# ACSM Risk Stratification Flowchart

**Review Health/ Medical History**

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**Known CV, Pulmonary, Metabolic Disease?**

- CVD: cardiac, peripheral artery (PAD), or cerebrovascular disease.
- Pulmonary: Chronic obstructive pulmonary disease (COPD), asthma, interstitial lung disease, or cystic fibrosis (CF)
- Metabolic: Diabetes mellitus (type 1 or type 2), thyroid disorders, renal or liver disease.

**Yes** ←

**No** ↓

**Major Signs & Symptoms of CV, Pulmonary, Metabolic Disease?**

- Pain, discomfort in the chest, neck, jaw, arms or other areas that may result from ischemia
- Shortness of breath at rest or with mild exertion
- Dizziness or syncope
- Orthopnea or paroxysmal nocturnal dyspnea
- Ankle edema
- Palpitations or tachycardia
- Intermittent claudication
- Known heart murmur
- Unusual fatigue or shortness of breath with usual activity

**Yes** ←

**No** ↓

**Cardiac Risk Factors** ≥ 2 CHD risk factors

- Age
- Smoking status
- Obesity
- Dyslipidemia
- Family History
- Sedentary Lifestyle
- Hypertension
- Pre-diabetes

**Yes**          **No**

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**High Risk**

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- Medical check-up recommended.
- Doctor needed at maximal testing.
- Doctor needed at sub-maximal test.

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**Moderate Risk**

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- Medical check-up not necessary for participation in moderate physical activity (40-60% $VO_2R$; 3-6 METs).
- Medical check-up recommended for participation in vigorous physical activity (>60% $VO_2R$ or > 6 METS) .
- Doctor needed at maximal test.
- No doctor needed at sub-maximal test.

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**Low Risk**

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- No medical checkup needed for moderate or vigorous physical activity.
- No doctor needed at maximal test.
- No doctor needed at sub-maximal test.
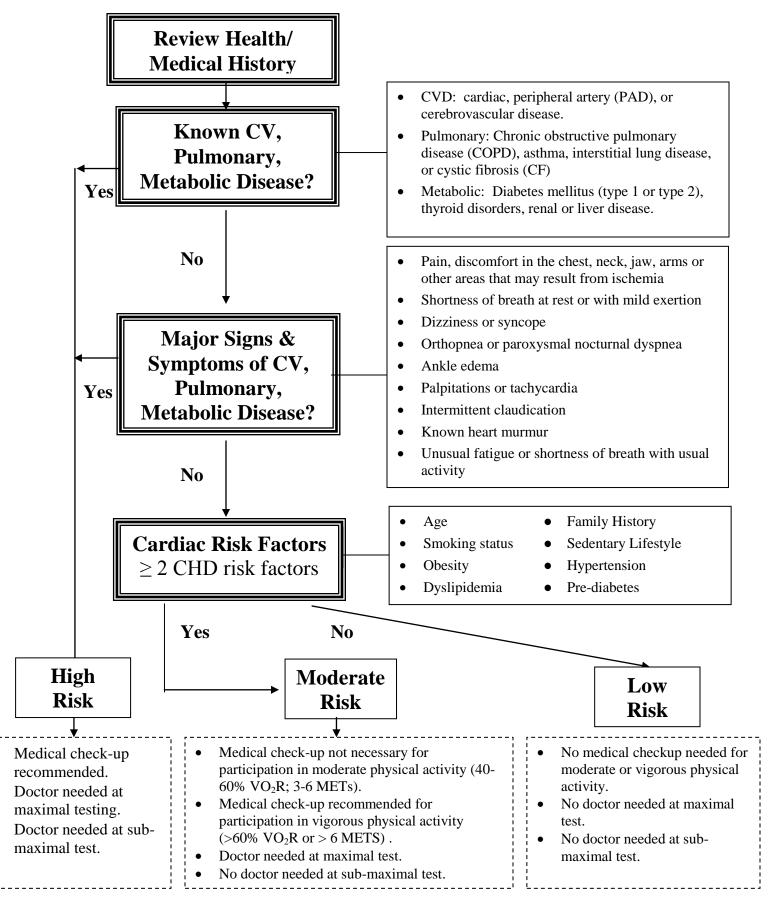
# KNOWN CARDIOVASCULAR, PULMONARY, AND METABOLIC DISASE

- Cardiovascular disease (CVD): cardiac, peripheral artery (PAD), or cerebrovascular disease.
- Pulmonary disease: Chronic obstructive pulmonary disease (COPD), asthma, interstitial lung disease, or cystic fibrosis (CF)
- Metabolic disease: Diabetes mellitus (type 1 or type 2), throid disorders, renal or liver disease.

