Roy's Adaptation Model to Promote Physical Activity among Sedentary Older Adults

Carol Rogers, RN, APRN-BC
Colleen Keller, PhD, RN-C, FNP

The aging population is rapidly increasing in size, and with this increase there is a growing need for age-appropriate physical activity (PA) programs to help older adults age successfully. Older adults face many challenges in adaptation to aging and related physical function, emphasizing the importance of developing interventions to promote adaptation to aging, such as increasing PA among older adults.

A primary concern for the aging individual is the decline in physical function, compounded with the increased prevalence of sedentary behavior. In 2005, 47% of the young-old (those aged 65–74 years) reported no leisure-time activity, with 60% of the old-old (those aged over 75 years) reporting no leisure-time activity.[1] These data indicate that the aging population is falling short of Healthy People 2010 goals and the American College of Sports Medicine/American Heart Association guidelines for PA in older adults.[2] Those guidelines recommend at least 30 minutes of moderate-intensity PA at least 5 times per week, strength training and flexibility 2 times a week, and balance training. Further, they recommend that sedentary older adults begin with balance, flexibility, and strength training to build endurance before participating in moderate- to vigorous-intensity aerobic PA.[2]

The interplay of mind-body theoretical concepts and PA has increased in popularity since the 1990s and makes up 30% of the exercise programs in fitness centers.[3] Mind-body practices that blend physical movement or postures with a focus on the breath and mind to achieve deep states of relaxation include, but are not limited to, familiar forms such as yoga, tai chi (TC), Qigong, and other less familiar forms such as Sign Chi Do (SCD).[4-6] SCD, grounded in the principles of traditional Chinese medicine, incorporates deep breathing and mental concentration during movement to achieve harmony between body and brain and is a novel form of PA that has multiple health benefits, including strengthening muscles and improving balance using a mind-body approach.[4] Both the mind-body interactions and the potential for improved functional outcomes resulting from these forms of PA make them particularly appealing for older adults.[7,8] SCD is particularly suitable for older adults, because it is implemented without the aerobic and musculoskeletal strain that is sometimes associated with higher-intensity exercise, while providing mild- to moderate-intensity PA. A growing body of research indicates a wide range of potential health benefits from mind-body exercise.[9] However, there has been limited research exploring mind-body PA interventions for adaptation and physical function among older adults. This discussion is focused on the description of the development of a theory-based intervention to promote successful adaptation to an active lifestyle based on Roy's Adaptation Model (RAM) and guided by evaluation theory to address theoretical integrity.[10]

Theoretical Approach

The broad nature of the RAM, developed by Sister Callista Roy, allows an examination of PA and the development of a theory-based intervention from an expanded, integrated, and holistic nursing perspective. According to the RAM, nursing's biobehavioral knowledge "balances understanding of the person as both a physiologic being in a physical world and as a thinking and feeling being with human experience in a cosmic world."[11] Human beings and groups are perceived as holistic, adaptive systems that constantly change and interact with their environment.

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Health is a process of being and becoming integrated and whole; it reflects the environment and person mutually. According to Roy, the overall goal of nursing is to focus on promoting health of the individual and group by promoting adaptation in each of 4 adaptive modes: physiological-physical, self-concept, role function, and interdependence.[11]

Adaptation is assessed and measured in physical (physiologic) and psychosocial (self-concept, role function, and interdependence) modes: physiologic-physical, measures bodily function and, specific to this study, the level of activity and function; self-concept, measures composite of beliefs including spirituality and feelings one has of oneself at a given time operationalized as confidence to exercise or self-efficacy; role function measures a set of expectations about how a person functions and relates with others; and interdependence measures giving and receiving love through nurturing relationships.[11] Although all of these modes are important, this intervention focuses on adaptation to aging using Roy's theoretical physiologic-physical and self-concept modes to evaluate the effect of SCD on physical function and personal beliefs.

The RAM has been used in studies of physical activity and cancer to promote adaptation and quality of life.[12,13] Flood[14] used the RAM to define adaptation to successful aging. The optimal level of adaptation is consistent with active aging as defined by the World Health Organization and others to include the importance of treating the person as a whole, emphasizing physical and psychological function, as well as spirituality.[11,14,15] The goal of the intervention described here is to promote adaptation by enhancing the physiological-physical and self-concept modes through a meditative movement (SCD) intervention that enhances physical activity performance, spirituality, and self-efficacy.

Problem Definition

Adaptation is the primary concept of interest in the RAM. It is the dynamic process whereby people use conscious awareness and choice to create human and environmental integration. The RAM model depicts the individual as a biopsychosocial being who is able to adapt to environmental stimuli categorized as focal, contextual, or residual. When assessing physical function, sedentary lifestyle is viewed as the focal stimulus, which leads to maladaptive responses for older adults (disuse consequences and negative beliefs). Contextual stimuli are indirectly related to the focal stimuli such as PA and personal beliefs. The residual are all other stimuli that affect the focal and contextual stimuli, such as relationships with family and friends.

Adaptation includes 2 processes called the regulator and cognator subsystems.[16] The regulator subsystem includes automatic bodily responses through neural, chemical, and endocrine adaptation channels.[11] The cognator subsystem responds through 4 cognitive-emotional channels: perceptual and information processing, learning, judgment, and emotion.[11] The effects of the regulator and cognator interact but cannot be measured at this level; however, they are measured in behavioral outcomes assessed in adaptation.[11] Adaptation occurs when the cognator and regulator subsystems are stimulated, resulting in behavior changes measured in physiologic and psychosocial modes.

The physiologic mode measures all bodily function and, specific to this intervention, physical function. In the RAM, the psychosocial or mind and spirit modes are self-concept, role function, and interdependence.[11] Self-concept deals with personal aspects of human systems—specifically, psychic and spiritual integrity.[11] It is a composite of beliefs one holds at a given time. In an older adult who is sedentary, self-concept is characterized by a decreased confidence in the ability to exercise and spirituality. Maladaptive responses occur when adaptive mechanisms are inadequate, resulting in activity intolerance and disuse consequences for sedentary aging adults.[11] The "problem," then, used to develop the following intervention, is the "maladaptive" response of older persons—sedentary behavior—that is amenable to "treatment" or an intervention that promotes adaptation through Sign-Chi-Do. See Table 1 for a description of the intervention components.

Critical Inputs

Roy's conceptualization of adaptation defines sedentary adults as being in a maladaptive state because of an inability to regulate their physiological and psychological state. An intervention needs to affect both of these modes. It was theorized that SCD would promote adaptation by

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