

**Pure Wellness: Your Unique Path to Better Health**

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**Abstract**

Research shows the desire to be healthy is significant among Americans, yet few report regular engagement in healthy dietary and lifestyle practices. There is a gap between the desire to be healthy and the comprehension of how to put health-promoting practices in place. This review analyzes and synthesizes current scientific research on four basic practices: (1) The Elimination Diet (ED), (2) Whole Foods Nutrition, (3) Yoga, and (4) Meditation, in order to create a health-promoting curriculum (the Pure Wellness program). The author believes that results from this review will demonstrate the health-promoting value of each practice, and that the PW curriculum will help people access and promote health through unique diet, exercise, stress management and lifestyle habits. Data illustrates the effects of the ED are substantial in the process of developing and maintaining health because they facilitate improved GI function and absorption of nutrients, decreased food-related symptoms and a heightened awareness of how food impacts the body. Research on whole food dietary practices shows their association with a decreased risk of many chronic diseases as well as other conditions and disease risk factors. Literature on Yoga suggests the practice is effective as a movement and exercise routine and at promoting exercise adherence, controlling stress and promoting emotional wellbeing. Meditation practices are found to decrease the risk of disease, improve physical health, encourage physical and psychological wellbeing and control stress. It is concluded that the four reviewed practices are fit for inclusion in a comprehensive wellness curriculum intended to help guide individuals in the process of developing fundamental and individualized aspects of whole body health.

## Introduction

Six out of ten Americans put a lot of thought into the foods and drinks they consume and the exercise they get. 90% of people reported giving at least some thought to these matters (International Food Information Council Foundation, 2012). People want to be healthy, this 2012 report shows, yet just 23% of people polled describe their actual diet and lifestyle as healthy. The same study also reports that 52% of Americans think that figuring out how to eat healthfully is harder than figuring out how to do their own taxes.

It is clear that health is on the minds of many; a simple Google search for “how to be healthy” returns over eight million results ranging from “20 Quick And Easy Ways To Get Healthier Fast” from Health magazine (2015) to “How Changa Mushroom Can Help You Be Healthy” from Mother Earth News (2015). A similar search in Amazon’s books department returns over 900,000 book titles on health and healthy living (amazon.com, 2015). It is also apparent that health, and how to access it, eludes a significant portion of the population. We know pretty well how to go out, get a job and work for a paycheck, but there’s significantly more confusion around how to eat, move, rest and care for our bodies and minds in a way that sustains optimal and individualized health.

What it means to be healthy, in many ways, extends beyond meeting standard medical definitions and having ‘good results’ to the measurable aspects of health such as blood pressure and heart rate. The value of health is also rooted in the moment-to-moment experience of it – covering distance on your own two feet, paddling against powerful waves, scaling mountaintops, digesting a good meal, sleeping restfully, breathing deeply and stretching openly. It is the author’s belief that a truly comprehensive

feeling of health is only fully realized when an individual goes beyond general recommendations, medical checkups and diet and exercise practices to access a unique way of nurturing the distinct qualities and needs of their body.

As alternative therapies, holistic practices, and a more comprehensive regard for health emerges into the mainstream, we are leaving behind the age-old definition of health as the mere absence of disease. Health, as the World Health Organization (2015) now defines it, is a state of complete physical, mental and social-well being. This new perspective opens the gates to one big, and rather elusive question – how does the individual access this state?

This comprehensive literature review aims to help people answer this question for themselves. It does so through the creation of a sound, accessible and substantiated curriculum that teaches people how to access and support some of what research and professional experience suggests are the most fundamental aspects of individual health, including:

- Eating in a way that suits the individual body and the nutritional needs of the individual
- Eating a sustainable, clean diet that provides the body with what is nourishing rather than toxifying, reactive and/or otherwise harmful to the body and mind
- Keeping the body and mind active
- Managing stress
- Creating and maintaining mental and physical wellbeing
- Encouraging cognitive and physical longevity

Based on the need and interest of the public, it is the author's opinion that the above aspects involved in developing and maintaining an individual's health need to be made more accessible, understandable and customizable. The purpose of this review is to analyze and synthesize current scientific research on four basic practices that can help the individual better access and support the above listed fundamental aspects of health on a daily basis. The four practices are: 1. elimination diets, 2. whole food consumption, 3. Yoga, and 4. meditation. Each practice was carefully chosen for inclusion based on its simplicity, accessibility to a wide variety of individuals, customizability to meet unique individual needs, and true health-supporting qualities backed by scientific research.

Information gleaned from research on each practice is synthesized here to create the corresponding four-parts of the Pure Wellness (PW) program curriculum: (1) The Elimination Diet, (2) Whole Foods Nutrition, (3) Yoga, (4) Meditation. Each section of this literature review offers extensive assessment of current scientific research on each practice in order to illustrate the just inclusion of it in the PW curriculum, as well as the scientifically backed outcome anticipated when each practice is put into action. The PW curriculum is to become a tool (website or pamphlet) supported by this review that clearly instructs engaged individuals in each of the four program parts.

The author believes that the results from this review will demonstrate the value of the four practices in promoting healthy living. Furthermore, it is speculated that because of the need for a better understanding of how to create and maintain health in the modern perspective of it, and because of the accessible and effective nature of the four practices included, the PW curriculum will be a highly valuable and unique resource for individuals. The PW curriculum will help people access and promote authentic and

individualized health through diet, exercise, stress management and lifestyle habits that fit their unique needs.

## Methods

The information included in this review of current scientific literature was gathered through an extensive search of peer-reviewed scholarly journals and current medical and scholarly texts. In order to ensure the most up-to-date information is presented here, all information presented in the results section was published after 1990. Search terms for each section of the review (elimination diet, whole foods nutrition, yoga and meditation) were established, and all results meeting the search criteria were evaluated. The most recent and relevant scientific publications were determined by the author for each category and these publications are presented and reviewed here in context of the author's hypothesis. The search terms used in this review include: “elimination diet” AND “food allergies”, “elimination diet” AND “inflammation”, “elimination diet” AND “digestion”, “challenge diet” AND “food allergies”, “whole foods nutrition”, “whole foods” AND “disease”, “yoga” AND “health”, “yoga” AND “stress”, “meditation” AND “health”, “meditation” AND “stress” and “mindfulness” and “health”. Studies were excluded from this review if they did not meet the aforementioned search criteria and/or if they presented conflict of interest or biased data.

## Results

### **The Elimination Diet**

The Elimination Diet (ED) is a “time-honored, effective approach to both diagnosis and treatment of food sensitivities” (Pizzorno & Murray, 2014). It involves removing all of the most common allergenic foods including wheat, gluten, dairy, eggs, corn, soy, peanuts, citrus, yeast and refined sugar, as well other problematic substances such as highly processed foods, chemicals additives, flavorings, colorings, caffeine and alcohol from the diet for one week or more. The object, Pizzorno and Murray (2014) explain, is to give the body time to clear potential irritants from the system and allow for healing in the GI tract to occur while consuming an allergen and toxin-free and easily digestible diet. The omitted foods are then re-introduced into the diet one at a time while the individual’s reaction is monitored and noted in a food and symptom diary. This process enables the individual to identify foods that offend their individual body and create an optimal dietary pattern based on these findings (Pizzorno & Murray, 2014).

The ED, Grimshaw (2006) explains, can be used in both the diagnosis and management of food hypersensitivity and allergy. Depending on the disease state of the target individual, the elimination period of the diet may need to be followed for two to six or more weeks, says Grimshaw (2006). If the individual experiences symptomatic improvement during this time, sensitivity to one of the eliminated foods is inferred. Re-introduction is performed one food at a time until a re-occurrence of symptoms is observed, signifying which foods the sensitivity is associated with. The maintenance ED, Grimshaw (2006) explains, is the diet the individual returns to after the elimination and re-introduction period and includes all foods the individual did not have a symptomatic sensitivity to. Foods that induced symptoms during the re-introduction phase are eliminated on a more permanent or prolonged basis.