# MAJOR SIGNS/ SYMPTOMS SUGGESTIVE OF CARDIOVASCULAR, PULMONARY, OR METABOLIC DISEASE

- Pain, discomfort in the chest, neck, jaw, arms or other areas that may result from ischemia
- Shortness of breath at rest or with mild exertion
- Dizziness or syncope
- Orthopnea or paroxysmal nocturnal dyspnea
- Ankle edema
- Palpitations or tachycardia
- Intermittent claudication
- Known heart murmur
- Unusual fatigue or shortness of breath with usual activity

# CARDIOVASCULAR DISEASE (CVD) RISK FACTOR THRESHOLDS FOR USE WITH ACSM RISK STRATIFICATION

| *Positive Risk Factors* | *Defining Criterion* |
|---|---|
| **Age** | ♂ ≥ 45 yr; ♀ ≥ 55 yr |
| **Family History** | Myocardial infarction, coronary revascularization or sudden death before **<55 years of age in father or other male first degree relative.** **or** **<65 years of age in mother or other female first-degree relative.** |
| **Cigarette smoking** | Current cigarette smoker or someone who has quit within the previous 6 months or exposure to environmental tobacco smoke. |
| **Sedentary lifestyle** | Not participating in at least 30 minutes of moderate intensity (40-60% $VO_2R$) physical activity on at least three days of the week for at least three months. |
| **Obesity** | **BMI of > 30 kg/m$^2$ , OR Waist girth** ♂ **> 40 in (102 cm);** ♀ **> 35 in (88 cm)** |
| **Hypertension** | **Systolic Blood Pressure >140 mmHg** OR **Diastolic Blood Pressure > 90 mmHg**, confirmed by measurement on at least two separate occasions; OR **on antihypertensive medication** |
| **Dyslipidemia** | *Any one or more of the following counts as one risk factor:* **Low Density Lipoprotein (LDL-c) >130 mg/dl (3.37 mmol/L)** **High Density Lipoprotein (HDL-c) < 40 mg/dl (1.04 mmol/L)** **On lipid-lowering medication.** **Total Serum Cholesterol >200 mg/dl (5.18 mmol/L)**, if only total is available. |
| **Prediabetes** | **Fasting plasma glucose ≥ 100 mg/dl** (5.0 mmol/L) but < 126 mg/dl (6.93 mmol/L) OR 2-hour values in **oral glucose tolerance test ≥ 140 mg/dl** (7.7 mmol/L) but < 200 mg/dL (11.00 mmol/L) confirmed by measurements on at least two separate occasions. |
| *Negative Risk Factors (subtract one risk factor)* | |
| **High serum HDL cholesterol** | **> 60 mg/dl (1.6 mmol-L$^{-1}$)** |

**Source:** *ACSM's Guidelines for Exercise Testing and Prescription*-**8$^{th}$ ed. Philadelphia: Lippincott Williams & Wilkins, 2010:28**

# ACSM Risk Stratification Categories

| Risk Category | Description | Limitations |
|---|---|---|
| **Low Risk** | Asymptomatic men and women who have ≥ 1 CVD risk factor. | • No medical checkup needed<br>• No doctor needed at maximal test<br>• No doctor needed at sub-maximal test |
| **Moderate Risk** | Asymptomatic men and women who have ≥ 2 CVD risk factor. | ***Moderate Exercise***<br>• No medical check-up needed<br>• Doctor needed at maximal test<br>• No doctor needed at sub-maximal test<br>***Vigorous Exercise***<br>• Medical check-up needed<br>• Doctor needed at maximal test<br>• No doctor needed at sub-maximal test |
| **High Risk** | Individuals who have known cardiovascular, pulmonary or metabolic diseases OR one or more signs and symptoms. | • Medical check-up needed<br>• Doctor needed at maximal testing<br>• Doctor needed at sub-maximal test |

**Source**: *ACSM's Guidelines for Exercise Testing and Prescription*-**7th ed. Philadelphia: Lippincott Williams & Wilkins, 2006:27.**