Special Populations

Programme design and delivery considerations

IMPORTANT NOTE

PLEASE NOTE: this qualification does not qualify you to teach special populations as specific groups.

You are required to show you have the knowledge to adapt your plans to accommodate these groups as occasional drop ins.

Providing your insurance allows, you would be able to teach ‘drop ins’ from special populations providing they are OK to participate, and you feel confident enough to coach them.

You should not run specific, special population classes unless you also have a qualification for that group e.g. L3 Pre and Post or L3 Older Adult.

Older adults

Consider

How would you modify a class and exercises to meet the needs of older adults?

Possible needs:

- Postural problems
- Stiffer, less mobile joints
- Loss of muscle tissue and bone density
- Less flexibility
- Weaker pelvic floor muscles
- Forgetting movement patterns more rapidly
- Reduced body awareness
- Reduced movement speed
- Difficulty in maintaining balance

Older adults (50+)

- Age-related changes generally start around age 50
  - Inactive lifestyle = may commence earlier!
  - Active lifestyle = delay onset and progress of ageing

Other considerations:

- Longevity of exposure to lifestyle factors affecting health, e.g. Inactivity, alcohol and smoking
- Longevity of exposure to health conditions, e.g. High blood pressure, diabetes, high cholesterol

Ageing process

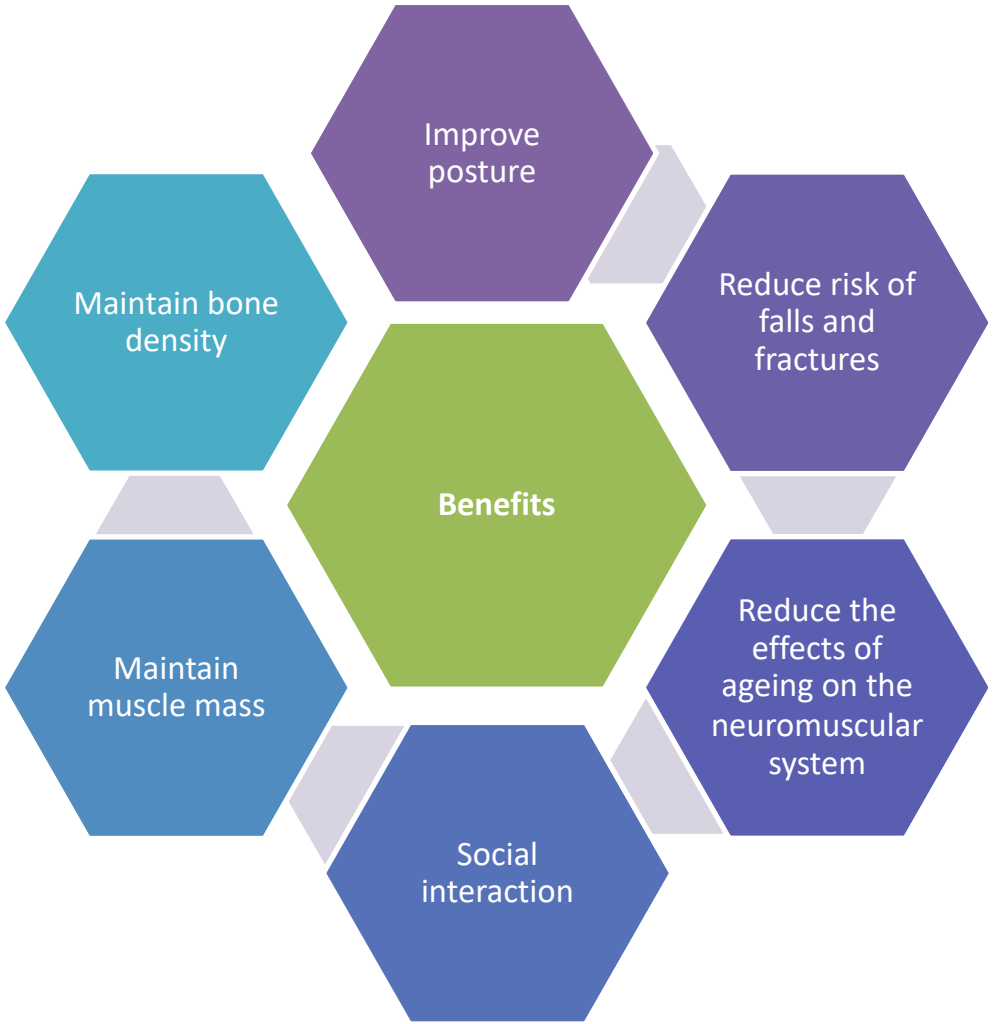
Age-related physiological changes may include:

- Changes to vision and hearing
- Reduced bone density (osteoporosis), risk of fracture or falls
- Stiffer joints (osteoarthritis)
- Reduced muscle mass, decreased motor units, reduced number and size of muscle fibres (especially fast twitch)
- Increased connective tissue and fat
- Postural and gait changes
- Memory and balance issues

Continued....

- Postural problems
- Loss of muscle tissue
- Less flexibility
- Weaker pelvic floor muscles
- Forgetting movement patterns more rapidly
- Reduced body awareness
- Reduced movement speed
- Difficulty in maintaining balance

Benefits of physical activity for older adults



Age related medical conditions

Mobility	Cardiac	Respiratory	Other
• Osteopenia • Osteoporosis • Osteoarthritis • Low back pain	• Atherosclerosis • Angina • Hypertension • Heart attack	• Asthma • COPD	• Stroke • Dementia • Obesity • Type 2 diabetes

Safety considerations

Depends on Individual and their needs:

- Current and previous activity level and fitness
- Functional ability, e.g. Mobility
- Health conditions that may need to be worked with by referral instructor
- Any contraindications, e.g. Heart conditions, stage 3 hypertension, resting heart rate at or above 100bpm, risk of falls

Blood Pressure Stages

Blood Pressure Category	Systolic mm Hg (upper #)		Diastolic mm Hg (lower #)
Low blood pressure (Hypotension)	less than 80	or	less than 60
Normal	80-120	and	60-80
Prehypertension	120-139	or	80-89
High Blood Pressure (Hypertension Stage 1)	140-159	or	90-99
High Blood Pressure (Hypertension Stage 2)	160 or higher	or	100 or higher
High Blood Pressure Crisis (Seek Emergency Care)	higher than 180	or	higher than 110

Source: American Heart Association

Modifications

- Longer preparation and closing phases
- Posture focus activities specific to needs
- Increased joint mobility (stiffer joints)
- Reduced movement speed and resistance (reduced fast twitch fibres)
- Increase teaching time (memory)
- Technique focus (body awareness)
- More stable positions, focus on balance
- Pelvic floor focus
- Less complexity
- Smaller range of motion (less flexible)
- Reconsider some positions, e.g. Supine lying controversial if osteoporosis of spine

Osteoporosis 50+

- One in every 2 women and 1 in every 4 men will suffer an osteoporosis-related hip, spine or wrist fracture during their lives.
- 1 in every 2 women has low bone density and is at risk for fracture
- Fractures can occur spontaneously or through e.g. opening a stuck window, lifting a light object from the floor with a rounded thoracic spine or even just coughing or sneezing. (National Osteoporosis Foundation [NOF] 2005)

Cummings & Melton 2002; Keller 2003

Osteoporosis continued…

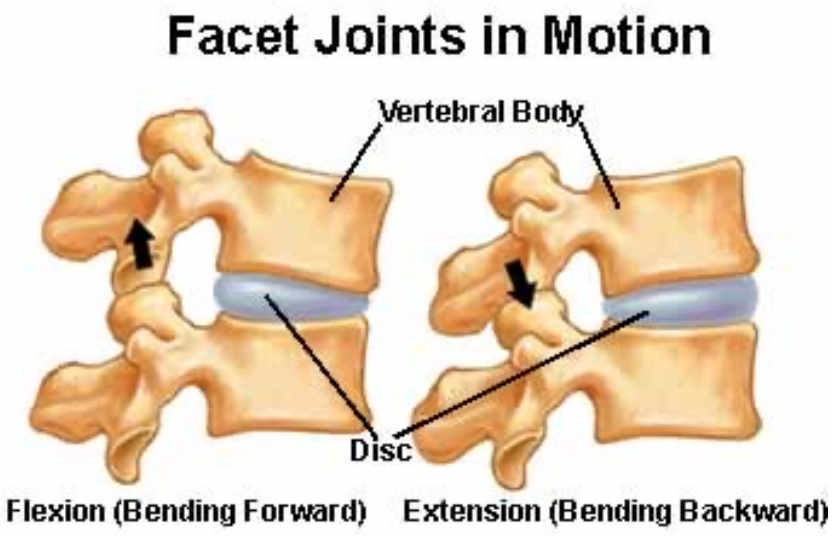
- In a controlled study* 89% of the people who performed only flexion exercises suffered additional fractures

