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WEIGHT MANAGEMENT IN THE POST-EPHEDRA ERA

Dr. Bridget M. Chufo

In the twenty-first century, it is next to impossible to read a newspaper, magazine, book, or web article, listen to the radio or watch television without reading, hearing or seeing something pertaining to weight and weight loss. America is now the fattest nation in the world. It is the first time in the history of the world that there are more overweight starving children than underweight starving children. With nearly two out of three Americans being overweight, we, as a nation, are facing an epidemic that is estimated to cost \$100 billion a year in increased medical costs. Obesity is the single most controllable variable related to health conditions, surpassing even smoking. It is directly associated with high blood pressure, coronary heart disease, type 2 diabetes, insulin resistance, hyperinsulinemia, dyslipidemia, gallbladder disease, some forms of cancer, sleep apnea, and other chronic conditions. Ninety-two percent of adults have been on diets at some time in their lives and as the population ages, this number will increase. Whether for medical, occupational or cosmetic reasons, most people are constantly seeking new strategies to lose weight or unique methods to maintain their current weight. Most Americans are consistently looking for "the magic pill." We are constantly being bombarded with statistics involving obesity and the associated health conditions, obesity in children, body mass indicators ("BMI"), the negative effects of the fast food industry and obesity, and the negative effects of today's sedentary activities, including the internet, television, and videos. Never before has weight loss been so critical. Yet, never before has obesity been so prevalent! Every time one turns around there is a new supplement on the market to reduce body fat, a different twist on a nutritional program

which promises to get the weight off safer and faster and/or the newest and latest exercise equipment that will make one thinner in practically no time at all. Each expert in the field believes their methodology is the best, most up-to-date and most accurate. There are even those who claim to be experts, but merely are taking advantage of an emotional audience in order to make a "fast buck." Who does one believe and what course of action does one take in order to achieve the desired results?

Let's go back to the historical method of how to lose weight. Pure science dictates that if one reduces their caloric intake and increases their metabolic rate via more movement or exercise, one can lose weight. Fat is what one needs to lose, but some "bad diets" actually cause one to lose muscle and organ tissues, which may never come back. Losing muscle mass will weaken one's body, and if these yo-yo diet measures are consistently employed, the body will get weaker with every "diet" because muscle mass will be deteriorating. Some people state that they cannot lose

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weight because they have a genetic predisposition, a slow metabolic rate, or certain medical conditions that prevent them from doing so. Medically speaking, they may be accurate. It does become more difficult to lose weight with age, as the metabolism slows down by 3-8% every decade. Some medications slow down the weight loss process, such as steroids. Certain medical conditions make it more tedious to lose weight, as well. That being said, we still go back to the basics for 99.999999999% of the general population. If one reduces their caloric intake and increases their metabolic rate via exercise, one can and will lose weight.

BODY MASS INDEX

What does it mean to be overweight? Overweight refers to an excess of body weight, up to 20% above ideal body weight. Obesity refers to an individual being more than 20% above ideal body weight. Normally, this means an excessively high proportion of body fat, as well. However, it is possible to be "over-fat" but not necessarily "overweight" and it is possible to be "overweight" but not necessarily "over-fat." This all depends on the proportion

of fat and muscle composition in the body compared to the total body mass. Health professionals use a measurement called body mass index (BMI) to classify an adult's weight as healthy, overweight, or obese (see the BMI chart, "Are You at a Healthy Weight?"). BMI describes body weight relative to height and is an indirect measure of body fat. These were calculated by first looking at the research data on BMI and how it relates to relative risk of death. The BMIs associated with high death rates were noted and the range of healthy BMIs were determined. The research showed that healthy BMIs range from 19 to 25, 25 to 29 implied "moderate overweight," and any number higher signaled "severe obesity." Although some are still debating these categorizations, the bottom line on the Harvard study's findings was that a sharp rise in the risk of death occurred when the BMI reaches 27 and greater. Although one should strive for a BMI in the healthy range of 19 to 25, this is of utmost importance if there is a family history of heart disease and cancer, high blood pressure, high cholesterol, high sugar, or a high percentage of belly fat. Excessive fat in the abdominal area has been associated with an increased risk of heart disease and other problems.

