Physical Activity and Haemophilia

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Regular physical activity is the ***key to getting healthy and staying healthy*** yet studies show that ***few Irish people take part in regular physical activity*** (SLÁN 1999, 2002, 2007).

Physiotherapy Team

National Coagulation Centre (NCC)

- 1 x full time clinical specialist physiotherapy position in NCC
- Key member of NCC Multi-disciplinary team (MDT)
- 0.5 Sheila Roche, 0.5 Mark McGowan
- Gerard in Cork, Paula in Crumlin
- Key roles:
  - Acute bleeds
  - Annual assessment and Haemophilia Joint Health Score (HJHS)
  - Inpatient rehabilitation
  - Management of any musculoskeletal issue
  - US joint assessment
  - Coordinate orthopaedic clinics in the NCC
  - ***Promote health and wellbeing including physical activity and healthy lifestyle***

Contents

- Why should we engage in physical activity?
- How much should we be doing?
- How much are we doing?
- What does this look like?
- Exercise and COVID-19

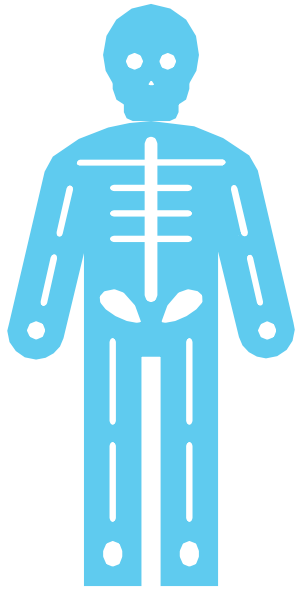
Why do we need to do Physical Activity?

- Only 1 out of every 3 people in Ireland is active on a regular basis
- Most people aged over 65 in Ireland are inactive
- 4 out of 5 children in Ireland are still not getting enough exercise
  - ***All of this creates serious risks to health and wellbeing***

Haemophilia and chronic disease

- **Increased life expectancy** due to advances in medical care of people with haemophilia including treatment
  - **Increased risk of other chronic disease** associated with an older population

Physiological Effects of Ageing: With increasing age…



- Fitness
- Muscle mass (sarcopenia- ~1% loss muscle mass per year after 50)
- Intensity of PA (leads to increases in chronic pain, increase body weight, increase risk of CVD, increased risk of OP)
- Bone mineral density

- Risk of falls and associated complications
- Risk of osteoporosis
- Risk of chronic disease

How does Physical Activity help us:

- Reduces risk of chronic diseases including heart disease, strokes and cancer
- Keeps your weight at a healthy level
- Build your muscle tone and strength
- Reduces feelings of stress, anxiety and depression
- Improve the quality of your sleep and your daily life
- Increases energy levels
- **Adds years to your life - up to 50% of our decline in health is actually caused by not being active**

Evidence base

Health benefits of physical activity – summary of evidence

(US Physical Activity Guidelines Advisory Committee, 2008)

Children and young people	**Strong evidence of:** better cardio-respiratory and muscular fitness stronger bones better cardiovascular and metabolic health healthier body fat composition **Some evidence of:** reduced symptoms of anxiety and depression
All adults (including adults with disabilities and older adults)	**Strong evidence of:** better cardio-respiratory and muscular fitness less weight gain more weight loss – combined with eating fewer calories better weight maintenance after weight loss lower risk of early death lower risk of stroke lower risk of coronary heart disease lower risk of high blood pressure lower risk of unhealthy blood lipid profile lower risk of type 2 diabetes lower risk of metabolic syndrome lower risk of colon and breast cancer fewer falls reduced levels of depression better cognitive function in older adults **Some evidence of:** lower risk of hip fracture lower risk of lung cancer lower risk of endometrial cancer stronger bone density better sleep quality reduced abdominal fat

Physical activity in Haemophilia

- Ongoing bleeds
- Chronic arthropathy
- Reduced mobility
- Psychological impact
  - 8 out of 11 People with haemophilia limit their activity (SOBI, 2018)

Summary

- Physical activity is important!!!
- Required throughout the lifespan

Physical Activity

- Aerobic
- Strength
- Flexibility and mobility
- Balance

Physical Activity – What Should we Be Doing?

