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Review Article

LIFESTYLE AND OBESITY

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ABSTRACT

The global incidence and prevalence of obesity continue to increase, with the fastest rate of increase in the developing world. Obesity is associated with many chronic diseases including type 2 diabetes, cardiovascular diseases and some cancers etc. Weight loss can reduce the risk of developing these diseases and can be achieved by various means such as, healthy lifestyle practices. This review article explores the relationship between the modern lifestyle and obesity and it includes a focus on obesity and healthy lifestyle practices, factors contributing to obesity, what are the causes and effects of obesity and finally it includes the methods to minimize the obesity.

Keywords: Effects, Healthy Lifestyle, Nutrition, Minimization, Obesity, Reason.

INTRODUCTION

The extent to which obesity is becoming a public health issue is widely publicized in newspapers, journal articles, and policy papers, on a worldwide scale. Young adults are increasingly engaging in erratic food choices, binge drinking and sedentary activities, which when combined bode ill for weight gain and obesity. The United Kingdom (UK) government, together with organizations such as the Food Standards Agency [FSA] and the National Social Marketing Centre [NSMC], are bringing this obesity and health focus to the forefront of their research and public health policies. However, this focus appears to be less concerned with young adults in comparison to other population groups such as children. The research presented here is based on focus group, self-reported lifestyle diary and interview data with young adults aged 19-26 from the North East of England. The role of social marketing to investigate lifestyle behaviors is outlined, alongside discussion of the value of a social marketing approach to tackle public health concerns such as obesity and unhealthy lifestyles in young adults¹.

A focus on obesity:

While obesity is not the only outcome of an unhealthy lifestyle, nor is an unhealthy lifestyle the only cause of obesity, it is generally accepted that obesity (as a non-communicable disease outcome) arises predominantly from excessive unhealthy food and alcohol intakes, and low physical activity levels (Lahti-Koski *et al.*, 2002). Obesity can affect individuals in a number of ways, both directly and

indirectly. Direct effects include physical and mental stress, whilst indirect effects include increasing NHS expenditure on treating obesity and its related diseases (Law *et al.*, 2007). The impact of obesity is widely cited in the literature, including statistics citing obesity as a contributory factor in 9000 premature deaths in England each year (Food Standards Agency, 2006). Furthermore, obesity impacts on individuals' life expectancies, with the life expectancy of obese individuals estimated to be as much as nine years shorter than that of an individual of a healthy weight (Food Standards Agency, 2006). Body Mass Index (BMI) is an indicator of the amount of excess body fat that individuals hold, and is widely used to assess overweight and obesity in individuals (World Health Organization [WHO], 2006). It is calculated by dividing a person's weight in kilograms by the square of an individual's height in metres. A BMI of more than 25 indicates that a person is overweight; with a figure of more than 30 indicating a person is obese (WHO, 2006). Whilst this scale does have its limitations, for example it does not directly measure body fat (Centers for Disease Control and Prevention, 2010), it nevertheless indicates a growing problem of weight issues within England, and whether individual scan successfully regulate their own weight. In summary, England now exhibits one of the highest global levels of obesity, with a 400% increase occurring over the last 25 years (House of Commons Health Committee, 2004). England has also exhibited faster growth rates in levels of obesity when compared to other European countries. For example, there has been more than a two-fold increase in levels of obesity in England over the

lastten years (House of Commons Health Committee, 2004); with 6% and 8% of men and women respectively being classified as obese in 1980, compared to 22.1% and 22.8% in 2002 (House of Commons Health Committee, 2004: 13). More recent evidence from Butland *et al* (2007) shows that in England around 25% of men and women are classified as obese on the Body Mass Index (BMI)scale¹.