Obesity, once thought by many to be a moral failing, is now often classified as a disease. The NHLBI (National Heart, Lung and Blood Institute) calls it a complex chronic disease involving social, behavioral, cultural, physiological, metabolic, and genetic factors. Although experts may have different theories on how and why people become overweight, it is the general consensus that one is healthier with a more ideal weight, and the key to losing weight is a simple message: Eat less and move more. One's body needs to burn more calories than one takes in.

Many individuals have a very difficult time reducing their caloric intake without the assistance of a supplement that actually suppresses the appetite. In the supplement industry today, there are many aids that claim to assist one in reducing cravings and appetites, as well as other supplements that claim to help increase their metabolic rates, and still other supplements that claim to burn up the sugars, fats, and carbohydrates better. Who should one believe, what really works and why? Before we review the current weight loss industry, we would be remiss if

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Editor In Chief Andrew D. Halpner, Ph.D.

Assistant Editor Michael Traficante

Assistant Editor & Research Natalie Shamitko

Technical Advisors/Contributors:.....James Wilson, Ph.D.

Martin P. Gallagher, M.S., D.C.

Mitchell J. Ghen, D.O., Ph.D.

Vern S. Cherewatenko, M.D., MEd

Derek DeSilva Jr., M.D.

Contact Us:

NutriNews Inquiries

600 Boyce Road • Pittsburgh, PA 15205

Phone: (412) 494-0122 • Fax: (412) 278-6804

Email: nutrinews@douglaslabs.com

Canadian Inquiries

Toll-Free: 866-856-9954

Email: info@douglaslabs.com

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Table 1 - Calculating One's Body Mass Index

To determine one's BMI, follow this 4-step formula:

- Step 1.** Multiply one's weight in pounds by .45
Example: 150 pounds x .45 = 67.5
- Step 2.** Multiply one's height in inches by .025.
Example: 5'9", or 69 inches x .025 = 1.725
- Step 3.** Multiply the answer from Step 2 by itself.
Example: 1.725 x 1.725 = 2.976
- Step 4.** Divide the answer from Step 1 by the answer from Step 3.
Example: 67.5/2.976 = BMI of 22.7

If the value is between 19 and 25, this is a healthy range.
If the value is higher, losing weight is important in improving one's chances for good health.

we did not look at where the industry started and how we evolved to the point that we are at today.

EPHEDRA

Most individuals involved in weight loss have heard of the herb, ephedra. We are aware of the controversy with ephedra, specifically, concerning the death of the Baltimore Oriole's pitcher, Steve Bechler. His death involved, among other things, the overuse of ephedra. This Chinese herb, *Ephedra sinica*, also known as ma huang, is the plant most commonly used as a source of ephedra products. Ephedra includes "ephedrine alkaloids," which are naturally occurring compounds that are found in plants. There is a difference between ephedrine alkaloids and synthetic ephedrine. Ephedrine is only one of the naturally occurring alkaloids present in ephedra extracts. Other alkaloids include pseudoephedrine, an ingredient which is less potent than ephedrine. One can find this substance in the popular sinus medication, Sudafed®.

Ephedrine was found to be useful in weight control quite by accident in 1974. A Danish physician, Dr. Eriksen, was treating asthmatic patients with a product composed of ephedrine, caffeine and phenobarbital. This combination created an "unintentional" loss of body weight in his patients. This finding was recognized almost immediately as a critical answer in the treatment for obesity. This evolved into the widespread use of the

3-ingredient combination until adverse reactions were attributed to the phenobarbital component. The FDA consequently banned phenobarbital from this weight loss combo, leaving the manufacturers with the ephedra/caffeine/guarana compound as the new weight loss strategy.

Although it has been absolutely proven that ephedra-containing products have been successful in helping to increase one's metabolic rate, as well as providing more energy, these products should be used with caution and discretion, especially if there is a history of heart disease, thyroid disease, diabetes, high blood pressure, psychiatric conditions or any seizure disorders. There are many ongoing congressional hearings and studies being performed on ephedra today. Its future in the weight loss world is unknown at the present time. Because of the controversy and potential side effects associated with ephedra, most insurance companies are eliminating coverage on any ephedra-containing products. Thus, it becomes next to impossible for the manufacturers, retailers, and distributors to continue manufacturing or carrying any products containing ephedra. As with anything in this world, nothing is all good or all bad. For the hundreds of thousands that these products have helped in their obesity dilemma, this is a regretful situation. However, to save one person for the sake of thousands, this may well be the only answer.

