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### **Introduction**

Over the past several years, there has been a multitude of articles, studies, reports and commentaries concerning how much Americans weigh. Many of these reports have been very well researched and written. Unfortunately, some of the reports have not been as well researched, and have taken an alarmist, almost hysterical, tone as they have searched for an audience to capture.

In October, 2002, the American Dietetic Association released the results of its nationwide public opinion poll (“*Nutrition and You, Trends 2002*”). The ADA survey showed that American consumers reported that they overwhelmingly relied upon television and magazines for their nutrition information. While there are many extremely responsible researchers, writers and journalists who document facts and provide reliable information, the very nature of our open society means that not all information is factual or credible. It is often very difficult to differentiate between fact and unsubstantiated opinion.

Overweight and obesity are very serious and very important issues. They need to be discussed in a dispassionate and objective manner so that individuals, employers, businesses, educators and public health experts can formulate sound strategies to assist Americans in balancing their lives. The members of the Colorado Beverage Association are as interested and concerned about the health of our families, our employees, and our customers as is any organization, individual or interest group in America.

Because there is a large body of misinformation available to the public, we have developed a series of topic papers to discuss these issues. It is our belief that informed Americans make good choices, and it is our goal to provide as objective and factual information as is possible. We are concerned that misinformation is very dangerous, and we encourage individuals and

organizations to conduct their own research and reach their own conclusions. We have gone to great lengths to be as complete as possible in these topic papers, and to provide the reader with a fair and unbiased body of information that can be independently verified.

### **What Do the Terms Overweight and Obese Mean?**

All discussions of substance should begin with a clear understanding of what the issues are, and there should be a common understanding of the terms and words used to advance that discussion. By providing a common understanding, communication can be more useful. Common understanding neutralizes the use of hyperbole, exaggeration and superlatives and enhances useful dialogue based on fact.

The terms “overweight” and “obese” refer to the physical condition of the human body. They are measures that are derived by comparing body weight with height. All weight-height indexes begin with some base or standard that establishes what is a desirable relationship between body weight and body height. Without a base to compare to, the terms “overweight”, “underweight” and “obese” have no meaningful context.

### **The Body Mass Index (BMI)**

Over the years, there have been several indexes (such as the ones used by life insurance companies such as Metropolitan Life) that measured the relationship of body weight to body height. The current index that is in widespread use is called the “Body Mass Index” or “BMI” for short. It is a mathematical ratio between body weight and height. The person’s body weight is expressed in kilograms. The person’s body height is expressed in meters.

The body weight (expressed in kilograms) is divided by the square of the body height (expressed in meters). As a formula, it is written as  $\text{weight}/(\text{height})^2$ . The formula sounds more complicated and difficult than it is. Fortunately, there are readily available tables that have been prepared that can be used so that it is not necessary to perform the actual arithmetic. Several of the tables also provide a conversion from metric units to standard pounds and inches. A particularly good and easy to use chart can be found online at <http://www.consumer.gov/weightloss/bmi.htm> . This reference contains two charts and a BMI calculator that allows you to enter your own specific height and weight. The online calculator will apply the formula and provide you with your specific and individual BMI.

Another good source for the BMI calculations can be found on the website of the National Heart, Lung and Blood Institute. To access this resource, please use the following link: <http://www.nhlbisupport.com/bmi/>

### **Beyond BMI - Additional Important Measurements**

There are three other measurements that are seldom discussed but which are very important. The BMI has proved to be a better measure of total body fat than any of its predecessor measures of body weight and height. However, the BMI that is derived from the formula does not tell us the whole story. For example, an athlete who is in superb physical condition may score very high on the BMI but have very little body fat. The weight difference comes from the muscle mass of the conditioned athlete.

A high BMI could also be an indication that the person’s body retains too much water. Excess water retention can be a health problem, but it is not necessarily correct to consider the person

obese. Individuals who experience water retention should consult a health care professional for further evaluation.

Although it is not often mentioned, the BMI can underestimate body fat among some aged persons who have lost muscle mass due to their advancing years. Relying on the BMI as the sole indicator for senior citizens could lead to the wrong assumption that they are properly weighted and are receiving the proper foods and nutrition for their age and health circumstances.

The other measurements look at where on the body the fat is carried. The first of these measurements is waist circumference. Waist circumference is a good indicator of the presence of excess fat in the abdomen. Physicians know that when the excess fat in the abdomen is out of proportion to total body fat that the person is at an increased risk of developing health problems that have been strongly associated with obesity. As a general rule, men who have a waist circumference of greater than 40 inches and women who have a waist circumference of greater than 35 inches are considered at increased risk for obesity related health problems. It should be noted that these standards are for the general adult population and they may not be applicable to individuals who are less than 5 feet in height or have a BMI of 35 or greater.

It is also important to understand that the BMI and these other measurements are for the general adult population. There are similar indexes for children, and these indexes should be used rather than the adult measurements and indexes.

The second of these important additional measurements is the “waist-to-hip” ratio. This ratio measures the relation of the person’s waist circumference to hip circumference. As with the BMI, it is an arithmetic formula. The formula is used by dividing the waist circumference by the hip circumference. Physicians know that a person who carries proportionately more fat around his or her abdomen is more at risk than a person who carries excess weight around his or her hips or thighs. For both men and women, a waist-to-hip ratio which is 1.0 or greater is considered an indicator of increased health risk. A desirable ratio for men is .9 or less, and for women it is .8 or less.

But do not misunderstand. Whereas the location where body fat is stored may be a good indication of increased risk, overall obesity as described by the BMI is still the best indicator of risk for most individuals. The user of the BMI should not be distracted by the other measurements, and should seek to secure a desirable BMI. If the individual has a BMI which indicates that he or she is overweight or obese, the additional measurements should be used in order to gain a better perspective on the overall condition. It should go without saying that anyone who has a high BMI should be consulting his or her physician for a proper diagnosis and treatment plan.

### **Defining Overweight and Obesity**

By using the BMI with its matrix of desirable ratios of weight and height, the terms overweight and obese make more sense. Generally, a BMI of 18.5 to 24.9 is considered “normal” or desirable.

“Overweight”, then, is a BMI which is greater than 25 but lower than 29.9. Remember that some well conditioned athletes may have BMI’s which indicate that they are “overweight” but the presence of lean muscle mass clearly indicates that such athletes are not fat.

“Obese”, then, refers to a BMI which is higher than that which describes overweight. Obesity is the presence of an excessive amount of body fat in relation to the lean muscle of the body. Obesity is considered to exist when the BMI exceeds 30. However, as obesity and the BMI increase, the importance of the other measurements of waist circumference and the waist-to-hip ratio become increasingly significant as indicators of health risk.

The chart that is available through the use of the forgoing links shows the heightened risk as the brackets associated with the stages of obesity increase. The following table developed by the National Heart, Lung and Blood Institute is a very good comparison of these risks:

<b>Overweight and Obesity (By BMI), Waist Circumference And Risk of Associated Diseases</b>				
<b>Classification</b>	<b>BMI</b>	<b>Obesity Class</b>	<b>Risk Related To Normal Weight &amp; Waist Circumference</b>	
			<b>Men &lt; 40 Inches Women &lt; 35 Inches</b>	<b>Men &gt; 40 Inches Women &gt; 35 Inches</b>
Underweight	<18.5	N/A	N/A	N/A
Normal	18.5 - 24.9	N/A	N/A	N/A
Overweight	25.0 - 29.9	Overweight	Increased	High
Obesity	30.0 - 34.9	Class I	High	Very High
Obesity	35.0 - 39.9	Class II	Very High	Very High
Extreme Obesity	> 40	Class III	Extremely High	Extremely High

A word of caution is warranted. Weight and the BMI are not in and of themselves indicators of health status. These measurements are criteria by which the individual is thought to be at increased risk for obesity related illnesses and ailments. A person with a perfectly desirable BMI may have health problems (such as cancer) and be lulled into assuming that she or he is healthy. There is no substitute for regular visits to the physician with the appropriate screening, monitoring and testing that is necessary to determine one’s health.

### **Body Fat and Weight Are Not the Same Things**

It should be clear from the forgoing discussion that the BMI is a valuable tool in the analysis of one’s health status. While it has limitations, it is useful when it is used for what it was intended. However, some people conclude that weight and body fat are synonymous. They are not, and the distinction is important.

In a pure laboratory setting under controlled conditions, the optimum method of measuring body fat is to weigh the person under water. Obviously, the use of this method is generally limited to research facilities. More common methods exist, and one of the most common of those is the “skin fold” test.

The skin fold test attempts to determine the amount of subcutaneous fat (that which is just below the skin) at various places on the body. The degree to which this test is successful is dependent upon the skill and experience of the person giving the exam.

Attempting to refine the information given to us by the BMI is why the skin fold test, the waist circumference measurements, the waist-to-hips measurement and other tests have been developed.

### **What Is A Healthy Weight?**

A healthy weight is one at which the individual feels comfortable, does not have weight related diseases or ailments and is not likely to develop such health problems in the future. While this definition may seem a little vague and not very helpful, it avoids using terms such as “normal” or “ideal”. It is a better definition because avoiding such labels will also avoid making wrong assumptions such as overweight or obese people are unhealthy while those who are at a desirable weight are healthy.

Stereotyping of people by physical attributes can be very harmful. The continuing use of high-fashion models who are significantly underweight and glorifying their bodies as “desirable” establishes unrealistic images and expectations in many young people who seek to emulate them. It is becoming increasingly evident that such idealizations can lead to various eating disorders that jeopardize health.