiota being one mechanism by which dietary interventions could be a therapeutic tool for chronic disease. Further studies are required to assess the effect of these findings in clinical practice. Perhaps a potential exists for a more customized (personalized) approach to the implementation of dietary interventions based on the disease and the individual patient. In the interim, clinicians should continue to utilize evidence-based dietary interventions such as the MedDiet for chronic disease, including cardiovascular disease and breast cancer. ■

#### REFERENCES

1. Turnbaugh PJ, Ley RE, Mahowald MA, et al. An obesity-associated gut microbiome with increased capacity for energy harvest. *Nature* 2006;444:1027-1031.
2. Tremaroli V, Kovatcheva-Datchary P, Backhed F. A role for the gut microbiota in energy harvesting? *Gut* 2010;59:1589-1590.
3. Caesar R, Fåk F, Backhed F. Effects of gut microbiota on obesity and atherosclerosis via modulation of inflammation and lipid metabolism. *J Intern Med* 2010;268:320-328.
4. Bays HE, González-Campoy JM, Bray GA, et al. Pathogenic potential of adipose tissue and metabolic consequences of adipocyte hypertrophy and increased visceral adiposity. *Expert Rev Cardiovasc Ther* 2008;6:343-368.
5. Cani PD, Delzenne NM, Amar J, Burcelin R. Role of gut microflora in the development of obesity and insulin resistance following high fat diet feeding. *Pathol Biol (Paris)* 2008;56:305-309.
6. Ley RE. Obesity and the human microbiome. *Curr Opin Gastroenterol* 2010;26:5-11.
7. Blaser MJ, Falkow S. What are the consequences of the disappearing human microbiota? *Nat Rev Microbiol* 2009;7:887-894.
8. Ghanim H, Sia CL, Korzeniewski K, et al. A resveratrol and polyphenol preparation suppresses oxidative and inflammatory stress response to a high-fat, high-carbohydrate meal. *J Clin Endocrinol Metab* 2011;96:1409-1414.
9. Ghanim H, Sia CL, Upadhyay M, et al. Orange juice neutralizes the proinflammatory effect of a high-fat, high-carbohydrate meal and prevents endotoxin increase and Toll-like receptor expression. *Am J Clin Nutr* 2010;91:940-949.
10. Karlsson FH, Tremaroli V, Nookaew I, et al. Gut metagenome in European women with normal, impaired and diabetic glucose control. *Nature* 2013;498:99-103.
11. Qin J, Li Y, Cai Z, et al. A metagenome-wide association study of gut microbiota in type 2 diabetes. *Nature* 2012;490:55-60.
12. Aminov RI, Walker AW, Duncan SH, et al. Molecular diversity, cultivation, and improved detection by fluorescent in situ hybridization of a dominant group of human gut bacteria related to *Roseburia* spp. or *Eubacterium rectale*. *Appl Environ Microbiol* 2006;72:6371-6376.
13. Hatzioanou D, Mayer MJ, Duncan SH, et al. A representative of the dominant human colonic Firmicutes, *Roseburia faecis* M72/1, forms a novel bacteriocin-like substance. *Anaerobe* 2013;23:5-8.
14. Haro C, Garcia-Carpintero S, Alcalá-Díaz JF, et al. The gut microbial community in metabolic syndrome patients is modified by diet. *J Nutr Biochem* 2016;27:27-31.
15. Flint HJ, Bayer EA, Rincon MT, et al. Polysaccharide utilization by gut bacteria: Potential for new insights from genomic analysis. *Nat Rev Microbiol* 2008;6:121-131.
16. Wu GD, Chen J, Hoffmann C, et al. Linking long-term dietary patterns with gut microbial enterotypes. *Science* 2011;334:105-108.

## CANCER

### ABSTRACT & COMMENTARY

# Self-Administered Acupressure Beneficial in Treating Persistent Cancer-Related Fatigue in Breast Cancer Survivors

By Erica Benedicto, PA-C, MPH, YT

Founder, Shiny Healthy People, Austin, TX

Ms. Benedicto reports no financial relationships relevant to this field of study.

**SYNOPSIS:** Two different types of self-administered acupressure techniques were significant in reducing persistent cancer-related fatigue compared with standard of care, but only relaxing acupressure affected quality of sleep and life.