Sampson (1999) explains, “Patients with food-induced allergic disorders may be first seen with a variety of symptoms affecting the skin, respiratory tract, gastrointestinal tract and/or cardiovascular system.” Symptoms and conditions associated with increased intestinal permeability related to food sensitivity and allergy additionally include: acne, eczema, irritable bowel disease, chronic pain, chronic inflammation, chronic fatigue, bloating, abdominal pain, skin rash, sluggish mental function, poor concentration, exercise intolerance and general weakness (Galland, 2015). Allergic reaction in the gut may affect 1-2% of adults, Bischoff, Mayer and Manns (2000) explain, leading to unspecific symptoms including nausea, vomiting, abdominal pain, cramping and diarrhea. Individuals suffering from a wide variety of general and/or specific symptoms may, therefore, benefit from the identification of food allergies and/or sensitivities.

#### **Individualized eating - identifying food allergy and sensitivity using the ED:**

In their study on non-celiac gluten-sensitivity, Nijeboer, Bontkes, Mulder and Bouma (2013) discuss the role of the ED for non-celiac patients with irritable bowel disease. In this study, 30% of patients who underwent a full ED became asymptomatic with a recurrence of symptoms upon the re-introduction of gluten. The ED, in this case, proved an effective method of identifying gluten sensitivities in the patient population where celiac disease was not present but symptoms were persistent. The findings reported by Nijeboer and colleagues is congruent with prior findings from ED studies such as that from Brown (2012), who writes, “The use of a gluten-free diet or an elimination diet is encouraged in assisting people to determine whether or not they are gluten sensitive.”

Pelsser, Frankena, Toorman, Savelkoul and Dubois (2011) found an ED to be an effective method in the identification of food-related symptoms in children with

attention-deficit hyperactivity disorder. In this study patients in the test group were restricted to a 5-week ED while individuals in the control group were instructed to maintain a healthy diet with no specific restrictions. Individuals in the test group who demonstrated an improvement of 40% or more on the ADHD rating scale were subjected to a 4-week double blind food challenge phase where eliminated foods were reintroduced one at a time to the diet. Relapses in ADHD symptoms were recorded during the challenge phase as a percentage change on the rating scale. Results showed that individuals on the ED experienced a significant decrease in ADHD symptoms. During the challenge phase, 63% of subjects experienced a reoccurrence of symptoms associated with specific foods. There were no adverse events associated with either diet. The ED, the authors conclude, is an effective method for the identification of food sensitivity-related symptoms in children with ADHD (Pelsser et al., 2011).

The review published by Matthew (2010) on the association between food allergy and atopic dermatitis (AD) further supports the use of an ED as a diagnostic tool in the process of determining food allergies and/or sensitivities. Food allergens are known to provoke AD in about 35% of patients, Matthew (2010) reports, with milk, eggs, soy, wheat and peanut accounting for about 75% of the cases. However, the author finds that the positive predictive value of the parental history, skin-prick-tests and serum IgE tests are low. An ED followed by a food challenge, Matthew (2010) recommends, is a vital part of the diagnostic process, objectively confirming the patient history and/or positive tests.

Baker, Duncanson, Tunnicliffe and Ayres (2000) also report a poor positive predictive value of other food allergy testing methods (skin-prick-tests and

radioallergosorbent in this case) in their study on food elimination and challenge diets for patients with brittle asthma. Compared to other testing methods and open food challenges, the authors report that standardized, double-blind, placebo-controlled, food challenge testing (a clinical form of the ED) more effectively confirms the presence of food intolerance in patients with brittle asthma.

In a study on inciting foods for patients with Eosinophilic esophagitis, Spergel, Brown, Cianferoni, Shuker and Wang (2012) focus on determining optimal testing methods and the effectiveness of an allergy ED. The authors compared a general 6-food ED to a targeted food ED based on IgE-mediated food reactions predicted by skin prick tests (SPT) and atopy patch tests (APT). Results showed that the 6-food ED had a histological success rate of 53%, as did a targeted elimination of positive foods identified by the allergy testing methods (Spergel et al. 2012). The success of both elimination-based diets leading to a resolution of esophageal eosinophilia, the authors conclude, suggests that both the ED methods are acceptable treatment options. The ED, furthermore, was just as effective at identifying causative foods as the SPT and APT.

**Supplementary Healing: relieving chronic conditions with the elimination diet:** Significant attention in recent research has been placed on the ED for its potential healing effects for individuals with gastrointestinal disorders, chronic conditions related to gastrointestinal dysfunction, inflammatory conditions and generalized symptoms of fatigue, pain and digestive discomfort (Lamb et al. 2011). In addition to its role in discovering food allergies and sensitivities, the ED appears to facilitate healing processes in the gastrointestinal (GI) tract, which subsequently facilitates improved symptoms and disease states in cases associated with GI dysfunction.

There are a group of several studies that focus on the effect of an ED on children with Eosinophilic Esophagitis (EoE). One of the most recent and well-designed of these is by Amir et al. (2013). EoE, the authors explain, is an inflammatory disorder triggered by food antigens. Participants with EoE who participated in this study were put on a 6-food ED including cow's milk, soy, wheat, egg, nuts and seafood. Results from the participants on the ED showed a significantly increased rate of remission compared to the control group. Additionally, the authors note that the single food reintroduction following the elimination period proved to be an effective way for participants to identify specific causal food antigens.

Lamb et al. (2011) published a study on the use of an ED for managing Fibromyalgia (FM) symptoms and promoting overall detoxification. The authors explain their approach in this study is geared toward "restoring balance to basic dysfunctional physiological processes" (Lamb et al., 2011). During the trial, 8 participants were put through two different regulated dietary regimens, one of them being a standard ED. During the ED period, participants expressed significantly reduced FM symptoms and pain scores, as well as an increased urinary excretion of toxins compared to the non-ED period. No significant side effects of the ED were reported.

Ayindar et al. (2013) studied the effects of an IgG-based ED on subjects with migraines and irritable bowel syndrome. Their double-blind, randomized and controlled study looked at the effects of an ED compared to a typical diet on 21 patients. Patients on the ED experienced a decreased mean reaction count to a standard list of 270 food allergens, decreased rate and length of migraine attack, decreased amount of pain and bloating in the digestive system, and reported an improved quality of life. The authors

conclude that the ED effectively reduces symptoms of both disorders and has a positive impact on the quality of life in patients.

Woolger et al. (2013) also studied the effects of an IgG-based ED on patients with gastrointestinal disorders. Subjects in this study eliminated IgG-reactive foods for a total of 90 days. Throughout the study the quality of life (Qol) of each subject was evaluated on a weekly basis using the Irritable Bowel Syndrome and the Medical Outcomes Study Short Form methods. Data from the evaluations showed that patients on the ED had statistically significant improvements in all indicators of Qol. The ED, the authors conclude, is an effective way for patients with unresolved GI disorders to improve Qol and related conditions. Evidence for both the physical healing effects and the effects of the ED on overall Qol are provided by this study.

### **Whole Foods Nutrition**

A new wave of nutrition research is shifting attention away from the predominantly reductionist approach. For many years in modern medicine we have focused on the role of single nutrients in diet, disease and health, and now we are starting to look more synergistically at the additive influences of whole foods on health. As researchers Jacobs and Steffen (2003) explain, “it is now clear that today’s chronic diseases such as atherosclerosis, ischemic heart disease, and cancers, are complex diseases with multiple etiologies and not simple single deficiency diseases.” Citing several recent whole grain feeding studies, Jacobs and Steffen (2003) demonstrate that whole grains are associated with improved health conditions and reduced chronic disease risk in many populations and across several disease states including obesity, coronary artery disease, high cholesterol and diabetes. The same results are not found in feeding

studies with refined grains. Furthermore, the authors explain, benefits were not found with processed whole grains, but only with phytochemical-rich cereal fiber found in the whole grain when eaten as part of the whole food. This review concludes that various parts of a whole food act synergistically and “eating all edible parts of diverse plant foods, including whole grains, is recommended to maintain advantageous biological activity while hindering possible side effects (Jacobs & Steffen, 2003).

Consumption of whole fruits, vegetables and grains has been strongly associated with a reduced risk of cancer, diabetes, cardiovascular disease, Alzheimer’s disease, cataracts and age-related health decline, explains Liu (2003). However, research on single nutrients isolated from whole foods known to have protective health benefits do not show the same results. For example, Hennekens et al. (1996) studied the effects of long-term supplementation with beta-carotene on the incidence of malignant neoplasms and cardiovascular disease. “Observational studies,” the authors note, “suggest that people who consume more fruits and vegetables containing beta carotene have somewhat lower risks of cancer and cardiovascular disease.” Results from their randomized double-blind, placebo-controlled trial of beta carotene supplements (50 mg on alternate days), however, showed no benefit from the nutrient supplementation in its non whole food form over the 12-year trial period.

