Exercise and Physical Therapy

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2019 Myotonic Dystrophy Annual Conference
Philadelphia, PA
Goals of Physical Therapy and Exercise

• Promote optimal health and wellness
• Prevent or delay secondary complications
• Maximize functional abilities
• Improve/increase participation
• Improve/maintain QOL
Health and Wellness

Health is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity. ~World Health Organization, 1948

Wellness is an active process through which people become aware of and make choices toward a more successful existence. ~ National Wellness Institute
Staying Strong

- Musculoskeletal involvement of DM results in progressive decline in strength
- Inactivity and aging also result in loss of muscle strength
- Physical activity and exercise are essential in minimizing strength loss secondary to disuse and inactivity.

- Aerobic training at a moderate intensity for 2 hours and 30 minutes (5 days of 30 minutes)
- Resistance exercise involving all major muscle groups on 2 or more days per week
- Moderate intensity: able to talk, but not able to sing
- Examples: brisk walking, water aerobics, bicycling, ballroom dancing, gardening
Physical Activity Guidelines for Adults with Disabilities (2018)

• Follow the adult guidelines. If this is not possible, these persons should be as physically active as their abilities allow. They should AVOID INACTIVITY.
Known Benefits of Physical Activity/Exercise

- Control your weight
- Reduce your risk of cardiovascular disease
- Reduce your risk for type 2 diabetes and metabolic syndrome
- Reduce your risk for some type of cancers
- Strengthen your bones and muscles
- Improve your mental health and mood
- Improve your ability to do daily activities and prevent falls
- Increase your chances of living longer
Evidence for Exercise

• “Aerobic training is safe and can improve fitness effectively in patients with myotonic dystrophy.” (Orngreen et al., 2005)

• “There is level II evidence (likely to be effective) for strengthening exercises in combination with aerobic exercises for patients with muscle disorders.” (Cup et al., 2007)

• “Moderate intensity strength training appears not to do harm” (Cochrane Review, 2010)
Evidence for Exercise

• Retrospective study (Brady et al., 2014) aimed to look at the differences in strength of individuals with DM1 who were habitually active or sedentary.

• Individuals with mid-range CTG repeats (100-500) who were engaged in regular exercise programs, demonstrated stronger grip, elbow flexor, and knee extensor strength than sedentary counterparts.

• Those who began an exercise program demonstrated a 24% gain in knee extensor strength.
Evidence for Exercise

• Review (Roussel et al., 2019)
• Looked at 21 papers that reported on the effects training programs and exercise in individuals with DM1.
• Programs included exercise, NMES, strength training, aerobic training, balance training, and multiple interventions
• Positive effects on patient reported outcomes, aerobic capacity, muscle endurance,
• Improvement in function in 4/10 studies; improvement in strength in 9/11 studies.
• No adverse effects of exercise; but insufficient evidence to establish recommendations such as type, frequency, intensity and duration of exercise.
Evidence for Exercise

• OPTIMISTIC study (Okkersen et al., 2018)
• 128 individuals with DM1 who participated in a cognitive behavioral therapy (CBT) + exercise program
• CBT (10-14 sessions) focused on symptoms of reduced initiative, increasing physical activity, improving social interaction, sleep-wake patterns, pain and addressing beliefs of fatigue.
• Increased activity and participation, improved fatigue and exercise capacity (6MWT)
Evidence for Exercise

- Impact of exercise on the cellular mechanisms in mice (Manta et al., 2019)
- Increased motor performance, strength and endurance
- Increased mitochondria, reduced RNA toxicity and improved mRNA splicing
- IN MICE
Physical Activity and Exercise

“Physical activity in daily life can be categorized into occupational, sports, conditioning, household, or other activities. Exercise is a subset of physical activity that is planned, structured, and repetitive and has as a final or an intermediate objective the improvement or maintenance of physical fitness.” (Caspersen, 1985)
Types of Exercise

- Stretching (range of motion)
- Strengthening (resistance training)
- Aerobic (cardiovascular training)
- Balance training
Range of Motion

- Active, Active/Assisted, Passive
- Gravity minimized
- Addresses muscle imbalances
- May decrease pain
Aerobic

- Cycling
- Walking
- Aquatic exercise
- Dancing
- Gardening/yardwork

- Moderate intensity: Activity that raises heart rate and respiratory rate, but you are still able to talk.
Resistive

- Body weight
- Free weights
- Machines
- Resistive bands
- Soup cans
- Aquatic exercise

- Moderate intensity-able to complete 12-15 repetitions
Balance Training

• Multi-dimensional
  • Strengthening (proximal muscles/core for stability)
  • Range of motion
  • Task oriented

• Multi-sensory
  • Vision
  • Vestibular
  • Sensation

• Tai Chi, yoga
Minimize Sedentary Lifestyle

• Evidence is mounting regarding the detrimental effects of sitting/being sedentary
• Individuals with DM were noted to sit 7.5 hours/day!
• Be as physically active as you are able
• Set a timer to get up and move around
# Overcoming Barriers to Physical Activity

| Motivation | ✓ Plan ahead. Make physical activity a regular part of your daily or weekly schedule and write it on your calendar.  
|            | ✓ Invite a friend to exercise with you on a regular basis and write it on both your calendars.  
|            | ✓ Join an exercise group or class |
| Fatigue/Lack of Energy | ✓ Schedule physical activity for times in the day or week when you feel energetic.  
|                        | ✓ Convince yourself that if you give it a chance, physical activity will increase your energy level; then, try it |
Physical Therapy Intervention

- Individualized care
- Establish patient centered goals following evaluation
- Type, frequency, intensity, duration
- Exercise Recommendations
- Bracing/Orthotics
- Assistive devices
Bracing

http://www.allardusa.com/

medtechbusiness.com

http://www.cascadeorthotics.com
Assistive Devices
Scooters and Wheelchairs
Thank you!