Deterioration of Occlusal Status Affects Physical Fitness in the Elderly

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Abstract: Physical fitness including lower extremity muscle strength and balance function is important for elderly people. Reductions in lower extremity muscle strength or balance function are related to an increased risk of falls. Such falls often lead to fractures and a bedridden state. Thus, maintenance of physical fitness among the elderly helps to preserve their disability-free life expectancy and quality of life.

Physical fitness and oral status are related. Deterioration of oral status is associated with loss of physical fitness such as muscle strength, balance function and agility in the elderly. We conducted a cross-sectional and longitudinal study to examine the influence of oral status on physical fitness decline in an elderly population, focusing our attention on the occlusal status. We clarified that the occlusal status influenced the age-related deteriorations of leg extensor power and balance function. Maintenance of occlusal condition may contribute preventing physical fitness decline in the elderly, thereby enhancing their activities of daily living and quality of life.

Key words: Dental occlusion, Physical fitness, Balance function, Muscle strength, Elderly

Introduction

Developments in medicine and technology, especially in industrial countries, have to increased life expectancies and improved life standards and hence to a higher proportion of elderly people in society. In the ageing society, activities of daily living (ADLs) are regarded as an important parameter of elderly people's health. ADLs are fundamental activities for an individual to lead their daily life in indoor or outdoor environments. Maintaining physical fitness is vitally important in maintaining ADLs.

Physical fitness is a requirement for many ADLs such as walking, rising from a chair or climbing stairs. Physical fitness for ADLs includes various elements such as muscle strength (especially of the lower extremities), balance function, agility, endurance and flexibility, and reductions in these capacities inevitably affect ADLs-related performance. Lower extremity strength is the prerequisite neuromuscular capacity underlying both balance and gait. Abnormalities of balance and gait along with disabilities of the lower extremities are predisposing factors for falls. Static balance is regarded as a factor which distinguishes elderly non-fallers from fallers. Falls are the most common and serious problem facing elderly persons, because of their close association with mortality, reduced function, and early nursing home admission. A meta-analysis of 16 studies showed that muscle weakness, gait deficit and balance deficit were associated with a comparatively high risk for falls. These findings suggest that physical fitness is an important factor in preventing future falls in the elderly. Impairments caused by declining physical fitness can reduce elderly people's quality of life (QOL) (Fig. 1).

The importance of oral health and its relation with general health has recently become recognized. Deterioration of oral status with increasing age is related not only to oral functions such as food intake but also to systemic, mental and physical functions. Several reports have indicated that chewing ability in the elderly is related to ADLs and general health...