Healthy lifestyles:

Healthy lifestyles incorporate basic fundamentals such as appropriate intake levels of healthy food and alcohol, and participating in recommended amounts of physical activity (Cross-Government Obesity Unit, 2010). However, healthy lifestyles also encompass enjoyment gained from lifestyle choices and overall wellbeing; including the absence of distress, satisfaction with daily lives, and “*contentment, satisfaction, or happiness derived from optimal functioning*” (McDowell, 2010: 70).Focusing only on healthy food, alcohol

and physical activity practices as a measure of healthy lifestyles, even minor changes to one’s lifestyle such as increasing fruit and vegetable consumption, can help when seeking to follow a healthy diet (Mintel, 2005). The reasons why individuals either do not follow (even partly) healthy lifestyles, or are unable to make changes to their lifestyle behaviors, is therefore an important area of research. That said, becoming healthier in one’s food, alcohol and physical activity practices, does presume an understanding of what constitutes a healthy lifestyle in these three areas. Certainly, current guidelines are available to the public to inform them of ‘best practice’ behaviors in terms of food, alcohol and physical activity. For example the ‘eat well plate’ from the Food Standards Agency indicates the main food groups that individuals should be consuming on a daily basis (see Figure 1) (Food Standards Agency, 2007)¹.

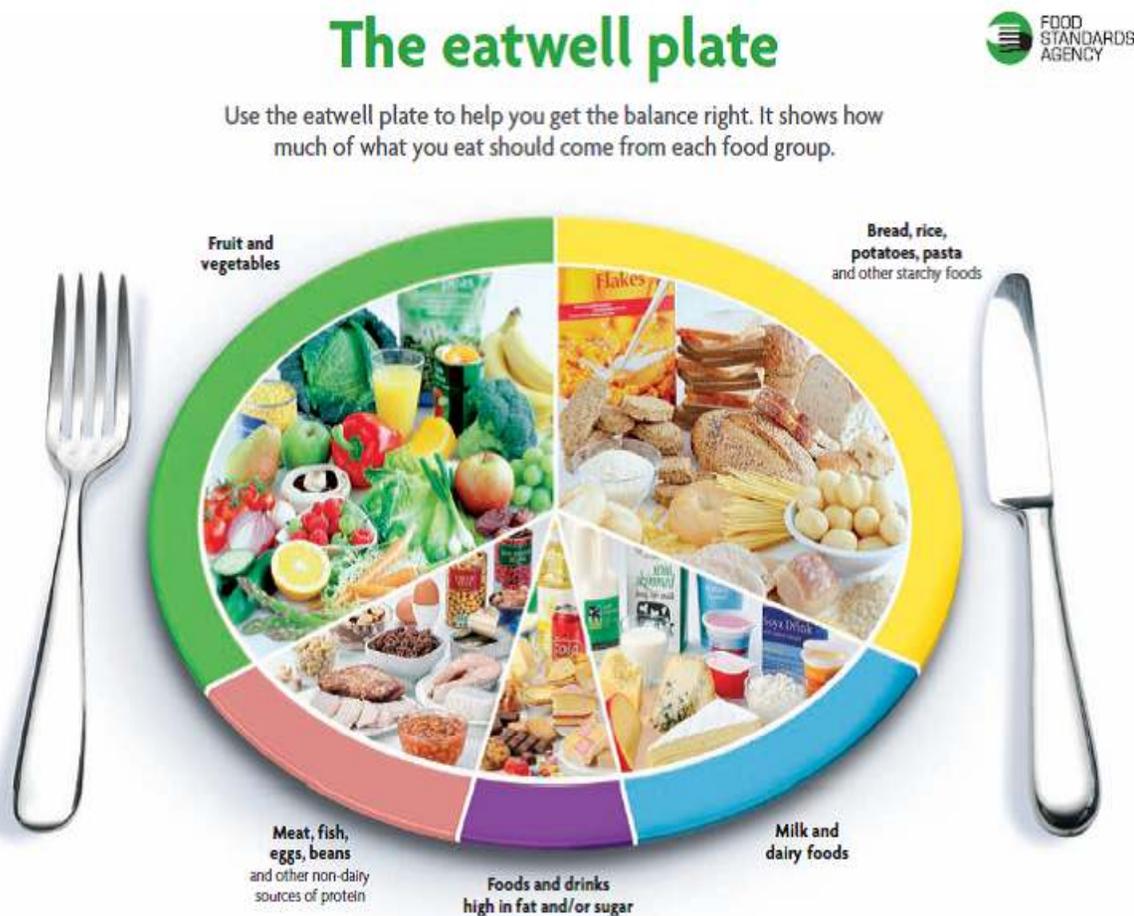


Figure 1: The Food Standards Agency’s ‘eat well plate’

In relation to these requirements, Table 1 presents more specific dietary recommendations, alcohol intake guidelines and physical activity recommendations advocated by the Department of Health¹.

