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# EXERCISE AND BODY COMPOSITION

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**ABSTRACT**:

*The human body is composed of three major structural components; muscle, fat and bone. The total amount of fat exists in two places or depots: - the first fat depot is called Essential fat. This fat is located in the marrow of bones as well as in the heart, in the lungs, in the liver, in the spleen, in the kidney, in the intestine, in the muscle, in the lipid-rich tissues, and throughout the nervous system. The essential fat is required for normal physiological functioning. The second major fat depot comprises of fat that accumulates in Adipose tissue. This is also known as Nutritional Reserve that includes the fatty tissue. It provides the various internal organs from trauma as well as the large subcutaneous fat value deposited under the skin surface. It is well established that an individual gains weight each year up to few decades of life. Of course the trend in gaining body fat for men and women is different for different ages. Like 50-60 years there is a reduction in total body weight despite increasing body fat. Also lean body weight does tend to decrease with age. This is largely due to the aging bones becoming demineralised and porous. Consequently the quantity of muscle mass is reduced. Osteoporosis is a major problem in aging. This condition results in a loss of bone mass, increased bone porosity and a decrease in the thickness of bone cortex. For the people over 60 years of age, these changes in aging bone can reduce the bone mass from 30 to 50%. Whether or not regular physical activity can stop or decline these changes in body density is unknown. However, optimal body composition levels can be maintained during old-age with an average/ modest level of exercise or physical activity and conscious efforts of diet control. Such as in a 10 weeks programme with three days a week for men in the age group from 17 to 59 years, the results show that the body composition changes did occur but they are relatively small. The pre-test percent body fat was18.9% and post-test percent body fat was 17.8% which represented a fat loss of 1.07 kg (Wilmore 1970). In a walking running programme for 20 weeks with different duration of workouts of 15, 30 and 45 minutes per workouts with three different experiments groups, the results of the experimental groups were compared with control group after 20 weeks of training period the three exercise groups significantly decreased their body fat, skin folds, and waist girth, body weight was also significantly lowered with exercise except for the 15 minute group, whose weight remained stable. When comparisons were made between the three groups, the 45- minute training group lost a greater percentage of body fat than other two exercise groups. This was attributed to the greater caloric-burning effect of the longer exercise period.*

**KEYWORDS**: *Exercise, Physical activity, Training, Body composition, Diet control*

## INTRODUCTION

Body composition refers to the ratio of a person's body's fat to lean mass. To evaluate it, experts look at person's total body fat percentage. Body composition is body's ratio of fat to lean mass, including muscle, bones, and organs. Body composition is evaluated using body fat percentage. A fit woman's body fat generally falls between 21% and 24%. A fit man's body fat generally falls between 14% and 17%. There are many ways to measure body fat percentage. Many health clubs and doctor's office can perform simple tests to get the number. There are also body fat scales that measure percentage. According to experts, a person's body fat may tend to change due to his/her dietary patterns, age, genes, regular physical activities and other primary factors. Below is a sample of the recommended body fat percent within different age groups: ages ranging 20-29 years for women - Excellent: 14 to 16.5%, Good: 16.6 to 19.4%, Fair: 19.5 to 22.7 %, Poor: Between 22.8 to 27.1%, dangerously low: Under 14%, dangerously high: Over 27.2%. Men age ranging from 20 to 29 Excellent: 8 to 10.5%, Good: 10.6 to 14.8%, Fair: 14.9 to 18.6 %, Poor: Between 18.7 and 23.1%, dangerously low: Under 8%, dangerously high: Over 23.2%. Having a high percentage of body fat can be harmful and lead to possible health risks. So, a person needs to maintain his/ her body fat to acceptable levels, depending on his/her age. As mentioned earlier, person's diet and exercise plan has a high influence on his/her body composition. Therefore, person cannot work on one and leave the other out and still expect to transform his/her body shape. It does not work like that. The two works simultaneously, therefore, person should go hand in hand. Let us evaluate some of the best body composition exercises a person can do at home. He/she can choose to do all or combine 3 exercises for body composition. The best way to figure out the best combination is to seek expertise on the same. So, person should seek professional help before a person start these workouts. All of these components and the balance between them are important.