Studies on the antioxidant activity of whole foods, on the other hand, do demonstrate significant health benefits. 100 grams of whole fresh apple, Eberhardt, Lee and Liu (2000) find, has the same antioxidant activity as 1,500 mg of supplement-form vitamin C. Consumption of the whole apples, additionally, was associated with inhibited growth of colon and liver cancer cells. Natural antioxidants eaten in whole food form, the

authors conclude, could be more effective than a dietary supplement (Eberhardt, Lee & Liu, 2000). Phytochemicals from whole fruits and vegetables are believed to be important elements in the health benefits of whole foods and have been shown to have strong antiproliferative and antioxidant effects, especially synergistically (Sun, Chu, Wu & Liu, 2002). There are about 8,000 phytochemicals present in whole foods, Liu (2003) explains, and pills and tablets are unable to mimic the balanced natural combination of these substances and their subsequent health benefits.

The Mediterranean diet, composed primarily of whole fruits, vegetables, grains and fish, has been the subject of several studies that have established a beneficial role for the main nutritional components of the diet on cardiovascular and chronic degenerative diseases (Sofi, Cesari, Abbate, Gensini & Casini, 2008). However, as Sofi and colleagues (2008) aptly point out, the more recent research interest in this field has shifted to focus on “adherence to the whole Mediterranean diet rather than analyzing the individual components.... because the analyses of single nutrients ignore important interactions between components of a diet and... because people do not eat isolated nutrients.” In their review of 12 studies on the topic, Sofi et al. (2008) find a significant trend in the association between Mediterranean dietary patterns and improvement in health status, seen in a significant reduction in overall mortality (9%), mortality from cardiovascular disease (9%), mortality from cancer (6%), incidence of Parkinson’s disease (13%) and incidence of Alzheimer’s disease (13%). This data, the authors conclude, is significant in demonstrating the beneficial effects of whole food dietary patterns rather than just single nutrients, which offers more applicable findings to modern dietary trends. Still,

limitations of these findings do exist in the non-homogenous pattern of eating and nutrient combinations that a whole food Mediterranean diet implies.

In addition to the physical health benefits associated with the consumption of whole foods, researchers Reinks, Dobson and Mishra (2012) have studied the consumption of the Mediterranean diet to discover a decreased incidence of mental depressive symptoms. In this study, subjects with a higher consumption of the Mediterranean-style diet had a significantly lower incidence of depressive symptoms compared to subjects consuming processed foods, meats, dairy and high fat and sugar diets (Reinks et al., 2012).

More specifically looking at the effects of a whole food diet (primarily consisting of whole vegetables, fruits and fish) vs. processed food diets (heavily loaded with sweets, fried foods, processed meats, refined grains and high-fat dairy foods), Akbaraly et al. (2009) studied 3,486 individuals over a 10-year period. Associations were examined between the whole food and processed food dietary patterns and depression as measured by the Center for Epidemiologic Studies Depression (CES-D) scale. Subjects engaged in whole food dietary patterns showed lesser incidence of depression than those eating processed food diets. In particular, the researchers note, “after adjusting for potential confounders, participants in the highest tertile of the whole food pattern had lower odds of CES-D depression than those in the lowest tertile.” The results of this study, the authors conclude, suggest that an overall diet rich in whole foods has a protective effect against depression while a processed food diet encourages the development of depressive conditions. Plausible mechanisms underlying this association, Akbaraly et al. (2009) explain based on current research citations, include the high antioxidant content in whole

fruits and vegetables as well as high folate levels in some whole foods such as cruciferous vegetables, leafy greens and dried legumes.

## **Yoga Practices**

**Physical Fitness:** In a 2007 study Tran, Holly, Lashbrook and Amsterdam presented landmark information on the impact of yoga on muscular strength, endurance, flexibility, cardiorespiratory endurance and body composition. In this study, subjects who were not engaging in regular physical activity prior to the trial and refrained from all other forms of exercise during the trial, attended two yoga classes per week for eight weeks. Each yoga class consisted of 10 minutes of breathing exercise, 15 minutes of dynamic warm-up, 50 minutes of yoga postures and 10 minutes of relaxation in corpse pose (savasana). Each subject was evaluated for measures of muscular strength, muscular endurance, flexibility, VO<sub>2</sub>max and body composition before and after the trial. At the end of the 8-week period, subjects attending the regular yoga classes demonstrated improved muscular strength (average improvement of 26%), improved muscular endurance, improved flexibility measurements and increased VO<sub>2</sub>max. Additionally there were no reported injuries from the yoga protocol and no adverse musculoskeletal effects. “Hatha yoga practice,” the authors conclude, “a tradition that has existed for at least 4500 years and is now becoming increasingly popular in the United States, can have significant benefits in improving the health-related aspects of physical fitness” (Tran et al., 2007).

In 2010 similar conclusions were drawn in a study on functional fitness improvements after a worksite-based yoga initiative in a metropolitan fire department (Cowen, 2010). For this study 108 firefighters engaged in weekly yoga classes consisting

of breathing exercises, physical postures and relaxation (savasana) for 6 weeks. Baseline and post-trial assessments were performed in order to measure functional fitness, movement and perceived stress. Paired t-tests of these measures showed significant improvement in functional movement and fitness as well as a noted improvement in trunk flexibility. Additionally the study reports that participants also experienced significant improvements in feelings of focus and favorable perceptions, while noting a decrease in musculoskeletal pain. The author concludes that the regular practice of yoga may have a favorable effect on functional fitness for already active individuals.

**Exercise Adherence:** Bryan, Zipp and Parasher (2012) present groundbreaking information on the association between yoga and exercise adherence based on results from their randomized, controlled study. In this study, the authors assessed the effects of 10 weeks of yoga classes held twice a week on exercise adherence in previously sedentary adults. The treatment group took part in hour-long hatha yoga classes twice a week while the control group did not. Results of the study revealed the yoga group's exercise adherence improved significantly from the baseline and was significantly higher than the control groups after the 10-week period. Additionally results reported an increased in general well-being in the yoga treatment group while the control group reported a decrease in this measure. An exercise-induced feeling inventory performed throughout the study showed that the yoga participants strongly felt that the yoga practice lead to feelings of happiness, peace and enthusiasm. The authors also report that qualitative data show the yoga group experienced improvements in exercise behavior, stress management and eating habits. It is concluded that yoga, as a mind-body exercise program may be an effective way to fight against physical inactivity and improve quality

of life (Bryan et al., 2012).

**Emotional Wellbeing & Stress Management:** Hartfiel, Havenhand, Khalsa, Clarke & Krayer (2011), studied the effectiveness of yoga for the improvement of well-being and resilience to stress in the workplace. Their randomized control trial divided 48 university employees into either a yoga group that attended one 60-minute yoga class per week or a control group that did not attend any yoga classes during the six-week study. The Profile of Mood States – Bipolar (POMS-Bi) assessment and the Inventory of Positive Psychological Attitudes (IPPA) assessment were used to track baseline and end-program measurements for each participant. The authors report that individuals in the yoga group had significantly improved POMS-Bi and IPPA scores compared to the control group. Additionally, Hartfiel and colleagues (2011) report that the yoga group showed marked improvements in feelings of clear-mindedness, composure, elation, energy and confidence as well as greater feelings of purpose, satisfaction and self confidence. From these results it is concluded that, “even a short program of yoga is effective for enhancing emotional well-being and resilience to stress in the workplace.

The randomized, control trial performed by Wolever et al. (2012) reports similar findings to those published by Hartfiel and colleagues (2011). In this trial, 239 employees were studied for the impacts of therapeutic yoga-at-work stress reduction and mindfulness programs. Compared to the control group, the yoga and mindfulness programs showed significantly greater improvements in perceived stress, sleep quality, and the heart rhythm coherence ratio of heart rate variability (Wolever et al., 2012). Simple yoga and mindfulness practices like the ones used in this study, the researchers concluded, could be effective for improving and maintaining the health of employees in

the workplace while lowering healthcare costs and increasing workplace productivity.