- This indicates that it is potentially harmful and dangerous to allow clients to perform flexion exercises when they have known osteoporosis

**Sinaki & Mikkelson 1984*

Spinal Extension

- The posterior surface of the vertebrae contain a higher composition of cortical bone
- These areas do get compressed as the spine moves into extension
- the movement is claimed to be much less risky due to the strength of cortical bone.



(Sinaki et al.1986, 1996, 2002).

Spinal Extension

- Research shows that people with stronger back extensor muscles had higher bone density in their spines
- Strong back extensors link to less vertebral fractures
- People intuitively avoid spinal extension because of the “bone on bone” feeling at the end range during back arching.

- **Exercises which *may* be safe for a client with osteoporosis**

Hundred--with head down
Single Leg Circles
Single Leg Stretch--head down
Double Leg Stretch--head down
Single Leg Stretch With Straight Legs--head down
Double Leg Stretch With Straight Legs/Lower Lift--head down
Criss-Cross--head down
Swan-Dive (Level 1/prep only)
Single Leg Kick
Double Leg Kick
Shoulder Bridge--not too high
Side Kick
Hip Circle/Hip Twist With Stretched Arms-neutral spine
Swimming
Leg-Pull--Front
Leg-Pull
Side Kick Kneeling--neutral spine
Push-Up

Contraindicated Pilates Mat Exercises for clients with osteoporosis

Hundred--unmodified
Scissors
Bicycle
Spine Twist
Jack-Knife
Teaser
Boomerang
Seal
Crab
Rocking
Control Balance

Roll-Up
Roll-Over--both ways
Rolling Back/Rolling Like a Ball
Scissors
Spine Stretch
Rocker With Open Legs/Open Leg Rocker
Corkscrew
Saw
Neck Pull

For information only – it is recommended that L3 Instructors do NOT work with osteoporosis without further training.