**SOURCE:** Zick SM, Sen A, Wyatt GK, et al. Investigation of 2 types of self-administered acupressure for persistent cancer-related fatigue in breast cancer survivors. *JAMA Oncol* 2016; Jul 7. doi: 10.1001/jamaoncol.2016.1867. [Epub ahead of print].

The prevalence of breast cancer is rising, with about one in eight U.S. women developing invasive cancer over her lifetime.<sup>1</sup> One of the most common symptoms of breast cancer survivors is persistent fatigue, leading to decreased quality of life and poor sleep quality.<sup>2</sup> Fatigue persists in approximately one-third of women up to 10 years

after the end of breast cancer treatment.<sup>3</sup>

Although the rates of cancer-related fatigue remain high, the treatments for this symptom are limited.<sup>4</sup> This is where inexpensive, easy-to-administer self-care techniques can fill a need for breast cancer survivors. Zick et al looked at persistent fatigue after breast

## Summary Points

- Breast cancer survivors were randomized and assigned to one of three interventions: self-administered relaxing acupressure, stimulating acupressure, or usual care.
- At the end of six weeks, 66.2% of relaxing acupressure, 60.9% of stimulating acupressure, and 31.3% in usual care achieved normal fatigue levels, meaning they had a Brief Fatigue Inventory score of < 4, indicating a statistically significant difference.

cancer treatment and the benefits of self-administered acupressure vs. usual care.

Acupressure has shown promising benefits, particularly in treating cancer-related fatigue, decreasing patients' symptoms of fatigue by approximately 45% to 70%.<sup>4</sup> Participants in this study further benefited by initiating *relaxing* acupressure (which is typically used for insomnia) and *stimulating* acupressure (used to boost energy).

The study was a 10-week randomized, single-blind trial. The authors screened 424 women recruited from the Michigan Tumor Registry and randomized 288 women. Researchers divided the 288 women into three groups: relaxing acupressure, stimulating acupressure, and usual care. Usual care consisted of any treatment given by a healthcare professional for cancer-related persistent fatigue. Randomization (1:1:1) was computer generated by blocks of six and by county. Of the three groups, 72.4% of the relaxing acupressure, 73.4% of the stimulating acupressure, and 86.5% in usual care completed all study visits. There were no significant differences in any sociodemographic group or clinically between those who withdrew from the study and those who completed the study.

Participants who performed self-administered acupressure were taught by a trained acupressure educator at baseline. Women were taught point location, stimulation techniques, and pressure intensity. Participants in the relaxing acupressure group worked on five points, with four done bilaterally and one centrally. The stimulating acupressure group used six points, four done bilaterally and two centrally. Participants were instructed to perform acupressure once daily, stimulating each point in a circular motion for three minutes. Researchers assessed consistency and fidelity by testing participants on technique and duration at baseline, three weeks, and six weeks. Participants

**Table 1: Relaxing vs. Stimulating Acupressure**

Relaxing Acupressure	Stimulating Acupressure
<b>Done Bilaterally</b> <ul style="list-style-type: none"> <li>• <i>anmian</i></li> <li>• heart 7</li> <li>• spleen 6</li> <li>• liver 3</li> </ul>	<b>Done Bilaterally</b> <ul style="list-style-type: none"> <li>• large intestine 4</li> <li>• stomach 36</li> <li>• spleen 6</li> <li>• kidney 3</li> </ul>
<b>Done Centrally</b> <ul style="list-style-type: none"> <li>• yin tang</li> </ul>	<b>Done Centrally</b> <ul style="list-style-type: none"> <li>• du</li> </ul>

performed self-administered acupressure daily for six weeks. There was a four-week follow-up for all three groups. Women were ineligible if they had untreated major depressive disorder, other fatigue-causing comorbidities, or a cancer diagnosis other than breast or skin cancer within the previous 10 years. Also, they were not allowed to participate in the study if they were starting a new treatment, changing medication for cancer, taking medication for insomnia, or if they received acupressure or acupuncture within the six months prior to the study beginning.