Table 1: Dietary reference values, and alcohol and physical activity guidelines

	Female	Male
Energy (Calories)/day	1940	2550
Total Fat/day	No more than 35% of food energy	No more than 35% of food energy
Saturated Fat/day	No more than 11% of food energy	No more than 11% of food energy
Carbohydrate/day	No more than 50% of food energy	No more than 50% of food energy
Non-milk extrinsic sugars/day	No more than 11% of food energy	No more than 11% of food energy
Intrinsic and milk sugars and starch/day	No more than 39% of food energy	No more than 39% of food energy
Protein (g/day)	45	55.5
Dietary Fibre (g/day)	18	18
Alcohol units (per day)	2-3	3-4
Physical activity (per week)	30mins x 5 sessions (moderate intensity)	30mins x 5 sessions (moderate intensity)

Table 1 presents information that is made available to the general population, from sources such as the Department of Health, the Food Standards Agency, and also in forms such as newspapers, magazines and NHS leaflets. The need to follow these 'healthy lifestyle' principles is paramount for all adults to maintain good health. In particular, young adults would benefit from following this information and leading healthier lifestyles, considering that if healthy behaviors are adopted at younger ages, then they may be continued into adulthood (as would unhealthy behaviors)¹.

Factors Contributing to Overweight and Obesity:

Obesity is a complex condition with biological, genetic, behavioral, social, cultural, and environmental influences (U.S. Department of Health and Human Services [USDHHS], 2001). However, the current high rates of overweight and obesity among children and adults in the U.S. are primarily a result of individual behaviors and environmental factors that lead to excess caloric intake and inadequate amounts of physical activity (USDHHS, 2001; USDHHS, 2003). Examples of such individual behaviors and environmental factors are provided below.

Factors Contributing to Excess Caloric Intake

- Increased consumption of sugar-sweetened beverages (Duffey & Popkin, 2007; Nielsen et al., 2002)
- Increased snacking (Duffey & Popkin, 2011; Jahns et al., 2001; Zizza et al., 2001)
- Larger portion sizes (Piernas & Popkin, 2011; Young & Nestle, 2002; Young & Nestle, 2003)
- Higher calorie-density of foods (Kant & Graubard, 2006)
- More meals consumed or purchased away from home (Kant & Graubard, 2004)
- More exposure to advertising that encourages food consumption and promotes unhealthy foods (French et al., 2001; Powell et al., 2011)
- Value-sizing of less nutritious foods (e.g., value meals at fast food outlets) (French et al., 2001; French, 2005)²

Factors Contributing to Inadequate Amounts of Physical Activity

- Labor-saving technological advances (e.g., computers) (Sallis & Glanz, 2009)

- Increased media use (e.g., television, video games) (French et al., 2001)
- Automobile-oriented communities and reliance on motorized transportation (Sallis & Glanz, 2009)
- Limited access to safe, convenient recreation facilities or walking areas (French et al., 2001)
- Limited opportunities for activity during the workday (French et al., 2001)
- Limited time for daily physical education and recess in schools (Lee et al., 2007)³

What are other factors associated with obesity?

