

# Aging and Physical Disability: On Integrating Group and Individual Counseling with the Promotion of Physical Activity

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REJESKI, W.J., and B.C. FOCHT. Aging and physical disability: On integrating group and individual counseling with the promotion of physical activity. *Exerc. Sport Sci. Rev.*, Vol. 30, No. 4, pp. 166–170, 2002. This review examines selected conceptual models on physical disability that have been commonly employed in the study of chronic disease and aging, and suggests including self-efficacy beliefs and physical symptoms into the main pathway of the disablement process. The resulting model of disability has direct implications for integrating group and individual counseling into exercise prescription. **Keywords:** exercise prescription, disability, functional limitations, physical activity, behavioral interventions

## INTRODUCTION

The prevalence of physical disability among older adults is alarming. Just 3 yrs ago, population-based estimates indicated that over 16 million adults aged  $\geq 65$  reported some type of physical disability. The major chronic health conditions associated with these disabilities included: arthritis and rheumatism (17.5%), back or spine problems (10.5%), and heart trouble/hardening of the arteries (7.8%). Because older adults represent the fastest growing segment of the U.S. population, physical disability is clearly one of the most important challenges faced by public health in the new millennium.

In the past 20 yrs, there has been growing recognition that physical activity is an important health behavior to the process of physical disablement. For example, numerous randomized clinical trials have shown that physical activity can improve the physical functioning of older adults who are burdened by chronic disease such as arthritis, cardiovascular disease, and chronic obstructive pulmonary disease. In fact, a reanalysis of data from the Longitudinal Study of Aging (participants aged  $\geq 70$ ) demonstrated that even low levels of physical activity

(walking at least 1 mile $\cdot$ wk $^{-1}$ ) were prospectively related to slowing the 2-yr progression of functional limitations and disability (8).

Despite these positive signs, Keysor and Jette (4) suggest that we may have oversold the benefits of physical activity/exercise in late life. In their review of research published between 1985 and 2000, these authors concluded that exercise programs have been shown to have consistent, favorable effects on older adults' strength, aerobic capacity, range of motion, and functional task performance (*i.e.*, walking, balance, and chair rise). However, results from studies that have employed measures of physical disability (*i.e.*, self-reported activities of daily living) are inconsistent and small to moderate in magnitude. Keysor and Jette (4) propose that improvement in physical disability may not follow directly from favorable changes in performance on functional tasks. One of their conclusions is that social cognitive variables and the physical environment may mediate the favorable effects that functional abilities have on disability. In short, physical activity alone may be insufficient in improving older adults' perceptions of their level of function as it relates to activities of daily living. We are in total agreement with Keysor and Jette's (4) position on this point (13). With this in mind, the goal of the current review is to provide a brief overview of one conceptual scheme of disability and to offer evidence from our laboratory that suggests physical activity programming for older adults should expand beyond traditional views of the exercise prescription.

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## REVISITING THE CONCEPTUALIZATION OF PHYSICAL DISABILITY

Saad Nagi (10) developed one of the most influential models of disability in gerontology and geriatric medicine. His conceptual scheme included four concepts that were characterized as occurring sequentially: active pathology, impairment, functional limitations, and disability (see Fig. 1). Although this model was adopted by the Institute of Medicine, there have been several important developments since this early work. First, Verbrugge and Jette (15) proposed that there are a number of internal and external factors, such as a sedentary or physically active lifestyle, that can speed up or slow down the development of disability. They coined the phrase *disablement process model* to describe the complete sociocultural scope of this problem (see Fig. 2). Second, Verbrugge and Jette (15) strongly reinforced Nagi's view that disability is the result of interactions between people and their social/physical environments. And third, there is now evidence that impairments in strength and aerobic capacity can lead to functional limitations *independent* of active pathology (9).

