23 August 2018

Physical activity and older people with Osteoporosis/Osteopenia

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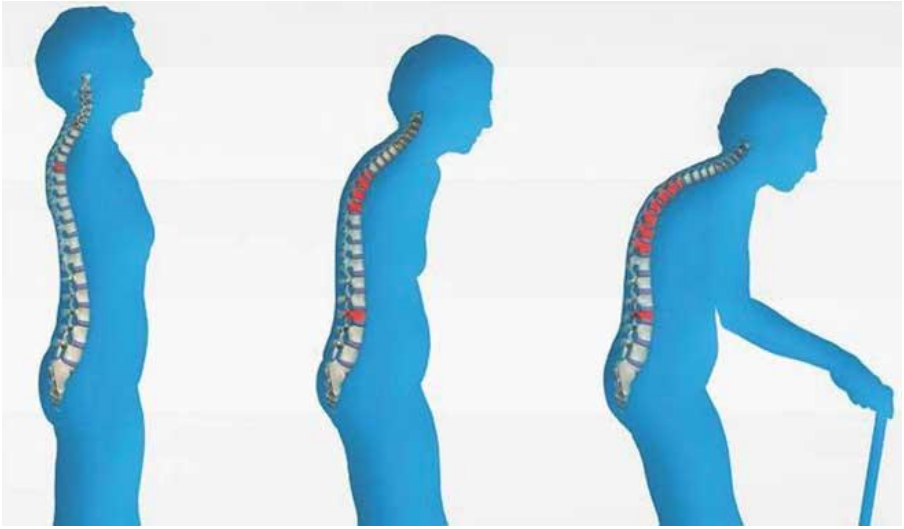
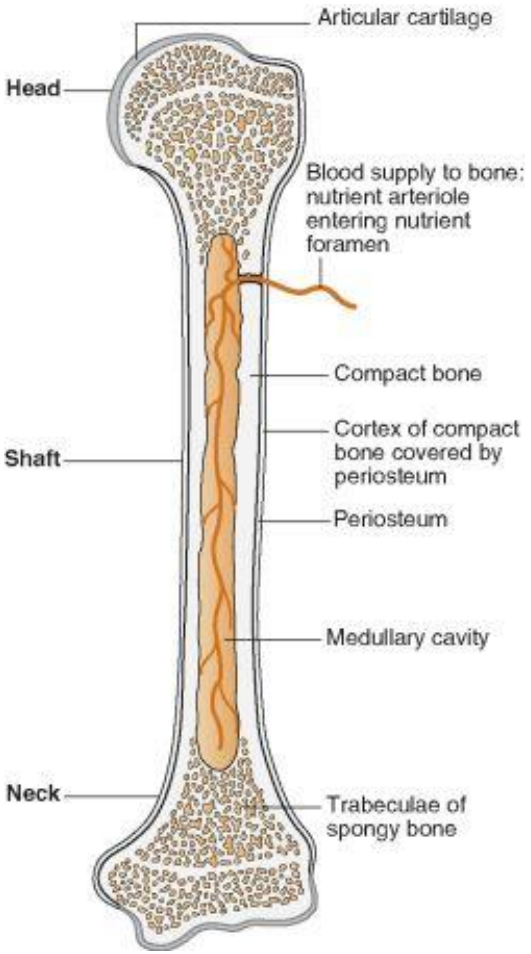
Etiology

- Systemic skeletal disease
- Excessive bone resorption outbalances bone deposition
- Bones weaken (osteopenia) or become brittle and prone to fracture (osteoporosis)

