



Weight Loss

By Kristi Bercier, BS, ACSM HFS
Shawn R. Simonson, Ed.D., C.S.C.S., ACSM HFS

GENERAL PRINCIPLES

This protocol for Weight Loss is designed to provide the exercise professional with general guidelines for client care with the [AlterG Anti-Gravity Treadmill](#). It should be noted that the progression should be individualized and based on the client's specific needs, physical examination, progress, and complications or pain.

CLINICAL ASSUMPTIONS

Body Mass Index (BMI) is the commonly used criterion to determine overweight and obesity. Adults classified as overweight have a $BMI \geq 25 \text{ kg} \cdot \text{m}^{-2}$ and adults classified as obese have a $BMI \geq 30 \text{ kg} \cdot \text{m}^{-2}$. Obesity is becoming an increasing concern with estimates that more than 66% of adults are either overweight or obese. Increased BMI's are related to numerous chronic diseases, such as cardiovascular disease, diabetes mellitus, cancers, and musculoskeletal problems such as osteoarthritis. Obesity is a common risk factor for osteoarthritis. Exercise is a proven way to reduce body fat however; osteoarthritis can limit exercise capability because of increased pain in the affected joints. Reducing an individual's effective weight during exercise with the [AlterG Anti-Gravity Treadmill](#) can reduce or eliminate the osteoarthritis induced pain during walking.

RISK STRATIFICATION

- **Low Risk:** Asymptomatic men and women who have ≤ 1 CVD risk factor.
- **Moderate Risk:** Asymptomatic men and women who have ≥ 2 risk factors.
- **High Risk:** Individuals who have known cardiovascular, pulmonary, metabolic disease or one of more signs and symptoms.

ABSOLUTE CONTRAINDICATIONS

- A recent significant change in the rest ECG suggesting significant ischemia, recent MI, or other acute cardiac event
- Unstable angina
- Uncontrolled cardiac dysrhythmias causing symptoms or hemodynamic compromise
- Symptomatic severe aortic stenosis
- Uncontrolled symptomatic heart failure
- Acute pulmonary embolus or pulmonary infarction
- Acute myocarditis or pericarditis
- Suspected or known dissecting aneurysm
- Acute systemic infection, accompanied by fever, body aches, or swollen lymph glands

RELATIVE CONTRAINDICATIONS

- Left main coronary stenosis
- Moderate stenotic valvular heart disease
- Electrolyte abnormalities (e.g., hypokalemia, hypomagnesemia)
- Severe arterial hypertension (i.e., systolic BP $>200 \text{ mg Hg}$

- and/or a diastolic BP of $>110 \text{ mm Hg}$) at rest
- Tachydysrhythmia or bradydysrhythmia
- Hypertrophic cardiomyopathy and other forms of outflow tract obstruction
- Neuromuscular, musculoskeletal, or rheumatoid disorders that are exacerbated by exercise
- High-degree atrioventricular block
- Ventricular aneurysm
- Uncontrolled metabolic disease (e.g., mononucleosis, hepatitis, AIDS)
- Mental or physical impairment leading to inability to exercise adequately

PHASE I (Immediate): Week 1- Week 6

GOALS:

- Begin weight loss program.
- Teach and monitor heart rate, blood pressure and Rating of Perceived of Exertion (RPE) throughout.
- Aim for 30 minutes of physical activity at least 3 days a week, either continuously or at regular intervals of at least 10 minutes duration as tolerated by the participant.
- Physical activity should begin at a mild to moderate intensity, target heart rate = 20-40% of age predicted heart rate maximum; calculated by: $(206.9 - (0.67 \times \text{age})) \times 20$ and 40% respectively. RPE should be low, 1-3 on a modified Borg scale of 1 – 10.

TREATMENT OPTIONS

- Modalities:
 - Icing as needed per musculoskeletal symptoms.
- Therapeutic Exercise:
 - Foam rolling and stretching pre and post exercise.
- Gait Training:
 - **AlterG Anti-Gravity Treadmill**
 - Walking at 50-70% body weight for 15-30 minutes
 - Achieve target heart rate by walking at 1.5-3.5 mph. If a comfortable walking speed has been established and heart rate is below the target zone, increase the treadmill grade to bring the heart rate into the target zone. As the individual adapts, this can also be used to increase heart rate and stay within the target heart rate training zone without increasing speed and allow physiological adaptations to exercise to continue.
 - Progressively increase each session by increasing one of the following: body weight, exercise intensity (speed and/or grade), and/or duration by 1-5% as tolerated pain free. Effective body weight should be increased based on participant's tolerance and level of pain. When increasing exercise intensity and/or duration, keep the participant's heart rate in the target zone and increase based on their RPE.
 - Focus on proper gait mechanics at pain-free AlterG levels.

