Intentional Development: A Model to Guide Lifelong Physical Activity

Jeffrey M. Cherubini

Abstract

Framed in the context of researching influences on physical activity and actually working with individuals and groups seeking to initiate, increase or maintain physical activity, the purpose of this review is to present the model of Intentional Development as a multi-theoretical approach to guide research and applied work in physical activity. Elements within the model include ecological influences and developmental areas of attitude, attention, action, and adherence. In breaking down influences on physical activity into these elements, researchers and practitioners can closely examine and understand the key areas that need focus for initiating, increasing, and maintaining lifelong physical activity

A variety of theories have influenced approaches to physical activity and exercise adherence research. McElroy (2002) describes a "resistance to exercise" in contemporary society as a conflict between two such theories, "one that situates explanations for sedentary lifestyles in the failure of individuals to accept personal responsibility for their own health and another that views the cause as part of the larger social, cultural, political, and economic structure" (p. 17). Although studies investigating psychosocial correlates of health-related physical activity are often guided by major theoretical models, many still neglect to include all variables shown to be related to physical activity (De Bourdeaudhuij & Sallis, 2002). Grounded in ecological theory, Grzywacz and Marks (2001) support a bio-psychological perspective of physical activity suggesting future health behavior research consider determinants from multiple contexts and multiple levels of human ecology. In identifying new treatments for inactivity, researchers and practitioners need to recognize and pay more attention to the interaction of individual capacities and experiences with the social and physical environment in which choices to be active occur (Cohen, Scribner, & Farley, 2000; Dubbert, 2002; McNeill, Wyrwich, Brownson, Clark, & Kreuter, 2006; Powell, Bricker, & Blair, 2002).

Similarly, Weiss and Gill (2005) advocate the continued use of multi- and interdisciplinary approaches to exercise psychology research through the integration of models and methods from a variety of disciplines. Zeigler (2006) recommends the term "developmental physical activity" to describe an integrated multi-disciplinary approach to our discipline which is "concerned with healthful physical activity that is used for some sort of worthwhile development through a person's life" (p. 37). Such an approach may also serve to bridge the gap between those researching physical activity and those actually "doing" the applied work in the school, gymnasium, health club, clinic or hospital. Acknowledging the importance of cross-disciplinary approaches in this context, the purpose of this review is to present the model of Intentional Development as a multi-theoretical approach to guide research and applied work in physical activity.

Foundational Assumptions

The model of Intentional Development represents an authentic attempt at theory development unique to this discipline of "developmental physical activity". The critical aspect of a developmental theory is that it focuses on change over time (Miller, 1983). More specifically, a theory helps to describe changes within one or several areas of behavior, to describe changes in

the relationships among several areas of behavior, and to explain the course of development. A basic assumption of developmental work acknowledges the interaction of the individual and environment as either enhancing or detracting from development. It is on the basis of this assumption that the model of Intentional Development begins.

The term *Intentional Development* is an umbrella term for the proposed influences on physical activity as defined in the model itself (see Figure 1). Since the model is intended for practical use, language within the model (attitude, attention, action, and adherence) is used in 'layperson terms' to define the model and its' elements. For example, the term *intentional* is used to indicate something that is deliberate, planned, and purposeful. The term *development* is used as a synonym of progress, growth, and positive change. Hence, *Intentional Development* can be described as something practitioners in the fields of physical education, health, recreation, sport and dance are often "doing" with students, athletes, and clients, purposefully helping them achieve some level of growth and positive change in their chosen areas of participation.