Primary outcome measures were assessed using the Brief Fatigue Inventory (BFI) score, which was collected at baseline and weeks 1 to 10. The BFI looks at nine different items measuring fatigue on a scale from 0 to 10. A score of 4 or higher is considered clinically relevant for fatigue and a three-point change and drop below 4 is considered a clinically meaningful change. Secondary outcome looked at the Pittsburgh Sleep Quality Index (PSQI) and Long-Term Quality of Life Instrument, which were administered at baseline and weeks 6 and 10. Eligible women had to report persistent fatigue starting on or after their cancer diagnosis with a score of 4 or higher on the BFI. Usual care was considered any treatment given to a patient by a healthcare professional for fatigue. The three groups consisted of 98 self-administering relaxing acupressure, 94 stimulating acupressure, and 96 allocated to usual care. After six weeks, 74 completed relaxing acupressure, 70 completed stimulating acupressure, and 84 completed usual care. At the four-week follow-up with no acupressure, there were 71 from the relaxation group, 69 from the stimulating group, and 83 from the usual care group.

Fatigue measured by the BFI score from baseline to six weeks was significantly greater in relaxing and stimulating acupressure compared to usual care (mean [SD], -2.6 [1.5] for relaxing acupressure, -2.0 [1.5] for stimulating acupressure, and -1.1 [1.6] for usual care;  $P < .001$  for both acupressure groups

compared to usual care). At week 10, the change in BFI score from baseline was higher in the relaxing acupressure group vs. the stimulating group compared with usual care. The mean percentage fatigue reductions at 6 weeks were 34% for relaxing, 27% for stimulating, and -1% for usual care ( $P < 0.001$  for both acupressure arms and usual care). Participants who managed to achieve normal fatigue levels with a BFI score of  $< 4$  at week 6 were 66.2% in relaxing, 60.9% in stimulating, and 31.3% in usual care. These benefits continued into the follow-up period at 10 weeks, with 56.3% in relaxing acupressure, 60.9% in stimulating acupressure, and 30.1% in usual care having normal fatigue levels. Sleep quality was measured on a 19-item PSQI,

[Self-administered relaxing acupressure can be added to the toolbox of healthcare professionals treating breast cancer patients to target persistent fatigue.]

which measures sleep disturbance over one month. A score of 8 or higher indicates poor sleep quality; if the score drops below 8 or changes more than 3 points, it is considered clinically significant. Those in the relaxing acupressure group had PSQI scores that were significantly lower. Those in the stimulating group did not have any significant clinical changes. There was no significant difference in the three arms at the 10-week follow-up. Participants in the relaxing acupressure arm had an improved measure of long-term quality of life for three of the four subscales, including somatic, fitness, and social support at six and 10 weeks. Stimulating acupressure was not significantly different from usual care for any subscale. Six adverse events were recorded during the research, which consisted of mild bruising at acupressure sites.

#### ■ COMMENTARY

According to this study, cancer-related fatigue can be reduced with self-administered relaxing and stimulating acupressure compared to usual care. Both relaxing and stimulating arms demonstrated significant improvements in fatigue, and the relaxing arm showed improved quality of life and sleep compared with usual care. These results are interesting for several reasons, one of which is that the research shows that the etiology of persistent fatigue can be from various mechanisms. Recent studies suggest persistent fatigue stems from central

nervous system dysfunction and possibly is linked to elevations in specific neurotransmitters and metabolites, including elevations in glutamate levels; acupressure provided benefits despite a lack of stratification by etiology.<sup>5-8</sup> Acupuncture has been proven to alter brain physiology, chemistry, and function, and the researchers from this study posit that self-administration of acupressure may have the same effects.

The study had a few limitations, including too few minority women. Breast cancer is more common in African-American women than white women younger than 45 years of age. African-American women also have a higher rate of death from breast cancer.<sup>1</sup> There were also concerns about self-administered acupressure being too time consuming and, therefore, leading to discontinuation of participation. However, dropout rates were not overtly affected by randomization to the treatment groups, perhaps indicating a minimal time-disincentive.

