

# Sarcopenia, older age, chronic disease and obesity

**Is this the major risk factors for falling?**

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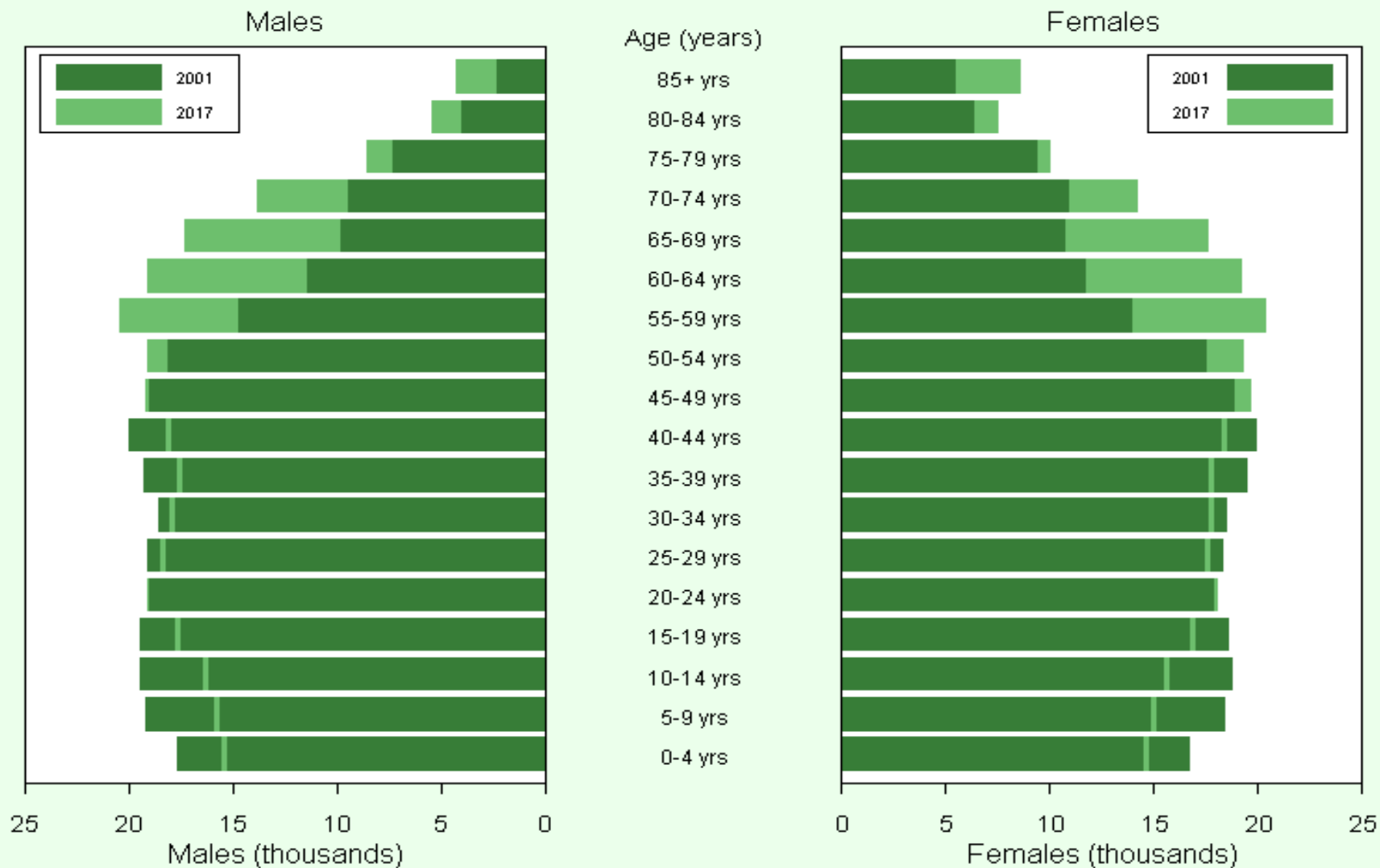
May, 2011

