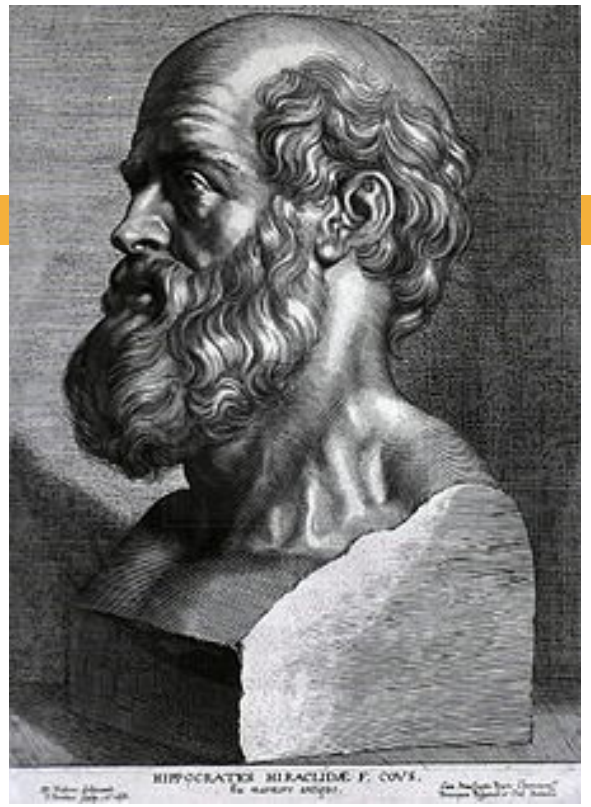
PROSTATE CANCER, EXERCISE AND HEALTH

Ben Rattray

"Eating alone will not keep a man well; he must also take exercise. For food and exercise, while possessing opposite qualities, yet work together to produce

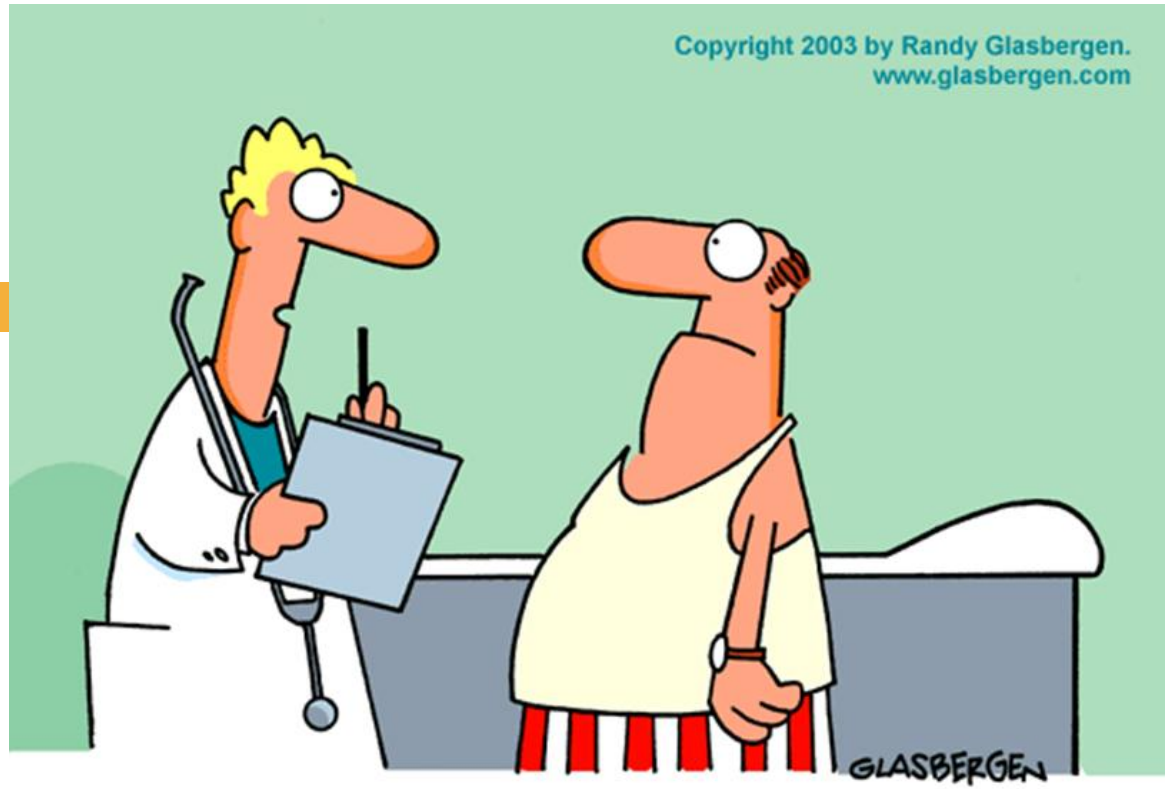


23 and 1/2 hours: What is the single best thing we can do for our health?

http://youtu.be/aUaInS6HIGo

"Exercise is the closest thing we'll ever get to the miracle pill that everyone is seeking."

