Nothing Will Change Unless Physicians and Exercise Physiologists Start to Think Differently

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ABSTRACT

Boone T. Nothing Will Change Unless Physicians and Exercise Physiologists Start to Think Differently. JEMonline 2016;1(4):1-9. The key to better mind-body health is increased physical activity, which is regular exercise. This point is indisputable. Yet, the primary care physicians do not take the necessary time to speak to their patients about the importance of regular exercise. This is a major problem that is driven by similar issues that keep the primary care physicians and other medical practitioners from prescribing exercise medicine to their patients. Just as regular exercise is medicine and just as ASEP is the only exercise physiology organization in the United States, why is it the majority of the physicians and academic exercise physiologists do not support exercise medicine and ASEP, respectively? Physicians are poised in favor of prescribing drugs over strategies to modify lifestyle behaviors while exercise physiologists are inclined to prescribe exercise medicine to apparently healthy individuals as well as to individuals with known chronic disease or ill-health. The goals for such practice are to: (a) promote health and wellness; (b) improve the components of physical fitness; (c) prevent disease and disability (via the identification of risk factors and behaviors that may impede mind-body functioning); (d) assist in restoring health to clients with chronic disease or disability; and (e) rehabilitate clients to their optimal functional level following physical and/or mental illness. Hence, physicians should refer their patients with non-communicable chronic disease to exercise physiologists.

Key Words: Exercise Medicine, Physicians, Chronic Diseases
INTRODUCTION

There isn’t any question that regular exercise is as effective as some drugs for many chronic diseases. It is considered by some physicians as the miracle drug with few contraindications or adverse effects. But, strangely enough, the majority of the medical practitioners do not prescribe exercise as medicine. This is really hard to understand, especially since it has been shown that death from cardiovascular diseases is reduced with increased physical activity. Yet, the leading causes of morbidity and mortality continue to be linked to unhealthy lifestyles that set the stage for hypertension, use of tobacco, elevated blood glucose, obesity, and physical inactivity.

The key to better mind-body health is increased physical activity, which is regular exercise. This point is indisputable. The scientific data from literally hundreds of scientific studies over many decades support this conclusion. But, here again, the idea of primary care physicians prescribing exercise medicine alongside drugs is very uncommon. Most physicians and/or hospitals do not prescribe exercise medicine while the pharmaceutical companies are smiling with the big bucks. It is as if medicine is all about money more than helping patients, especially since research papers in dozens of journals show that exercise offers just as good if not better results for most chronic diseases and conditions.

The bottom line is that primary care physicians do not take the necessary time to speak to their patients about the importance of regular exercise. Why they avoid doing so is a function of how medicine has always been practiced. As a result, they have allowed for insufficient consultation time to become common place, just as it is true with their lack of knowledge and hands-on exercise physiology laboratory skills. Without question, the primary care physicians should determine the patients’ weekly physical activity, but they don’t. The typical physician’s office time is seldom spent talking about exercise charts, exercise medicine, or motivating patients to exercise, and forget about physicians providing individualized exercise prescriptions. Also, forget about physicians’ support groups or identifying social support, fine tuning exercise programs and caloric intake, updating goals, or adopting a healthy lifestyle.

All of this is a major concern for the United States population, which is growing with increased health problems. The medical pill for the growing non-communicable chronic disease epidemic should be low to moderate intensity exercise, but it isn’t. Without question, exercise medicine results in significant improvements in health and longevity. Yet, it is common knowledge that the majority of the physicians do not recommend regular exercise as a primary intervention. Why? There are many reasons, but one in particular is that physicians are trained to prescribe drugs for every illness and/or health condition. Their response is so expected by the medical community that it is difficult to think they may be purposefully turning a blind eye to exercise medicine for patients with sedentary lifestyles.

THE EXERCISE PHYSIOLOGY ORGANIZATION

I find this as interesting as the fact that the American Society of Exercise Physiologists (ASEP) is overlooked by many academic exercise physiologists as “the” exercise physiology organization in the United States. This is a major problem that is driven by similar issues that keep the primary care physicians and other medical practitioners from prescribing exercise medicine to their patients. As an example, refer to the article by Ian Gillam, PhD of the National Institute of Integrative Medicine, Melbourne, Australia (1). While we may agree on the reasons why medicine turns a deaf ear to exercise medicine, it is more than interesting to note that Dr. Gillam refers to the
American College of Sports Medicine as “the” organization that represents exercise physiologists in the United States.

Although the American Society of Exercise Physiologists has existed for ~20 years, there is no mention of it or its work to empower exercise physiologists as healthcare professionals. There is no discussion that ASEP is responsible for designing, implementing, and supervising exercise interventions for individuals with diagnosed chronic diseases. No one seems willing to argue the case that the ASEP leadership developed the exercise physiologists’ first-ever standards of ethics, academic accreditation guidelines, standards of professional practice, and board certification. In America, Board Certified Exercise Physiologist are university educated healthcare professionals who are qualified to design and supervise individualized exercise prescriptions, including particularly the prescription of exercise medicine for clients and patients with existing chronic diseases and medical disabilities.