- **Ethnicity:** Ethnicity factors may influence the age of onset and the rapidity of weight gain. African-American women and Hispanic women tend to experience weight gain earlier in life than Caucasians and Asians, and age-adjusted obesity rates are higher in these groups. Non-Hispanic black men and Hispanic men have a higher obesity rate than non-Hispanic white men, but the difference in prevalence is significantly less than in women.
- **Childhood weight:** A person's weight during childhood, the teenage years, and early adulthood may also influence the development of adult obesity. For example,
 - being mildly overweight in the early 20s was linked to a substantial incidence of obesity by age 35;
 - being overweight during older childhood is highly predictive of adult obesity, especially if a parent is also obese;
 - being overweight during the teenage years is even a greater predictor of adult obesity⁴.
- **Hormones:** Women tend to gain weight especially during certain events such as pregnancy, menopause, and in some cases, with the use of oral contraceptives. However, with the availability of the lower-dose estrogen pills, weight gain has not been as great a risk.

Genetics:

Science shows that genetics plays a role in obesity. Genes can directly cause obesity in disorders such as Bardet-Biedl syndrome and Prader-Willi syndrome.

However genes do not always predict future health. Genes and behavior may both be needed for a person to be overweight. In some cases multiple genes may increase one's susceptibility for obesity and require outside factors; such as abundant food supply or little physical activity.

Diseases and Drugs:

Some illnesses may lead to obesity or weight gain. These may include Cushing's disease, and polycystic ovary syndrome. Drugs such as steroids and some antidepressants may also cause weight gain.

A doctor is the best source to tell you whether illnesses, medications, or psychological factors are contributing to weight gain or making weight loss hard⁵.

Causes Overweight and Obesity:

Lack of Energy Balance:

A lack of energy balance most often causes overweight and obesity. Energy balance means that your energy IN equals your energy OUT.

Energy IN is the amount of energy or calories you get from food and drinks. Energy OUT is the amount of energy your body uses for things like breathing, digesting, and being physically active.

To maintain a healthy weight, your energy IN and OUT don't have to balance exactly every day. It's the balance over time that helps you maintain a healthy weight.

- The same amount of energy IN and energy OUT over time = weight stays the same
 - More energy IN than energy OUT over time = weight gain
 - More energy OUT than energy IN over time = weight loss
- Overweight and obesity happen over time when you take in more calories than you use⁶.

Other Causes:

An Inactive Lifestyle:

Many Americans aren't very physically active. One reason for this is that many people spend hours in front of TVs and computers doing work, schoolwork, and leisure activities. In fact, more than 2 hours a day of regular TV viewing time has been linked to overweight and obesity.

Other reasons for not being active include: relying on cars instead of walking, fewer physical demands at work or at home because of modern technology and conveniences, and lack of physical education classes in schools.

People who are inactive are more likely to gain weight because they don't burn the calories that they take in from food and drinks. An inactive lifestyle also raises your risk for coronary heart disease, high blood pressure, diabetes, colon cancer, and other health problems⁷.

Environment:

Our environment doesn't support healthy lifestyle habits; in fact, it encourages obesity. Some reasons include:

- Lack of neighborhood sidewalks and safe places for recreation. Not having area parks, trails, sidewalks, and affordable gyms makes it hard for people to be physically active.
- Work schedules. People often say that they don't have time to be physically active because of long work hours and time spent commuting.

- Oversized food portions. Americans are exposed to huge food portions in restaurants, fast food places, gas stations, movie theaters, supermarkets, and even at home. Some of these meals and snacks can feed two or more people. Eating large portions means too much energy IN. Over time, this will cause weight gain if it isn't balanced with physical activity.
- Lack of access to healthy foods. Some people don't live in neighborhoods that have supermarkets that sell healthy foods, such as fresh fruits and vegetables. Or, for some people, these healthy foods are too costly.
- Food advertising. Americans are surrounded by ads from food companies. Often children are the targets of advertising for high-calorie, high-fat snacks and sugary drinks. The goal of these ads is to sway people to buy these high-calorie foods, and often they do⁸.

Genes and Family History:

Studies of identical twins who have been raised apart show that genes have a strong influence on a person's weight. Overweight and obesity tend to run in families. Your chances of being overweight are greater if one or both of your parents are overweight or obese.

Your genes also may affect the amount of fat you store in your body and where on your body you carry the extra fat. Because families also share food and physical activity habits, a link exists between genes and the environment.

