Over the past three decades, health professionals and epidemiologists have observed a weight phenomenon unprecedented in recorded history. The explosive increase in individuals who are overweight and obese and their collateral nutrition-related chronic disease may provide food and nutrition professionals both the greatest challenge and the greatest opportunity of their professional careers.

Due to the complex nature of obesity and chronic disease, individual response to a specific strategy may vary widely. For that reason, the development of a broad spectrum of approaches may best serve the growing population of individuals with nutrition-related chronic disease.

Yoga the multitasker: mind-body therapy and physical activity as a guide to a moderate lifestyle

Yoga is a philosophical system originating in India whose beginnings may be traced as far back as 5,000 BCE. The word yoga comes from the Sanskrit root "yuj", which means to bind, join, attach and yoke, and concentrate one's attention, to use and apply. It also means union or communion.12

While yoga in America today is often exclusively thought of as the physical practice (asana in Sanskrit), the full practice of yoga encompasses all aspects of life including mental attitude, lifestyle choices about self-care and how one spends their time and energy, and philosophical study and ritual.

Meditation is a process of quieting the physical body and the mind. Yoga scholar Georg Feuerstein, PhD, describes meditative absorption (dhyana) as the state of deep concentration in which an internalized object fills the entire space of...
As spring moves quickly into summer, I always marvel how the desert changes from year to year. Different flowers and cactus bloom based on the amount of moisture that they have received over the winter. Much like these plants, humans flourish based on the opportunities provided to them to enrich their knowledge and lifestyle from the people they interact with and the food, activity, and complementary therapies they choose to use. The NCC Executive Committee had the opportunity to nourish their minds and bodies while meeting at the corporate offices of Nutrilite in Buena Park, CA in March, not only for their own benefit, but for the benefit of NCC as a whole.

As you will read in the newsletter, this meeting allowed the formation of a new strategic plan to help further NCC’s positioning as leader in the area of complementary nutrition therapies. Plans are afoot to offer members a wide array of opportunities to enrich their knowledge and their lifestyle as well as the lifestyles of their clients and patients. One such opportunity includes webinars on functional medicine. Another includes exciting offerings at this year’s FNCE in Chicago. New columns and offerings are planned for the newsletter and to help with those, we are asking members who are interested in helping by becoming a column editor or author for the coming year to contact me or Mary Alice Gettings, NCC Chair-Elect, regarding these opportunities.

The views expressed in this newsletter are those of the authors and do not necessarily reflect the policies and/or official positions of the American Dietetic Association.

We invite you to submit articles, news and comments. Contact us for author guidelines.

Send change-of-address notification to the American Dietetic Association, 120 South Riverside Plaza, Ste. 2000, Chicago, IL 60606-6995.

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NCC EC’s meeting in March could not have been possible without the support of the Nutrilite Institute for Health and Wellness. As many of you may be aware, Nutrilite has assisted us in the past with highly scientific, peer-reviewed articles for the newsletter as well as support for other mid-year meetings. Highlights of the meeting included a tour of the facilities where their dietary supplements are manufactured, a lesson on the history of the company, and the opportunity to meet with the son of the founder and current president, Dr. Sam Rheborg. It was a highly productive and educational meeting along with the opportunity to observe how quality controlled dietary supplements are made.

As always I welcome your input, comments, and offers to author articles or assist in any other way with the newsletter. Please feel free to contact me at peaknut@cascadeaccess.com.
While our country seems to be holding on to winter in many areas (as I write this Nebraska is experiencing a mini blizzard!), it is time to say goodbye to winter and move into spring! It is also time to say thank you to everyone in NCC for an outstanding year and move into the role as Past Chair.

This spring I have had the pleasure to reflect on many things. Not only have I been reflecting on NCC, but our family is reflecting on a natural transition as our oldest child graduates from high school. As Chair, I must first thank the membership for having the confidence in me to provide me with the honor of leading NCC. The year has been possible only with the help of a strong Executive Committee (EC) and many others who are behind the scenes. To thank each of them individually would take this entire issue! Each and every one of the EC members has continually worked to make NCC better and insure that the needs of members have taken center stage. I am so many times in awe of what these wonderful people can and have done for NCC.

NCC will soon be lead by an outstanding leader, Mary Alice Gettings. Mary Alice’s drive, commitment, and determination to make NCC the leader in complementary nutrition for ADA members will be difficult for future leaders to match. I have been blessed to have had Mary Alice there to assist me and at times, because of unforeseen circumstances, to be the leader. I look forward to continuing to work with Executive Committee and Mary Alice as NCC begins its tenth year!

So as I see my son move into a new part of his life, I will cherish the memories and look to future experiences to share with him, while a sad time it is also an exciting time. I am feeling the same with NCC. There are always things that we wish we could have accomplished, but I know in my new position as Past Chair, I will be able to continue that work and look for the exciting future opportunities that NCC will offer.

Thank you again for a wonderful experience and the opportunity to get to know so many members.

Yours in health,

Gretchen
consciousness. There is no loss of lucidity, but the sense of wakefulness appears to be intensified even though there is little awareness of the external environment.\(^5\)

**The state of the literature on yoga for nutrition-related chronic disease**

With many of our grandmothers, nieces, and overweight brothers “doing yoga”, it’s safe to say that yoga is here to stay. Many individuals who come to food and nutrition professionals may already be using yoga or other complementary and alternative medicine (CAM) therapies. A 2004 National Center for Health Statistics report using data from 31,044 interviews in the National Health Interview Survey found that 62% of adults surveyed used some form of CAM therapy.\(^3\) The most commonly used CAM therapies included prayer for one’s own health (43.0%), deep breathing exercises (11.6%), meditation (7.6%), yoga (5.1%), and diet-based therapies (3.5%).\(^4\)

In most CAM circles, yoga is considered an adjunctive therapy. While an allopathic protocol treats the patient’s condition, yoga and meditation support the overall well-being of the individual. There are a growing number of studies, however, that suggest that yoga and meditation have isolated effects. A comprehensive body of literature, primarily out of Indian yoga and ayurvedic research centers, details these effects. Methodological and other limitations characterize many early studies in this area and preclude drawing firm conclusions. In current studies, yoga is often part of a combination therapy, which is appropriate in practice, but may lead to nonspecific findings. However, the scientific pieces continue to assemble with more clinical attention and the concurrent advances in behavioral and psycho-neurological research now taking place.