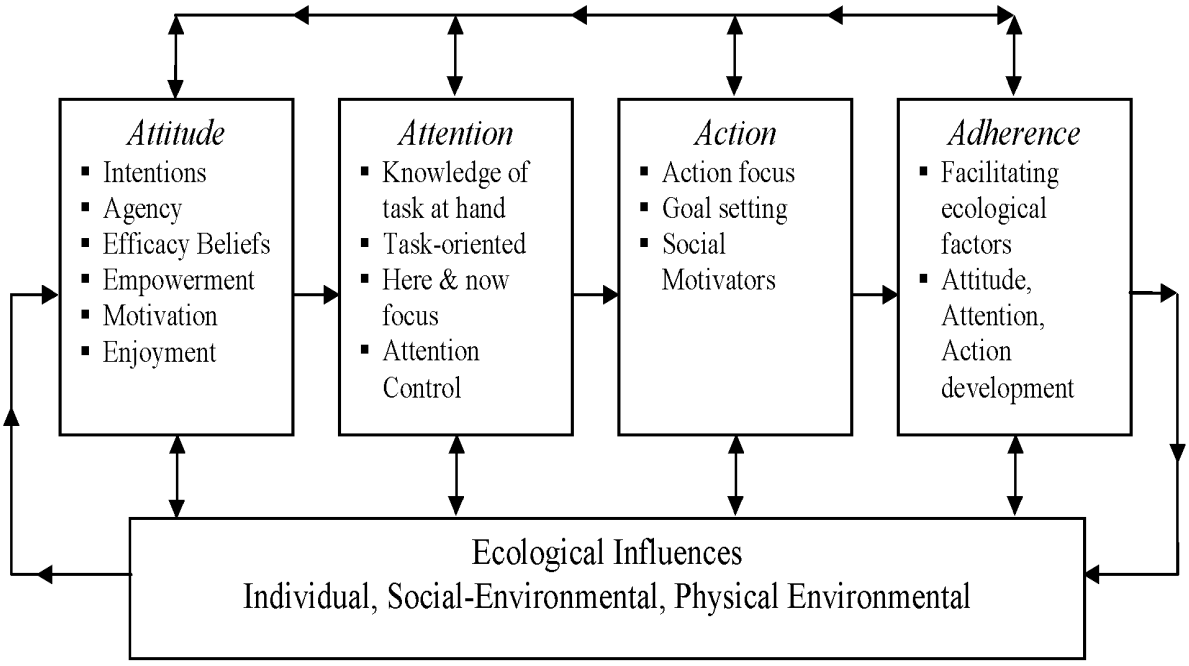

Figure 1. Model of Intentional Development

Framed in the context of researching influences on physical activity and actually working with individuals and groups seeking to initiate, increase or maintain physical activity, the model builds upon research already completed in the field of exercise psychology as well as professional experience. Elements within the model include ecological influences (individual, social environmental and physical environmental) and developmental areas of attitude, attention, action, and adherence. In breaking down influences on physical activity into these elements, individuals and groups can closely examine and understand the key areas that need focus for initiating, increasing, and maintaining physical activity.

Ecological Factors

Ecological factors are theorized to play a role in an individual's level of physical activity. Influences on physical activity need to be examined in the context of the interaction between individual, social environmental, and physical environmental influences, and their effect on personal level behavior.

Individual Influences

Personal characteristics such as demographic and health variables, psychological and behavior attributes and skills, as well as an individual's knowledge, beliefs, values, and emotions are all acknowledged as influences on physical activity levels (Anshel & Kang, 2007; Cherubini, 2008, King, 2001). Other personal factors involved in the interaction of individuals with the environment may include physical fitness, physical skill, and perceptual skill (Vealey, 1988). Berger (1998) identifies ethnicity, culture, and religion as influences on individual attitudes and beliefs. Gill (1999) adds broad diversity issues within a social dynamic perspective including gender, sexual orientation, age, and physical abilities. These personal influences on activity levels vary and may include: too little time, feeling tired, obtaining enough physical activity at one's job, lacking energy, not being in good health, and no motivation to be physically active (Brownson, Baker, Houseman, Brennan, & Bacak, 2001).

Within this model, individual influences can be examined within the context of both ascribed and achievement factors. Ascribed factors include those in which the individual was born with or into. In essence, factors which have been ascribed to the individual without choice. Ascribed factors may include genetics/traits, gender, ethnicity, health/physiology, abilities/disabilities, culture, religion, childhood socio-economic status, and regional geographic identity. Achievement factors include those in which the individual has attained over time and allocation. Achieved individual factors may include current knowledge and education, health and wellness, physical fitness, socio-economic status, religion and spirituality, cultural identity, stage of change, childhood activity, physical skill, psychological skill, perceptual skill, attentional style, interpersonal style and learning style. Both ascribed and achievement factors may interact with social and environmental demands to influence behavior levels of physical activity.

Social Environmental Influences

Bandura (2001) describes social environmental influences as operating through psychological mechanisms to produce behavioral effects. Accordingly, economic conditions, socioeconomic status, and educational and family structures affect behavior through their influence on goals, sense of efficacy, personal standards, affective states, and other self-regulatory influences (Bandura). Equally, McElroy (2002) distinguishes between basic causes and surface causes corresponding to physical activity behavior. He notes "even if we are effective in getting people to adopt…regular physical activity (e.g., surface cause), as long as the social structure of society remains unchanged (e.g., basic cause) new obstacles are likely to emerge to perpetuate sedentary habits" (p. 15).

Other social factors associated with physical activity include surroundings in which many people are exercising, friends who encourage exercise, and having at least one friend with whom to exercise (Brownson et al., 2001). Gender issues are also considered to be part of this social context (Cherubini, 2008; Gill, 1999; Martens, Mobley, & Zizzi, 2000). For women in particular, sociological influences may include: competing demands for attention, a lack of support from family or friends, and the possible unpopular image of being a girl who enjoys physical activity (Cherubini; Ransdell, Oakland, & Taylor, 2003; Sherwood & Jeffery, 2000). Kumanyika (2002) altogether summarizes these social influences on physical activity behavior.

