

Combating Obesity - A world-wide epidemic

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The World Confederation for Physical Therapy, an international organisation representing over 270,000 physical therapists/physiotherapists from Member Organisations in 101 countries, celebrates International Physical Therapy Day on September 8th.

Physical therapists, as exercise experts, join the worldwide concern for the ever-growing epidemic of obesity, which is probably one of the greatest challenges to our health systems around the world in this 21st century.

DEFINITION

While obesity is defined simply as excess or abnormal body fat accumulation for a given height and gender to the extent that health may be impaired (WHO), it is a very multifaceted disorder. Obesity is an extremely complex disorder affecting male and female adults, adolescents, and children. We know that obesity tends to run in families and that obese children often tend to become obese adults. The majority of obesity is the result of our population's faulty diets and their lack of exercise and physical activity. While genetic factors are known to exist in some obesity, the majority of obesity results from that imbalance between the calories taken in and the calories expended during any given period of time.

DIAGNOSIS

One of the ways that the diagnosis of obesity is made is by calculating what is called the body mass index, or BMI. This calculation, which can be determined through the use of the many charts available on the internet (<http://www.cdc.gov/nccdphp/dnpa/bmi> or <http://www.nhlbisupport.com/bmi>) or can easily be done using the formulas that follow:

- weight (in pounds) divided by (height in inches x height in inches) x 704.5, or
- weight (in kilograms) divided by (height in meters x height in meters)

A BMI of 25 or greater is considered to be overweight, whereas a BMI of 30 or greater is defined as obesity.

Other tests are also used to diagnose obesity, since the BMI may be affected by one's muscular composition and body frame. These tests include measures of intra-abdominal fat, waist circumference, and waist-to-hip ratio. The two latter measures are increasingly used as very practical ways to determine obesity. In men a waist circumference of over 40 inches (102cm) is considered obese and in women over 35 inches (85 cm) is obese. In men a healthy waist-to-hip ratio is 1.0 or lower and in women 0.8 or lower. Ratios above these numbers are associated with obesity. (Note: the waist-to-hip ratio is obtained by measuring your waist at the smaller section of the waist in a relaxed standing position breathing normally and your hips at the widest part of the buttocks and then by dividing the measurement of the waist by the measurement of the hips.) The measurement of waist-to-hip ratio has led to the classification of the two distinct ways in which fat is stored in the body, around the middle (apple shape) and around the hips (pear shape).

PREVALENCE

The prevalence of obesity has been rising at alarming rates around the world in both developing and industrialised nations. Rates of obesity have doubled and tripled in the last decade making it reach epidemic proportions globally. Around the world, approximately 350 million people are obese (BMI ≥ 30.0) and approximately 1.6 billion adults and at least 20 million children under 5 years of age are overweight (BMI ≥ 25), a particularly alarming statistic. Thus, obesity is one of the top threats to health in our societies. It occurs in low-, middle-, and high-income countries. And interestingly, in many developing countries in the world, one finds the co-existence of obesity and under-nutrition. Along with the rise in incidence of obesity is the concomitant rise in health costs, which have to include not only the costs for treatment of obesity and its related disorders, but also the costs of loss of economic activity and the personal losses associated both with the obesity and its health problems.

COMPLICATIONS

Obesity in and of itself is a major health problem, but on top of that are the serious diseases for which obesity is a major risk factor. These wide ranging potential complications of obesity include atherosclerosis and cardiac disease, diabetes, high blood pressure, stroke, osteoarthritis, dyslipidemia, various forms of cancer (colon, kidney, endometrial, and postmenopausal breast cancer), and sleep apnoea. Worldwide, approximately 2.5 million deaths annually are attributed to overweight/obesity.

Obese individuals tend to engage in less exercise and physical activity and may be aerobically deconditioned. Consequently their heart and lungs have to work harder with increased activity. The sequelae of obesity becomes a viscous cycle so that these individuals find themselves with increased shortness of breath with activity leading to decreased activity, increased eating, less activity, decreased function, and increased perception of exertion that results in yet even more overall decreased activity levels.

What is known is that avoiding obesity and adopting healthy habits and practices will be essential in lowering the rates of death from these serious complications of obesity disorders around the world.