In 2005, a group from the University of Virginia undertook a meta-analysis of the published literature regarding the effects of yoga on cardiovascular disease (CVD) and insulin resistance syndrome (IRS) clinical endpoints. Seventy eligible studies were found, including one observational study, 26 uncontrolled clinical trials, 21 nonrandomized controlled clinical trials, and 22 randomized controlled trials (RCT). Together, the results of these studies indicated beneficial changes in glucose tolerance and insulin sensitivity, lipid profiles, anthropometric characteristics, blood pressure, oxidative stress, coagulation profiles, sympathetic activation, and cardiovagal function, as well as improvement in several clinical endpoints.\(^5\) Recent studies, including a large observational study (n=15,500) suggesting that yoga was part of a weight-prevention lifestyle in the individuals in their 50s who participated, continue to support previous findings.\(^6,12\) Yoga-based therapies have also been promising in addressing eating disorders. In 1998 researchers from Toronto reported that guided imagery, a form of meditative relaxation, significantly reduced maladaptive eating behaviors in a group on individuals with bulimia (n=50).\(^7\)

Meditation is an aspect of yoga practice increasingly recognized as having clinical effects. These include a broad spectrum of physical and psychological occurrences, such as reduced anxiety, pain, depression, and stress, along with enhanced mood and self-esteem. In an RCT by Davidson and Kabat-Zinn, a short program in mindfulness meditation produced demonstrable effects on brain and immune function.\(^8\) In a prospective investigation by Carlson involving breast and prostate cancer patients those enrolled in a mindfulness based stress reduction program exhibited positive changes in hormones associated with hypothalamic-pituitary-adrenal (HPA) axis functioning, including improved cortisol profile.\(^9\)

**How might therapeutic yoga work?**

Much of the observed benefit of yoga and meditation may be due to their apparent effectiveness in managing stress. Additionally, yoga likely provides some of the physiological advantages of gentle to moderate physical activity. While there is growing evidence that yoga and meditation have therapeutic value in those with chronic nutrition-related conditions, additional high quality RCTs are needed to confirm and further elucidate the effects of standardized yoga programs on specific indices in specific populations.

From a psycho-physiologic perspective, there are a number of theories investigating how yoga, meditation, and other mind-body modalities work. One theory for yoga is that the practice helps to fine-tune our sensory systems, which have internal, external, and memory components. Integrative physician and researcher Cheikin suggests that the sensory system encompasses the five senses, as well as kinesthetic, vestibular and visceral sensing elements. On a conscious level we can normally attend to only one of the three components of the sensory system. In yoga, however, we practice their interplay, and begin to develop conscious control over our internal, external, and memory realities, thus gaining insight into how events in our lives imprint our sensory system, and in effect we train the brain to integrate life experience differently.\(^10\)
Yoga also has a spiritual component often overlooked but is likely part of its appeal, its clinical effect, and its challenge to quantitative study. From a spiritual perspective yoga is the process of joining individual consciousness with universal consciousness. Like Buddhism and other eastern philosophical practices, yoga practice involves focusing conscious attention inward. This turning inward of attention and self-observation with an attitude of compassion lies at the heart of yoga psychology theory. As the practitioner gains skill, a sense of the physical, psychological, and emotional realities often shift, becoming less influenced by the external forces of modern culture and more anchored in an internal value system. This is the cognitive restructuring within the practice of yoga that may make it a valuable support to health behavior change. By using physical sensation within one’s own body as a focal point, yoga personalizes the context of behavior, and of behavior change. The practitioner learns to relate bodily physical sensations to emotions, and gains skill in differentiating sensations and their physical, emotional, and psycho-spiritual meaning.

The state of an evolving profession; who’s doing therapeutic yoga?

There are many styles of yoga, and teachers bring with them their own training, personal insights, and limitations. Some styles such as Kripalu, Kundalini, Anusara and softer Hatha styles may be more beneficial than others to those at risk for chronic disease. There are several schools of yoga, including Phoenix Rising Yoga Therapy, Viniyoga, and Integral Yoga that focus specifically on therapeutic aspects of the practice. While Astanga, Bikram, and Power Yoga styles can embody the elements of yoga philosophy and practice, their physically demanding nature can be intimidating and injury-inducing for beginners, particularly for those unaccustomed to regular physical activity. Skilled and compassionate teachers exist in all yoga styles. But with yoga’s explosion in popularity and with professional standards in their infancy, there are many yoga teachers who lack the skills and experience to safely and effectively undertake the therapeutic role they are asked to fill. While certification is evolving and the ranks of highly qualified therapists are growing, let the yoga practitioner beware.

In 1999, the first national accrediting body of yoga in the United States was formed. The Yoga Alliance (YA) (www.yogaalliance.org) registers yoga teachers at the 200 hour and 500 hour levels of training; certified teachers use the initials RYT after their names to depict their level of training. YA also registers yoga schools providing approved curriculums and trainings with the initials RYS.

Patanjali’s Eight-Limbed Path of Yoga (union of the individual with the universal Divine)

The following provides a brief overview of yoga philosophy as presented in the Yoga Sutras (an ancient text by the sage Patanjali). It maps out the progression toward wholeness/union/yoga and describes the practices within that progression. Note that the physical practice of asana that we think of as yoga in the West is only one of eight aspects of the full practice.

1. **Yama** (restraints of attitude or behavior, primarily in community or relationship)
   - **Ahimsa** (non-violence, compassion)
   - **Staya** (truthfulness)
   - **Asteya** (non-stealing)
   - **Brahmacharya** (chastity or control of personal energy)
   - **Aparigraha** (greedlessness, charity)

2. **Niyama** (observances and attitudes, primarily individual)
   - **Saucha** (purity, cleanliness)
   - **Santosa** (contentment)
   - **Tapas** (asceticism, simplicity, passion)
   - **Svadhyaya** (self-study, self-inquiry)
   - **Isvara Pranidhana** (devotion or surrender to the Divine)

3. **Asana** (seat, the physical practice of postures)

4. **Pranayama** (energy control, including breathing practices)

5. **Pratyahara** (inward direction focus of attention)

6. **Dharana** (the quality of focused concentration)

7. **Dhyana** (meditation)

8. **Samadhi** (absorption into bliss consciousness)

Note: The words above are in Sanskrit, a complex ancient language no longer spoken except in yoga and other specific situations. In their most correct form, many Sanskrit words contain various diacritics (accent-like marks). For English readability and simplicity of production, diacritics are not included in the above terms.