> These behaviors are also anchored by contextual factors…where a person lives, his or her daily routine, and obligations at

> work and at home. They are potentially influenced by socioeconomic factors such as education, discretionary income, exposure to socioecological stressors, and a person's ability to cope with these stressors, as well as health variables such as mobility limitations… Not all of the implied constraints can be leveraged by the individual, even one who is well motivated (p. 425).

Physical Environmental Influences

Environmental factors play a critical role in promoting and supporting physically active lifestyles. Neighborhood quality and safety, residential environments and physical settings conducive to physical activity, convenient and accessible facilities, enjoyable scenery, aesthetics, lighting, and sidewalk maintenance have been noted as prominent environmental influences on physical activity (Brownson et al., 2001; Cherubini, 2008; Craig, Brownson, Cragg, & Dunn, 2002; King, Stokols, Talen, Brassington, & Killingsworth, 2002; McNeill et al., 2006; Saelens, Sallis, Black, & Chen, 2003; Sallis, Bauman, & Pratt, 1998). Other notable environmental influences within the model include: weather, time of year or seasonality, modes of transportation, and policy or legislative characteristics such as healthcare or workplace incentives.

Elements of the Model

The individual interacting with her or his environment (social and physical factors) has an influence on each of following elements: Attitude, Attention, Action, and Adherence. Within each of these elements, a continuum exists in which the individual may be regressing, remaining stable, or developing. Individuals may move along continuums within each of these elements until the desired outcome (i.e., the adoption of physical activity as a lifestyle) is achieved. This development can be looked at as a continuous, on-going, and dynamic process. Although depicted linearly, the elements interact and influence each other in a more dynamic fashion depending on the ecological influences present.

Attitude

Personal attitude towards physical activity refers to an individual's overall beliefs regarding physical activity (Biddle & Chatzisarantis, 1999; Rhodes, Jones, & Courneya, 2002) and includes positive and negative evaluations of being physically active (Sheeran & Orbell, 1999). Haggar, Chatzisarantis, and Biddle (2002) postulate that a individual's intentions to participate in physical activity is a function of her attitudinal evaluation of future physical activity behavior, followed by the degree of subjective control she perceives as having over her ability to engage in the physical activity. These intentions reflect a conscious plan or decision to enact a particular behavior indicating to what extent individuals want to perform the activity and how much effort they are willing to exert in the activity (Ajzen, 1991; Rhodes et al.). In examining intentions, it is important to acknowledge and account for an individual's values and core beliefs about what is most important in life (Anshel & Kang, 2007). These values influence intentions and are significant to understanding and guiding behavior change.

Bandura (2001) refers to actions done intentionally as agency and "to be an agent is to intentionally make things happen by one's actions" (p. 2). An individual's belief in her capability to exercise some measure of control over her own functioning and environmental events is therefore central to an individual's personal agency (Bandura, 1997, 2001). Efficacy beliefs are at the foundation of this human agency and along with outcome expectancy beliefs are well recognized as a strong influence on physical activity behavior (Anderson, Wojcik, Winett, & Williams, 2006; Ball & Crawford, 2006; Biddle, 1997; McNeill et al., 2006; Ryan, 2005; Sniehotta, Scholz, & Schwarzer, 2005). Other factors may operate as guides and motivators for physical activity, but must be rooted in the belief that one has the power to produce effects by one's own actions (Bandura,

2001). Unless an individual can believe she can produce chosen results by her actions, she has little incentive to act. Efficacy beliefs further impact behavior by influencing choices and "by choosing and shaping their environments, people can have a hand in what they become" (Bandura, 2001, p. 11). Through their impact on other determinants, efficacy beliefs play a pivotal role in lifelong behavior change (Bandura, 1997; Ziegelmann & Lippke, 2007).

Furthermore, the role of empowerment is a critical aspect of attitude. Similarly, control is at the core of individual empowerment (Koelen & Lindstrom, 2005; Malloy & Rossow-Kimball, 2007). The belief that an individual has the power to produce effects by his or her own actions is a strong influence on attitude. Individuals with this sense of control generally are healthier and have an easier time initiating, performing in, and adhering to a health, exercise, or sport program than those who perceive that they have no control (Koelen & Lindstrom; Malloy & Rossow-Kimball; Rhodes & Plotnikoff, 2006).

