Mitochondrial Disease and Exercise

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What will be covered

• What is Mitochondrial disease (MD)?
• Why do we exercise?
• Benefits of exercise for people with MD
• Types of exercise that may help
• Monitoring during exercise sessions
• Other considerations
• Questions?
What is Mitochondrial Disease?

- **Mitochondrial disease (MD)** is due to a fault in one or more genes that make up mitochondria causing a hiccup in the production of Mitochondria from the time of conception.
Exercise versus Physical Activity

• **Physical Activity**...is movement that is carried out by muscle movement requiring energy.

• **Exercise** is...planned, structured and intentional physical activity completed to work on cardiovascular fitness and strength.
Why do we exercise?

• Improved cardiovascular fitness
• Maintain healthy weight
• Reduce risk of developing comorbidities
• Maintain physical mobility and independence
• Improve Mental health status
Types of Exercise

- **Resistance versus endurance**
  - *Resistance* exercise is any form of exercise that forces your skeletal muscles to contract
  For example: free weights, resistance bands, cycling

  - *Endurance* exercise is the act of exercising to increase endurance
  For example: Walking, swimming and body-weight exercises
Benefits of exercise for people with Mitochondrial Disease

If completed in the correct manner, exercise can:

• **Alter the ratio** of mutated to wild-type mitochondria (Taivassalo et al.)

• Improving oxygen use, muscle function and overall metabolism efficiency (Murphy et al. 2008 & Taivassalo et al. 2006a, b)

• Ultimately resulting in improvements in **quality of life**
Monitoring during Exercise

- Noting early **signs of fatigue** and time of onset
- Self-monitoring (own awareness of signs)
- Timed play and planned breaks (e.g. 10 minutes of playing and 10 minutes of quiet game OR on the sideline being score keeper)
- Stopping **BEFORE** exhaustion
- Monitoring response to different types of exercise
Other Considerations

- Weather conditions (e.g. temperature)
- Time of day (e.g. morning or afternoon)
- Current health (e.g. sickness)
- What else is planned for the day? (e.g. community appointments)
- Assistive technology (e.g. walker)
Client’s Story

• Knowing their energetic times and utilising them
• Varying exercise (swimming, walking, body-weight)
• Having rest days
• Noting early signs of fatigue
• Keeping up nutrition
• Use of assistive technology (e.g. manual wheelchair, modified bike, walker, SPIO suit, Piedro boots, foot orthoses)
Summary:

- Exercise 3x/week (every-other-day)
- Fuel up before, during and after exercise
- Stay hydrated
- Warm up and cool down
- Factor in rest and nutrition
- Goals should be small and achievable
- Stop BEFORE exhaustion
QUESTIONS??
References:


References continued:
