The power of lifestyle…
for the prevention and treatment of diabetes

Regular physical activity can:
• Improve fitness
• Increase vigour
• Improve blood glucose control
• Decrease insulin resistance
• Improve lipid profile and blood pressure
• Help maintain weight loss
• Reduce morbidity and mortality

The Canadian Diabetes Association CPGs recommend a minimum of 150 minutes of moderate- to vigorous-intensity aerobic exercise each week, spread over at least 3 days of the week, with no more than 2 consecutive days without exercise. Most people living with diabetes currently do not meet these targets.

As a diabetes healthcare professional, you can substantially improve the adoption of regular physical activity (PA):
• Ask about PA at every diabetes-focused visit
• Advise inactive patients to get started. People with very low fitness levels can start with lower volumes and intensities of activity. For example, they could start with five minutes daily for a week, then 10 minutes daily (or 5 minutes twice a day) for a week, then 15 minutes a day, and so on, gradually working up to the 150-minutes-per week goal over six or more weeks.
• Encourage and guide those who are active to maintain or progress further with their PA
• Help patients identify resources in the community

Physical activity and exercise

Key elements from the Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada

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diabetes.ca | 1-800 BANTING
Getting going – the 5 “A”s of PA promotion

Assess: establish current PA level and readiness
Determine frequency, intensity, time and type of PA.
- Not active, not thinking about PA
- Not active, ready for PA
- Active and ready to maintain or progress

Advise: strongly encourage all patients to get more active
Review health risks, benefits of PA, appropriate amount and type of PA.

Agree: collaboratively develop goals and a personalized action plan
Provide individually relevant exercise prescriptions, time frames and monitoring strategies to meet the goals.

Assist: identify personal barriers and strategies to overcome barriers
Identify connections and resources for exercise and PA in the community.
- Regional Canadian Diabetes Association offices
- Canadian Society for Exercise Physiology (CSEP)
  - Find an exercise professional (www.csep.ca)
  - Canadian Physical Activity Guidelines
- Canadian Association of Cardiac Rehab
  - Find a local program (www.cacr.ca)
- Canadian Centre for Activity and Aging (www.ccaa-outreach.com)
- YMCAs and local fitness facilities
- Municipal / Community programs
- Canadian Kinesiology Alliance (www.cka.ca)

Arrange: specify plan for follow-up at diabetes focused visits with telephone calls or email reminders
Review PA level at subsequent visits and provide advice to achieve the next level of activity.

Successful PA counselling includes:
- Discussion of decisional balance (pros and cons), barriers, opportunities and supports
- Development of specific action plans and goals

<table>
<thead>
<tr>
<th>Ready for PA?</th>
<th>Current Activity</th>
<th>Action Plan Examples</th>
</tr>
</thead>
</table>
| NO           | None            | • Discuss benefits of PA  
|              |                 | • Reduce sedentary time  
|              |                 | • Ask whether patient would consider walking for five minutes per day. Increase this amount over time |
| YES          | Occasionally physically active | • Plan for regular PA  
|              |                 | • Add introductory resistance exercise |
| YES          | Regularly active | • Progress aerobic exercise  
|              |                 | • Add advanced resistance exercise |

Aerobic and resistance exercise significantly improves glycemic control (A1C) over 6 months. Aerobic Training (AT) and Resistance Training (RT) can be combined or done separately. Successful exercise prescription is a combination of aerobic and resistance exercises.

AT = Aerobic Training  
RT = Resistance Training
### Table 1. Aerobic exercise

<table>
<thead>
<tr>
<th>Definition and recommended frequency</th>
<th>Intensity</th>
<th>Examples</th>
</tr>
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</table>
| Rhythmic, repeated and continuous movements of the same large muscle groups for at least 10 minutes at a time | Moderate: 50 – 70% of person’s maximum heart rate | • Biking  
• Brisk walking  
• Continuous swimming  
• Dancing  
• Raking leaves  
• Water aerobics |
| Recommended for a minimum of 150 minutes per week (moderate intensity) | Vigorous: >70% of person’s maximum heart rate | • Brisk walking up an incline  
• Jogging  
• Aerobics  
• Hockey  
• Basketball  
• Fast swimming  
• Fast dancing |

Patients with very low fitness may need to begin with as little as five minutes per day and increase volume and intensity gradually over time.

### Table 2. Resistance exercise

<table>
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<tr>
<th>Definition</th>
<th>Recommended frequency and intensity</th>
<th>Examples</th>
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| Activities that use muscular strength to move a weight or work against a resistant load* | 3 times per week  
• Start with 1 set using a weight with which you can perform 15 to 20 repetitions while maintaining proper form  
• Progress to 2 sets and decrease the number of repetitions to 10–15 while increasing the weight slightly. If you cannot complete the required repetitions while maintaining proper form, reduce the weight  
• Progress to 3 sets of 8 repetitions performed using an increased weight, ensuring proper form is maintained | • Exercise with weight machines  
• Exercise with free weights |

*Initial instruction and periodic supervision are recommended

### CPG chapters of interest

- Physical Activity and Diabetes
- Nutrition Therapy
- Management of Obesity in Diabetes
- Hypoglycemia
- Screening for the Presence of Coronary Artery Disease

### Structured counselling by healthcare professionals effectively increases PA adoption.5

Physical activity and exercise is safe – cardiovascular complications occur in less than 1/100,000 hours of exercise.6

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Considerations before starting an exercise program

A physical activity program is generally safe and reduces health problems in persons with diabetes. Being inactive carries much more risk than being active.

Before establishing an exercise prescription for choice and intensity of exercises, pay attention to and talk to your patients about:

**PRESENCE OF DIABETES COMPLICATIONS**
- Severe autonomic neuropathy
  - Watch for dizziness or other evidence suggesting possible hypotension during or after exercise.
- Severe peripheral neuropathy
  - Be careful with prolonged weight-bearing exercise.
  - Check your patient’s feet and review the importance of proper footwear.
- Proliferative retinopathy
  - Should be treated prior to starting resistance exercise.

**CARDIOVASCULAR CONCERNS**
Consider an exercise stress test for those:
- With symptoms suggestive of heart disease, such as dyspnea or chest discomfort.
- Previously sedentary individuals, at high risk for cardiovascular disease, who wish to undertake a vigorous exercise program.

**MUSCULOSKELETAL ISSUES**
- Back, hip and knee problems are common in people with diabetes.
  - Consulting with a musculoskeletal professional (e.g., physiotherapist, kinesiologist) may be helpful prior to starting an exercise program.

**HYPOGLYCEMIA**
- Discuss potential for hypoglycemia for patients taking insulin or oral medications (such as sulfonylureas) that may cause this.
  - Have patients self-monitor blood glucose before and after exercise for the first few sessions to look for hypoglycemia and to demonstrate effects of exercise on blood glucose levels.
  - Have your patient be prepared to treat hypoglycemia during exercise.

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References: