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## EDITORIAL

### The Evolving Role and Clinical Application of the Exercise Physiologist

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#### Abstract

This article discusses the clinical relevance of the exercise physiologist and posits that these health care professionals can be further integrated into the care of clinical populations to enhance health outcomes. This perspective is based on compelling evidence demonstrating positive health outcomes among exercising patients with chronic medical conditions, as well as a growing group of qualified exercise professionals with specialized training in clinical exercise physiology. Exercise physiologists are considered competent to work with clinical populations are those professionals having a specific scope of practice that includes fitness evaluation and exercise prescription for patients with a variety of health concerns. Also, the completion of clinical internships is of paramount importance for those exercise professionals seeking to work with clinical populations. We provide a review of the exercise physiologist's qualifications, their current role in clinical exercise physiology, and contend that healthcare workers and health policy makers should include qualified exercise professionals as part of standard care for the management of various chronic medical conditions. **Health & Fitness Journal of Canada 2013;6(1):72-77.**

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#### Background

Exercise physiology has been traditionally regarded as the study of how exercise affects major physiological systems, with a peripheral application to the clinical problems of sports medicine (Pate and Durstine, 2004). However, the definition of exercise physiology has matured to encompass the great value exercise has demonstrated in many areas of general medicine and the deleterious effects of a variety of disease conditions upon functional performance. Numerous randomized controlled trials have established the safety and clinical benefits of exercise in many different populations, with evidence of disease regression, improved symptom tolerance, reduced treatment-related side effects, and enhanced survival (Gleeson et al., 2011; Kujala, 2006; Warburton et al., 2011b). Guidelines for exercise testing and prescription for various health conditions are now widely available and are updated continually in accordance with *advances* in research (Warburton et al., 2011a).

Physicians are increasingly becoming aware of the importance of exercise in the clinical management of their patients (Lobelo et al. 2009); however, exercise recommendations or programming by primary care clinicians is challenged by workload, gaps in exercise-specific knowledge and a limited availability of resources (Petrella, et al, 2003; Petrella et al, 2007; Williams et al., 2004; Warburton

et al., 2011a). Moreover, clinicians often do not have access to an exercise physiologist for referral, as exercise therapy has not become a component of the conventional allied health approach. This may be partly due to a historical dogmatic perception that exercise professionals are limited to conventional personal training and basic fitness assessment skill sets. To our knowledge, no empirical analysis of the public perception of the exercise professional has been conducted, but our sentiment is evident in alternate forms in contemporary literature. At the forefront, there is an undertone of under-appreciation for qualified exercise professionals and constant drive for reputable industry promotion in commentary and update papers congruent to the present article (Costanzo, 2006; Franklin et al., 2008; Warburton & Bredin, 2009; Jones, 2011). There is also the quasi-empirical data available from the American College of Sports Medicine's annual survey of fitness professionals chronicling the top fitness industry trends. "Clinical integration/medical fitness" has *only just* entered the top 20 of this list in 2011, but it's reign was short-lived and it has not returned since (Thompson, 2010). However, physician referral to an exercise professional remains among the top 20 industry trends since 2010 and "educated and experienced exercise professionals" has remained at the #1 trend in the fitness industry since 2008 (Thompson 2011, 2012). Collectively, these data concerning industry trends suggest a stronger and more explicit connection between medical and fitness professions and an emphasis on qualified and experienced exercise professionals to address more complex (often clinical)

client needs. Thus, the observation that the *quality* of the exercise professional still requires justification and promotion provides the fundamental element of professional advocacy strategies – broader dissemination of the qualifying requirements of an exercise physiologist.

Today's exercise physiologist has a *minimum* of an undergraduate exercise science degree (with requisite training in anatomy, physiology, fitness testing and prescription, behaviour change, pathophysiology, and basic pharmacology), verified client/patient contact hours in an exercise setting, and/or completion of national certification exams (such as those provided by the ACSM). Furthermore, advanced exercise certifications in various clinical fields (e.g. cardiovascular disease, oncology, and diabetes) are becoming more prevalent and add population-specific training to provide optimal care (Warburton et al., 2011). However, a gap remains in clinical training with respect to mandatory post-graduate training and/or clinical internships related to working with higher-risk populations. Warburton et al have recently described the modest amount of clinical internships for the qualified exercise professional, but note that advanced practical training is mandatory for other allied health professionals (Warburton et al., 2013). The absence of this supervised experience likely remains an obstacle to gaining acceptance from the broader medical community. In spite of deficits in mandatory clinical internships, the exercise physiologist still possesses the most specialized education and training relevant to assessing clients and patients for: the appropriateness of exercise, anticipated benefits, and possible

contraindications of exercise; and is recommend to conduct fitness assessment protocols, provide exercise prescriptions; and monitor signs and symptoms that require immediate modification or termination of exercise. This skill set distinguishes the exercise physiologist from related professionals, such as physiotherapists, occupational therapists, and kinesiologists.