Educating and empowering patients to take control of their health is becoming a common trend in healthcare. Providing patients with the tools and resources encourages independence and autonomy. Self-administered relaxing acupressure can be added to the toolbox of healthcare professionals treating breast cancer patients to target persistent fatigue. As part of the comprehensive care plan for patients with breast cancer, this may be a feasible addition in decreasing cancer-related fatigue and improving quality of sleep and life. ■

#### REFERENCES

1. U.S. Breast Cancer Statistics. Breast Cancer.org. Available at: [http://www.breastcancer.org/symptoms/understand\\_bc/statistics](http://www.breastcancer.org/symptoms/understand_bc/statistics). Updated Sept. 30, 2016. Accessed Oct. 16, 2016.
2. Reinertsen KV, Cvancarova M, Loge JH, et al. Predictors and course of chronic fatigue in long-term breast cancer survivors. *J Cancer Surviv* 2010;4:405-414.
3. Minton O, Stone, P. How common is fatigue in disease-free breast cancer survivors: A longitudinal investigation. *Cancer* 2006;106:751-758.
4. Berger AM. National comprehensive cancer network. Cancer-Related Fatigue, Version 2.2015 *J Natl Compr Canc Netw* 2015;13:1012-1039.
5. Ling WM, Lui LY, So WK, Chan K. Effects of acupuncture and acupressure on cancer-related fatigue: A systematic review. *Oncol Nurs Forum* 2014;41:581-592.
6. Zick SM, Alrawi S, Merel G, et al. Relaxation acupressure reduces persistent cancer-related fatigue. *Evid Based Complement Alternat Med* 2011;2011:142913.
7. Zick SM, Zwickey H, Wood L, et al. Preliminary differences in peripheral immune markers and brain metabolites between fatigued and non-fatigued breast cancer survivors: A pilot study. *Brain Imaging Behav* 2014;8:506-516.
8. Hampson JP, Zick SM, Khabir T, et al. Altered resting brain connectivity in persistent cancer related fatigue. *Neuroimage Clin* 2015;8:305-313.

## ABSTRACT &amp; COMMENTARY

# How Much More Physical Activity Helps Patients Avoid Chronic Diseases?

By Seema Gupta, MD, MSPH

Clinical Assistant Professor, Department of Family and Community Health, Joan C. Edwards School of Medicine, Marshall University, Huntington, WV

Dr. Gupta reports no financial relationships relevant to this field of study.

**SYNOPSIS:** Higher levels of total physical activity are strongly associated with lower risk of five common chronic diseases: breast and bowel cancer, diabetes, heart disease, and stroke.

**SOURCE:** Kyu HH, Bachman VF, Alexander LT, et al. Physical activity and risk of breast cancer, colon cancer, diabetes, ischemic heart disease, and ischemic stroke events: Systematic review and dose-response meta-analysis for the Global Burden of Disease Study 2013. *BMJ* 2016 Aug 9;354:i3857.

**P**hysical activity may provide a protective effect against several chronic conditions as well as all-cause mortality. The amount of time Americans spend engaging in sedentary activities, such as watching television or playing video games, is rising steadily. Such habits have been independently associated with increased risks of several chronic conditions and mortality.<sup>1</sup>

The World Health Organization (WHO) recommends at least 600 metabolic equivalent (MET) minutes of total activity per week for health benefits. For example, a patient could engage in about 150 minutes per week of brisk walking or 75 minutes per week of running.<sup>2</sup> One MET equals the resting metabolic rate of approximately 3.5 mL O<sub>2</sub>/kg/min, and represents the approximate rate of oxygen consumption of a seated adult at rest. Although the beneficial effects of exercise appear to be dose-dependent, there is a paucity of studies that have systematically quantified the dose-response relationship between physical activity and chronic disease endpoints. In the existing literature, often the focus is on studying a single activity domain, such as leisure time activity, and its effect on the chronic disease in question.<sup>3,4</sup> Rarely is that true for a patient who engages in multiple daily physical activities. However, no study to date has been able to quantify the total physical activity required to have an effect on chronic diseases in a dose-response manner.

Kyu et al quantified the dose-response associations between total physical activity and the risk of breast cancer, colon cancer, diabetes, ischemic heart disease, and ischemic stroke events. They analyzed the results of 174 studies published between 1980 and 2016,

examining the associations between total physical activity and at least one of these five chronic diseases.

