

# Nomogram Calculates Women's Exercise Capacity

BY MITCHEL L. ZOLER  
Philadelphia Bureau

NEW ORLEANS — Finally, someone has developed a nomogram devised just for women that calculates exercise capacity as a percentage of normal for age.

Until now, the only nomogram available for assessing exercise capacity as the percentage of normal for age was based on observations in men. But gender is one of the key factors that defines normal exercise capacity, which means that exercise capacity in women has been erroneously assessed, Martha Gulati, M.D., said at the annual scientific sessions of the American Heart Association.

The exercise-capacity nomogram for men is currently recommended for use in both sexes in the joint guidelines of the American College of Cardiology and American Heart Association.

Although these two equations differ by just a small multiplicative factor (a difference of 0.02 metabolic equivalents [METs]), when the difference is multiplied by age, it creates a substantial difference.

For example, a 50-year-old woman will have a normal exercise capacity 1.0 METs less than

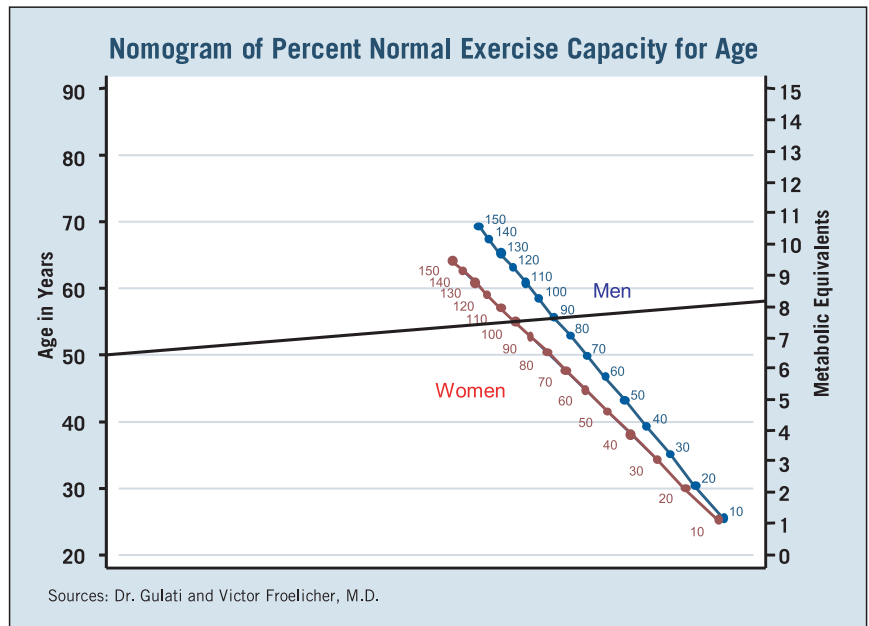
what is calculated for a man—a major difference, given that normal exercise capacity for a 50-year-old woman is 8.2 METs, said Dr. Gulati, a cardiologist at Rush University Medical Center in Chicago. (See box.)

One MET is the amount of oxygen a person consumes while at rest. The new formula for calculating normal exercise capacity in METs in women is  $14.7 - 0.13(\text{age})$ , and in men,  $14.7 - 0.11(\text{age})$ .

This difference means that when women were held to the male standard for exercise capacity, they were expected to have a greater capacity than they should have. As a result, an excess of women were diagnosed with impaired exercise capacity, Dr. Gulati said.

The new nomogram was derived from exercise data collected from 5,721 women from the Chicago area who were asymptomatic for coronary disease, older than 35 years, and participants in the St. James Women Take Heart Project.

The women's nomogram was then validated using another set of exercise test results that had been collected from 4,471



women with coronary disease symptoms who participated in the Economics of Noninvasive Diagnosis study.

Follow-up survival data were collected for both groups of women for an average period of

about 5 years. Survival data from the asymptomatic women showed that those whose exercise capacity was less than 85% of normal for age were twice as likely to die from cardiac causes as women with an exercise ca-

capacity of 85% or greater. Follow-up of the symptomatic women showed that baseline exercise capacity of less than 85% of normal was linked with a 2.4-fold increased risk of death from cardiac causes, Dr. Gulati reported. ■

## Family History of Heart Disease Boosts Coronary Risk in Sisters

BY MITCHEL L. ZOLER  
Philadelphia Bureau

NEW ORLEANS — Sisters of patients with early coronary disease had an unexpectedly high prevalence of coronary artery disease themselves in a study with 102 apparently healthy women without diabetes.