Sources:
The primary professional organization serving yoga therapists is the International Association of Yoga Therapists (IAYT) (www.IAYT.org). While IAYT does not certify or register yoga therapists, they are in the process of identifying national standards for training, and act as a resource on therapy and research to both yoga teachers and health professionals. The International Journal of Yoga Therapy is peer-reviewed, and articles, research summaries, and a listing of therapeutic yoga trainings can be found on their website.

There are a growing number of Western clinicians including physicians, physical therapists, registered nurses, and registered dietitians cross-trained in therapeutic yoga. It is this author’s opinion that RDs cross-trained in therapeutic yoga offer the unique benefit of this mind-body physical activity, and a grounding in the scientific basis and individual complexities of weight and chronic disease management.

**Take Home Message**

Living in our American culture and maintaining a healthy nutritional status often appear mutually exclusive. The practices of yoga, breath-based stress management, and meditation, with their elements of clarifying internal vs. external values, the development of the skills to differentiate between reality and delusion, and provision of physical context for emotional work, provide useful tools for these challenging personal transitions. As individuals develop their practice and become more familiar with their internal cues, they often become less influenced by the external values of beauty and excessive thinness projected in the media.

Yoga and meditation may not be useful in all cases of nutrition-related chronic disease. Like most behavioral therapies, the individual must freely commit to consistent adherence to the therapy to receive its benefits. For those interested, however, these practices may offer cognitive training, moderate physical activity, and philosophical guidance that uniquely support healthy attitudes about weight, eating, and self-care.

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**Therapeutic Yoga**

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Annie Kay has a therapeutic yoga and nutrition practice in Nantucket, MA and Kauai, HI. Find out more about her writing and teaching at www.anniebkay.com or contact Annie at 508-228-6961.

**References**


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Annie B. Kay, MS, RD, RYT

Obesity epidemic

During the past three decades, a dramatic increase in overweight and obesity has occurred in the United States. According to national data [National Health and Nutrition Examination Survey (NHANES)], the prevalence of obesity more than doubled between 1976 and 2004, and 66% of Americans are now either overweight or obese. More than a cosmetic inconvenience, obesity increases risk for diabetes, heart disease, some cancers, and early death.

An individual’s body weight results from a simple equation reflecting energy ingested through food, minus energy expended through metabolic and physical activity. The inability to balance this equation has resulted in a collision of biology and modern society.

The American food supply has seen major shifts during this timeframe, and the Economic Research Service (ERS) of the United States Department of Agriculture (USDA) reports that production and consequent intake of calorically-dense, nutrient deficient processed carbohydrates, simple sugars, and fat have increased significantly. These foods are ubiquitous, convenient, and often cheaper for the consumer than nutrient dense low-calorie foods such as fruits and vegetables. Not surprisingly, consumption data suggest Americans are not only eating more calories, but that those calories are coming from high-calorie, low-nutrition foods. Unfortunately, this increase in calories has not been offset by an increase in energy expenditure, and less than half of American adults meet the recommendations for participation in physical activity.

In America, weight carries significant cultural and psychological implications. As early as the mid-1960’s, researchers noted that 70-80% of normal weight women wanted to lose weight; among women who are surveyed, more than half select target weights in the underweight range, suggesting a desire for extreme thinness in normal weight women. Social stigmatization and discrimination, including job and college admission discrimination as well as countless negative depictions in the media, have been well documented toward overweight individuals. Stress has been identified as both a root source of weight-generating behaviors and the result of being overweight. Research suggests that visceral obesity in women—a risk factor for hypertension, diabetes, and cardiovascular disease—is, in part, a psychological adaptation to chronic stress.

In our consumer-based culture, unrealistic body images projected in the media coupled with simultaneous success by the food industry encouraging Americans to overeat, create an unhealthy environment where overeating and dysfunctional eating patterns thrive. Unprecedented levels of stress in modern society and the relative inaccessibility of stress management and physical activity opportunities likely exacerbate the problem. The overabundance of calories in the food supply completes the environmental set-up for the current obesity epidemic.

Physiologic and psychologic basis of yoga in weight management

A number of hypotheses explore the physiology of how yoga, meditation, and other mind-body modalities work in weight management. One is that yoga practice helps fine-tune the sensory systems, which have internal, external, and memory components. On a conscious level, an individual can normally attend to only one of these three components. In yoga, however, the interplay of these components is explored, and the practitioner develops conscious control over internal, external, and memory realities, thus gaining insight into how life events imprint the sensory system.

Meditation is increasingly recognized as having clinical effects on a broad spectrum of physical and psychological occurrences, such as reduced anxiety, pain, depression, and stress, along with enhanced mood and self-esteem. In a randomized, controlled study by Davidson and Kabat-Zinn, a short program in mindfulness meditation produced demonstrable effects on brain and immune function. In a prospective investigation by Carlson involving breast and prostate cancer patients, a mindfulness-based stress reduction program resulted in positive changes in hormones associated with hypothalamic-pituitary-adrenal (HPA) axis functioning, which included improved cortisol profiles.

As described in the Yoga Sutras (an ancient text often considered the central text on yoga philosophy and practice), at the heart of yoga psychology lies internal focus of attention and self-observation with an attitude of compassion. As the practitioner gains skill, their senses in terms of physical, psychological, and emotional realities often shift, becoming less influenced by the external forces of modern culture and more anchored in an internal value system. This
Yoga philosophy in weight management

In addition to its stress management benefits, yoga, and particularly the yamas and niyamas (guidelines for living in yoga philosophy—literally “restraints” and “observances,” respectively), is helpful in defining moderation. Many national health organizations feature moderation in their guidelines, but are light on the “how-to’s” of achieving a moderate lifestyle in our anything-but-moderate culture. In the yoga philosophy, moderation is not a passive state, but is more akin to “standing in the fire” between the two beckoning poles of excess and deprivation. The moderate yogini (female yoga practitioner) is no passive risk-avoider, but is a highly skilled and strong-willed warrior. The author has observed that the practices of yoga and meditation seem to aid the development of mindfulness during mealtimes by aiding awareness of portion sizes, food preparation, and how fast an individual eats the food before them.