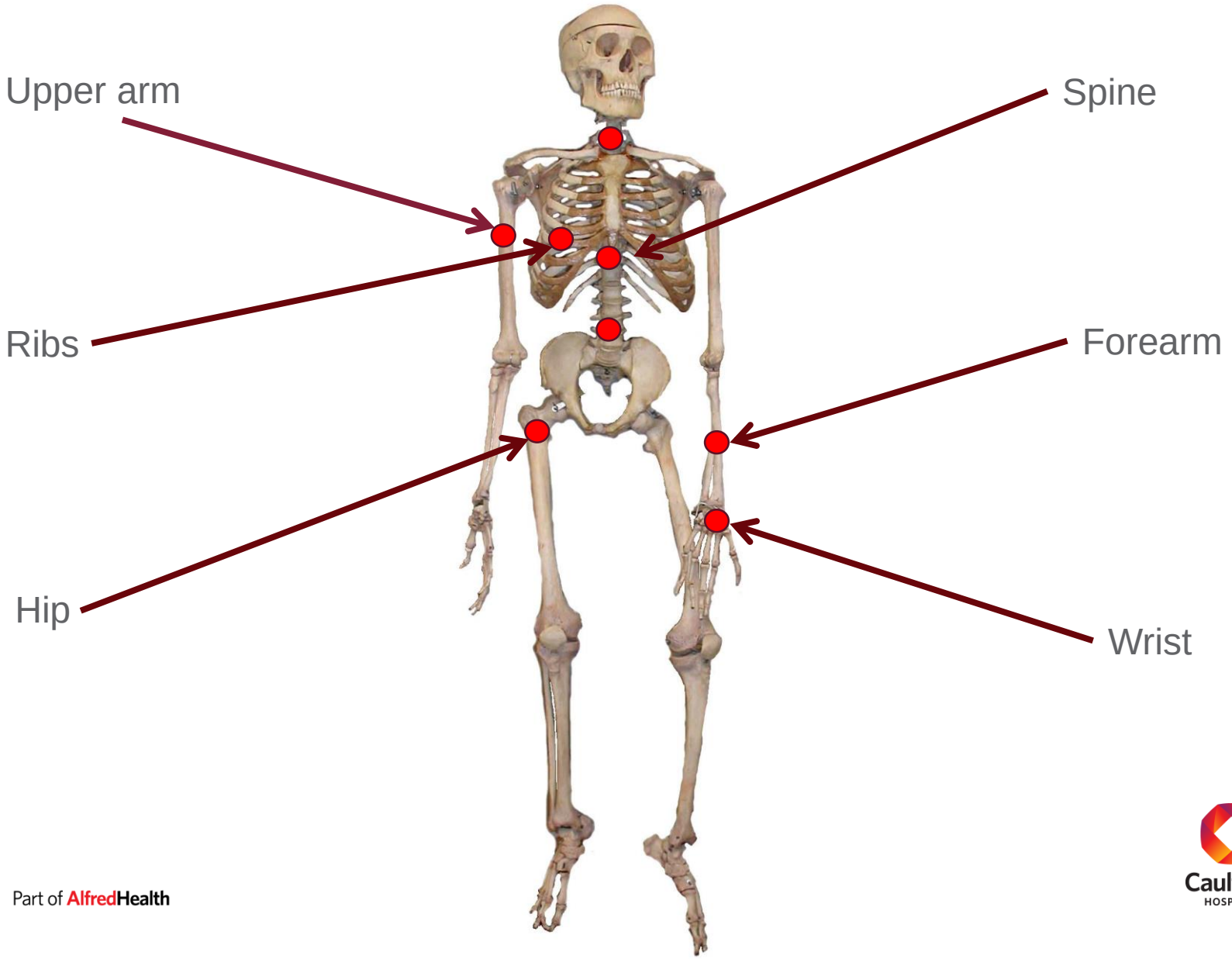


Pathophysiology



- Cortical bone (compact bone)
- Trabecular bone (spongy bone)
- Osteoblasts v's osteoclasts
- Disruption of remodelling and mineralisation
- Influence of age, hormones and medications

