

Exercise Screening and Prescription for Older Adults with Cancer

Karen M. Mustian, Ph.D., M.P.H.

Director PEAK Human Performance Laboratory

Deputy Director URCC NCORP Research Base

Associate Professor Department of Surgery

University of Rochester Medical Center

Wilmot Cancer Institute

NIH Award 1R25CA183723-01A1



Exercise is Medicine

- Decrease toxicities and side effects of cancer and its treatments
 - Fatigue, emesis, nausea, infections, inflammation, immunosuppression, depression, insomnia, cognitive impairment, sarcopenia, loss of physical function
- Decrease recurrence and second cancers
- Improve quality of life
- Improve survival



EXCAP[®] Home-Based Exercise for Older Cancer Patients



EXCAP[®] Intervention



EXCAP[®] Adherence & Adverse Events



	Controls	Exercisers
<u>Baseline</u> Average Daily Steps	5861	6548
<u>Post-Intervention</u> Average Daily Steps	2471	7180
<u>Baseline</u> Average Number of Minutes and Days of Resistance Bands	0/0	0/0
<u>Post-Intervention</u> Average Number of Days/Minutes Per Day of Resistance Bands	0/5	3/22
<u>Adverse Events</u>	1 AE/8SAE	2AE/7SAE

Results

(N=58 Prostate Cancer Patients)



- Intervention improved:
 - Cancer-related fatigue
 - Cardiopulmonary function
 - Strength
 - QOL
 - Improved sleep
 - Maintained muscle mass
 - Reduced Inflammation
 - Increased expression of genes supporting muscle growth, metabolism and immune function

Results

(N=198 Older Cancer Patients Receiving Chemotherapy)



- Intervention improved:
 - Quality of life
 - Anxiety
 - Confusion and delirium
 - Diarrhea
 - Shortness of breath
 - Sensitivity to cold or heat in hands or feet

Clinical Implications



- Exercise is safe even for older cancer patients as long as they are properly screened and the exercise prescription is appropriately modified for their individual circumstances
 - Low to moderate intensity
 - Home-based and unsupervised

Clinical Implications



- Referral of older cancer patients to an exercise professional is suggested for screening and assistance in developing an exercise prescription that is tailored based on functional capacity and co-morbidities prior to commencing exercise
 - ACSM Exercise Guidelines for Cancer Patients and Survivors
 - Older cancer patients with balance issues were able to safely complete a 6-Minute Walk Test in lieu of a graded exercise test using a treadmill to assess $\dot{V}O_2$ max

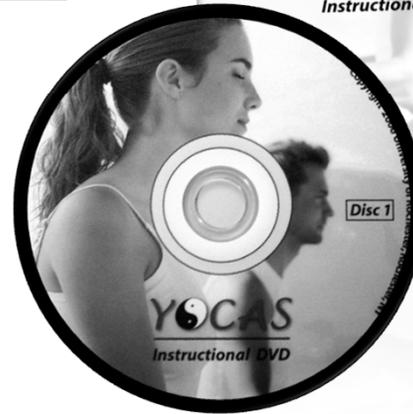
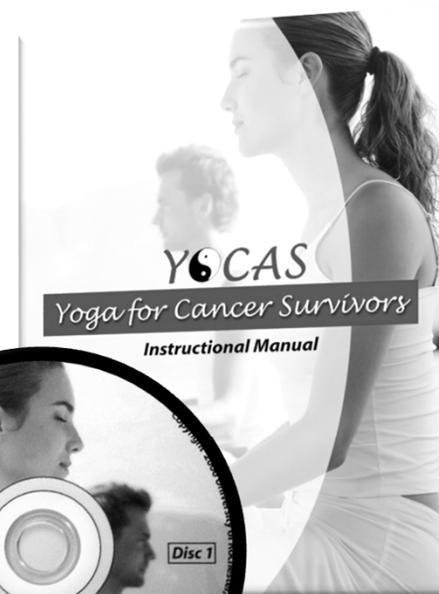
YOCAS® Yoga Significantly Improves
Sleep, Anxiety, Mood, Memory, Bone
Pain and Circadian Rhythm in 97 Cancer
Survivors Over Age 60



Mustian, et al. 2013, Sprod et al. 2014, Janelsins et al. 2015, Peppone et al. 2015



YOCAS[®] Intervention



Summary



- YOCAS[®] Yoga improved
 - Fatigue (physical and mental)
 - Insomnia
 - Sleep quality
 - Anxiety
 - Mood
 - Memory
 - Arthralgia and pain
 - Global Toxicity/Side Effect Burden
 - Quality of life
 - Reducing Sleep Medication Use!
 - Circadian rhythm profiles!