Physical activity

Current physical activity guidelines of 30 to 60 minutes most days of the week may appear hopelessly unattainable for sedentary persons. While adequate moderate physical activity is always part of a sound weight management program, gentle yoga practice under skillful guidance can safely reintroduce movement without the need for performance, exertion, or spandex. Once sedentary individuals commence...
or resume movement, regular moderate physical activity often seems less daunting.

**East-west weight program integration**

The obesity epidemic, along with its societal underpinnings, provides an opportunity to combine the current scientific basis of weight management that was summarized by the National Institutes of Health (NIH) in their 1998 publication *Identification, Evaluation, and Treatment of Overweight and Obesity in Adults* with the transformational psychological and cognitive benefits of yoga and meditation.

Based on my personal health story in concert with my formal training as a registered dietitian and yoga therapist, I developed a comprehensive weight management program. This program incorporates the protocol for weight management outlined in the NIH guidelines with meditation and yoga exercises, designed to aid the practitioner in the cognitive restructuring necessary for sustained behavior change to maintain a healthy weight. This protocol includes: anthropometrics, a food diary and intake analysis, goal setting and review, and contingency planning and motivational intervention.

The protocol was adjusted to incorporate transformational, psychological, and philosophical aspects of yoga, including the initiation of the program with a series of exercises intended to foster *ahimsa* (nonviolence, compassion) in self-care. Thus, weight management begins with self-compassion and respect. Body-centered meditations, yoga practice in a *kripalu* (gentle) style, and conscious eating exercises are woven throughout the program. In addition to recording food journals, participants are provided with a series of questions intended to guide the exploration of the *yamas* (restraints of behavior) and *niyamas* (observances) in regard to their own lives as well as their journey with weight, eating, and self-care.

Anecdotally, participating women reported moderate weight loss over time, but also reported successfully using these techniques to aid their transition to healthier lifestyles and habits. To facilitate quantification of success, detailed interviews are currently underway with past program participants.

**Take home message**

Early reports suggest that yoga may aid the cognitive restructuring critical to making lasting weight-related life-

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**References**

6. Cheikin M. *An Integrated Medical Yoga Curriculum.* Workshop and notes presented at Kripalu Center for Yoga and Health, November 3-8, 2002, Lenox, MA.
Inflammation is associated with a whole host of human diseases including heart disease, arthritis, asthma, osteoporosis, and many others. Individuals with certain gene variations in the IL-1 (Interleukin 1) gene cluster have a greater propensity for inflammation in the body. C-reactive protein, or CRP, is a protein used to identify inflammation in the body and has been associated with a greater risk of heart disease. An ideal scenario for practice would be to utilize knowledge of an individual’s pro-inflammatory genotype, such as IL-1 gene variations, along with markers of inflammation, such as CRP, along side inflammation modulating botanicals to identify at risk individuals and manage their inflammation before they exhibit disease. In fact, a study was conducted to investigate this idea.

Researchers from Nutrilite (Buena Park, CA) and Interleukin Genetics (Waltham, MA) collaborated on a randomized, placebo controlled, double-blind, proof-of-concept clinical trial demonstrating the beneficial effects of a botanical mixture of rose hips, blueberry powder, blackberry powder, and resveratrol (grapevine extract) on IL-1 positive individuals (IL-1B -511 CC, IL-1A +4845 TT, or IL-1A +4845 T* and IL-1B +3954). The botanicals were identified from a screen of 220 ingredients for their ability to inhibit IL-1β gene expression.

At 12 weeks of dosing, researchers found their botanical mixture could decrease early MI risk by decreasing IL-1β expression and CRP levels in a significant number of IL-1β positive individuals.¹

Very few research articles have been published that identify the association between a beneficial response from a botanical or supplement mixture and an individual’s genotype. Hopefully, more and larger studies of this kind will be published in peer reviewed journals to expand our capabilities to treat people based on their individual, biochemical, and genetic uniqueness.

Reference


Please check the NCC web site for a list of some of the commercial nutritional and predictive genetic testing companies and their web sites.

*The links provided on our web site are for your convenience and should not be considered an endorsement of products or services by NCC or ADA. Any views expressed on these web sites do not reflect official policy of NCC nor ADA.*

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**Nutrigenetics Research Highlight**

Colleen Fogarty Draper, MS, RD
Education Chair, NCC

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Without your generous contributions, many of the opportunities and member benefits would not be possible.

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¹ Very few research articles have been published that identify the association between a beneficial response from a botanical or supplement mixture and an individual’s genotype.
You spoke. We listened. Your NCC Executive Committee spent three days discussing ways to enhance your member benefits. Under the direction of Colleen Fogarty Draper, MS, RD, the group participated in a strategic planning session to help to keep us moving on a successful path in the next three to five years.

If I had one word to describe this experience, it would be ENERGY. Ideas to promote the RD in holistic and integrative medicine internally within ADA and externally to other health practitioners and to the public were plentiful. The passion and enthusiasm of this group will be felt for many years as we strive to make every member of ADA believe it’s necessary to join NCC, not only for professional, but also personal reasons.

Much of the discussion revolved around the survey results that we obtained from a representative sample of our members. For example, many of the members are interested in functional medicine, functional foods, nutrition supplements, and botanicals. As a result, we will begin our webinar series with the Institute for Functional Medicine, with whom we formed a Network, in May and continue throughout the next year to address these areas that are important to you. These webinars will be free to all NCC members and will provide you with CPEUs. The webinar format is also a result of the survey showing that members want to use online means to meet their educational needs. In addition, our first NCC FNCE pre-conference is being planned to address the various areas in which the membership wants to become more knowledgeable.

The survey also revealed that members would be interested in client/consumer education materials. While this is in preliminary discussions, we plan to provide you with downloadable educational materials for your professional use. We will also be looking closely at how to enhance our excellent newsletter and the navigation of the website. All of this is only the tip of the iceberg. I will continue to update you as the year progresses.

As we revised our mission and vision, we also discussed in length a possible name change for NCC to reflect the present and future. Within the next month, each member will receive a very short web-based survey to determine your choice of a DPG name. When this arrives, please take a couple of minutes (no kidding!) to provide us with feedback.

We also welcome your involvement as we develop a list of tasks with time commitments so that you can choose smaller or more involved projects that are of interest to you. This will be sent to each member as part of an eblast. Speaking of eblasts, we are planning to develop an eblast schedule so that you will receive less email, but with more information in each. I strongly encourage you to peruse these emails as they have important information and opportunities.