Empowerment includes general resistance resources and the sense of coherence (Koelen & Lindstrom, 2005). The general resistance resources include any biological, psychosocial, and material factors that make it easier for an individual to enact a physically active lifestyle. The ability to use these resources describes an individual's sense of coherence. A strong sense of coherence develops when an individual has the confidence in his or her ability to manage any life circumstances through the use of their general resistance resources (Koelen & Lindstrom). The more readily available resources, the better equipped one will be to enact the behavior. Examples of general resistance resources include knowledge and experience (individual influences), support of a physical educator or family member (social environmental influences) and accessible and affordable facilities (physical environmental influences). Although some individuals have more or less of these resources than others, the key aspect is the individual's ability to use the resources that are available. Hence, empowerment is influenced by the process of developing self-efficacy and perceived behavior control (Malloy & Rossow-Kimball, 2007).

Motivation is also an integral component of attitudes toward physical activity and exercise related behaviors. Kowal & Fortier (2000) propose Self-Determination Theory (Deci & Ryan, 1985; Deci, Vallerand, Pelletier, & Ryan, 1991) as a theoretical framework proven to be significant in examining motivation toward physical activity. The theory proposes that individuals possess three innate psychological needs: autonomy, competence, and relatedness (Kilpatrick, Hebert, & Jacobsen, 2002). To motivate individuals to make positive behavioral changes, it is necessary to allow for opportunities to develop these needs. Intrinsic motivation is the result of satisfying such inherent needs (Boyd, Weinmann, & Yin, 2002). Physical activity perceived to be interesting, challenging, or providing feelings of pleasure and satisfaction further induces intrinsic motivation and self-determined behavior (Standage, Duda, & Ntoumanis, 2005).

The impact of enjoyment on one's personal attitude, intentions, self-efficacy, and motivation toward physical activity cannot be underestimated. Alderman, Beighle & Pangrazi (2006) propose that a primary motive for student participation in physical activities is "the sheer enjoyment they experience while moving and interacting with their peers" (p. 42). Promoting students' enjoyment based on feeling of autonomy, personal control, perceived physical competence, optimal challenge, and overall well being are essential considerations for enhancing adherence to a physically active lifestyle (Alderman et al.; Biddle & Chatzisarantis, 1999; Mandigo & Holt, 2006; Wankel, 1993). Simply put, individuals that enjoy physical activity will adhere longer than those that do not (Napolitano & Marcus, 2000). These enjoyment motives are important and clearly have an influence on physical activity levels (Glaros & Janelle, 2001).

Indeed attitude influences physical activity levels. Interventions for promoting physical activity should focus on the promotion of a positive attitude as well as fostering a sense of control over physical activity situations, particularly internal perceptions of control or self-efficacy (McAuley, Jerome, Marquez, Elavsky, & Blissmer, 2003). Encouraging people to participate in a physical activity at which they feel competent, in control, and connected to others is essential to developing positive attitudes (Kilpatrick et al., 2002). Hence, allowing individuals multiple choices and helping them connect these choices with subsequent actions and ultimate outcomes will allow for attitude to positively develop including an increased motivation toward physical activity.

Attention

Although a positive attitude toward physical activity is important, without knowing what to do (knowledge of the task at hand) and how to do it (knowledge of strategies), an individual will not fully be developing (Ziegelmann & Lippke, 2007). For this reason, along with positive attitude development, it is necessary to acknowledge the influence of attention on physical activity levels. Within the framework of the model, the element of attention includes: knowledge of the task at hand, a task-oriented approach, a here and now focus, and attentional control.

Maintaining physical activity over the course of a lifetime is a process (McKenzie, 2007). Individuals have success within this process when a task-oriented approach is utilized with an emphasis on learning and personal improvement (Boyd et al., 2002; Solmon, 2006). In addition, when an individual is cognitively focused in the present, expected future events are transformed into current motivators of behavior (Bandura, 2001). When focused in the present, behavior is motivated and directed by specific goals and anticipated outcomes rather than being pulled by the unknown of the future (Bandura). Martin, Thompson, McKnight (1998) also place an emphasis on this here and now focus. Although the past may influence current behavior, the past cannot be changed. Individuals must choose to behave and focus in the present (Martin et al.).

For this reason, attention control (Nideffer, 1989) is an important element of developmental physical activity. The ability to control physical and mental arousal while matching attentional style to the demands of the environment is an important component of attention (Nideffer, 1981) and may influence an individual's ability to initiate and maintain a physical activity program. With knowledge of the task at hand and a focus in the present, an established technique to enhance performance is attentional focus (Nideffer, 1981). Attentional focus functions along two dimensions: width (broad or narrow) and direction (internal or external). By combining width and direction, four types of attentional focus emerge: Broad-Internal, Broad-External, Narrow-Internal, and Narrow-External. It is often necessary to shift between these four attentional types during any type of activity.

Action

Within this model, positive development in the elements of attitude and attention will have an influence on physical activity levels. However, a positive attitude and the most focused attention will not benefit us physically unless we actually take action. The action itself is essential to development. In this model, the element of action includes: an action focus, goal setting, and social motivators.