General Physical Activity – Aerobic activity Recommendations:

- **Adults aged 18-64:**
  - At least 30 minutes a day of **moderate intensity activity** on 5 days a week or 150 minutes a week
  - or 75 minutes **vigorous intensity** activity a week
  - or combination
- **Over 65's** : at least 30 minutes a day of **moderate intensity activity** on 5 days a week, or 150 minutes a week or 75 minutes **vigorous** intensity activity or combination per week.
  - Focus on aerobic activity, muscle-strengthening and balance.
- You can count shorter bouts of activity towards the guidelines.
  - ***These bouts should last at least 10 minutes.***

How much are we doing?

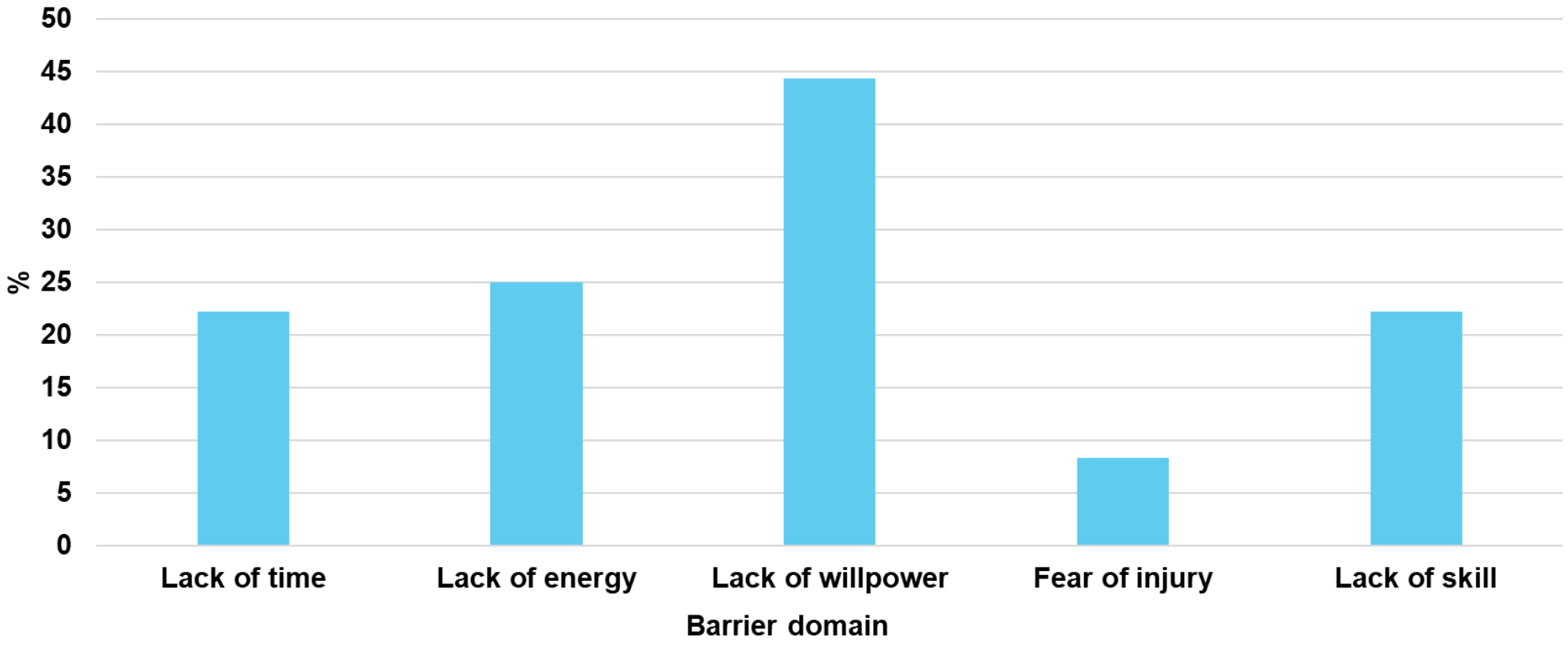
- The National Survey of Lifestyles Attitudes and Nutrition (SLÁN 2007) showed that ***only 41% of Irish adults*** took part in moderate or strenuous physical activity for at least 20 minutes three or more times a week. This level of activity has ***not changed much over the past ten years*** – 40% in 2002 compared with 38% in 1998. We do not have specific data for people with disabilities taking part in physical activity (NDA, 2005).