The researchers found that a higher level of total weekly physical activity was associated with a lower risk of all five conditions. Most health gains occurred at a total activity level of 3,000-4,000 MET minutes per week, with diminishing returns at higher activity levels. They found that an increase from the currently recommended level of 600 MET minutes per week to 3,600 MET minutes per week reduced the risk by an additional 19%. Furthermore, the researchers found that compared with less active individuals (total activity < 600 MET minutes per week), the risk reduction for those in the highly active category (≥ 8,000 MET minutes per week) was 14% (relative risk [RR], 0.863; 95% confidence interval [CI], 0.829-0.900) for breast cancer; 21% (RR, 0.789; 95% CI, 0.735-0.850) for colon cancer; 28% (RR, 0.722; 95% CI, 0.678-0.768) for diabetes; 25% (RR, 0.754; 95% CI, 0.704-0.809) for ischemic heart disease; and 26% (RR, 0.736; 95% CI, 0.659-0.811) for ischemic stroke. The authors concluded that individuals who can achieve total physical activity levels several times higher than the currently recommended minimum level experience a significant reduction in the risk of the five diseases under study.

## ■ COMMENTARY

We know that physical activity is good for health, but clinicians are uncertain about how much physical activity produces positive outcomes and to what degree. In the past, while some studies have evaluated the physical activity as a whole, others have concentrated on specific types of activity. The study by Kyu et al represents a significant advance in our

understanding of the significance of total physical activity as well as its dose-response effect on a set of chronic illnesses.

As the results suggest, the total physical activity perhaps should be several times higher than the current recommended minimum level of 600 MET minutes a week to potentially achieve much larger risk reductions of these diseases. With the total physical activity concept, it may not be very difficult to achieve such a task. For example, a patient can achieve 3,000 MET minutes a week by incorporating different types of physical activity into his or her daily routine, such as climbing stairs for 10 minutes, vacuuming for 15 minutes, gardening for 20 minutes, running for 20 minutes, and walking or cycling for 25 minutes. Although this meta-analysis was based on observational studies, and therefore may not prove a relationship between the amount and/or type of physical activity and a lowering of the risk of chronic

disease, it makes sense for clinicians to prescribe prevention in the form of total physical activity. With an aging population, that does not have to be just exercise but a host of activities for patients that are easy to perform and that can become part of their lifestyle. ■

#### REFERENCES

1. Ekelund U, Steene-Johannessen J, Brown WJ, et al. Does physical activity attenuate, or even eliminate, the detrimental association of sitting time with mortality? A harmonised meta-analysis of data from more than 1 million men and women. *Lancet* 2016 Jul 27. pii: S0140-6736(16)30370-30371.
2. U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Physical activity guidelines for Americans. Available at: <http://bit.ly/2bXF6yT>. Accessed Sept. 7, 2016.
3. Aune D, Norat T, Leitzmann M, et al. Physical activity and the risk of type 2 diabetes: A systematic review and dose-response meta-analysis. *Eur J Epidemiol* 2015;30:529-542.
4. Sattelmair J, Pertman J, Ding EL, et al. Dose response between physical activity and risk of coronary heart disease: A meta-analysis. *Circulation* 2011;124:789-795.

## ASTHMA

### SHORT REPORT

# Is Yoga Effective for Treating Asthma?

By *Concepta Merry, MB, BCh, BAO, BA*

*Associate Professor, Global Health, School of Medicine, Trinity College Dublin; Integrative Medicine Fellow, University of Arizona, Tucson*

Dr. Merry reports no financial relationships relevant to this field of study.

SYNOPSIS: Although the data on yoga in asthma are only of moderate quality, they do suggest that yoga may improve quality of life and asthma symptoms.

SOURCE: Yang ZY, Zhong HB, Mao C, et al. Yoga for asthma. *Cochrane Database System Rev* 2016;4:CD010346. DOI: 10.1002/14651858.CD010346.pub2.

Three hundred million people worldwide suffer from asthma, and unfortunately this number continues to rise.<sup>1</sup> Pathophysiologically, asthma is a disease of the airways, but in reality the effects of asthma extend far beyond the lungs and negatively affect quality of life.<sup>2</sup>

It is biologically plausible that the ancient Indian practice of yoga could offer some relief for the physical and psychological effects of asthma. It is oversimplistic to refer to yoga as a single entity, given that there are more than 40 different types of yoga. However, common to the many different types of yoga are breathing exercises (pranayama), postures (asanas), and meditation (dhyana), which theoretically could help asthmatics by:

- reducing airway hyper-responsiveness,
- triggering the relaxation response, and/or
- increasing lung capacity.<sup>3,4</sup>

### Summary Points

- This review of 15 clinical trials on yoga for people with asthma found improved quality of life, improved asthma symptoms, and less medication use.
- The authors recommended larger, high-quality clinical trials to comment definitively on the effectiveness of yoga for asthma, including trials that include a sham yoga group for comparison purposes.