Ante and post natal

Ante natal period

- Trimester 1: 0-3 months
- Trimester 2: 3-6 months
- Trimester 3: 6-9 months

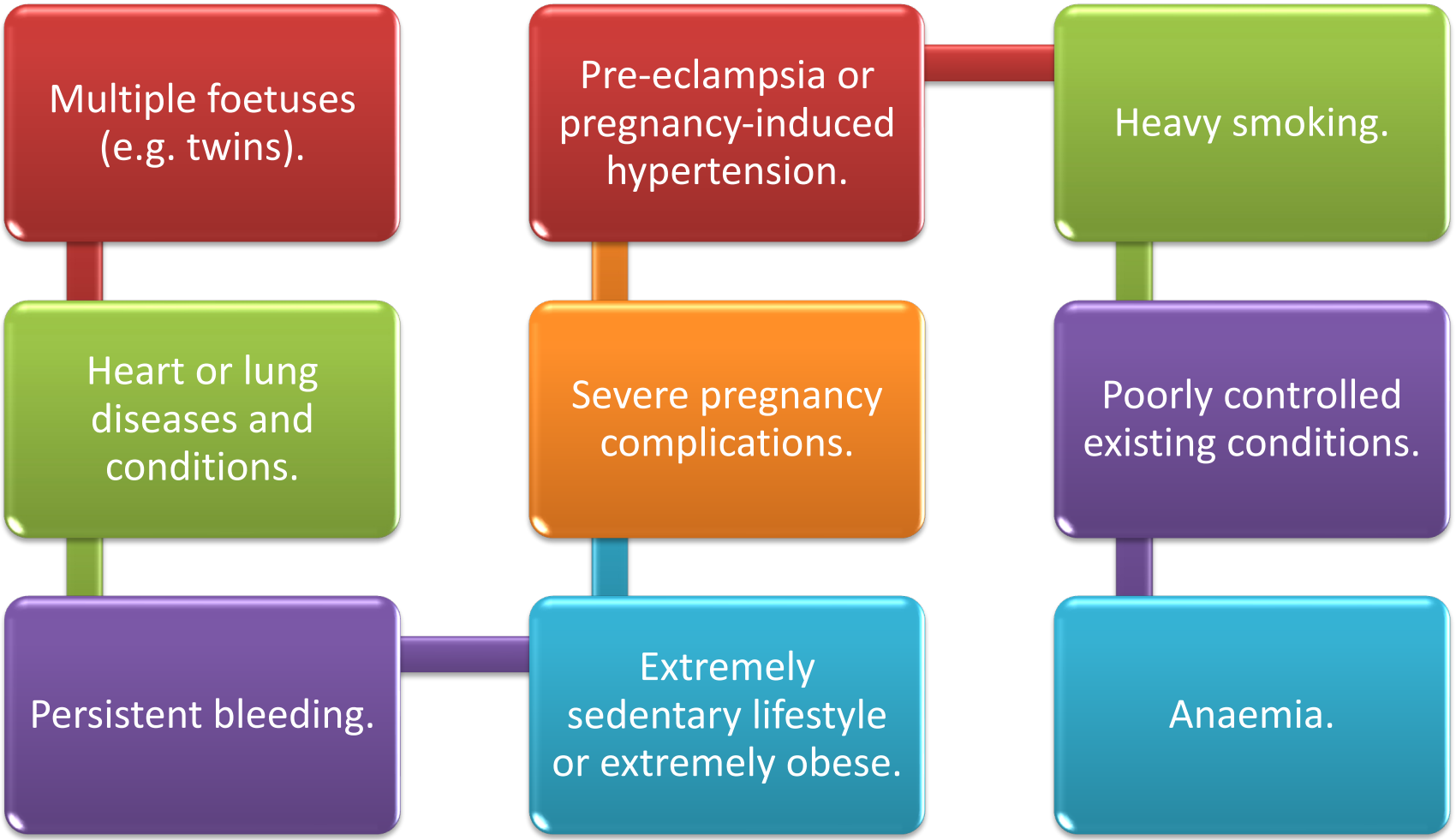
Post natal period

- Post birth

Benefits of physical activity for pre and postnatal clients

- Maintenance of general fitness levels
- Preparation for labour and postnatal recovery
- Maintenance of a healthy weight
- Improved coordination and body awareness
- Reduced fatigue
- Improved circulation
- Reduced swelling
- Improved psychological wellbeing
- Improved sleep patterns
- Reduced stress

Contraindications for pre and postnatal clients



STOP exercising with pre and postnatal clients if:

- Excessive shortness of breath.
- Chest pain or palpitations.
- Dizziness or fainting.
- Abdominal, uterine, back or pubic pain or contractions.
- Bleeding or leakage of amniotic fluid.
- Excessive fatigue.
- Reduced foetal movement.
- Shortness of breath before exertion.
- Headache.
- Muscle weakness.
- Calf pain or swelling.

STOP exercising with pre and postnatal clients if:

- Sudden swelling of the ankles, face, or hands.
- Persistent, severe headaches and/or visual disturbance; unexplained spell of faintness or dizziness.
- Elevation of pulse rate or blood pressure that persists after exercise.
- Persistent contractions .. may suggest onset of premature labour.
- Unexplained abdominal pain.

Pre natal considerations

- Is client new to exercise? (if so suggest a defer until after the birth)
- Consider a specialist qualification for pre and post natal – essential if you want to specialise or progressively programme
- Extra caution if client has previously miscarried or had a prem baby
- Internal pressure can result in a feeling of core strength

Ante and post natal

Trimester 1	Trimester 2	Trimester 3	Post birth
Increase in weight + 1-3kg Breasts and uterus start to enlarge Hormonal changes commence, e.g. increased relaxin affecting ligaments Morning sickness	Increase in weight + 6-8kg Postural changes Possible low back pain Abdominal muscles lengthen and stretch as baby grows Change in centre of gravity	Increase in weight + 3-4 kg Tired more easily Venous return may be reduced Weight of baby presses on pelvic floor	Avoid physical stress for 2 weeks (ACOG) Return to activity normal birth (6 weeks) caesarean birth (12 weeks) Hormone levels still high (up to one year) Weaker pelvic floor Abdominal separation

Post natal clients

- Ensure 6 week post natal check has been done.
- Caution re diastasis – can be easier to spot after the birth
- Be aware of pelvic floor muscle issues (leakage etc)
- Relaxin could make joints hypermobile for 6+ months post birth

