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THE ROLE PLAYED BY PROPHYLACTIC PHYSIOTHERAPY IN ADULTS

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Abstract: *Physical activity is based on fundamental social, educational, and cultural values. This presupposes integration, involvement in life and society, that is why the practice of sports can serve as an element to promote active citizenship, to stimulate the young people to take part in the life of society.*
Purpose. This paper aimed to emphasize the role played by prophylactic physiotherapy in adults.
Methods. The research methods were established according to the objectives of the research, as follows: the study of the professional literature method, the testing method, the statistical-mathematical method and the graphical representation method.
Results. Physical therapy can be applied with remarkable results in all forms of activity.
Conclusions. Through prophylactic physiotherapy programs one can determine an increase in the functional capacity of the human body organs and systems, especially the ones directly involved in the effort. It is important to constantly evaluate the myo-arthro-kinetic system to observe the possible deficits in joint mobility and muscle strength, especially at an old age, aiming to prevent or fight them;

Key words: *prophylactic physiotherapy, adult, physical activity.*

1. Introduction

The concept of health involves not only a psychological and physical wellbeing of the individual and community, but also a certain ability for physical effort, and regaining your strength after effort, of resistance against the unfavorable environmental factors, against diseases, and a certain longevity, in concordance with the socio-economic and geographical conditions in which a person performs his/her activity.

There is a universally accepted truth that in order to maintain and optimize your health, you must exercise. The psycho-somatic integrity and functioning needs a rational and continuous that must go beyond the average individual possibilities [4].

The promotion of systematic physical activity, no matter the age group was designated in various countries as a national health priority. In this context,

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coming in contact with numerous people, the physicians and the medical personnel could influence the people's health by promoting systematic exercise. Thus, the people involved in health services should evaluate the patients' current level of exercise, recommend them an exercise program, and determine them, through various counseling strategies, to respect this program. On the other hand, everyone should know the necessity and the benefits of exercise, including the fact that the regular practice of physical exercise influences positively the physical and mental health during pregnancy, it facilitates the children's normal development, and plays an important role in maintaining one's health throughout one's life [6].

"According to the Eurobarometer, 197/2015, regarding how physical activity appears in national and European polls, 88% of the European Union citizens prefer spending their spare time in front of their television, 19% surf the Internet, and only 15% of them practice some form of sport.

In a 2013 poll we can see that only 46% of the young people in the 13 countries that were applying for European Union membership practice sports in their leisure time, as opposed to 50% of the European Union youth. In the young people's preferences for spending their free time, we find: watching TV, listening to music, meeting friends, and barely in sixth place, sports" [7].

Goals:

This research tries to highlight the role played by primary prophylactic physical therapy in the identification of the fitness and effort capacity level in adults, but also to prove to the subjects that although they are healthy, they present important deficits, which, cumulated in time, undermine slowly but surely the structure and functions of the body.

2. Materials and Methods

The research activity was conducted between January and May 2017, and the actual research was conducted over 2 months (February – March 2017), at the ”Authentic Fit” club, Bacău.

The research comprised a number of 48 subjects, aged between 22 and 38. The subjects were part of the young adult age group, seeing that the people from the mature adult age group participate less in organized or individual forms of activity.

The purpose of the research was to highlight the role played by primary prophylactic physical therapy in the assessment of the myo-arthro-kinetic system, by applying the Hettinger System in adults.

The *research methods* were: the study of the professional literature, the measurement and assessment method, the statistical-mathematical method, and the graphical representation method.

The measurement makes possible the characterization of values in quantifiable terms, allowing the assessment, summarization, and analysis of the recorded data sets, to interpret and compare them. These methods were used to establish the degree of joint mobility and muscle strength, and the progress that would allow us to draw some conclusions about the subjects.

In this research the Hettinger system was applied, aiming to obtain relevant data regarding joint mobility and muscle strength in young adults.

The Hettinger system comprises a series of exercises envisaging the testing of joint

mobility and balance, form various positions, each exercise presenting items with different marks (from 1 to 5 points), according to the performance ability of the subject, for the muscle strength and endurance to effort, using the Ruffier – Dickson test [1, 2, 3].

The effort capacity was assessed through the RUFFIER-DICKSON test. Thirty squats are performed in 45 seconds, calculating the Ruffier index:

$$(P+P_1+P_2-200)/10.$$

where:

P – Resting pulse

P_1 – Pulse in the first 10 sec. after the effort.

P_2 – Pulse at 1 minute after the effort; 2 min; 3 min.

Assessment - Index:

0 - 5 = Excellent adaptation

5 -10 = Good adaptation

10 -15 = Medium adaptation

15-20 = Poor adaptation - pathological heart [5].

The prophylactic gymnastics programs were about 50 minutes per session, being conducted two times a week. The programs were conceived in general, taking into account the existing particularities.

The objectives of the primary prophylactic physical therapy programs envisaged:

- to maintain an optimal body position;
- to prevent diseases and/or injuries;
- to maintain the correct posture of the body;
- to maintain/improve the effort capacity to an optimal level;
- to maintain a good coordination of movements;
- to maintain the joint mobility;
- to maintain the muscle strength and endurance, general and segmental;
- to keep and/or improve the morpho-functional integrity of the body.

The physical activity plan comprised analytical gymnastics exercises (free, with opposition, using devices or objects), aiming to maintain the optimal functionality of the muscle groups with a static and dynamic action that ensure a correct posture of the body; specific exercises for the improvement of the effort capacity; exercises to maintain the coordination at an optimal level; elements from sports; respiratory gymnastics exercises.

The methodical indications regarding the application of the primary prophylactic physical therapy programs to the young adult age were that:

- there is an universally accepted truth that in order to maintain and optimize your health, you must exercise. Another well-known fact is also that the psycho-somatic integrity and functioning needs a rational and continuous that must go beyond the average individual possibilities;
- prophylactic physical therapy in adult age has no contraindications for any subject, no matter their age or gender. The exercise programs must be strictly compatible with the individual particularities linked to the subjects' health, age, gender, aim and goals;
- the elaboration and application of the prophylactic physical therapy programs cannot be done without the subjects' morpho-functional particularities, based on which the goals are set, for the testing of their neuro-myo-artho-kinetic system.

3. Results and Discussions

This research, during the application of the Hettinger test for the assessment of the myo-artho-kinetic system, considered the individual particularities, the physiological parameters and the health of the subjects.

Figures 1 and 2 present the values of the joint mobility and muscle strength from the Hettinger test, comparing the initial and the final values recorded by the subjects.

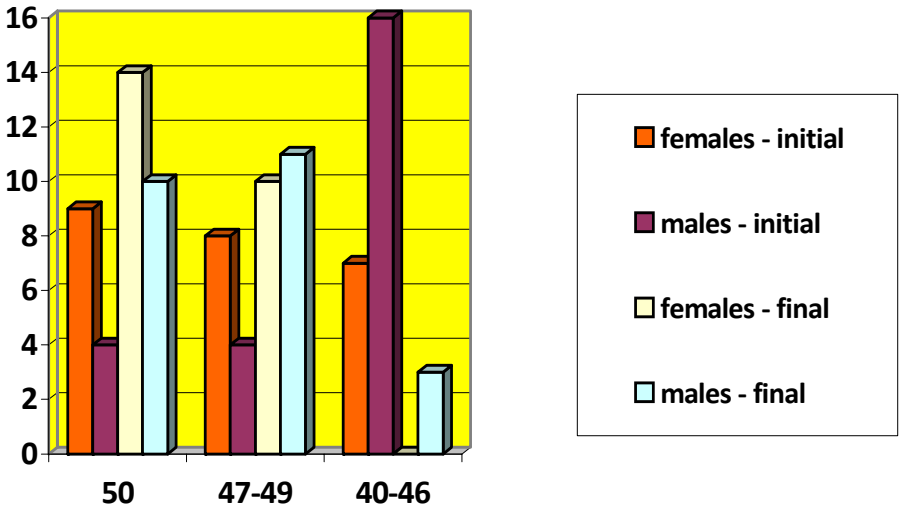


Fig. 1. *Image of the joint mobility*

Figure 1 shows that the female subjects recorded higher values than the male subjects during the joint mobility tests, both initial and final.

