

SIGNIFICANCE OF THE EXERCISE TOLERANCE TEST

WILLIAM F. RENNER, M.D.

BALTIMORE

THE EXERCISE tolerance test has enjoyed a considerable popularity for many years, particularly among the medical departments of industrial concerns, insurance companies, the Armed Services and the Veterans Administration. A review of the literature on functional tests of the heart suggests that this popularity has been based on theoretical considerations rather than on demonstrated usefulness. It is the purpose of this paper to express the results of an attempt to evaluate the exercise tolerance test as an aid in detecting cardiac or pulmonary disease in an examinee. The application of the test to the determination of physical fitness is not under consideration in this report.

METHOD

One hundred normal controls and 41 patients with various types of serious cardiac or pulmonary disease were studied. Controls and patients were admitted to the study in consecutive order as they appeared for examination, only those being eliminated who were considered

TABLE 1.—*Classification of Patients with Cardiorespiratory Disease According to Diagnosis*

	Patients
Rheumatic heart disease.....	17
Arteriosclerotic heart disease.....	6
Hypertensive cardiovascular disease.....	4
Bronchial asthma.....	9
Chronic bronchitis *.....	2
Far advanced pulmonary tuberculosis.....	1
Syphilitic aortitis with aortic insufficiency.....	1
Boeck's sarcoid †.....	1
Total	41

* One patient had probable bronchiectasis; one had a history of poor exercise tolerance.

† The patient had extensive pulmonary involvement.

unsuitable for the study because of (1) the suspicion of cardiac or pulmonary disease in the control group, (2) the absence of definite objective findings of serious disease in the abnormal group, (3) the presence of a noncardiorespiratory disease which might influence the test. Each examinee was given a complete physical examination. Whenever indicated, additional studies were carried out, including electrocardiograms, chest roentgenograms, basal metabolism tests, determinations of the vital capacity and blood studies. The controls consisted of persons with no disease (55) or with conditions which, by their nature, would not be expected to influence cardiorespiratory efficiency, such as dermatitis, impaired hearing, chronic sinusitis, old injuries, minor surgical conditions and neuropsychiatric disorders (15). The 41 patients with diseases of the heart or lungs are classified according to diagnosis in table 1. All had definite objective evidence of the disease diagnosed. None was included simply on the basis of arterial hypertension. None was included on the basis of a systolic murmur without other evidence of organic cardiac disease. In all those with bronchial asthma there was objective evidence of the disease at the time of examination.

Dr. Renner is physician-in-charge of the Cardiac Clinic, Franklin Square Hospital, and medical consultant to the Baltimore plant of Proctor & Gamble Manufacturing Company.