iPATH: Physical Activity in Haemophilia

n = 42	Median (IQR)
Light PA (mins/week)	1993 (841)
Moderate PA (mins/week)	**207 (192)**
Vigorous PA (mins/week)	0 (1)
Moderate-Vigorous PA (MVPA) (min/week)	218(0)
Total time in MVPA of 10 minute bouts	42 (113)
Meeting recommendations in total minutes?	***Yes = 69%*** No = 31%
Meeting recommendations in total minutes of **at least 10 minute bouts** of MVPA?	***Yes = 17%*** No = 83%

Megan Kennedy – Research Physiotherapist – iPATH study

Barriers to Physical Activity in Haemophilia population: iPATH



Megan Kennedy – Research Physiotherapist – iPATH study

Barriers to Physical Activity in Haemophilia population: iPATH

	<45y (n=17)	≥45y (n=19)
Lack of time (%)	35.3	10.5
Lack of willpower (%)	47.1	36.8
Lack of skill (%)	5.9	42.1
Fear of injury (%)	0	15.8
Lack of energy (%)	29.4	21.1

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Aerobic activity

- Aerobic activity relates to exercise that is sustained for prolonged periods and targets the development of your heart and respiratory system to supply fuel and oxygen to the working muscles

- Commonly used training methods to develop your aerobic endurance, which is also termed cardiovascular endurance, are steady state running, cycling and swimming

Intensity – What's That?

Intensity the rate at which the activity is being performed or the magnitude of the effort required to perform an activity or exercise.

It can be thought of as "*How hard a person works to do the activity*".

What is Moderate Intensity Exrercie

A Brisk Walk

Dancing

Gardening

Hoovering

Cycling

Moderate Intensity Exercise

How should I feel:

- You should still be able to talk, but you can't sing the words to a song.

How can I measure it?