## OBSERVATION:

There are various physical activities and exercises which lead to modification of the body composition of the individual, who participates in it and it is corroborated by the research findings repeatedly. It is seen that in a 10 weeks programme with three days a week for men in the age group from 17 to 59 years, the results show that the body composition changes did occur but they are relatively small. The pre-test percent body fat was 18.9% and post-test percent body fat was 17.8% which represented a fat loss of 1.07 kg (Wilmore 1970). In a walking running programme for 20 weeks with different duration of workouts of 15, 30 and 45 minutes per workouts with three different experiments groups, the results of the experimental groups were compared with control group after 20 weeks of training period the three exercise groups significantly decreased their body fat, skin folds, and waist girth, body weight was also significantly lowered with exercise except for the 15 minute group, whose weight remained stable. When comparisons were made between the three groups, the 45-minute training group lost a greater percentage of body fat than other two exercise groups. This was attributed to the greater caloric-burning effect of the longer exercise period. In a 2 year calisthenics and jogging programme on the body composition of seven middle aged men i.e. 40-60 years, the experimental subjects participated in a supervised programme 3 days a week and six men were kept as a control group. Initially, the experimental group walked and jogged for 10 minutes, thereafter they jogged for 30-35 minutes. The average distance covered increased from 2.4 to 12.1 km per week, and the total mileage run per subject after 2 years of training averaged 1188 km (Carter and Phillips 1966). When compared with control subjects, the experimental group after the first year significantly reduced their body weight (5.7%), sum of skin folds(27.4%) and girth measurements (3.1%). thereafter, there was little further change in body weight and body composition. when aerobic capacity was assessed by a maximal oxygen uptake test the exercise group showed a 25% improvement. the above finding show that calisthenics and jogging can significantly alter the physique of previously sedentary 40-60 years-old men. The training effects of walking, running or, bicycling on body composition, each mode of

exercise is found to be effective in changing body weight, body fat, skin fold thickness and girths. After going through many research findings, related to body composition, and exercise, it appears that at least 3 days of training per week are required to bring about changes in body composition through exercise. There is also indication that more frequent training may even be more effective. More than likely, this effect is probably the direct result of the added caloric stress provided by the extra training. In addition the caloric burning of each exercise session should reach a threshold of about 300 kcal (Zuti and Golding 1976). This is generally achieved with 20-30 minutes of moderate to vigorous running, swimming or bicycling or walking programme of 40-60 minutes duration.

## DISCUSSION:

Regular vigorous exercises produce physiological improvements regardless of age. Of course the degree of change depends on several factors, including initial fitness level, age and specific type of physical activity. With regard to the age factor, it appears that aged individuals are nor able to improve their strength and endurance capacity in the same extent as younger ones. It may be due to the result of general decline in neuromuscular function as well as of an age related impairment in the cell's capability for protein synthesis and chemical regulation. However, appreciable improvement can be expected from regular vigorous physical training exercise if undertaken in the later years of life. When it comes to exercise there are a lot of different types out there, each one impacting the body in different ways. Aerobic exercise focuses on cardiac training and includes exercises such as running, swimming, or biking. Vibration exercise has received attention recently because of its ease of use. The thinking behind vibration exercise is that it could stimulate the muscle fibers without requiring people to travel to a gym, stress their bones, or even break a sweat. Even though it is relatively new, there is some objective data on vibration exercise. One study divided postmenopausal women into three groups where they participated in resistance training (RT), vibration training with resistance training, or no training at all. They measured their body composition prior to starting the eight-month study and after the study were completed. Some of the findings included: both the RT group and the RT group with vibration increased their lean tissue mass The control group did not show any increase in lean tissue and gained body fat only the combination of vibration training with RT showed a drop in the percent body fat. A study published in the *Journal of Sports Medicine and Fitness* placed male athletes in a training program that incorporated vibration training. One group had lower-limb strength training with vibration training and the other group had lower-limb strength training without vibration training. During the course of the study, the researchers found that the athletes in the vibration training group improved their leg extension strength by 5 percent. In addition, balancing ability and peak vertical lift, a jumping test improved in the vibration training group after 8 weeks. Even though vibration training is still in its infancy, it may hold some promise improving body composition. The search for the best body composition exercises is now higher than ever. It is because most people have a quest of transforming their current body types into their desired body shapes. A person can transform his/her body at home by doing body composition exercises such as squats, lunges, push-ups, burpees, and planks. However, before a person start these exercises, he/she will remember to talk to a licensed trainer, doctor, and dietitian. They will help in shedding more light on how the person can incorporate these workouts into his/her schedule. All forms of exercise burn calories. But body composition exercises combine activities to burn fat and activities to build muscle. That way, person replaces fat with lean, tight, strong muscles. So what is the best way to burn fat? Aerobic exercise will do the trick. Aerobic activity, sometimes called cardio, is an exercise that gets a person's heart pumping. During an aerobic workout, person breathes heavier and begins to sweat. It is not necessary, however, to exercise to the point of breathlessness every day. In fact, person will burn the highest percentage of calories from fat at a moderate intensity. As person's fitness level improves, however, person may want to include harder workouts in his/her exercise schedule. Higher intensity workouts burn more calories, but a smaller ratio of fat. To maximize fat loss, Person should combine high intensity, moderate intensity, and low intensity workouts in a complete and balanced fitness program, which exercises are best when person's trying to change his/her body composition? Simple bodyweight exercises are effective because they

