

# 2019 Myotonic Annual Conference

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# Exercise and Physical Therapy

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# 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

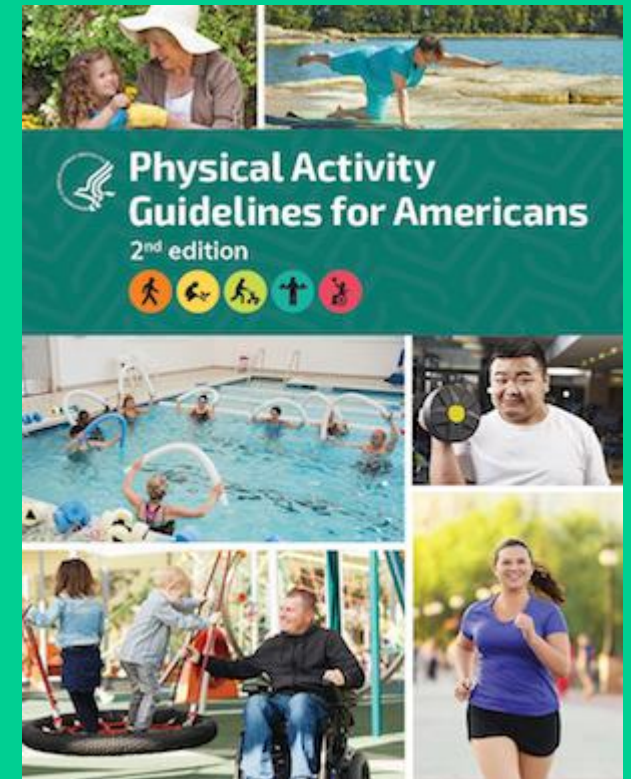
Wellness is an active process through which people become aware of and make choices toward a more successful existence. ~ National Wellness Institute

# 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.

# Physical Activity Guidelines 2<sup>nd</sup> ed. (2018)

- 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



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# 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



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# 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	<ul style="list-style-type: none"><li>✓ Plan ahead. Make physical activity a regular part of your daily or weekly schedule and write it on your calendar.</li><li>✓ Invite a friend to exercise with you on a regular basis and write it on both your calendars.</li><li>✓ Join an exercise group or class</li></ul>
Fatigue/Lack of Energy	<ul style="list-style-type: none"><li>✓ Schedule physical activity for times in the day or week when you feel energetic.</li><li>✓ Convince yourself that if you give it a chance, physical activity will <b>increase</b> your energy level; then, try it</li></ul>

# Physical Therapy Intervention

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



# Bracing



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<http://www.cascadeorthotics.com>

# Assistive Devices



# Scooters and Wheelchairs



Thank you!

