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JRRD Guest Editorial

Complexities of fall prevention

INTRODUCTION

Falls are a major cause of morbidity and mortality among older adults and are an independent predictor variable leading to nursing home admission [1]. Each year, 20 percent of people older than 65 sustain serious falls [2]. Accidental death among the elderly is most often caused by falls [3]. The effects of falls, however, are not limited to physical injury; psychological and social sequelae have a long-lasting impact on function [4]. Medical, pharmacological, and functional factors, independently or jointly, increase the likelihood of falls [5–6]. Visual impairment, vestibular dysfunction, antidepressants, sedatives, gait abnormalities, and impaired mental status have all been implicated as increasing the risk for falls. The complex nature of fall causation and prevention prompts research focusing on risk factors, interventions, and the biomechanics of falls in general and within specific populations known to be in greater danger of incurring falls. Consequently, we dedicate this special issue of *JRRD* to older people who struggle with the likelihood of falling. We aim to further our understanding of interventions that modify specific aspects of this important clinical problem. This issue highlights the complexities of fall prevention through evaluation, intervention, and biomechanical analysis.

EVALUATION OF FALL RISK FACTORS

The scientific literature has abundant assessment instruments designed to evaluate risk factors for falls in various populations. The multitude of assessments, however, can lead to confusion when a clinician needs to select an appropriate tool. Gates et al. (p. 1105) review 29 tools, seeking to identify which are the most accurate for predicting falls in community-dwelling older adults. Ray and Wolf (p. 1117) focus on a specific population, those with visual impairment, as the basis for designing exercise interventions. Finally in this first section, Kloseck et al. (p. 1125) take a novel approach, looking at risk factors for falling by using personality theory to clarify why some people increase their fall risk, while others are able to reduce their risk. All these investigators acknowledge the need for further research in evaluating fall risk.

INTERVENTIONS TO PREVENT FALLS

The gamut of interventions proposed to prevent falls is very broad. Many clinicians advocate exercise, balance training, medical or pharmacological

assessment, or some combination of these approaches. Some research tests a single intervention, while other studies assess the efficacy of a multipronged program. Costello and Edelstein (p. 1135) summarize essential components of both single and multiple interventions to help clinicians select the most efficacious fall prevention strategy. Rose (p. 1153) explores various types of exercise, recognizing that fall risk plays an important role in many exercise programs. In a more specific interventional approach, Menant et al. (p. 1167) suggest particular footwear that has been demonstrated to minimize falls. In response to technology within the home, Horton (p. 1183) uses qualitative analysis to investigate the practicality of telemonitoring devices designed to make the environment safer for older adults.

FALLS IN INDIVIDUALS WITH STROKE

Certain populations with particular diagnoses have increased risk for falls; those with stroke are especially vulnerable. Interventions that target balance and gait deficits are very necessary. Weerdesteyn et al. (p. 1195) describe evidence supporting task-specific exercise programs that target balance and gait and technological advances in the design of assistive devices to reduce falls in adults with cerebrovascular accidents. Oliveira et al. (p. 1215) explore tools to evaluate balance in stroke patients as a means of guiding strategies that will lead to fewer falls. Overall, these studies emphasize the need for tailored rehabilitation programs, especially for those patients with stroke.

BIOMECHANICS OF FALLS

While much work focuses on the clinical aspects of fall reduction, biomechanical analysis addresses fall prevention from another perspective. Schulz et al. (p. 1227) use simulations from a crash mannequin to explore the initial conditions that cause injury when a person falls out of bed. Mathiyakom and McNitt-Gray (p. 1237) review the role of the swing and stance legs in regulating angular impulse during fall recovery; these investigators contrast the balance recovery strategies used by young adults, older adult nonfallers, and older adult fallers. These articles expand our understanding of the mechanics of falling and the ways in which people attempt to prevent falling.

Our goal in presenting this wide-ranging examination of fall risks, interventions, and biomechanical analyses is to enable the readers to develop greater insight into the management of this serious health problem so that fewer older adults suffer the physical, emotional, and functional devastation associated with falls.

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