

AN INTEGRATIVE APPROACH TO HEALTHY WEIGHT

General

According to the Centers for Disease Control and Prevention (CDC), approximately one-third of U.S. adults (33.8%) and 12.5 million children and adolescents aged 2-19 years (17%) are obese.¹ The etiology of obesity is multi-factorial including genetic, psychosocial, behavioral and environmental factors. Obesity is a chronic disease requiring a lifetime of prevention, treatment and maintenance.

Overweight is determined by calculating the body mass index (BMI, defined as the weight in kilograms divided by height in meters squared). Overweight is defined as a BMI of 25 to 29.9 kg/m², obesity as a BMI of >30 kg/m².

Some Useful Tools

- **BMI Calculator:** <http://www.bmi-calculator.net/>
- **Basal Metabolic Rate** (calories needed to maintain current weight):
<http://www.calculator.org/calculate-online/health-fitness/basal-metabolic-rate.aspx>

Many large epidemiologic studies have shown a relationship between all causes and cardiovascular mortality with increasing BMI.^{2,3} Obesity in adulthood is also associated with a striking reduction in life expectancy for both men and women. Obesity is an independent risk factor for the development of several chronic diseases including diabetes, hypertension, dyslipidemia, gout, heart disease, stroke, dementia, GERD, osteoarthritis, cancer, kidney disease, urinary incontinence and depression. Other reports have found higher disability and healthcare expenditures for patients who are overweight and obese.

Weight Loss

Changing the way patients approach weight loss can help them be more successful in the long-term. Most people who are trying to lose weight only focus on the goal of weight loss. However, setting the right goals and focusing on lifestyle changes such as following a healthy eating plan, watching portion sizes, being physically active, decreasing sedentary time, reducing stress and getting enough sleep are much more effective.

The combination of a reduced-calorie diet and increased physical activity is recommended, because it produces weight loss that also may result in decreases in abdominal fat and increases in strength and cardiorespiratory fitness.⁴ The initial goal of weight-loss therapy should be to reduce body weight by 5-10% from baseline as this can have significant impact on health parameters.⁴ With success, and if warranted, further weight loss can be attempted.

Weight loss should be about one to two pounds per week for a period of six months, with the subsequent strategy based on the amount of weight loss needed. The pacing of weight loss differs among individuals, and expectations should be realistic. Women, in particular, have difficulty losing more than one pound per week. One pound of weight loss requires a weekly deficit of 3500 kcal