In fact, on December 30, 2003, just prior to the printing of this article, the FDA issued a consumer alert on the safety of ephedra-containing products. This alert advised consumers to stop buying and using ephedra. The FDA also announced plans to publish a final rule within the next 60 days stating that ephedrine alkaloids present an unreasonable risk of illness or injury and should be removed from the market. While it is not clear what the final result will be, the FDA is certainly continuing to take steps on the Ephedra issue.

THE POST-EPHEDRA ERA

With the decreasing number of ephedra-based products, the consumer continues to seek other alternatives. When scanning the nutritional aisles in the supermarkets and drug stores, one sees a varying array of weight loss products. It appears that today's consumer is seeking a non-stimulant-containing supplement because of the

potential concerns associated with stimulant-containing products. Popular formularies include Conjugated Linoleic Acid ("CLA"), *Garcinia cambogia*, 5-HTP, Phenylalanine, Dihydroepiandrosterone ("DHEA"), B-vitamins, and Essential Fatty Acids ("EFAs").

CONJUGATED LINOLEIC ACID

Conjugated linoleic acid ("CLA") is a fatty acid related to the omega-6 fatty acids which is one of the three types of essential fatty acids. CLA occurs naturally in meat and dairy products, but most people do not consume adequate amounts of CLA through diet alone. Because of the changes over the last 30 years to cattle farming, in addition to the low-fat dairy products being consumed, the amount of CLA people acquire through diet has been drastically reduced. Thus, individuals are seeking the benefits of CLA through supplementation. CLA is known for promoting a decrease in body fat, supporting an increase in lean body mass, maintaining a healthy inflammatory response, enhancing immune function, and providing antioxidant protection. CLA supplementation has been shown to improve the lean body mass to body fat ratio, decrease fat disposition, most especially in the abdomen and also enhance muscle growth.

The University of Wisconsin released results of a key six-month study involving 89 overweight people. Individuals who supplemented their diets with CLA were better able to lose weight and maintain goal weight, with less fat regained and more muscle mass retained. Another study conducted by the Department of Public Health and Caring Sciences/Geriatrics of Uppsala University in Sweden reported that supplementation with CLA induced a number of physiological effects in experimental animals, including reduced body fat content, decreased aortic lipid deposition, and improved serum lipid profile. The results suggest that supplementation with CLA may reduce the proportion of body fat in humans and that CLA affects fatty acid metabolism. In a randomized, double-blind, placebo-controlled study of 20 healthy humans of normal body weight and BMI of less than 25, who did standardized physical exercise in a gym for 90 minutes three times a week, CLA dramatically reduced body fat. Participants took

either placebos or CLA 0.6 g, three times a day, during meals for 12 weeks. Body fat, as measured by near infrared light, was significantly reduced in the CLA group during the study, but not in the placebo group. In another study of the metabolic benefits of CLA, 53 men and women, aged 23-63, were randomly assigned to supplementation with CLA during a 12-week period in a double-blind fashion. The proportion of body fat decreased in the CLA-treated group and was significantly different from the control group. In a 2000 study, people who took CLA had significant reductions in body fat gain without any serious side effects. The findings reported that people taking this supplement lost an average of six pounds and statistically significant amounts of weight without otherwise changing their diets. In this study, 60 overweight people were randomly assigned to take a placebo or CLA for 12 weeks. The main objectives were to investigate the effects of different doses of CLA, from 1.7 grams to 6.8 grams per day, compared to placebo. The study indicated that 3.4 grams of CLA per day is enough to obtain all of the beneficial effects on body fat.

