

Health and Injury Risks OBESITY	PHOENIX FIRE DEPARTMENT HEALTH & FITNESS M. P. 1-A02.07 01/1998-N Page 1 of 3
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INTRODUCTION

Deposits of fat on the body serve to protect internal organs and the bones from trauma, such as falls or direct blows. These deposits also serve as stores of concentrated energy that can be called upon in times of need, as well as stores for the fat-soluble vitamins. However, it is only when these deposits are kept within acceptable limits that they serve a beneficial function. Outside these boundaries, fat deposits begin to have a detrimental effect on the health and safety of the body. The major complications of obesity are;

- Decreased ability to dissipate heat.
- Decreased fitness and of particular importance cardiovascular fitness.
- Increased muscle and joint strain.

OBESITY

Will Rogers - *"There are only two things that cause people to become overweight--chewing and swallowing; and, the best exercise for losing weight is pushing yourself away from the table."*

Obesity has become a major concern in society today because of the recognition of its relationship to disease and general decrease in the quality of life. This concern has also spawned a billion dollar business that ranges from diet books to fat-burning solar belts. Obesity and the control of obesity have become increasingly complex and confused as waves of unsubstantiated claims and statements surface in attempts to sell a product or service. This manual has attempted to sort through these claims and reflects only that data that can be substantiated by controlled scientific research. There appear to be three basic theories about how obesity comes about, physiological, psychological and environmental.

Psychological

The psychological theory is based on the concept that food is often related to pleasure or satisfaction, replacing feelings of inadequacy, or as a method of relieving stress. It's not uncommon to see an individual who is nervous about a situation start eating in an attempt to deal with the stress. Boredom is also commonly dealt with by eating.

Environmental

The environmental theory is based on the concept that modern society greatly influences obesity. For example, in society today because of TV and the computer physical activity has decreased dramatically. The constant bombardment of advertisement aimed at making the masses hungry has also contributed to the problem.

The fire station is the immediate environment of the firefighter. Unfortunately, it historically has not been conducive to a good diet. Nutritious foods like fruits and vegetables are conspicuously absent and often replaced with junk foods. The meals are often planned with the concept that quantity rather than quality that makes for a good meal.

Health and Injury Risks OBESITY	PHOENIX FIRE DEPARTMENT HEALTH & FITNESS M. P. 1-A02.07 01/1998-N Page 2 of 3
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Physiological

A common belief among obese people is that their obesity is a result of problems with glands in the body that control metabolism. Research reveals, however, that very few obese individuals show any clinical or laboratory evidence of difficulty with the glands. Therefore, no further discussion will be provided on this topic other than the recognition that it does exist and accounts for an extremely small percentage of obesity cases.

The importance of heredity at this point is unclear. Studies have shown that children of obese parents tend to have a higher risk of obesity, but are unable to determine if genetics is responsible. It is thought that environmental factors in the home contribute to eating and thought patterns about food that lead to obesity.

The appetite is thought to be controlled, to some extent, by a center in the brain. If injury or disease affects this center, dramatic shifts in eating patterns can develop ranging from starvation to obesity. This theory is based primarily on animal research and no conclusive human research has been completed.

PROCESS OF WEIGHT GAIN

It is felt that to some extent all theories of obesity could apply to almost any case, with the difference being the percentage to which they contributed. However, many experts in the field feel that the single most important factor in obesity is not overeating, but decreased physical activity. To understand why requires looking at the simple process of weight gain.

- If energy output is equal to food intake weight remains constant.
- If energy output is greater than food intake weight is lost.
- If energy output is less than food intake weight is gained.

It is the recommendation of many experts that not only should physical activity be a part of a sound weight-loss program, but the emphasis of the program should be on increasing physical activity.

An increase in activity levels, despite popular belief, reduces the desire to eat in proportion to the energy expended. Therefore, you exercise more, expend more energy, and eat less. Vigorous physical activity will also increase the amount of energy expended throughout the rest of the day. Studies have shown that following vigorous exercise, the basal metabolism or the number of calories the body burns up at rest, is increased up to 28%, for as long as four to six hours AFTER exercise has ceased. Physical activity also promotes a better self image that can increase the desire to eat a better diet.

Health and Injury Risks OBESITY	PHOENIX FIRE DEPARTMENT HEALTH & FITNESS M. P. 1-A02.07 01/1998-N Page 3 of 3
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OBESITY AND FIREFIGHTING

One study indicated that the percentage of fat that a firefighter carried was one of the most important factors in determining his or her ability to perform assigned job-related tasks. This finding relates back to the relationship of body fat to physical performance. A higher percentage of body fat lowers the capacity for physical performance. Because of the high intensity levels at which the firefighter must work, any factor that negatively affects the physical efficiency of the body, no matter how insignificant it may appear on the surface, usually has far-reaching implications on actual performance.

MEASUREMENT

The percentage of body fat that is considered acceptable ranges from 15% to 19%, for men and 19% to 24% for women. Determining exact percentages requires specialized equipment. Fortunately, there are two methods to monitor body fat that requires no specialized equipment and are still accurate enough to be useful.

The first method is known as the pinch-an-inch test. It involves taking the thumb and index finger and "pinching" several different sites on the body. If more than an inch of skin and underlying fat can be pinched, the percentage of body fat is considered too high. The second method simply involves standing in front of a mirror, opening ones' eyes and being honest about what is seen.