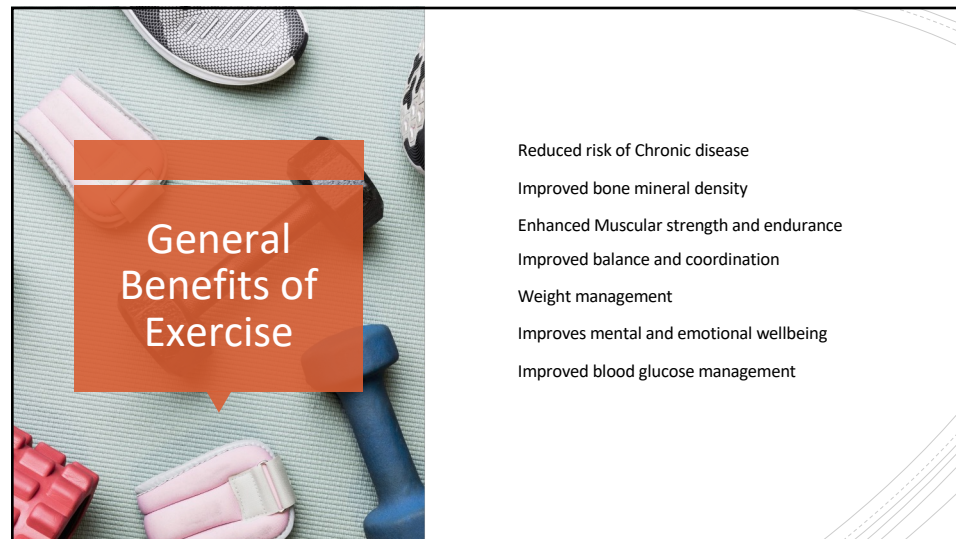


Empower Your Health: Movement for Diabetes Management

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General Benefits of Exercise

- Reduced risk of Chronic disease
- Improved bone mineral density
- Enhanced Muscular strength and endurance
- Improved balance and coordination
- Weight management
- Improves mental and emotional wellbeing
- Improved blood glucose management

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2022 Physical Activity Guidelines

ADCES & ADA



ACSM & EIM

2022 Consensus Statements and Recommendations

Regular aerobic exercise including HIIT
 High-intensity resistance exercise training
 500 kcal energy expenditure
 Small “doses” of PA results
 Weight loss
 Youth with type 2 diabetes
 Pregnant women
 Insulin or insulin secretagogues
 Bariatric surgery

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TABLE 2. Recommended types of exercise training for all adults with T2D.

Type of Training	Type	Intensity	Frequency	Duration	Progression
 Aerobic	Walking, jogging, cycling, swimming, aquatic activities, rowing, dancing, interval training	40%–69% of $\dot{V}O_2R$ or HRR (moderate), RPE 11–12; or 60%–89% of $\dot{V}O_2R$ or HRR (vigorous), RPE 14–17	3–7 d wk^{-1} , with no more than 2 consecutive days between bouts of activity	Minimum of 150–300 min wk^{-1} of moderate activity or 75–150 min of vigorous activity, or an equivalent combination thereof	Rate of progression depends on baseline fitness, age, weight, health status, and individual goals; gradual progression of both intensity and volume is recommended
 Resistance	Free weights, machines, elastic bands, or body weight as resistance; undertake 8–10 exercises involving the major muscle groups	Moderate at 50%–69% of 1RM or vigorous at 70%–85% of 1RM	2–3 d wk^{-1} , but never on consecutive days	10–15 repetitions per set, 1–3 sets per type of specific exercise	As tolerated; increase resistance first, followed by a greater number of sets, and then increased training frequency
Flexibility	Static, dynamic, or PNF stretching; balance exercises; yoga and tai chi increase range of motion	Stretch to the point of tightness or slight discomfort	≥ 2 –3 d wk^{-1} or more; usually done with when muscles and joints are warmed up	10–30 s per stretch (static or dynamic) group; 2–4 repetitions of each	As tolerated; may increase range of stretch as long as not painful
Balance	Balance exercises; lower body and core resistance exercises, yoga, and tai chi also improve balance	No set intensity	≥ 2 –3 d wk^{-1} or more	No set duration	As tolerated; balance training should be done carefully to minimize the risk of falls


1RM, 1-repetition maximum; HRR, heart rate reserve; PNF, proprioceptive neuromotor facilitation; RPE, rating of perceived exertion; $\dot{V}O_2R$, $\dot{V}O_2$ reserve.

FITT


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Balance and Flexibility


Although no direct correlation to diabetes, balance and flexibility impacts:




Injury
Prevention




Improves
Posture



Improves
coordination



Improves
joint health



Improves
mental focus

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Exercise Intensity Considerations

Pre-Exercise Evaluations (Medical clearance and exercise testing)

Low Intensity (PA)
 No clearance unless known complications
 Blood glucose $\geq 250\text{mg-dL-1}$, any PA over 300

Moderate Intensity
 NO if apparently healthy
 YES if CVD or Microvascular risk factors
 YES if sedentary, older age or longer duration of diabetes

High Intensity
 Use judgment but definitely for any of the above recommendations

Resistance training – no evidence is available

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Type 1 Diabetes and Exercise

Resistance training should come before Aerobic Training

Resistance exercise stabilizes blood glucose issues

Reduces risk of Hypoglycemia

Stimulates the release of stress hormones, helps mobilize the release of stored glucose (glycogen) into the blood stream

Pre training glucose target levels – 126-180 for maximal benefits

To prevent hypoglycemia

decreasing prandial insulin pre and post exercise snacks

On heavy exercise days – reduce basal insulin

Consider 0.5-1g of CHO/Kg per hour of exercise

If fasting, consume 10-15g CHO for low to moderate intensity aerobic exercise (30-60mins)

During and after exercise, reduce basal pump rate by 10-50%, or put pump on suspend/exercise mode

Exercise may lower blood glucose levels 1-16 hours post activity


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Better

- Physical Activity at any time of day
- Physical Activity throughout day w/10-minute bouts
- Structured low moderate intensity exercise
- Resistance training at any level

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Best

- Physical Activity throughout day w/10-minute bouts
- 500 kcal per day
- High Intensity Resistance Exercise
- High Intensity Aerobic Activity (limited time)

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Barriers

- Normal**
 - Time
 - Knowledge of how and competency
 - Access to safe and effective resources
 - Don't like!
- Diabetes**
 - Inequities in experiences
 - Fear
 - Glycemic Management
 - Feet and other limitations

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