INTERVENTIONS

The World Health Organization (WHO) has long proclaimed that the “diseases of civilization” of which obesity is one are ‘largely’ preventable. The two important interventions both for prevention and management of obesity include optimal nutrition/weight control and increased exercise and physical activity. For overweight individuals (BMI ≥ 25) with an abdominal girth above 35 inches/85 centimetres (women) and 40 inches/102 centimetres (men), a weight loss of 5-10% of their body weight is recommended, and a weight loss of more than 10% may produce even more long-term health benefits.

Nutrition: When we look at the unhealthy changes that have occurred in dietary behaviour around the world, we find increased intake of fatty foods, sugar, snacks, pre-packaged meals, and fast foods and reduced intake of fruits and vegetables. To combat obesity, nation-wide educational programs, government-supported health promotion programs, provision of healthy school lunches, easier access to fresh fruits and vegetables particularly in poorer rural areas, total labelling of the contents of foods in packages and cans, structured meal plans, decreased use of trans-fatty acids, and decreased use of processed foods are only some of the many initiatives that will need to be taken to begin to reverse this epidemic obesity trend.

Exercise and Physical Activity: Exercise and physical activity have also undergone unhealthy changes in societies around the world so that they all too often have become a leisure activity rather than a requisite for weight control. Too much time watching television, using cars to go a distance of a couple of miles/kilometres, and using (bus) transportation rather than walking or biking to schools and markets have all contributed to increasing obesity in our populations.

Physical activity is any movement of the body that requires the use of our skeletal muscles, which in turn requires energy expenditure. This energy expenditure is basic to weight control. Aerobic exercise prescriptions must go hand in hand with reduced food intake, and the progression of activity should be gradual and tailored individually to each person. Weight loss will usually occur with moderate intensity exercise (55-69% of maximal heart rate) for about 4.5 hours per week that results in an energy expenditure of at least 2000 calories per week in combination with reduced energy intake. Exercises may be intermittent (eg, several shorter 10-15 minute sessions adding up to a total of 30-40 minutes per day) or continuous (one 30-40 steady session). Aerobic exercise may be prescribed using multiple different types of exercise, including walking, jogging, treadmill, elliptical, glider, bicycling (stationary, moveable, upright, recumbent, arm cycling/upper extremity ergometer), rope jumping, stairs/steppers/climbers, cross country skiing/skiers, rowing machine, and aerobic classes (dance, step, water). It is important that the physical therapist/physiotherapist find the most appropriate type of activity for the individual, who is overweight or obese, so that they will not only enjoy the activity but also have a greater chance of staying with it. The mode may also be varied in what might be considered as a circuit program (15 minutes of bicycling on a recumbent bicycle, 15 minutes of treadmill walking, and 15 minutes of rowing).

Resistance/strength training exercises are also important in the management of obesity and will result not only in increased muscle strength, but also increased fat-free mass and reduced body fat. Strength training has been shown to decrease total and intra-abdominal fat. A decrease in trunk obesity may in

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turn lead to improved breathing and posture. Strength/resistance training may also use many different modes to achieve the end results. These may include free weights, elastic bands and tubes, machines, body weight, weighted bars, medicine balls, pulleys, and body blade. Again the important aspect is the physical therapist/physiotherapist finding the right mode for the individual. The progression for strength training for individuals, who are overweight or obese, should be gradual with lower intensity for the first 2 weeks to permit adaptation with minimal risk for injury. The duration will be increased initially and then the intensity, and gradually one would like the intensity to reach 60-80% of an individual's capabilities. Progression will be based on how well the individual is responding to the strength training exercises, any medical/health limitations, and the individual's goals.

Combining aerobic conditioning and strength/resistance training can provide a fun interesting way to get the benefits of both exercise types. For example, a well-rounded 12-week aquatic exercise program 3 days/week (20 minutes of warm-up/stretching, 10 minutes of resistance exercises, 30 minutes of aerobic conditioning exercises of walking and dancing, and 10 minutes of cool-down exercise) led to significant improvements in body fat in adult women. Thus, there are numerous types of exercise prescriptions that the physical therapist may help to establish in an increasing effort to battle the obesity epidemic. The sooner all of our nations begin to adopt initiatives and programs to combat the ever-increasing obesity, the less will be the burdens on health systems delivery around the world.

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