Kohn, Lundholm, Bryngelsson, Carlsson and Westerdahl (2013) analyzed the effects of yoga on stress-related symptoms in primary care settings. Using patients that displayed symptoms of fatigue, insomnia, anxiety, depression, hypertension, or musculoskeletal discomfort in the neck and shoulders, the researchers randomly assigned patients to a control group or a medical yoga group that practiced yoga therapy once a week for 60 minutes over a 12-week period. Stress levels, anxiety, depression, pain, sleep and quality of life were tested before each patient started the trial, halfway through the 12-week period and again at the end of the 12 weeks. Results showed that patients in the group practicing yoga experienced significantly greater improvement in stress and burnout symptoms, a decrease in anxiety symptoms, decreased insomnia tendencies, and subjective benefits including contact with emotions, experience of peacefulness and knowledge of how to use breathing techniques (Kohn et al., 2013). The authors conclude that yoga can be an effective treatment for patients suffering stress-related symptoms. The complexity of yoga, they believe, which includes not only exercise but stretching, mindfulness practices, circulatory enhancement and body awareness makes it a good treatment for the complex symptoms of stress.

In their study on the efficacy of a short-term yoga-based lifestyle intervention in reducing stress and inflammation, Yadav et al. (2012) studied 86 patients with chronic inflammatory diseases at an outpatient Integral Health Clinic. They found that the mean level of cortisol, which is the hormone related to stress, decreased from the initial testing before the trial to the follow up test 10 days into the patients' yoga practice. The implications of this, the authors discuss, is that yoga can be an effective alternative

treatment for patients dealing with stress and stress-related related inflammatory conditions.

**Pain Management:** Williams et al. (2009) studied the effectiveness and efficacy of Iyengar yoga therapy on chronic low back pain in a randomized control study and found that the patients who practiced yoga had significantly less pain, functional disability and need for pain medication after treatment than the control group. They also reported significantly lower levels of depression in the yoga group, suggesting that yoga may help decrease both physical and emotional pain and/or the impact of yoga on pain subsequently improves symptoms of depression (Williams et al., 2009).

### Meditation and Mindfulness Practices

**What is Meditation:** The term *meditation* describes a group of techniques used to calm mental activity and direct the focus inward and away from the materiality of the external world (Micozzi, 2011). There are numerous forms and styles of meditation, most of which stem from ancient religious practices from India, Japan and China. One popular trend in meditation called Transcendental Meditation (TM), emerged in the West in the mid 1960's and has been the focus of a great deal of scientific research. The TM technique involves the reception of a mantra (a repeated word or sound) from a notable teacher. The individual's given mantra is then repeated silently while sitting in a comfortable position with the goal of minimizing distractions to the mind and body (Micozzi, 2011).

Another popular form of meditation called mindfulness meditation, which stems from Buddhist traditions, does the opposite – embracing distractions as a way to cultivate greater awareness and connection with the world. “An integral part of mindfulness, “

Micozzi (2011) explains, “is to accept and welcome stress, pain, anger, frustration, disappointment, and insecurity when those feelings are present...When thoughts and feelings arise, it is important not to ignore or suppress them or analyze or judge them by their content; rather, the thoughts are observed intentionally and nonjudgementally, moment by moment, as events in the field of awareness.”

Meditation is also a central practice to many yoga techniques, believed to be part of the transcendent path to *Samadhi*, or bliss (Iyengar, 2005). Meditative techniques in the practice of yoga may be tied in to movement, mantra, chanting and/or physiological focus. The practice of yoga, according to some lineages, is purely to prepare the physical body for the stillness of meditation (Desikachar, 1995).

**Physiological and Psychological Effects Of Meditation:** TM has been studied as an effective method for reducing the risk of Cardiovascular disease, which is the leading cause of death for people of most ethnicities in the United States (Schneider et al., 2012; CDC, 2015). In the randomized, controlled trial performed by Schneider and colleagues (2012) 201 black men and women with coronary heart disease were randomly assigned to either a TM or a health education program. At the average follow up point (5.4 years) the TM group had a 48% reduction in mortality risk compared to the health education group. Additionally there were reductions of 4.9 mmHg in systolic blood pressure in the TM group. TM, the authors conclude, “significantly reduced risk for mortality, myocardial infarction, and stroke in coronary heart disease patients. These changes were associated with lower blood pressure and psychosocial stress factors” (Schneider et al., 2012)

Researching the mechanisms underlying the association between positive emotions and physical health, Kok et al. (2013) employed the loving kindness (LK) meditation technique to test their hypothesis about a upward-spiral dynamic between positive emotions and health mediated by perception of positive social connections. Compared to a control group, individuals practicing the LK meditation technique showed increased positive emotions, which is an effect moderated by vagal tone the authors explain. As a proxy index of physical health, vagal tone enhancement due to LK meditation suggests one mechanism through which positive emotions help improve physical health. Results suggest, the authors conclude, “that positive emotions, positive social connections, and physical health influence one another in a self-sustaining upward-spiral dynamic (Kok et al., 2013).

Jacobs et al. (2013) suggest another mechanism by which meditation and mindfulness practices may benefit physical health. In this study the authors note, “Cognitive perseverations that include worry and rumination over past or future events may prolong cortisol release, which in turn may contribute to predisease pathways and adversely affect physical health. Meditation training may increase self-reported mindfulness, which has been linked to reductions in cognitive perseverations.” To study this association Jacobs and colleagues (2013) measured self-reported mindfulness and nighttime cortisol levels in a group of subjects at the beginning and end of a 3-month meditation retreat. Results after the 3-month period showed an increase in mindfulness associated with a decrease in cortisol levels. Participants with larger increases in mindfulness levels had larger decreases in nighttime cortisol, while those with only slight increases or decreased mindfulness had increased cortisol levels. This data, the authors

conclude, suggests the resting output of the hypothalamic-pituitary-adrenal system is decreased as mindfulness increases from the practice of meditation. A larger cohort and more precisely defined method of meditation is recommended to replicate these findings in future studies (Jacobs et al. 2013).

According to Hoge et al. (2013) the LK meditation technique is associated with longer telomeres in women. Telomere length, the authors describe, serve as a marker for aging in the human body; those with shorter telomeres may be experiencing accelerated aging processes. Telomere shortening, Hoge et al. (2013) add, has been associated with chronic stress. In this study, blood samples from individuals regularly practicing the LK meditation technique were genetically tested to provide relative telomere length (RTL). RTL in the LK test group was significantly longer than the RTL of individuals in the control group practicing no meditation techniques even after controlling for age, gender, body mass index and past depression. While the sample size in this study was small (22 control participants), the authors suggest the data points toward an association between LK meditation and telomere length, a biomarker associated with longevity (Hoge et al. 2013).

Mindfulness meditation, according to Singleton et al. (2014) may help individuals improve their levels of psychosocial wellbeing (PWB). This effect, the authors explain, occurs through the modulation of grey matter concentration in several brain areas including the pontine tegmentum, locus coeruleus, nucleus raphe pontis, and the sensory trigeminal nucleus. Test subjects in this study who engaged in a mindfulness-based stress-reduction course reported significant increases in PWB, which was correlated with an increase in grey matter concentration in the reported brain areas. The identified brain

areas where the grey matter increase was detected, the authors explain, “include the sites of synthesis and release of the neurotransmitters, norepinephrine and serotonin, which are involved in the modulation of arousal and mood, and have been related to a variety of affective functions as well as associated clinical dysfunctions” (Singleton et al. 2014).

## Discussion

The formulation of the Pure Wellness (PW) curriculum is based on the results of this comprehensive review of literature. The curriculum is broken up into four sections corresponding to the topics reviewed: (1) The Elimination Diet, (2) Whole Foods Nutrition, (3) Yoga, and (4) Meditation. Each section addresses specific yet simple protocols and recommendations that can help improve an individual’s overall health. The protocols and recommendations included in each section are based on the results and data presented and synthesized here.

### **The Elimination Diet**

**The foundation – why start with the digestive tract:** Like a foundation beneath a house, the digestive system supports the structure, longevity and integrity of the rest of the body. All the substances the body requires in order to function properly, excluding those inherent in the body or taken in through the respiratory or integumentary (skin) systems, enter through the digestive system (Mahan et al., 2012). Specifically, the lower GI tract, which consists of the small and large intestine, plays an integral role in the transport and breakdown of food, the absorption of nutrients and liquids, and the excretion of unwanted materials. When functioning properly, intestinal walls function as

a barrier against harmful substances and unwanted materials and play a significant role in the body's immune response (Mahan et al., 2012).