To date advances in clinical exercise physiology, improved evidence-based exercise guidelines/recommendations, and the growing number of specialized exercise physiologists have not translated into widespread implementation of clinical health management exercise programmes. Exercise physiologists have, however, found a specialized role in research for many clinical exercise studies. The exercise physiologist has proved useful in designing, delivering, testing, and monitoring exercise programmes for clinical populations. However, the researching exercise physiologist can be quite limited in his/her ability to individualize exercise prescriptions for participants, often confined by research protocols and the edicts of (typically conservative) human research ethics boards. Furthermore, clinical populations with multiple comorbidities or those whom are particularly frail are often excluded from research studies, despite the likelihood that they stand to benefit the most and that the exercise physiologist is trained to accommodate multiple health impediments. Notwithstanding these issues, the researching exercise physiologist is beginning to fill clinical care gaps with research-related exercise activity and is likely the primary source of exercise guidance for those patients eligible for available studies.

A notable exception to the exercise physiologist's inadequate involvement in clinical care is observed in the field of cardiac rehabilitation. For over 30 years, exercise therapy has been an integral component of patient management post-infarction, with specialized exercise and rehabilitative credentials that provide an appropriate scope of practice (Certo, 1985). In this field, research and clinical practice have escalated through the ranks of knowledge translation; from proof of principle through an extensive body of physical activity and exercise interventional research, to cost-effectiveness affirmation, and finally referral and outreach programmes designed to enhance cardiac rehabilitation availability and participation. Exercise physiologists have become valued members of the cardiac rehabilitation team as they conduct exercise stress testing and deliver an appropriate exercise prescription under physician supervision. This type of professional symbiosis offers a desirable model for exercise physiology integration into many aspects of clinical care, independent of specific research agendas – a promising model that could be replicated in other clinical populations or for primary prevention during routine health assessments.

The most valuable skills that an exercise physiologist contributes to all clinical teams not only exceed the basic exercise assessment or prescription (which could likely be performed by various allied health providers), but also involve an understanding of how specific exercise exposures work within the larger picture of integrative physiology. To illustrate this, we offer the following analogy: most physicians are capable of determining the class of drugs

appropriate for a given condition, and using published dosage guidelines. However, full comprehension of how these drugs will interact with other medications and patient conditions is far more complicated and requires specialized training and skill sets to maximize clinical benefit and minimize patient risk. Similarly, the exercise physiologist's role is to understand exercise interactions with medical conditions, prescribed treatments, and various patient characteristics (including co-morbidities), to guide the prescription of safe and effective exercises. *Accordingly, the exercise physiologist appears to be well suited for consultation in the provision of clinical exercise delivery and management.*

The majority of healthcare centres remain devoid of a clinical exercise programme, owing to lack of funding, low-level priority, or physical space constraints. Implementation efforts are further hampered by a lack of public healthcare investment into primary and secondary disease prevention strategies and the fact that exercise is only sparingly covered by private insurance and not at all by conventional government (e.g., Provincial, State) insurance. Despite these challenges, a considerable movement towards incorporating exercise into standard healthcare is led by physicians, and specifically the American College of Sports Medicine through the "Exercise Is Medicine" campaign (Exercise is Medicine, 2013). This campaign is a united initiative by physicians and exercise professionals advocating the integration of exercise into standard care in disease prevention and management. Thus far, this campaign has achieved accolades in the United States, but its

implementation and adoption in Canada has been limited thus far.

Possibly the greatest barrier for exercise physiologists seeking greater involvement in clinical care is a lack of empirical data demonstrating a health and/or economic advantage to having the exercise physiologist *versus* another health care professional deliver exercise programming. Recent findings from the Physical Activity Counselling trial; however, have shown increases in physical activity volume for approximately 3 months following a brief counselling session from a qualified exercise professional at the point of care with their family physician (Fortier et al., 2007; Fortier et al., 2011). Task and barrier self-efficacy appear to influence this relationship, further underscoring the need for appropriate patient instruction and support by an exercise specialist (Blanchard et al. 2007). The cost of implementing a physical activity counselor was estimated to be \$91.43(CAD) per participant per month, much more affordable than previously reported interventions aimed at physical activity promotion (e.g., Sevick et al., 2000; Stevens et al. 1998, Yanagawa et al., 2004).

Although we are currently unaware of research that has specifically compared the delivery of exercise programmes by an exercise physiologist versus another allied healthcare worker (nurses, physiotherapists, physicians, etc.), it is generally accepted that "specialists" are best prepared to handle the subtleties of their own profession. Moreover, best practice in contemporary clinical-exercise research most often utilizes the exercise physiologist to deliver interventions and conduct outcome assessments, a subtle, yet important, acknowledgment of the

need for this profession in the clinical-research context. In the absence of a trial comparing the delivery of exercise programming by various healthcare professionals, the argument for the clinical integration of the exercise physiologist must extend from its integration in research. That is, if the exercise physiologist is the requisite clinician for exercise-related *research* activity, then evidence-based practice would encourage a comparable approach in the delivery of exercise-related *clinical* activity.

### Conclusions

In light of advances within exercise physiology and the professional growth of its applied discipline, we encourage the community of physicians and health policy makers to capitalize on opportunities to utilize exercise and exercise professionals within their standard of care.

### Authors' Qualifications

The authors' qualifications are as follows: Daniel Santa Mina MSc, PhD, CEP; Jamie Burr MSc, PhD, CEP

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