Prescription of Exercise During Cancer Treatment

American College of Sports Medicine Exercise Recommendations

**AEROBIC EXERCISE:**

**Frequency:**
- Aim for 3 to 5 days per week
- If previously sedentary, gradually increase number of sessions to 3 to 5 days per week over the course of one month

**Intensity:**
- Aim for moderate to vigorous intensity (definition depends on method used for intensity prescription, see methods below)
- Exercise tolerance may be highly variable during active treatment, reduce intensity if adverse effects of symptoms or side effects

**Time:**
- If tolerated, 20 to 30 minutes sessions
- During active treatment, it may be helpful to do several short bouts throughout the day rather than one continuous session
- Aim for 75 minutes per week of vigorous intensity or 150 minutes per week of moderate intensity or equivalent combination of the two.

**Type:**
- Prolonged, rhythmic activities using large muscle groups such as walking and cycling
- Avoid swimming during active treatment due to risk of infection

**Progression:**
- Progress slowly from lower to higher frequency, intensity and duration
- General guidelines for healthy individuals include starting with progression of exercise time/duration of 5 to 10 minutes per session every 1-2 weeks; progress exercise intensity last
- If exercise progression leads to an increase in fatigue or other adverse symptoms, reduce intensity and duration
RESISTANCE EXERCISE:
Frequency:
  • Aim for 2 to 3 sessions per week
Intensity:
  • Moderate intensity (12-13 on rating of perceived exertion scale below)
Time:
  • 1 to 2 sets of 8-12 repetitions
Type:
  • Free weights, resistance machines, or weight-bearing functional activities (sit to stand or squats) targeting all muscle groups
Progression:
  • Start with one set of 8-10 repetitions for initial week or two, then increase to two sets, followed by increase in repetitions
  • Increase weight and/or difficulty of exercise as necessary to maintain target subjective rating of perceived exertion

FLEXIBILITY EXERCISE:
Frequency:
  • Daily
Intensity:
  • Be mindful of range of motion restrictions due to surgery and/or radiation therapy
Time:
  • Even 5 minutes a day can be helpful
Type:
  • Stretching or range of motion exercises of all major muscle groups
  • Specifically address areas of joint or muscle restriction that have resulted from surgery or radiation
Aerobic Exercise Intensity Prescription Methods

**HEART RATE RESERVE METHOD:**

- **Equipment:**
  - Heart rate monitor
  - Calculator

- **Variables:**
  - Resting heart rate (HRrest)
    - Acquired after a 5-minute period of quiet, seated rest or ask patient to measure it first thing in the morning manually or with a heart rate monitor (most accurate)
  - Maximal (or peak) heart rate (HRmax)
    - Prediction equation: HRmax = 207 – (0.7 * age)
  - Intensity level
    - Moderate intensity = 40% to 59%
    - Vigorous intensity = 60% to 85%
    - Usually used as a range (i.e. 50 to 60%)

- **How to use:**
  - Determine three variables above
  - Plug these three variables into the equation below to determine the target heart rate
  - Perform this again using second intensity level if a range of target heart rates is desired
  - It is assumed that when you exercise at the target heart rate that your exercise intensity is equivalent to whatever intensity you use in the equation
  - Re-measure HRrest often during treatment and adjust target heart rate accordingly

\[
\text{Target heart rate} = ([\text{HRmax} - \text{HRrest}] \times \text{intensity}) + \text{HRrest}
\]

- Where intensity is in decimal form (i.e. 60% = 0.6)

**Pros:** very easy to calculate and adjust with changes in fitness or with physiological changes during chemotherapy (i.e. changes in HRrest); accurate and will achieve an intensity ± 10 percentage points within desired exercise intensity

**Cons:** use of predicted HRmax will decrease accuracy compared to measuring HRmax in a maximal exercise test; heart rate monitor required;

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The Rating of Perceived Exertion Method:

- **Equipment:**
  - Borg rating of perceived exertion (RPE) scale:

- **Variables:**
  - The subjective values from the Borg rating of perceived exertion scale
    - Moderate intensity = 12 to 13
    - Vigorous intensity = 14 to 17

- **How to use:**
  - Adjust difficulty of exercise to where you subjectively feel that your perceived rating of exertion corresponds to the goal number on the scale above

**Pros:** no equipment required during exercise other than Borg scale

**Cons:** inaccurate; tendency to achieve an intensity much lower than desired intensity during treatment;

References