GARCINIA CAMBOGIA

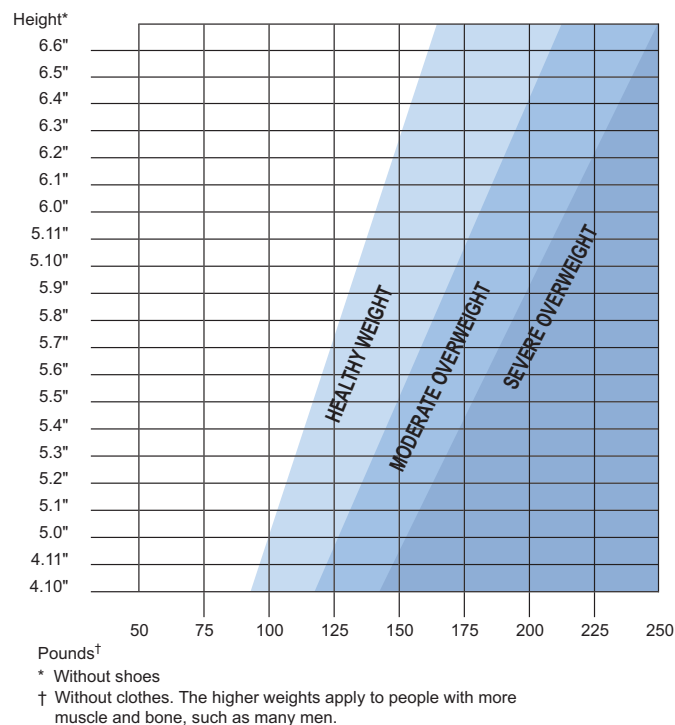
Another widely used supplement in weight loss is *Garcinia cambogia*. *Garcinia cambogia* is a small, sweet, purple fruit, also called the Malabar tamarind. This fruit contains hydroxycitric acid ("HCA"), a derivative of citric acid. Test-tube and animal research suggests that HCA may be helpful in weight loss because of its effects on metabolism. Animal studies have shown that HCA can suppress appetite and thereby encourage weight loss. It is thought to work by interfering with the body's ability to produce and store fat. It is known to inhibit the synthesis of lipids and fatty acids and lower the formation of LDL and triglycerides. When utilizing *garcinia cambogia*, the appetite is suppressed by promoting synthesis of glycogen. Glycogen is the stored form of glucose, one of the body's primary sources of energy. Increased glycogen production and storage is the body's normal way of signaling the brain's satiety center that enough food has been eaten. This has made *garcinia* a very effective herbal medicine for helping to

control obesity and cholesterol. A typical dosage of HCA is 250 to 1,000 milligrams three (3) times daily. Products are often labeled garcinia cambogia and standardized to contain a fixed percentage of HCA, typically 50%, which is the dosage used in larger studies. No significant side effects have been reported from animal or human studies involving either fruit extracts or the concentrated chemical.

5-HTP

The compound 5-hydroxytryptophan (commonly known as the nutrient 5-HTP) is a derivative of the amino acid tryptophan and is extracted from the seeds of the African plant, *Griffonia simplicifolia*. A mood-enhancing chemical, 5-HTP has attracted a good deal of attention lately because of its ability to increase pain tolerance, induce sleep, and affect how hunger is perceived. Unlike many other supplements that have molecules too large to pass from the bloodstream into the brain, molecules of 5-HTP are small enough to do so. Once in the brain, they are converted into an important nervous system chemical, or neurotransmitter, called serotonin. The body produces its own supply of 5-HTP from tryptophan, an amino acid found in high-protein foods such as chicken, fish, beef, and dairy products. Research indicates that besides assisting people with depression, insomnia, migraine headaches and fibromyalgia, studies indicate that 5-HTP may help promote weight loss by curbing the appetite when taken before meals. In a recent study of dieting women, those given 5-HTP reported feeling fuller than those who were given a placebo. In the end, participants in the 5-HTP group consumed fewer calories overall, and lost more weight than those in the placebo group. Another study reported increased weight loss among obese patients who took 5-HTP versus those who were given a placebo. In another study, patients who took 600 to 900 milligrams daily lost 11 pounds over the course of 12 weeks. Because 5-HTP reportedly reduces cravings for sweets and starches, it may also be of use in helping diabetics adhere to a healthy eating plan. The dosage recommended is 100 milligrams three times per day, 20 to 30 minutes before meals, increasing to 200 milligrams three times per day after two (2) weeks.

Table 2 – Height/Weight Comparison



Source: Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 1995, page 23-24.

Taking 5-HTP on an empty stomach yields the quickest absorption rate and therefore, better results.

PHENYLALANINE

Phenylalanine is an essential amino acid and therefore must be obtained from the diet as it is not made by the human body. The utilization of phenylalanine requires adequate levels of minerals and vitamins C and B complex. It has been found to help control appetite by stimulating the release of an appetite-suppressing substance from the wall of the small intestine, which is normally released when food has been consumed. Phenylalanine is used as a mood elevator since it is so closely involved with the nervous system. It also helps with memory and learning and has been used as an appetite suppressant. There are side effects associated with this ingredient which can include headaches, jitteriness, and phenylalanine may affect one's blood pressure, so supplementation through a health care practitioner is important. It is not recommended for long-term use and should not be taken for more than three weeks at a time without a break or without the support of the other amino acids.

