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Effects of a health improvement programme on quality of life in elderly people after falls



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ABSTRACT

Introduction: Falls of elderly people illustrate a telling health problem related to both physical injury and its psychological effects. They also bring about significant medical and economic consequences.

Aim: The aim of this study is to assess the predisposition to falling as well as the subjective evaluation of quality of life in the elderly after implementation of the fall prevention programme.

Material and methods: The observational study and statistical methods encompassed people aged 65 or older who reported falls during ordinary daily activity. A group of selected patients took part in a three-stage (three-month) rehabilitation programme designed by the authors. The research tools consisted in modified scales: the Katz ADL scale, the Lawton IADL scale, the Tinetti test for balance and gait evaluation, and the EuroQol 5D questionnaire for subjective evaluation of quality of life. The study included test performer before implementing the programme as well as after its completion.

Results and discussion: Slipping at home was the most frequent cause of falling, as it constituted almost 50% of the analyzed cases. During the programme no falls were observed. Patients who completed the programme showed improvements in all the analyzed aspects, especially in activities of daily living and the level of pain.

Conclusions: Both considerable functional and physical improvement as well as lower levels of pain was observed in the participants of the programme. A systematically conducted health improvement exercise programme minimizes susceptibility to falls and has a beneficial effect on improvement of quality of life in elderly people.

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1. Introduction

The underlying causes of falls in the group of elderly people concern numerous overlapping internal and external factors. The internal factors include age, sex, living alone, frequent medicine use, multiple co-morbidities, motor and gait impairment, nutritional deficiencies, dementia, vision deficits, and many others.¹⁻⁴ As a result of these circumstances, one deals with lowered attention, orthostatic disorder (which is a common symptom of impaired blood pressure regulation especially after assuming the upright position, which is related to the aging process), diseases (hypertension, diabetes, influence of medication, etc.) and symptoms of balance disorders, which in consequence lead to falls. The external factors consist in environmental hazards (poor lighting, slippery floors, uneven surfaces, living alone, etc.), inappropriate footwear or clothing, inappropriate walking aids or assistive devices, architectural barriers.⁵⁻⁷ Also being careless while performing daily life activities and walking in disorderly space or on stairs may lead to falls.^{1,8} A fall results in an injury which impairs mobility and independence, leading at the same time to disability, which may cause a serious decrease in quality of life of an elderly patient. A long-term disability exerts dramatic effect on the life of family members and caregivers of elderly people.^{1,9} There appears also a secondary problem limiting the activity of elderly people after falling – the so called 'post-fall syndrome,' which is characterized by a fear of falling again, not undertaking some activities, considerably limited motor activity with secondary impairment of physical ability, and subsequent lowering of quality of life.⁹⁻¹¹

This process determines physical functionality, a feature which is individual to each person and which is defined as a process of adapting to the environment. The concept behind the fall prevention relies on minimizing susceptibility to falling: improving the indicators of physical ability, minimizing the post-fall syndrome, and in turn increasing the subjective evaluation of quality of life.

2. Aim

The aim of this study is to assess susceptibility to falling as well as the subjective quality of life after implementation of the fall prevention programme.

3. Material and methods

The observational study and statistical methods encompassed people aged 65 and more whose health was being improved in a day care unit of Rehabilitation Department. The research was conducted over the period of 3 years. The 'fall prevention' programme, which in each case lasted for 3 months, was conducted only for those patients who presented in order to improve their health after an injury caused by a fall (during the day, while performing activities of daily living). The research included 87 patients. Conditions to be met in order to qualify a patient for the programme comprised: signing an agreement to participate in a fitness experiment, falls confirmed in an

interview, walking alone (or with an assistive device such as a walking stick or a crutch), a general condition enabling the patient to participate in the programme. The disqualifying criteria comprised diagnosed Alzheimer's disease, Parkinson's disease, and post-stroke states. The basic research tool consisted in the modified scales: Katz – Activities of Daily Living (ADL), Lawton – Instrumental Activities of Daily Living (IADL), Tinetti test for balance and gait evaluation, and the EuroQol 5D questionnaire for subjective evaluation of quality of life.

Having interviewed the subjects, the researchers established the most common circumstances in which falls occurred. These were decreased vigilance, lack of support, absentmindedness, hurry and co-occurring diseases causing orthostatic disorders.

The functional assessment was performed on the basis of a modified ADL scale, which evaluates the basic activities of daily living, and a modified IADL scale, which evaluates more complex activities of daily living.^{12,13} Application of the ADL scale allowed the authors to assess six basic activities of daily living. These were: (1) taking a shower/bath, (2) dressing or undressing, (3) using the toilet, (4) moving from the bed to the armchair, (5) eating and (6) sphincter control. Every activity performed without assistance was awarded one point. The lower the independence, the lower the score the patient received. The Lawton IADL scale made it possible to assess eight functional parameters. These were abilities to: (1) use a telephone, (2) do shopping, (3) prepare meals, (4) do housework, (5) do the washing, (6) use transport, (7) take medications, and (8) manage money. The higher the score, the better the functional ability of the patient. Pursuing the objective of the study, the physical condition of the subjects was assessed with the use of a modified Tinetti test.¹⁴ In the part devoted to balance, the following activities were assessed: (1) arising from a chair with eyes open, (2) sitting down on a chair, (3) shifting to the balanced sitting position: upper limbs to the side, lower limbs above the ground, (4) standing with eyes closed, (5) standing with a stick on one foot, (6) sitting down on a ball (balance, unbalance), (7) arising from a chair + walking around it + sitting down again, arising from a chair + turning around + sitting down again. In the part concerned with gait, the assessment concerned the ability to walk in a balanced way (along a route and a line), to walk sideways (step), to walk sideways (grapevine), to walk around a circle 1.5 m in diameter, to walk and step over an obstacle, to walk and go past an obstacle, to walk and climb an obstacle, to walk across the street. The assessment also included the ability to walk in all directions, simultaneously overcoming obstacles, moving objects of various sizes, lifting objects and reaching for objects overhead. Obtaining fewer than the maximum of 82 points indicated a risk of falling. In order to assess the subjectively evaluated quality of life, a modified EuroQol 5D test was applied. It checked self-assessment with reference to five fields that focused on: mobility, self-care, leading a normal daily life activity, presence and degree of pain, mood disorders. Exercises were selected individually for each patient, with special attention paid to their difficulties while performing them or excluding those impossible to perform. The general structure of the programme is presented in [Table 1](#). It included exercise in front of a mirror (individual demonstration):

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