Intentional behavior, such as adopting and maintaining physical activity, must center on a plan of action (Anderson et al., 2006; Bandura, 2001; Ziegelmann & Lippke, 2007). Bandura (2001) notes "not only the deliberative ability to make choices and action plans, but the ability to give shape to appropriate courses of action and to motivate and regulate their execution" (p. 9) as primary aspects of behavior change. Hence, an action focus emphasizing self-regulatory behavior

is needed. Action planning, coping planning, goal setting, scheduling, and an effective concentration on the daily task at hand are all critical to lifelong physical activity (Anderson et al., 2006; Ziegelmann & Lippke, 2007).

The effectiveness of goal setting in various physical activity settings is well recognized as an influence on the actions people take (Filby, Maynard, & Graydon, 1999; Shen, Chen & Guan, 2007; Theodorakis, 1996). Moreover, goals consistent with core beliefs and values give action purpose and meaning (Anshel & Kang, 2007; Bandura, 2001). Multiple-goal strategies are significantly advantageous for taking action (i.e., increasing physical activity) when compared to methods that do not combine different types of goals (Filby et al.). Specifically, the development of process or mastery goals within a hierarchy of goals that also includes both performance and outcome goals is recommended (Filby et al.). These mastery goals also enhance individual interest, learning, and enjoyment (Shen et al.) further contributing to lifelong physical activity. The strength of this type of goal setting is the focus on what you need to do (the process) as opposed to what you want to happen (the outcome).

Rather than evaluating one's development in relation to others, a task and skill balance, with a focus on mastery, self-improvement, and effort, appears to be a positive influence on physical activity levels (Boyd et al., 2002). Within this process, it is important to match the demands of the task with individual skill level (Mandigo & Holt, 2006) as well as current stage of change (Cardinal, 1995). This level of challenge activates self-influences which govern motivation and action (Bandura, 2001). Easy and general goals are too vague to serve as guides and incentives for sustained behavior change. Alternatively, challenging, yet achievable, process goals activate a here and now focus needed to increase and maintain activity levels.

Most of our physical activity involves participating with others and a "commitment to a shared intention and coordination of interdependent plans of action" (Bandura, 2001, p. 7). Social motivators in the form of social support from family, friends, or educators (social-environmental influences) is well documented as an influence on lifelong physical activity and is theorized to play a major role in the actions people take (Anderson et al., 2006; Brownson et al., 2001; Cherubini, 2008; McNeill, 2006; Duncan & McAuley, 1993; Sallis & Owen, 1999). Social support can be direct and physical (e.g., exercising with a friend or family member) or informational and emotional (e.g., talking about being active and encouraging a friend to participate). Social support is enhanced by surroundings in which people are physically active, having friends who encourage physical activity, and having a friend with whom to be physically active with (Brownson et al.).

A focus on self-regulatory behavior and the process of actually doing the activity is of utmost importance. Utilizing process, performance, and outcome goals while considering the current skill level of the individual or group is also imperative to the process. Choosing challenging, yet achievable, goals is suggested as a good starting point.

Adherence

The model proposes adherence as a result of facilitating ecological factors (individual, social environmental, and physical environmental) interacting with each other (McNeill et al., 2006) influencing the elements of attitude, attention, and action. When the individual or group is developing (rather than staying stable or regressing) within each of the elements of attitude, attention, and action, adherence is likely to be enhanced (Cherubini, 2008). The level of generality vs. specificity of these influences depends on the individual or group attempting to increase or maintain activity. For example, an inactive woman may need to make specific changes in all elements of the model (i.e., increase confidence, pay attention to the task at hand, set process goals and create a support system). While a physically

active women interested in maintaining activity may need to make more specific changes in just one element (i.e., limiting attention distractions during scheduled activity).

Programming directed towards guiding lifelong physical activity should account for the influence of ecological and psychological factors on behavior change (Ball & Crawford, 2006; McNeill et al., 2006). Several guidelines for improving exercise adherence within the model include: making activity enjoyable, matching the intervention to the stage of change and skill level of the participant, promoting exercising with a group or friend, and giving individualized feedback. Research examining adherence has supported these guidelines including establishing a routine, setting reasonable goals, maximizing enjoyment, and integrating methods to increase an individual's self-efficacy (Palmer, Burwitz, Smith, & Collins, 1999).

Future Directions

The Model of Intentional Development has been designed for health and physical educators, exercise and nutrition specialists, coaches, physically active individuals, and physically inactive individuals to understand, guide, and facilitate adoption, maintenance, and adherence to physical activity. The model can be used by physical educators in the assessment and planning of physical activity interventions with global populations (school systems and community programs) as well as with specific populations (overweight children). In addition, an individual may use the model as a way to examine and understand the key areas that she/he needs to focus on in order to adopt and maintain physical activity. In this case, the model serves as a 'self-help' tool.

The proposed model attempts to account for all elements contributing to levels of physical activity. In the content area of adherence to physical activity, individuals or groups may 'report' similarities or differences on certain elements within the model. This information may then be used to help the development of others within this same content area. The key is that not one strategy or intervention to facilitate motivation, adherence, and development works for everyone. However, the power of each of the elements remains to be tested. It is possible that one element (i.e., an individual's inability to stay focused) may have a greater effect on physical activity adherence than another element (i.e., the same individual's self-determination). Regardless of how motivated the individual may be, constantly being distracted the individual may not adhere to a prescribed program. In addition, different ecological influences (i.e., gender interacting with neighborhood characteristics) may have a greater or less of an impact on physical activity and adherence. During future validation of the model, these counterhypotheses can be explored to account for all potential influences that may affect physical activity.

Practical Perspective

Zeigler (2006) recommends improving the quality and length of life through an emphasis on physical activity as a lifelong enterprise. Practically speaking, a lifetime of physical activity includes being motivated, knowing what to do and how to do it, taking action and sticking with it. Accounting for all ecological influences on an individual or group, a physically active lifestyle starts with an *attitude*. Positive thoughts, intentions, and our capacity to choose and have these choices determine actions are all elements of attitude that individuals can control and use to successfully manage their environment and become more physically active. Together with a positive attitude, it is necessary for professionals to help individuals and groups focus their *attention*. Staying focused in the present, limiting distractions, having clear goals and strategies, trusting the process, and understanding what effort is needed all contribute to a lifetime of healthy behavior. Ultimately, individuals and groups can only make things happen by the *actions* they take. So, what can be done right now, today, to get one step closer to the goal?

With positive attitudes, a focus on the task at hand and the initiation of action, consistency now becomes the vital element. Consistency or *adherence* is often determined by how much fun the activity is, levels of confidence, and support from friends, family, educators and significant others. In examining physical activity from this perspective, researchers and practitioners can further guide individuals and groups in initiating, increasing, and maintaining lifelong physical activity.

REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*, 179-211.

Alderman, B.L., Beighle, A., & Pangrazi, R.P. (2006). Enhancing motivation in physical education. *Journal of Physical Education, Recreation & Dance*, *77*(*2*), 41-45, 51.

Anderson, E.S., Wojcik, J.R., Winett, R.A., & Williams, D.M. (2006). Social-cognitive determinants of physical activity: The influence of social support, self-efficacy, outcome expectations, and self-regulation among participants in a church-based health promotion study. *Health Psychology*, *25(4),* 510-520.

Anshel, M.H., & Kang, M. (2007). An outcome-based action study on changes in fitness, blood lipids, and exercise adherence, using the disconnected values (intervention) model. *Behavioral Medicine*, *33*, 85-98.

Ball, K., & Crawford, D. (2006). An investigation of psychological, social and environmental correlates of obesity and weight gain in young women. *International Journal of Obesity*, *30*, 1240-1249.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman. Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Reviews of Psychology*, *52*, 1-26.

Berger, J.T. (1998). Culture and ethnicity in clinical care. *Archives of Internal Medicine*, *158*, 2085-2090.

Biddle, S.J.H. (1997). Cognitive theories of motivation and the physical self. In K.R. Fox (Ed), *The Physical Self* (pp.59-82). Champaign, IL: Human Kinetics.

Biddle, S.J.H., & Chatzisarantis, N. (1999). Motivation for a physical active lifestyle through physical education. In Y.Vanden Auweele, F. Bakker, S. Biddle, M. Durand, & R. Seiler (Eds.), *Psychology for Physical Educators* (pp.5-26). Champaign, IL: Human Kinetics.

Boyd, M.P., Weinmann, C., & Yin, Z. (2002). The relationship of physical self-perceptions and goal orientations to intrinsic motivation for exercise. *Journal of Sport Behavior*, *25*, 1-18.

Brownson, R.C., Baker, E.A., Houseman, R.A., Brennan, L.K., & Bacak, S.J. (2001). Environmental and policy determinants of physical activity in the United States. *American Journal of Public Health*, *91*, 1995-2003.

Cardinal, B.J. (1995). The stages of exercise scale and stages of exercise behavior in female adults. *Journal of Sports Medicine and Physical Fitness, 35*, 87-92.

Cherubini, J.M. (2008). Adult African American women's perspective on influences that affect their physical activity involvement. *ICHPER•SD Journal of Research*, *3*, 86-99.