As we forge ahead to provide you with the resources you need to improve your knowledge, effectiveness, and practice, please do not hesitate to contact me at magettings@psu.edu with your ideas and thoughts.

Announcing: NCC’s First Networking Relationship

The ADA recently approved NCC-DPG’s request to form a network relationship with the Institute for Functional Medicine (IFM). A “network” is defined by the ADA as a communication opportunity designed for the purpose of sharing information between the two groups.

IFM is comprised of 5,000 health care professionals representing a full complement of disciplines and specialties, including MDs, DOs, RDs, DCs, NDs, dentists, nutritionists, and nurse practitioners. The mission of IFM is to serve the highest expression of individual health through widespread adoption of functional medicine as the standard of care. More information on IFM can be found on their Web site at www.functionalmedicine.org.

Examples of proposed network activities with IFM include collaboration on webinars, conferences and publications on functional medicine. IFM holds regular webinars and conferences that would be of benefit to NCC members. Watch your email in-boxes for more information as this Network relationship develops.

For more information, contact Kathie Swift, MS, RD, NCC Educational Chair at swiftnutrition@aol.com.
Americans are not getting enough potassium; and the little potassium they do consume is coming from less than ideal sources. The 2005 Dietary Guidelines for Americans and the Institute of Medicine’s recommendation for most Americans is a daily potassium intake of at least 4,700 mg (Tables 1a and 1b). Research findings show that on average, the modern U.S. diet is lacking in potassium. The USDA as well as estimates from the National Academy of Sciences support this assessment with data showing that Americans meet just a little more than half the recommended intake for potassium.\(^1,2\)

Table 1a\(^3,4\)

<table>
<thead>
<tr>
<th>Average Intake (mg)</th>
<th>Recommended Intake (mg)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium Men</td>
<td>2800 – 3300</td>
<td>4700</td>
</tr>
<tr>
<td></td>
<td>Need 1400-1900 mg MORE Potassium</td>
<td></td>
</tr>
<tr>
<td>Potassium Women</td>
<td>2200 – 2400</td>
<td>4700</td>
</tr>
<tr>
<td></td>
<td>Need 2300-2500 mg MORE Potassium</td>
<td></td>
</tr>
</tbody>
</table>

Table 1b\(^5,6\)

<table>
<thead>
<tr>
<th>Guidelines for Daily Adequate Intake of Potassium</th>
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<tbody>
<tr>
<td>Sex</td>
</tr>
<tr>
<td>M/F</td>
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<tr>
<td>M/F</td>
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<tr>
<td>M/F</td>
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<td>M/F</td>
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<td>F</td>
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In addition, high blood pressure affects nearly one in three American adults, or about 72 million men and women. Pre-hypertension affects another 69 million adults, and the risk of developing high blood pressure over a lifetime is 90%.\(^6\) In view of these two issues, this article will focus on the beneficial role of a high potassium diet in managing blood pressure.

High blood pressure (HBP), also referred to as hypertension, is defined as one or both of the following: systolic blood pressure (SBP) of 140 mmHg or higher and/or diastolic blood pressure (DBP) of 90 mmHg or higher. Pre-hypertension refers to blood pressure between normal and high, which is relevant because it increases the risk of developing high blood pressure and its medical sequelae. Table 2 provides more details.

Table 2: Classification of Blood Pressure for Adults\(^7\)*

<table>
<thead>
<tr>
<th>Category</th>
<th>Systolic</th>
<th>Diastolic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Less than 120</td>
<td>Less than 80</td>
</tr>
<tr>
<td>Pre-hypertension</td>
<td>120–139</td>
<td>80–89</td>
</tr>
<tr>
<td>High blood pressure*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 1</td>
<td>140–159</td>
<td>90–99</td>
</tr>
<tr>
<td>Stage 2</td>
<td>160 or higher</td>
<td>100 or higher</td>
</tr>
</tbody>
</table>

*For people with diabetes and chronic kidney disease, blood pressure of 130/80 mmHg or higher is considered high.

The science behind potassium’s benefits

Numerous clinical studies report that diets high in potassium can significantly lower blood pressure. Findings from a meta-analysis of 33 randomized controlled trials showed that potassium supplementation lowered both systolic and diastolic blood pressure. The median level of additional potassium was 2933 mg/day with a range of 665 to 7820 mg/day. Systolic blood pressure was lowered 3.11 mmHg (95% CI: 1.91 to 4.31), and diastolic blood pressure was lowered 1.97 mmHg (95% CI: 0.52 to 3.42).\(^8\) Results from an earlier meta-analysis, which included non-randomized controlled trials, showed that potassium supplementation lowered SBP 5.9 mmHg (95% CI: 6.6 to 5.2) and DBP 3.4 mmHg (95% CI: 4.0 to 2.8).\(^9\) Both of these meta-analyses found greater blood pressure lowering effects for potassium in participants with high blood pressure as compared to those with normal blood pressure.

Large scale epidemiological studies further support the positive role of potassium by showing that a high potassium diet is associated with a decreased risk of stroke in people with normal and high blood pressure over the long term.\(^10,11\) In one such observational study, which was a cross-sectional examination of over 10,000 men and women from 52 sites around the world, potassium excretion was negatively and independently associated with blood pressure, even after adjusting for sodium excretion, body mass index, and...
Supplements - Potassium

alcohol intake. On average, study participants excreted 915 – 3171 mg/day of potassium, suggesting that a diet relatively high in potassium (with increased levels of elimination) is associated with lower blood pressure.\textsuperscript{12}

In addition, the eating plan that was the foundation of the landmark study - the Dietary Approaches to Stop Hypertension (DASH) trial - is clinically proven to lower blood pressure. The DASH study used foods rich in potassium (versus isolated nutrients), including fruits, vegetables, and low-fat dairy products. It was also high in fiber, calcium, and magnesium, and low in saturated fat, total fat, sodium, and cholesterol. The DASH eating plan was found to significantly lower blood pressure in just two weeks.\textsuperscript{13} The initial study was done in four clinical centers with 459 participants having blood pressures of <160/80-95 mmHg. The individuals ate one of three meal types: a typical American diet as the control diet (mineral intakes were 25% of recommendations for calcium, potassium, and magnesium, respectively); a diet high in fruits and vegetables, but unchanged in macronutrients from the control; or a diet high in fruits and vegetables and lower in saturated fat, total fat, and cholesterol. Sodium was kept slightly below the average intake of Americans across all three diets. The study findings showed that the DASH eating plan lowered blood pressure in virtually all subgroups (e.g. race, sex, age, body mass index, education, income, physical activity level, alcohol intake, hypertension status).\textsuperscript{13}

In a follow-up randomized clinical trial, the DASH eating plan significantly lowered blood pressure beyond the effects of sodium restriction alone.\textsuperscript{14} The DASH trials provided the basis for the 2005 USDA Dietary Guidelines for Americans, which recommend 4700 mg/d of potassium, especially for those with hypertension.