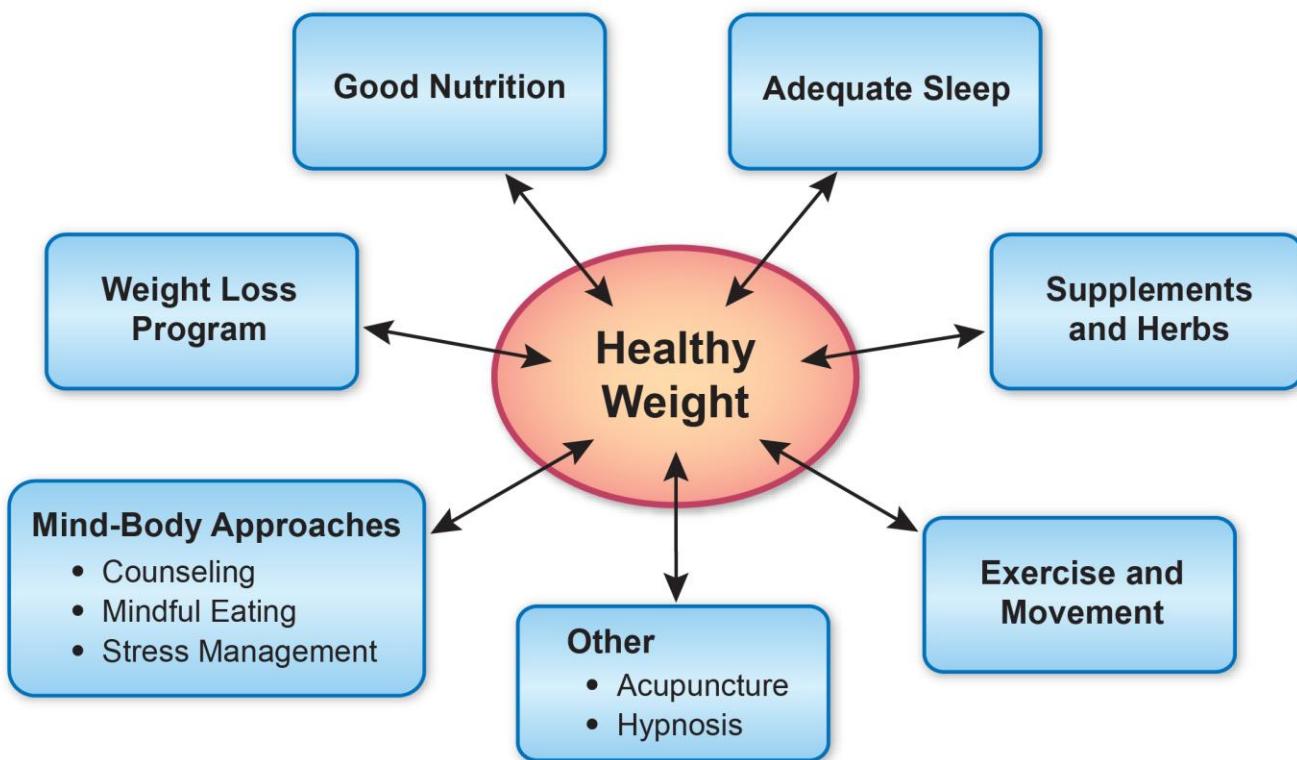


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from diet or exercise. A diet that is individually planned to help create a deficit of 500 to 1,000 kcal/day should be an integral part of any program aimed at achieving a weight loss of 1 to 2 pounds per week. Working with a nutritionist is ideal to develop this plan.

A healthy approach to weight loss will include some or all of the following approaches: 1) good nutrition, 2) diet or weight loss programs, 3) exercise and movement, 4) supplements and herbs, 5) medication review, 6) mind-body therapy, 7) adequate sleep, and 8) acupuncture and hypnosis.

Contributors to Healthy Weight



1. Nutrition

General principles of a healthy diet

- **Aim for a plant-based diet.** The risk for many diseases is decreased with an intake of 8-10 servings of fruits and vegetables daily. Many plant-based proteins are complete and balanced sources of amino acids. Buy organic and local when possible. (See our handout [Protein Alternatives to Meat](#).)
- **Consume 20-35 grams of fiber daily.**
- Choose a variety of whole grains and aim for carbohydrates low in glycemic index. (See our handout [Glycemic Index & Glycemic Load](#) for more information.)
- **Moderate fat in diet** (25%-35% of total calories). Limit saturated fats. Avoid intake of trans-fatty acids (e.g., hydrogenated vegetable oils found in margarines, commercially fried and baked foods.)
- **Moderate sugar intake.** Consume natural sugars in small amounts; avoid artificial sweeteners.



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- **Moderate salt intake.** Choose and prepare foods with less salt. 2,400mg of sodium recommended per day.
- **Increase intake of omega-3 fatty acids.** Reduces inflammation and risk for heart disease. Sources include fatty cold water fish, walnuts, flax, fortified eggs. (See our handouts [Omega-3 Fats](#) and [The Anti-Inflammatory Diet](#) for more information.)
- **Hydrate!** Most adults need approximately two liters of fluid per day. Many people eat when their bodies are actually giving them cues to drink.
- **Eat intelligently.** Establish regular patterns of eating; exercise portion control.
- **Eat when hungry.** Stop eating when full.

Additional Reading on Nutrition

- ***Eat, Drink, and Be Healthy: The Harvard Medical School Guide to Healthy Eating*** by Walter Willett. New York: Free Press. (2005)
- ***Eat, Drink, & Weigh Less*** by Mollie Katzen and Walter Willett. New York: Hyperion. (2007)
- ***Superfoods Healthstyle*** by Steven Pratt and Kathy Matthews. New York: William Morrow. (2006)
- ***Eating Well for Optimal Health*** by Andrew Weil. New York: Alfred A. Knopf, Inc. (2000)
- ***Food Rules*** by Michael Pollan. New York: Penguin Books. (2009)

Sugar Cravings/Reactive Hypoglycemia

While addiction to alcohol and caffeine are widely recognized, it is not well appreciated that many people are addicted to refined sugar. Reactive hypoglycemia is a term used to denote an exaggerated fall in the blood glucose concentration that results from excessive insulin secretion in response to a high carbohydrate meal or sugar load.