While pharmaceutical companies are highly connected to medical schools, it is important that treatments other than the ever so common prescription drugs and the dramatic increase in surgeries are used without some analysis and reflection. Exercise as medical therapy is real, and it is here to stay just as ASEP and its members embrace the challenges to professionalize exercise physiology and promote it as a healthcare profession. The medical community and exercise physiologists are responsible for grasping the underlying ethical message that drives the change process. There is also the profound necessity to acknowledge ASEP as “the” exercise physiology organization just as it is critical that physicians prescribe exercise medicine rather than the present-day pharmaceutical solutions. In so doing, medicine and its diverse healthcare practitioners must be willing to embrace exercise physiologists as the key exercise medicine professionals.

Exercise is medical treatment and Board Certified Exercise Physiologists are qualified healthcare professional to prescribe exercise medicine. All adults should engage in at least 150 min of aerobic exercise, and children and adolescents should do at least 1 hr of daily exercise (2). This point is profoundly intuitive just as exercise medicine is without question the treatment for chronic diseases and yet it is not being prescribed to patients. I might be preaching to the choir, but let’s go beyond this scientific fact and get to the second point of this article. Why is ASEP overlooked by other organizations, especially since it is obvious that it should be acknowledged as the professional organization of exercise physiologists? Is it possible that the individuals in charge of status quo are not interested in changing or thinking differently for fear it would alter their influence and disrupt their organizational agenda?

My point is this: Just as regular exercise is medicine and just as ASEP is the only exercise physiology organization in the United States, why is it that the majority of the physicians and academic exercise physiologists do not support exercise medicine and ASEP, respectively? The evidence is overwhelming that change results from thinking differently; it is the rejection of status quo. Why? Because if nothing is changing, the future is the same as it was yesterday, last month, and years ago. That means even though exercise medicine is real medicine and ASEP is a credible organization, nothing changes unless physicians and exercise physiologists think differently. While there is no power in staying the same and yet, there is hope in taking the time to think, for example, about the benefits of regular exercise:

- Decrease blood pressure
- Build stronger muscles and bones
- Improve mood
• Boost immunity
• Prevent heart disease
• Lower rates of hospitalization
• Decrease body fat
• Increase weight
• Increase LDL cholesterol
• Manage chronic pain
• Control blood sugar
• Decrease blood pressure
• Decrease certain cancers

Clearly, these are very positive physiologic responses that help to prevent and treat chronic diseases. The fact that the people of our nation and that of the world are sick with major chronic diseases means they are stuck in status quo of not exercising. They need help from physicians and exercise physiologists. Their medications alone “…are rarely completely effective for chronic conditions…” (3). Hence, it is critical that physicians and exercise physiologists come together to initiate and promote the exercise medicine prescription to maintain a physically active lifestyle. Collectively and individually, when professionals allow themselves to think differently, the reality of, for example, medicine and exercise physiology can become the global influence it should be in leading both medicine and exercise physiology out of the 20th century perspective into the 21st century exercise medicine reality. Working together, both professions can encourage the adoption of a healthy lifestyle that embraces exercise medicine, healthy eating, and emotional and spiritual well-being to help, for example, the overweight and obese clients and patients who suffer from hypertension, heart disease, diabetes, cancer, and depression (4).

EXERCISE MEDICINE AND OBESITY

In just the United States, ~170 million Americans are overweight or obese (5). The Centers for Disease Control and Prevention states that people who are obese, compared to those with a normal or healthy weight, are at increased risk for many serious diseases and health conditions, including the following (6-9):

• All-causes of death
• High blood pressure
• High LDL cholesterol, low HDL cholesterol, or high levels of triglycerides
• Type 2 diabetes
• Coronary heart disease
• Stroke
• Gallbladder disease
• Osteoarthritis
• Sleep apnea and breathing problems
• Some cancers (endometrial, breast, colon, kidney, gallbladder, and liver)
• Low quality of life
• Mental illness such as clinical depression, anxiety, and other mental disorders
• Body pain and difficulty with physical functioning
Unsurprisingly, being overweight or obese is a major health condition with increased morbidity and mortality. Yet, unfortunately, there is a huge medical bias against exercise interventions (i.e., exercise medicine). Physicians are poised in favor of prescribing drugs over strategies to modify lifestyle behaviors. In fact, Naci et al. (10) state that, “This blind spot in available scientific evidence prevents prescribers and their patients from understanding the clinical circumstances where drugs might provide only modest improvement but exercise could yield more profound or sustainable gains in health.” Perhaps, there is another important consideration for the “blind spot” as well. Russell (5) reports that overweight doctors are less likely to counsel their patients about obesity.

