

# PAR-Q+ and ePARmed-X+

*New risk stratification and physical activity clearance strategy for physicians and patients alike*

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The Physical Activity Readiness Questionnaire and You (PAR-Q) and the Physical Activity Readiness Medical Examination (PARmed-X) were Canada's primary front-line pre-participation screening tools for physical activity. The PAR-Q contains a simple 7-question battery designed to determine whether individuals are able to become more physically active or engage in a fitness appraisal.<sup>1</sup> When a person responds positively to 1 or more questions on the PAR-Q, he or she is advised to consult a physician for physical activity participation clearance. The PARmed-X was designed for use by physicians to address medical concerns about physical activity participation for persons answering yes to 1 or more of the 7 questions on the PAR-Q.<sup>2</sup>

Although the original PAR-Q is used extensively in Canada and worldwide, barriers in this physical activity participation clearance process have been identified by physicians, physical activity participants, fitness professionals, and various organizations.<sup>1-5</sup> For instance, the PAR-Q is purposely conservative, leading to many false positive results and causing considerable unnecessary medical referrals<sup>4</sup>; the age restrictions of the PAR-Q (ie, 15 to 69 years) create an unnecessary barrier to physical activity participation for children and elderly people; and there is often inconsistent or improper use of the clearance forms.<sup>4</sup> Also, the PAR-Q is often a barrier for individuals who need increased physical activity the most (such as those living with chronic medical conditions).<sup>1,2</sup> Moreover, physicians commonly complain that the PARmed-X is too long, is very difficult to use, and is not evidence-based.

The College of Family Physicians of Canada has not formally endorsed the PARmed-X. The medical community has recently challenged the validity of both the PAR-Q and the PARmed-X owing to their lack of evidence-based support. Because of this criticism, our research team conducted a series of systematic reviews together with an evidence-based consensus process to establish best practices in risk stratification for physical activity participation. The result of this process was the creation of a new pre-participation risk stratification strategy: the new Physical Activity Readiness Questionnaire for Everyone (PAR-Q+) and the electronic Physical Activity Readiness Medical Examination (ePARmed-X+).<sup>3,4</sup> This article will briefly summarize the features of the new PAR-Q+ and ePARmed-X+ and highlight how these tools can be incorporated into daily clinical

practice to facilitate risk stratification, physical activity clearance, and exercise prescription for both asymptomatic individuals and persons living with chronic medical conditions.

## Discussion

The new pre-participation risk stratification strategy was designed to enhance the ability of fitness and health care professionals to reduce the barriers to becoming physically active while ensuring safe and effective advice that is based on sound evidence.<sup>4</sup> The new tools were derived from the systematic evaluation of more than 540 000 articles, with more than 1000 specific articles leading to more than 60 evidence-based exercise risk-specific recommendations.<sup>3,6</sup> This process included systematic reviews to identify exercise-related risks and establish effective risk stratification for prominent medical conditions (orthopedic conditions; cancer, heart, or cardiovascular conditions; metabolic conditions; psychological conditions; respiratory conditions; spinal cord injury; and stroke). Additional systematic reviews were conducted to evaluate the risks associated with exercise testing and training in the general population, the role of qualified exercise professionals (including the requisite core competencies required for working with varied chronic medical conditions), and the risks associated with exercise during uncomplicated pregnancy.<sup>4,6</sup> The entire process adhered to the international standards established by the Appraisal of Guidelines for Research and Evaluation instrument<sup>7,8</sup> and was consistent with the development of other clinical practice guidelines.<sup>9</sup> This ensured that the highest standards for the development of evidence-based best practices were followed for the development of the new evidence-based PAR-Q+ and ePARmed-X+.<sup>1</sup>