Although emotional abnormalities were considered a form of impairment by Nagi (10) and disability was inextricably tied to the social setting, there is little discussion of how psychological factors may influence the development of either functional impairments or physical disability. Whereas in Verbrugge and Jette's (15) *disablement process model*, psychological factors can either increase or decrease the rate at which disability progresses over time, these variables are external to the main pathway (see Fig. 2).

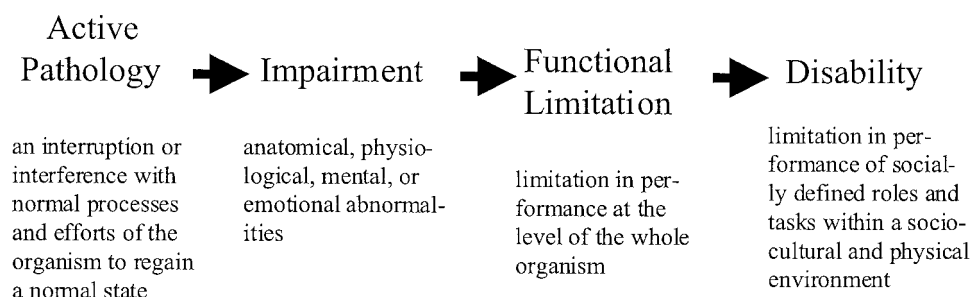
Our own research on physical activity and functional decline in older adults and contemporary theories of behavior (1) suggest that physical symptoms and self-efficacy beliefs should be conceptualized as a part of the main pathway to physical disability rather than external to it. To date, our primary focus has been on how these variables influence functional limitations. For example, in the Fitness and Arthritis in Seniors Trial (FAST), we found that knee pain and self-efficacy beliefs were independent predictors of performance for two different physical tasks: stair climbing and lifting/carrying a 10-lb object (11). Of particular interest in this study is the fact that the analyses controlled for cardiovascular fitness and knee strength—two impairments that appear to have direct effects on functional limitations. Our position is that knee pain may either have a direct effect on functional limitations or an indirect effect via self-efficacy (Fig. 3). In addition to the inclusion of pain and self-efficacy

in the model, impairments are viewed as having effects on functional limitations that are, in part, independent of active pathology (e.g., sarcopenia that results from a sedentary lifestyle). The effects of impairments on functional limitations may also be direct or indirect.

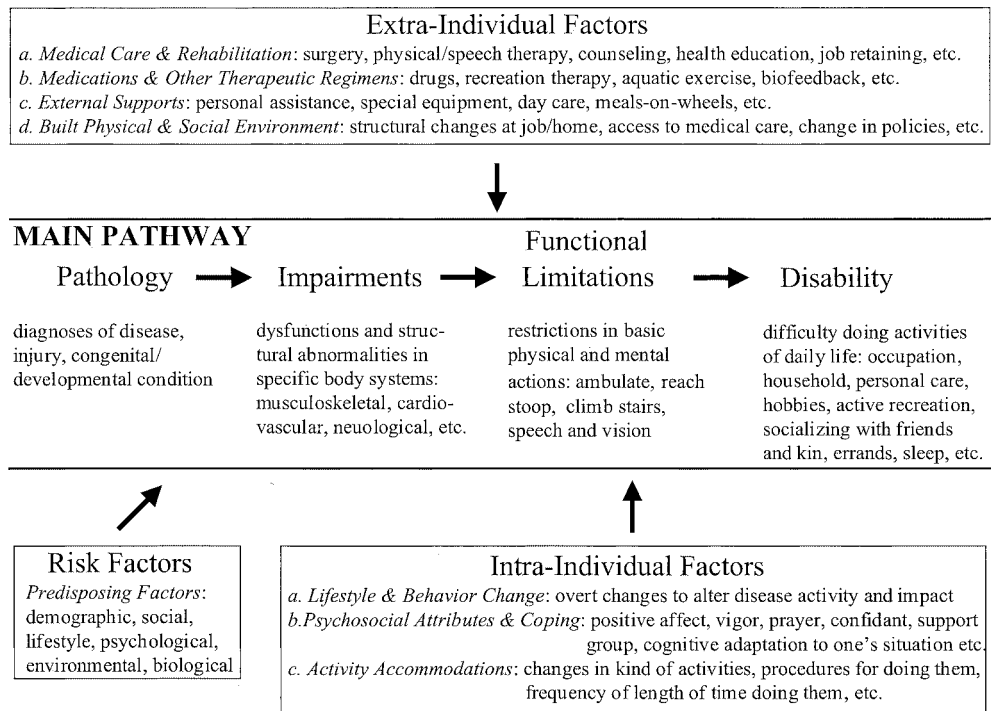
Some readers may wonder why additional social cognitive constructs such as the incentive value of activities, outcome expectations, or social processes are not currently included in the revised model. Consistent with Nagi (10), we view functional task performance as reflections of abilities that are evaluated independent of the social context of behavior. In our research to date, we have not found consistent support for other social cognitive constructs as determinants of functional abilities. Of course this does not mean that the incentive value of activities or some such construct should not be considered by other researchers. More importantly, when functional limitations of a physical nature are placed in a social context, they then become disabilities. Conceptually, one would expect social cognitive theory to be related to disability in a more complex manner than functional limitations that are often assessed in controlled environments at a single point in time.