It is abundantly clear that primary care doctors should talk with their patients about the benefits of regular exercise. They should refer patients with chronic disease to an exercise physiologist to prescribe an individualized exercise prescription to maintain an ideal body mass index (BMI), normal levels of cholesterol, blood pressure, and blood glucose (11). The physicians know, as Myers and colleagues (12) reported that, “…the least fit male veterans had >4 times the risk of all-cause mortality compared to those with the highest level of cardiorespiratory fitness (CRF), and also that CRF was a stronger predictor of mortality than smoking, hypertension, high cholesterol, and type 2 diabetes.”

So it should be obvious what is necessary, but the medical community continues to drag its feet on this issue. Exercise is a drug that should be prescribed daily, but it isn’t. Primary care physicians are not doing their very best on behalf of their patients. They should recommend exercise medicine to increase their patients’ cardiorespiratory fitness. This point is clearly evident in the work of Myers et al. (12) and in the commentary by Hallal and Lee (13) who “…advocated that the “prescription of physical activity should be placed on par with drug prescription.”

THE PRACTICE OF EXERCISE PHYSIOLOGY

With the exercise medicine approach to healthcare, the “Practice of Exercise Physiology” includes equipment that enables Board Certified Exercise Physiologists to measure, examine, and provide instruction to evaluate the components of physical fitness. Such practice is applied to apparently healthy individuals as well as to individuals with known chronic disease or ill-health. The goals for such practice are to: (a) promote health and wellness; (b) improve the components of physical fitness; (c) prevent disease and disability (via the identification of risk factors and behaviors that may impede mind-body functioning); (d) assist in restoring health to clients with chronic disease or disability; and (e) rehabilitate clients to their optimal functional level following physical and/or mental illness (14).

The equipment used may include the use of submaximal and maximal exercise tests via treadmills and various ergometers to make evaluations and recommendations regarding, but not limited to, metabolic processes, cardiorespiratory system (to measure submaximal and maximum oxygen consumption, VO2 max), musculoskeletal system (strength, endurance, and power tests), and body composition tests. Measurement, examination, analysis, and instruction may be done for the purpose of improving health and well-being, research, health and fitness counseling, and the enhancement of athletic performance and improvement of physical and/or emotional well-being (14).

However, due to the use of exercise as a diagnostic tool in different medical fields, Board Certified Exercise Physiologists may work alongside other medical personnel to conduct tests that assist in the medical diagnosis of disease. This may mean the identification and/or discussion of signs and
symptoms that correlate with specific diseases and/or clinical dysfunctions. Also, exercise testing of clients with known risk factors for coronary artery disease and/or subsequent to a myocardial infarction (MI) should be performed with the supervision of a physician who is responsible for handling emergencies. The physician is ultimately responsible for interpreting the ECG data from testing, and the administration of drugs, defibrillation, and other appropriate medications.

The Board Certified Exercise Physiologist is responsible for: (a) supervising the exercise laboratory and personnel; (b) preparing the client/patient for the test and placement of electrodes; (c) taking resting and exercise blood pressure and 12-lead ECG strips; (d) determining the exercise ECG response to the exercise protocol; and (e) ruling out any contraindications to continuing the test. The Board Certified Exercise Physiologist is also responsible for acknowledging the scientific and medical findings that associate with specific diseases or dysfunctions along with the appropriate language for sharing the same (i.e., primary and secondary risk factors) with the client/patient and for monitoring cardiovascular status (using metabolic equipment to determine oxygen consumption and related cardiovascular responses) throughout the exercise session and recovery periods (14).

Testing for symptom-limited maximum oxygen consumption (primarily in post-myocardial infarction patients) or maximum oxygen consumption, VO$_2$ max, (i.e., the greatest amount of oxygen a person can use at the cellular level while performing dynamic exercise involving a large muscle mass) is one such test to identify and discuss signs and symptoms that might associate with disease and/or dysfunction. Maximum oxygen consumption is product of maximum cardiac output (Q) and maximum arteriovenous oxygen difference (i.e., tissue extraction of O$_2$). Since Q is equal to the product of heart rate (HR) and stroke volume (SV), the test helps to evaluate the role of both in the transport of blood to the tissues (14).

