

Case Study

# Effect of Aerobic Exercise on Obese Female Patient - Case Study

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## ABSTRACT

**Background:** As a common metabolic disease in modern society, obesity is mostly caused by unreasonable lifestyle and eating habits. Obesity affects people's health greatly in figures and images as well as disease including high blood pressure, diabetes, and various cardiovascular diseases.

**Case presentation:** 42 years old female patient had 121 kg weight with 51.44kg/cm<sup>2</sup> BMI. Female had also complained of difficulty in walking. She had diagnosed grade 4 bilateral osteoarthritis in knee. She had performed medium to high intensity aerobic exercise.

**Conclusion:** 14 kg weight reduction with grade 4 bilateral osteoarthritis in knee within 6 month.

**Key words:** Obesity, BMI, Aerobic exercise, osteoarthritis.

## INTRODUCTION

Excess body weight has become significantly more prevalent in developed and developing nations. Obesity is closely associated with some major health risk factor. It is well known that individuals with central obesity are at greater risk for coronary heart disease and several metabolic disorders. [1] The intra abdominal fat accumulation is strongly associated with metabolic disorders independent of whole-body adiposity, including high blood pressure and triglycerides as well as an increased incidence of diabetes mellitus. [2] As one of the most effective way against obesity. Especially aerobic exercise can help reduce fat, lose weight, change appearance. [3] Obesity is widely acknowledged as a risk factor for OA, with every 5 kg of weight gain conferring a 36% increase in the risk of knee OA. [4] There is evidence that the risk accumulates with increased exposure to high BMI throughout adulthood, with an association between BMI and later knee OA starting as early as 20 years in men and 11 years in women. [5] In addition, body weight

influences the severity of OA; obese individuals have significantly more severe joint degeneration in the knees compared with normal weight or underweight individuals. [6] Data from a case-control study have also indicated a strong association between increasing BMI and surgical replacement of hip and knee joints. [7] Obesity and OA collectively reduce mobility. This can initiate a vicious cycle of events: reduced activity, further weight gain and decreased muscle strength, leading to increased joint problems and disease progression. [8] Hence, weight loss is a primary goal in obese individuals with OA knee.

## MATERIALS AND METHODS

A 42 years old female diagnosed bilateral osteoarthritis with 51.44 kg/cm<sup>2</sup>BMI was selected for the case study. She had 121 kg weight and 154 cm height with 51.44 kg/ cm<sup>2</sup> BMI including in class 3 obese. Since 3 years she had diagnosed bilateral osteoarthritis in knee grade 4. After pregnancy gradually weight was increased

day by day. She is house wife. Every day she done house hold work. Her life style attitude consider as sedentary lifestyle. No any other genetic and medical history was present. Before four month female started exercise that time baseline data was taken. weight, height, BMI, WHR (waist - hip ratio), chest (at T<sub>4</sub> level), arm (15 cm above olecranon process) and thigh (15 cm above patella) girth measurements was taken.

**Table 1: Baseline characteristics**

| Variable | value                    |
|----------|--------------------------|
| Age      | 42years                  |
| Weight   | 121.2 kg                 |
| Height   | 154 cm                   |
| BMI      | 51.44 kg/cm <sup>2</sup> |
| WHR      | 0.80cm                   |
| Chest    | 114cm                    |
| Arm      | 48cm                     |
| Thigh    | 73cm                     |

Exercise program:

According to FITT program,

Frequency: 5 days/ week

Intensity: Target heart rate was taken 70 - 80%. Patient target heart rate was 124-142 b/min.

Time: 100 min/ day

Type: Cardio and Aerobic both workout including in exercise program.

Warm - up: 10 min

All flexibility exercise

Mostly concentrate large muscle group.

Aerobic period:

Treadmill: 30 min - 5.0 to 5.5 kmph - 2 % incline

Cycle: back rest cycle: 25 min

Floor Aerobic workout: 25 min (every day change)

Chair workout

Stick workout

Floor Aerobic dance workout

Kickboxing

Theraband workout

Cool down - All stretching exercise mainly use large muscle like quadriceps, hamstring, and calf muscle stretching. After completed exercise session, static quadriceps exercise, state leg raise exercise, and vastus medialis obliques performed. After four month, without changing diet style baseline data was changed.

## RESULTS

After four month of exercise program baseline data was:

**Table 2: Baseline characteristics**

| Variable | value                    |
|----------|--------------------------|
| Age      | 42years                  |
| Weight   | 109 kg                   |
| Height   | 154 cm                   |
| BMI      | 45.11 kg/cm <sup>2</sup> |
| WHR      | 0.73cm                   |
| Chest    | 107cm                    |
| Arm      | 42cm                     |
| Thigh    | 70cm                     |

## DISCUSSION

Obesity refers to the state caused by overweight or excessive fat. It is not just weight gain, but the excessive of body fat. Obesity is a pathologic and physiological phenomenon caused by excessive food intake or metabolic problems. Obesity is caused by complicated factors including genetic factors, environment, metabolism, endocrine function change, excessive fat, lifestyle and eating habits, drug obesity, and intestinal problems. [9] Aerobic exercise means exercise in the case of adequate oxygen. For people who want to lose weight, taking aerobic exercise is a long-term plan. Common aerobic exercises are: walking, jogging, climbing, rope skipping, swimming, riding bikes, fit aerobics, and yoga. Aerobic exercise can consume body fat, which in turn brings good weight loss effect. Therefore, most people take this way to lose weight. Aerobic exercise can increase blood flow and oxygen transmission capacity, and promote blood circulation and inner metabolism. It can also help enhance the function of heart and lung, increase bone density to prevent from, osteoporosis fight against aging, prevent the happening of, disease and help improve attitude to keep good mood. [10] In this case study, patient having heavy weight due to direct transfer on bilateral knee. After some time of walking patient having pain because of osteoarthritis in knee. Because of heavy weight and Pain patient not able to proper walking. After starting chair exercise and stick exercise patient weight was reduced. Then after start treadmill walking and cycle

help to reduction in weight. Reduction of weight also helps in osteoarthritis in knee.

### CONCLUSION

Aerobic exercise affects on obese osteoarthritis patient. Use of different type of aerobic exercise reduced 14 kg weight in 6 month.

**Conflict of interest:** None

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