Children adopt the habits of their parents. A child who has overweight parents who eat high-calorie foods and are inactive will likely become overweight too. However, if the family adopts healthy food and physical activity habits, the child's chance of being overweight or obese is reduced⁹.

Health Conditions:

Some hormone problems may cause overweight and obesity, such as underactive thyroid (hypothyroidism), Cushing's syndrome, and polycystic ovarian syndrome (PCOS).

Underactive thyroid is a condition in which the thyroid gland doesn't make enough thyroid hormone. Lack of thyroid hormone will slow down your metabolism and cause weight gain. You'll also feel tired and weak.

Cushing's syndrome is a condition in which the body's adrenal glands make too much of the hormone cortisol. Cushing's syndrome also can develop if a person takes high doses of certain medicines, such as prednisone, for long periods.

People who have Cushing's syndrome gain weight, have upper-body obesity, a rounded face, fat around the neck, and thin arms and legs.

PCOS is a condition that affects about 5–10 percent of women of childbearing age. Women who have PCOS often are obese, have excess hair growth, and have reproductive problems and other health issues. These problems are caused by high levels of hormones called androgens¹⁰.

Medicines:

Certain medicines may cause you to gain weight. These medicines include some corticosteroids, antidepressants, and seizure medicines.

These medicines can slow the rate at which your body burns calories, increase your appetite, or cause your body to hold on to extra water. All of these factors can lead to weight gain.

Emotional Factors:

Some people eat more than usual when they're bored, angry, or stressed. Over time, overeating will lead to weight gain and may cause overweight or obesity.

Smoking:

Some people gain weight when they stop smoking. One reason is that food often tastes and smells better after quitting smoking.

Another reason is because nicotine raises the rate at which your body burns calories, so you burn fewer calories when you stop smoking. However, smoking is a serious health risk, and quitting is more important than possible weight gain¹¹.

Age:

As you get older, you tend to lose muscle, especially if you're less active. Muscle loss can slow down the rate at which your body burns calories. If you don't reduce your calorie intake as you get older, you may gain weight.

Midlife weight gain in women is mainly due to aging and lifestyle, but menopause also plays a role. Many women gain about 5 pounds during menopause and have more fat around the waist than they did before.

Pregnancy:

During pregnancy, women gain weight to support their babies' growth and development. After giving birth, some women find it hard to lose the weight. This may lead to overweight or obesity, especially after a few pregnancies¹².

Lack of Sleep:

Research shows that lack of sleep increases the risk of obesity. For example, one study of teenagers showed that with each hour of sleep lost, the odds of becoming obese went up. Lack of sleep increases the risk of obesity in other age groups as well.

People who sleep fewer hours also seem to prefer eating foods that are higher in calories and carbohydrates, which can lead to overeating, weight gain, and obesity.

Sleep helps maintain a healthy balance of the hormones that make you feel hungry (ghrelin) or full (leptin). When you don't get enough sleep, your level of ghrelin goes up and your level of leptin goes down. This makes you feel hungrier than when you're well-rested.

Sleep also affects how your body reacts to insulin, the hormone that controls your blood glucose (sugar) level. Lack of sleep results in a higher than normal blood sugar level, which may increase your risk for diabetes¹³.

Effects of Obesity:

Obesity is a serious, chronic disease that can negatively effect the health of any number of systems in your body. People who are overweight or obese have a much greater risk of developing everything from heart disease and Type 2 Diabetes to bone and joint disease.

The U.S. Surgeon General has declared that overweight and obesity have reached epidemic proportions in the United States. Currently, about 35 percent of women and 31 percent of men are considered seriously overweight, and 15 percent of children between the ages of six and 19 are overweight. Public health officials say the results of physical inactivity and poor diet are catching up to tobacco as a significant threat to health¹⁴.

