

## The Issue of Coincident Weight Gaining and Fat-Loss through Exercise and Diet Planning

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### Abstract

Nowadays, weight loss, weight-gaining programs and diet plans separately are being prescribed by exercise physiologists and dieticians to fill the non-drug treatment gaps for diabetics. From the perspective of exercise science, there are barriers to achieve these results because of the specificity of exercise plan for clinical conditions specially for diabetics. The aim of present case-study report was to develop a well-established exercise plan for diabetics to achieve their non-diabetic range through performing such exercise programs under their exercise physiologists. The novelty of exercise plan is the key in solving the diabetics non-drug treatment. In present study, a 39-year-old diabetic male with 113 kg weight participated in a 2-month exercise plan. Exercise plan included sessions in which there were 3 sections. First section was warm-up and second section consisted of weight training specific to diabetics (low weight – high repetitions). Diet plan was based on 2000 calories a day (restricted sugar and higher glycemic foods). Before and after the end of plan, Fasting Blood Sugar (mg. DL<sup>-1</sup>), Cholesterol skinfold (mg. DL<sup>-1</sup>), Triglyceride skinfold, Fat Percentage (%) (mg DL<sup>-1</sup>) skinfold sites were measured. After performing 2-month programme, all values of factors were lower than before and all in normal range. Clinically this diabetic adult was changed into a non-diabetic person with normal range of risk factors. Conclusion of present study is to introduce a novel and well-established exercise plan for diabetics and a non-drug treatment to achieve their health. The specificity of exercise plan is muscle groups weight training with specific loads and repetitions and diet plan with restricted sugar and high glycemic foods based on 2000 calories a day. Also there needs several researches to be assured such training methods have similar results among other clinically diabetics for both males and females.

### Introduction

Today, in order to lose weight, there are many people who tend to achieve their goals in a short period of time. Among the various types of treatments and plans for fat-loss, undoubtedly scientific methods in sport science field are valuable and reliable [1,2]. Exercise physiologists may face clients who are looking for fat-loss and weight-gain programme. As we know, there is no shortcut for losing weight and weight gaining. Always, exercise physiologists are attempting to convince their clients with scientific reasons. Here, current paper is aimed to open a new window for those who have time-consuming plans for losing fat and weight and weight gaining process [3,4]. All the clients want to lose their fats as their bodies become muscular and are getting in good shape. The common strategy for trainers and exercise physiologists is to prescribe a monthly schedule for weight loss and fat burning workouts, then to put a weight gain programme afterwards. The problem here is the physiological understanding of this time consuming programme. The case study described in this paper shows the easier plan and strategy for achieving these two goals simultaneously. Human body is a complicated system that is capable of taking several commands at the same time. This organized system is the key for establishing two different types of exercise programs beside the combined diet (changing body composition) [5]. Population of Diabetics is incredibly increasing and the burden of disease also puts too much pressure on diabetic's family members. Diabetic muscles do not respond to blood glucose as a source of energy. Without health care and physical activity plan, after a period of time, the susceptible organs are attacked and diabetes results in liver and heart attack, kidney failure, blindness, chronic pain and amputations. Exercise activity treatment along with drugs prescribed for diabetics has been demonstrated to be a part of treatment plan. Through contracting muscle groups during an exercise programme, muscles begin to produce Gluts (Glucose Transporters). These Gluts are glucose transporters [6-8]. In fact, these Gluts (specially Glut 4) are Insulin-Regulated Pathway to direct blood

glucose into muscle cells. Post exercise condition continues to direct blood glucose into muscle cells. Unfortunately, the effect of exercise plan for diabetics have not been clearly shown the practical treatment effects. Exercise plan including both aerobic and weight training sessions with specific manipulations in sequence, loads and repetitions during a session have not been conducted practically in former case report studies [8-10].

### Case Report

The case described in present paper a 39-year-old male with sedentary lifestyle. As shown in Table 1, this case is engaged in a combined type of exercise programme with a fixed diet plan during 2 months of exercise plan.

As it is noticed, the case is an overweight male who for the first time started to engage in a specific and new type of exercise and diet plan for changing his body composition. All anthropometric data were measured at university of Tabriz in sport science lab. In Table 2 anthropometric data before starting plan are shown.

### Methodology and Measurements

Exercise plan was organized for 5 sessions a week and diet plan was

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Age (years old)	39
Weight (kg)	113
Height (cm)	189

Table 1: Case characteristics.