A group of Chinese researchers recently published a Cochrane review of yoga in asthma. Initially, they looked at any study of yoga in asthma, including

studies comparing the effects of yoga vs. usual care (or no intervention) or yoga vs. sham intervention. Following detailed review of the available studies, they selected 15 studies, which included a total of 1,048 participants, for review. Most of the studies involved adults only, but two studies included children and adolescents. Understandably, given the origin of yoga in India, most of these studies came from India.

They found some evidence that yoga may improve quality of life in people with asthma (mean difference in Asthma Quality of Life Questionnaire [AQLQ] score per item 0.57 units on a 7-point scale; 95% confidence interval [CI], 0.37-0.77), improve symptoms (standardized mean difference 0.37; 95% CI, 0.09-0.65), and reduce medication use (risk ratio 5.35; 95% CI, 1.29-22.11) in people with asthma.

The mean difference for the AQLQ score exceeded the minimal clinically important difference of 0.5 as per other medical interventions, but this needs to be interpreted with care as the two key studies that included a placebo found no difference. There was no statistically significant impact of yoga on the forced expiratory volume in one second (FEV<sub>1</sub>) (mean difference 0.04 L; 95% CI, -0.10 to 0.19). There were no serious adverse events associated with yoga across the studies; however, this was based on a very limited number of data points.

Overall, the authors concluded that there is moderate-quality evidence that yoga may improve quality of life and symptoms in people with asthma. However, they effectively added a disclaimer saying that these findings are preliminary and suggestive rather than conclusive. The authors recommended that large, well-conducted, randomized, controlled trials are needed to fully assess the effect of yoga in asthma. Specifically, the authors recommend the inclusion of a sham yoga intervention group. Ethically designed sub-studies looking at special populations, such as children and people with severe asthma, also need to be considered if possible.

It is always disappointing when a Cochrane review fails to answer the question at hand because of insufficient quality data. Sometimes the main contribution a Cochrane review of an integrative therapy makes is to offer a blueprint for design of future studies needed to fill the existing gaps, just as we have seen in this review. It is interesting to ponder how often funders and principal investigators take these recommendations into consideration when designing new studies. ■

REFERENCES

- Masoli M, Fabian D, Holt S, Beasley R; Global Initiative for Asthma (GINA) Program. The global burden of asthma: Executive summary of the GINA Dissemination Committee report. *Allergy* 2004;59: 469-478.