Each year obesity-related conditions cost over 150 billion dollars and cause an estimated 300,000 premature deaths in the US. The health effects associated with obesity include, but are not limited to, the following:

- **High blood pressure:** Additional fat tissue in the body needs oxygen and nutrients in order to live, which requires the blood vessels to circulate more blood to the fat tissue. This increases the workload of the heart because it must pump more blood through additional blood vessels. More circulating blood also means more pressure on the artery walls. Higher pressure on the artery walls increases the blood pressure. In addition, extra weight can raise the heart rate and reduce the body's ability to transport blood through the vessels.
- **Diabetes:** Obesity is the major cause of type 2 diabetes. This type of diabetes usually begins in adulthood but, is now actually occurring in children. Obesity can cause resistance to insulin, the hormone that regulates blood sugar. When obesity causes insulin resistance, the blood sugar becomes elevated. Even moderate obesity dramatically increases the risk of diabetes¹⁵.
- **Heart disease:** Atherosclerosis (hardening of the arteries) is present 10 times more often in obese people compared to those who are not obese. Coronary artery disease is also more prevalent because fatty deposits build up in arteries that supply the heart. Narrowed arteries and reduced blood flow to the heart can cause chest pain (angina) or a heart attack. Blood clots can also form in narrowed arteries and cause a stroke.
- **Joint problems, including osteoarthritis:** Obesity can affect the knees and hips because of the stress placed on the joints by extra weight. Joint replacement surgery, while commonly performed on damaged joints, may not be an advisable option for an obese person because the artificial joint has a higher risk of loosening and causing further damage.
- **Sleep apnoea and respiratory problems:** Sleep apnea, which causes people to stop breathing for brief periods, interrupts sleep throughout the night and causes sleepiness during the day. It also causes heavy snoring. Respiratory problems associated with obesity occur when added weight of the chest wall squeezes the lungs and causes restricted breathing. Sleep apnea is also associated with high blood pressure.
- **Cancer:** In women, being overweight contributes to an increased risk for a variety of cancers including breast cancer, colon, gallbladder, and uterus. Men who are overweight have a higher risk of colon cancer and prostate cancers¹⁶.
- **Metabolic syndrome:** The National Cholesterol Education Program has identified metabolic syndrome as a complex risk factor for cardiovascular disease. Metabolic syndrome consists of six major components: abdominal obesity, elevated blood cholesterol, elevated blood pressure, insulin resistance with or without glucose intolerance, elevation of certain blood components that indicate inflammation, and elevation of certain clotting

factors in the blood. In the US, approximately one-third of overweight or obese persons exhibit metabolic syndrome.

- **Psychosocial effects:** In a culture where often the ideal of physical attractiveness is to be overly thin, people who are overweight or obese frequently suffer disadvantages. Overweight and obese persons are often blamed for their condition and may be considered to be lazy or weak-willed. It is not uncommon for overweight or obese conditions to result in persons having lower incomes or having fewer or no romantic relationships. Disapproval of overweight persons expressed by some individuals may progress to bias, discrimination, and even torment¹⁷.

How obesity can be minimized:

It's important to understand that poor dietary and lifestyle choices are at the very root of skyrocketing obesity- and disease rates. But, while the seven "laws of thin people" compiled by Zincenco and Goulding are good ones, CRUCIAL factors for successful long-term weight management and optimal health¹⁸.

Rule #1: Severely Limit Fructose in Your Diet

It is important to understand that your diet is THREE times more important for controlling your weight than your exercise. It's very easy to sabotage any benefit you'd receive from exercise by consuming fructose-laden foods and beverages, including sports drinks, sodas, and fruit juices. If you consume any processed foods or sweetened beverages at all, reading the labels is a necessity. You may be shocked to realize just how much sugar is in the products you consume on a regular basis.

Why is limiting fructose so important for weight management and optimal health?

The reasons are numerous, but if I could make you memorize just one thing that can truly help you improve your health, it would be that *eating fat does not make you fat; eating excessive fructose does!* If you were to view soda with the same disdain most people give to a chunk of lard, you'd be on the right track... Ironically though, the lard would actually be more healthful for you than the soda!

