The effects of exercise on diabetes mellitus II

INTRODUCTION

- According to American Diabetes Association (2015), diabetes mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both.
- In 2015, 30.3 million Americans, or 9.4% of the population, had diabetes. Approximately 1.25 million American children and adults have type 1 diabetes (American Diabetes Association, 2015).
- 90% of the population whom is diagnosed with DM is diagnosed with Type 2 (Goodpaster et al., 2000).
- When being diagnosed with DM, one must have a fasting plasma glucose (FPG) of ≥ 7.0 mmol/L, glycated hemoglobin (A1C) of ≥ 6.5% (in adults), 2-hour plasma glucose (2hPG) of ≥ 11.1 mmol/L, or a random plasma glucose (RPG) of ≥ 11.1 mmol/L (Punthakee et al., 2017).
- You are more likely to develop type 2 diabetes if you are age 45 or older, have a family history of diabetes, or are overweight. Physical inactivity, race, and certain health problems such as high blood pressure also affect your chance of developing type 2 diabetes. You are also more likely to develop type 2 diabetes if you have prediabetes or had gestational diabetes when you were pregnant (American Diabetes Association, 2015).
- Type 2 diabetes symptoms are subtle, so it may take years to detect type 2 diabetes. You may also have a greater risk for type 2 diabetes if you have prediabetes or a history of diabetes in your family. Prediabetes is a condition that affects 1 in 3 adults in the US. Prediabetes is a warning sign that says ‘you are at risk of developing type 2 diabetes.’
- Type 2 diabetes is often associated with excess body fat with fat distribution usually in the upper body (Elkafrawi, Shoab & Elghamian, 2017).

EXERCISE GUIDELINES

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<tr>
<th>Frequency</th>
<th>Intensity</th>
<th>Duration</th>
<th>Mode</th>
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<tbody>
<tr>
<td>Aerobic</td>
<td>Resistance</td>
<td>Flexibility</td>
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<td>5 to 7 days per week with the goal of 30 minutes of continuous aerobic activity per session.</td>
<td>50-85% of heart rate reserve, or a rating of 12-16 on the perceived exertion scale.</td>
<td>2-3 days per week with 48 hours between workouts</td>
<td>Beginners should start with 50-70% of 1RM and gradually progress over the course of 3-6 months.</td>
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<td>30 min per session (150 min per week), or 60 min per session (300 min per week)</td>
<td>30-60 minutes of exercise per session. Performing 10-12 multipoint exercises with 2-3 sets and 8-12 reps.</td>
<td>Flexibility workouts should be performed every other day.</td>
<td>Stretch until the feeling of slight discomfort.</td>
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<td>Exercises with continuous rhythmic movements that work large muscle groups such as biking or swimming.</td>
<td>Many modes of exercise are available, but the goal is to use free weights.</td>
<td>EXERCISES WITH CONTINUOUS RHYTHMIC MOVEMENTS THAT WORK LARGE MUSCLE GROUPS SUCH AS BIKING OR SWIMMING.</td>
<td>3-2 static stretches per major muscle group is recommended.</td>
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DIETARY RECOMMENDATIONS

- According to American Diabetes Associations (2015), individuals with diabetes should monitor the amount of carbohydrates they consume in their daily diet.
- Foods to Eat
  - Meat, Poultry and seafood
  - Eggs
  - Cheese
  - Non-Starchy vegetables
  - Avocados
  - Olive oil, Coconut oil
- Foods to Avoid
  - Breads, pasta, cereal, corn, other grains
  - Potatoes, peas, beans
  - Milk, juices, soda, beer
  - Deserts

SPECIAL CONSIDERATIONS

- All individuals who have been diagnosed with type 2 diabetes must be cleared prior to beginning a vigorous exercise program (Jacobs, L. P., 2018)
- Individuals with Type 2 diabetes who have a greater than 10% risk of cardiac over the next ten years should go through a maximal clinical supervised test prior to engaging in any exercise program (Jacobs, L. P., 2018)
- Type 2 diabetes may result in a patient having silent ischemia, a symptom where insufficient blood flow reaches with heart but does not show any clinical signs or symptoms. A radionuclide injection may allow for detection of ischemia (Jacobs, L. P., 2018)
- Type 2 patients tend to suffer from Hyperglycemia. A abnormal response to exercise that results from a blood glucose levels of <70 mg/dl (Jacobs, L. P., 2018)

REFERENCES