DHEA

An alternative ingredient that has risen in popularity today is dihydroepiandrosterone ("DHEA"). DHEA is a naturally occurring weak androgenic steroid hormone, produced from cholesterol by the adrenal glands. DHEA is chemically similar to testosterone and estrogen and is easily converted into those hormones. DHEA production peaks in early adulthood and declines in production with age in both men and women. Thus, many diseases which correlate with age also correlate with low levels of DHEA production. DHEA has many benefits including the facilitation of weight loss. It has also been used in the prevention of the signs of aging, improving sexual function, improving athletic performance and strength, treating osteoporosis and depression, and improving immunomodulation for rheumatologic conditions. Recommended dosages include 25 to 1600 milligrams per day. Investigators from the Medical College of Virginia published a prospective, double blind, placebo controlled weight loss trial with DHEA. Several men received 1600 milligrams of DHEA per day for 28 days. This dose resulted in a 3-fold increase in DHEAs and a 2-fold increase in androstenedione. At the end of treatment, the DHEA subjects demonstrated a 31% decrease in fat mass (by anthropometrics) with no change in total body mass. In addition, the test group also showed a 7.5% decrease in LDL cholesterol levels.

B-VITAMINS

Although most people associate the B-vitamins with a good auto-immune system, B-vitamin supplementation also assists in facilitating weight loss through the production of energy, including the metabolism of fats, carbohydrates, and proteins. A B-vitamin complex containing B-1, B-2, B-3, B-6, and B-12 is important for blood cells, hormonal and nervous system functions. B-vitamins help in nerve impulse transmission and are key components in most major metabolic reactions. B vitamins have long been known as the "Anti-Stress Vitamins." B vitamins are essential in providing support against anxiety and depression. The more stress we have in our lives, the faster the B vitamins are used up. This is important to understand, as B vitamins are also critical in energy production, healthy nerve function, liver detoxification processes, skin and muscle tone, and are essential co-factors

in hundreds of other chemical reactions within the body. Homocysteine levels, when elevated, have been associated with an increased risk of stroke, heart disease, and Alzheimer's. Homocysteine levels are reduced by proper amounts of B6, B12 and Folic Acid. The B vitamins are important in the functioning of the liver and in energy metabolism. They are necessary for the formation of the red blood cells, numerous hormones, and specific neurotransmitters. If high amounts of stress are present in one's life, it is essential to increase the amount of B vitamins in one's diet. One will not be able to get enough B vitamins in the food consumed to meet the body's physiological needs when modern day stresses are prevalent in life. Reducing stress levels is key to weight loss and weight loss management as emotional eating is a major component in the obesity battle. "Feeding one's feelings" occurs all too frequently in stressful situations and the battle of the bulge rages on.

ESSENTIAL FATTY ACIDS

Essential Fatty Acids ("EFAs") in the diet have been positively correlated to an increase in the rates of weight loss. Individuals on low caloric diets are at greater risk of EFA deficiency than the general population. EFAs were previously known for preventing skin problems, gall bladder problems and increased cholesterol levels. In addition to these benefits, they have significant benefit in facilitating weight loss. EFAs containing Omega-6s and Omega-3s have been shown to increase thermogenesis, which is defined as the of production of heat in the body, resulting in increased expenditure of calories concluding in weight loss. Researches have reported that Omega-3s increased the responsiveness of muscles to insulin and significantly increased the rate of glucose uptake by the muscle. Studies have also shown that supplementation with Omega-3s improves aerobic metabolism. Other studies have shown that increases in EFA intake improves the rate of weight loss by a presumed thermogenic mechanism and also improve the efficiency of energy-generating metabolic processes in the body. If one does not have adequate amounts of EFAs in their diet, their rate of weight loss may decrease. It is important to take an EFA supplement, but especially during the time one is undergoing a weight loss program, as one's weight loss will most probably increase when adequate EFAs are present in the body.

