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Original article

IMPROVING THE QUALITY OF LIFE BY ADAPTING THE THERAPY TO THE PARTICULARITIES AND NEEDS OF THE ELDERLY PATIENT

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Abstract*

Aim: This study aims to evaluate the effectiveness of an imposed motor activity program based on specific daily activities of elderly people with post-traumatic sequelae, trying to improve their functional parameters and their quality of life.

Methods: The research was conducted on an experimental group of 5 subjects, whose daily activity was assessed, modified, and monitored for 3 months, in parallel with a witness group of also 5 subjects, whose activity was assessed and monitored without any intervention. Both in the case of the experimental and witness group, functional tests were applied to assess the disorders of each subject. The results were statistically analyzed for an objective interpretation of the data.

Results: The results recorded after the application of periodical assessment tests indicate an improvement of the observed functional parameters and, implicitly, an improvement in the quality of life of the subjects.

Conclusions: At the end of this study its initial hypothesis was confirmed, stating that the motor physical activity performed by the elderly persons and their rational involvement in it lead to the improvement of the functional parameters, being able to prevent a series of acute and chronic disorders, as well as various degenerative disorders, and finally, to slow down physical aging, thus improving the quality of life.

Keywords: motor activity, elderly person, independence

Introduction

Aging is a continuous gradual process that starts at birth and continues throughout all life's stages. As people get older, biological aging sets in, meaning modifications in all organs, the deterioration of a system causing the deterioration of another and favoring the body's vulnerability.

Unlike aging (a dynamic process, independent of the chronological age), senescence comprises the last period of one's life. Within it, there is the senility, which is a final stage, with severe biological deteriorations. Senescence is not a disease, but a physiological process, even if aging is associated, usually although not always, with sickness. The various physiological modifications seem to be directly related to aging, but many elderly persons keep their functional abilities, regardless of their apparent organic degeneracy. Currently, the old age threshold is considered to be between 60 and 65.

The World Health Organization defines the state of health as "a complete state of well-being: physically, mentally and socially". In elderly people, the physical abilities regress, an intellectual deterioration also taking place, and a social disengagement with marginalization. However, old age must not be regarded as a disease. Besides, the

standard for what is "normal" is the "normal" adult male, which does not correspond to reality. This situation takes into account the fact that medical education is focused generally on the treatment of adult people, even though the reality makes the physician confront the problems of elderly people.

Just like young people, the elderly need to be physically active in order to improve their quality of life. The response of the elderly person's body to exercise translates to an increase in the cardio-respiratory endurance, gait, muscle strength and endurance, and an increase in flexibility (Allen, 2004).

It was proven that exercise determines the growth of bone density and decreases the risk of osteoporosis; it leads to maintaining an adequate activity, it contributes to keeping one's independence; it maintains an optimal functionality of the metabolism; it also decreases the risk of injury caused by falling, by improving one's mobility, strength and balance; exercise can be a way to socialize, improving also one's state of mind, thus influencing the health of the entire body.

While exercising represents an important part of physical rehabilitation, modifications in one's lifestyle can determine more important changes in the

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physical and mental well-being than the physical exercises included in an imposed rehabilitation program. These lifestyle modifications must be perceived as a new, healthier way of life that can ease the previous suffering.

The cardiac rehabilitation program considerably improves the quality of life by improving one's general health, weight loss, if necessary; it can ease depression, stress and anxiety, and increase one's self-respect.

A study conducted by Hagberg et al. in 1989 has proven that "elderly people (men and women aged 70-79) have responded positively to cardio-respiratory training. Other studies have shown an important improvement of cardiopulmonary endurance in elderly people that can be gained through exercises at a lower intensity than the one recommended for young people. This is significant because low intensity exercises decrease the risk of musculoskeletal injury in elderly people" (Hagberg, 1989).

With age, postural balance tends to modify itself toward instability (Alexander, 1994). The elderly people who fall have a higher gait deficit than the ones who do not fall, and the people with multiple falls show a greater instability than the ones with isolated falls (Tideksaar, 1997). Correlations between age and stability and balance disorders were attributed to a diminished sight, vestibular and proprioceptive system. The people with declining sight (Felson et al., 1989) or declining proprioception (Lord, Clark, and Webster, 1991) present an increase in instability. The recovery response of the vestibular system also diminishes with age (Alexander, 1994), which can lead to one's inability to maintain one's balance during movement (Bonder, Vanina, 2008).

