



UNIVERSITY OF OTTAWA  
HEART INSTITUTE  
INSTITUT DE CARDIOLOGIE  
DE L'UNIVERSITÉ D'OTTAWA

**HEARTWISE WEBINAR SERIES**

# Exercise and Cardiovascular Disease

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# WHAT YOU WILL LEARN

1

What we need to know about your clients **before** prescribing exercise

2

Understanding the guidelines and principles for **exercise in the cardiovascular population**

3

Applying the **FITT(T) principal** in the cardiovascular population

4

What about symptomatic clients



# CARDIAC REHABILITATION (CR)

CR is recognized as a **core component** of the continuum of comprehensive care for CVD in Canada.

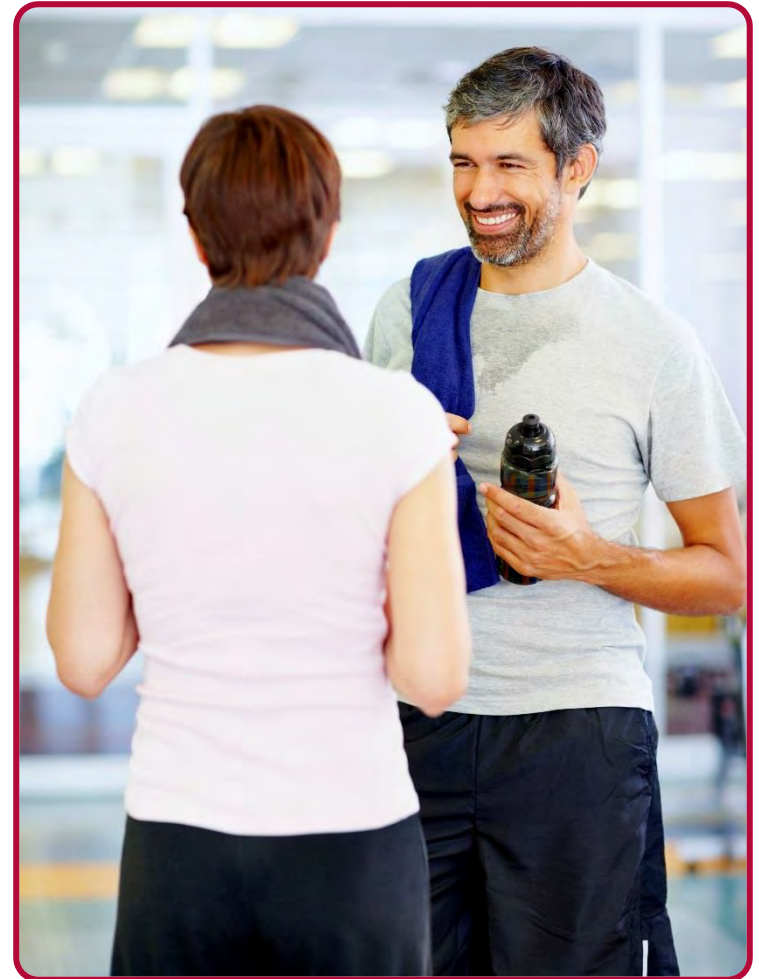


- Identify and provide strategies for managing CVD risk factors
- Exercise, Nutrition, psychosocial health
- Ensure appropriate medical assessment
- Find a program near you:

<http://www.cardiachealth.ca/cardiac-rehab/locate-cardiac-rehab-centre>

# GETTING TO KNOW OUR CLIENTS

- **Cardiovascular History**
  - Events and timelines
- **Co-morbidities**
  - Factors affecting exercise





# TIMELINES FOR RESUMING EXERCISE AFTER A CARDIAC EVENT



Begin with low intensity, or easy exercise, as soon as it feels comfortable to do so

Progress to moderate intensity once 30 minutes of easy exercise is achievable, but not before 3 weeks

Sternal precautions for 6-8 weeks post-coronary artery bypass graft surgery (CABG), valve surgery or transplant (due to the sternotomy incision).

Patients with a pacemaker or ICD are advised not to lift their arm above shoulder height for 2 weeks & not to lift items over 10lbs for 4 weeks.

# GOAL SETTING



**Goal setting** is an area where, as fitness professionals, we can do a great job by making this a focus.

If you enjoy exercise or a certain type of exercise, the benefits are even greater.