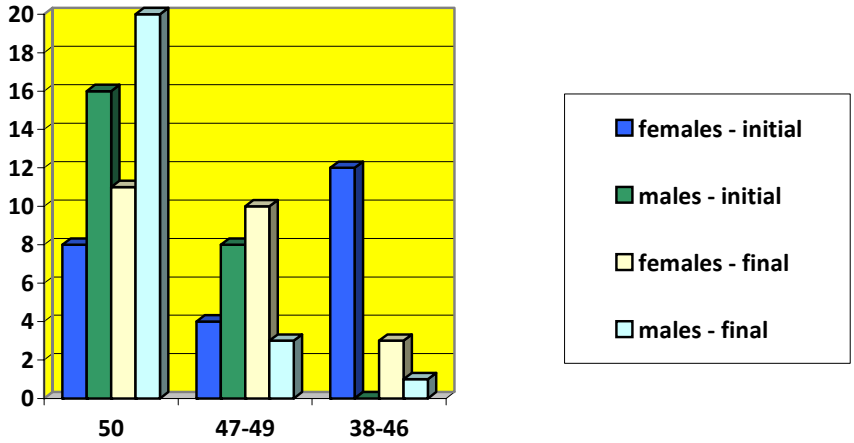
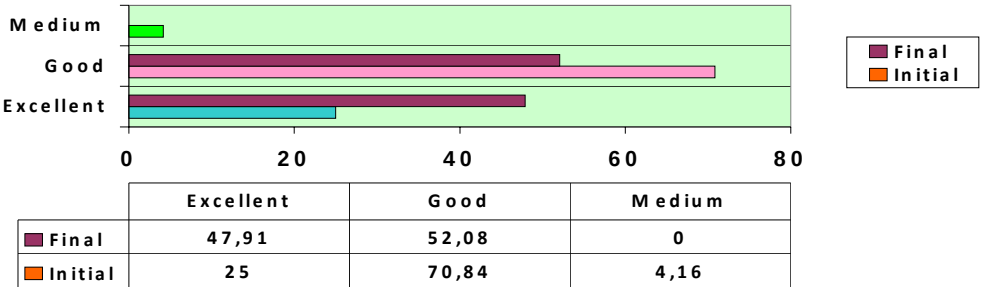


Fig. 2. *Image of the muscle strength*

Figure 3 shows that during the muscle strength tests, initial and final, the male subjects recorded higher values than the female subjects.



	Excellent	Good	Medium
Final	47,91	52,08	0
Initial	25	70,84	4,16

.Fig. 3. *Image of the Ruffier – Dickson test results*

Figure 3 presents the initial and final values recorded during the Ruffier-Dickson test. It can be seen that 70.84% represents a "good adaptation" to effort, initially, and 47.91% a "good adaptation" to effort, finally.

In Figure 1, representing the **initial assessment of the joint mobility in the female subjects**, one can see that out of a total number of 24 female subjects, 9 recorded maximum values (37.5%), 8 subjects recorded values between 47 and 49 points (33.33%), and 7 recorded values between 43 and 46 points (29.16%), presenting difficulties in tests 1 (dorsal-lumbar mobility) and 3. During the **final assessment,** out of the total number of 24, 14 subjects recorded maximum values (58.33%) and 10 subjects recorded values between 47 and 49 points (41.66%).

In Figure 1, representing the **initial assessment of the joint mobility in the male subjects**, one can see that out of a total number of 24 female subjects, 4 recorded maximum values (16.66%), 4 subjects recorded values between 47 and 49 points (16.66%), and 16 recorded values between 40 and 46 points (66.66%), presenting difficulties in tests 2 and 3. During the **final assessment,** out of the total number of 24, 10 subjects recorded maximum values (41.66%), 11 recorded values between 47 and 49 points (45.83%), and 3 subjects recorded values between 40 and 46 points (12.5%).

Regarding the **muscle strength**, Figure 2 shows that the **female subjects** recorded smaller values **initially**, only 8 of them recording a maximum score (33.33%), 4 recording values between 47 and 49 points (16.66%), and 12, values between 38 and 46 points (50%), presenting difficulties in tests 1, 3, and 4, when compared to the **final assessment** values: 11 subjects recorded a maximum score (45.83%), 10 recorded values between 47 and 49 points (41.66%), and 3 subjects recorded values between 38 and 46 points (12.5%).

During the **initial assessment**, 16 male subjects recorded a maximum score (66.66%), and 8 recorded values between 46 and 49 points (33.33%), presenting difficulties in tests 3 and 4, when compared to the **final assessment** values: 20 male subjects recorded a maximum score (83.33%), 3 recorded values between 46 and 49 points (12.5%), and 1 subject recorded values between 38 and 46 points (4.16%).

Figure 3 shows us that regarding **the Ruffier – Dickson initial test**, out of a total of 48 subjects, 12 had an excellent adaptation (25%), 34 a good adaptation (70.83%), and 2 subjects had a medium adaptation (4.16%). During the **final assessment,** the following values were recorded: 47.91% excellent adaptation (23 subjects) and 52.08% good adaptation (25 subjects).

4. Conclusions

On the basis of the results we obtained, we can assert the following conclusions:

- physical activity, in general, leads to maintaining and strengthening one's health, prolonging one's life, and erasing the effects of daily stress;
- through prophylactic physiotherapy programs one can determine an increase in the functional capacity of the human body organs and systems, especially the ones directly involved in the effort;
- it is important to constantly evaluate the myo-arthro-kinetic system to observe the possible deficits in joint mobility and muscle strength, especially at an old age, aiming to prevent or fight them.

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