**It worked
in older
adults too!**

Exercise Guidelines for Cancer Patients and Survivors



- Evaluate baseline functional/fitness levels
- Become knowledgeable about cancer and non-cancer related limitations
- Exercise should be individually tailored
- **AVOID INACTIVITY!**
- **START & PROGRESS SLOWLY!**





Exercise Guidelines For Cancer Patients and Survivors

- Aerobic Exercise
 - 150 Minutes of Moderate Intensity/75 minutes of Vigorous
- Anaerobic Exercise
 - 20-30 Minutes Across All Major Muscle Groups, 2-3 days per week



What Can You Do?

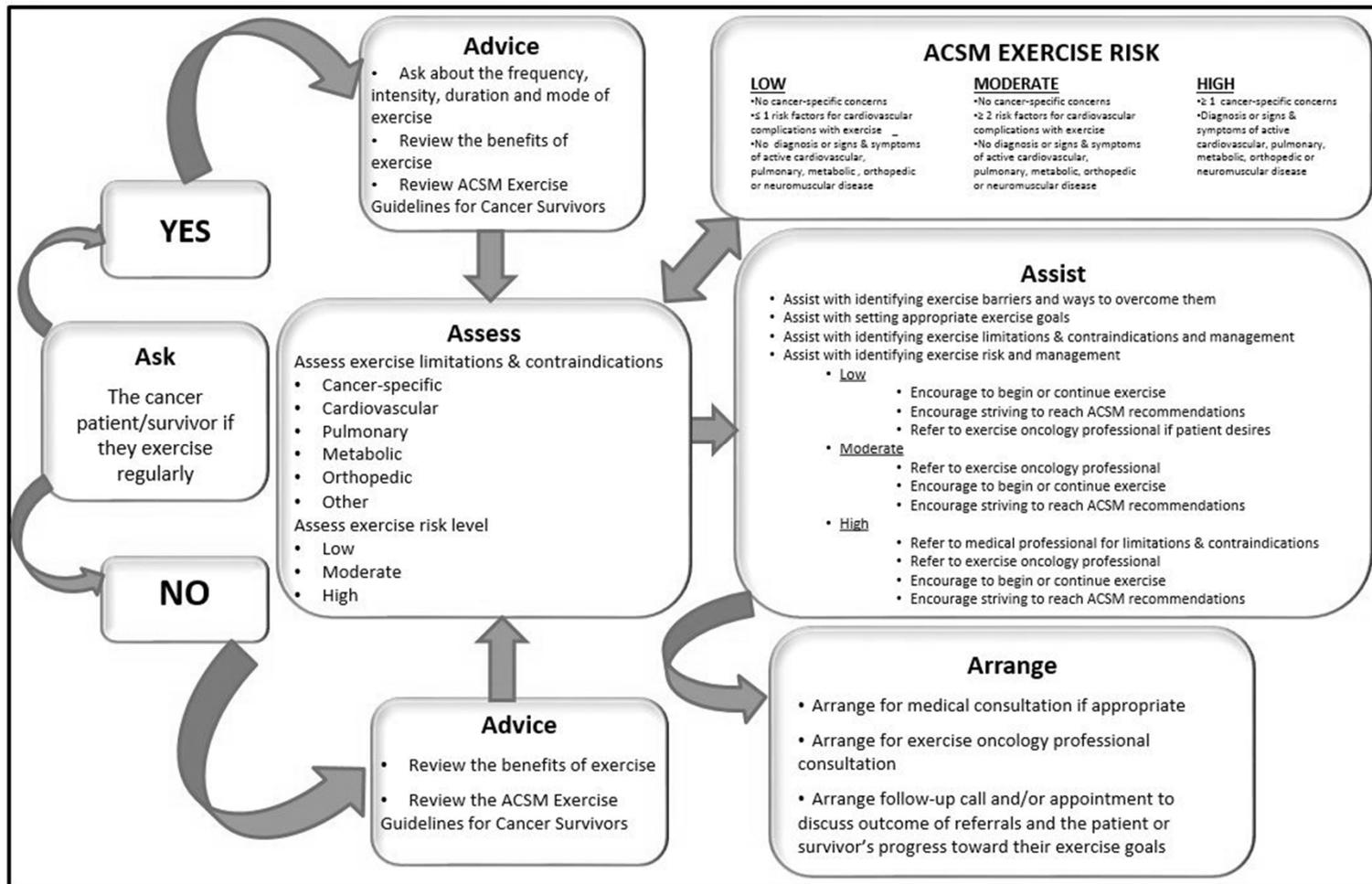
**USE
5 A Model &
Refer to
Credible
Rehabilitation**



