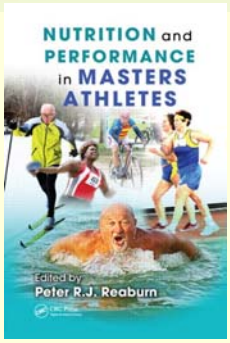
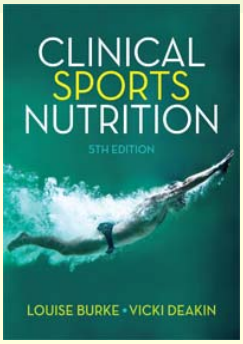
BE WHAT YOU WANT TO BE

Working with Masters Athletes

Peter Reaburn PhD

Who is this Masked Man?





Masters Athletes? What The?

An individual who systematically trains for and competes in organised forms of competitive sport specifically designed for older adults

Reaburn and Dascombe (2008)

Age Qualifications of Masters Athletes?

25 years	20 years	35 years
		

Characteristics of Masters Athletes

- Well-educated
- Disposable income
- Keen to learn
- All shapes and sizes
- Differing health status
- Differing fitness levels
- Differing rates of aging
- Differing motivations

Motivations of Masters Athletes

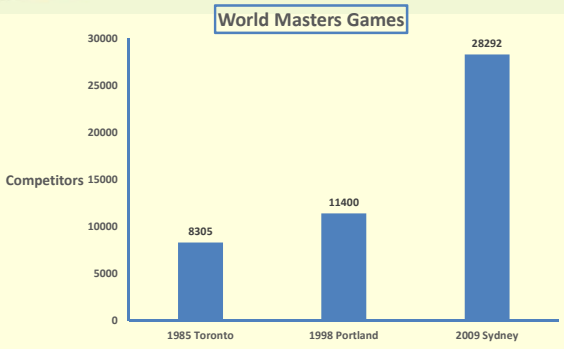
Fun

Fitness

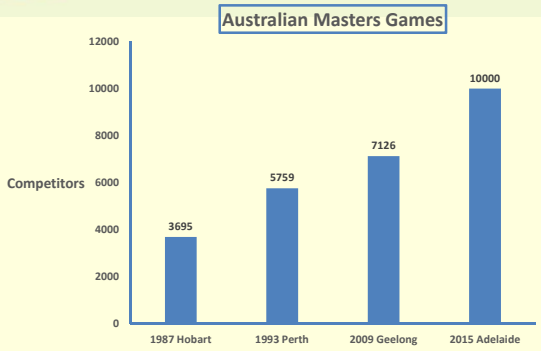
Friendship

Foe

Growth in Masters Sport

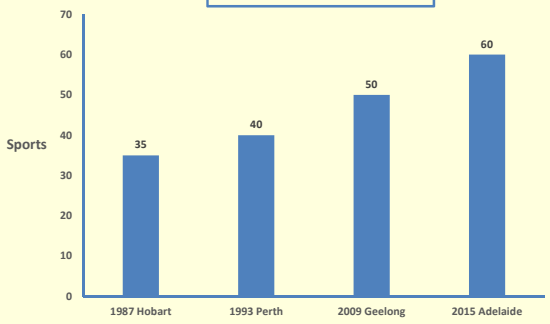


Growth in Masters Sport

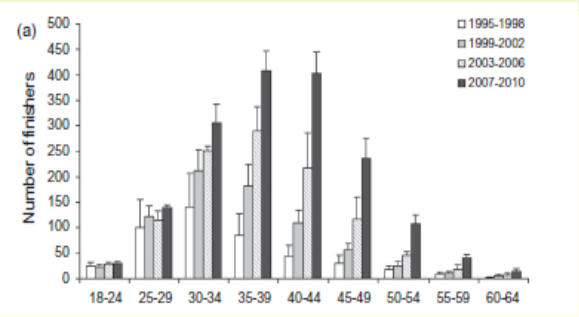


Growth in Masters Sport

Australian Masters Games



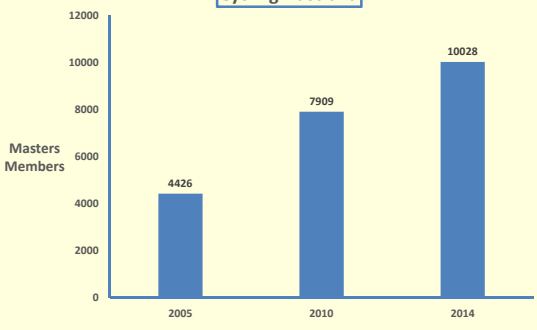
Ironman Switzerland



Stiefel, Knechtle and Lepers (2012)

Growth in Masters Sport

Cycling Australia



AGING

and / or

INACTIVITY

and / or

DISEASE?