The actual presence of coronary disease in these women far exceeded their estimated risk calculated by the Framingham risk formula, the major tool used in the United States to assess a person's 10-year risk of having a major coronary event. Because of this disparity between estimated risk and actual disease in women with a family history of coronary disease, such women "likely warrant being considered for noninvasive screening for subclinical atherosclerosis," Erin D. Michos, M.D., said at the annual scientific sessions of the American Heart Association.

The noninvasive screening could consist of measuring the woman's serum level of C-reactive protein, or measuring coronary calcium with CT, said Roger S. Blumenthal, M.D., director of preventive cardiology at Johns Hopkins Hospital in Baltimore and a coinvestigator in the study.

The 102 women in the study were sisters of 71 probands who had been identified with coronary artery disease when they were younger than 60 years. The coronary-disease risk of each woman was calculated using the Framingham risk score, and each woman also

had her coronary calcium measured by multi-detector CT. The Framingham scoring system estimates a person's risk for having a coronary disease event by using several clinical variables, such as blood pressure and total serum cholesterol level, but the score does not take into account a person's family history of coronary disease.

The average Framingham risk score for the entire group was a 2% risk for a major coronary event over the next 10 years. Broken down, 95 women (93%) had a very low Framingham risk score of 5% or less, and another 5 (5%) had a low risk score of 6%-9.9%. Only two women (2%) had intermediate-risk scores of 10%-19.9%, and none had high-risk scores of 20% or greater, said Dr. Michos of the Preventive Cardiology Center at Johns Hopkins Hospital.

Despite these very low Framingham scores, many women had significant amounts of coronary calcium. Twelve women (12%) had coronary calcium scores that were greater than 100, an indicator of moderate atherosclerosis; 9 of the women with these relatively high levels of coronary calcium had Framingham scores of 5% or less. Of the 12 women with calcium scores of greater than 100, 6 had calcium scores that were greater than 400, a marker of severe atherosclerosis.

In addition, of the women with Framingham scores of 5% or less, 28 (29%) had calcium scores that were above the 75th percentile for similarly aged women. ■

## Heart Disease Prevention Efforts Should Target Women in Midlife

BY SHARON WORCESTER  
Tallahassee Bureau

ATLANTA — Better cardiac disease awareness and prevention programs that target younger women are needed, according to at least two studies presented at a prevention conference on heart disease and stroke sponsored by the Centers for Disease Control and Prevention.

In one study, risk factors for cardiac disease were common among women aged 34-64 years presenting with myocardial infarction. Of 50 such women, with a mean age of 54 years, 18% had 1-3 risk factors, 42% had 4-6 risk factors, and 40% had 7-10 risk factors, Lucia Kamm-Steigelman, Ph.D., and colleagues at Emory University, Atlanta, reported in a poster.

Risk factors included menopause (78% of patients), family history of coronary artery disease (80% of patients), previous diagnosis of coronary artery disease (38% of patients), diabetes (44% of patients), hypertension (64% of patients), hyperlipidemia (56% of patients), moderate depression (36% of patients), lack of exercise (76% of patients), body mass index over 24 kg/m<sup>2</sup> (68% of patients), and current smoking (58% of patients). ■

Public health and clinical prevention programs are clearly needed in this population, the investigators concluded.

Aparna Sunderam, D.O., and colleagues from the CDC analyzed data from the Behavioral Risk Factor Surveillance System and arrived at a similar conclusion.

Of 28,271 women under age 65 years who took part in the state-based telephone survey, 739 white women and 118 black women reported having heart disease.

Among those with reported heart disease, 44% of white women and 56% of black women had two or more risk factors for coronary heart disease, including hypertension (present in 86% of black women and 57% of white women), overweight status (recorded in 63% of black women and 33% of white women), sedentary lifestyle (reported by 50% of black women and 40% of white women), and high cholesterol (found in 53% of black women and 56% of white women).

Comprehensive risk reduction is necessary for all women, but aggressive intervention programs that target women by ethnicity and age, based on selected risk factor profiles, are also needed, according to the investigators. ■