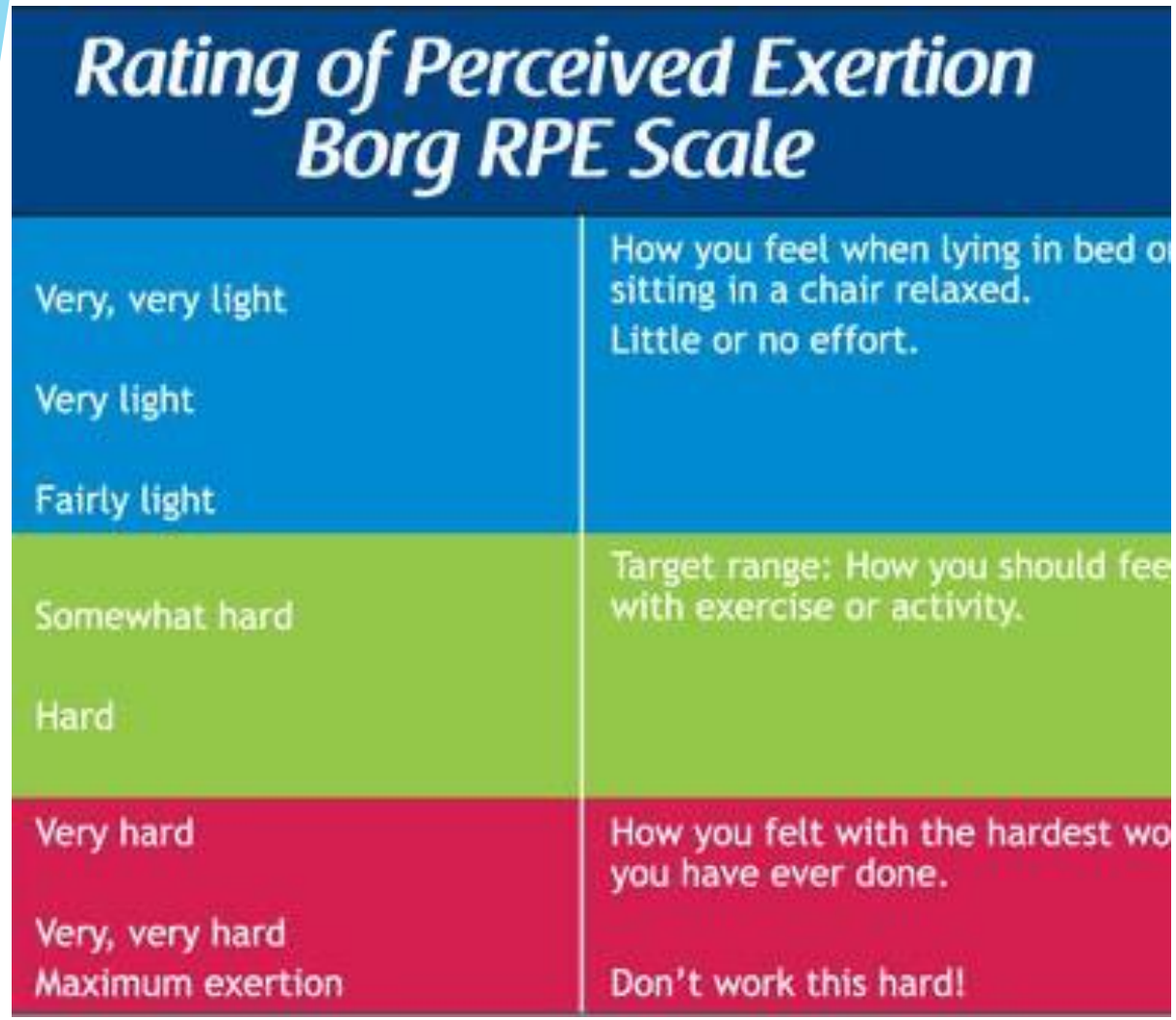
- You can measure it using your heart rate or an effort scale
- you are aiming for 50-70% of your maximum heart rate.

How to calculate your maximal heart rate and training heart rate zone

Example for a 60 year old person – 50-70% heart rate

1. 220 – age
   - 220 – 60 = 160 beats per minute - **Max Heart rate (estimate)**
2. Calculate 50% of 160
   - 160 ÷ 100 = 1.6
   - 1.6 × 50 = **80 beats per minute**
3. Calculate 70% of 160
   - 160 ÷ 100 = 1.6
   - 1.6 × 70 = **112 beats per minute**

- Therefore moderate intensity heart rate training zone is estimated as between 80 – 112 bpm for a 60 year old person