In his 2011 text *Nutritional medicine*, Gaby explains that reactive hypoglycemia presents most frequently with one of two clinical responses in the body: adrenergic and neuroglycopenic.⁵ When excessive insulin secretion occurs, blood glucose levels drop too fast and the body compensates by releasing adrenaline and other hormones that raise blood sugar. This results in a “fight or flight response” and symptoms of anxiety, panic, **hunger**, palpitations, tachycardia, tremor, sweating, and abdominal pain.⁵ If the blood glucose peak falls slowly over a matter of hours, patients have delayed symptoms of headache, fatigue and memory impairment.⁵ Symptoms of reactive hypoglycemia tend to occur or become worse in the late morning and late afternoon or if a meal is missed. Symptoms are typically resolved by eating.

Practically, reactive hypoglycemia is a clinical diagnosis. A blood glucose level below 70 mg/dL at the time of symptoms and relief after eating will confirm the diagnosis. The oral glucose tolerance test is no longer used to diagnose reactive hypoglycemia because the test can actually trigger hypoglycemic symptoms. People who have reactive hypoglycemia frequently crave refined sugar or other simple carbohydrates, and they may also complain of many of the symptoms listed above. Eating these foods provides a temporary relief of symptoms as the blood glucose rises, but this also tends to trigger another episode of rebound hypoglycemia and carbohydrate cravings. **This repetitive cycle can lead to overeating and obesity.**⁵

The symptoms of reactive hypoglycemia, including the sugar cravings, can be managed with dietary modifications. Patients will feel best and have less rebound hunger if they eat several small meals



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and snacks throughout the day, no more than three hours apart. It is also necessary to eat a well-balanced diet including lean and nonmeat sources of protein, complex carbohydrates (low glycemic index), and fruit and vegetables. It is best to avoid or limit foods with a high sugar content, especially on an empty stomach. These include refined sugars as well as natural sugars such as fruit juice, honey, and molasses. Alcohol should be minimized and patients should be counseled to eat food when consuming alcohol. With these dietary changes, many people will have withdrawal symptoms for two to three days until their bodies resume normal blood glucose control.

2. Diet and Weight Loss Programs

There are dozens of diets available to promote weight loss. In general, most diets work because there is an overall reduction in daily intake and calories. Some diets work better for some patients, however. For example a low carbohydrate diet might be helpful for someone with insulin resistance while a low fat diet might be helpful for someone with dyslipidemia. A dietician can help patients determine which diet is best for them.

- **Low carbohydrate diets**

- The **Atkins** diet (www.atkins.com) is a high-fat, low-carbohydrate diet. The premise is that carbohydrates increase insulin levels and induce metabolic changes that cause weight gain.
- The **South Beach** diet (www.southbeachdiet.com) is a spin-off of the Atkins diet. The South Beach diet allows "good" carbs based on glycemic index and therefore is more balanced than the Atkins diet.

- **Low fat diets**

- The **Ornish** Diet (www.ornishspectrum.com) is a low fat, high fiber, vegetarian diet. In addition to weight loss, this diet proposes to reverse and prevent heart disease.

- **Balanced Diets**

- The **Zone** diet (www.drsears.com) uses a "40-30-30" rule. The diet consists of 40% carbohydrates, 30% protein, and 30% fat. It advocates only sparing use of grains and starches. The yet-unproven theory behind the Zone diet is that a balance of carbohydrates, proteins, and fats maintains insulin levels "in the zone" and therefore minimizes fat storage and inflammation.
- The **Weight Watchers** (www.weightwatchers.com) approach is to assist members in losing weight by forming helpful habits, eating smarter, getting more exercise and providing support. A point system for food is used and daily targets typically assign a 1000 kcal deficit. Local support groups as well as on-line programs are available.
- The **Anti-Inflammatory Diet**. A number of medical conditions are linked to too much inflammation in the body including heart disease, stroke, cancer, asthma, diabetes mellitus type II, chronic pain, inflammatory bowel disease and Alzheimer's disease. Any long-term, healthy eating plan should try and incorporate the principles of the Anti-Inflammatory Diet. The pertinent aspects of this diet include: avoiding trans-fats, limiting fats that are high in omega-6-fatty acids including many saturated fats, increasing monounsaturated fats and omega-3 in the diet, aiming for 8-10 servings of fruits and vegetables, and eating at least 30 grams of fiber daily choosing whole grains whenever possible (See our handout [The Anti-Inflammatory Diet](#).)

Food-intake recording and regular weigh-ins were both identified as important aspects of weight loss planning and maintenance by successful members of the National Weight Control Registry.



