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Review article

Toward a greater understanding of the syndemic nature of hypokinetic diseases

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Abstract

Physical activity participation has historically been conceptualized at the individual level with a strong emphasis on apparently healthy people. However, in the latter part of the 20th century and early part of the 21st century, a paradigm shift emerged whereby physical activity participation increasingly was acknowledged to be dependent on factors residing beyond an individual's control, with programming and intervention efforts necessary across the lifespan, in multiple settings, and under various life circumstances. This shifting emphasis has created opportunities and challenges for those involved in physical activity program delivery and research. In this presentation, physical activity behavior change, promotion, and retention efforts will be reviewed and critiqued. Emerging from this critical analysis is an understanding of the syndemic nature of hypokinetic diseases (i.e., the diseases associated with disuse and physical inactivity). The term syndemics is used to account for the interplay and synergistic nature of person, place, and timing in the development of disease. Not only are individual lifestyle behaviors and social factors considered in syndemics, but so too are the forces that link those causes together. To genuinely affect change among the masses, those involved in delivering physical activity interventions and programming must not only address each lifestyle behavior and social affliction that contributes to hypokinetic diseases, but also to the social and environmental forces that link those causes together (e.g., stigma, unequal access to resources).

Keywords: Community-based participatory research; Exercise is Medicine; History; Kinesiology; Philosophy; Physical activity; Psychosocial; Sociocultural

Introduction

Considering the theme, "Active Aging, Quality of Life, and Physical Activity as Medicine," as well as the "Exercise is Medicine" initiative that was launched in the United States in 2007,[1] it is sobering to recall:

> "The importance of exercise and diet was perhaps never more fully acknowledged than by the physicians of the present day. Experience has proved these means to be the best preventive against disease, as well as a powerful auxiliary, if not a substitute for medicines, in many obstinate cases." (Reviews,[2] p. 235)

Those words were written 190 years ago. They are still relevant today.[3]

The aim of this paper is to critically reflect on where the discipline of kinesiology has been and to offer suggestions about where it is going, with a keen interest in advancing inclusive physical activity practices. The complexities of physical-inactivity-related diseases is discussed, leading to recommendations for assuring the sociocultural relevancy of the work that is being done, work that can be enhanced by employing community-based participatory research methods.

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Academic discipline of kinesiology

There are mores in all academic disciplines, and kinesiology (also known as physical culture, physical training, physical education, exercise science, and sport science) is no exception. The idea that physical activity is important for the acquisition, maintenance, or restoration of health dates back centuries,[4,5] yet it was not until the 19th century that the discipline of kinesiology began to codify[6] and it did so primarily under the leadership of medical doctors.[4] As it codified, certain traditions began to set in place, with the pendulum swinging within the degrees of freedom established by the early leaders in the discipline.

For example, the Department of Physical Education and Hygiene at Amherst College, recognized as the first of its kind in the United States (US), was instituted in 1859–1860 due to concerns over student health, not for the development of military personnel or sportsmen.[7] Counter to this inclusionary[i] and health promoting perspective were those who promulgated a more exclusionary perspective whereby they believed the discipline should be focused on "…improving the development of the best developed, of improving the health of the healthiest".[8] Even though there is evidence that this exclusionary position has negatively affected the physical activity participation levels of the population at large, exclusionary practices persist.[9–11]

These extreme value propositions have pushed and pulled the discipline of kinesiology to one degree or another – like the mythical Pushmi-Pullyu animal described in *The Story of Doctor Doolittle*[12] – for the past 150+ years.[ii] Such tension continues to this day.[11,13] Consider, for example, that many in the US who are seeking baccalaureate degrees in the field and/or are interested in careers in physical education teaching, tend to be Caucasian, male, middle-class, conservative, and athletic.[14,15] They also appear to be growing up in an increasingly narcissistic (i.e., self-oriented) society,[16] which is perpetuated and reinforced by at least some in the commercial fitness industry.[17]

Concurrently, the science of physical activity and public health – and the more inclusionary physical activity practices that it aspires to foster and promote[18] – has matured immensely during the later part of the 20th century and this has continued into the 21st century. The work of Pate et al.[19] and the US Department of Health and Human Services[20] two decades ago clearly accelerated progress in this area. There is now an unprecedented cadre of talented scholars from within and outside of the discipline of kinesiology who have a more inclusionary and health promoting orientation,[21] and new talent is being recruited and developed with this orientation.[22]

21st century diseases, 19th century wisdom

This shifting orientation is due to the rise of hypokinetic diseases, which are the diseases associated with disuse and physical inactivity (i.e., hypo = less, kinetic = movement).[23] Hypokinetic diseases encompass a range of medical conditions that afflict the world's population, such as cardiovascular disease, diabetes mellitus, hypertension, and obesity, to name only a few. At least in part, these medical conditions are preventable or otherwise mitigated through regular physical activity participation.[3,24] Unfortunately, few people engage in physical activity at the level recommended to avoid or delay the onset of hypokinetic diseases and therefore they miss out on the many benefits that a physically activity lifestyle affords.[25]

To some degree the benefits of physical activity are also characterized as the polar opposites of hypokinetic diseases. That is, not having cardiovascular disease, not having diabetes mellitus, not having hypertension, or not having obesity. While avoiding or preventing disease is certainly a worthy cause, loss-frame messaging such as this is not as effective as gain-frame messaging (i.e., emphasizing the positive benefits and values of physical activity participation).[26] Moreover, the benefits of physical activity can encompass so much more than what is depicted in loss-frame messaging, such as freedom of expression and will, fun and enjoyment, joy and pleasure, and the pursuit of meaning and self-fulfillment.[27,28] These latter benefits can be immediate. Hiking a mountain trail and seeing and experiencing the natural beauty along the way and the vista at the end of the trail are prime examples. Another example is walking or cycling to complete short-trips and errands rather than driving or riding in a car. This has the immediate benefit of achieving tangible tasks while simultaneously having one less automobile on the roadway, which results in fewer carbon emissions being produced, and the personal value of saving money (and a natural resource for those who are environmentally conscious) by not consuming gasoline unecessarily.[iii]

As the second example begins to illustrate, the benefits of physical activity extend beyond the individual level. It also

[i] While the word "inclusionary" is used here, it is important to remember that Amherst College was an all-male institution at the time, with the students being Caucasian and from affluent families primarily.

[ii] Both within and outside of the discipline of kinesiology, other approaches and perspectives have existed (and do exist). For example, the discipline has contributed to advances in basic science (e.g., mechanistic work in exercise physiology and motor behavior); therapeutic and rehabilitation science and practice (e.g., the professions of athletic training and physical therapy); product design and safety in both sport and non-sport settings (e.g., adapted physical activity and biomechanics); acceptance, diversity, equity, human understanding, and international relations (e.g., sport and exercise psychology, sport history, sport philosophy, sport sociology); among others.

[iii] Dargay et al.[29] estimated that the demand for private automobiles would grow from 800 million units in 2002 to more than 2 billion units by 2030. Much of that growth is expected to be in non-Organisation for Economic Co-operation and Development (OECD) countries, with a 20 fold increase expected in China alone. Beyond this sobering estimate, if American automobile passengers weighed what they did in 1960, an estimated 958,000,000 gallons of gasoline would be saved each year.[30] Given projections in population growth, the increased demand for automobiles worldwide, and the worldwide obesity trends, the pending demands on the biosphere could be cataclysmic.