Factor	Before	After	Status
Weight (kg)	113	110	↓*
Fasting Blood Sugar (mg.DL <sup>-1</sup> )	157.9	99.9	↓*
Cholesterol skinfold (mg.DL <sup>-1</sup> )	226	210	↓*
Triglyceride skinfold (mg.DL <sup>-1</sup> )	264	145	↓↓*
Pectoral skinfold (mm)	24	20	↓*
Axilla skinfold (mm)	40	36	↓*
Abdominal skinfold (mm)	44	42	↓*
Suprailiac skinfold (mm)	42	39	↓*
Thigh Skinfold (mm)	48	44	↓*
Fat Percentage (%)	34.40%	30.80%	↓*
Fat Free Mass (kg)	73.45	77	↑*

\*Shows the Significant change. (P<0/05).

Table 2: Skinfold and body fat percentage before plan.

a 7 day fixed menu for 2000 calories a day. Having calculated energy expenditure and energy requirement for exercise plan, menu was planned for this case and was suggested being followed the programme. Exercise programme included 10 minutes' war-up (elliptical, stationary bike, treadmill walking), main workout (Lat machine 6 sets, with 30 reps, Fly machine 6 sets, all 55% Maximum 1 rm, 35 reps, corrected sit-up 6 sets for 25-35 reps between workouts, 45 minute 55% Vo<sub>2</sub>max stationary bike or elliptical or treadmill brisk walking), cooling down (stretching and walking).

Diet plan was based on 2000 calories a day. All meals and snacks were controlled. During the programme, exercise physiologist was counselling about the procedure and coping with difficulties following plan. After following Two-month plan, physiological and skinfold data collected before and after programme were surprising. As it is shown in Table 2, Fasting Blood Sugar, LDL, Triglyceride, Fat percentage were significantly decreased to their normal values (P<0/05).

## Discussion

This study has demonstrated that a young diabetic and obese male with a specific training and diet plan may be able to eliminate the diabetic status and reduce levels of risk factors. In our study, Exercise plan included both aerobic and weight training with a modeled plan [10-12]. A light 20-minute warm-up (treadmill walking or stationary bike) prior to core body exercises for 10 minutes. Having completed both warm-up and core body exercises, subject was introduced to do a circuit weight training including 6 exercises. After weight training, subject started to complete his aerobic exercise. Diet plan was according to a diabetic diet plan guideline (American Diabetic Association) [13-15]. Many researches performed by various exercise physiologists reported significant weight loss among diabetics. Researchers have focused merely on weight loss process whereas body composition beside gradual weight loss. In fact, weight loss process itself may not be logical among diabetics, because when a diabetic body faces weight loss situation, it loses both fat and non-fat weight. Therefore, diabetic status may still continue in a smaller surface. There are several researches in which it is stated that weight training and resistance exercise leads to increased insulin sensitivity. In parallel with previous finding, Glut 4 level increase with resistance and weight training specially when performed with main muscle groups. Increased insulin sensitivity and glut 4 (a shortcut to glucose transportation system toward muscle tissues) may be helpful in glucose balance and blood glucose monitoring

in a diabetic subject; a fact which was found in our study [12-18]. Regarding fat loss exercises, there are various types of exercise plans in the world [19]. The most scientific and logic exercise plan which could be justified by exercise physiology science, is the correct layout of exercise plan and gradual increase in exercise intensity and its load. Scientific layout of an exercise plan for fat loss and weight loss plan may be as follow: a warm-up activity with 20-minute duration. In order to boost fat loss during aerobic exercise, core body exercises are arranged after warm-up. Weight training is designed to train main muscle groups in a short period of time. For this reason, circuit training is the best choice. Additionally, circuit training is not boring for a diabetic and obese person and the subject does his plan enthusiastically. By completing the weight training, subject gets ready for aerobic exercise. Although, there are inconsistent reports about the layout of concurrent training, the most scientific and logic layout is the one performed in present study. It is the procedure of exercise plan which makes significant changes in physiological parameters. This procedure must be monitored by an exercise physiologist to lead to target weight and normal physiological status [14-18]. The results of presented case study report demonstrated the main roles of intricate mechanisms inside the field of sport science regarding diet plan and exercise programme. There is a need for stronger studies in order to reach the efficient exercise and diet plan for fat-loss, weight gain programme. The most interesting result of this case was his diabetic status before plan and non-diabetic state after program. This case of present study is now continuing his second month of exercise and diet plan to reach his target weight. In near future, well organized and well-structured combined plan will be directed in Lab. Thus, exercise plans and diet are the key solutions for body composition and fat-loss, weight gain plans.

## Conclusion

The results of presented case study report demonstrated the main roles of intricate mechanisms inside the field of sport science regarding diet plan and exercise programme. There is a need for stronger studies in order to reach the efficient exercise and diet plan for fat-loss, weight gain programme. The most interesting result of this case was his diabetic status before plan and non-diabetic status after programme. This case of present study is now continuing his second month of exercise and diet plan to reach his target weight. In near future, well organized and well-structured combined plan will be directed in Lab. Thus, exercise plans and diet are the key solutions for body composition and fat-loss, weight gain plans.

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