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On-Line Programs and Applications (“Apps”) To Record Food and Physical Activity

- **Calorie Count** at <http://calorienet.about.com/> or <http://www.myfitnesspal.com/>.
- **SuperTracker** through the United States Department of Agriculture (USDA) <https://www.choosemyplate.gov/SuperTracker/default.aspx>

Exercise and Movement

Physical activity should be part of a comprehensive weight loss therapy and weight control program because it: 1) modestly contributes to weight loss in overweight and obese adults, 2) may decrease abdominal fat, 3) increases cardiorespiratory fitness, and 4) may help with maintenance of weight loss.

Engaging in activity at least 150 minutes per week ensures health and fitness benefits, but this amount might not be adequate for weight loss. According to the National Weight Control Registry, a person in ongoing weight loss needs to exercise for approximately 60 minutes per day (about 400 calories expended daily).⁶ Maintenance of weight loss requires 60-90 minutes of exercise per day if total calorie intake is not changed.⁴

Small changes in physical activity can have a significant impact over time. These can include walking or biking for transportation, parking further away from an entrance, and taking the stairs when possible. Some people find it helpful to use a pedometer or device that counts each step a person takes. Although 10,000 steps per day (5.0 miles) are recommended by some to be the benchmark for a healthy lifestyle, individual goals can also be set. Exercise is a vital component to any program, yet **most weight loss occurs through reducing total calories and improving nutrition.**

3. Supplements/Herbs

There are a large number of supplements that are marketed for weight loss. Their effects can be organized into three categories: appetite suppressants, thermogenic agents, and digestion inhibitors. Few weight loss supplements, however, have demonstrated both effectiveness and safety in clinical trials. **The following three supplements are safe and can be recommended to patients attempting weight loss.**

- **Multivitamin.** Food cravings can be triggered by the human body's lack of a certain vitamin or mineral. Taking a daily multivitamin reduces the likelihood of deficiency and may help with cravings.
- **Fiber (appetite suppressant and digestive inhibitor).** The role of dietary fiber in preventing and managing obesity in humans is strongly supported by epidemiological and physiological studies. Additionally, increasing dietary fiber intake is safe and provides many health benefits. This includes reducing risk for development of the following diseases: coronary heart disease, stroke, hypertension, diabetes. Furthermore, increased consumption of dietary fiber improves serum lipid concentrations, lowers blood pressure, improves blood glucose control in diabetes and promotes regularity.⁷ Fiber supplementation in obese individuals can also enhance weight loss. Foods high in fiber typically have a lower glycemic index and increase satiety. Patients should obtain a daily dietary fiber intake of 20-35g through diet or nutritional fiber supplements including psyllium, guar-gum, methyl cellulose or ground flax seed. These can be taken at a dose of one Tbsp. in 8-10 oz of water daily or one tsp. in six to eight oz of water before each meal.



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- **Camellia sinensis--green tea (thermogenic agent).** A systematic review of 15 randomized controlled trials (RCTs) involving 1226 participants found camellia sinensis to be effective for weight reduction and weight maintenance. Proposed mechanism of weight reduction is that it stimulates fat oxidation and energy expenditure. Doses included 270mg-1207mg/day (250mg extract=1 cup).^{8,9} A more recent meta-analysis showed the administration of green tea catechins with or without caffeine is associated with statistically significant reductions in BMI, body weight, and waist circumference; however, the clinical significance of these reductions is modest at best.¹⁰ Use of green tea for weight loss is unlikely to be harmful and appears to have a small benefit in weight loss.

The following supplements are found in commercial weight loss products. Most are lacking efficacy and safety data although some of them are known to be unsafe. **Evidence does not support recommending these supplements to patients.**

SUPPLEMENTS	EFFICACY	SAFETY
Ephedra ^(4,9,11)	Effective	Not safe
Chromium picolinate ^(4,9,11)	Not likely effective	Unknown
Conjugated Linoleic Acid ^(4,9,11)	Not likely effective	Unknown
Chitosan ^(4,9,11)	Not likely effective	Safe
Hoodia ^(4,9,11)	Not likely effective	Unknown
Bitter Orange ^(4,9,11)	Unknown	Not safe
Glucomannan ^(4,9,11)	Unknown	Safe
Garcinia (hydroxycitric acid) ^(4,11)	Unknown	Unknown
L-Carnitine ^(4,11)	Unknown	Safe
Pyruvate ^(4,11)	Unknown	Safe
Ginseng ^(4,11)	Unknown	Unknown
Guar gum ^(4,9,11)	Not effective	Safe
Psyllium ^(4,9,11)	Unknown	Safe
Green tea ^(4,9,11)	Unknown	Safe
St. John's Wort ^(4,11)	Unknown	Unknown

4. Medications

Orlistat is the only approved medication for long-term use in the treatment of obesity. It works by inhibiting fat absorption but can lead to diarrhea when fat is consumed and there are vitamin deficiencies. Sibutramine (*Meridia*) was removed from the market in 2010 out of concern that it increased rates of cardiovascular disease. Unfortunately, drug treatment of obesity, despite short-term benefits, is often associated with rebound weight gain after the cessation of drug use and side effects from the medication.