The proper functioning of the lower GI tract depends significantly upon the structural components of the intestinal wall. In the small intestine, where a majority of the nutrient absorption takes place, folds in the intestinal wall called valvulae conniventes are covered with finger-like projections called villi. The villi are also covered with smaller finger-like projections called microvilli, also referred to as the brush border. Beneath the microvilli are absorptive cells and goblet cells that make up the surface structure of the villi. Goblet cells serve to secrete mucus that protects the mucosal wall and facilitates the easy transport of substances through the digestive tract. The absorptive cells selectively allow certain substances to pass through the mucosal wall and into the lymphatic system and bloodstream (Mahan, Stump & Raymond, 2012). Together the valvulae conniventes, villi, microvilli and cellular structure of the intestinal wall serve to create an incredibly large absorptive surface that is also highly specialized to take in only what the body needs (nutrients and water) and excrete the remaining substances.

The dysfunction of any one or more of these structural components can interfere with the body's normal capacity to selectively absorb the water and nutrients it needs while maintaining a powerful barrier against other substances. Some surgical procedures and genetic disorders are known causes of GI dysfunction and the loss of normal absorptive and protective function of the intestinal wall. Additionally, dietary and lifestyle factors such as food sensitivities and stress are also to blame in GI dysfunction (International Foundation for Functional Gastrointestinal Disorders, 2014).

As noted in the ED results section, a variety of symptoms may be present in association with food-allergy and food-sensitivity related GI dysfunction, affecting areas and functions of the body including the skin, respiratory tract, digestive tract, cognitive function and muscular performance (Sampson, 1999; Galland, 2015). According to the International Foundation for Functional Gastrointestinal Disorders (2014) functional gastrointestinal disorders affect two in five Americans and are estimated to cost over 30 billion dollars annually. Irritable Bowel Syndrome (IBS), one of the most highly studied GI disorders, affects 10-15% of the population. Food allergies and sensitivities are believed to affect up to 15 million Americans and the number of children affected by food allergies has grown by 50% since 1997 (Food Allergy Research & Education, 2014). According to the American Nutrition Association (2007), general “digestive issues” including constipation, diarrhea, abdominal pain and reflux as well as the numerous diagnosed digestive disorders like IBS and Crohn’s Disease, affect over 70 million Americans. Based on the vital role of the GI tract, the magnitude of the impact of GI dysfunction, and the quantity of people suffering from symptoms and/or conditions related to GI dysfunction, there is a need for a healing protocol for food-related GI dysfunction.

**The healing process - using the elimination diet:** Addressing the basic functioning and overall health of the digestive system is clearly fundamental to the process of developing and maintaining the health of the individual. The information included in this review establishes the value of the Elimination Diet (ED) in this role, suggesting its use as a first step in a wellness curriculum because of its capacity to

identify food-related symptoms and specific agonizing foods, while functioning as a method of symptom management.

As the first protocol of the PW curriculum, a 14-day ED functions to: (1) to clear potential irritants from the individual's GI tract, (2) determine the presence, if any, of food allergies and sensitivities (3) allow for a period of GI healing and dietary reset, and (4) encourage the individual to develop individualized dietary practices that best fit their body's needs. The data presented in the results section of this review provides sound evidence for these objectives, and for the inclusion of a 14-day ED in the PW curriculum.

As noted by Pizzorno & Murray (2014), the ED is designed to clear potential irritants from the gastrointestinal system, therefore decreasing and/or alleviating symptoms associated with irritation. This claim is supported by the findings of Nijeboer et al. (2013), Iacono et al. (1998) and Amir et al. (2013), whose findings show that the elimination of suspected food irritants during an ED period correlates with a significant decrease in symptoms reported by the subjects of each study. Symptoms relieved in these studies include those related to irritable bowel syndrome triggered by gluten ingestion (Nijeboer et al. 2013), chronic constipation associated with cow's milk ingestion (Iacono et al. 1998) and inflammation triggered by cow's milk, soy, wheat, egg, nuts and seafood (Amir et al. 2013). Additionally, the ED was reported to alleviate symptoms of general pain, bloating, migraine, and quality of life, however specific food irritants associated with these symptoms were not reported (Lamb et al., 2011; Ayindar et al., 2013; Woogler et al., 2013).

The value of clearing irritants from the system to start the PW curriculum is significant. First, this process can help the client and the practitioner more clearly see

what symptoms are related to food and food habits, and if there are additional non food-related symptoms that may need professional treatment. Second, it can provide the client with a direct perspective on what his/her body feels like on a clean and irritant-free diet, creating a clean slate for his/her perspective on health. Furthermore, clearing irritants from the system may allow for improved digestion and absorption of the healing supplements and foods the client ingests in the later steps of the PW curriculum.

As a diagnostic tool for determining the presence and nature of food allergies and food sensitivities, the ED is considered the gold standard (Pizzorno & Murray, 2014). This claim is defensibly backed by current literature, with results from Nijeboer et al. (2013), Brown (2012), Pelsser et al. (2011), Mathew (2010), Baker et al. (2000), Spergel et al. (2012) and Amir et al. (2013) showing that forms of an ED are effective at identifying food allergy and food sensitivity related symptoms as well as specific causal food antigens. Mathew (2010) and Baker and colleagues (2000) additionally note that the ED methods are more effective at confirming the diagnosis of food allergies and/or sensitivities than other testing methods, including the skin prick test, which was compared to the ED in both studies. Furthermore, information from Spergel et al. (2012) shows that the ED is just as effective at identifying causative foods as the Skin Prick Test and Atopy Patch Tests for food allergy and sensitivity.

The value of effectively determining the presence of food allergies and/or sensitivities, as well as identifying the specific causative foods, at the beginning of the PW program is substantial. First of all, it shows the client and practitioner if any of the client's current symptoms are food-related. Identifying causative foods, if they exist, then allows the client to take control of his or her symptoms, creating an individualized diet to

fit his or her needs. Seeing and feeling, first hand, how certain foods impact the body through the process of the ED, is a powerful tool in teaching people how and what to eat in order to encourage health and manage and/or decrease symptomatic occurrence.

The stage of elimination during the ED process additionally allows for a period of healing for the body and specifically the GI tract. When potentially irritating foods and food antigens are eliminated from the diet, inflammation, muscle weakness, pain, gastrointestinal irritation and bloating are reported to decrease, while quality of life is reported to improve (Amir et al, 2013; Ayindar et al. 2013; Woolger et al, 2013). The simplicity of the *clean* (free of processed foods, artificial flavorings, added sugars preservatives and other non-food elements) diet during the elimination period also provides nutrition for the body in simple, easily digestible and whole food form. This encourages the improved absorption of nutrients without the stress of food irritants, additives, sweeteners and other substances in the client's typical diet that may interfere with the optimal digestion and absorption of nutrients and the use of these nutrients to fuel and heal the body.

As shown by Lamb et al. (2011) the ED promotes overall detoxification of the body. The 'clean' ED period has the additional benefit of creating a clean slate for the client's diet and dietary habits, meaning unhealthy food habits and addictions are abandoned during this period with a conscious goal of starting healthier habits upon concluding the elimination period.

Of utmost importance regarding the effects of the ED period is the consequential development of a highly individualized diet for the client. Each body reacts to food and nutrients in a semi-unique way depending on the presence of genetic factors, allergic

conditions, digestive capacity, microbiota of the GI tract and other conditions or disease states (Mahan, Stump & Raymond, 2012). During the elimination and re-introduction periods of the ED, the client is given the chance to learn what foods impact his/her body and how (Nijeboer et al., 2013; Pelsser et al., 2011; Lamb et al., 2013; Woogler et al., 2013), so when the maintenance diet is developed it is specific to his or her individual constitution and needs.

A lack of standardized ED protocol across these studies creates a notable weakness in the data. A varied time period for elimination (from 2 to 6 weeks depending on the study) makes it difficult to conclude what time frame is necessary for the elimination of potential food irritants to be effective. Additionally, a varied list of eliminated foods across the studies leaves room for further debate about a standard list of foods to avoid during the ED period. Consistencies in the elimination protocol across most studies, however, include the elimination of dairy, gluten, soy, eggs, nuts and seafood, which provides a baseline list for dietary elimination. This, combined with data on common food allergens from the Food Allergy Research and Education organization (2014), the gold standard elimination protocol (Pizzorno and Murray 2014), and food elimination charts from existing medical professionals (Lipski, 2015; UW Integrative Medicine 2015), is what is used to formulate the comprehensive list of dietary protocols for the ED period of the PW program (figure 1.1). More research is recommended in order to create a standard definition of the ED and its nutritional protocol.

