

## **APTA Guidelines for Diabetics**

### **APTA diabetic precautions to exercise**

- Nephropathy
  - SBP should not rise above 180 mm/hg
  - Avoid weight lifting, breath holding or high-intensity aerobic exercise
- Retinopathy
  - Avoid head jarring activities
  - Avoid valsalva
  - Avoid position with the head below the waist
  - SBP should not rise above 20-30 mm/Hg above RBP
- Autonomic Neuropathy
  - Monitor blood glucose signs more closely.
  - Monitor for signs and symptoms of silent ischemia (dyspnea, diaphoresis, orthostatic hypotension)
- Be aware of A1C values-generally below 7% is considered good control
- Fast acting carbohydrate must be carried at all times.
- Carbohydrate should be ingested if glucose levels are <70 mg/dl
- Vigorous exercise above 80% of Karvonen can cause hyperglycemia after exercise.
- Fluid ingestion should occur before, during and after exercise.
- Proper foot wear/vigilant foot inspection should be performed.
- Exercise should be avoided prior to going to bed
- Rotate insulin injection sites away from active muscles.
- ID must be carried at all times

### **Relative contraindications requiring close monitoring**

- Age >40, w/ or w/o CVD risk factors other than DM
- Age > 30 yrs and any one or more of the following:
  - Type 2 DM of > 10 yrs
  - Cigarette smoking
  - Dyslipidemia
  - Proliferative or preproliferative retinopathy
  - Nephropathy, including microalbuminuria
- Any of the following, regardless of age:
  - Known or suspected CAD, CVD, and/or PVD
  - Autonomic neuropathy
  - Advanced nephropathy with renal failure

### **Absolute contraindications to exercise**

- Ingesting alcohol 3 hours prior to exercise
- Hypoglycemia < 70 mg/dl. Symptoms include:
  - Shakiness
  - Dizziness
  - Sweating
  - Hunger

- Headache
- Pale skin color
- Behavior changes
- Clumsy/Jerky movements
- Seizure
- Tingling sensations around the mouth
- Hyperglycemia > 300 mg/dl with ketones. Ketones with one or more of these symptoms require emergency treatment
  - Shortness of breath
  - Nausea or vomiting
  - Breath that smells fruity
  - A very dry mouth

### **Exercise for Individuals with Type 2 DM**

- Aerobic Training
  - Intensity: Determined by Karvonen's formula
  - Duration: 20-30 min, with additional 5-10 for warm up and cool down
  - Frequency: 4-7 days per week, or every other day
- Resistance Training
  - 8-10 rep max weight, begin with 1 set, progress to 3 sets
  - Include 8-10 major muscle groups
  - 2-3 days per week

### **Key points**

- Prefer to exercise when insulin levels are low (3-4 hrs after an injection of short acting insulin) to avoid hypoglycemia
- Hold off on exercising if blood glucose is very high (250 mg/ml or higher)
- Insulin levels may rise if exercising the muscle that insulin injection is given due to increased blood flow and increased rate of absorption.
- Instead of decreased circulating insulin, the diabetic may have more than normal insulin and therefore a drop in blood sugar.
- Insulin levels may be deficient later since prematurely absorbed.
- Have blood sugar monitor in clinic or have patient bring monitor
- Keep snacks and glucose tablets
- Encourage patient to wear diabetic bracelet