## INTEGRATING GROUP/INDIVIDUAL COUNSELING WITH PHYSICAL ACTIVITY

Positioning physical symptoms and self-efficacy in the main pathway to physical disability has important implications for the promotion of physical activity among older adults. For example, when considering various health outcomes, current recommendations for an appropriate dose of physical activity have been conceived under the rubric of a *passive stimulus-response paradigm*. In contrast, participants' tolerance for a given dose of physical activity is shaped by social as well as cognitive and affective responses that are either directly experienced or perceived to be related to a given activity prescription. For example, many older adults who may be the targets of physical activity campaigns have one or more chronic medical conditions. Is it surprising that these individuals would have reservations about physical activity when, in the short term, they either anticipate or are directly experiencing greater fatigue or an increase in pain and stiffness with activity? In the case of physical disability, what guarantees that older adults will transfer the abilities that they may acquire through physical activity to their daily lives? As indicated by Keysor and Jette (4), social-cognitive variables and the physical environment may mediate the



**Figure 1.** Nagi's (1965) model of physical disability.



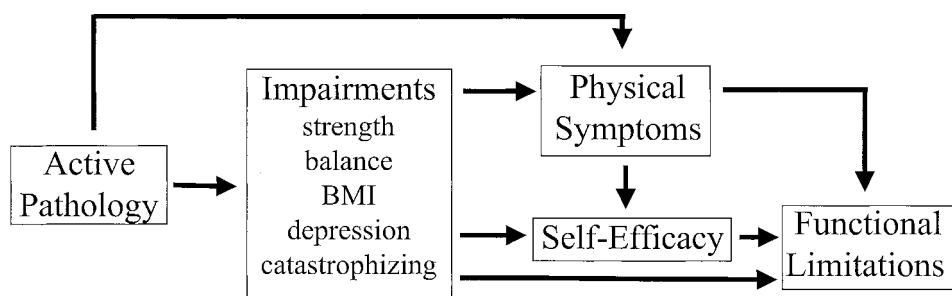
**Figure 2.** Verbrugge & Jette's (1994) disablement process model.

favorable effects that functional abilities have on disability. Indeed, it is well known that self-efficacy beliefs are behavior specific. To maximize the effect that physical activity interventions have on perceptions of physical disability, it is necessary to target these outcomes—together with the social cognitive variables and environments that are integral to such outcomes—as part of the behavior change process.