- Lee (1997). N Eng J Med Health News



"What fits your busy schedule better, exercising one hour a day or being dead 24 hours a day?"

Barriers to exercise amongst prostate cancer survivors[1]

1. Too busy – 45%
2. No willpower – 44%

Concern about over-exertion and type of exercise considering severity of treatment
Perceived barriers:
Parking, increased visits to the hospital, transportation, distance and location.

1. Ottenbacher et al (2011). J Cancer Surviv 5: 413-9.
2. Peeters et al (2009). Psycho-Oncology. 18: 898-902.

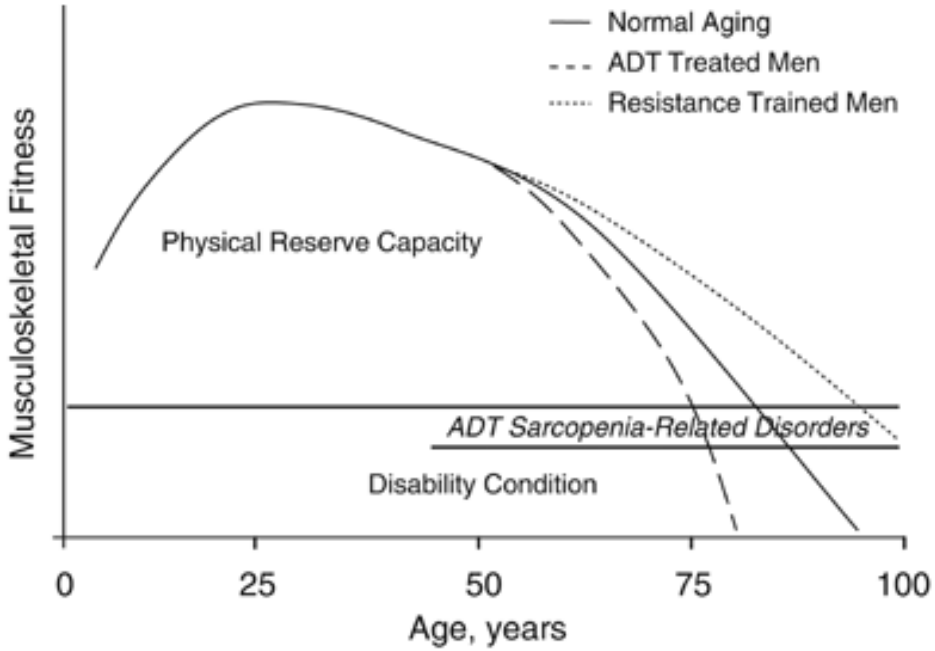
Androgen-deprivation therapy (ADT)

- Side effects may include:
  - ↓ lean muscle mass (sarcopenia)
    - ↓ muscle strength
    - ↓ physical functionality
    - ↓ independence
  - Osteoporosis (bone density changes)
    - ↑ risk of fracture
  - Cardiovascular and metabolic disease risk
  - Weight (fat) gain
  - Joint pain
  - ↓ balance
    - ↓ Quality of Life

- Exercise with treatment
- Exercise pre-treatment

Exercise in treatment

- Exercise can reverse many side-effects[1]
  - ↓ fatigue
  - ↑ QOL
  - ↑ muscle strength and endurance
  - ↑ functional performance
  - ↑ balance



1. Galvão et al (2007). Prostate Cancer and Prostatic Diseases. 20: 340-6.

Exercise Benefits

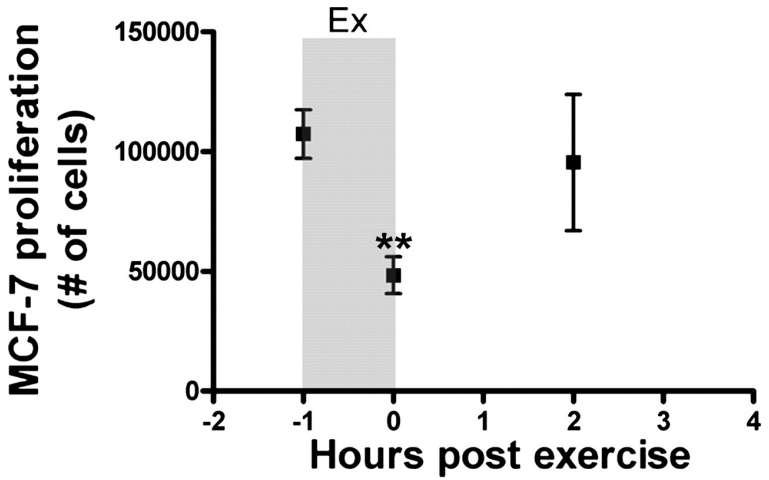
- Summary of potential benefits of exercise during and/or following cancer treatment[1]

Preservation or improvements	Reductions
Muscle mass, strength, power	# symptoms/side-effects (nausea, fatigue, pain)
Cardiorespiratory fitness	Intensity of symptoms reported
Physical function	Duration of hospitalisation
Physical activity levels	Psychological land emotional stress
Range of motion	Depression and anxiety
Immune function	
Chemotherapy completion rates	
Body image, self esteem and mood	