Borg Rating of Perceived Exertion Scale

What is Vigorous Intensity Activity

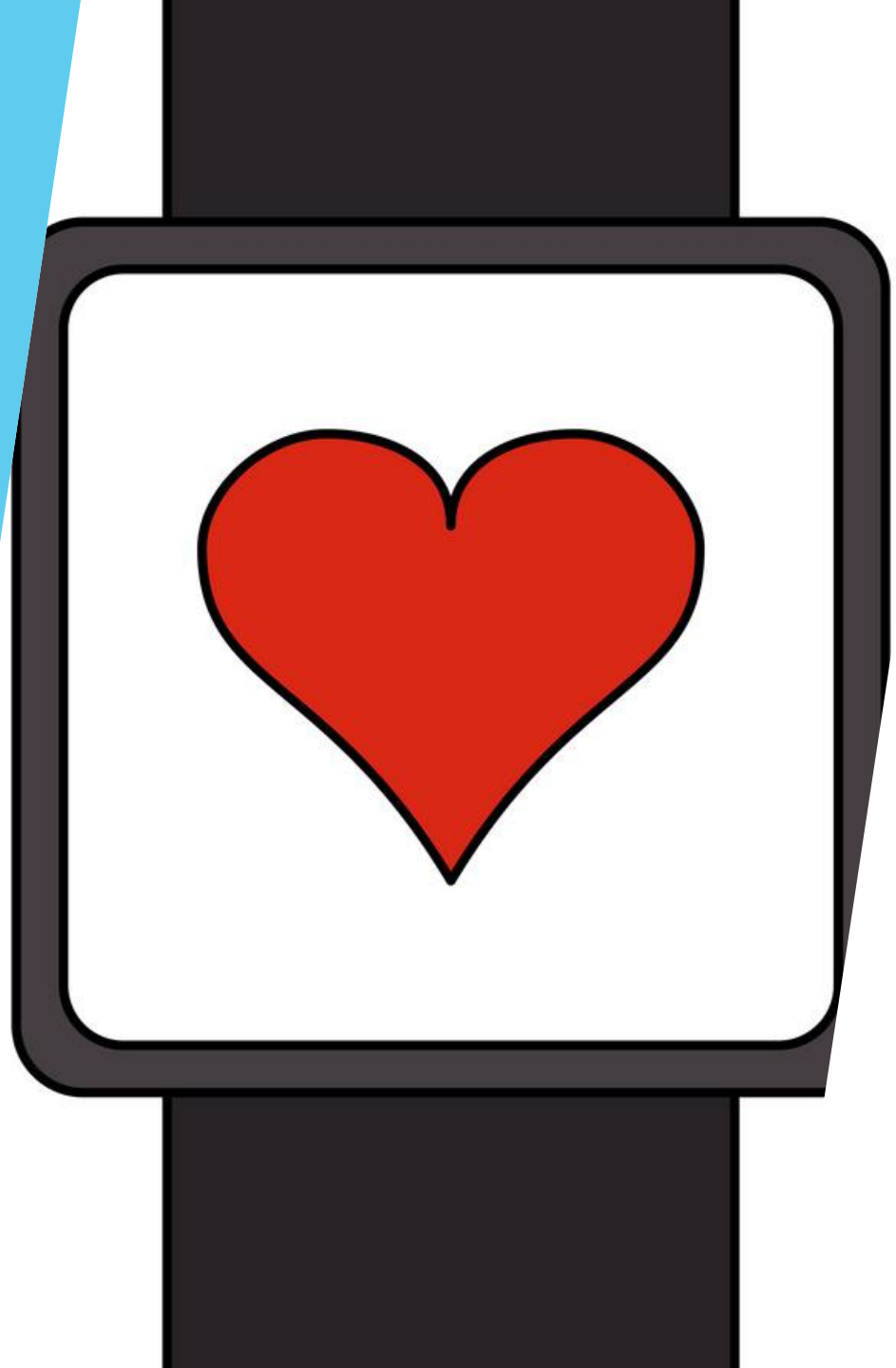
Running

Swimming laps

Aerobics

Competitive sports

Hiking up hill



Vigorous Intensity Activity

- **How should you feel?**
  - Vigorous activity requires a large amount of effort.
  - It causes rapid breathing and a substantial increase in heart rate.
  - You would find it hard to speak in full sentences.