PHASE II (INTERMEDIATE) Weeks 6-12

GOALS:

- Continue weight loss program.
- Monitor heart rate, blood pressure and RPE as previously described.
- Aim for 30-45 minutes of physical activity at least 3-5 days a week, either continuously or at regular intervals of at least 10 minutes duration as tolerated by the participant.
- Physical activity should be at a moderate intensity, 40-60% of age predicted heart rate maximum; calculated by: $(206.9 - (0.67 \times \text{age})) \times 40$ and 60% respectively. RPE should be moderate, around 3-5.

TREATMENT OPTIONS

- Modalities:
 - Icing as needed per musculoskeletal symptoms.
- Therapeutic Exercise:
 - Foam rolling and stretching pre and post exercise.
 - Single and double leg balance activities.
- Gait Training:
 - **AlterG Anti-Gravity Treadmill**
 - Walking at 70-80% body weight for 30-45 minutes
 - Achieve target heart rate by walking at 2.5-4.0 mph. If a comfortable walking speed has been established and heart rate is below the target zone, increase the treadmill grade to bring the heart rate into the target zone. As the individual adapts, this can also be used to increase heart rate and stay within the target heart rate training zone without increasing speed and allow physiological adaptations to exercise to continue.
 - Progressively increase each session by increasing one of the following: body weight, exercise intensity (speed and/or grade), and/or duration by 1-5% as tolerated pain free. Effective body weight should be increased based on participant's tolerance and level of pain. When increasing exercise intensity and/or duration, keep the participant's heart rate in the target zone and increase based on their RPE.
 - Focus on proper gait mechanics at pain-free AlterG levels.

10 minutes duration as tolerated by the participant.

- Physical activity should be at a moderate to vigorous intensity, 60-85% of age predicted heart rate maximum, calculated by: $(206.9 - (0.67 \times \text{age})) \times 60-85\%$ respectively. RPE should be moderate to slightly vigorous, around 5-7.

TREATMENT OPTIONS

- Modalities:
 - Icing as needed per musculoskeletal symptoms.
- Therapeutic Exercise:
 - Foam rolling and stretching pre and post exercise.
 - Single and double leg balance activities.
- Gait Training:
 - **AlterG Anti-Gravity Treadmill**
 - Fast Walking/Light Jogging at 80-95% body weight for 45-60 minutes, 4.0+ mph or by increasing the incline on the treadmill to 3-5% as tolerated.
 - If a comfortable walking speed has been established and heart rate is below the target zone, increase the treadmill grade to bring the heart rate into the target zone. As the individual adapts, this can also be used to increase heart rate and stay within the target heart rate training zone without increasing speed and allow physiological adaptations to exercise to continue.
 - Progressively increase each session by increasing one of the following: body weight, exercise intensity (speed and/or grade), and/or duration by 1-5% as tolerated pain free. Effective body weight should be increased based on participant's tolerance and level of pain. When increasing exercise intensity and/or duration, keep the participant's heart rate in the target zone and increase based on their RPE.
 - Focus on proper gait mechanics at pain-free AlterG levels.

GOALS:

- Weight loss cannot generally be achieved by solely increasing physical activity; modifying the individual's diet will also be necessary. Have the participant log a food diary in order to calculate a 500 Calorie/day deficit to meet ACSM's guidelines for a 1-2 pound/week weight loss. Inform the participant about a healthy weight loss and how to avoid yo-yo weight loss through long-term changes in eating habits.
- Focus on well-balanced, micronutrient dense meals before, during and after exercise as well as adequate hydration.
- Help the participant set long-term and short-term physical activity and diet goals to use as motivation during their program.
- Teach the participant about exercise, diet, and weight loss.

PHASE III (ADVANCED) Weeks 12-18

GOALS:

- Continue weight loss program.
- Monitor and teach heart rate, blood pressure and RPE as previously described.
- Aim for 45-60 minutes of physical activity at least 5 days a week, either continuously or at regular intervals of at least

ALTERG PROGRESSION TABLE

Weeks	BW %	Speed (mph)	Incline (grade)	Time (min)	Target Heart Rate	RPE (1-10)
1-6	50-70%	1.5-2.5	1%	15-30	20-40%	1-3
6-12	70-80%	2.5-4.0	3-5%	30-45	40-60%	3-5
12+	80-95%	4.0+	3-5%	45-60	60-85%	5-7

References:

Baechle, T. R., & Earle, R. W. (2008). *Essentials of Strength Training and Conditioning*. (3 ed.). Champaign: Human Kinetics Publishers.

Thompson, W. R., Thompson, W. R., Gordon, N. F., Pescatello, L. S., & et al, L. S. (2010). *ACSM's Guidelines for Exercise Testing and Prescription*. (8th ed. ed.). Philadelphia: Hubsta Ltd.