**The only prescription
with unlimited refills.**



5 A's of Applied Exercise Oncology



The 2015 ACSM Exercise Preparticipation Health Screening Recommendations

- Recognize that the hazards of exercise-related cardiovascular events may more likely be reduced by careful attention to a safe and effective exercise prescription that:
 - Addresses FITT-VP (frequency, intensity, time, type, volume, progression) that incorporates a progressive transitional phase during which exercise duration and intensity are gradually increased
 - Advocates appropriate warm-up and cool-down
 - Promotes education of warning signs/symptoms
 - Encourages sedentary people to engage in regular, brisk walking to move them out of the least physically fit, least physically active cohort
 - Counsels physically inactive individuals to avoid unaccustomed vigorous intensity physical activity.

Healthcare provider questions:

1. Is the patient a regular exerciser?
 - Insert questionnaire
2. Do they have known disease (CV, metabolic, or renal)?
3. Are they experiencing any signs or symptoms suggestive of (CV, metabolic, or renal)?
 - Use Par- Q , AHA/ACSM Health/Fitness Facility Pre-participation Screening Questionnaire, or other screening tool

*Use the 2015 ACSM guidelines to determine if medical clearance is recommended prior to the initiation of exercise, then referral to the Clinical Exercise Physiologist

1. Is the patient a regular exerciser?

Regular Exercise is defined here as any planned activity (for example, brisk walking, aerobics, jogging, bicycling, swimming, rowing, etc.) performed to increase physical fitness. Such activity should be performed 3-5 times a week for 20-60 minutes per session. Exercise does not have to be painful to be effective, but should be done at a level that increases your breathing rate and causes you to break a sweat.

1. Is the patient a regular exerciser?

Do you exercise regularly according to that definition?

- Yes, I have been for MORE than 6 months.
- Yes, I have been for LESS than 6 months.
- No, but I intend to in the NEXT 30 DAYS.
- NO, but I intend to in the NEXT 6 MONTHS.
- No, and I do NOT intend to in the next 6 months.

2. Does the patient have known disease?

Assess your health status by marking all *true* statements

History

You have had:

- a heart attack
- heart surgery
- cardiac catheterization
- coronary angioplasty (PTCA)
- pacemaker/implantable cardiac defibrillator/rhythm disturbance
- heart valve disease
- heart failure
- heart transplantation
- congenital heart disease

Symptoms

- You experience chest discomfort with exertion
- You experience unreasonable breathlessness
- You experience dizziness, fainting, or blackouts
- You experience ankle swelling
- You experience unpleasant awareness of a forceful or rapid heart rate
- You take heart medications

Other health issues

- You have diabetes
- You have asthma or other lung disease
- You have burning or cramping sensation in your lower legs when walking short distance
- You have musculoskeletal problems that limit your physical activity
- You have concerns about the safety of exercise
- You take prescription medications
- You are pregnant

*If you marked any of these statements in this section, consult your physician or other appropriate health care provider before engaging in exercise. You may need to use a facility with a **medically qualified staff**.*

3. Does the patient have suggestive signs and symptoms of disease?

Signs and Symptoms

TABLE 5. Prodromal symptoms reported by 45 subjects within 1 week of their SCD.