## Exercise Goals

- **S**pecific
- **M**easurable
- **A**chievable
- **R**esults focused
- **T**ime sensitive



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# HEART WISE EXERCISE

## GUIDELINES FOR AEROBIC EXERCISE

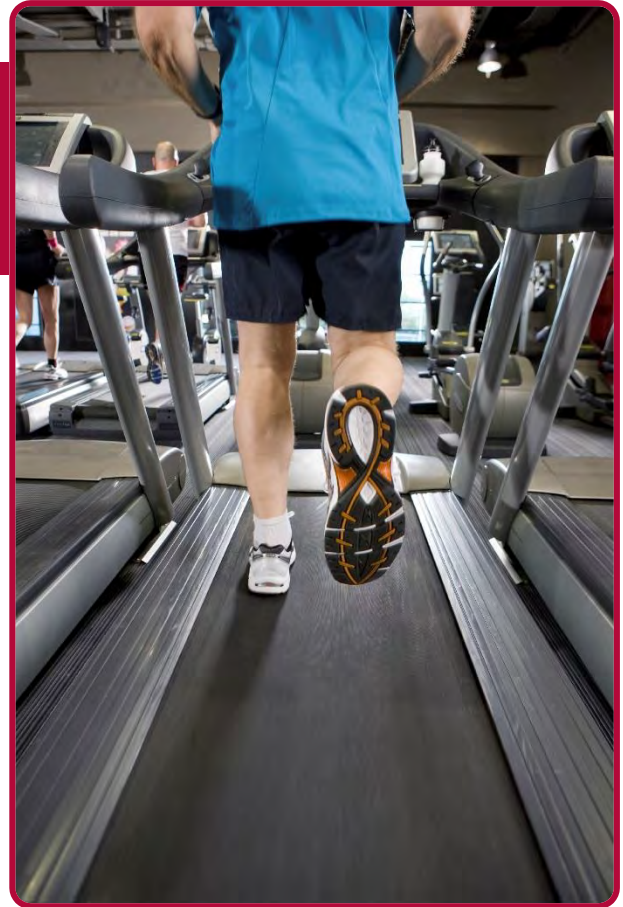


# CANADIAN GUIDELINES FOR CARDIAC REHABILITATION

30-60 minutes of aerobic **exercise** most, preferable all days of the week.

*"Scientific literature is now rich with reports, trials, and meta-analyses identifying physical inactivity does as one of the primary initiators of not only vascular disease, but also site specific cancers, type II diabetes, osteoporosis, hypertension, dyslipidemia, obesity and osteoarthritis."*

*CACR Guidelines 3<sup>rd</sup> ed.*





# WARM UP AND COOL DOWN



Warm-up and cool-down are essential.

- Injury prevention
- Cardiovascular optimization
- Reduces arrhythmias (irregular heart beats)

# AEROBIC EXERCISE IS KEY!

Warm-up and cool-down surround the conditioning phase.

- Aerobic exercise can **retard** the progression of CAD
- **Steady state** and **interval training** can be effective





## Cardiovascular History

- 62 year old man
- 2002 – CAD diagnosed – 2 stents inserted; attended CR with good response
- 2014 – Heart Attack
- 2 stents put in to open arteries that were 95% blocked

Once the procedure was complete, tests showed good blood flow with no heart damage.

# CASE STUDY: JIM



## Risk Factors

- Family history
- Diabetes
- High cholesterol
- High blood pressure
- Anxiety

## Jim's Goal

- Long walking excursions

# F.I.T.T.



- **F** - Frequency
- **I** - Intensity
- **T** - Type
- **T** - Time
- **(T)** - Timing

# PRESCRIBING INTENSITY


Moderate intensity is the goal for most.

- 20-30 beats above resting HR
- RPE 3-5 or 12-15:
  - ✓ Moderate to somewhat difficult exercise intensity is recommended for most
- Talk Test
- Using a Stress Test (exercise specialist)



# RATING OF PERCEIVED EXERTION (R.P.E)

0	<i>Nothing at all</i>
0.5	<i>Very, very easy</i>
1	<i>Very easy</i>
2	<i>Easy</i>
3	<i>Moderate</i>
4	<i>Somewhat difficult</i>
5	<i>Difficult</i>
6	<i>More difficult</i>
7	<i>Very difficult</i>
8	
9	
10	<i>Very, very difficult (almost maximal)</i>



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## Rating of Perceived Exertion

## Échelle de perception de l'effort

The Borg® Rated Perceived Exertion Scale helps you to rate your level of level of exertion and fatigue.

L'Échelle de perception de l'effort de Borg® vous aide à déterminer votre niveau d'effort et de fatigue lorsque vous faites de l'exercice.

No exertion at all	6	Pas de fatigue du tout
Extremely light	7	Extrêmement léger
	8	
Very light	9	Très léger
	10	
Light	11	Léger
	12	
Somewhat hard	13	Un peu fatigant
	14	
Hard (heavy)	15	Fatigant
	16	
Very hard	17	Très fatigant
	18	
Extremely hard	19	Extrêmement fatigant
Maximal exertion	20	Fatigue maximale

© Borg 1982, 1990, 1998, 2004

# F.I.T.T.



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# F.I.T.T. FOR JIM



## Aerobic Prescription:

- **F** - 5-7 times per week
- **I** - Resting HR+20-30 bpm
- **T** - Walking
- **T** - 30-60 minutes
- **(T)** - Meds / meals

## Strength Training:

2-3 times per week



# SIGNS OF OVEREXERTION



- Being unable to **exercise** and **talk** at the same time
- **Prolonged fatigue** 30-60 minutes after exercise
- Continuous **muscle and joint soreness**
- Lightheadedness
- Nausea
- Pounding in your head or **headache**
- HR after cool-down that is more than **20 beats above resting level**
- Prolonged periods of irregular heart beats ('palpitations')