Figure 1.1: ED Protocol for the PW program

<b>Food Group</b>	<b>Foods to Eat</b>	<b>Foods to Eliminate</b>
Fruits	All fresh fruit except ->	Citrus, dried fruits, canned fruit
Vegetables	All fresh raw, steamed or lightly sautéed vegetables except ->	Tomatoes, eggplant, peppers, tomatoes, tomatillos

Grains	Rice, buckwheat, millet, quinoa	All gluten-containing grains, oats and corn
Legumes	None	All beans, peas, lentils, soy and soy products (tofu, milk etc)
Nuts	None	All
Seeds	None	All
Dairy	None. Use unsweetened rice, almond or coconut milk if necessary	All
Meat & Fish	All fresh fish except tuna, turkey & chicken	Beef, pork, tuna, cold cuts, canned meats, bacon, shellfish, sausage and meat substitutes
Fats & Oils	Organic cold-pressed olive oil, flax oil, coconut oil	Butter, corn oil, vegetable oil, margarine, hydrogenated oils
Condiments & Spices	Fresh or dried herbs and spices, sea salt, black pepper, fresh garlic, apple cider vinegar	Mayonnaise, ketchup, mustard, relish, BBQ sauce, vinegar
Beverages	Herbal tea, water, sparkling water, fresh-pressed fruit and vegetable juice excluding nightshades and citrus	Alcohol, caffeine, sweetened drinks
Sweeteners	None	All

An initial 14-day dietary elimination period is recommended in the PW curriculum, based on the demonstrated effectiveness of a shorter elimination period (Iancono et al. 1998), which is ideal for the PW curriculum due to its increased client accessibility. Re-introduction protocol, which is also un-standardized and is incongruent across the studies reviewed here, is based on recommendations made by Pizzorno & Murray (2014) and recommends the re-introduction of 1 food group every 2 days. This allows time for monitoring the body's reaction to each food group, and it is recommended that a food and symptom journal be kept in order to record findings in detail. The maintenance diet is assumed after all food groups have been re-introduced and foods that cause reactivity have been more permanently eliminated from the diet.

### **Whole Foods Nutrition**

The second protocol of the PW curriculum is the development of a clean, whole food diet. Following the completion of the 14-day ED in section one of the PW curriculum, the goals of this section are: (1) to educate the individual about dietary choices that will continue to promote health, (2) to help steer the individual toward a sustainable healthy diet for the long term and (3) validate the importance of whole foods in creating and maintaining health. The data presented in the Whole Foods Nutrition results section provides scientific evidence for the promotion of a primarily whole food diet and the inclusion of this recommendation in the PW curriculum.

When compared to diets consisting of processed and refined foods, whole food diets, and specifically whole cereal grains, whole fruits and whole vegetables, are associated with a decreased risk of obesity, coronary heart disease, high cholesterol, diabetes, cancer, Alzheimer's disease, Parkinson's disease and cataracts (Jacobs & Steffen, 2003; Liu, 2003; Sofi et al., 2008). Processed whole foods and isolated elements of whole foods were not found to have the same preventative results (Jacobs & Steffen, 2003; Liu, 2003).

Synergism between various parts of a whole food, results suggest, offers health benefits beyond the benefits of single nutrients (Jacobs & Steffen, 2003; Liu, 2003; Sofi et al., 2008). In the case of beta-carotene, for example, whole beta-carotene rich foods are known to provide certain health benefits, yet the isolated nutrient appears to provide less of the same benefits over a long-term trial (Hennekens et al., 1996). Likewise, data provided by Eberhardt et al. (2000) shows that a side-by-side test of 100 grams of fresh whole apple has more antioxidant and anti-cancer benefits than 1,500 mg of supplement-form vitamin C. These studies provide strong evidence for the synergistic and beneficial

effects of whole foods, and as Liu (2003) suggests, the benefits may be a result of unique and balanced amounts of phytochemicals not found in supplements or highly processed or refined foods (Liu, 2003). Further research to better identify the synergistic parts of whole foods and their effects will provide more insight on how whole foods may be used in more precise healing protocols.

The study performed by Sofi et al. (2008) offers some of the most significant evidence to date regarding the health impacts of whole food diets. While other studies reviewed provide supporting evidence for the benefits of certain whole foods like cereal grains and fruits, Sofi and colleagues (2008) focused on the overall adherence to a whole food diet and its effects. Data from this study strongly suggests that the whole food dietary pattern of the Mediterranean diet is associated with reduced disease risk and improved health. These findings are highly important for the realistic application of a diet to an individual or a population. As Sofi et al. (2008) aptly point out, people do not eat isolated foods or nutrients, so knowing how an overall diet, in addition to just a few specific whole foods, will impact their health is valuable. As the authors note, however, weaknesses in data like this do exist based on the natural variations in dietary patterns between individuals, even within the confines of whole food choices. Certain whole food and nutrient combinations, for example, could be more beneficial than others.

The Mediterranean-style whole food diet is shown to be additionally beneficial in decreasing the risk of depressive symptoms as shown by both the 2009 study by Akbaraly et al. and the 2012 study by Reinks et al. Furthermore, the 2009 study suggests that processed foods may encourage the development of depressive symptoms. This evidence

supports the inclusion of whole-food dietary practices in the PW curriculum for both the physical and mental health benefits.

The substantial evidence supporting the association between whole food dietary practices and decreased disease risk and improved mental and physical wellbeing is evidence enough to support the inclusion of whole food recommendations in the PW curriculum. Additionally no adverse effects of whole food dietary practices were found in this review. Based on a synthesis of findings included in this review, the PW includes recommendations for: decreased or eliminated consumption of processed and highly refined foods, decreased or eliminated consumption of food additives and flavorings (sugar, color and preservatives included), regular consumption of whole fruits and vegetables (organic when possible), moderate consumption of whole and sprouted grains, moderate consumption of fish and other whole proteins from sustainable sources and consumption of whole “functional foods” (Micozzi, 2014) based on individual need.

### **Yoga Practices**

The third protocol of the PW curriculum is the development of a personalized yoga practice. The objectives of including yoga in the PW curriculum are: (1) to offer the individual a gentle movement and exercise routine and promote exercise adherence, (2) to help manage stress and promote emotional wellbeing and (3) to promote an improved connection/relationship to the physical body. The data presented in the results section provides scientific evidence for these objectives and the inclusion of yoga in the PW curriculum.

As a method of improving physical fitness, the practice of yoga is recommended for two reasons. First, regular yoga practice is shown to improve muscular strength,

muscular endurance, flexibility, VO<sub>2</sub> max and functional movement and fitness (Tran et al., 2007; Cowen, 2010). Consistent findings in the reviewed scientific literature suggest that engaging in regular (weekly or twice weekly) yoga classes (involving breathing exercises, physical postures and relaxation) for 6 weeks or more significantly increases these aspects of physical fitness both for individuals that are previously inactive as well as for individuals already engaged in a fitness routine. For individuals already engaged in a fitness routine, Cowen's (2010) data shows that yoga offers additional benefits of added focus, favorable perceptions and decreased musculoskeletal pain.

The conclusions drawn from both Tran et al. (2007) and Cowen (2010) are sturdy due to the well-defined yoga techniques and the significant duration of study (6-8 weeks). Furthermore, both studies have significant sample size and report no injuries or adverse effects of the yoga exercise. To improve the understanding of how yoga impacts physical fitness, further trials that track the effects of regular yoga over multiple years are recommended. Nevertheless, both studies offer strong support for the inclusion of yoga in a wellness curriculum as a method of improving physical fitness. Data presented by Bryan and colleagues (2012) offers added support for the inclusion of yoga in a wellness curriculum, suggesting that the practice also improves exercise adherence and behavior, stress management and eating habits. These elements are important aspects of overall wellness (Pizzorno & Murray, 2014) and the yoga practice is recommended as a safe and beneficial method of promoting them.

