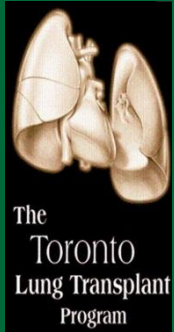


Guidelines for safe & effective exercise training



Lisa Wickerson BScPT, MSc, PhD (c)
Nancy Howes BScPT, MSc



October 17th – 18th, 2015



Disclaimer

The presentation provides general information and advice for transplant patients. For specific medical guidance relating to health issues, please talk to your doctor or members of your transplant team.

Presentation Objectives

Objective 1- Discuss the concept of ‘Exercise as Medicine’

Objective 2 - Describe the “**FITT**” principle of exercise training

Objective 3- Outline modifications to exercise to prevent and/or manage chronic health conditions

Objective 4- Review transplant organ-specific considerations for exercise

Objective 5- Provide practical aspects of exercise training and physical activity

Why are YOU here?

- A. Your spouse made you come
- B. You want to prepare for the Transplant Games
- C. You want to be more active
- D. You want to lose weight
- E. You want to join a sport or activity that you haven't done in a long time

Exercise as Medicine



- Part of your medical treatment
- Physical activity **vs.** exercise **vs.** competitive training
(different goals, dose, level of fitness required)
- Can be tailored for different ages, abilities and health conditions
(i.e. elderly, non-athletes, chronic disease)

23 ½ hours video

<https://www.youtube.com/watch?v=3F5Sly9JQao>



FITT Principles of exercise training

“the dose or prescription”

- **F**requency ‘*how often*’
- **I**ntensity ‘*how hard*’
- **T**ime ‘*how long*’
- **T**ype ‘*what kind*’

Name _____

Address _____

R_x

Walking – 5 x/week, 20 mins, RPE 4 and/or 60% max heart rate

Free weights – 2 x/week, 2 sets of 10 reps at 70% 1RM, all major muscle groups

Unlimited refills

MD _____

Signature _____

F -Frequency (How often to exercise)

- Depends on your baseline level of activity
- 3-5 days/week is recommended for aerobic exercise
- Every other day for weight training



I – Intensity (How Hard to Exercise)



Heart rate

(Maximal heart rate=220-age)

0	Nothing at all
0.5	Very, very slight (just noticeable)
1	Very slight
2	Slight (light)
3	Moderate
4	Somewhat severe
5	Severe (heavy)
6	
7	Very severe
8	
9	
10	Very, very severe (maximal)

Borg Rating of Perceived Exertion

T - Time (How Long to Exercise)

- This term usually refers to aerobic exercise (walking, swimming, biking, hiking)
- Depends on your baseline
- Work on improving how many minutes you spend doing the exercise
- Once you have reached a target of 20-30 minutes, then start increasing the intensity

T- Type (What kind of exercise)

Light

- Easy walking, golfing with a cart, stretching, yoga, bowling

Moderate

- Brisk walking, golfing and walking the course, climbing stairs, swimming, biking

Vigorous

- Running, fast cycling, basketball, gym workouts, snowshoeing

Example – Light exercise program

- **F** – daily
- **I** - 2 (slight/light) to 3 (moderate) on the Borg Rating of Perceived Exertion
 - OR 50-60% of your Maximal Heart Rate (220-age) OR Talk Test
- **T** – start with what you can easily do (5 mins?)
- **T** – Walk on the level, easy pace

Example: < 2mph (3.2kph) walking speed on a level surface

When appropriate:

- Have not been exercising, very sedentary
- Recovering from an illness
- Recently out of hospital
- To increase physical activity

0	Nothing at all
0.5	Very, very slight (just noticeable)
1	Very slight
2	Slight (light)
3	Moderate
4	Somewhat severe
5	Severe (heavy)
6	
7	Very severe
8	
9	
10	Very, very severe (maximal)



Example – Moderate exercise program

- F-5 days per week
- I- 3 (Moderate) to 5(Heavy) on Borg Rating of Perceived Exertion
 - OR 60-80% of Maximal Heart Rate
 - OR Talk Test
- T- Increase toward 30 minutes
- T- Brisk Walk

Example: 2.5-4mph (4-6.5 kph) walking speed on a level surface or small incline (1-2%).