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# GUIDELINES FOR RESISTANCE TRAINING

## HEART WISE EXERCISE



# RESISTANCE TRAINING GUIDELINES

Resistance training of each  
major muscle group

2-3 days per week with at least 48  
hours rest for each muscle group

- Each muscle group should be trained for a total of **2-4 sets**
- Allow individual to complete **8-12 reps (10-15 for older adults)**
- Rest interval of **2-3 min** between sets



# RESISTANCE TRAINING GUIDELINES



*"For older adults and very deconditioned individuals,  $\geq 1$  set of 10-15 repetitions of moderate intensity resistance is recommended."*

- Unilateral exercise
- **Sitting** reduces energy use by 25%

*ACSM Guidelines 9<sup>th</sup> ed.*

# RESISTANCE TRAINING TIMELINES

Clients can **safely** resume strength training programs

Once aerobic exercise is comfortable for 2-4 weeks

6-8 weeks post-surgery  
(CABG/Valve/transplant)

5 weeks post-heart attack





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# HEART WISE EXERCISE

# SYMPTOMATIC CLIENTS



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# WHAT IS ANGINA?



## Myocardial Ischemia

- Lack of oxygen to the heart muscle
- Occurs when clinically significant atherosclerotic lesions result in inadequate blood flow to meet myocardial oxygen demand



# STABLE ANGINA

- Occurs with **progressive exercise** at approximately the same exercise heart rate
- Exercise training is indicated as long as the training intensity remains **below** the level at which angina occurs

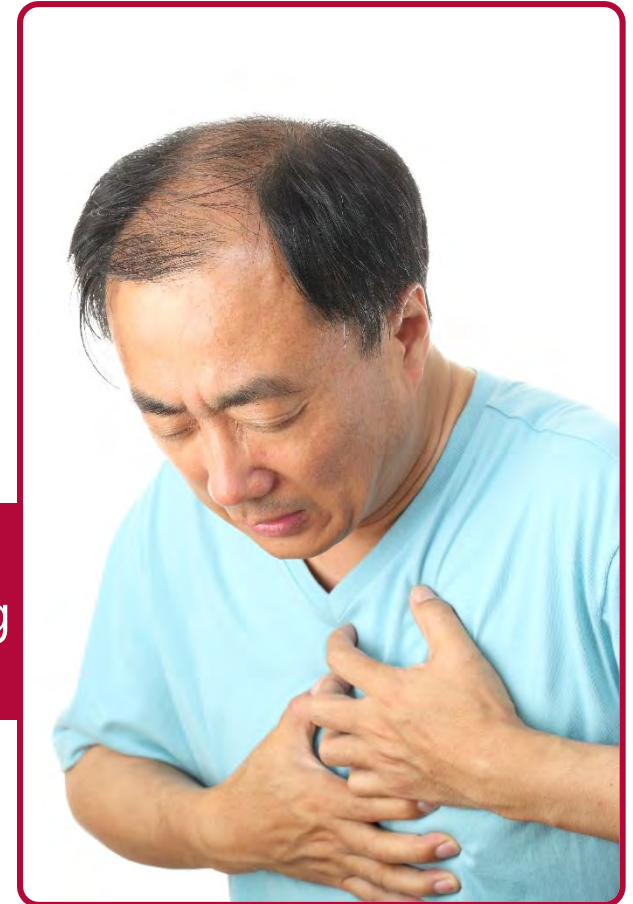


# STABLE ANGINA SYMPTOMS

- Pain
- Discomfort
- Heaviness
- Squeezing

Some patients have shortness of breath, lightheadedness, weakness, nausea, sweating or fainting.

**Women** often have vague symptoms which may also occur in different locations



# STABLE ANGINA SYMPTOMS



## Symptoms are typically triggered by:

- Physical activity
- Emotional stress
- Exposure to cold
- Consuming a heavy meal
- Smoking

Discomfort is resolved after lowering exercise intensity, rest &/or Nitroglycerin.

# PAIN OR DISCOMFORT IS NOT LIKELY ANGINA IF...



- It is **localized**
- **Palpation** makes it worse
- It gets worse with **deep breathing, coughing** or **movement**
- **Exercise** does not make it worse or may even reduce the pain

# UNSTABLE ANGINA

- Chest discomfort occurs with **increasing frequency and severity** with progressively less activity or at rest
- **Contraindication** to exercise training
- Requires **medical attention**



# IN SUMMARY



## Exercise Recommendations for Angina

Training heart rate should be at least 10 beats/min below angina symptom/ischemic threshold.

↓ intensity or stop exercise if angina symptoms occur.

Training may be resumed if angina symptoms subside with ↓ intensity, rest or Nitro, **but** when resuming training, intensity should be decreased.



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THANK YOU!

HEART WISE EXERCISE

