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General Principles

This protocol for Transient Ischemic Attack (TIA) is designed to provide the rehabilitation professional with a general guideline for patient care with the AlterG® Anti-Gravity Treadmill™. As such, it should be stressed that this is only a protocol and should not be a substitute for professional clinical decision-making regarding a patient's progression. And it should be further noted that progression should be individualised based upon each patient's specific needs, pain level, physical examination, progress, and presence of any complications.

Precautions and Contraindications

Transient Ischemic Attacks occur when blood flow to the brain is occluded for a short period of time. The patient will experience CVA-like symptoms for a brief period of time, typically not longer than 2 hours in duration. TIAs are considered to be a warning sign that a Cerebrovascular accident (CVA) can happen in the future if nothing is done to prevent it.

Some of the risk factors for TIA and CVA include:

- High blood pressure
- Atrial fibrillation
- Heart disease
- Diabetes
- Family history of CVA
- High cholesterol
- Age > 55 years old
- Race

While working with a patient with a history of TIA and CVA, it is important to closely monitor them for symptoms that may indicate a re-occurrence of their condition. The patient should be taken to hospital for further evaluation if a sudden change is noted in the following symptoms:

- Decreased coordination and balance
- Difficulty walking
- Muscle weakness of the face, arm, or leg
- Unilateral numbness or tingling
- Decreased sensation
- Change in alertness
- Confusion or memory loss
- Personality or mood changes
- Non-movement related vertigo
- Slurred speech
- Difficulty swallowing
- Impaired vision
- Decreased bowel and bladder control

Physical activity can begin once the patient has been cleared by their doctor. It is important to monitor the pre and post exercise blood pressure and heart rate to ensure appropriate cardiovascular response to exercise. The patient should not participate in AlterG training with a diastolic blood pressure greater than 100 mmHg. Any present risk factors should be addressed in order to prevent a CVA from occurring. Up to 40% of people who have a TIA may have a Cerebrovascular accident (CVA) sometime in their lifetime.

More than 10% of people who had a TIA will have a CVA within 3 months so it is important to limit the contributing factors. Half of these CVA's occur within the first 48 hours after a TIA so it is important to go to the hospital following a TIA even if symptom resolution is quick.

Phase 1 (Immediate): Weeks 1 - 4

Goals

- Monitor heart rate and blood pressure throughout rehabilitation sessions
- Increase cardiovascular exercise to five days a week
- Begin weight loss program
- Address any coordination or balance deficits
- Begin a walking program

Treatment Options

- Modalities:
 - Low level laser to promote cerebral recovery (if residual deficits noted)
 - Kinesio taping to facilitate weak musculature
 - Electrical Stimulation to promote neurological recovery or to facilitate weak muscles
- Manual Therapy:
 - Neurological Facilitation Techniques (tapping, joint loading, etc.) (if residual deficits noted)
 - Resisted PNF diagonals
 - Perturbations during balance training
- Therapeutic Exercise:
 - Static and dynamic balance training
- Sitting and standing:
 - Stationary bike to increase cardiovascular and muscular endurance
 - Closed-chain strengthening exercises
 - *NOTE: Any closed-chain and balance exercises can be performed in the AlterG Anti-Gravity Treadmill to decrease difficulty and focus on proper technique*
- Gait Training:
 - AlterG Anti-Gravity Treadmill
 - Walking at 60-80% body weight for 15-20 minutes, 1.5-3.5mph
 - Progress body weight by 1-5% each session with an emphasis on proper gait mechanics
 - Walking with head turns and reaching for objects to further challenge balance and stimulate neuromuscular system
 - Monitor heart rate and blood pressure prior to, during, and following use of AlterG training
 - Over Ground Walking
 - 10-15 minutes on even terrain, self-paced, several times throughout the day

Phase 2 (Immediate): Weeks 5 - 8

Goals

- Monitor heart rate and blood pressure throughout rehabilitation sessions
- Continue exercising 5 times per week
- Continue weight loss program
- Full return to household activities
- Brisk walking for a total of 2.5 hours per week
- Muscular endurance exercises 2+ days per week

Treatment Options

- Modalities:
 - Kinesio taping to facilitate weak musculature
 - Electrical Stimulation
- Manual Therapy:
 - Perturbations during balance training
 - As needed to address bio-mechanical restrictions
- Therapeutic Exercise:
 - Single leg balance activities
 - Stationary bike to increase cardiovascular and muscular endurance (increase resistance and speed)
 - Closed-chain strengthening exercises
 - Initiate functional strengthening exercises for the upper and lower body
 - *NOTE: Any closed-chain and balance exercises can be performed in the AlterG Anti-Gravity Treadmill to decrease difficulty and focus on proper technique*
- Gait Training:
 - AlterG Anti-Gravity Treadmill
 - Walking at 75-90% body weight for 20-40 minutes, 2.5-4.1 mph
 - Focus on proper gait mechanics at higher speeds
 - Decrease speed and/or body weight percentage if gait deviations are noted
 - Monitor heart rate and blood pressure prior to, during, and following use of AlterG training
 - Over Ground Walking
 - 15-20 minutes on uneven terrain (grass, slopes, etc.), self-paced, several times throughout the day
 - Recreational activities at 75% full intensity during, and following use of AlterG training

Phase 3 (Immediate): Weeks 9+

Goals

- Monitor heart rate and blood pressure throughout rehabilitation sessions
- Continue exercising 5 times per week
- Continue weight loss program
- Full return to community and recreational activities
- Progress walking to a light jog if tolerated (75 minutes of vigorous intensity aerobic exercise/week)
- Muscular endurance exercises 2+ days per week

Treatment Options

- Modalities:
 - Kinesio taping to improve mobility
 - Electrical Stimulation
- Manual Therapy:
 - As needed to address bio-mechanical restrictions
- Therapeutic Exercise:
 - Functional strengthening exercises for the upper and lower body
 - Plyometrics as appropriate
 - Elliptical for cardiovascular and muscular endurance
- Gait Training:
 - AlterG Anti-Gravity Treadmill
 - Fast Walking/Light Jogging at 60-95% body weight for 15-40 minutes, 3.5-10 mph
 - *Focus on increased time duration if patient is unable to jog*
 - Monitor heart rate and blood pressure prior to, during, and following use of AlterG training
 - Over Ground Walking
 - Brisk walk for 20-40 minutes on even and uneven terrain daily
 - Full return to community and recreational activities

Week	Body Weight %	Speed (mph)	Time (mins.)
Weeks 1-4	60-80	1.5-3.5	15-20
Weeks 5-8	60-85	2.5-4.1	20-40
Weeks 9+	60-95	3.5-10.0	15-40

