The Exercise Vital Sign as a Potential Alternative to Determining Cardiorespiratory Fitness

To the Editor: Ross makes a powerful argument for the measurement of cardiorespiratory fitness (CRF) in clinical care and challenges us to take action. Cardiorespiratory fitness is potentially a stronger predictor of mortality than are established risk factors such as smoking, hypertension, high cholesterol, and type 2 diabetes mellitus, and its routine measurement would certainly improve patient care.

The routine measurement of CRF, however, is not feasible in most clinical settings because of logistics, cost, and time. The use of nonexercise estimates of CRF has been advocated as an alternative to CRF measurement. These CRF estimates are based on complex sex-specific formulas that are negatively affected by age, body mass index, and resting heart rate and positively affected by a physical activity score/index obtained from self-reported exercise intensity, duration, and frequency.

Exercise vital sign (EVS) has been proposed to help health care systems and providers prioritize physical activity assessment, advice, and promotion during clinical encounters. The EVS is the product of the answer to 2 questions: “On average, how many days per week do you engage in moderate to strenuous exercise like a brisk walk?” and “On average how many minutes do you engage in exercise at this level?” The result can determine whether an individual is meeting current physical activity guidelines. The EVS includes 2 of the self-reported physical activity components (frequency and duration) that formulas use to estimate CRF. The EVS is easily obtained and calculated and is already included in many electronic medical records.

Until CRF can be more easily measured or estimated in clinical practice, health care providers should focus on promoting physical activity and CRF by routinely obtaining the EVS.

James T. Langland, MD
Division of General Internal Medicine
University of Minnesota
Minneapolis

Potential Competing Interests: The author reports no competing interests.


https://doi.org/10.1016/j.mayocp.2019.12.005
I would dispute the notion that the derivation of nonexercise estimates of CRF is challenging. Health care professionals can choose to download one of several readily available apps or instruct the patient/client to do the same. In this way, the end user can easily self-monitor improvements in CRF that follow increases in physical activity and/or reductions in body weight. More importantly perhaps, health care professionals’ estimates of CRF would provide unique opportunities to counsel patients on the importance of improving CRF by increasing physical activity levels—a win-win scenario.

Langland concludes with the suggestion that health care professionals should focus on promoting physical activity until CRF can be more easily measured in clinical settings. While I fully agree that physical activity levels should be assessed in all patients, this should not be accomplished at the expense of estimating CRF. Indeed, trying to separate physical activity from CRF is like trying to separate heat from the sun—we cannot, and should not, do it.

Robert Ross, PhD, R Kin, FACSM, FAHA, FCAHS
School of Kinesiology and Health Studies
Queen’s University
Kingston, Ontario, Canada

Potential Competing Interests: Dr Ross has received grant support from the Canadian Institutes of Health Research (no. 394394). He is an employee of Queen’s University (outside the submitted work).

Immune Checkpoint Inhibitor—Induced Type 1 Diabetes: An Underestimated Risk

To the Editor: Drs Marin-Acevedo and colleagues nicely summarize the toxicities associated with immune checkpoint inhibitor therapy. We want to further emphasize immune checkpoint inhibitor—induced type 1 diabetes (ICI-T1D), as it frequently presents with life-threatening diabetic ketoacidosis. The authors report the frequency of ICI-T1D as 0.2% citing a meta-analysis that assessed premarketing registration trials. We believe this is an underestimate for several reasons. First, premarketing clinical trials excluded patients with a pre-existing autoimmune disorder, and in recent years immune checkpoint inhibitor use and indications have dramatically increased. Second, at large medical centers such as Mayo Clinic and Yale, the frequency of ICI-T1D is reported between 1% and 1.8%, which represents thousands of patients who have received immune checkpoint inhibitor therapies. Furthermore, in the past 2 years, there has been a significant increase in reports of diabetes following immune checkpoint inhibitor therapy in VigiBase, the World Health Organization’s database for individual case safety reports. This evidence indicates that the frequency of ICI-T1D is far more common than reported here.

ICI-T1D has been reported mainly with monoclonal antibodies targeting anti—programmed cell death 1 and anti-programmed cell death 1 ligand but not with anti-cytotoxic T lymphocyte-associated antigen 4. This adverse event frequently presents with severe diabetic ketoacidosis and almost half of the cases have T1D associated antibodies at presentation. Patients presenting with T1D-associated antibodies have a more rapid onset and higher incidence of diabetic ketoacidosis than those without antibodies. Human leukocyte antigen (HLA) risk genes for childhood-onset T1D, such as HLA-DR4 and DR3, are predominant in individuals who develop ICI-T1D. Rapid onset, lack of a honeymoon phase, presentation with severe diabetic ketoacidosis, and low or absent C-peptide levels at presentation, which is a measure of residual beta cell function, are more common in ICI-T1D compared with childhood-onset disease. However, both require permanent lifelong treatment with insulin therapy.

Health care providers need to be aware of this adverse event to prevent morbidity and mortality in vulnerable cancer patients. Guidelines to assess risk and monitor patients at high risk during treatment for ICI-T1D are needed to reduce severe diabetic ketoacidosis.

Halis Kaan Akturk, MD
Aaron W. Michels, MD
March 2020;95(3):611-618

2. Akturk HK, Alkanani A, Zhao Z, Yu L, Michels AW. PD-1 Inhibitor immune-related adverse events in...