PROTEIN

Other alternatives to oral supplementation are protein powders as a meal supplement and/or meal replacement. Protein shakes are used as a “quick” and “convenient” meal or snack. One seeks these alternatives during the weight loss phase as well as the maintenance phase of weight loss. We have all been made aware of the studies performed by Dr. Atkins and the benefits of a high-protein diet. Why do we need protein? We need protein to make sure that we do not lose valuable body protein from our muscles and organs since they may never be able to be replaced. Why do high protein diets help facilitate the weight loss process? Protein has a thermogenic effect on the body by boosting the metabolism to a much greater extent than anything else in the food ingested; thus, burning more calories. Protein also helps rebuild lean tissues instead of breaking them down. The essential amino acids found in proteins are converted into neurotransmitters that govern mood, hunger, appetite and metabolic status. Studies that were performed showed that women on a low caloric diet who did not get sufficient protein had abnormal metabolism of serotonin, which manifested as minor psychiatric disturbances. The body uses energy to process food that one eats. More energy is required to digest and metabolize protein than is required to digest and metabolize carbohydrates and fats. Higher protein, lower carbohydrate eating plans give much better rates of weight loss with the same number of calories. It is known that persons who easily put on weight have a poor thermogenic response to dietary fat, but still tend to respond to protein. Protein helps one feel full more quickly when eating and stops one from feeling quite so hungry, both of which help one stick to their diet. Protein takes a longer time to digest than carbohydrates, making the glucose/insulin spikes a more gradual response; thus, decreasing cravings and hunger. Not everyone can obtain enough protein via their daily meals because of their lifestyle. The hectic life of the twenty-first century requires more time spent at work and on the road and makes kitchen appliances less accessible. For many, traditional meals, eaten family style for so many has become a thing of the past. Thus, the use of protein powders has become popular as either a meal supplementation or a meal replacement.

HEALTHY DIET

Although the many and various supplements that help to facilitate weight loss have been a crucial component to a healthy weight loss, we would be remiss not to stress the importance of a healthy eating plan and a consistent moving program. Eating a diet full of fruits, vegetables and lean protein is an absolute necessity when discussing health and weight loss. No one ever got fat eating too many fruits, vegetables, chicken and fish. It's the other things we add to our everyday eating plans that hurt our weight loss endeavors. That being said however, we believe that there is no such thing as a bad food. It is the amount and frequency that we indulge in some of these foods that makes the body unhealthy and what makes us lethargic and energy-less. We must be aware that there are five groups that we tend to overdue in our normal course of living and eating if we have a weight problem. They are the starches, fats, dairies, sugars, and salts. None of these are ‘bad’ in and of themselves. But, these are the foods that we tend to over-consume. These are foods that are addictive, when we can't eat just a little. These are the foods that we gravitate towards when there is a crisis and we emotionally eat. These are the foods that tend to precipitate the diseases. These are the foods that tend to raise the blood pressure and the cholesterol and the triglycerides. It is for these reasons that we do not suggest that we eliminate them, but that we become aware of our overindulgence and flag these groups. In addition to being cautious about these five groups, we also need to have more awareness of portion control. We need to go back to the days gone by and remember to say the word “small” when ordering. “Super-sizing” has become a concept too automatically used and expected when ordering and preparing food and drink. It is the portions and the frequency of eating and drinking the products in these five groups that contribute to the obesity dilemma. One day did not make us the fattest nation on earth nor did one holiday. It is the 355 other days of the year that contribute to our epidemic of obesity in the twenty-first century. We cannot ignore the benefits of a movement program as well. When undergoing any nutritional program, it is

recommended to employ some type of exercise program to ensure burning more calories. In addition, movement can help to build lean muscle mass and will prevent the loss of muscle during the aging process.

Weight loss management is achieved via a healthy eating plan coupled with dietary supplements and a movement program. The supplements discussed above are the most widely used on the market today and have the lowest frequency of reported side effects. Combining a healthy eating plan, movement, and quality dietary supplements will in fact, help us make gigantic strides in becoming a smaller and healthier nation.

Dr. Bridget M. Chufo, is the President and Founder of Healthy Performance. Dr. Chufo has been helping individuals in the weight loss and health fields for over 22 years. Dr. Chufo is responsible for managing and directing the long-term success of the six retail centers in Pittsburgh, Pennsylvania, as well as the one retail center in Long Island, New York. In addition to the retail outlets, Dr. Chufo manages a significant mail-order business on a national basis.

Her education includes a B.S.N. in Nursing from Villanova University, an M.S.N. in Nursing Administration from Duquesne University, and a Ph.D. in Nursing Research in the study of weight loss and obesity from New York University. In addition, she holds four R.N. Certifications in the states of Pennsylvania, New York, New Jersey and California. She has taught, on both a graduate and undergraduate level, at La Roche College, Duquesne University, and New York University.

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