Age-related Changes and Implications

Age-Related Change	Nutritional Implication
Decreased muscle mass	Decreased energy requirements
Decreased aerobic capacity	Decreased energy requirements

Age-related Changes and Implications

Age-Related Change	Nutritional Implication
Decreased bone density	Increased need for calcium and vitamin D
Decreased calcium bioavailability	Increased need for calcium and vitamin D
Decreased skin synthesis	Increased need for vitamin D
Decreased gastric acid	Increased need for vitamin B12, folic acid, calcium, iron and zinc

Age-related Changes and Implications

Age-Related Change	Nutritional Implication
Decreased thirst perception	Increased fluid needs
Decreased kidney function	Increased fluid needs

Age-related Changes and Implications

Age-Related Change	Nutritional Implication
Decreased immune function	Increased need for vitamins B6 and E and zinc
Increased oxidative stress status	Increased need for carotenoids and vitamins C and E
Decreased hepatic uptake of retinol	Decreased need for vitamin A
Decreased efficiency in metabolic use of pyridoxal	Increased need for vitamin B6
Increased levels of homocysteine	Increased need for folate and vitamins B6 and B12

Carbohydrate Needs of Masters Athletes

Same intake guidelines as younger athletes so therefore consider INDIVIDUAL:

- Training vs competition
- Training
  - Type
  - Volume
  - Frequency
  - Intensity
  - Duration
- Body composition

1. Consider age-related decline in muscle mass
2. Low-moderate GI for recovery given age-related decrease in glucose sensitivity
3. Nutrient-dense CHO foods promoted given decreased energy intake requirements

Cox (2015)

Fat Needs of Masters Athletes

No evidence fat metabolism changes with age

1. Low CHO, high-fat diets and fasting can increase fat oxidation BUT
2. High-fat diets may increase risk of CVD in masters athletes with family history or personal CVD risk factors

Johnson and Stannard (2015)

Protein Needs of Masters Athletes

Older adults have some anabolic resistance to protein/amino acid ingestion therefore:

1. Time protein ingestion early in post-exercise period (5-10 min)
2. Foods of high protein and biological value (milk, egg white, cheese, yoghurt, meat, fish)
3. 20-40 g protein
4. Large bolus in first 5-10 min of recovery

Tarnopolsky (2015)

Other Protein Intake Guidelines

5. Pre- and during exercise CHO supplements (gels, sports drinks) will attenuate amino acid oxidation and likely promote protein retention during hard training
6. Eat several small meals and snacks versus 2-3 meals per day

Tarnopolsky (2015)

Protein Intake Recommendations

Endurance Sports	**(g/kg/day)**
❑ Well-trained young male athletes	1.6 – 1.7
❑ Well-trained male and post-menopausal masters athletes	1.4 – 1.6
❑ Well-trained eumenorrheic masters athletes	1.2 – 1.4
❑ Recreational older athletes	1.2
Resistance sports*	
❑ Power sports (rugby, football)	1.4 – 1.7
❑ Resistance training (early phase – few months)	1.4 – 1.7
❑ Resistance training (adapted phase/maintenance)	1.0 – 1.2

* No definitive data in women doing resistance exercise but likely 10 – 20 % lower than above.

Tarnopolsky (2015)

Vitamin Needs of Masters Athletes

Both aging and high-intensity exercise create oxidative stress and may compromise the immune system

- Masters athletes with high energy intakes and a healthy diet may NOT need supplementation
- Those at risk may benefit from supplementation with emphasis on antioxidant vitamins A, C, E

Brisswalter (2015)

Mineral Needs of Masters Athletes

Masters athletes with high energy intakes and a healthy diet may NOT need supplementation

- Data equivocal regarding need for mineral supplementation
- Be aware of medication intake and effect on mineral status

Hirsch, Sharma and Volpe (2015)

Fluid and Electrolyte Needs of Masters Athletes

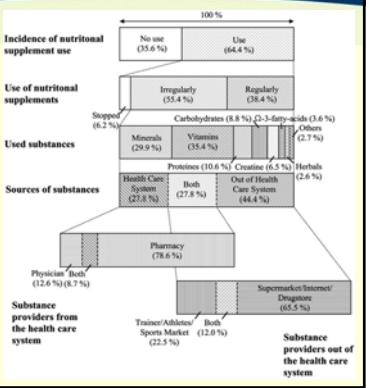
Reduced thirst sensation with age – drink when thirsty debate!

