Working with special populations

Spirduso et al. (2005) gives the definition of ageing as ‘ A process or group of processes occurring in living organisms that begins with birth and, with the passage of time, leads to a loss of adaptability, functional impairment and eventually death’. Also Swain and Leutholtz (2002) define aging as a result in years of physical inactivity, and that much to do with the biological consequences of age is the sedentary lifestyles most aging people have.

Those who remain physically active throughout life demonstrate much slower rates of physical decline than do the sedentary, and a growing body of research indicates that those who have been sedentary for many years can experience significant improvements by beginning an exercise programme even at very advanced ages (Fiatrone et al. 1990).

The World Health Organization (WHO) estimates that there is over 20 percent of the population in the United Kingdom over the age of 65 and by the year 2025 there is an overall projection that, that value will rise to almost as much as 30% of the population living in the united Kingdom to be over the age of 65 (Mcardle, Katch and Katch 2010).

Research shows that when properly prescribed exercise, elderly people can significantly improve their aerobic power (Eshani 1987), muscular strength and size (Fiatrone et al. 1990; Frontera et al. 1988), and bone density (Dalsky 1989). Improvements in functional movements such as walking speed and stair climbing power have also been reported (Fiatrone et al. 1990). These results can reverse the effects of many years of physical decline and lead to greater independence and a much higher quality of life.

More than half of elderly people have at least one disability or chronic condition, participation in a regular physical activity/exercise programme has many physiological health benefits including reducing the risk and lessening the impact of many chronic diseases (DiPietro, Caspersen and Ostfield 1995).

Aging has numerous effects on organ systems in the body, effecting skeletal muscle, body composition, the cardiovascular system, the metabolic system, the respiratory system, the nervous system, energy expenditure and energy intake and also thermoregulation. These can all seem to be contraindications for exercising when elderly such as thermoregulation being affected this means there is a decreased ability to regulate body temperature when homeostasis is challenged; decreased amount of sweat per active sweat gland; reduced response to increased blood flow during exercise attributable to structure and response of cutenous blood vessels; inadequate ability to reduce splanchnic blood flow during exercise (Kenney 1997 and King, Martin 1998).

In general, if an individual leads an active lifestyle it preserves and enhances skeletal muscle, strength and endurance, flexibility, cardio respiratory fitness and body composition for later life.

Main Content

Physiological Factors

Cardiovascular Fitness + Training

Since many elderly individuals have a low initial fitness level, it is prudent to begin exercise programmes at a low intensity and to progress gradually (Swain and Leutholtz 2002). Low cardiorespiratory fitness is a risk factor for

cardiovascular disease and all cause mortality (Blazer 1982). Low VO2 peak is associated with reduced ability to perform ADL's (activities of daily living) including climbing stairs and brisk walking (Birdt 1998). A small improvement in cardiovascular fitness is associated with lower risk of death. Healthy sedentary older men and women can increase their cardiorespiratory fitness by performing aerobic exercise training (Engels et al. 1998: Kuczmarski et al. 1994). Physical activities that the elderly population, should engage in are walking (indoors, outdoors, or treadmill), gardening, swimming (water aerobics), golf and cycling (White 1995).

Combining strength with endurance training is also beneficial for the elderly individual. One study showed that after 6 months of combined resistance and endurance training, older healthy individuals increased their VO2 peak (11%) and their upper and lower body strength (Blazer 1982). The ability to carry out normal daily task such as carrying laundry, vacuuming and climbing stairs translated to carrying 14% more weight and moving 10% faster.

Resistance Training

Elderly individuals, including the oldest old and very frail elderly, demonstrate physiological adaptations to strength training (Kuczmarski et al. 1994). How much adaptation depends on the frequency, volume, mode, type of training and initial training state (Ferketich, Kirby and Alway 1998). Strength training has the potential to improve functional capacity and quality of life of the elderly person (Fiatrone et al. 1990). Most elderly individuals can participate in a resistance training programme that is individually designed. Those with hypertension or arthritis or at risk of osteoporotic

fracture need to be assessed and evaluated by a physician prior to initiating resistance training programme (White 1995).