Also, a decrease in the strength of the proximal muscles, hip extensor and flexor muscles causes a decrease in speed, length and height of the gait. The gait of elderly people who often fall down is even more compromised than the one of the people who do not fall (Alexander, 1996), resulting a more difficult gait, shorter and slower, with unsure steps (Bonder, Vanina., 2008).

The elderly is a person whose physical, affective, intellectual, spiritual or social resources are momentarily or permanently diminished, that is why the aging process must be controlled by promoting health, preserving the energy and quality of life.

The purpose of this research was to prove the effectiveness of a therapeutic program, personalized for each subject, according to their physical and clinical particularities.

The objectives of this research were to:

- establish the characteristics of old age and its needs.
- identify the patient selection criteria and select the patients for the study.
- establish a daily activity therapeutic program to improve the functional parameters and, implicitly, of the subjects' quality of life.
- evaluate the effectiveness of the therapy method that was adapted to improve the quality of life of the elderly person.

Methods

Research Hypotheses

- if one uses as therapeutic means a program consisting of daily activities based on exercising, one will obtain at least the same results as in the case of applying a therapeutic program based on specific physical therapy means and methods.
- the application of the therapeutic program at a time chosen by the patients as part of their daily routine and without direct physical therapy supervision will determine a greater collaboration and interest from the patients. (it is well known that it is hard to change an elderly person's program and habits, that is why the therapeutic program was chosen to be based on the elderly person's daily activities, the authors intervening only in regards to: repetitions, performance time, etc.).
- the personalization of the therapeutic program according to each patient's physical and clinical particularities and daily activities will lead to an improvement of their quality of life.

Patient selection

The study was conducted on 10 patients selected from a group frequenting a club for elderly people (Club 60+). The criteria for selecting the patients were:

- age - between 65 and 80 years old;
- gender - 5 witness subjects and 5 experimental subjects
- collaboration level: MMSE (Mini Mental State Evaluation)
- independence level: The national elderly people need assessment grid, the FIM (Functional Independence Measure) scale, the Functional motor capacity assessment scale for elderly people.
- pathology (patients with musculoskeletal system disorders - post-traumatic and neurological sequelae)



- distance between the club and their home (patients with their home at a maximum distance of 1 km from the club, in order to be easier to be monitored)

The therapeutic approach

The therapeutic program for the elderly is preceded, firstly, by a general evaluation of their health. Before recommending and starting the physical therapy program, the patients are evaluated to classify their risk (low, moderate, or high). The evaluation consisted in a clinical assessment (cardiological and neurological consultation), a biochemical assessment that the patient was recommended to undertake, an assessment of their effort capacity (stationary bicycle, treadmill testing), functional tests that were applied and interpreted.

Based on the evaluation results and on the daily activities of each patient, therapeutic programs were proposed and applied taking into consideration their daily activities, which were adapted and modified to fulfill a therapeutic role and to help accomplish the set objectives - to improve the patients' physiological parameters and quality of life.

The study was conducted on 10 patients, on whom the modified daily activity program was applied and who were monitored for 3 months.

The daily activity program was analyzed:

- morning walk to the market at 9.00 - 300m;
- at 10.30, to the club - 700m;

- at 12.30 from the club back home for lunch - again 700m;
 - in the afternoon - rest (sleep, TV) - 4 hours;
 - in the evening - one hour on the bench in front of the buildings where they live;
 - 18.30 - dinner; rest until morning.
- This program was modified as follows:
- morning walk to the market at 8.00 - 300m;
 - at 09.30, to the club - 700m;
 - at 11.00 - walking 300m;
 - at 11.30 from the club back home for lunch - again 700m;
 - in the afternoon - rest (sleep, TV) - 2 hours;
 - 15.00 - time for a walk - 800m;
 - in the evening - one hour on the bench in front of the buildings where they live;
 - -18.30 - dinner; rest until morning.