# Sarcopenia

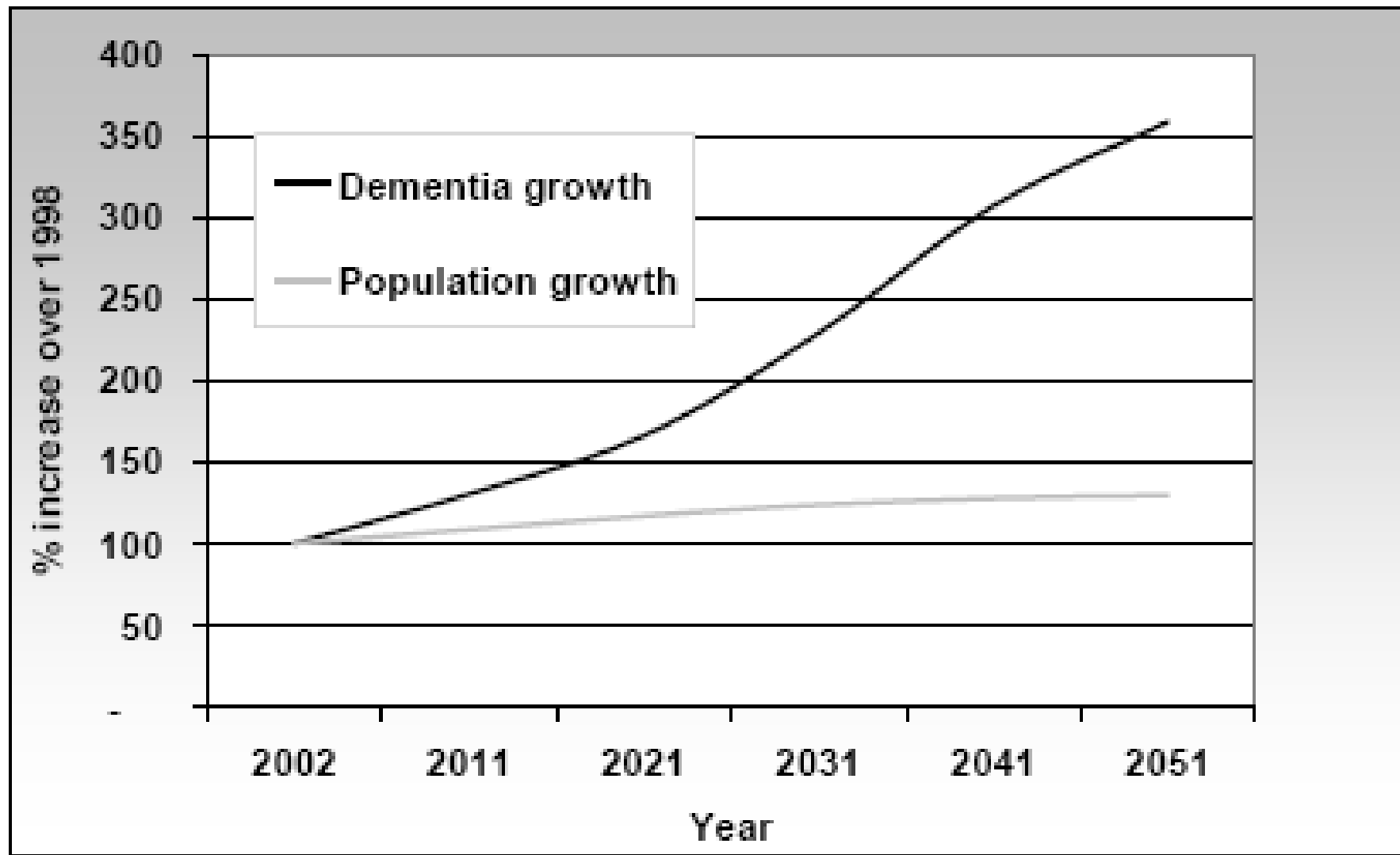
- Literally means “loss of flesh”
- Medically means loss of muscle mass and strength
- Accompanies ageing – starts in 4th or 5th decade
- Increases markedly in chronic disease, immobility
- Associated with obesity
- Major cause of “frailty” and loss of dependence
- Confluence of ageing, chronic disease, obesity is one of the major public health challenges of 21st century

