

# ACSM's New Preparticipation Health Screening Recommendations from *ACSM's Guidelines for Exercise Testing and Prescription*, Ninth Edition

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## Introduction

Previously the American College of Sports Medicine (ACSM) preparticipation health screening recommendations were cardiovascular disease (CVD) risk assessment and stratification of all people, and a medical examination and symptom-limited exercise testing as part of the preparticipation health screening prior to initiating vigorous-intensity physical activity in individuals at increased risk for occult CVD (14). Individuals at increased risk in these recommendations were men  $\geq 45$  yr and women  $\geq 55$  yr; those with 2 or more major CVD risk factors; individuals with signs and symptoms of CVD; and those with known cardiac, pulmonary, or metabolic disease.

ACSM's new preparticipation health screening recommendations are as follows:

- Reduce the emphasis on the need for medical evaluation (*i.e.*, medical examination and exercise testing) as part of the preparticipation health screening process prior to initiating a progressive exercise regimen in healthy, asymptomatic persons;
- Use the term *risk classification* to group people as low, moderate, or high risk based upon the presence or absence of CVD risk factors, signs or symptoms, and/or known cardiovascular, pulmonary, renal, or metabolic disease;
- Emphasize identifying those with known disease since they are at greatest risk for an exercise-related cardiac event (Table);

- Adopt the American Association of Cardiovascular and Pulmonary Rehabilitation risk stratification scheme for people with known CVD because it considers over all patient prognosis and potential for rehabilitation (16); and
- Support the public health message that all people should adopt a physically active lifestyle.

ACSM's new preparticipation health screening recommendations continue to encourage atherosclerotic CVD risk factor assessment, since such measurements are an important part of the preparticipation health screening process and good medical care but do seek to simplify the preparticipation health screening process in order to remove unnecessary and unproven barriers to adopting a physically active lifestyle (11).

There are multiple considerations that have prompted these different points of emphasis. The risk of a cardiovascular event is increased during vigorous-intensity exercise relative to rest, but the absolute risk of a cardiac event is low in healthy individuals. Recommending a medical examination and/or stress test as part of the preparticipation health screening process for all people at moderate to high risk prior to initiating light- to moderate-intensity exercise program implies that being physically active confers greater risk than a sedentary lifestyle (3). Yet the cardiovascular health benefits of regular exercise far outweigh the risks of exercise for the general population (12,13).

There is also an increased appreciation that exercise testing is a poor predictor of acute CVD events such as heart attacks and sudden death in asymptomatic individuals probably because such testing detects flow-limiting coronary lesions, whereas sudden cardiac death and acute myocardial infarction are produced usually by the rapid progression of a previously nonobstructive lesion (13). Furthermore there is lack of consensus regarding the extent of the medical evaluation (*i.e.*, medical examination and stress testing) needed as part of the preparticipation health screening process prior to initiating an exercise program even if it is of vigorous intensity (1,5,15). There is also evidence from decision analysis modeling that routine screening using exercise testing prior

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**Table.**  
New ACSM GETP9 recommendations for exercise testing in asymptomatic people prior to exercise for individuals at high risk (10).

Diagnosed CVD
Unstable or new or possible symptoms of CVD
Diabetes mellitus and at least one of the following:
Age >35 yr or
Type 2 diabetes mellitus >10 yr duration or
Type 1 diabetes mellitus >15 yr duration or
Hypercholesterolemia (total cholesterol $\geq 240$ mg·L <sup>-1</sup> ) or
Hypertension (systolic blood pressure $\geq 140$ or diastolic $\geq 90$ mm Hg) or
Smoking or
Family history of coronary artery disease (CAD) in first-degree relative <60 yr or
Presence of microvascular disease or
Peripheral vascular disease or
Autonomic neuropathy
End-stage renal disease
Patients with symptomatic or diagnosed pulmonary disease including chronic obstructive pulmonary disease, asthma, interstitial lung disease, or cystic fibrosis

to initiating an exercise program is not warranted regardless of baseline individual risk (7). These considerations form the basis for the new ACSM preparticipation health screening recommendations that follows (10).

#### Preparticipation Health Screening Recommendations

- All people wanting to initiate a physical activity program should be screened at minimum by a self-reported medical history or health risk appraisal questionnaire such as the PAR-Q (4) or modified American Heart Association/ACSM Health/Fitness Facility Preparticipation Screening Questionnaire (2) for the presence of risk factors for various cardiovascular, pulmonary, renal, and metabolic diseases as well as other conditions (e.g., pregnancy and orthopedic injury) that require special attention when developing the exercise prescription (Ex R<sub>x</sub>) (6,8,9).