Occasionally medications that are used to treat other conditions might contribute to weight gain. Although it is not always possible to change therapies, a review of medications for the patient trying to lose weight can be helpful.



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Medications That Might Promote Weight Gain⁴

- antipsychotics (olanzapine, clozapine, risperidone)
- antidepressants (SSRIs, tricyclics, lithium)
- antiepileptics (valproate, gabapentin, carbamazepine)
- diabetes agents (insulin, sulfonylureas)
- steroid hormones (OCPs, corticosteroids)
- miscellaneous (beta blockers, alpha antagonists, antihistamines.)

5. Mind-Body Approaches

- **Counseling.** Research has demonstrated the importance of regular visits with a physician or dietitian when actively pursuing weight loss. Behavioral interventions, including motivational interviewing and cognitive behavioral therapy, should be adjunct therapies for any treatment plan. This is particularly true for any individual in which active mental health issues affect eating activity.^{4,12}

Motivational Interviewing

The AHRQ National Guideline Clearinghouse recommends motivational interviewing to assist patient self-management in chronic disease care. Remember the 5A's (Assess, Advise, Agree, Assist, Arrange) of Motivational Interviewing. The website <http://www.motivationalinterview.org/> contains resources for clinicians.

- **Mindful Eating.** Eating patterns can also contribute significantly to the progression of obesity and must be addressed as part of any weight loss plan. The practice of mindfulness is not only useful for stress reduction but has also shown promise as an adjunct treatment for those desiring weight loss. Through meditation and yoga, patients often develop an increased awareness of their bodies including the feeling of satiety and non-hunger reasons for eating.

Mindful eating is the idea that we can take control of what we put in our bodies and get pleasure from eating the foods we choose. The nature of our society is such that we often let our eating get out of our control for one reason or another. We eat quickly so that we can get back to work; we eat fast food because it is convenient and quick; we eat at restaurants because we are too tired or busy to cook for ourselves, and we eat processed food because it is cheaper and more accessible than fresh produce. Sometimes we eat foods with lower nutritional value because they taste good and give us an immediate burst of energy. Our bodies are hard-wired to like sugar and fat. However, because of the way we eat, we often don't even notice or enjoy the flavors of our food. The concept of mindful eating is a strategy some people use to help with weight loss, but it also can help people take control of what they eat and get more pleasure from the food choices they make. (See our handout *Mindful Eating* for more information.)

Overeater's Anonymous is a 12-step program to address compulsive eating. It addresses physical, emotion and spiritual well-being. More information including how to find a local chapter is at <http://www.oa.org/>.

Internet Resources on Mindful Eating

- The CAMP System: The Joy of Mindful Eating: <http://www.mindfuleating.org/>
- The Center for Mindful Eating: www.tcme.org



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Mindful Eating Exercise

- Approach food with a desire to experience all it has to give you.
- Take the time to be aware of every sensation you get from each piece of food.
- Start with how you feel before you eat--notice how hungry or full you are, and what made you choose the food you are eating.
- Notice how the food looks--the color, textures, and arrangement on your plate and how the food smells.
- Take a single bite and focus on the sensation as it hits your tongue--the temperature, texture, and initial taste.
- Continue to focus on that single bite, chewing carefully and appreciating each sensation as it comes to you.
- When you are finished with that bite, pause to reflect on what emotions or thoughts you have about the food and about what pleasure you got from it.
- Wait to pick up another bite of food until you take that reflective pause.
- Start over with the next bite; continue to be aware of your food in these ways.