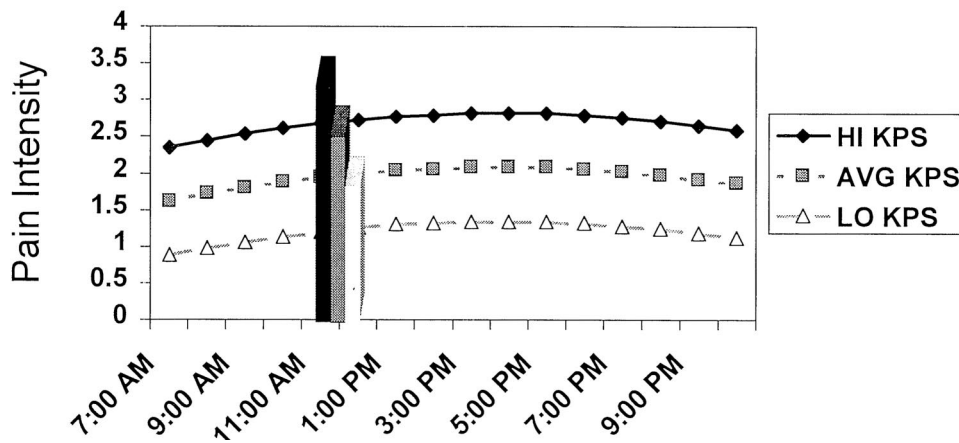
Over the past several years, a number of investigations focusing on the promotion of physical activity among older adults have relied on various cognitive and behavioral strategies as a means of enhancing adherence (5). Typically, these interventions involve self-regulatory skills training in areas such as goal setting, self-monitoring, and self-reinforcement of activity behavior. Data from our own laboratory suggest that there is good reason to expand this line of research. For example, as part of a recent randomized clinical trial on older adults with knee osteoarthritis, we examined the effects of exposure to acute bouts of physical activity on knee pain, employing an experience sampling methodology (3). As shown in Figure 4, irrespective of participants' baseline level of chronic knee pain intensity, pain was higher immediately after physical activity (see bars on graph) when compared with pain reported at a similar time on a nonexercise day (see

lines on graph). However, given that pain responses before and in the hours after exercise did not differ from pain reported at similar times on nonexercise days, the perturbation in pain symptoms was short lived. Interestingly, chronic exercise training in this population has been found to lower the overall intensity of reported knee pain. Thus, integrating interventions on the management of pain that may occur with acute bouts of physical activity is important in this population to encourage adherence to an active lifestyle.

In another publication (14), we demonstrated that self-efficacy beliefs related to the performance of various physical tasks are prospectively tied to functional decline in older adults who have chronic knee pain—a sizable proportion of the older adult population. Moreover, a significant interaction between strength and self-efficacy revealed that self-efficacy beliefs were most important among older adults challenged by muscular weakness in the lower extremities. Of even greater significance are data from the FAST trial demonstrating that changes in self-efficacy and knee pain act as potential mediators of improvements in functional performance observed after exercise training (12). Specifically, once changes in self-efficacy and knee pain were included in the statistical model, the effects of exercise therapy on func-



**Figure 3.** Revised model of main pathway to functional limitations.



**Figure 4.** Pain responses throughout the day (*lines*) and in response to acute exercise (*bars*) among individuals with high, average, or low levels of baseline knee pain intensity as measured by the Knee Pain Scale (KPS).

tional performance disappeared! Collectively, these data suggest that the effectiveness of physical activity interventions on physical disability could be enhanced through targeted group and individual counseling strategies.

In the past couple of years, we have been developing a group-mediated cognitive behavioral therapeutic intervention for use in promoting active lifestyles among older adults. The assumption underlying this approach is that the older adult community will be better served if physical activity programs are integrated into their daily lives rather than delivered as an independent center-based activity. The advantage from the perspective of functional limitations and physical disability is that activities of daily living become the focal point of the prescription process. That is, the environments in which older adults live and the social cognitive processes that determine behavior are as important to prescription as are the frequency, intensity, duration, and mode of activity. Results from a recent investigation testing the efficacy of this intervention demonstrated that the group-mediated counseling program led to a higher frequency of participation in moderate physical activity when contrasted with a traditional exercise program (2). In light of this promising finding, further study of this approach among older adults burdened with chronic disease is warranted.