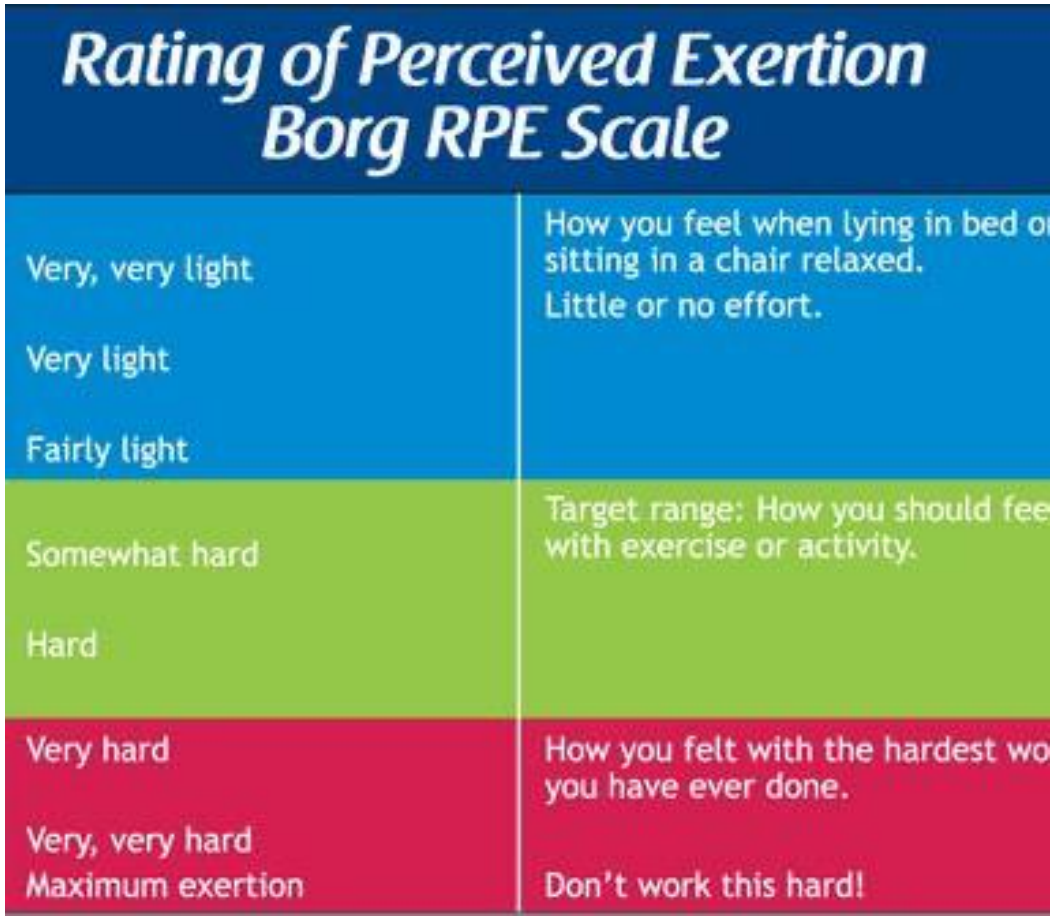
- **How can I measure this?**
  - You can measure it using your heart rate or an effort scale
  - you are aiming for 70-85% of your maximum heart rate.

How to calculate your maximal heart rate and training heart rate zone

Example for a 60 year old person – 70-85% heart rate

1. 220 – age
   - 220 – 60 = **160 beats per minute Max Heart rate (estimate)**
2. Calculate 70% of 160
   - 160 ÷ 100 = 1.6
   - 1.7 × 70 = **112 beats per minute**
3. Calculate 85% of 160
   - 160 ÷ 100 = 1.6
   - 1.6 × 85 = **136 beats per minute**

- Therefore moderate intensity heart rate training zone is estimated between 112 – 136 bpm



Borg Rating of Perceived Exertion Scale

General Physical Activity - other Recommendations:

- Strength training x2/ week
  - is a type of physical exercise using resistance to induce muscular contraction, which builds the strength, anaerobic endurance, size of skeletal muscles and bone density
- Flexibility training x2/ week
  - Is a type of physical exercise to developing a wide range of movement in a joint or muscle group by stretching or mobility exercises
- Balance training – particularly for over 65s and those with balance deficits

The Principles of Strength Training

1. **Overload**: use more resistance than your muscles are used to
   - Stimulus for muscles to adapt and build strength
   - lifting enough weight that you can only complete the desired number of reps
2. **Progression**: to avoid plateaus, you need to increase your intensity regularly
   - You can do this by increasing the amount of weight lifted, changing your sets/reps, changing the exercises, and/or changing the type of resistance
3. **Specificity**: This means you should train for your goal
   - If you want to increase your strength, your program should be designed around that goal (e.g. train with heavier weights closer to your 1 RM, or 1 rep max)
4. **Rest and Recovery**: Rest days are just as important as workout days. It is during these rest periods that your muscles grow and change, so make sure you're not working the same muscle groups two days in a row