# Hunter Population Pyramid

Hunter Area population pyramid,  
estimated residential population in 2001 and projected population in 2017

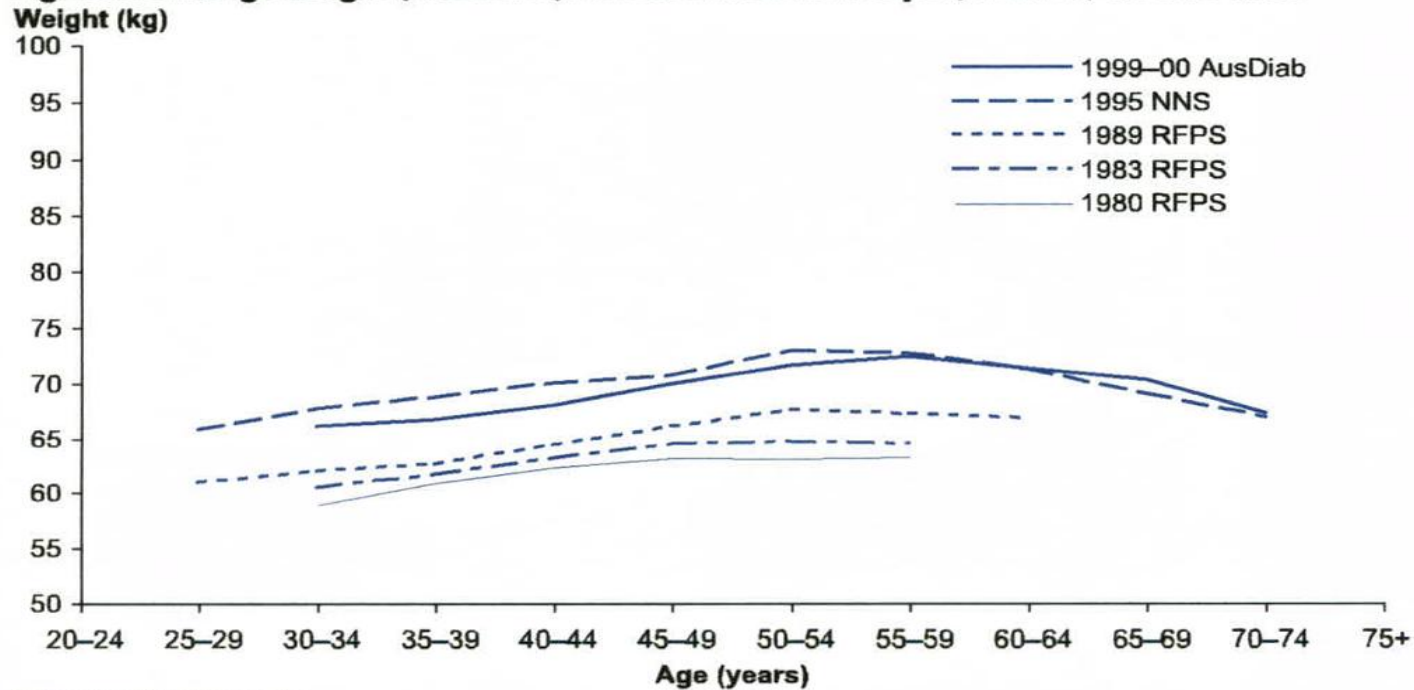


# Projections (Access Economics)



# Average weight in women by age

**Figure 3: Average weight (measured) across the adult life span, women, 1980 to 2000**

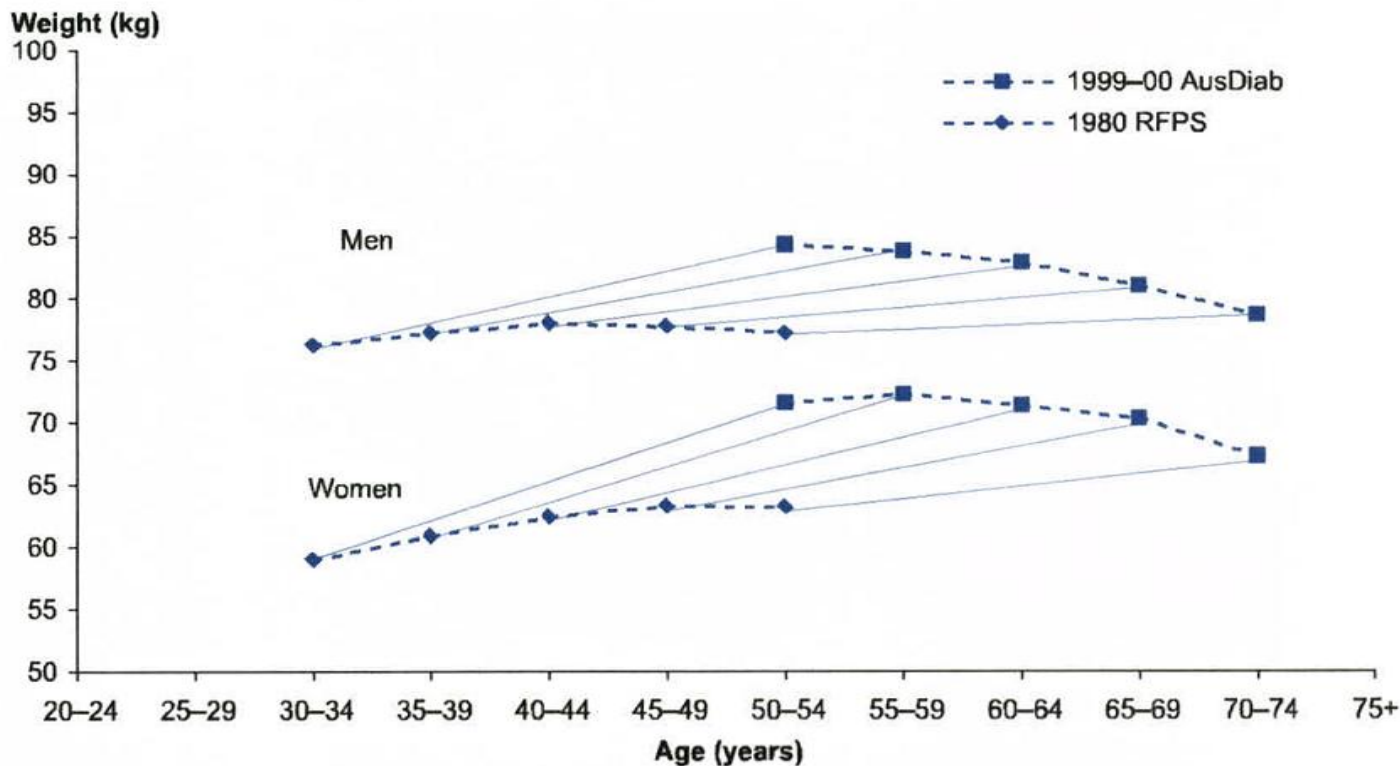


Note: Capital cities only.

Sources: AIHW analysis of the 1980, 1983 and 1989 Risk Factor Prevalence Surveys; 1995 National Nutrition Survey; 1999-2000 Australian Diabetes, Obesity and Lifestyle Study (AusDiab).

# Trends in weight by age cohort, 1980 to 2000

**Figure 4: Trends in weight (measured) by age cohort, 1980 to 2000**



*Note:* Capital cities only

*Sources:* AIHW analysis of the 1980 Risk Factor Prevalence Survey; 1999-2000 Australian Diabetes, Obesity and Lifestyle Study (AusDiab).