Abdominal Separation– FOR INFORMATION ONLY

FOR INFORMATION ONLY

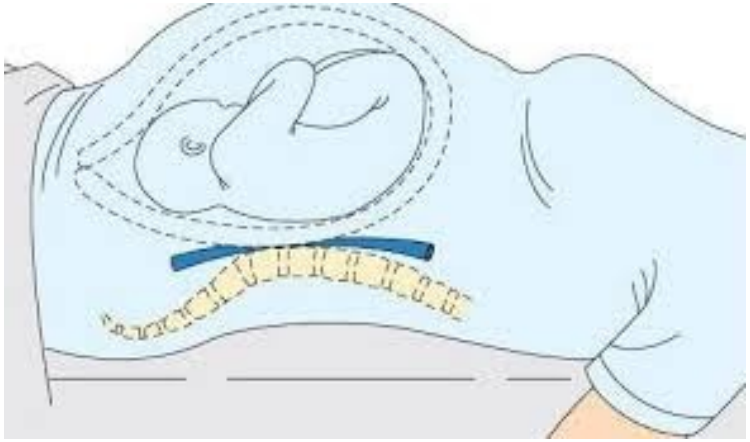
- Diastasis recti
  - 1 finger OK
  - 2 fingers: no oblique or rotation
  - 3 fingers: no head raised, no leg lowering – advise to see GP
  - can offer splinting for rotation (with specialist qual)

https://www.youtube.com/watch?v=I_I6JnO3aHw

https://www.youtube.com/watch?v=QT4-dMmhYDY

Supine work

- Eliminate after the 1st trimester



Dizziness and a drop in blood pressure

Supine hypotensive syndrome

Caused when the weight of the uterus, infant, placenta, and amniotic fluids compress the inferior vena cava, reducing return of blood to the heart and cardiac output.

Supine hypotensive syndrome

- *Also know as "Aortocaval compression syndrome"*
- can result in a loss of 30% of the effective circulating blood volume.
- can take three to seven minutes
- can mimic symptoms of shock. This is because blood pressure drops and uterine arteries contract to redirect blood to the major organs. This can cause distress for the foetus
- foetal hypoxia (insufficient 0^2) can occur and in *extreme cases*, foetal death.

Contraindications for exercising during pregnancy

- Pregnancy induced hypertension.
- Pre-term rupture of membrane
- Pre-term labour during the prior or current pregnancy
- Incompetent cervix
- Bleeding, and persistent second to third trimester bleeding
- Intrauterine growth retardation

Contraindications and safety considerations

Avoid the following:

- Exercising in the supine position after 16 weeks
- Prolonged motionless standing
- Isometric exercises
- Rapid changes of direction or position
- Uncontrolled twisting
- Exercise with a risk of falling or abdominal trauma
- Excessive and uncontrolled de-stabilisation (balance) techniques
- Abdominal exercises

Contraindications and safety considerations

Exercise should stop if any of the following is experienced:

- Any signs of bloody discharge from the vagina.
- Any "gush" of fluid from the vagina (premature rupture of membranes).
- Sudden swelling of the ankles, face, or hands.
- Persistent, severe headaches and/or visual disturbance; unexplained spell of faintness or dizziness.
- Swelling, pain, and redness in the calf of one leg (phlebitis).
- Elevation of pulse rate or blood pressure that persists after exercise.
- Excessive fatigue, palpitations, chest pain
- Persistent contractions .. may suggest onset of premature labour.
- Unexplained abdominal pain.

Post natal clients

- Ensure 6 week post natal check has been done.
- 12 week if C Section
- Caution re diastasis – can be easier to spot after the birth
- Be aware of pelvic floor muscle issues (leakage etc)
- Relaxin could make joints hypermobile for 6-12+ months post birth

Ante and post natal

CONSIDER

How would you modify a class and exercises to meet the needs for ante natal or post natal women?