Results

After the initial and final assessment of the subjects' activities of daily living, an improvement of the observed parameters has been observed. In order to observe the modifications in the independence level during the daily activities, the subjects were assessed initially and finally, based on the following tests: *The national elderly people need assessment grid (NEPNAG), the FIM (Functional Independence Measure) scale, the Functional motor capacity assessment scale for elderly people (FMCASEP).*

Table 1 Values recorded during the independence tests, initial and final assessment – experimental group

	NEPNAG		FIM		FMCASEP	
	Initial	Final	Initial	Final	Initial	Final
P1	20	10	87	113	13	18
P2	23	16	73	101	14	17
P3	19	11	92	115	13	16
P4	23	11	85	115	15	17
P5	17	10	93	117	15	18

Table 2 Values recorded during the independence tests, initial and final assessment – witness group

	NEPNAG		FIM		FMCASEP	
	Initial	Final	Initial	Final	Initial	Final
P1	21	21	97	101	12	13
P2	18	19	73	73	14	14
P3	19	18	85	93	13	18
P4	17	17	83	85	13	13
P5	17	16	73	83	12	12

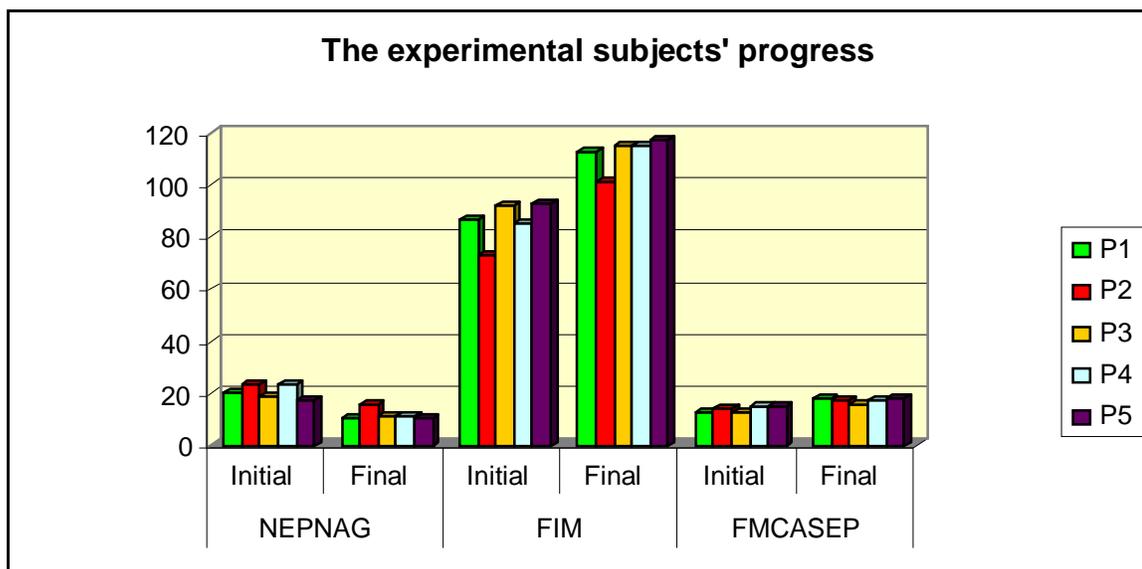


Figure 1 Graphical representation of the experimental subjects' progress

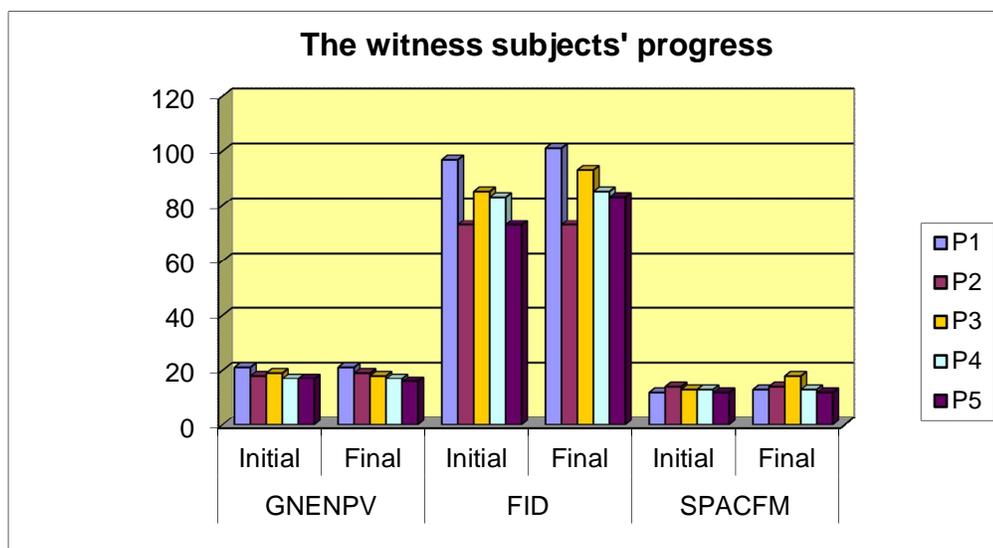


Figure 2 Graphical representation of the witness subjects' progress

The three applied tests assessed the independence level of the patients before and after the application of the suggested daily activity program.