Symptom	Reports, n
Chest pain/angina	15
Increasing fatigue	12
Indigestion/heartburn/gastrointestinal symptoms	10
Excessive breathlessness	6
Ear or neck pain	5
Vague malaise	5
Upper respiratory tract infection	4
Dizziness/palpitations	3
Severe headache	2

Adapted from Northcote et al. (57).

- Individuals who experience cardiovascular complications during or soon after exercise often have prodromal symptoms in the days and weeks before the event.
- Exercise professionals should promote education about exertion-related symptoms in the persons they counsel

Franklin *Circulation* 2014; Thompson *Circulation* 2007

PAR-Q & YOU

(A Questionnaire for People Aged 15 to 69)

Regular physical activity is fun and healthy, and increasingly more people are starting to become more active every day. Being more active is very safe for most people. However, some people should check with their doctor before they start becoming much more physically active.

If you are planning to become much more physically active than you are now, start by answering the seven questions in the box below. If you are between the ages of 15 and 69, the PAR-Q will tell you if you should check with your doctor before you start. If you are over 69 years of age, and you are not used to being very active, check with your doctor.

Common sense is your best guide when you answer these questions. Please read the questions carefully and answer each one honestly: check YES or NO.

YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	1. Has your doctor ever said that you have a heart condition and that you should only do physical activity recommended by a doctor?
<input type="checkbox"/>	<input type="checkbox"/>	2. Do you feel pain in your chest when you do physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	3. In the past month, have you had chest pain when you were not doing physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	4. Do you lose your balance because of dizziness or do you ever lose consciousness?
<input type="checkbox"/>	<input type="checkbox"/>	5. Do you have a bone or joint problem (for example, back, knee or hip) that could be made worse by a change in your physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	6. Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?
<input type="checkbox"/>	<input type="checkbox"/>	7. Do you know of any other reason why you should not do physical activity?

**If
you
answered**

YES to one or more questions

Talk with your doctor by phone or in person BEFORE you start becoming much more physically active or BEFORE you have a fitness appraisal. Tell your doctor about the PAR-Q and which questions you answered YES.

- You may be able to do any activity you want — as long as you start slowly and build up gradually. Or, you may need to restrict your activities to those which are safe for you. Talk with your doctor about the kinds of activities you wish to participate in and follow his/her advice.
- Find out which community programs are safe and helpful for you.

NO to all questions

If you answered NO honestly to all PAR-Q questions, you can be reasonably sure that you can:

- start becoming much more physically active — begin slowly and build up gradually. This is the safest and easiest way to go.
- take part in a fitness appraisal — this is an excellent way to determine your basic fitness so that you can plan the best way for you to live actively. It is also highly recommended that you have your blood pressure evaluated. If your reading is over 144/94, talk with your doctor before you start becoming much more physically active.

DELAY BECOMING MUCH MORE ACTIVE:

- if you are not feeling well because of a temporary illness such as a cold or a fever — wait until you feel better; or
- if you are or may be pregnant — talk to your doctor before you start becoming more active.

PLEASE NOTE: If your health changes so that you then answer YES to any of the above questions, tell your fitness or health professional. Ask whether you should change your physical activity plan.

Informed Use of the PAR-Q: The Canadian Society for Exercise Physiology, Health Canada, and their agents assume no liability for persons who undertake physical activity, and if in doubt after completing this questionnaire, consult your doctor prior to physical activity.

No changes permitted. You are encouraged to photocopy the PAR-Q but only if you use the entire form.

NOTE: If the PAR-Q is being given to a person before he or she participates in a physical activity program or a fitness appraisal, this section may be used for legal or administrative purposes.

"I have read, understood and completed this questionnaire. Any questions I had were answered to my full satisfaction."

NAME _____

SIGNATURE _____ DATE _____

SIGNATURE OF PARENT _____ WITNESS _____
or GUARDIAN (for participants under the age of majority)

Note: This physical activity clearance is valid for a maximum of 12 months from the date it is completed and becomes invalid if your condition changes so that you would answer YES to any of the seven questions.



