Exercise and Hypermobility

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Exercise and Hypermobility

- Why exercise?
- Understanding exercise
  - Exercise physiology
- Considerations for patients with EDS/hypermobility
Why Exercise?

• Numerous health benefits
• If the effects of exercise could be wrapped up in tablet and patented by a Pharmaceutical Company then it would be widely prescribed
• BUT
  • No financial gain
  • Poor compliance
Why Exercise?

Prevention and management of

- Diabetes
- Obesity
- Cardiovascular disease
- Hypertension
- Osteoporosis
- Depression/anxiety
- Arthritis
Types of exercise training

• Aerobic
• Strength
• Flexibility
• Balance/coordination/proprioception
Aerobic (cardiorespiratory) exercise

- Transfer of oxygen to muscle
- Stimulates
  - Heart
  - Lung
  - Red cells
  - Muscle
Aerobic (cardiorespiratory) exercise

- Increased energy expenditure
- Metabolic changes
  - Increased insulin sensitivity
  - Improved lipid profile
Exercise prescription

Aerobic exercise

- Moderate intensity - Sing-talk test
  - 150 min per week (children 300 min/week)
  - 30 min x 5 per week (10 min episodes)
  - eg Walking

- High intensity
  - 75 min/week
  - eg Running
Strength training

- Enhances strength
  - Muscle
  - Ligament
  - Tendon
  - Bone
- Reduced risk of injury
- Metabolic changes
  - Insulin sensitivity
  - Increased RMR
Exercise prescription
Strength training

- 8 – 10 strength training exercises
- 8 – 12 repetitions of each exercise
- Twice a week
Flexibility training

- Reduced risk of injury
- Improvement in posture
Balance/coordination/proprioceptive training

• Reduced risk of injury
• Reduced risk of falls
• Tai Chi
Exercise prescription
Balance/proprioceptive training

• Single leg standing
  • Eyes open
  • Eyes closed
• Balance board exercises
• Tai Chi
Exercise and Type 2 Diabetes Prevention


- 10 prospective cohort studies of 301,221 subjects
- RR of Type 2 Diabetes
  - 0.69 for regular physical activity – moderate intensity
  - 0.70 for regular walking (>2.5 hours per week)
- This effect is independent of BMI
  - Effect still applies in those who do not lose weight
Exercise and Hypertension

• Multiple clinical trials have shown that regular exercise can lead to a reduction in systolic BP of 10mmHg and in diastolic of 8mmHg


• Moderate exercise in the form of walking seems to be adequate

Sohn et al. Impact of exercise (walking) on blood pressure levels in African American adults with newly diagnosed hypertension. Eth Dis 2007;17:1049
Exercise and Hypertension


- **Subjects>60yrs**
- **Exercise programme**
  - Treadmill walking
  - 30 mins x 3 per week
  - Moderate intensity
Exercise and lipidaemia

- **Regular aerobic exercise will**
  - *Raise HDL cholesterol*
  - *Lower LDL cholesterol*

    - 50 – 75 yr olds; moderate aerobic exercise over 24 weeks
  - Kodama et al. *Effect of aerobic exercise training on serum levels of HDL cholesterol.* Arch Int Med. 2007; 167;999
    - Meta-analysis
    - 120 minutes of aerobic exercise per week
Exercise and Cardiovascular disease

Exercise and Physical Activity

- Prevention of atherosclerotic CAD
- Treatment of CAD, HF and Claudication
- Reducing risk factors
  - Lipids
  - Hypertension
  - Glucose intolerance

Exercise and Obesity

- Needs to be combined with a reducing diet

- Fit & obese is much better than Unfit & obese

- Fit & obese is better than Unfit and normal weight
  - eg diabetic risk
Exercise and Stress/Anxiety/Depression

Evidence that aerobic exercise is effective in the management of

- **Mild depression**
  - May be more effective than medication
- **Major depressive disorder**
- **Anxiety disorders**
- **Stress**


Cochrane review 2010 states that it is effective but not yet enough evidence to give recommendations of the relative merits of aerobic or resistance training and of individual or group sessions.
Exercise and Depression

• Slowly progressive exercise will improve self-worth and self-efficacy
• The social interaction of a group exercise class may be helpful
Exercise and Arthritis

Osteoarthritis of the knee

• **Strength and aerobic training**
  • Cochrane review 2009

Osteoarthritis of the hip

• Less clear evidence for the use of exercise therapy
  • Cochrane review 2009
Exercise and Chronic low back pain

- Aerobic exercise
- Stability exercise

Cochrane reviews 2010
- recurrent low back pain
- non-specific low back pain
Exercise and Fibromyalgia/chronic widespread pain and chronic fatigue


Cochrane review 2008

- Supervised aerobic exercise programme has a beneficial effect on physical capacity and fibromyalgia symptoms
- Strength training may also have a beneficial effect
Exercise and Osteoporosis/Falls

- Aerobic, weight-bearing and resistance exercise are all effective in increasing Spinal BMD
- Walking effective in the hip
- Exercise focusing on strength, balance and endurance can all reduce the risk of falls eg Tai Chi

Cochrane reviews 2009
Exercise prescription for patients with EDS/Hypermobility

EDS – classic (types I & II), Vascular (type IV)

- Need to be cautious about exercise
  - Avoid contact sport
  - Avoid high intensity activity
  - Focus on
    - low impact aerobic activity, eg swimming, exercise bike
    - Low/moderate load strength training
    - Balance and proprioceptive training

Eg Pilates, Tai Chi, Yoga
Exercise prescription for EDS – hypermobility type

Neuromuscular considerations

- Joint laxity → subluxation → dislocation
- Impaired proprioception/balance awareness
- Musculoskeletal pain
- Deconditioning
  - Reduced aerobic fitness
  - Reduced muscle strength
  → FATIGUE
Exercise prescription for EDS – hypermobility type

The deconditioning is reversible through exercise

- Reduced fatigue
- Improved function
- Improved pain tolerance
- Reduce symptoms of POTS

So what would an exercise programme look like in a patient with EDS-hypmobility type?
Exercise prescription for EDS – hypermobility type

- Avoid contact sport
- Avoid high impact but…..
Exercise prescription for EDS – hypermobility type

Address deconditioning with graded exercise programme

• Aerobic exercise
  ➢ Walking
  ➢ Alternatives: Cycling, swimming
  ➢ Wheelchair exercises including cycling

• Strength training
  ➢ Pilates
  ➢ Using own body weight
Exercise prescription for EDS – hypermobility type

Address impaired balance(proprioception through
- Closed chain exercises
- Eyes open/eyes closed standing
- Pilates
- Tai Chi
Exercise prescription for EDS – hypermobility type

Principles of safe exercise

- Slow, progressive increase in activity
  - Initially short duration and frequency eg twice/week
  - Gradually increase duration and frequency
  - Aim: 20 – 30 mins exercise most days/week

- Monitor by level of carryover pain after activity
  - Duration and intensity
  - Accept a degree of post exercise stiffness that can last for 48 hrs
Summary

• Regular exercise is a key factor in the management of patients with the Hypermobility syndrome
  ➢ Treatment of many aspects of the syndrome
  ➢ Enhancing health and wellbeing

• Consider 3 types of exercise training
  ➢ Aerobic
  ➢ Strength
  ➢ Proprioceptive