Through this process it was clearly established that the risks of being physically inactive far outweigh the small, transient risks seen after acute exercise in both asymptomatic and symptomatic populations across the lifespan.<sup>10</sup> Moreover, there was no sound evidence base to support the age restriction of the old PAR-Q and PARmed-X. An evidence-based risk continuum (**Figure 1**) was created. Persons at low risk can exercise at low to moderate intensities with minimal to no supervision; persons at intermediate risk should exercise under the guidance of appropriately trained, qualified exercise professionals; and persons at high risk

should exercise in medically supervised settings that include qualified exercise professionals. Appropriate intensity and mode progression of physical activity and exercise is critical throughout the risk continuum. This process also formally established the important role that qualified exercise professionals play in the physical activity clearance process for exercise testing and training.<sup>4,11</sup> The need to develop clinical exercise prescriptions for persons with chronic medical conditions was also clearly identified. It was recommended strongly that health care providers should avoid using generic physical activity guidelines (developed for use with healthy individuals<sup>12</sup>) in the treatment of persons living with prominent chronic medical conditions. This was based on an overwhelming body of research indicating that functional and health benefits are often observed in those living with prominent chronic medical conditions at an exercise volume that is well below that currently recommended for the apparently healthy population. A final important finding of the process was the need for researchers to clearly document all exercise-related adverse events.

There are several key features to the new PAR-Q+ and ePARmed-X+. For instance, the current PAR-Q+ is a 4-page document that contains a range of questions to identify any possible restrictions or limitations on physical activity participation. Using the PAR-Q+, clearance for physical activity participation is a straightforward process for a physician, exercise professional, or participant. The entire process takes approximately 5 minutes and can be completed in the waiting area of a physician's office.

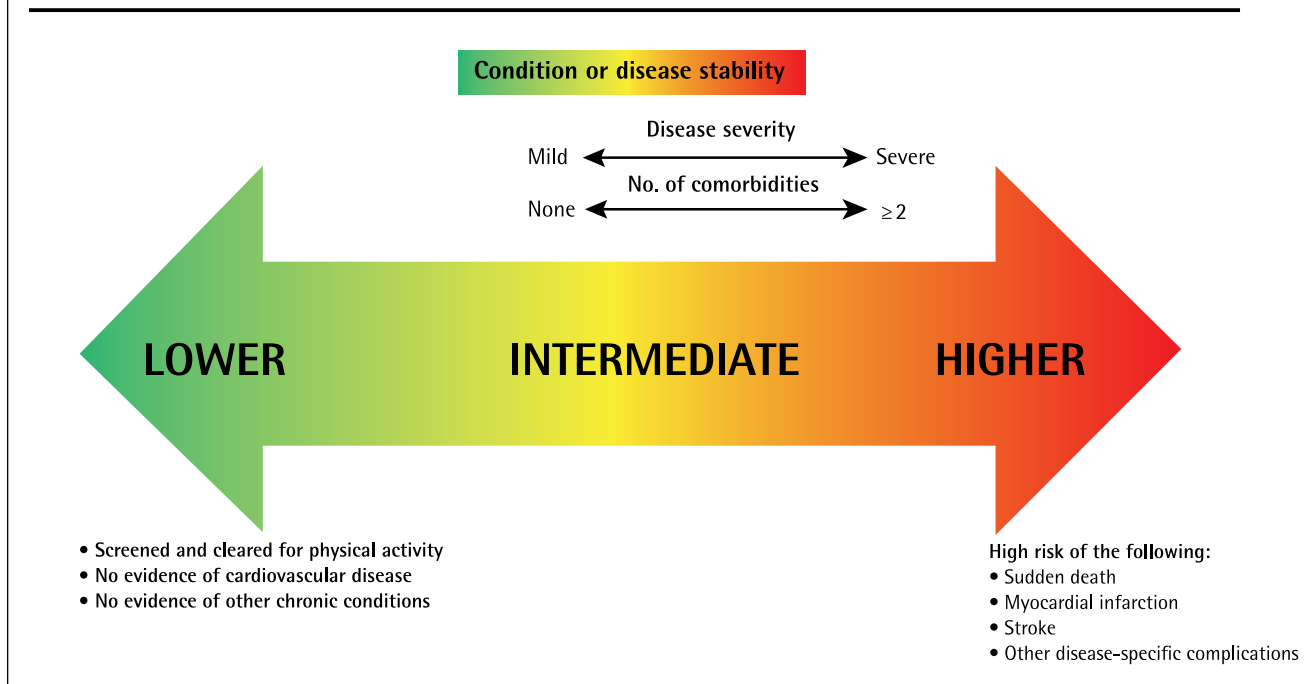
To begin, the participant simply answers the 7 new evidence-based questions on page 1 of the PAR-Q+. If the answer is no to all of the questions, he or she is cleared for unrestricted physical activity participation following the

general physical activity guidelines for healthy asymptomatic populations.<sup>12-14</sup> If the participant answers yes to 1 or more of the questions, he or she is required to complete pages 2 and 3 of the PAR-Q+.

Pages 2 and 3 of the PAR-Q+ contain a series of follow-up questions on specific chronic medical conditions to either clear the respondent or refer the respondent to the online ePARmed-X+. If the participant answers no to all of the follow-up questions on pages 2 and 3 of the PAR-Q+ regarding his or her medical condition, he or she is cleared to become more physically active. The participant also receives advice on how to develop a safe and effective physical activity plan, including physical activity recommendations that are appropriate for lower-risk individuals with established chronic medical conditions (eg, 20 to 60 minutes of low to moderate intensity exercise, 3 to 5 times per week progressing toward 150 minutes per week). If the participant answers yes to 1 or more questions on pages 2 and 3, he or she is referred to a qualified exercise professional or to the ePARmed-X+ for further probing for pertinent information. At the end of the ePARmed-X+ process, the participant might be cleared for unrestricted physical activity participation or physical activity participation with restrictions. The participant is given a specially tailored exercise prescription to be monitored by a qualified exercise professional or is referred to a physician for additional medical probing or testing.

The result of this new screening strategy is that only a small proportion of participants (approximately 1%) are referred for additional medical screening, greatly reducing the burden experienced by physicians when using the old PAR-Q screening process. In this new process, persons previously screened out of physical activity participation are

**Figure 1.** Risk continuum established through the systematic review process: *Appropriate intensity and mode progression of physical activity and exercise is critical throughout the risk continuum.*




cleared (often self-screened via the PAR-Q+ or ePARmed-X+) back into physical activity participation.<sup>4</sup> The PAR-Q+ screening is valid for 12 months and the ePARmed-X+ screening is valid for 6 months (to account for potential changes in health status).

The physical activity recommendations contained within the ePARmed-X+ and available to physicians are based on evidence-based best practices for participants' particular chronic medical conditions. These recommendations are not based on generic physical activity guidelines provided to the general population. Tailored clinical exercise prescriptions have already been developed for a range of clinical populations and adopted into the ePARmed-X+. The use of the new clinical exercise prescriptions has already been shown to lead to substantial improvements in the overall health status of a range of clinical populations (including persons living with breast cancer, chronic kidney disease, and obesity).<sup>15-17</sup>

## Conclusion

The newly created PAR-Q+ and ePARmed-X+ tools are evidence-based, meeting the requirements recognized by the medical community. This new risk stratification and physical activity participation clearance strategy allows for persons normally screened out of physical activity participation to be screened (often self-screened) back into participation. The process is easy to complete

and administer. In addition, it is applicable to persons of all ages and individuals living with chronic medical conditions. New clinical exercise prescriptions have been (and continue to be) developed for various chronic medical conditions, allowing for the further refinement of exercise prescription. Collectively, this work will further reduce the barriers to physical activity participation for asymptomatic and symptomatic populations, and provide physicians with an efficient, safe, and effective means of risk stratification for patients interested in becoming more physically active. 

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### Competing interests

None declared

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