DESIGNING WEIGHT REDUCTION TRAINING, FITNESS AND REHABILITATION TRAINING CONSIDERATION FOR OBESE AGE ADULT AND DIABETIC SUBJECT

INTRODUCTION

Losing weight is difficult, and interventions that work in younger adults cannot be assumed to successfully translate into an older population, where low muscle mass and consequent physical frailty, osteoporosis, comorbid disease and cultural differences may increase risk and prevent benefits seen in younger people from translating into health gains in older people. It is likely that sustained weight loss is required to produce meaningful changes in health outcomes, particularly for cardiovascular disease. We, therefore, systematically reviewed the evidence for interventions designed to produce sustained weight loss in obese older adults to inform current practice.

OBESITY

Obesity is recognized as a major health problem amongst children, younger adults and middle-aged adults in the developed world and increasingly in rapidly industrializing countries. The prevalence of obesity [body mass index (BMI) ≥30 kg/m^2] in the US is currently between 30 and 35% in both middle-aged adults (40–59 years) and in older adults (>60 years).Obesity in older adults is also rapidly increasing in other industrialized countries; England has seen a rapid increase in the number of older adults with obesity-rising from 16% of women and 15% of men aged ≥75 in 1994to 27 and 18%, respectively, in 2006. In younger people, obesity is well known to be associated with adverse cardiovascular outcomes, osteoarthritis, type 2 diabetes mellitus and reduced exercise capacity. All of these problems are prevalent in older people and contribute to the high burden of disease and functional impairment.

WEIGHT-LOSS PROGRAMS WORK FOR SEVERELY OBESE

For people who are severely obese and struggling with their weight, new research shows weight-loss intervention programs that combine diet and exercise really can work. Though the benefits of diet and exercise have long been known, the impact lifestyle changes have on people who are severely obese, said researchers from the University Of Pittsburgh School Of Medicine. That means people who cannot afford to or choose to not undergo bariatric surgery have other options that have been shown to be effective. "Most people are very pessimistic about what kind of weight loss we can achieve with lifestyle changes. But this intervention was in a seriously obese

population, and that is the big take-home message: that very heavy people can benefit from lifestyle change. In 2009, nearly 27 percent of people in the United States were obese, according to the Centers for Disease Control and Prevention.

By controlling the size of food portions, and finding motivation to be active through a friend or personal trainer, weight-loss interventions can work for people who are morbidly obese.

DIET AND EXERCISE

In one new study from the University Of Pittsburgh School Of Medicine, researchers implemented a weight-loss program with 130 severely obese adults, ages 30 to 55, who had a body mass index (BMI) between 35 and 39.9. A BMI between 18.5 and 24.9 is considered healthy; a BMI of 30 or higher is considered obese. The adults in the study were randomly assigned to two groups. One group underwent exercise and diet interventions for 12 months, which consisted of an hour of brisk walking five days a week or at least 10,000 steps a day, and liquid and pre-packaged meal replacements for certain meals throughout the day.

The other group had the same meal replacements for all 12 months, but was given the exercise instructions during the last six months of the study. After six months, the group that had both diet and exercise interventions lost more weight. They lost an average of 24 pounds (10.9 kilograms), compared with 18 pounds (8.2 kg) lost by the other group. By the end of the 12-month period, the first group had lost almost 27 pounds (12.1 kg), and the other group lost 22 pounds (9.9 kg), the researchers said. Waist circumference, liver and abdominal fat, blood pressure and insulin resistance – a risk factor for diabetes – were all reduced by the intervention.

DIABETES

Diabetes is a disease that occurs when the blood glucose, also called blood sugar, is too high. Blood glucose is the main source of energy and comes from the food we eat. Insulin, a hormone made by the pancreas, helps glucose from food get into the cells to be used for energy. Sometimes body doesn't make enough—or any—insulin or doesn't use insulin well. Glucose then stays in the blood and doesn't reach cells. Over time, having too much glucose in blood can cause health problems. Although diabetes has no cure, we can take steps to manage our diabetes and stay healthy. Sometimes people call diabetes "a touch of sugar" or "borderline diabetes." These terms suggest that someone doesn't really have diabetes or has a less serious case, but every case of diabetes is serious.

TYPES OF DIABETES

The most common types of diabetes are type 1, type 2, and gestational diabetes.

Type 1 diabetes

In the type 1 diabetes, the body does not make insulin. The immune system attacks and destroys the cells in the pancreas that make insulin. Type 1 diabetes is usually diagnosed in children and young adults, although it can appear at any age. People with type 1 diabetes need to take insulin every day to stay alive.

Type 2 diabetes

In the type 2 diabetes, the body does not make or use insulin well. We can develop type 2 diabetes at any age, even during childhood. However, this type of diabetes occurs most often in middle-aged and older people. Type 2 is the most common type of diabetes.

Gestational diabetes

Gestational diabetes is a condition in which a women without diabetes develops high blood sugar levels during pregnancy. Gestational diabetes is caused by not enough insulin in the setting of insulin resistance. The usual onset is most common lasting three months of pregnancy.

DIABETES WEIGHT-LOSS WORKOUT PLAN

Regular exercise has long been proven to help people with diabetes reduce their risk of future complications and manage their blood sugar levels. The study shows that when people with type 2 diabetes doing aerobic (cardio) exercise some days and resistance training on others, they had lower blood sugar levels after nine months than people who did either type of exercise alone. That's believed that aerobic exercise alone was the best way to manage blood sugar. Someone who wants to maximize the impact on glucose control and maximize the use of their time should do both aerobic and resistance exercise. Even a relatively small amount of resistance exercise--one set twice a week for about 20 minutes--makes a difference.