Strength Training
Training Load and Repetitions

Training Zone	Fitness Goal	Resistance
1 – 3 RM	Muscular Power	Very heavy
3 – 7 RM	Muscular Strength	Heavy
8 – 12 RM	Muscular strength and Endurance	Moderate
13 – 25 RM	Muscular Endurance	Light

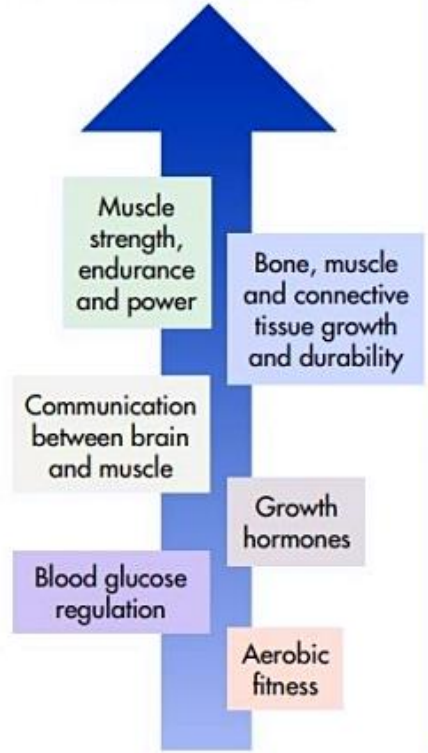
RM – repetition maximum
For example 8 – 12 RM – reach fatigue after completing between 8 – 12 repetitions – and cannot complete repetition 13!

- No evidence what is safe for haemophilia population
- Start higher training zone reps and build from there

Resistance Training for Health

People of all ages and abilities who regularly participate in resistance exercise reduce risk of numerous diseases, improve quality of life and reduce mortality.

Key Physiological Benefits of Resistance Exercise



Resistance Exercise Can Help Manage and Treat Many Conditions Including:

- Arthritis
- Cancers
- Cardiovascular disease
- Dementia
- Depression
- Diabetes
- Fall risk
- Frailty
- Hypertension
- Insomnia
- Low back pain
- Mental health
- Movement disorders
- Obesity
- Osteoarthritis
- Osteoporosis
- Pulmonary disorders
- Peripheral vascular disease
- Stroke

Training can be time efficient and effective for health benefits:

For health benefits, muscles need to be challenged with a combination of weight lifted, repetitions and speed of lifting. The addition of resistance training to aerobic programs can also enhance other health gains throughout the life span from childhood to old age.

Exercise Plan:

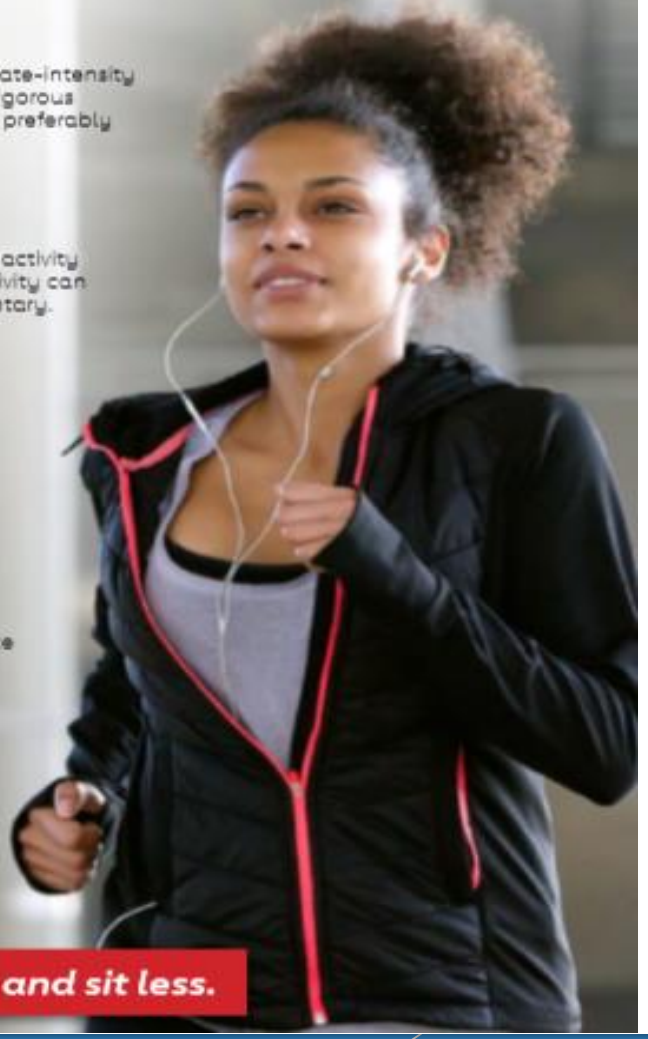
- Free weights, machines and/or bands can be used
- Perform 8-10 multi-joint exercises that stress the major muscle groups
- Perform 2-3 sets of 8-12 repetitions with good form
- Lift and lower the weight in a controlled manner (2 seconds each up and down)
- The last repetition should be difficult to complete
- Perform exercise 2-3 times per week
- Progress weight lifted over time so that it feels like an 8 out of 10 difficulty (where 0 = no effort, 10 = hardest effort you can give)