© Canadian Society for Exercise Physiology



Health Canada

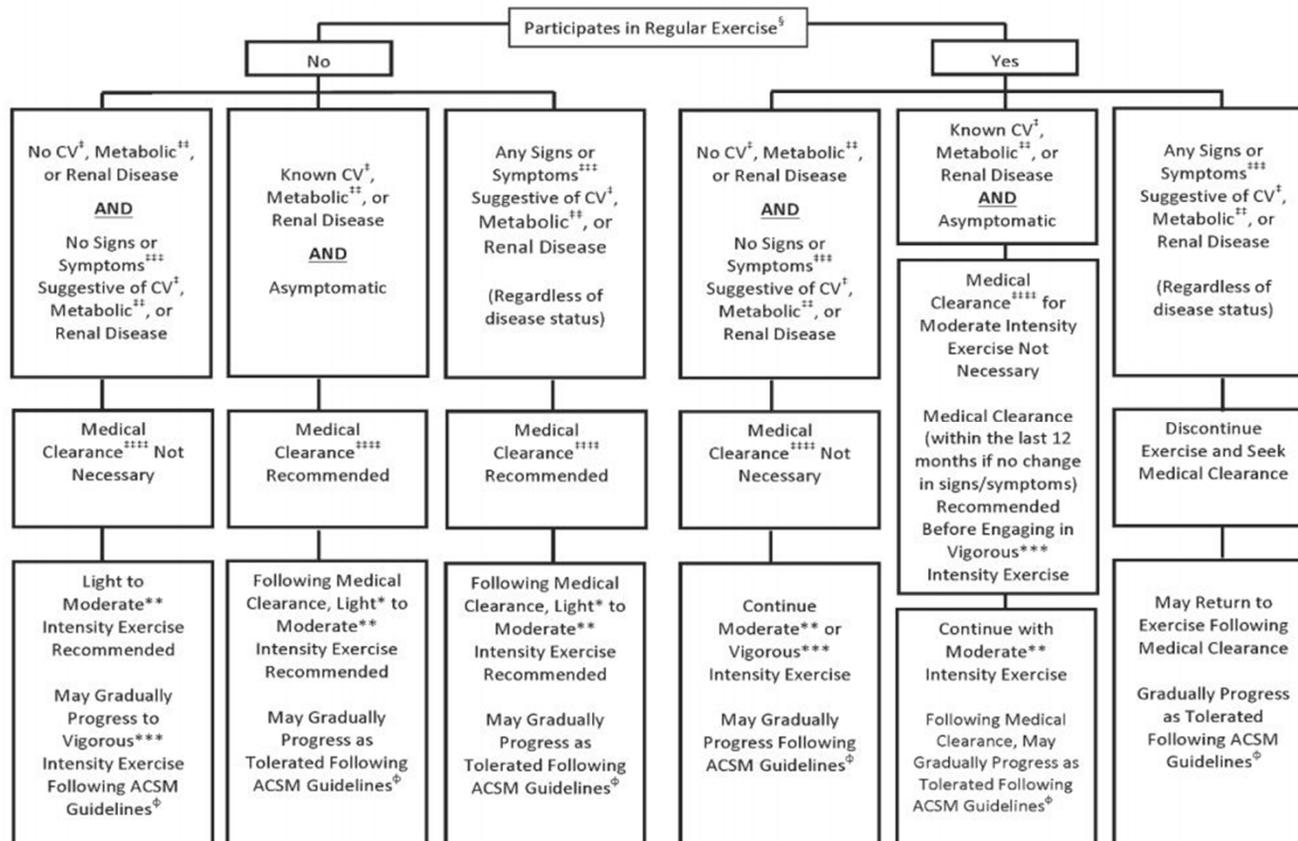


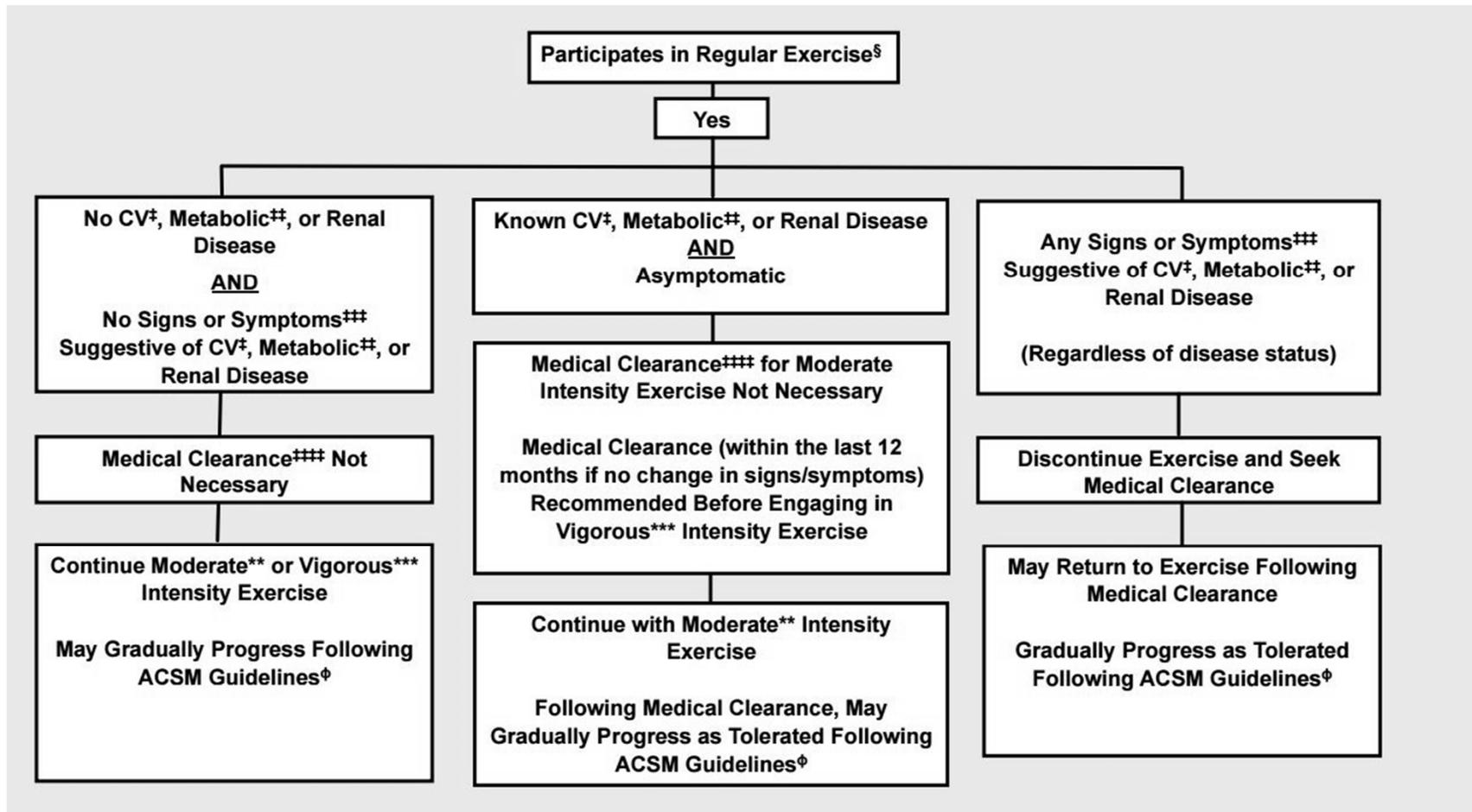
Santé Canada

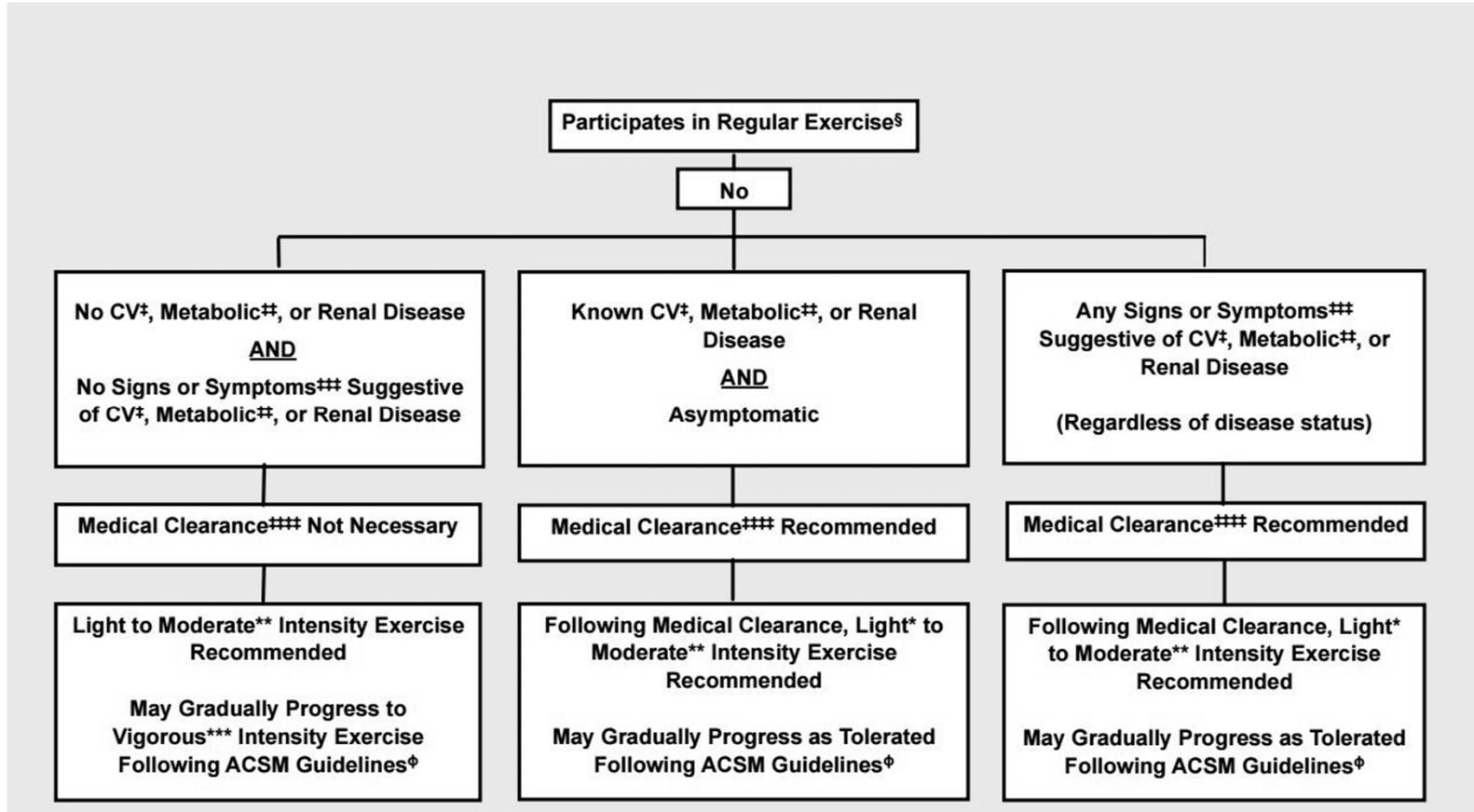
continued on other side...

FIGURE 2.1. Physical Activity Readiness Questionnaire (PAR-Q) form. Reprinted from (8), with permission from the Canadian Society for Exercise Physiology, .

Canada's Physical Activity Guide to Healthy Active Living [Internet]. Ontario (Canada): Public Health Agency of Canada; [cited 2007 Jun 15]. Available from: <http://www.phac-aspc.gc.ca/pau-uap/paguide/index.html>







The 2015 ACSM Exercise Preparticipation Health Screening Recommendations

Participates in Regular Exercise	Yes
Signs and Symptoms	No
Known Disease	No
Medical Clearance Needed?	Moderate Exercise - No Vigorous Exercise - No

Questions???