# Sarcopenia, diabetes and obesity

- Obesity reduces physical activity
  - . increased effort of exercise
  - . reluctance to be exposed in public – swimming pools, gyms
  - . arthritis of knees, venous ulceration
- Diabetes and obesity cause sarcopenia
  - . production of pro-inflammatory catabolic cytokines - TNF alpha, IL-6
  - . muscle fat infiltration causes insulin resistance reducing anabolic effects of insulin
  - . fat tissue produces TNF alpha and leptin which reduce metabolic rates and GH production
  - . obese people have lower levels of testosterone and GH
- Sarcopenia causes obesity and diabetes
  - . reduced amount of insulin-responsive target tissue increasing insulin resistance
  - . reduces metabolic rate reducing calorie utilisation

# Consequences of sarcopenia

- reduced physical activity
- reduced ADL capacity (shopping, gardening, housework)
- reduced quality of life (sport, social activities, dance)
- falls and falls injuries
- increased joint pains and need for surgery
- dependent oedema and risk of ulceration
- prolonged hospital stay
- increased risk of nursing home placement

# Management of sarcopenic obesity in older people in community

- Mild-moderate obesity (BMI<35) in older age does not increase mortality
- Sensible eating is always wise
- Dieting without exercise is not helpful in older age unless obesity is life threatening
  - . cyclical weight loss and gain can be harmful
  - . energy levels reduce, limiting physical activity
  - . bone loss with calorie restriction; not with exercise
- Bariatric surgery is rarely offered to older people and carries higher risk
- Drug management is not recommended
- Exercise (resistance and aerobic) with sensible eating is most effective intervention

# Exercise in older age

- even mainly aerobic exercise increases muscle strength by 5-10% in 2-3 months
- resistance exercise increases muscle strength by greater amounts 13-20% in 8 weeks depending on % of 1RM used
  - . 120% in NH residents av. age 87 (Fiaterone)
- many obese older people find aerobic exercise difficult but all can do resistance exercise
  - . weight bearing exercise can be limited by arthritis
  - . water exercise limited by self image in public pools and lack of hydrotherapy facilities

# Exercise in older age

- all carefully designed exercise programs are safe
  - . Heartmoves (NSW Heart Foundation) and Active over Fifties(Area Health Service) are all run by accredited fitness leaders
  - . hydraulic machines (Curves) safer than fixed weight machines but may have less effect on bone density and muscle strength
  - . more adverse events with high intensity strength training
- older people enjoy exercise
  - . if properly designed with music, dance, social component
- exercise has many other benefits for older people
  - . depression (Singh); socialisation
  - . diabetes, hypertension, osteoporosis, cancer survival
  - . function for ADLs
  - . capacity to manage in situations of stress

# Ideal exercise program for older people

- resistance exercises 2-3 times per week  
ideally progressive resistance training  
one day rest between sessions
- aerobic weight bearing exercise on most days  
walking for 20-40 mins  
dance, golf, tennis, swimming
- balance exercise 2-3 times per week  
Tai Chi, yoga, ballet movements, standing on one leg, stair climbing/descending



Perca peso bebendo. Beba Camp Light.



NEW ENGLAND  
ALTH

# Sarcopenia prevention in Hunter

- Sarcopenia Prevention Working Group  
meets second monthly  
includes HNE, Uni, DVA, Heart Foundation
- Conference in 2009  
. planning a HNE seminar in late 2011
- DVD to prevent sarcopenia in hospital
- Inventory of exercise programs in community
- Training Fitness Leaders for new programs
- Sarcopenia Prevention Program at Toronto

# Take home message

- Most people can cope with older age, chronic disease or obesity, provided they are fit
- It is lack of fitness, not older age, chronic disease or obesity that causes many people to lose independence
- Sarcopenia may be the major risk factor for falls in the community and in institutions
- We need the health system to accept fitness and the prevention of sarcopenia as a health responsibility and a public health priority
- We need accessible, evidence-based exercise programs in the community, adaptable for people with disabilities