The substantial body of literature suggesting beneficial links between a high potassium diet and blood pressure reduction is in line with current dietary recommendations. The recent 2006 American Heart Association (AHA) Scientific Statement, \textit{Dietary Approaches to Prevent and Treat Hypertension}, emphasizes lifestyle modifications to lower blood pressure. It highlights how increased potassium intake has emerged as an effective strategy over the past decade.

<table>
<thead>
<tr>
<th>Lifestyle modification</th>
<th>Average values at which clinical benefits were seen</th>
<th>Effect on blood pressure (mm Hg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High potassium intake</td>
<td>2000 mg/d net increase in urinary potassium</td>
<td>Hypertensive patients: -4.4 SBP -2.5 DBP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-hypertensive patients: -1.8 SBP -1.0 DBP</td>
</tr>
<tr>
<td>Overall diet</td>
<td>DASH eating plan</td>
<td>-4.4 SBP -3.0 DBP</td>
</tr>
<tr>
<td>Weight loss</td>
<td>-5.1 kg (-11.2 lbs)</td>
<td>Hypertensive patients: -5.0 SBP -2.7 DBP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-hypertensive patients: -2.0 SBP -1.0 DBP</td>
</tr>
<tr>
<td>Reduced salt intake</td>
<td>-1800 mg/d sodium</td>
<td>-3.3 SBP -2.0 DBP</td>
</tr>
<tr>
<td>Moderation of alcohol intake</td>
<td>Less than 2 drinks per day</td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{*}Table created from data presented in \textit{Dietary Approaches to Prevent and Treat Hypertension: A Scientific Statement from the American Heart Association.}

Brushing up on the DASH diet

For a 2000-calorie diet, plan for the following number of servings each day:
- 7-8 of whole grains
- 4-5 of vegetables
- 4-5 of fruits
- 2-3 of low-fat or fat-free dairy foods
- 2 - 3-ounce servings or less of meat, poultry, and fish
- 4-5 servings per week of nuts, seeds, and dry beans
- 2-3 teaspoons or equivalent fats and oils
- 5 or less servings of sweets per week

Let your fellow NCC members know about your accomplishments. Email Sarah Harding Laidlaw at: peaknut@cascadeaccess.com with information about YOU and YOUR business, innovative approaches to CAM, and achievements.
Table 3 includes more details on the blood pressure lowering effects of a high potassium diet as well as other lifestyle changes such as an overall healthy diet, weight loss, and a reduced salt intake.

** Mechanism for potassium in blood pressure  
Potassium is an essential dietary mineral. It is the primary positively charged ion inside the cell, and sodium is its counterpart outside the cell. Relatedly, potassium concentrations are much higher inside the cell than out, and vice versa for sodium. The difference in concentrations creates an electrochemical gradient (membrane potential), which keeps sodium and potassium where they are required for optimal bodily function via a sodium-potassium pump. It uses ATP to pump sodium out of the cell in exchange for potassium – this process accounts for 20-40% of resting energy expenditure.

While we know clinical research demonstrates that diets high in potassium can significantly lower blood pressure, the exact mechanism of action is still being debated. However, most scientific data for how potassium helps lower blood pressure points to potassium’s ability to help the body eliminate sodium. Other potential mechanisms are predicated on potassium’s contribution to vasodilation and subsequent greater allowance of blood flow without increasing blood pressure.

Potassium’s role in controlling high blood pressure may be attributable to: reducing peripheral vascular resistance via direct arteriolar dilation, increasing the loss of water and sodium from the body, suppressing rennin and angiotensin secretion, decreasing adrenergic tone, and by stimulating sodium-potassium pump activity.¹⁶

In the general healthy population with normal kidney function, a relatively high potassium diet does not pose any safety concern. But there are exceptions. For example, individuals with impaired kidney function and those taking certain types of medication need to carefully control their potassium intake in order to avoid adverse health effects. Patients should speak to their health care team if they have any concerns, especially those patients with diabetes, chronic kidney disease, advanced renal disease, severe heart failure, adrenal insufficiency, or those who are on medications such as angiotensin converting enzyme (ACE) inhibitors, angiotensin receptor blockers (ARB), or potassium-sparing diuretics.

<table>
<thead>
<tr>
<th>Table 4: Where Americans Are Getting Their Potassium¹⁷</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Milk</td>
</tr>
<tr>
<td>2. Potatoes</td>
</tr>
<tr>
<td>3. Coffee</td>
</tr>
<tr>
<td>4. Beef</td>
</tr>
<tr>
<td>5. Tomatoes</td>
</tr>
<tr>
<td>6. Orange/grapefruit juice</td>
</tr>
<tr>
<td>7. Yeast bread</td>
</tr>
<tr>
<td>8. Poultry</td>
</tr>
<tr>
<td>9. Dried beans/lentils</td>
</tr>
<tr>
<td>10. Bananas</td>
</tr>
</tbody>
</table>
Supplements - Potassium

Table 5: Potassium-rich Snacks

<table>
<thead>
<tr>
<th>Snack Description</th>
<th>Calories</th>
<th>Potassium</th>
</tr>
</thead>
<tbody>
<tr>
<td>½ cup dried, unsweetened apricot halves</td>
<td>106</td>
<td>514</td>
</tr>
<tr>
<td>1 small sweet potato, baked with skin (approx. 1.75&quot; dia.)</td>
<td>74</td>
<td>297</td>
</tr>
<tr>
<td>1 cup non-fat vanilla yogurt with ½ cup sliced fresh banana</td>
<td>273</td>
<td>786</td>
</tr>
<tr>
<td>½ cup raw baby carrots with 1 TBSP hummus</td>
<td>52</td>
<td>221</td>
</tr>
<tr>
<td>1 cup fresh apple, sliced, with 1 TBSP peanut butter</td>
<td>153</td>
<td>206</td>
</tr>
</tbody>
</table>