Additional Reading on Mindful Eating

- **Women, Food and God** by Geneen Roth. New York: Scribner. (2010)
- **Savor: Mindful Eating, Mindful Life** by Thich Nhat Hanh and Lilian Cheung. New York: HarperOne. (2010)
- **Eating Mindfully: How to End Mindless Eating and Enjoy a Balanced Relationship with Food** by Susan Albers. Oakland, CA: New Harbinger Publications, Inc. (2003)

- **Stress Management.** The stress response is the generalized response to any factor that has the potential to overwhelm the body's compensatory ability to maintain homeostasis. Part of this response involves metabolic changes that increase abdominal adiposity and insulin resistance. Stress may also affect food choice, both through lack of time for food preparation and by increasing preferences for higher-fat, energy-dense foods; thereby promoting positive caloric intake. On the deficit side, stress has been shown to reduce participation in leisure time physical activity; again potentially favoring positive caloric intake.

The epidemiological literature linking stress to weight gain has produced inconsistent results. One recent meta-analysis evaluated 14 cohort studies and found no significant relationship between stress and adiposity (69% of the analyses), but among those with significant effects, more found positive than negative associations (25% of the analyses vs. 6%).¹³

Based on our current understanding of the physiologic impact of stress on the body, a comprehensive lifestyle plan for weight management should include strategies for stress management. See our handouts Breathing Exercise, Using Journaling to Aid Health, and Meditation for Health and Happiness. There are many other approaches that can be incorporated into one's lifestyle such as hobbies, music (either performing or listening), physical activity, spending time in nature or with companion animals, yoga, etc.



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6. Sleep

Both epidemiologic and clinical studies have shown that short sleep duration is consistently associated with development of obesity in children and adults.¹⁴

Consecutive sleep restriction (four hours per night) elevates the sympathetic nervous system and increases evening cortisol production, which has been shown to increase food intake and the accumulation of abdominal fat.¹⁵ Sleep debt is associated with lower levels of leptin secretion.¹⁶ Leptin is secreted from fat cells and transmits energy (fat energy) balance messages to the hypothalamus (brain center for hunger). As leptin levels decrease, the hypothalamus interprets the message that the fat cells need more food, and directs the body to eat more. Sleep restriction also leads to a significant increase in ghrelin, a hunger hormone produced and secreted from the stomach. Higher circulating ghrelin levels stimulate hunger and food intake (once again by the hypothalamus).¹⁷ Sleeping fewer hours also results in more waking hours for food intake and calorie consumption.

Compared to individuals who work during the day, shift workers are at higher risk of a range of metabolic disorders and diseases including obesity. At least some of these complaints may be linked to the quality of the diet and irregular timing of eating, however other factors that affect metabolism are likely to play a part, including psychosocial stress, disrupted circadian rhythms, sleep debt, physical inactivity, and insufficient time for rest and revitalization. There is increasing data showing the chronobiological aspects of food intake, like time of day, meal frequency and regularity, and also circadian desynchronizations in shift work may affect energy metabolism and weight regulation.¹⁸

In light of this information, patients should be advised to: 1) limit shift work when possible, 2) adopt a regular bedtime routine which mimics the natural circadian rhythms of the body and allows for seven to eight hours of sleep, 3) limit night-time eating, 4) eat regular meals, 5) eat breakfast.

Sleep recommendations from the American Academy of Sleep Medicine

- Infants (3 to 11 months): 14 to 15 hours
- Toddlers: 12 to 14 hours
- Preschoolers: 11 to 13 hours
- School-age children: 10 to 11 hours
- Adults: 7-8 hours

7. Other Approaches

- **Acupuncture.** It has been observed that acupuncture depresses the appetite by activating the satiety center in the hypothalamus and increasing sympathetic activity through an increase in the concentration of serotonin in the central nervous system of obese people. Acupuncture can also stimulate the auricular branch of the vagal nerve, which has been shown to increase tone in the smooth muscle of the stomach, thus suppressing appetite.

Although many studies have looked at the relationship between acupuncture and weight loss, most have been of poor quality. Non-standardized treatment protocols, lack of adequate controls and blinding and short duration (<12 weeks) make these studies difficult to interpret.⁴



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- **Hypnosis.** There have been two meta-analyses conducted that look at the effect of hypnosis on weight loss.^{19,20} They concluded that adding hypnosis as an adjuvant to cognitive behavioral therapy increased the amount of weight loss. A RCT conducted by Stradling and colleagues looked at hypnosis for stress reduction or energy-intake reduction and compared these groups to one that used dietary advice alone.²¹ This study demonstrated that all three groups lost two to three percent of their body weight at three months. However, by 18 months, only the group that received hypnosis for stress reduction had a significant weight loss relative to their baseline. This evidence suggests that hypnosis may be a useful treatment for obesity.

See our corresponding [handout for patients](#) on this topic, which includes a sample weight management plan.

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