1. Publication Title		2. Publication Number		3. Filing Date	
Integrative Medicine Alert		10/1/16		10/1/16	
4. Issue Frequency		5. Number of Issues Published Annually		6. Annual Subscription Price	
Monthly		12		\$319.00	
7. Complete Mailing Address of Known Office of Publication (Not printer) (Street, city, county, state, and ZIP+4)				8. Contact Person	
950 East Paces Ferry Road NE, Ste. 2850, Atlanta Fulton County, GA 30326-1180				Regenia Sims	
9. Complete Mailing Address of Headquarters or General Business Office of Publisher (Not printer)				Telephone	
950 East Paces Ferry Road NE, Ste. 2850, Atlanta, GA 30326-1180				404-262-5473	
10. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor (Do not leave blank)					
11. Owner (Do not leave blank. If the publication is owned by a corporation, give the name and address of the corporation immediately followed by the names and addresses of all stockholders owning or holding 1 percent or more of the total amount of stock. If not owned by a corporation, give the names and addresses of the individual owners. If owned by a partnership or other unincorporated firm, give its name and address as well as those of each individual owner. If the publication is published by a nonprofit organization, give its name and address.)					
Full Name		Complete Mailing Address			
AHC Media LLC		950 East Paces Ferry Road NE, Ste 2850, Atlanta, GA 30326-1180			
David Fournier		950 East Paces Ferry Road NE, Ste 2850, Atlanta, GA 30326-1180			
Bethany Schilling		950 East Paces Ferry Road NE, Ste 2850, Atlanta, GA 30326-1180			
Lone Peak Capital Group, LLC		79 West Paces Ferry Road, Suite 200-A, Atlanta, GA 30305			
12. Tax Status (For completion by nonprofit organizations authorized to mail at nonprofit rates) (Check one)					
<input type="checkbox"/> Has Not Changed During Preceding 12 Months					
<input type="checkbox"/> Has Changed During Preceding 12 Months (Publisher must submit explanation of change with this statement)					
13. Publication Title					
Integrative Medicine Alert					
14. Issue Date for Circulation Data Below					
September 2016					
15. Extent and Nature of Circulation		Average No. Copies Each Issue During Preceding 12 Months		No. Copies of Single Issue Published Nearest to Filing Date	
a. Total Number of Copies (Net press run)		240		232	
b. Paid and/or Requested Circulation					
(1) Paid/Requested Outside-County Mail Subscriptions Stated on Form 3541 (Include advertiser's proof and exchange copies)		181		171	
(2) Paid In-County Subscriptions Stated on Form 3541 (Include advertiser's proof and exchange copies)		0		0	
(3) Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Non-USPS Paid Distribution		9		9	
(4) Other Classes Mailed Through the USPS		11		12	
c. Total Paid and/or Requested Circulation (Sum of 15b (1), (2), (3), and (4))		201		192	
d. Free Distribution by Mail (Samples, complimentary, and other free)					
(1) Outside-County as Stated on Form 3541		21		20	
(2) In-County as Stated on Form 3541		0		0	
(3) Other Classes Mailed Through the USPS		0		0	
e. Free Distribution Outside the Mail (Carriers or other means)		5		5	
f. Total Free Distribution (Sum of 15d and 15e.)		26		25	
g. Total Distribution (Sum of 15c and 15f)		227		217	
h. Copies not Distributed		13		15	
i. Total (Sum of 15g and h.)		240		232	
j. Percent Paid and/or Requested Circulation (15c divided by 15g, times 100)		89%		88%	
16. Publication of Statement of Ownership					
<input checked="" type="checkbox"/> Publication required. Will be printed in the November 2016 issue of this publication. <input type="checkbox"/> Publication not required.					
17. Signature and Title of Editor, Publisher, Business Manager, or Owner					
David R. Fournier				09/12/2016	
Publisher & CEO				Date	
I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including civil penalties).					
Instructions to Publishers					
1. Complete and file one copy of this form with your postmaster annually on or before October 1. Keep a copy of the completed form for your records.					
2. In cases where the stockholder or security holder is a trustee, include in items 10 and 11 the name of the person or corporation for whom the trustee is acting. Also include the names and addresses of individuals who are stockholders who own or hold 1 percent or more of the total amount of bonds, mortgages, or other securities of the publishing corporation. In item 11, if none, check the box. Use blank sheets if more space is required.					
3. Be sure to furnish all circulation information called for in item 15. Free circulation must be shown in items 15d, e, and f.					
4. Item 15h, Copies not Distributed, must include (1) newsstand copies originally stated on Form 3541, and returned to the publisher, (2) estimated returns from news agents, and (3), copies for office use, leftovers, spoiled, and all other copies not distributed.					
5. If the publication had Periodicals authorization as a general or requester publication, this Statement of Ownership, Management, and Circulation must be published; it must be printed in any issue in October or, if the publication is not published during October, the first issue printed after October.					
6. In item 16, indicate the date of the issue in which this Statement of Ownership will be published.					
7. Item 17 must be signed.					
Failure to file or publish a statement of ownership may lead to suspension of Periodicals authorization.					
PS Form 3526, October 1999 (Reverse)					

#### EXECUTIVE EDITOR

Leslie G. Coplin

#### ASSOCIATE MANAGING EDITOR

Jonathan Springston

#### CONTINUING EDUCATION AND EDITORIAL DIRECTOR

Lee Landenberger

#### EDITOR

David Kiefer, MD

Clinical Assistant Professor, Department of Family Medicine, University of Wisconsin; Clinical Assistant Professor of Medicine, Arizona Center for Integrative Medicine, University of Arizona, Tucson

#### EDITORIAL ADVISORY BOARD

Donald Brown, ND

Managing Director  
Natural Product Research Consultants  
Seattle

Russell H. Greenfield, MD

Clinical Assistant Professor  
School of Medicine  
University of North Carolina  
Chapel Hill  
Visiting Assistant Professor  
University of Arizona College of Medicine  
Tucson