Information provided by Hartfiel et al. (2011), as well as Wolever et al. (2011) offers significant evidence to support the inclusion of regular yoga practice in a wellness curriculum for the purpose of managing stress and promoting mental wellbeing. Both

publications report congruent findings regarding the association between regular yoga practice and decreased feelings and perceptions of stress. Also, marked improvements in energy, focus, feelings of elation, confidence, purpose, satisfaction and sleep quality found in these studies suggest that yoga offers added support for mental wellbeing. Similar findings are reported in the trial by Kohn and colleagues (2013) in the primary care setting, which offers sound evidence to support the use of regular yoga to decrease stress, burnout symptoms anxiety and insomnia in patients suffering from stress-related symptoms.

The studies included in this review offer strong qualitative data as evidence to support the association between yoga and improved stress management and wellbeing. Additionally, large sample size and clear definitions of style and duration of the yoga practice make these studies robust. However, quantitative data to scientifically support the association between yoga and stress levels is limited. Yadave et al. (2012) do report a significant decrease in cortisol levels in individuals engaged in a 10-day trial period of daily yoga practice, but more evidence and longer trial periods focusing on the association between yoga and cortisol and other biological measurements of stress would be beneficial. Because cortisol and other stress-related hormones are associated with many symptoms and conditions (Pizzorno & Murray, 2014), understanding this relationship will expand the current understanding of how yoga impacts health and wellbeing.

The aggregate findings from the yoga-focused studies reviewed here also suggest that, in a broader sense, yoga helps facilitate an improved association and relationship with the physical body, whether through the reduction of pain, the management of stress,

the improvement of mood and favorable perceptions and/or the motivation to exercise. In a curriculum that is designed to help create whole-body and holistic health and wellness, encouraging a positive body relationship and perception through the practice of yoga will help ensure that the client's path to health is comprehensive for the mind and body.

Studies in this review looked at the effects of several different styles of yoga, frequency of practice and duration of practice. It is not viable to conclude that all styles and durations of yoga have the same effects, and possible variances in the effects of the practice must be accepted. The recommendations for yoga included in the PW curriculum are based on commonalities in the yoga techniques used in the reviewed studies, as well as the goal of creating an accessible practice with a modifiable structure to fit the needs of the individual. The basic yoga practice recommendations in the PW are: twice weekly yoga classes consisting of breathing exercises, physical postures and relaxation (savasana). Hatha, vinyasa, Ashtanga, Anusara, Jivamukti, yin and restorative yoga techniques satisfy the yoga recommendations in the PW curriculum and may be practiced in a group or private setting.

### **Meditation & Mindfulness Practices**

The fourth protocol of the PW curriculum is the development of a regular meditation practice. The objectives of including meditation in the PW curriculum are: (1) to decrease the risk of disease and improve physical health, (2) encourage positive emotions and physical and psychological wellbeing, (3) to manage stress and stress-related conditions and (4) promote mental and physical longevity. The data presented in the results section provides scientific evidence for these objectives and the inclusion of meditation in the PW curriculum.

The study performed by Schneider et al. (2012) offers robust support for the use of Transcendental Meditation (TM) to prevent cardiovascular disease. The strengths of this study include its long trial period (5.4 years) and its fairly large sample size (201 people with pre-existing coronary heart disease). The 48% reduction in mortality risk and the 4.9mmHg reduction in systolic blood pressure are significant findings to support the positive effects of TM on heart disease risks. Weaknesses of this study include the limited test population (restricted to black males and females only) and the lack of control for potential confounding variables that may impact cardiovascular disease risk. It is difficult to conclude from this study whether the same effects will be seen in other populations and races, and it is hard to tell whether TM or a particular lifestyle shared by those who participated in TM was the cause of the decreased risk of mortality, myocardial infarction and stroke (Schneider et al. 2012). Further research to include other populations and other forms of meditation, as well as to control for confounding variables is recommended.

Nevertheless, because cardiovascular disease is one of the leading causes of death across most ethnicities in the U.S. (CDC, 2015), and because no adverse effects are reported from the TM study, it is worthwhile to recommend the practical application of meditation practices to individuals based on the potential decrease in disease risk. Furthermore, the findings reported by Jacobs et al. (2013) are not limited to single-race populations and do suggest that meditation practice may contribute to decreased cortisol levels and therefore a lower risk of disease progression, including cardiovascular disease, related to cortisol release.

The decreased cortisol levels Jacobs et al. (2013) associated with meditation and mindfulness practices are also significant evidence to support the use of meditation for managing stress and supporting positive psychological and physiological wellbeing. Mindfulness practices, the authors find, are associated with decreased cognitive worry and rumination over past or future events, which decreases the amount of cortisol released from the hypothalamic-pituitary-adrenal system. Less mental experience of stress, as well as physiological reactions to stress (in the form of cortisol release), suggests that simple mindfulness practices are effective stress management techniques and may additionally help prevent long-term effects of stress exposure.

Meditation, as a method of stress-response management, may also modulate the amount of grey matter in certain brain areas associated with the release of neurotransmitters related to mood and arousal, Singleton et al. (2014) find. Grey matter, as opposed to white matter, is the site of information processing in the brain, and is associated with the proper response to stimuli and the communication and function of neurons (Marieb & Hoehn, 2013). Increasing grey matter in the brain has many potential benefits, including improved stress response and management. As Singleton et al. (2014) report, increased grey matter and subsequent improvement in psychosocial wellbeing are noted in response to mindfulness meditation, with no adverse side effects. The combined effects of decreased cortisol levels and increased grey matter in response to regular mindfulness and meditation practice strongly suggests that meditation is an effective and safe method for stress management and the promotion of psychological as well as physical wellbeing.

Research, like that reported by Hoge et al. (2013), moreover demonstrates the significant impact of meditation on the brain. Telomeres, which the authors describe are a part of the physiological structure of the brain, serve as a marker for the aging process. Their length is also significantly impacted by chronic stress, with increased telomere shortening associated with high and prolonged stress levels. Hoge et al. (2013) have found that relative telomere length in individuals practicing the Loving Kindness (LK) meditation technique are significantly longer than those who do not practice any form of meditation. This data suggests that meditation serves to decrease the impact of stress on the body and/or modulate telomere shortening in response to stress, decreasing the rate of the aging process and promoting longevity in the mind and body. Larger sample sizes and longer term studies are necessary in order to confirm these findings, but initial conclusions from Hoge et al. (2013), and the lack of evidence contradicting the use of meditation for general wellbeing and stress management, indicate that meditation techniques are an exceedingly valuable asset in a wellness curriculum, promoting mental and physical health.

Based on a synthesis of findings reviewed here, the PW curriculum recommends daily meditation of 10 or more minutes. The meditation technique is left up to personal preference of the practitioner, but TM, LK and mindfulness techniques are highlighted due to their inclusion in the reviewed research. Like in the subject of yoga, studies in this review looked at the effects of several different styles of meditation, frequency of practice and duration of practice. It is not viable to conclude that all styles and durations of meditation have the same effects, and possible variances in the effects of the practice must be accepted. As a whole, it is concluded that the regular practice of some form of

focused awareness in the style of meditation will have positive effects on the mind and body.

### **Conclusions & Recommendations**

What it means to be *healthy* and to build or maintain health is different for every individual. It is clear from current polls, as well as the multitudes of media, research, professional recommendations and health products present in today's world, that health is on the minds of many people. It is also clear, however, that there is a lot of confusion around how to access and promote a truly healthy state of being. What lies beneath all the confusion is a real need for each individual to develop a better understanding of his/her body and its' unique needs and functions.

The goal of this comprehensive literature review is to help people answer the question, *how do I promote and maintain my individual health?* It aims to look beyond general recommendations and mainstream practices to uncover steps that can be taken toward better individual health on a daily and self-directed basis. It is acknowledged that many general recommendations offer positive direction, and that mainstream practices - especially medical treatments to test and treat the individual's health - are immensely valuable. It is the author's belief, however, that more needs to be done to clarify and promote practices that the individual can do on a daily basis to promote fundamental and whole-body health.