When appropriate:

- To maintain physical activity levels
- To increase fitness

0	Nothing at all
0.5	Very, very slight (just noticeable)
1	Very slight
2	Slight (light)
3	Moderate
4	Somewhat severe
5	Severe (heavy)
6	
7	Very severe
8	
9	
10	Very, very severe (maximal)



Example – Vigorous exercise program

- **F**- 3-5 days per week
- **I**- 5(Heavy) to 9 (Very severe) on Borg Rating of Perceived Exertion
 - OR 80-90% of Maximal Heart Rate
 - OR Talk Test
- **T**-30-40 minutes +
- **T**-Jogging, running, brisk walking with hills/ inclines

0	Nothing at all
0.5	Very, very slight (just noticeable)
1	Very slight
2	Slight (light)
3	Moderate
4	Somewhat severe
5	Severe (heavy)
6	
7	Very severe
8	
9	
10	Very, very severe (maximal)

Example: > 4.5mph (7 kph) walking/running speed on a level surface or incline/ hill (>3%).

When appropriate:

- To increase fitness
- Improve performance



Aerobic Exercise Prescription

- Can be made based on a stress test or a walk test (% of speed or workload achieved)
- Can use a Target Heart rate (based on age, resting heart rate)
- Borg Rating of Perceived Exertion
- Important to find an aerobic activity that you enjoy!
Be creative!

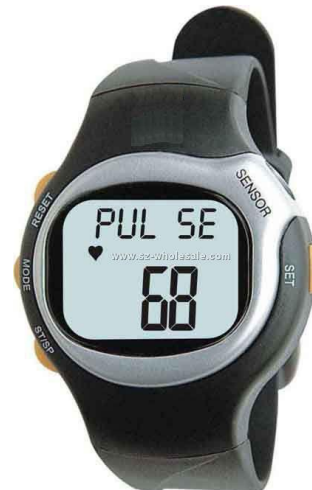
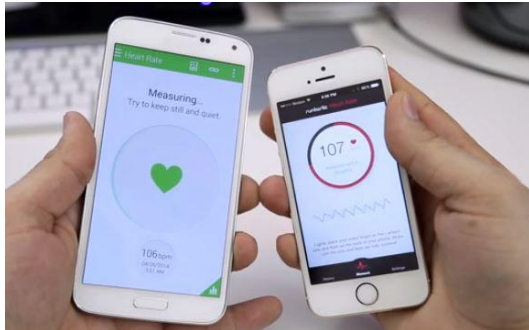


Strength Training Prescription

- Some use the 1-repetition maximum (1-RM) method or multiples (6-10 RM)
- Muscle should be challenged
- By the last few repetitions, the weight should be heavy and it should be harder to lift
- Never hold your breath while lifting
- Goal is 10-15 repetitions (can do 1-3 sets)
- Weight lifting should be controlled using a slow to moderate speed
- Correct posture is important
- **Free weights, weight machines, elastic bands, gravity-resisted exercise**

How to Monitor Yourself

- The Talk Test
- Heart rate (counted from the wrist or neck)
- Pulse oximeter
- Heart rate monitor
- Symptoms/ perceived exertion
- Apps on phones



0	Nothing at all
0.5	Very, very slight (just noticeable)
1	Very slight
2	Slight (light)
3	Moderate
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10	Very, very severe (maximal)

Where can I 'fill' my prescription?

- YMCA/ local fitness facilities
- Municipal /Community park and recreation programs
- Employee wellness health programs
- Running Room walking programs
- Walking clubs, malls, schools after hours
- Wellness centres
- Senior centres
- Public library fitness programs
- Public courts
- Home (condo gym, home equipment, exercise videos/ Wii/Xbox Kinect)
- Cardiac or pulmonary rehabilitation programs
- Physiotherapy clinics



Do I need medical supervision to exercise?

- **In almost all cases:**
 - Follow guidelines/advice from your transplant team to exercise independently
- **May** be indicated if:
 - New medical issues/chronic conditions arise
 - Unstable or uncontrolled medical condition
 - Seek additional medical guidance and possible referral to a physiotherapist or clinical exercise professional

Side effects

- Cardiovascular
 - Hypotension, dizziness
 - Cardiac issues
- Musculoskeletal
 - Arthritis
 - Low back pain
 - Acute injury (i.e. fall, stress fracture)
 - Overuse injuries
- Diabetic complications
 - hypoglycemia