Dónal O'Mathúna, BS (Pharm), MA, PhD

Senior Lecturer  
Ethics, Decision-Making & Evidence  
School of Nursing and Human Sciences  
Affiliated Scholar, Institute of Ethics  
Dublin City University, Dublin, Ireland

David Rakel, MD

Associate Professor  
Department of Family Medicine  
Founder and Director, University of Wisconsin Integrative Medicine  
University of Wisconsin School of Medicine and Public Health, Madison

Suhani Bora, MD

Access Community Health Centers  
Madison, WI

Howell Sasser, PhD

Associate, Performance Measurement  
Clinical Policy  
American College of Physicians  
Philadelphia

Craig Schneider, MD

Director of Integrative Medicine  
Department of Family Medicine  
Maine Medical Center  
Portland, ME

- Adams RJ, Wilson DH, Taylor AW, et al. Psychological factors and asthma quality of life: A population based study. *Thorax* 2004;59:930-935.
- Vempati R, Bijlani RL, Deepak KK. The efficacy of a comprehensive lifestyle modification programme based on yoga in the management of bronchial asthma: A randomized controlled trial. *BMC Pulm Med* 2009;9:37. doi: 10.1186/1471-2466-9-37.
- Goyeche JR, Abo Y, Ikemi Y. Asthma: The yoga perspective. Part II: Yoga therapy in the treatment of asthma. *J Asthma* 1982;19:189-201.

## CME INSTRUCTIONS

To earn credit for this activity, please follow these instructions:

- Read and study the activity, using the references for further research.
- Scan the QR code to the right or log on to [AHCMedia.com](http://AHCMedia.com) and click on [My Account](#). First-time users will have to register on the site using the eight-digit subscriber number printed on the mailing label or invoice.
- Pass the online test with a score of 100%; you will be allowed to answer the questions as many times as needed to achieve a score of 100%.
- After completing the test, a credit letter will be emailed to you instantly.
- Twice yearly after the test, your browser will be directed to an activity evaluation form, which must be completed to receive your credit letter.



## CME QUESTIONS

- Which of the following is true about the cognitive effects of *Ginkgo biloba* and *Panax ginseng*?**
  - Panax ginseng* improved cognitive function, but only in men.
  - Ginkgo biloba* affected executive functioning, but only in women.
  - The effect of *Ginkgo biloba* did not appear to be mediated by any effects on the cardiovascular system.
  - Panax ginseng* had significant effects on cognition and cardiovascular function, but only at the lower dose.
- Which of the following statements is false regarding the effect of gut microbiota and chronic disease?**
  - Obesity is linked with increase in *Firmicutes/Bacteroides* ratio.
  - Gut microbiota are involved in extracting nutrients, regulating innate and adaptive immunity, and helping control energy balance.
  - The microbial population in the human colon has been shown to adapt to specific diet compositions.
  - The improvement in insulin sensitivity in obese patients found in this study after one year of consumption of a Mediterranean diet or low-fat, high-complex carbohydrate diet is directly attributable to the changes observed in the microbiota.
- According to the study by Zick et al, breast cancer survivor fatigue may be reduced by which of the following?**
  - Using relaxing acupressure and stimulating acupressure
  - Using only relaxing acupressure
  - Using only stimulating acupressure
  - Continuing usual standard of care for fatigue
- Which of the following is true regarding the use of yoga for people with asthma?**
  - It is associated with significant serious adverse effects.
  - It results in a statistically significant improvement in FEV<sub>1</sub>.
  - The mechanism of action is clearly understood.
  - It improves the quality of life.

## [IN FUTURE ISSUES]

Melatonin during chemotherapy

Extra-virgin olive oil and type 1 diabetes

Soy and polycystic ovarian syndrome

Beetroot juice and endurance

Interested in reprints or posting an article to your company's site? There are numerous opportunities for you to leverage editorial recognition for the benefit of your brand.

Call us: (800) 688-2421

Email us: [Reprints@AHCMedia.com](mailto:Reprints@AHCMedia.com)

For pricing on group discounts, multiple copies, site-licenses, or electronic distribution, please contact our Group Account Managers at:

Phone: (866) 213-0844

Email: [Groups@AHCMedia.com](mailto:Groups@AHCMedia.com)

To reproduce any part of AHC newsletters for educational purposes, please contact:

The Copyright Clearance Center for permission

Email: [info@copyright.com](mailto:info@copyright.com)

Phone: (978) 750-8400