The analysis of the charts shows an increase in the autonomy of the experimental group subjects in performing the primary daily life activities (feeding, hygiene, use of toilet), as well as improvements in their coordination, balance, and gait.

The daily activity program also improved the joint mobility in their upper and lower limb and trunk, their muscle strength, their posture, their respiratory function.

Thus, according to the recorded values, if initially the experimental subjects presented a high level of dependence in performing certain daily activities, or just part of them, after the application of this program, thanks to the improvement of their joint mobility, muscle strength, balance and gait, the subjects recorded better values at the assessment tests, which indicates a decrease in their dependence. By improving their functional parameters, they have actually improved the quality of their lives, in general.



In regards to the witness group subjects, at the end of the assessments, there was no modification in the observed parameters.

Discussions

Over the last years, this age category, with all its specific modifications constituted the subject of many studies, due to the various fields of research that can be interested in the elderly people.

Studies regarding the improvement of the quality of life through exercise were numerous, since the second half of the 16th century (1569), when the physician Hieronymus Mercurialis published in Venice the book "Ars gymnastica", in which he divided gymnastics into three branches: military, medical, and athletic, and he returns to the word "gymnastica", using it instead of "exercitium" or "exercitic"; Don Francesco Amoros (1770-1848) creates in France, in the Modern Age, a system of gymnastics divided into three categories: civilian gymnastics, military gymnastics, and medical gymnastics. These comprised common drills and specific drills; Peer Harrik Ling, the father of Swedish gymnastics, and who was convinced of the curative properties of physical exercises, which helped cure a paralyzed arm, has founded in 1814 the Central Gymnastics Institute of Stockholm.

It is well known that one of the particularities of an elderly person, perhaps even the most important one, is the formation of a routine, of daily schedules that are hard to modify. The idea that started this study was to achieve the set objectives through a progressive, non-aggressive intervention within the subjects' daily activity program. An imposed exercise program, in an unfamiliar space, limits the level of collaboration, the motivation, and implicitly the results.

At the end of the study, the hypotheses have been confirmed, meaning that the personalization of the therapeutic program according to each patient's physical and clinical particularities and daily activities has led to an improvement of their quality of life.

It can be said that this type of intervention plan resulted in not only the improvement of the physical parameters but also of the psycho-social ones, avoiding, through the applied program, the long periods of loneliness that are specific to elderly people.

The effectiveness of the physical therapy program, as well as the improvement of the observed parameters has depended on how much the patients were involved in its development, but also on their skills at the moment of its start.

At the end of the study, the patients were recommended to continue the exercise program that was applied, in order to maintain the results they had on their quality of life. It must be emphasized that although they recorded good results during the rehabilitation period, these patients are still exposed to relapses, due to a decrease in their interest toward exercise.

Conclusions

At the end of this research, after applying the proposed rehabilitation program, after centralizing and analyzing the results, the following conclusions can be stated:

- the use as therapeutic means a program consisting of daily activities based on exercising, resulted in at least the same results as in the case of applying a therapeutic program based on specific physical therapy means and methods,
- the application of the therapeutic program at a time chosen by the patients as part of their daily routine and without direct physical therapy supervision has contributed to better results, because it has determined a greater collaboration and interest from the patients,
- the personalization of the therapeutic program according to each patient's physical and clinical particularities and daily activities has led to an improvement of their quality of life.

The assessment of the activities of daily living was important because it contributed to the formulation of the functional diagnosis, showing the incapacity level; it led toward the creation of a rehabilitation program for the patients' functional deficits, and helped emphasize the level of influence that exercise has in improving the performance of daily activities, thus in improving the quality of life.

It can also be concluded that the results recorded by the subjects were due to the freedom of their activity program, which has led to a better collaboration with the therapists. A patient who trusts the person who is trying to help him or her recuperate, who is not forced to undergo a certain exercise program, will be more optimistic, more cooperative, and will have better results. Currently, most therapists are focused generally on treating the deficit and not on preventing the causes, the situations that could maintain it or make it worse. It is a problem that needs more attention and an intervention with real solutions in order to avoid these situations and, implicitly, to reduce the sedentary lifestyle with its functional limitations.



Another major problem today is the intentional or unintentional neglect of the people that need our attention and care, both because of their various pathologies, and because of their age - elderly people.

Aknowledgements

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