S T R E T C H



B R E A K



Transplant organ-specific considerations for exercise

General considerations for all solid organ transplant recipients

- Pre-transplant illness and degree of deconditioning
- Osteoporosis (contact sports)
- Medication side-effects (systemic, muscle)
- Rejection
- Risk of developing heart disease, diabetes, kidney disease
- Risk of infection

Heart transplant

- Initially, restrictions related to the incision through the breast bone.
- Altered heart rate responsiveness post transplant:
 - ↑resting heart rate
 - ↓peak heart rate
 - Slower time to speed up or slow down

Heart-Lung and Lung Transplant

- Heart-lung transplant
 - Similar alterations in heart rate as heart transplant
- Upper extremity lifting restrictions for first 3 months
- Increased risk of lung infections
- Prolonged steroid use can lead to muscle weakness, slower improvements in strength

Liver Transplant

- Initially, restrictions related to the incision through the abdominal muscles
- After 8 weeks – can begin to learn core strengthening exercises
- For patients with NASH cirrhosis- important to exercise with weight control in mind

Kidney Transplant

- Care and protection (vulnerable location) – no boxing or rappelling
- Long duration of chronic kidney disease and wait for transplant can lead to multiple medical complications
 - Renal osteodystrophy
 - Neuropathies
 - Visual disorders
 - Amputations

Exercise for Weight Loss

- **F** - daily
- **I** – as vigorously as can be tolerated (i.e. add incline or challenging terrain, intermittent bursts of higher speeds, use walking poles)
- **T**- work up to 30-45 minutes +
- **T** – brisk walking, swimming, biking, hiking (aerobic exercise to burn calories)



Exercise to Reduce Risk of Heart Disease

- Blood pressure often ↑s post transplantation
- Regular exercise can help to reduce blood pressure, manage weight, manage diabetes, improve cholesterol levels

F – 3-5 days/week

I – as vigorous as can be tolerated

T – working towards 30 minutes of aerobic exercise

T – walking, brisk walking, or other

Exercise for Osteoporosis Management

- Many people have lower bone density before transplant
- Further bone loss can occur with some of the transplant medications
- We can lose more bone density as we age

F – 3-5 days/week

I – as vigorous as can be tolerated (careful with intensity if you have had fractures)

T – work towards 30 minutes of aerobic exercise

T – weight bearing aerobic exercise, strength training, exercise for balance to prevent falls (i.e. tai chi, dancing)

*Cycling and swimming are good aerobic exercises for general health, but are not weight bearing exercise

Practical aspects of exercise training and physical activity

- Goals
- Sun protection
- Equipment (footwear, rackets, clubs)
- Sources of motivation (family/friends, technology)
- Weather Air Quality Health Index for Ontario:
www.airqualityontario.com/aqhi/index.php



What if I get an injury or become ill?

- Medical set-backs do occur
- If medical set-back was brief, the progression back to your former level of activity will likely be quick
- After longer periods of illness or periods of being sedentary you will need to cut back your prescription and build up gradually
- Even a little, light activity is better than nothing
- If you experience an injury see your family doctor. Also consider consulting a physiotherapist or specialist



Useful Apps, Devices and resources



Activity Log – Date:

	Target	MON	TUE	WED	THU	FRI	Total	Notes
Calls attempted								
Decision-makers reached								
Client visits attended								
New connections								
Resources sent								
1 st Interviews								
2 nd Interviews								

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“Your Prescription for Health” series

Provides information and recommendations for exercising safely with over 40 health care conditions

- *Exercising with Arthritis*
- *Exercising with Osteoporosis*
- *Exercising with Low Back Pain*
- *Exercising with Anemia*
- *Exercising with Frailty*
- *Exercising with Type 2 Diabetes*
- *Exercising with Angina*
- *Exercising with Hypertension*



Google ‘exercise is medicine your prescription series’

Other links

Canadian Diabetes Association

<http://www.diabetes.ca/clinical-practice-education/professional-resources/physical-activity-exercise>

Osteoporosis Canada

<http://www.osteoporosis.ca/osteoporosis-and-you/exercise-for-healthy-bones/>

Heart and Stroke Foundation

http://www.heartandstroke.com/site/c.iklQLcMWJtE/b.3484253/k.4FE0/Healthy_living_Physical_Activity.htm

Exercise is Medicine Canada

<http://www.exerciseismedicine.ca/english>

The Arthritis Society

<http://www.arthritis.ca/page.aspx?pid=1117>

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