Top 25 High Potassium Foods

Ranked by milligrams of potassium per standard amount:

<table>
<thead>
<tr>
<th>Food, Standard Amount</th>
<th>Potassium (mg)</th>
<th>Calories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweet potato, baked, 1 potato (146 g)</td>
<td>694</td>
<td>131</td>
</tr>
<tr>
<td>Tomato paste, ¼ cup</td>
<td>664</td>
<td>54</td>
</tr>
<tr>
<td>Beet greens, cooked, ½ cup</td>
<td>655</td>
<td>19</td>
</tr>
<tr>
<td>Potato, baked, flesh, 1 potato (156 g)</td>
<td>610</td>
<td>145</td>
</tr>
<tr>
<td>White beans, canned, ½ cup</td>
<td>595</td>
<td>153</td>
</tr>
<tr>
<td>Yogurt, plain, non-fat, 8-oz container</td>
<td>579</td>
<td>127</td>
</tr>
<tr>
<td>Tomato puree, ½ cup</td>
<td>549</td>
<td>48</td>
</tr>
<tr>
<td>Clams, canned, 3 oz</td>
<td>534</td>
<td>126</td>
</tr>
<tr>
<td>Yogurt, plain, low-fat, 8-oz container</td>
<td>531</td>
<td>143</td>
</tr>
<tr>
<td>Prune juice, ¼ cup</td>
<td>530</td>
<td>136</td>
</tr>
<tr>
<td>Carrot juice, ¼ cup</td>
<td>517</td>
<td>71</td>
</tr>
<tr>
<td>Blackstrap molasses, 1 Tbsp</td>
<td>498</td>
<td>47</td>
</tr>
<tr>
<td>Halibut, cooked, 3 oz</td>
<td>490</td>
<td>119</td>
</tr>
<tr>
<td>Soybeans, green, cooked, ½ cup</td>
<td>485</td>
<td>127</td>
</tr>
<tr>
<td>Tuna, yellow-fin, cooked, 3 oz</td>
<td>484</td>
<td>118</td>
</tr>
<tr>
<td>Lima beans, cooked, ½ cup</td>
<td>484</td>
<td>104</td>
</tr>
<tr>
<td>Winter squash, cooked, ½ cup</td>
<td>448</td>
<td>40</td>
</tr>
<tr>
<td>Soybeans, mature, cooked, ½ cup</td>
<td>443</td>
<td>149</td>
</tr>
<tr>
<td>Rockfish, Pacific, cooked, 3 oz</td>
<td>442</td>
<td>103</td>
</tr>
<tr>
<td>Cod, Pacific, cooked, 3 oz</td>
<td>439</td>
<td>89</td>
</tr>
<tr>
<td>Bananas, 1 medium</td>
<td>422</td>
<td>105</td>
</tr>
<tr>
<td>Spinach, cooked, ½ cup</td>
<td>419</td>
<td>21</td>
</tr>
<tr>
<td>Tomato juice, ¼ cup</td>
<td>417</td>
<td>31</td>
</tr>
<tr>
<td>Tomato sauce, ½ cup</td>
<td>405</td>
<td>39</td>
</tr>
<tr>
<td>Peaches, dried, uncooked, ¼ cup</td>
<td>398</td>
<td>96</td>
</tr>
</tbody>
</table>

Treatment goals

All people with high blood pressure should aim for blood pressure that is at least lower than 140/90 mmHg. People with certain conditions such as chronic kidney dis-
ease, diabetes, or coronary artery disease should aim for even lower numbers. See Table 6.

Table 6: Blood Pressure Treatment Goals

<table>
<thead>
<tr>
<th>Blood Pressure</th>
<th>Goal for</th>
</tr>
</thead>
<tbody>
<tr>
<td>140/90 mm Hg or lower</td>
<td>A healthy adult.</td>
</tr>
<tr>
<td>130/80 mm Hg or lower</td>
<td>Person with chronic kidney disease, diabetes, or coronary artery disease or at high risk of coronary artery disease.</td>
</tr>
<tr>
<td>120/80 mm Hg or lower</td>
<td>Person whose heart is not pumping as well as it should (left ventricular dysfunction or heart failure) or who has severe chronic kidney disease.</td>
</tr>
</tbody>
</table>

Take home message

Caring for your Patients: Getting from Knowing to Eating

To paraphrase Brillat-Savarin, “we are what we eat.” What the 18th century French gastronome did not say was, “we rationally eat a collection of isolated nutrients that reflect what we know about those biochemicals and human vitality.” That is to say, choosing and eating food is a complex process, based on more than knowing what’s good for our health. Food choices are guided by access and availability, preference, ethnicity, and multiple spheres of influence from peers to trusted nutrition and health care professionals to government authorities.

What Else Does Potassium Do?

- **Fluid balance:** With sodium, potassium is involved in maintaining a normal water balance, osmotic equilibrium, and the acid-base balance.
- **Muscle:** In addition to calcium, potassium is important in the regulation of neuromuscular activity. Muscle formation and contraction require potassium.
- **Cellular growth:** Potassium promotes cellular growth.
- **Bone health:** Potassium rich foods often contain potassium bound to bicarbonate (buffer) anions, and so may contribute to decreased bone loss.
- **Kidney stones:** Potassium rich foods may reduce the risk of recurrent kidney stones.
Evidence that we have a challenging job to do is reflected in study findings revealing that in order to eat according to DASH guidelines, the typical diet would have to change to include: two times as many servings of fruits, vegetables, and dairy; half as much fat, oils, and salad dressing; a third less beef, pork, and ham; and a quarter less of sweets. Clearly, there are challenges to translating the DASH eating plan from a more controlled trial situation to everyday living in which there are myriad variables. One thing to keep in mind when adding foods to increase potassium intake is to remind patients to keep sodium and calories in check.

Changing a dietary habit is a complex but worthwhile process that requires RDs to help their patients find meaningful motivation, the confidence to make and follow through with the decision to change, and support along the way to overcome individual and environmental barriers. As nutrition and health care professionals know, realistic small steps are key to keeping patients motivated, confident, and active in taking control of their own health. Strategizing with patients on how to add potassium to their diet in ways that work for them is an important step that will help them control their blood pressure.