Think about exercises you could or could not include

Modifications

- Use ParMed X for pregnancy screening tool
- Check with GP prior to participation, especially if previously inactive, as greater risk
- Lower intensity
- Maintain hydration
- Adapt exercise positions
- More stable positions
- Low intensity (less repetitions, resistance)
- No supine lying post 16 weeks
- Avoid exercising to point of exhaustion
- Avoid abdominal exercises – focus on posture mobility and pelvic floor

Source: American College of Obstetricians and Gynaecologists ACOG: www.acog.org)

Disabled people

May include:

- Physical disability, e.g. spinal cord injury or limb amputation
- Neurological conditions, e.g. multiple sclerosis, stroke, cerebral palsy
- Cognitive and psychological conditions, e.g. Downs syndrome or mental health conditions
- Sensory, e.g. partial sighted or blind or partial hearing or deaf

Disabled people

Condition	Consideration
Progressive disorders (e.g. Multiple sclerosis)	Careful monitoring to ensure that exercise does not cause the condition to worsen (exacerbation).
Asymmetrical weakness (e.g. stroke)	Aim to improve the affected side as much as possible, without neglect for the other side
Spasticity	Flexibility can be beneficial, but seek advice from a medical authority on how to stretch a spastic muscle without causing injury.
Neurological conditions (e.g. muscular dystrophy)	Focus on improving general fitness. Refer any rapid decline in function to their GP immediately
Sensory nerve damage	May result in an inability to detect pressure against the skin, which if left unprotected may result in a pressure sore
Depression	Often secondary as a result of the challenges of living with a disability. Can affect adherence – low motivation, low energy, may be suicide risk

Disabled people

Consider

How would you modify a class and exercises to meet the needs of a disabled client?

Think about exercises you could or could not include

Working with disabled people

The Pilates mat work teacher may be presented with a client who has a disability of some kind such as:

- Physical disability
- Spasticity
- Neurological conditions
- Damage to sensory nerves
- Depression

Working with disabled people

Always ask the disabled client what he or she can or cannot do. Do not make assumptions! Involve the client in the programme adaptations. Integrate where possible – do not isolate. Include specialist when programming. Defer or refer where appropriate.

Key safety guidelines for physical disabilities:

Progressive disorders (e.g. Multiple sclerosis)
Requires careful monitoring to ensure that the exercise programme is not causing the condition to worsen (exacerbation). Consider specialist qualification (exercise referral)

Asymmetrical weakness (e.g. stroke)
Where one side is weaker than the other – aim to improve the affected side as much as possible, without neglect for the other side

Working with disabled people

Key safety guidelines:

Spasticity (Hypertonia)
Flexibility can be very beneficial, but authorisation should be sought from a suitably trained medical professional on how to stretch a spastic muscle without causing injury.

Neurological conditions (e.g. muscular dystrophy)
Programmes should focus on improving general fitness levels. Should there be a rapid decline in function, the client should be referred to their GP immediately

http://www.muscular-dystrophy.org/

Working with disabled people

Key safety guidelines cont:

Damage to sensory nerves
May result in an inability to detect pressure against the skin, which if left unprotected may result in a sore

Depression
Often a common secondary condition as a result of the challenges of living with a disability
Occasionally, depression can cause a person to drop out of the programme

Modifications

- Depends on specific need
- Pre-screening to identify needs
- Adapt exercise positions, e.g. Wheelchair-based activities or chair-based activities
- Adapt teaching style for visual or hearing impairments
- Simplify, less complex – when appropriate
- Lower intensity (repetitions, resistance, range of motion, rate) as appropriate
- Vulnerable people (adults at risk) and safeguarding

Young people (14-17)

Key considerations:

- Growth-related issues and injury risk
- Flexibility
- Stage of anatomical and physiological development
- Immaturity regarding their safety and the safety of others
- Reduced coordination and motor skills whilst growing

Can develop for no apparent reason.

Osgood Schlatter's Disease

- Overuse of the quadriceps muscles
- Repeated strain on the attachment of the patellar ligament to the growing tibia.
- The growing tibia isn't quite strong enough to withstand the strain
- Can cause redness and soreness where the ligament attaches. In some cases, a small flake of bone is pulled off the tibia by the pulling ligament.
- Healing bone (callus) then forms which may cause a hard bony bump to develop.

Sever’s Disease

- Usually occurs during the growth spurt of adolescence
- 8 and 13 for girls and 10 and 15 for boys.
- Sever's disease rarely occurs in older teens

Modifications

- Pre-screening
- Longer preparation and closing
- Lower intensity (repetitions, resistance, range of motion, rate)
- Simplify, less complex, less technical demands
- Adapt teaching style
- Consider vulnerable people and safeguarding legislation