Fructose simultaneously prevents weight loss and promotes fat storage, by:

- Diminishing your satiety (feelings of fullness) as it does not stimulate a rise in leptin, one of the most powerful hunger and fat storage regulators in your body. And, of course, when you're feeling hungry you tend to eat more. Leptin resistance, just like insulin resistance, is also one of the most significant factors underlying a vast array of diseases. For example, it plays a significant if not primary role in the development of heart disease, obesity, diabetes, osteoporosis, autoimmune diseases, reproductive disorders, and perhaps the rate of aging itself.
- Not suppressing ghrelin (also known as "the hunger hormone"). Glucose, on the other hand, does suppress ghrelin, making you feel satiated
- Slowly, if consumed chronically, causing insulin resistance, which hampers weight loss efforts
- Converting directly to fat more readily than any other sugar. It is also known to raise triglycerides significantly¹⁹
- Robbing your body of micronutrients while assimilating itself for use (in the case of foods containing high fructose

corn syrup. Whole fruits on the other hand does not have this particular problem as the fruit contains all these extra nutrients along with the fructose)

With all these simultaneous factors coming into play every time you consume fructose, it's easy to see why a high-fructose diet can propel you into a vicious cycle of over-eating while also being malnourished.

My recommendation is to keep your *total* fructose intake below 25 grams of fructose per day, if you're in good health. Most people will also benefit from limiting your fructose from fruit to 15 grams a day, and, if you need to lose weight, you likely will need to limit your total fructose consumption to 15 grams a day total, including that from fruit.

Rule # 2: Reduce Your Grain Carb Consumption

Excess weight	Depression	Bloating	High blood pressure
Fatigue and frequent sleepiness	Brain fogginess	Low blood sugar	High triglycerides

If you experience any of the following symptoms, chances are very good that the excess carbohydrates in your diet are, in part or whole, to blame: the primary reason for cutting out as many grain carbs as possible is because grains convert into sugar in your body, spiking your insulin levels. Eventually, your body becomes insulin resistant, and that's when the majority of the problems really set in. Obesity is just the beginning. Insulin resistance is in fact one of the hallmarks of nearly every chronic disease known to man, from diabetes, to heart disease, to cancer.

If you want to be optimally healthy and normalize your weight, reducing your carb consumption is essential. This includes:

- Breads and baked goods (ALL grains, including organic ones)
- Rice
- Pasta
- Potatoes

We all need a certain amount of carbohydrates, of course, but, through our addiction to grains, corn, sweets and other starchy and sugary foods, we are consuming far too many. Your body's storage capacity for carbohydrates is quite limited, so here's what happens to all the excess: they are converted, via insulin, into fat and stored in the adipose (fatty) tissue²⁰.

Rule # 3: Increase Your Healthy Fat Consumption

Carbs (sugars) provide your body with energy, but it's fast burning and doesn't satisfy very long. Once you decrease carbs in the form of sugar/fructose and grains, you need to replace them with increased amounts of vegetable carbs and healthy saturated fats. Fats will not only make you feel satiated longer than carbs, but will also provide you with high quality fuel your body needs. And, while eating grains and sugars will raise your insulin levels and promote insulin resistance, eating fat does not. However, the quality of the fats is very important. Loading up on margarine and vegetable oils is asking for trouble as these types of trans fats have been linked to:

Cancer: They interfere with enzymes your body uses to fight cancer	Decreased immune function: They reduce your immune response	Obesity
Diabetes: They interfere with the insulin receptors in your cell membranes	Problems with reproduction: They interfere with enzymes needed to produce sex hormones	Heart disease: Trans fats can cause major clogging of your arteries

At the other end of the spectrum you have saturated fats, which are:

Preferred fuel for your heart	Useful antiviral agents (caprylic acid)	Useful for lowering cholesterol levels (palmitic and stearic acids)
Carriers for important fat-soluble vitamins A, D, E and K, and required for the conversion of carotene to vitamin A, for mineral absorption, and for a host of other biological processes	Effective as an anticaries, antiplaque and anti fungal agents (lauric acid)	Modulators of genetic regulation and prevent cancer (butyric acid)

Sources of healthy fats that you'll want to add to your diet include:

Olives and Olive oil (for cold dishes)	Coconuts, and coconut oil (for all types of cooking and baking)	Butter made from raw grass-fed organic milk
Raw Nuts, such as, almonds or pecans	Organic pastured egg yolks	Avocados
Grass fed meats	Palm oil	Unheated organic nut oils

Another healthful fat you want to be mindful of is animal-based omega-3. Deficiency in this essential fat can cause or contribute to very serious health problems, both mental and physical, and may be a significant underlying factor of up to 96,000 premature deaths each year. For more information about omega-3's and the best sources of this fat, please review this previous article²².