Myocardial oxygen uptake (MVO$_2$) is determined by the Board Certified Exercise Physiologist through the use of a regression formula, such as \[ \text{MVO}_2 = 0.14 \times (\text{HR} \times \text{SBP} \times 0.01) - 6.3 \]. The product of HR and systolic blood pressure (SBP) is called double product (DP). It is a linear relation between MVO$_2$ and coronary blood flow. During exercise, HR increases linearly with workload and VO$_2$. Systolic blood pressure rises with increased work as a result of the increase in Q while diastolic blood pressure usually remains the same or decreases somewhat. Failure of SBP to rise with exercise can be the result of aortic outflow obstruction, left ventricular dysfunction, or myocardial ischemia. Changes in blood pressure may also reflect peripheral vascular resistance, given that systemic vascular resistance (SVR) equals mean arterial pressure (MAP) divided by Q. Since Q is expected to increase with progressive increments in exercise work and MAP usually changes very little, then, SVR is expected to decrease with exercise (15).

**Measurement and Examination**

Exercise physiology “measurement” and “examination” includes: (a) the administration of a health history questionnaire, a disease-specific or disorder-specific laboratory evaluation as well as the assessment of the client’s musculoskeletal system and/or cardiorespiratory system using standard laboratory equipment, exercise tests protocols, exercise programs, and risk factor modification and/or measurements to assist in evaluating the client’s overt and/or objective responses, signs, and/or symptoms for cardiorespiratory fitness of individuals who are apparently healthy or who have disease including, but are not limited to, tests that measure body composition, range of motion (flexibility), muscle strength, endurance, work, and power; (b) tests that assist in the overall analysis of the central and/or peripheral components of oxygen consumption and energy expenditure; (c) tests of pulmonary function, and exercise prescription for cardiorespiratory fitness of individuals with metabolic disorders including, but not limited to, deficiencies of the
cardiovascular system, diabetes, lipid disorders, hypertension, cancer, cystic fibrosis, chronic obstructive and restrictive pulmonary diseases, arthritis, organ transplant, peripheral vascular disease, and obesity; and (d) treadmill or other ergometer test protocols in conjunction with exercise electrocardiography (ECG) to identify the HR and ECG responses at rest and during submaximal and maximal (graded) exercise programs in addition to specific contraindications for continuing exercise (14).

Instruction

Exercise physiology “instruction” includes providing educational, consultative, or other advisory services for the purpose of helping the public with issues and concerns regarding fundamental and scientific information about mind-body health and fitness. Instruction pertains to matters that are believed to develop and/or maintain health, fitness, rehabilitation, and/or athletics is also included. Instruction includes, but may not be limited to, the: (a) acute physiological responses to exercise; (b) chronic physiological adaptations to training; (c) designing resistance training programs; (d) measuring energy expenditure at rest and during exercise; (e) hormonal regulation and/or metabolic adaptations to training; (f) cardiorespiratory regulation and adaptation during exercise; (g) thermal regulation during exercise; (h) exercising at altitude, underwater, and in space; (i) optimizing sports training through the use of ergogenic aids and better nutrition; (j) appropriate body composition and optimal body weight and the role each plays in diabetes and physical activity; (k) growth and development of young athletes, aging and gender issues; (l) preventing cardiovascular disease through exercise, the prescription of exercise for health and performance; (m) biomechanical aspects of posture and sports and the physiological assessment of human movement; (n) stress testing protocols for athletics and special populations; (o) resting and exercise electrocardiography changes; (p) biobehavioral techniques for reducing stress and/or increasing running economy; and (q) biochemistry of nutrition and exercise.

Analysis and Treatment

Exercise physiology “analysis” and “treatment” includes performing laboratory tests, with specific expectations for ‘treatment’ measures and activities. This may include, but not limited to: (a) range of motion (flexibility) exercises; (b) muscle strength and muscle endurance exercises; (c) lean muscle tissue-fat analysis; (d) musculoskeletal and/or postural exercises; (e) sports nutrition programs; (f) sports biomechanics instructions for the enhancement of sports or occupational related skills; (g) stress management exercises; (h) sports training and the development programs; (i) cardiac and pulmonary rehabilitation (including, but not limited to, development of such programs, supervising testing, development of exercise prescription, and other functions such as the education and counseling of patients); and (j) exercise physiology instruction that pertains to all forms of sports training and athletics (14).

FINAL THOUGHTS

Exercise physiology is a healthcare profession with an established ASEP academic and scientific base with hands-on laboratory applications in prescribing exercise medicine to develop, maintain, and enhance health, well-being, and quality of life. The Board Certified Exercise Physiologist’s professional services prevent or treat chronic diseases and disabilities that decrease physiologic functions. Exercise medicine is provided for individuals of all ages to improve the conditions of the musculoskeletal, cardiovascular, and pulmonary systems. Hence, physicians should refer their patients with non-communicable chronic disease to exercise physiologists. They play a vital role in today's healthcare and, increasingly, are recognized as essential providers of prevention and risk-reduction services. Moreover, it is pastime that exercise physiologists grow a backbone and come
together as members of ASEP to support the organization’s efforts in the professionalization of exercise physiology.

REFERENCES


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