Exercise Prescription in Diabetes

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The exercise prescription (Ex Rx) guidelines and recommendations for individuals with Diabetes mellitus.

Benefits of Regular Physical Activity for Diabetes

Physical activity (PA) is a key management tool for any type of diabetes and may assist in preventing diabetes-related health complications, insulin resistance, and T2DM.

Moderate intensity exercise totaling 150 min · wk − 1 is associated with reduced morbidity and mortality in observational studies in all populations, including those with DM.

Exercise Testing

The following are special considerations for exercise testing in individuals with DM:

1. When beginning an exercise program of light-to-moderate intensity, exercise testing is generally not necessary for individuals with DM or prediabetes who are asymptomatic for CVD and low risk (<10% risk of cardiac event over a 10-yr period using the Framingham risk calculator).
2. Electrocardiogram (ECG) stress testing may be indicated for individuals with DM, especially anyone who has been sedentary and desires to participate in vigorous intensity activities.
3. If positive or nonspecific ECG changes in response to exercise are noted or nonspecific ST and T wave changes at rest are observed, follow-up diagnostic testing may be performed. However, the Detection of Ischemia in Asymptomatic Diabetes trial involving 1,123 individuals with T2DM and no symptoms of coronary artery disease (CAD) found that screening with adenosine-stress radionuclide myocardial perfusion imaging for myocardial ischemia over a 4.8-yr follow-up period did not alter rates of cardiac events. Thus, the cost-effectiveness and diagnostic value of more intensive testing remains in question.
4. Silent ischemia in patients with DM often goes undetected ; therefore, annual CVD risk factor assessments should be conducted .

Exercise Prescription

The FITT principle of Ex Rx for healthy adults generally applies to individuals with DM.

Criterion	Aerobic	Resistance	Flexibility
Frequency	3-7d/week	2-3 d/week	2-3 d/week
Intensity	Moderate:40 to 50% VO2 Roe 11-12 RPE Severe: 60% to 90% VO2R or 14-17 RPE	Moderate (50%-70% of 1RM) to vigorous (70%-85% of 1RM)	Stretch to the point of tightness or slight discomfort
Time	150min/week	At 8-10 exercises with 1-3 sets of 10-15 repetition	Hold static stretch for 10-30 sec for 10-30 sec

		to near fatigue per set early training. Gradually progress to heavier weights using the 1-3 set of 8-10 repetition.	2-4 repetition of each exercise
Type	Walking, Cycling, Swimming	Resistance machine and free weights	Static and Dynamic and/or PNF Stretching

Exercise Training Consideration

Many people with DM have comorbid conditions; tailor the Ex Rx accordingly. Many individuals with prediabetes or DM are at high risk for or have CVD.
Most individuals with T2DM and prediabetes and many with T1DM are overweight
Due to low initial fitness levels, most individuals with T2DM will require at least 150 min · wk−1 of moderate-to-vigorous aerobic exercise to achieve optimal CVD risk reduction. Interspersing very short, high intensity intervals during moderate intensity aerobic exercise may be useful to lessen the decline in blood glucose during the early postexercise recovery period). A greater emphasis should eventually be placed on vigorous intensity aerobic