Authors: Fiataraone Singh, Maria; Hackett, Daniel; Schoenfeld, Brad; Vincent, Heather K.; Wescott, Wayne. 2019

AMERICAN COLLEGE of SPORTS MEDICINE
LEADING THE WAY

How much physical activity do you need?

Here are the American Heart Association recommendations for adults.



Fit in 150+

Get at least 150 minutes per week of moderate-intensity aerobic activity or 75 minutes per week of vigorous aerobic activity (or a combination of both), preferably spread throughout the week.

Move More, Sit Less

Get up and move throughout the day. Any activity is better than none. Even light-intensity activity can offset the serious health risks of being sedentary.

Add Intensity

Moderate to vigorous aerobic exercise is best. Your heart will beat faster, and you'll breathe harder than normal. As you get used to being more active, increase your time and/or intensity to get more benefits.

Add Muscle

Include moderate- to high-intensity muscle-strengthening activity (like resistance or weight training) at least twice a week.

Feel Better

Physical activity is linked with better sleep, memory, balance and cognitive ability. And less risk of weight gain, chronic disease, dementia and depression. It's one of the most important things you can do for your health and well-being.

Move more, with more intensity, and sit less.

Each exercise session

A. Always warm-up thoroughly before your training session. Your warm-up should gradually raise your heart rate and prepare you for the main part of the training session.
B. Keep hydrated before, during and after your training session.
C. Refuel after the training session.
D. Progress from week to week in a gradual manner. No week should increase in volume and intensity by greater than 10%.
E. Appropriate footwear

Exercise and COVID-19 restrictions

- Any exercise, any physical activity is better than nothing
- If you are not in a vulnerable category, get out for a walk, jog or cycle within the current 5km radius restrictions
  - Monitor your exercise intensity using your heart rate or the RPE scale
  - Monitor your time
- If you have a garden you can walk or jog
  - You can mix pacing in your back garden with some body weight exercises
- Some caution with introduction of new activities – gradual introduction and pacing important

Exercise and COVID-19 restrictions

- Circuit 1
- Try to do as many repetitions as possible in a certain time – for example 1 minute for each exercise, take a short rest and repeat the circuit, aiming for 3 sets

Exercise and COVID-19 restrictions

- Circuit 2

Exercise and COVID-19 restrictions

- Circuit 3

Top Tips

- Any exercise, any physical activity is better than nothing
- Intensity is key
- A mix of aerobic, strength, flexibility and balance exercises is optimal
- Individualised as required
- Find the exercise that you enjoy and your body can tolerate

Physiotherapy Survey

Who - Survey people with severe haemophilia VIII and IX

What - Physiotherapy annual assessment and Physiotherapy Haemophilia Joint Health Score

Why - To develop our physiotherapy service to best fit the needs of our patient population

Please feedback

- Questions?