A ACSM recommendation for the elderly that bears some scrutiny is the recommendation to use machines as apposed to free weights. Swain and Leutholtz (2002) evaluates that although it is true that machines require less skill, free weights have the advantage of teaching balance and greater neuromuscular control, which may be transferrable to real world activities. Furthermore they also talk about free weights being more superior by allowing the user to add small amount of weight onto their dumbbells i. e. 1kg whereas resistance machines normally have increments of 4. 5kg or more which is a large leap when the user is frail, on the other hand ACSM realise that machines require less balance requirements and the risk of injury.

Resistance training programmes lasting from 8 weeks to 1 year can increase muscle strength and mass in elderly, regardless of age and sex (Fiatrone et al. 1990).

Psychological + Sociological Factors

International Society of Sport Psychology (1992) states that " Individual psychological benefits of physical activity include: positive changes in self perceptions and well-being, improvement in self-confidence and awareness, positive changes in mood, relief of tension, relief of feelings such as depression and anxiety, influence on premenstrual tension, increased mental well-being, increased alertness and clear thinking, increased energy and

ability to cope with daily activity, increased enjoyment of exercise and social contacts, and development of positive coping strategies.”

Many older individuals do not have a spouse, close children or friends to rely on for socialization, assistance and support (Evans 1999). Although with age, social relationships may change from family to more formalized organizations or nonfamily members, many elderly live in social isolation and are very lonely. This is important because epidemiological studies have demonstrated a relationship between social support and physical health (Evans 1999). To add on to this it has been show that in several studies, lack of social support is a major risk factor for depression, morbidity and mortality (Engels et al. 1998).

Participation in an organized training session provides an excellent opportunity for interaction between other elderly people and when organising a session it is been seen to do all activities as in one whole group to get a more major interaction between participants (Evans 1999). Also another method which could be used to improve social interaction for the elderly participating in a exercise program could include a ‘ buddy’ exercise system where individuals are matched up with similar ability to perform their exercises together.

Exercise Recommendations

Physical activity recommendations for the elderly are updated regularly by the American College of Sports Medicine (ACSM 2000).

High intensity activities such as running, rowing, aerobic/gravity riders, and stair steppers may not be appropriate unless the individual has a rare high

fitness level. Low to moderate intensity exercise programmes can be performed daily. Higher intensity exercise sessions (> 70% heart rate reserve) should only be performed 3 to 5 days per week (ACSM 2000). This allows for recovery days, which are more important for the older adult than the younger person as elders recover slower. Older individuals with a low exercise capacity may benefit from multiple daily sessions of short duration, whereas the more capable individual can benefit from three sessions per week with exercise bouts performed once per day (ACSM 2000).

Elderly individuals who are unable to perform ambulatory activities may be candidates to perform seated chair activities, stationary cycling and water activities. T’ ai chi is seen to be one of the best activities for elderly individuals to undertake as it improves strength and balance according to Dalsky (1989).

For the healthy older individual, it is recommended that exercise be performed minimally for 30 minutes but not beyond an hour in duration. If an individual beginning an exercise programme is predominately sedentary, has severe chronic disease, or has a very low fitness level, a minimum of 30minutes of continuous activity may not be possible. Sessions of as little as 10 minutes two or three times a day is appropriate in this situation. Health benefits are still obtained this way (ACSM 2000).

National and Regional Strategies

Summary

Physical activity of light to moderate intensity helps to improve health, whereas moderate to high intensity physical activity with an emphasis on aerobic endurance improves cardiorespiratory fitness (VO2) as well as health

in older individuals. Elderly individuals demonstrate improvements during resistance training by increasing muscle mass and strength; this improves gait, balance, and overall functional capacity and bone health this staving off chronic diseases such as osteoporosis and improve overall quality of life. There are also psychological benefits associated with regular physical activity and exercise. Dr. Robert Butler, former director of the National Institute of Aging states ‘ If exercise could be put in a bottle, it would be the strongest medicine money could buy’

In general the elderly person can improve physical and mental health by performing regular physical activity, and this should be encouraged by all medical and exercise professionals.

Ultimately, regardless of age or level of frailty, nearly all elderly persons can derive some physiologic, functional or quality of life benefit from initiating an exercise programme.

Training Sessions

Mode	Frequancy	Itenisity	Duration	Special Considerations
Aerobic Training				
Intensi				

ty

Load

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