CANCER REHABILITATION

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Exercise Programming

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Distinguishing guidelines, why so sparse?

- Novel area of research;
- So many types of cancer;
- Pathological effects of cancer;
- Treatment side-effects;
- People's reaction to being sick (attitudes and beliefs);
- How people cope;
- The need for individualisation.

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Information gathering

- Critical to carry out thorough screening:
  - Cardiovascular disease risk factors;
  - Co-morbidities;
  - Orthopaedic problems;
  - Fitness level;
  - Type, site and stage of cancer;
  - Type, site and stage of treatment;
  - Side effects of treatment (particularly fatigue index);
  - Psychological condition;
  - Particular attention to test time and condition on testing.

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Cancer-related Fatigue

- "The first step to treating CRF is to correct, if possible, medical conditions which can aggravate it (anaemia; drugs such as opiates, antihistamines, and anti-sickness medication; electrolyte imbalance; steroid withdrawal sedatives, depression, nocturia, night sweats and pruritis)" Thomas (2005)

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Research summary

- Goals in early stage cancers should be set to restore strength and CV capacity and to prevent further demise;
- Goals in late stage cancers to be based on thorough screening of cancer condition and any further co-existing medical conditions;
- Patients with low levels of mobility can benefit from incremental, brief durations of work-rest over 5-10mins. If and when tolerated, the work intervals can be increased.

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Research summary

- Exercises should be based on safety and ability of which the cancer type allows. High impact activities should be avoided in patients with bone metastasis due to stress fracture risk, in low platelet count (<50,000 per micro litre) and peripheral neuropathies;
- Tumour site must be considered, as with surgical sites and avoided if there is a risk that the exercise will irritate the tumour or disturb stitching and scar tissue;
- The patient should exercise at least 4 days per week, not miss 2 consecutive days and rest at least once a week.

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Research summary

- Gradual progression is advised. A training heart rate of 55-75% HR_{max} for 20-30 minutes is a good place to start. In very debilitated patients however it may be necessary to reduce the heart rate to 40-45% HR_{max};
- Chemotherapy patients at risk from cardio-toxicity must be supervised by an exercise professional;
- CV exercise should involve whole-body rhythmical actions such as walking, rowing, and cycling. In patients with poor upper arm mobility, the cross trainer or arm ergometer can be used. Resistance training should try to optimise compound exercises to avoid joint stress and to encourage co-anatomical muscular contractions.

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Research summary

- Progression should begin by increasing time and frequency before moving on to intensity;
- For those in remission, the goal is to return the patient to their pre-cancer fitness, strength and function—or better;
- Encourage core strength in the form of functional training, particularly in abdominal surgery and treatment. Localised core work may induce bleeding, so use cables and whole body functional training to engage the core.

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Procedure recommendation

- Physician referral;
- Review of physician examination;
- In-centre screening and testing;
- Individualised exercise planning and prescription;
- Reassessment;
- Community-based ancillary services.

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Exercise programming for cancer rehab (Adapted from Durstine and Moore,2003, ACSM)

Modes	Goals	Intensity/frequency Duration
Aerobic Large muscle actions (walking, rowing, cycling, Pool based, aerobics group classes)	Improve/maintain work capacity Body weight management Improve mood and self esteem/social Reduce fatigue Improve QOL	Moderate intensity 64%-73% HRR Exercise most days of the week Don't miss 2 days running Short incremental intervals if needed 20-30 min sessions, progressing to 45-60 as tolerated Take intensity day to day based on fatigue and treatment symptoms
Strength Free weights Machines Cables Bands Circuit training	Maintain/improve strength in arms, legs and trunk Increase muscle mass for BMR Control insulin and IGF 1 Improve self esteem	Improve balance and core first if necessary 60% 1RM to start 2-3 days per week, 20-30 mins 1-3 sets of 8-5 reps, progress to 10-12 reps Compound exercises preferred Increase functionality and intensity as tolerated Increase sets and reps before resistance Be aware of 'sensitive sites' which may bleed or break stitching.
Flexibility Stretching- active and passive	Reduce stiffness Increase mobility Breast cancer and lymphoma rehab	Most days of the week Active early in day, passive and progressive later
Functional ADL Gait and balance	Maintain/gain independence Return to work Improve gait and balance	Daily and ongoing Increase daily physical activity.

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Schmitz et al (2010). ACSM Roundtable on Exercise Guidelines for Cancer. Med Sci in Sp Ex

- Three main areas of focus in rehab:
- Health
- Quality of life
- Psychosocial well being

"people with disease should be as active as their disease will allow them to be"

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FITT

- 150 minutes per week of moderate aerobic exercise or:
- 75 minutes per week of vigorous;
- 2-3 sessions per week of strength training focussing on large muscle groups;
- Stretch each exercise day.

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Dep't of Health Infographic 2016

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Considerations

- The main priorities for the exercise professional are to understand and consider:
  - The type of cancer and treatment;
  - That therapies are always changing;
  - Health and activity before diagnosis;
  - Co-morbidities present and prior to diagnosis;
  - Effects of treatment can be immediate and short term, long-term and lasting, or delayed (arrhythmias, cardiomyopathy, toxicity).

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Modes

- Large muscle groups: walking, cycling, etc.
- Train muscle groups affected by the cancer;
- ROM wheel;
- Fit-ball;
- Bands;
- Wobble boards, etc.
- Pulley ropes.
  - Mode is determined by ability
  - "Aim at the problems, overcome the limitations".

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Frequency

- Aim for 3 x per week but be flexible to extreme fatigue, treatment weeks and treatment changes;
- Look out for lost motivation and act;
- Remember immunity and training volume.

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Intensity

- Use Karvonen formula and RPE (Meds?);
- Mainly moderate, but increase as the patient moves into remission;
- Also when PSA is low and off treatment;
- Reduce when pain or fatigue high;
- Use challenging, but achievable goals.

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Duration

- Continuous or intermittent;
- Use stretches in-between bouts;
- Steady, but focussed progression;
- In early stages, use duration over intensity then bring more intensity in as health improves;
- Be flexible (pain, fatigue, treatment weeks, etc.).

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Treatment consequences

- The exercise professional should be aware of the consequences of treatment and toxicity including:
  - Increased risk of fracture (hormone therapy);
  - CV events and risk factors;
  - Neuropathies (chemotherapy);
  - Musculoskeletal morbidities;
  - Treatment-related toxicity;
  - Metastatic disease in the bone will require adaptation, due to fragility.

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Negative features

Pain:

- Unexplained persistent pain in any area;
- Nerve root pain associated with pins and needles, a burning sensation or numbness.

Soft tissues disease:

- A lump or swelling, particularly if changing;
- Unexplained area of thickening or dimpling;
- Sudden onset of lymphoedemia.

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Negative features

Deteriorating psychological well-being:

- Progressive lowering of mood;
- Increasing anxiety.

Reported bleeding:

- In urine;
- In sputum;
- In bowel motions.

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