Cohen, D.A., Scribner, R.A., & Farley, T.A. (2000). A structural model of health behavior: A pragmatic approach to explain and influence health behaviors at the population level. *Preventive Medicine*, *30*, 146-154.

Craig, C.L., Brownson, R.C., Cragg, S.E., & Dunn, A.L. (2002). Exploring the effect of the environment on physical activity: A study examining walking to work. *American Journal of Preventive Medicine*, *23*, 36-43.

De Bourdeaudhuij, I.D., & Sallis, J. (2002). Relative contribution of psychosocial variables to the explanation of physical activity in three

population-based adults samples. *Preventive Medicine*, *34*, 279-288.

Deci, E.L., & Ryan, R.M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

Deci, E.L., Vallerand, R.J., Pelletier, L.G., & Ryan, R.M. (1991). Motivation and education: The self-determination perspective. *Educational Psychologist*, *26*, 325-346.

Dubbert, P.M. (2002). Physical activity and exercise: Recent advances and current challenges. *Journal of Consulting and Clinical Psychology*, *70*, 526-536.

Duncan, T.E., & McAuley, E. (1993). Social support and efficacy cognitions in exercise adherence: A latent growth curve analysis. *Journal of Behavioral Medicine*, *16*, 199-218.

Filby, W., Maynard, I., & Graydon, J. (1999). The effect of multiple-goal strategies on performance outcomes in training and competition. *Journal of Applied Sport Psychology*, *11*, 230-246.

Gill, D.L. (1999). Gender issues: Making a difference in the real world of sport psychology. In G.G. Brannigan (Ed.), *The sport scientists: Research adventures* (pp. 133-147). New York: Addison Wesley Longman.

Glaros, N.M., & Janelle, C.M. (2001). Varying the mode of cardiovascular exercise to increase adherence. *Journal of Sport Behavior*, *24*, 42-62.

Grzywacz, J.G., & Marks, N.F. (2001). Social inequalities and exercise during adulthood: Toward an ecological perspective. *Journal of Health and Social Behavior*, *42*, 202-220.

Hagger, M.S., Chatzisarantis, N., & Biddle, S. (2002). A meta-analytic review of the theories of reasoned action and planned behavior in physical activity: Predictive validity and the contribution of additional variables. *Journal of Sport & Exercise Psychology*, *24*, 3-32.

Kilpatrick, M., Hebert, E., & Jacobsen, D. (2002). Physical activity motivation: A practitioner's guide to Self-Determination Theory. *Journal of Physical Education, Recreation, & Dance, 73(4),* 36-41.

King, A.C. (2001). Interventions to promote physical activity by older adults. *The Journals of Gerontology*, *56*, 36-46.

King, A.C., Stokols, D., Talen, E., Brassington, G.S., & Killingsworth, R. (2002). Theoretical approaches to the promotion of physical activity: Forging a transdisciplinary paradigm. *American Journal of Preventive Medicine*, *23*(2S), 15-25.

Koelen, M.A., & Lindstrom, B. (2005). Making healthy choices easy choices: The role of empowerment. *European Journal of Clinical Nutrition, 59(S*1), S10-S16.

Kowal, J., & Fortier, M.S. (2000). Testing relationships from the hierarchical model of intrinsic and extrinsic motivation using flow as a motivational consequence. *Research Quarterly for Exercise and Sport*, *71*, 171-181.

Kumanyika, S.K. (2002). Obesity treatment in minorities. In T.A. Wadden & A.J. Stunkard (Eds.), *Handbook of obesity treatment* (pp. 416-446). New York: The Guilford Press.

Malloy, D.C., & Rossow-Kimball, B. (2007). The philosopher-as-therapist: The noble coach and self-awareness. *Quest*, *59*, 311-322.

Mandigo, J.L., & Holt, N.L. (2006). Elementary students' accounts of optimal challenge in physical education. *The Physical Educator*, *63*(*4*), 170–183.

Martens, M.P., Mobley, M., & Zizzi, S.J. (2000). Multicultural training in applied sport psychology. *The Sport Psychologist*, *14*, 81-97.

Martin, S.B., Thompson, C.L., & McKnight, J. (1998). An integrative psychoeducational approach to sport psychology consulting. *International Journal of Sport Psychology*, *29*, 170-186.

McAuley, E., Jerome, G.J., Marquez, D.X., Elavsky, S., & Blissmer, B. (2003). Exercise self-efficacy in older adults: Social, affective, and behavioral influences. *Annals of Behavioral Medicine*, *25*, 1-7.

McElroy, M. (2002). *Resistance to exercise*. Champaign, IL: Human Kinetics.

McKenzie, T.L. (2007). The preparation of physical educators: A public health perspective. *Quest*, *59*, 346-357.

