

Dr John Best

Exercise Prescription - Part 2

Consideration for the Older Adult / Athlete
Specific Medical Circumstances (case studies)

Summary

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Considerations for the Older Adult / Athlete

- What is older?
 - Livingly independently
 - Gainful employment
- WHO >50 years
- United Nations >60 years
- Research >65 years (15% pop)
 - Young-old 65-75yrs
 - Old 75-85yrs
 - Very old >85yrs



Physiological Changes with Ageing

(Concannon et al 2012)

- **Cardio-respiratory**

- From age 50 , 5-10% decline in VO₂ max / decade
- VO₂max of 15-20ml/kg is required for independent living
- Sedentary elderly often reach this age 80-85yrs
- Cardiac output reduced due to a combination of reduced myocardial function, medications and reduced HRmax



Physiological Changes with Ageing (Concannon et al 2012; Dickinson et al 2013)

- **Musculoskeletal**

- Sarcopenia from age 25
- Significant >65yrs, 25% loss of peak youth strength)
- At 80yrs - 50% loss of skeletal muscle (atrophy)
- Tendinopathy (e.g. 65% of 65 years olds, rotator cuff)
- Articular cartilage degeneration – varied
- Bone Mineral Density – post-menopausal, low testosterone



Physiological Changes with Ageing (Concannon et al 2012)

- **Neurological changes**

- Reduced proprioception and possibly sensory changes
- Reduced balance associated with medications or trunk weakness ; coordination changes
- Increased falls risk
- Cognitive changes (eg ST memory) affecting learning and exercise compliance



Physiological Changes with Ageing (Concannon et al 2012)

- **Other Factors**

- Sleep

- Increased required but more disturbed - naps

- Chemical and hormonal changes (Growth Hormone, testosterone, serotonin)

- Fatigue associated with disturbed sleep

- Socio-economic

- Retirement

- Loneliness and isolation



Prescribing Exercise for the Older Adult / Athlete – health benefits

- Gebel et al (JAMA Int Med 2015)
 - 1,444,927 person-years; vigorous activity endorsed
- Profound health benefits apply to all areas
- Improved cardiac function with HIIT training
 - Grace et al , 2017. 65 yo sedentary males (n=25). 6x30sec bike sprints @50% peak power with 3min recovery. Repeated each 5 days for 6 weeks
- Reduction in hip and knee OA symptoms by 50%
- Improved Bone Mineral Density in some

Prescribing Exercise for the Older Adult / Athlete – prescription principles

- Longer recovery, warm up and cool down
- More variety, less repetition
- Added proprioceptive training (2mins/day)
- Flexibility with static stretches
- Resistance training
- Aquatic therapy ; slow, controlled movements that add core activation (eg Tai Chi, Yoga, dance)
- Careful increases in volume and intensity



The “Exercise Medicine” History

- Medical history (contraindications), medications etc
- Previous injuries, arthropathy and treatment
- Sports and exercise history
 - Team, individual, contest....glory days!!
 - Now – ‘How much?’ and ‘How often?’
- Enjoyment activities
 - Gardening, travelling, dancing, music
- Expectations – goal setting, motivating factors
- Diet including hydration planning
- Barriers and anxieties
 - Other attempts in past; pain; displeasure



Case 1 – Barry 62yo male, tired, lethargic, stressed. Wants to get fit. Low libido.

- Borderline HT, obese, grade 4 medial tibiofemoral OA
- Rugby and squash to age 30. Occasional tennis. Loves games and competition
- BMI 35.6 (Obesity II, wt 118 kg)
- Knee effusion with mild MJL tenderness; foot pronation
- ‘laughed off’ his obesity in office
- Stress test normal
 - Stopped at 156bpm
 - 5 min recovery 120bpm
- “Contract arrangement”
- Pursued LCHF Eating (Ketogenic)
- Aerobic program 120bpm
 - 3 days – swim, bike, rower, light wts sets of 15 reps
 - Gardening for 2 × 1hr
- Table tennis weekly from week 2
- Boxing twice weekly from week 4
- At week 6
 - Table tennis, boxing twice (with HIIT), gardening twice and gym 2-3 times
- Cycling group from week 12
- At 12 weeks – left gym setting
 - Happy, BMI 31.5, Obesity I, wt 101kg
 - Ongoing progress



Case 2 – 55yo Pam, de-conditioned and lethargic; can't walk a flight of stairs

- Swam as a teenager; walked and was active to age 45 yrs
- Medications for HT, Type 2 DM, Hypothyroidism, Depression
- BMI 23
- Very keen, gym membership
- Severe muscle wasting (CK norm)
- Fatigues with 6 SCR's
- 6 day program, 30-40 mins. 3-4 gym
- Strength (5 × 3min)
 - 'circuit' low weight high rep
 - No overhead or squat
 - Core exes included
- Aerobic (3 × 5min)
 - Bike, treadmill, cross-trainer
 - Started aquaerobics
- In 4 weeks felt better on stairs
- At 8 weeks
 - Could carry 2 bags of shopping and do 12 SCRs
- At 12 weeks swimming



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Case 3 – 28yo Joel. Wants to get fit and healthy. Motivation is difficult.

- Rugby League at school. Not enjoyable. Bullied
- Hospitalised age 20 with major depressive episode. Duloxetine 120mg
- History of 'comfort eating' and social drug use
- Talented musician and works as a designer
- Very intelligent and has studied the effects of diet and exercise on depression
- Normal examination. Quiet demeanour.
- Not confident this will work
- Main issues identified
- Agreed that having a buddy and accountability is good
- Sleep hygiene
- Initial aerobic programme
 - 30 minutes walking most days with dog
- Added core strength and flexibility with pilates, then changed to Yoga
- Pursued low carb eating (no sugars)
- Added gym based training (with PT) then circuit classes – high intensity dance classes
- Uses pedometer through phone app
- Exhausted at 3 weeks
- Improving at 6 weeks
- Enjoying at 3 months
- ?Will reduce medications at 6 months



Case 4 – 72yo Len is deconditioned after cancer treatment. Wants to feel strong again.

- Life member local surf club
- National surfboat champion in 30's
- Widowed 2 years ago
- Prostate cancer 1 year ago
- Open prostatectomy and radiotherapy
- Hasn't trained for 2 years
- Mild urinary incontinence
- Wants to feel strong again
- Lost 13 kg (80-67kg), BMI 20.2
- Issues identified
- Goals and dreams discussed
 - Wanted to return to previous lifestyle and training with mates
- Diet – higher protein intake
- Osteopaenic – Ca++ supp
- Pelvic floor – referred to specialist physio
- Initial mixed aerobic program
- Fatigued first 2-3 weeks
- Strength training – avoid overhead, squat and lunge
- Returned to Masters surf boat rowing at 6 months (+ 8kg)



Take home messages (to share with your patients)

- Ask your patients about physical activity and push the profound benefits
- Low fitness kills 8 x as many people as obesity
- Low fitness kills 2 x as many people as smoking
- If all inactive persons were getting 150mins of PA per week = 16 lives saved per 100 persons
- WE JUST CANNOT AFFORD NOT TO TAKE ON THIS RESPONSIBILITY AND ACT ON THIS INFORMATION!