increase person's heart rate and build strength to shape strong muscles at the same time. Person can do these exercises at home with little or no equipment: front lunge, walking lunge, or overhead lunge, planks, push-ups with traditional, modified, or with a stability ball, squats with overhead press. If persons are consistent in his/her training, he/she should start to notice changes to his/her body composition in just a few weeks. To build a consistent program, person should combine aerobic workouts and strength training workouts into a circuit workout. Or person can alternate workouts on different days. Person can combine favorite cardio activity with strength training and alternate each activity within a single workout. For example, if person like to walk, person might get on a treadmill and climb a hill for 7 minutes, then should follow up with 3 minutes of push-ups, lunges, and abdominal curls. Person should repeat that pattern three to six times for a complete circuit workout. Person can also burn fat and build muscle by alternating workouts on different days. For example, person might choose to take an aerobics class on Monday, Wednesday, and Friday and complete his/her strength-training workout on Tuesdays and Thursdays. This gives his/her muscles time to recover. Person should not forget that person's diet plays an important role as well.

## CONCLUSION:

Human body composition cnsists of muscle, fat and bone, However, from many research findings it has been established that a compact exercise programme or a scheduled training programme like ten weeks jogging programme, walking, running programme of different duration, two year of calithenics, jogging, walking, running, bicycling, frequiency of training and other training programme have impact on body composition and can modify body composition. Whether or not regular physical activity can stop or decline these changes in body density is unknown. Person can do these exercises at home with little or no equipment: front lunge, walking lunge, or overhead lunge, planks, push-ups with traditional, modified, or with a stability ball, squats with overhead press. If persons are consistent in his/her training, he/she should start to notice changes to his/her body composition in just a few weeks. To build a consistent program, person should combine aerobic workouts and strength training workouts into a circuit workout. Or person can alternate workouts on different days. Person can combine favorite cardio activity with strength training and alternate each activity within a single workout. However, optimal body composition levels can be maintained during old-age with an average/ modest level of physical activity and conscious efforts of diet control.

## REFERENCES

Jackson APollock M Practical assessment of body composition. *Physician Sport Med.* 1985;1376-90Google Scholar

Wilmore J Increasing physical activity: alterations in body mass and composition. *Am J Clin Nutr.* 1996;63456S- 460SPubMed Google Scholar

Gómez-Cabello A, Vicente Rodríguez G, Vila-Maldonado S, Casajús JA, Ara I. Aging and body composition: The sarcopenic obesity in Spain. *Nutr Hosp.* 2012;27:22–30. [PubMed] [Google Scholar]

Zajac A, Wilk M, Socha T, Maszczyk A, Chycki J. Effects of growth hormone and testosterone therapy on aerobic and anaerobic fitness, body composition and lipoprotein profile in middle-aged men. *Ann Agric Environ Med.* 2014;21:156–60. [PubMed] [Google Scholar]

Hayes LD, Grace FM, Sculthorpe N, Herbert P, Ratcliffe JW, Kilduff LP, et al. The effects of a formal exercise training programme on salivary hormone concentrations and body composition in previously sedentary aging men. *Springerplus.* 2013;2:18. [PMC free article] [PubMed] [Google Scholar]

Randáková R. Effect of regular training on body composition and physical performance in young cross-country skiers: As compared with normal controls. *Acta Univ Palacki Olomuc Gymn.* 2005;35:17–25. [Google Scholar]

Donges CE, Duffield R, Guelfi KJ, Smith GC, Adams DR, Edge JA. Comparative effects of single-mode vs. duration-matched concurrent exercise training on body composition, low-grade inflammation,

and glucose regulation in sedentary, overweight, middle-aged men. *Appl Physiol Nutr Metab.* 2013;38:779–88. [PubMed] [Google Scholar]