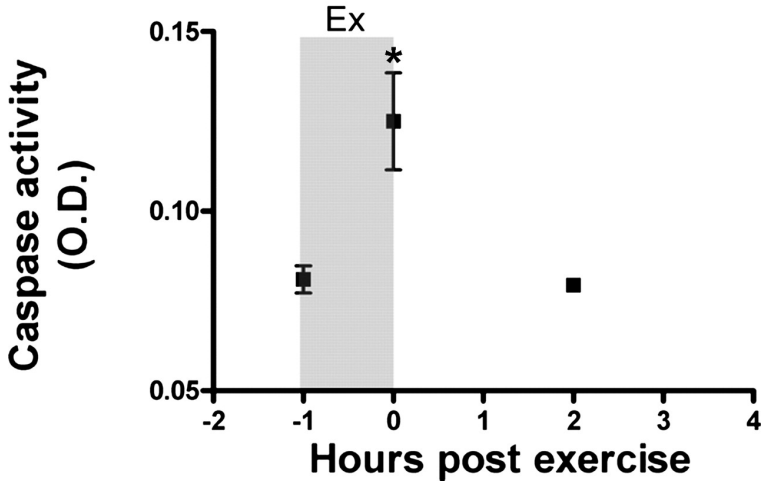
1. Hayes et al (2009). Australian Association for Exercise and Sport Science position stand: Optimising cancer outcomes through exercise. J Sci Med Sport. 12: 428-34.

Exercise and tumour growth

- Serum from exercised mice
- Human mammary cancer cell line (MCF-7)



And spread (metastasis)



Hojman et al (2011). Exercise-induced muscle-derived cytokines inhibit mammary cancer cell growth. American Journal of Physiology, Endocrinology and metabolism. 301(3): E504-10.

Potential concerns

- Exercise outcomes[1]
  - Age doesn't matter
  - Not influenced by ADT
- I've been on ADT for a long-time
  - No difference in exercise response if ADT > or < 6 months[2]
- Is it safe?
  - "…*exercise training and maximal and submaximal exercise testing are relatively safe procedures*… [for cancer populations]"[3]
  - Discuss with exercise professional – "The Man Plan"

1. Alberga et al (2011). Support Care Cancer. Epub ahead of print.
2. Galvão et al (2011). Adult Urology. Epub ahead of print.
3. Jones (2011). App Physiol Nutr Metab, 2011, 36:(S1) S101-S112

Exercise - Considerations

- Resistance or Aerobic?
- No real difference[1], likely to depend more on individual needs
- Most evidence relates to:

  higher intensity > lower intensity > no intensity

- Take into consideration[2]
  - Stage (diagnosis)
  - Site
  - Treatment(s)
  - Symptoms (fatigue and nausea can be common)
  - and other health indices (co-morbidities, common include diabetes/CV risk factors)

1. Courneya et al (2007). Effects of aerobic and resistance exercise in breast cancer patients receiving adjuvant chemotherapy: A multicenter randomized controlled trial. Journal of Clinical Oncology. 25(28): 4396-4404.
2. Schmitz et al (2010). American College of Sports Medicine Roundtable on Exercise Guidelines for Cancer Survivors. Medicine and Science in Sports and Exercise. 42(7): 1409-26.

Exercise recommendations

- Research supported positive results[1] generally programs that are:
  - At least 2 x week for min. 12 weeks
  - Best: Every-day – resistance 3-4/week

- Aerobic exercise
  - 15-20 min cycling and walking/jogging*

- Strength exercise
  - 2-4 x 12-6 Rep Max**
  - Machine weights:
    - Chest press, seated row, shoulder press, tricep extension, leg press, leg extension and leg curl (and core work)

* Impact may be superior

** Maximise strength/muscle mass – reaching close to exhaustion may be most important thing

1. Galvão et al (2010). J Clin Oncology. 28(2): 340-347.

And Diet?

- Muscle and Strength
  - Timing
    - Max protein synthesis (muscle gain) when 20g protein consumed asap after resistance exercise
  - Leucine may be particularly good
  - Omega-3 fatty acids good for preventing muscle loss in older adults[1]
  - Meeting energy requirements (may be hard with some treatments)

Foods

Grains, animal products – Sustagen/Milo useful

Most proteins (soy best)

Fish products, often supplemented

- Fat
  - Low-fat diets...

- Antioxidants
  - Nine serves per day

Colour fruits & vegetables

1. Smith (2011). Am J Clin Nutr.93:402–12.

And Diet?

- Bone health
  - Calcium important

Foods

Dairy and non-dairy (fortified foods)

- Carcinogens?
  - Avoid burnt meats

Exercise pre-treatment?

- Better outcomes if fit/healthy pre-treatment

  "*Strength previously obtained is easier to regain*!"

- Exercise/dietary recommendations similar to post-treatment

Resources

- Exercise is Medicine

www.exerciseismedicine.org.au

- Prostate cancer specific resource:

http://exerciseismedicine.org.au/wp-content/uploads/2011/03/Prostate-cancer_full.pdf