Common fracture sites



Current exercise recommendations

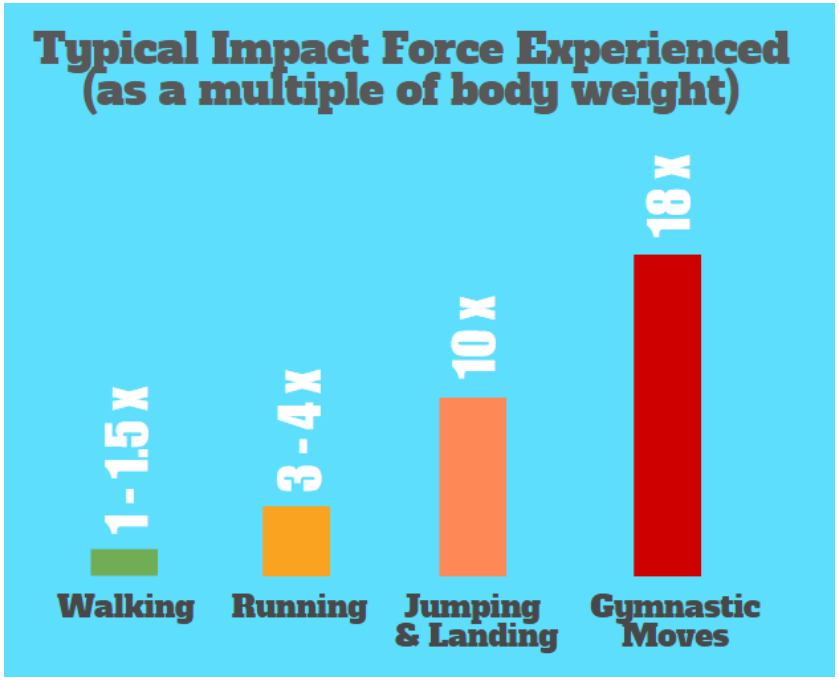
Moderate to high impact

Resistance training

Balance

Weight bearing

Highly osteogenic	Moderately osteogenic	Low osteogenic
Basketball/netball Jump Rope Impact aerobics Dance/gymnastics Tennis	Running/Jogging Brisk/Hill walking Resistance Training Stair Climbing	Leisure waking Lawn bowls Yoga/Pilates/Tai Chi



Exercise and Sport Science (ESSA) - Exercise Prescription for the prevention and management of Osteoporosis

Exercise Mode	Exercise Component	Low risk (OP prevention)	Moderate risk (OP prevention)	High risk (management of OP and prevention of falls)
Impact loading	Vertical and multidirectional jumping, bounding, hopping, skipping, drop jumps, bench steps	Intensity: High impact (>4 x body weight) Frequency: 4-7 d/wk Sets/reps: 50 jumps per session (3-5 sets of 20-30 reps with 1-2 min rest between sets)	Intensity: Mod – high (>2 x body weight) Frequency: 4-7 d/wk Sets/reps: 50 jumps per session (3-5 sets of 20-30 reps with 1-2 min rest between sets)	Intensity: Moderate impact (2-3 x body weight), within limits of pain, increasing as tolerated. Frail individuals will need period of progressive resistance training to develop adequate strength to perform some impact activities Frequency: 4-7 d/wk Sets/reps: Aim to work up to 50 repetitions over time (3-5 sets of 20-30 reps with 1-2 min rest between sets)
Progressive Resistance Training	8 exercise targeting major muscle groups attached to hip and spine e.g. weighted lunges, chest fly, seated row	Intensity: High to very high (80-85% 1RM: $\geq$16 on BORG scale Frequency: 2 x week Reps/sets: 2-3 x 8	Intensity: High to very high (80-85% 1RM: $\geq$16 on BORG scale Frequency: 2 x week Reps/sets: 2-3 x 8	Intensity: High to very high (80-85% 1RM: $\geq$16 on BORG scale Frequency: 2 x week Reps/sets: 2-3 x 8

Contraindications and Special Considerations

Those who have:

- low traumatic spinal fractures
- vertebral osteoporosis
- poor balance
- osteoarthritis

SHOULD AVOID

- deep forward flexion activities e.g. sit ups
- rapid and/or loaded twisting and explosive or abrupt actions e.g. golf, racquet sports

"What did I say about trying to do sit-ups?"

Case study one

88 year old lady

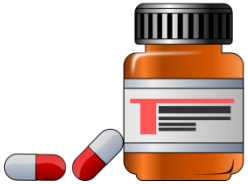
Medical history:
Osteoporosis
Kyphoscoliosis
High blood pressure
Osteoarthritis knees, shoulders
Previous fractures of pelvis, wrists, thoracic spine

Falls history
Walks with 4 wheel frame

Case study two

83 year old lady

Medical history:
Osteopenia
Autoimmune haemolytic anaemia
Mobilises with a 4 wheel frame



Medication:
Prednsisolone 3mg

References

http://www.osteoporosis.org.au/

https://www.essa.org.au/

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