#### Recommendations for a Medical Examination Prior to Initiating Physical Activity

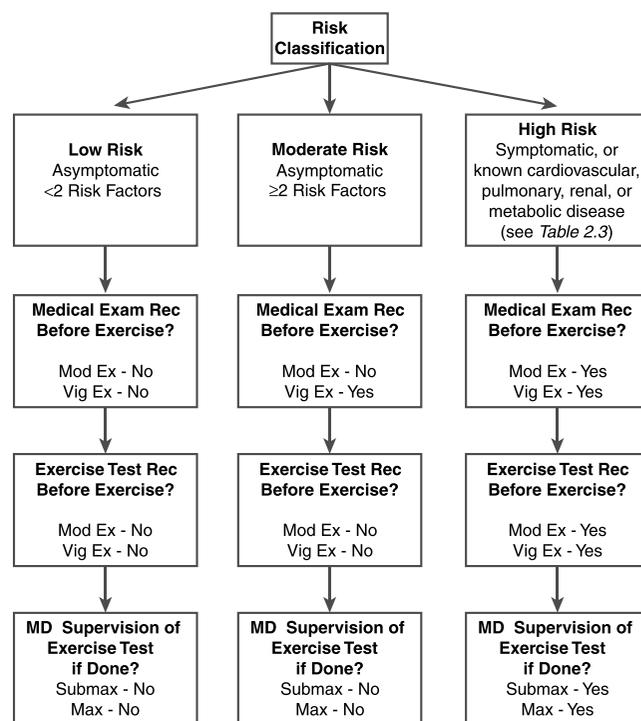
- Individuals at moderate risk with two or more CVD risk factors (Figure) should be encouraged to consult with their physician prior to initiating a vigorous-intensity physical activity program. While medical evaluation is taking place, the majority of these people can begin without consulting a physician light- to moderate-intensity physical activity programs such as walking.
- Individuals at high risk with symptoms or diagnosed disease (Table) should consult with their physician prior to initiating a physical activity program (Figure).

#### Recommendations for Exercise Testing Prior to Initiating Physical Activity

- Routine exercise testing before initiating a vigorous-intensity physical activity program is recommended only for individuals at high risk of exercise-related complications (Table and Figure).
- Exercise testing is warranted also whenever the health/fitness and clinical exercise professional has concerns about an individual's CVD risk or requires additional information to design an Ex R<sub>x</sub>, or when the exercise participant has concerns about starting an exercise program of any intensity without such testing.

#### Recommendations for Supervision of Exercise Testing

- Exercise testing of individuals at high risk can be supervised by nonphysician health care professionals if



**Mod Ex:** Moderate intensity exercise; 40%–60%  $\dot{V}O_2R$ ; 3–6 METs  
“An intensity that causes noticeable increases in HR and breathing.”

**Vig Ex:** Vigorous intensity exercise;  $\geq 60\%$   $\dot{V}O_2R$ ;  $\geq 6$  METs  
“An intensity that causes substantial increases in HR and breathing.”

**Not Rec:** Reflects the notion a medical examination, exercise test, and physician supervision of exercise testing are not recommended in the preparticipation screening; however, they may be considered when there are concerns about risk, more information is needed for the Ex R<sub>x</sub>, and/or are requested by the patient or client.

**Rec:** Reflects the notion a medical examination, exercise test, and physician supervision are recommended in the preparticipation health screening process.

**Figure:** Medical examination, exercise testing, and exercise supervision recommendations based on risk classification. (Reprinted from Pescatello LS, Riebe D, Arena R. *ACSM's Guidelines for Exercise Testing and Prescription*, 9th ed. Baltimore (MD): Lippincott Williams & Wilkins; 2013. Copyright © 2013 American College of Sports Medicine. Used with permission.)

the professional is specially trained in clinical exercise testing with a physician immediately available if needed.

- Exercise testing of individuals at moderate risk can be supervised by nonphysician health care professionals if the professional is trained specifically in clinical exercise testing, but whether or not a physician must be immediately available for exercise testing is dependent on local policies and circumstances, the health status of the patients, and the training and experience of the laboratory staff.

In conclusion, the new ACSM preparticipation health screening recommendations are made to reduce barriers to the adoption of a physically active lifestyle because of the following: 1) Much of the risk associated with exercise can be mitigated by adopting a progressive exercise training regimen, and 2) there is an overall low risk of participation in physical activity programs (1).

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