## SUMMARY AND RECOMMENDATIONS

Positioning physical symptoms and self-efficacy in the main pathway of the disablement process and underscoring the social-environmental context of physical disability has important implications for the prescription of physical activity among older adults. First, it is inappropriate to follow a passive stimulus-response paradigm in attempting to understand older adults' willingness to initiate or maintain an active lifestyle. For example, there is little wisdom in communicating a single recommendation about the appropriate dose of physical activity for this population, *e.g.*, 30 min of moderate physical activity on most days of the week. Due to chronic disease and the compromised function that frequently exists among many older adults, flexibility in programming becomes the rule rather than an exception. We find that it is best to negotiate physical activity prescriptions, shaping the desired behavior over an extended period of

time. Indeed physical activity programs for older adults need to actively address a variety of beliefs, affective responses, and physical symptoms that may exist before initiating physical activity or evolve in the process of adopting and/or maintaining a physically active lifestyle.

Second, when integrated with physical activity, group and individual counseling can be directed specifically at activity or can address alternative, but related targets. As an example of activity counseling, a common strategy is to use self-regulatory skills training to facilitate adherence. In our group-mediated cognitive behavior intervention (2), a primary objective is to encourage older adults to integrate physical activity into their daily lives, to see themselves as people who are "active" and "independent", and to feel emotionally charged about this transformation. However, in particular populations or for specific individuals in broader groups, there is often a need to address physical symptoms that accompany physical activity, *e.g.*, how to cope with pain, shortness of breath, or fatigue.

Third, if we expect the fitness benefits of physical activity programs to carry over to activities of daily living—to offset the transition to disability—it is important to develop programs similar to our current work with older adults who have or are at risk for chronic disease. Participants need to engage in activity challenges that demonstrate to them their capacities (self-efficacy) for a variety of social-role-related behaviors. This can be accomplished as a part of a formal physical activity program and can be augmented with homework assignments (2).

There are many recommendations for research in this important area and it is useful to frame research questions around three levels of analysis: downstream, midstream, and upstream (7). Downstream (individual interventions) studies are needed to clarify what the key mediating variables are in a) older adults' motivation to initiate/maintain physically active lifestyles, and b) empowering older adults' perceptions of physical function in day-to-day living. As more is learned about these intervening variables, researchers can begin to conduct very specific studies on how to effect change in these areas. To date, there is very little research on innovative methods to enhance self-efficacy or the value of physical functioning in older adults; yet, the importance of these two constructs in behavior change is undeniable (6). In addition, more research is needed on interventions that could be



integrated with physical activity to help older adults cope with physical symptoms such as pain, fatigue, or dyspnea.

Midstream studies are needed to identify and intervene with organizational channels such as churches, senior centers, and assisted living facilities. One of the most potentially influential midstream targets is geriatric medicine, a medium that offers the opportunity to reach entire populations. In essence, primary care for older adults could implement screening for functional decline and provide interventions when needed. The national success of cardiac rehabilitation provides evidence that such programming could substantially affect functional decline and health outcomes that are linked to the disablement process.

Finally, upstream studies are needed to address public policies that concern physical activity and functioning in older adults. There is no doubt that major determinants of physical activity and disability include the physical environment and the social fabric of our society. What is perceived as “possible” is shaped, in part, by policies that define accepted rules of conduct for industry, business, and local communities. What is defined as “desirable” is shaped, in part, by mass media messaging. Moreover, national policies concerning health contribute in a major way to the practice of medicine, to the advice that is passed from geriatrician to patient. Ultimately, our success in making physical activity an effective intervention for physical disability will require linking upstream, midstream, and downstream interventions that are anchored in the complex determinants of this health threat. Although this is a formidable challenge, the prevalence of physical disability in an aging America is too widespread to be ignored.

### Acknowledgments

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