Nutrition and health care professionals are perfectly poised to translate the science of potassium’s role in blood pressure into relevant advice, to help get patients from knowing to eating.

Maggie Moon is a freelance nutrition communications specialist based in New York, NY. Contact Maggie at maggie-moon@gmail.com or 646-327-1610.

References


This newly released book from the University Press of Mississippi's Understanding Health and Sickness series is a handy and valuable addition to any member's library. While primarily geared towards consumers, this book is invaluable for those wanting to find out more about the regulation, safety, and how to research dietary supplements.

The chapter on safety of dietary supplements reviews potentially dangerous supplements, what their status is as far as safe or banned, and the potential effects on the body. Information about verification of dietary supplements through the United States Pharmacopeia (USP), ConsumerLab.com, and the Natural Products Association (NPA) programs is explained in easy-to-understand terms. The chapter, Deconstruction Dietary Supplements, reviews the Dietary Reference Intakes (DRI) for vitamins and minerals and the assumptions that are made regarding these supplements. There is detailed information in table form on the Natural Standard's Approach to Classifying supplements and a review of those supplements with scientific evidence of their efficacy or lack thereof.

The appendix provides basic information about the DRIs for individual elements. An abbreviated but detailed description of the Dietary Supplement Health and Education Act is offered with important information regarding labeling, ingredients, and definitions. Resources for more information include verified dietary supplements, how to find out about additional supplements that are verified, websites, organizations, and publications that provide additional information and available research on dietary supplements. This book, although not all inclusive, for the price is well worth including as a reference for those who are interested in knowing more about dietary supplements, their regulation, and where to find more information about them.

Reviewed by Sarah Harding Laidlaw, MS, RD, CDE, editor of NCC newsletter. Contact Sarah at peaknut@cascadeaccess.com or 702-346-7968.

**IFM/NCC 2008 Webinar Series**

**Webinar #2**

**Date:** June 24, 2008 5:00 PDT, 8:00 EDT  
**Co-Presenters:** Susan Allen, RD, CCN and Diana Noland, MPH, RD, CCN  
**Moderator:** Dan Lukaczer, ND  
**Title:** Nutritional Supplementation in Functional Medicine: Most Researched, Most Important, and Most Recommended  
**Description:** Are all multivitamins basically the same? How much folic acid do your patients really need? Does everyone need omega 3 Essential Fatty acids? Which anti-inflammatory nutrients work best? Find out the answer to these questions and much more. Susan Allen RD, CCN and Diana Noland MPH RD CCN, both seasoned functional medicine practitioners will present the evidence supporting the use of these common nutrients in your everyday practice. Discover surprising facts that will have you rethinking your recommendations. Explore the importance of individualizing protocols and learn the what, why, and when specifics that make the difference for success!

**Webinar #3**

**Date:** November 4, 2008 5:00 PDT, 8:00 EDT  
**Presenters:** Ruth DeBusk, PhD, RD and Colleen Draper, MS, RD  
**Moderator:** Diana Noland, MPH, RD, CCN  
**Title:** Nutritional Genomics in Clinical Practice  
**Description:** As scientific research continues to advance in the areas of systems biology and nutrition, the science of nutritional genomics has begun to unfold. The Human Genome Project has shown us we have approximately 25,000 genes. Within each gene we have variations, often single nucleotide polymorphisms (SNPs), that change the way our bodies respond to food, supplements, medications, and our environment, including changes in nutritional requirements. The science of nutritional genomics shows us how we are each genetically unique individuals and therefore, we have unique requirements. It also further emphasizes the importance and effect of our nutritional environment and optimal body functioning on our health and well-being. We will review the basics of genetics and nutritional genomics, highlighting some scientific examples and use of testing in functional medicine practice. The webinar will give you a sense of the field as it is now and an understanding of how predictive genetic testing can be integrated into your practice. Join Ruth DeBusk PhD, RD, Colleen Draper MS, RD, and your functional nutrition colleagues for a very timely and exciting presentation.

1. State the prevalence of overweight and obesity.
2. Identify at least two plausible explanations for the increasing prevalence of excess weight.
3. List at least two purported benefits of including mind-body based modalities, such as yoga, into traditional weight management programs.
4. Identify at least two resources for gathering additional information and/or training.

This CPE activity is worth one credit hour.

QUESTIONS:

1. Which is not a factor contributing to today’s weight epidemic?
   a. Decrease in energy expenditure through physical activity
   b. Increase in levels of stress
   c. Increase in availability of caloricically dense, nutrient deficient foods
   d. Social stigmatization and discrimination of those with visceral obesity

2. National surveillance data estimates the prevalence of overweight/obesity at _____________ percent of the population.
   a. 50   b. 66   c. 25   d. 30

3. Which is not a reason to include yoga as an integral component of a traditional weight management program?
   a. Facilitation of behavior modification and change
   b. Decreased sense of bodily awareness
   c. Vehicle for stress reduction and management
   d. Incorporation of movement and physical activity

4. There is a growing body of scientific evidence substantiating the benefit(s) of including the practice of yoga into chronic disease management programs.
   a. True   b. False

5. Which organization provides certification to yoga therapists?
   a. International Association of Yoga Therapists
   b. The Yoga Alliance
   c. Kundalini
   d. Phoenix Rising Sun

6. Stress is both a cause and consequence of overweight/obesity.
   a. True   b. False

2) Answer the following single-answer, multiple-choice questions. For each question, select one best response. Compare your answers to the answer key on page 78.

3) Mail, fax or e-mail the following information to Katherine Bernard, MS, RD, CDN: article title, request for CPE credit, name, address, telephone number, e-mail address, and ADA member registration number.

Katherine L. Bernard, MS, RD, CDN
90 Panamoka Trail
Ridge, NY 11961
Phone: 1-800-279-6880
Fax: 1-877-614-4188
nccadmin@optonline.net

4) Once this information has been received, Kathy will e-mail verification of completion for the CPE credit. Complete and retain the certificate on page 79 for your records along with the verification in case you are audited by CDR.
COPY I: COMPLETION VERIFICATION
Please obtain a separate Certificate of Completion Form for license verification and your own records. You should record each session on your Learning Activities Log (Step 4), and retain a completed form for your file in the event you are audited by CDR.

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