McNeill, L.H., Wyrwich, K.W., Brownson, R.C., Clark, E.M., & Kreuter, M.W. (2006). Individual, social environmental, and physical environmental influences on physical activity among black and white adults: A structural equation analysis. *Annals of Behavioral Medicine, 31*, 36-44.

Miller, P. (1983). *Theories of developmental psychology*. New York, NY: W.H Freeman.

Napolitano, M.A., & Marcus, B.H. (2000). Breaking barriers to increased physical activity. *The Physician and Sportsmedicine*, *28*(10), 88-93.

Nideffer, R. (1981). *The ethics and practice of applied sport psychology*. Ithaca, NY: Mouvement.

Nideffer, R. (1989). *Attention control training for sport.* Los Gatos, CA: Enhanced Performance Services.

Palmer, C.L., Burwitz, L., Smith, N.C., & Collins, D. (1999). Adherence to fitness training of elite netball players: A naturalistic inquiry. *The Sport Psychologist*, *13*, 313-333.

Powell, K.E., Bricker, S.K., & Blair, S.N. (2002). Treating inactivity. *American Journal of Preventive Medicine*, *23*(2S), 1-2.

Ransdell, L.B., Oakland, D., & Taylor, A. (2003). Increasing physical activity in girls and women: Lessons learned from the DAMET Project. *The Journal of Physical Education, Recreation, & Dance*, *74*, 37-44.

Rhodes, R.E., Jones, L.W., & Courneya, K.S. (2002). Extending the theory of planned behavior in the exercise domain: A comparison of social support and subjective norm. *Research Quarterly for Exercise and Sport*, *73*, 193-199.

Rhodes, R.E., & Plotnikoff, R.C. (2006). Understanding action control: Predicting physical activity intention—behavior profiles across 6 months in a Canadian sample. *Health Psychology*, *25*(*3*), 292-299.

Ryan, M.P. (2005). Physical activity levels in young adult Hispanics and Whites: Social cognitive theory determinants. *Psychology and Health*, *20*(*6*), 709-727.

Saelens, B.E., Sallis, J.F., Black, J.B., & Chen, D. (2003). Neighborhood-based differences in physical activity: An environment scale evaluation. *American Journal of Public Health*, *93*(9), 1552-1558.

Sallis J.F., Bauman A., & Pratt M. (1998). Environmental and policy interventions to promote physical activity. *American Journal Preventive Medicine*, *15*, 379-97.

Sallis, J.F., & Owen, N. (1999). *Physical activity and behavioral medicine*. Thousand Oaks, CA: Sage Publications.

Sheeran, P., & Orbell, S. (1999). Augmenting the theory of planned behavior: Roles for anticipated regret and descriptive norms. *Journal of Applied Social Psychology*, *29*, 2107-2142.

Shen, B., Chen, A., & Guan, J. (2007). Using achievement goals and interest to predict learning in physical education. *The Journal of Experimental Education*, *75*(*2*), 89-108.

Sherwood, N.E., & Jeffery, R.W. (2000). The behavioral determinants of exercise: Implications for physical activity interventions. *Annual Reviews in Nutrition*, *20*, 21-44**.**

Sniehotta, F.F., Scholz, U., Schwarzer, R. (2005). Bridging the intention-behaviour gap: Planning, self-efficacy, and action control in the adoption and maintenance of physical exercise. *Psychology and Health*, *20*(*2*), 143-160.

Solmon, M.A. (2006). Creating a motivational climate to foster engagement in physical education. *Journal of Physical Education, Recreation, & Dance*, *77*(*8*), 15-16, 22.

Standage, M., Duda, J.L., Ntoumanis, N. (2005). A test of self-determination theory in school physical education. *British Journal of Educational Psychology*, *75*, 411-433.

Theodorakis, Y. (1996). The influence of goals, commitment, self-efficacy and self-satisfaction on motor performance. *Journal of Applied Sport Psychology*, *8*, 171-182.

Vealey, R.S. (1988). Future directions in psychological skills training. *The Sport Psychologist*, *2*, 318-336.

Wankel, L.M. (1993). The importance of enjoyment to adherence and psychological benefits from physical activity. *International Journal of Sport Psychology*, *24*, 151-169.

Weiss, M.R., & Gill, D.L. (2005). What goes around comes around: Re-emerging themes in sport and exercise psychology. *Research Quarterly for Exercise and Sport*, (*S2*), S-71-87.

Zeigler, E.F. (2006). What the field of physical (activity) education should do in the immediate future. *Journal of ICHPER•SD, 17(2)*, 35-39.

Ziegelmann, J.P., & Lippke, S. (2007). Planning and strategy use in health behavior change: A life span view. *International Journal of Behavioral Medicine*, *14*, 30-39.

Dr. Jeffrey Cherubini teaches in the department of Physical Education & Human Performance at Manhattan College.