If we are new to fitness or just want to renew the commitment to exercise and weight loss, SparkPeople's 8-Week Diabetes Weight Loss Challenge is created this workout plan for people of all fitness levels. It involves a proven combination of cardio exercise and strength training to rev the metabolism to help in manages the weight. Another plus is that every workout can be tailored to own fitness level, and also get to pick activities that enjoy.

WORKOUT PLAN

The following is the 8-Week Diabetes Weight Loss Workout Plan.

	Strength Training (3 days per week)	**Cardio**
Week 1	Follow the 15-Minute Desk Workout	Perform **three** 10-minute cardio workouts.
Week 2	Follow the 15-Minute Desk Workout	Perform **three** 10-minute cardio workouts.
Week 3	Follow the 20-Minute Band Workout **OR** this equipment-free alternative	Perform **three** 15-minute cardio workouts.
Week 4	Follow the 20-Minute Band Workout **OR** this equipment-free alternative	Perform **four** 15-minute cardio workouts.
Week 5	Follow the 20-Minute Dumbbell Workout **OR** this equipment-free alternative	Perform **four** 15-minute cardio workouts.
Week 6	Follow the 20-Minute Dumbbell Workout **OR** this equipment-free	Perform **four** 20-minute cardio workouts.

	alternative	
Week 7	Follow the 15-Minute Ball Workout **OR** this equipment-free alternative	Perform **five** 20-minute cardio workouts.
Week 8	Follow the 15-Minute Ball Workout **OR** this equipment-free alternative	Perform **five** 20-minute cardio workouts.

REHABILITATION

Physical activity is very important for diabetic patients. In normal subjects physical activity postpones diabetes mellitus and in diabetic patients postpones the cardiovascular complications. In diabetic patients with cardiovascular disease, physical training increases exercise capacity, decreases complications and prolongs survival. Physical activity can be applied in diabetic patients as physical activity counseling or physical training, the second being recommended to be ambulatory and supervised but, sometimes, also home rehabilitation can be useful. Aerobic exercises, but also resistance exercises will be applied. Some specific aspects of diabetic patients as hyper or hypoglycemia, autonomic or peripheral neuropathy, retinopathy, have to be considered during physical rehabilitation and sometimes physical training has to be modulated according to them.

PRACTICAL ASPECTS OF PHYSICAL ACTIVITY AND TRAINING IN DIABETIC PATIENTS

There are a series of guidelines and consensus regarding the role of physical activity in diabetic patients. The comments referring to diabetes mellitus are parts of special recommendations, or are included in more general guidelines about physical activity in cardiovascular patients. As example, the American Heart Association recommendations about the primary prevention of cardiovascular diseases in diabetic patients reinforce that the glycemic control, losing weight or maintaining a normal weight, with a consequent decrease in the cardiovascular risk can be a result of aerobic, moderate or intense physical activity, if it is performed for at least 150 minutes each week. The physical activity must be distributed equally for at least three days/week, so there would not be more than two consecutive days without exercise. It is emphasized that for maintaining the weight loss for a long time, it is absolutely necessary to perform moderate or intense physical activity for at least 7 hours/ week.

Also, the diabetes and pre-diabetes guidelines of European Society of Cardiology, in 2007, recommend for diabetic patients (Class I, level of evidence A) lifestyle changing (non-pharmacological therapy), which alleviates the metabolic control. There is a specific recommendation of 30 minutes physical activity, at least five times a week, along with the restriction of calories intake to 1500 kcal/day, and also of fat intake.

Regarding the modalities to apply the physical activity in diabetic patients, there are two major categories. The first one is represented by the physical activity counseling that is to advise the patients to perform physical activity, or promoting physical activity in diabetic patients, as daily or leisure time activity, including noncompetitive sports. The second modality and the most important one is

represented by the physical training conducted through specific cardiovascular rehabilitation programs. Of course, more than in other patients, a complete evaluation before inclusion in exercise Training programs is necessary. This evaluation is made by exercise stress testing. This is not necessary in patients with uncomplicated diabetes, except over the age of 35, in those having at least one more additional risk factor for ischemic heart disease. In turn, exercise stress testing is recommended, even mandatory in patients with complicated diabetes mellitus or associated cardiovascular disease.

The classical cardiovascular training protocol also contains resistance exercises. These are necessary because, during daily activity, the cardiovascular patients, including the diabetic ones, also perform resistance effort, with a significant isometric component, its efficacy and detrimental effects on cardiovascular system, being significantly improved, during the training. Resistance exercise is also important because it decreases insulin resistance, increases the muscular mass which is often reduced in this category of patients, especially in diabetic ones. It is well known that muscular atrophy contributes to the decrease in effort capacity. Resistance exercises are also recommended for preventing the onset of diabetes mellitus (improving the insulin sensitivity), or in uncomplicated diabetes for delaying or preventing the onset of cardiovascular diseases. In patients with complicated diabetes mellitus or associated cardiovascular diseases, diabetic neuropathy makes this type of exercises difficult to perform.

Benefit of physical activity in diabetic patients

1) Decrease glycaemia.
2) Increase of insulin sensitivity.
3) A decrease in the total body fat and abdominal (visceral) adiposity.
4) Increase in the aerobic capacity and muscular force.
5) The improving of the endothelial function.
6) Improving in diastolic left ventricular function.
7) Decrease the arterial rigidity.
8) Decreasing of the systemic inflammation.

CONCLUSION

Obesity is recognized as a major health problem amongst children, younger adults and middle-aged adults in the developed world and increasingly in rapidly industrializing countries. By controlling the size of food portions, and finding motivation to be active through a friend or personal trainer, weight-loss interventions can work for people who are morbidly obese. Over time, having too much glucose in blood can cause health problems. Although diabetes has no cure, we can take steps to manage our diabetes and stay healthy.