To do so, this literature review analyzes four dietary and lifestyle practices for their health-promoting effects: (1) The Elimination Diet (ED), (2) Whole Foods Nutrition, (3) Yoga, and (4) Meditation. Findings from the review are synthesized to

create a sound, accessible and scientifically substantiated curriculum with four corresponding parts. The Pure Wellness (PW) curriculum aims to teach people how to access and support some fundamental aspects of individual health, including: eating in a way that suits the nutritional needs of the individual, eating a sustainable and clean diet that provides the body with what is nourishing rather than toxicifying and/or otherwise harmful, keeping the body and mind active, managing stress, creating and maintaining mental and physical wellbeing and encouraging cognitive and physical longevity.

Results from this review confirm the author's postulations regarding the positive effects of the ED, whole foods, yoga and meditation on health. The four practices, for a variety of reasons reviewed and summarized below, are shown to have significant healing effects on the mind and body. Furthermore, the four practices are also shown to be effective ways for the individual to take control in his/her own healing process - learning how to eat, exercise, manage stress, access mental and physical wellbeing and promote mental and physical longevity.

The first section of the PW curriculum, The ED, aims to clear potential irritants from the GI tract, determine the presence of food allergies and/or sensitivities, allow for a period of GI healing and dietary reset and encourage the individual to develop long-term, sustainable individualized dietary practices. The review of literature on the use of the ED analyzes its effects toward these goals. Data from Nijeboer et al. (2013), Iacono et al. (1998) and Amir et al. (2013), supported by reports from Pizzorno and Murray (2014), shows that the ED is an effective method of clearing irritants from the GI tract as demonstrated by the significant decrease in symptoms of GI irritation reported during ED trials. Results from studies by Nijeboer et al. (2013), Brown (2012), Pelsser et al. (2011),

Mathew (2010), Baker et al. (2000), Spergel et al. (2012) and Amir et al. (2013) shows that an ED effectively identifies food allergy and food sensitivity related symptoms as well as specific causal food antigens. Significant decreases in food and diet-related symptoms, as well as a noteworthy increase in quality of life reported by Amir et al. (2013), Ayindar et al. (2013) and Woogler et al. (2013) during ED trials furthermore illustrates the effective use of the ED to promote healing in the body, and specifically in the GI tract. As Nijeboer et al. (2013), Pelsser et al. (2011), Lamb et al. (2013) and Woogler et al. (2013) demonstrate, the ED also gives the individual a chance to learn what foods impact his or her body and how, encouraging significant learning about how to eat in an individualized way in the long term.

A standard definition of protocols, including foods to eliminate, length of elimination and terms of food re-introduction for the ED, are lacking across the reviewed literature. It is recommended that future research focus on standardizing these protocols in order to better understand how a standard ED will impact the individual and what the expected results of the ED are. Nevertheless, the ED is considered the “gold standard” in diagnostic tools for determining the presence of food allergy and/or sensitivity (Pizzorno & Murray, 2014) and there is little risk when implementing the ED in appropriate adult population for a limited period of time. Furthermore, the beneficial effects of the ED are substantial in the process of developing and maintaining health because they facilitate improved GI function and absorption of nutrients, decreased food-related symptoms and a heightened awareness of how food impacts the body, all of which are highly important elements of overall health and wellbeing. For these reasons, a 14-day ED is included as the first protocol of the PW program.

The second section of the PW curriculum, Whole Foods Nutrition, aims to educate the individual about dietary choices that will continue to promote health after the completion of the ED, help steer the individual toward a sustainable healthy diet for the long term and validate the importance of whole foods in creating and maintaining health. The review of literature on the effects of whole food-based diets analyzes their effects toward these goals. Compared to diets consisting of processed and refined foods, whole food-based diets are associated with decreased risk of many common and high-risk diseases including cancer, heart disease, Alzheimer's and Parkinson's disease as shown by findings from Jacobs and Steffen (2003), Liu (2003) and Sofi et al. (2008). One reason for this, Sofi et al. (2008) and Eberhardt et al. (2000) demonstrate, is the synergism of elements in whole foods, particularly the many phytochemicals in whole foods, that are not present in the same amounts and/or proportions in processed and refined foods or supplemental forms. Strong evidence provided by Sofi et al. (2008), Akbaraly et al. (2009) and Reinks et al. (2012) shows that adherence to whole food dietary practices, specifically the Mediterranean-style diet, is correlated with reduced physical and mental illness and disease risk, as well as heightened overall health.

The World Health Organization (2015) reports that chronic diseases, including cardiovascular disease, cancer, diabetes and mental disorders, killed about 35 million people in 2005, and over the next ten years deaths from chronic disease are projected to increase by 17% if no actions are taken. The same report states that unhealthy diet is one of the top three risk factors for the development of chronic diseases (WHO, 2015). According to the research reviewed here, whole food dietary practices can decrease the risk of many of these chronic diseases as well as other conditions and disease risk factors.

Consuming processed, refined and/or artificial foods and food products, studies show, may alternatively promote mental and physical illness and disease. Based on the absence of adverse effects associated with whole food dietary practices and the considerable need to prevent disease risk factors and development, whole food dietary guidelines are included in the PW curriculum. Guidelines include: decreased or eliminated consumption of processed and highly refined foods, decreased or eliminated consumption of food additives and flavorings (sugar, color and preservatives included), regular consumption of whole fruits and vegetables (organic when possible), moderate consumption of whole and sprouted grains, moderate consumption of fish and other whole proteins from sustainable sources and consumption of whole functional foods based on individual need.

The third section of the PW curriculum, Yoga, aims to offer the individual a gentle movement and exercise routine, promote exercise adherence, help manage stress and promote emotional wellbeing and to promote an improved connection and relationship to the physical body. The review of literature on the practice of yoga analyzes the effects of the practice toward these goals. Data from Tran et al. (2007), Cowen (2010) and Bryan et al. (2012) provides sound evidence for the use of yoga as physical exercise to promote strength, endurance and flexibility as well as exercise routine adherence, stress management and positive eating habits. Hartfiel et al. (2011). Wolever et al. (2011) provide evidence to support the use of yoga as an effective stress management technique, with Yadave et al. (2012) backing up this evidence with demonstrated cortisol reduction in association with regular yoga practice.

A variety of yoga styles exist and studies reviewed here do not use a standardized practice across trials. Research that aims to better understand how the various styles of

yoga impact the body and mind differently is recommended in order to better understand what style of yoga to recommend to individuals to suit their needs. Nevertheless, it is concluded here that the practice of yoga, which is customizable to suit the needs of an individual, offers unique physical and mental health benefits and therefore it is included as a recommended protocol in the PW curriculum. The yoga practice recommendations in the PW are: twice weekly yoga classes consisting of breathing exercises, physical postures and relaxation (savasana).

The fourth section of the PW curriculum, Meditation and Mindfulness Practices, aims to decrease the risk of disease and improve physical health, encourage positive emotions and physical and psychological wellbeing, to manage stress and stress-related conditions and to promote mental and physical longevity. The review of literature on the practices of meditation and mindfulness analyzes their effects toward these goals. Schneider et al. (2012) report strong associations from their lengthy and robust study between meditation and reduced blood pressure and heart disease risk. Jacobs et al. (2013) also show that populations practicing regular meditation have lower cortisol levels and lower risk of diseases associated with elevated cortisol than non-meditating populations. Lower cortisol levels in the body and increased amounts of grey matter in the brain (Singleton et al., 2014) associated with regular meditation practice supports the use of meditation as a stress management technique and as a method of building psychological wellbeing. Longer telomeres found in the brains of individuals who meditate moreover demonstrate the association between meditation, stress and mental and physical longevity (Hoge et al. 2013).

The studies reviewed here look at the effects of a few different meditation techniques including TM, LK and more general mindfulness practices. Further research to identify which forms of meditation are most beneficial for physical and mental health is recommended. However, due to the lack of contraindications and the value of the reported effects of the various meditation techniques, general meditation, defined as a practiced form of focused awareness and breath, is concluded to be beneficial and important in creating and maintaining overall health. The PW curriculum therefore recommends daily meditation of 10 or more minutes, to include the practice of sitting in a still seated or reclined position, focusing the mind on an element, object or mantra and engaging in steady breathing techniques.

Based on the scientific research reviewed and synthesized here, it can be concluded that the four practices discussed – the elimination diet, whole food dietary practices, yoga and meditation – are highly effective and accessible tools for the individual to employ in his/her own individualized process of finding and maintaining health in the mind and body. The four-part PW curriculum that outlines the use of these four practices will help people access and promote authentic, whole-body health through diet, exercise, stress management and lifestyle habits that fit the unique needs of the individual.

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