- Are masters athletes at greater risk of hyponatraemia?
- Sports drinks more important in masters athletes given electrolytes help maintain thirst reflex

Jackson (2015)

Supplement Use in Masters Athletes

- 1560 Veteran T & F Athletes
- World Masters Indoor Championships 2004
- 50 ± 10 years
- Training years = 20 years
- 75% trained ≥ 3 x / week



Striegel et al. (2006)

Cautionary Note – Supplements and Masters

- Masters athletes on prescription drugs co-ingestion of herbal and complementary medicines an issue
  - St John's Wart
  - Ginko
  - Ginseng
  - Kava
  - Ginger
  - Echinacea

Desbrow, Shaw and Slater (2015)

Ergogenic Aids for Masters Athletes

- AIS Sport Supplement Program Category A
- **Protein** supplementation
- **Leucine** effective in enhancing muscle protein synthesis
  - 5 g with meals or in training beverages
  - NB for masters over 55 years, eating meals with less than 25-30 g of protein and vegetarian/vegan

Dalbo, Roberts and Scanlan (2015)

Ergogenic Aids for Masters Athletes

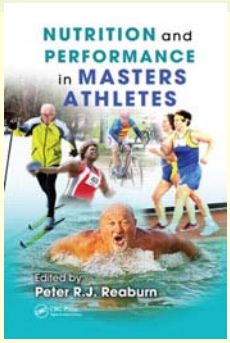
- **Creatine**
  - 5 gm / day
  - Benefit for masters strength and power athletes
  - Reduce risk of heat injury in endurance athletes
- **β-Alanine**
  - Benefit performance in high-intensity (110% VO_2 peak) short-duration (1-5 min) exercise
  - 6.4 g /day (8 x 800 mg doses OR 4 x 1600 mg with controlled release capsules

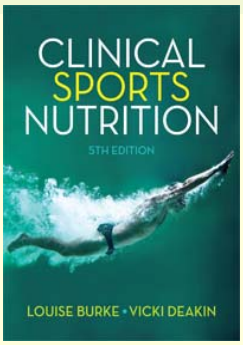
Dalbo, Roberts and Scanlan (2015)

Drug-Nutrient Interactions

DRUG	EFFECT	NUTRIENTS AFFECTED
Diuretics	Alterations in renal tubular function	Loss of sodium, potassium and magnesium
Antipsychotic/psychoactive	Disinterest in food	Protein and energy intake reduced
Cardiac glycosides	Anorexia, nausea, vomiting, disinterest in food	Protein and energy intake reduced
Anticonvulsants	Increased loss of vitamin D from liver, Reduced absorption of folic acid	Altered vitamin D and calcium metabolism, Folic acid
Salicylate	Aspirin in large amounts can cause loss of folate In large amounts over a long period, aspirin can cause gastrointestinal blood loss leading to iron deficiency and anemia	Folate, iron
Corticosteroids	Inhibition of calcium absorption, alterations in glucose metabolism and electrolyte imbalance Increased excretion of vitamin C	Calcium imbalance (osteoporosis), hyperglycemia, sodium retention and potassium deficiency, Vitamin C
Antacids	Decreased absorption of phosphate	Phosphate
Tetracycline	Increased excretion of vitamin C	Vitamin C
Bile acid sequesters	Malabsorption of fat-soluble vitamins	Vitamins A, D, E and K
Mineral oil laxatives	Inhibition of fat-soluble vitamins absorption Depletion of potassium	Vitamins A, D, E and K malabsorption, Potassium
Birth control pills	Lower levels of Vitamin B6 and folate	Vitamin B6 and folate

Q and A





Links for Books

1. Reaburn, P. (2015) Nutrition and Performance in Masters Athletes. https://www.crcpress.com/Nutrition-and-Performance-in-Masters-Athletes/Reaburn/9781439871874
2. Burke and Deakin (2015) Clinical Sports Nutrition (5th Ed). http://www.mheducation.com.au/9781743073681-aus-clinical-sports-nutrition
3. Reaburn, P. (2009) The Masters Athlete. http://www.mastersathlete.com.au/