Rule # 4: Avoid All "Diet" Foods, Especially Diet Sodas

Soda, in my opinion, is one of the primary health threats. A single can of Coke contains about 10 teaspoons of sugar. However, the alternative may be even worse. Diet sodas, which typically contain either aspartame or sucralose (Splenda), or a combination of both, can wreak havoc on your health in just as many ways as fructose, but since they are manmade chemicals, the toxic ramifications and side effects can be magnified.

Billions of dollars worth of advertising tells you that diet soda gives you all the pleasure of a sweet beverage or snack without any of the worries associated with excess calories. Too bad it really *is* too good to be true.

In fact, artificial sweeteners have actually been positively linked to weight gain—not weight loss! More recent research has demonstrated that your brain can tell the difference between real and artificial sugar, and not only are artificial sugars less satisfying to your brain at a cellular level, they also increase your craving for the real thing. So artificially sweetened foods and snacks, and diet soda in particular, must be avoided if you don't want to fuel sugar cravings²³.

Rule # 5: Be Sure to Eat PLENTY of Organic Vegetables

One of the best ways to improve your health is to make sure you're eating plenty of fresh, minimally processed high quality vegetables, ideally locally-grown and organic, with a majority

of them consumed raw. One simple way to boost your vegetable intake is to juice them. I highly recommend it to anyone working to restore or improve their health. You can review my comprehensive approach to how to juice on my vegetable juicing page.

And for every vegetable you pack onto your plate or into your glass, you'll have less room for all those other simple carbohydrates that can expand your waistline.

Rule # 6: Optimize Your Exercise Program

A healthy diet and exercise go hand in hand when it comes to creating and maintaining optimal health. If you are struggling with your weight, exercise is clearly one of the key factors that can *synergize the effects* of healthy food choices. But did you know that by making some minor changes in the types of exercises you engage in, you can speed up and dramatically improve the results?

It's true.

The key to boosting weight loss and getting the most out of your exercise routine is to make sure to incorporate high-intensity, short-burst-type exercises, such as my Peak Fitness Program, two to three times per week. Several studies have confirmed that exercising in shorter bursts with rest periods in between burns more fat than exercising continuously for an entire session.

This has been shown to hold true even when the session is not done at an extremely high intensity²⁴.

This may be because these types of exercises are the closest to how the human body was designed to move—like that of a hunter-gatherer. A recent study highlights the benefits of this type of daily movement. The researchers noted that the ideal "exercise prescription" would include the following aspects of normal hunter-gatherer living:

A variety of exercises performed regularly (weight training, cardio, stretching, etc.)	Alternate difficult days with easier days	Exercise outdoors, which helps maintain vitamin D levels and improve mood
Interval training sessions performed once or twice a week	Weight training at least twice a week	Walk and run on softer, uneven terrain, such as grass and dirt, possibly barefoot or using "simpler shoes that do not drastically restrict foot motion or alter natural foot strike dynamics"
Exercise with a friend to receive social stimulation as well	Ample time for rest after physical exertion	Recreational activities, including dancing and sex

I completely agree that variety is yet another key to getting the most benefits from your exercise²⁵. A sound, well-rounded regimen would include:

- High intensity interval exercises
- Conventional aerobics
- Strength training
- Core exercises like Pilates

CONCLUSION

Overall, the study reinforces previous findings about the critical importance of adhering to healthy habits. Future studies might focus on effective ways to increase adherence to healthy habits and the cost-effectiveness of such efforts.

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