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THE INFLUENCE OF KINETIC TREATMENT ON PATIENTS WITH GONARTIRRHY

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Abstract

The present paper aims to demonstrate the importance of physical therapy in a rehabilitation program for gonarthrosis. Due to its frequency and the problems it creates, related to the inability to work, the condition is starting to become a social disease. This is becoming more and more common in society, making it impossible for the subject to perform various activities.

The goal pursued in this paper is to recover the patient with gonarthrosis. The general goal of rehabilitation is to help the patient recover in the shortest possible time, to prevent physical discomfort and, in particular, to stop the worsening of the disease.

After performing the initial tests and the final tests by the patient, we were able to collect the results presented in the paper and to draw the final conclusions of the study.

Introduction

Osteoarthritis is a chronic condition, manifested by the degeneration of peripheral or vertebral joints, with predominant effects on the soft parts. The first signs of degenerative lesions were found on the first human skeletons, who lived 2.5 million years ago.[2,4,7]

The most frequently affected joint is the knee joint (gonarthrosis), followed by the hip joint.

Following statistics conducted by Heine, it was discovered that the incidence is 20% in men and 45% in women. The most exposed are people over 60 years old, and their incidence increases with age. Favorable factors can be excessive weight, overuse, etc.[1,5,9]

An important role in recovery is played by physiotherapy, as it constitutes an essential component in the management of gonarthrosis, according to the NICE guideline.[3,6,8]

The physiotherapy program must include individualized exercises, so that the patient can perform them both at home and in the physiotherapy room.[10]

Material and method

1. Hypothesis of the work

It is assumed that by implementing a prevention and recovery program, the function of the knee joints will be maintained, as well as a good general state of health.

2. Purpose and objectives of the work

The purpose of this work is to prevent the process of installing gonarthrosis and its worsening, increasing the functional capacity of patients.

The objectives of the work are:

• Analyzing the specialized literature specific to the study topic
• Determining cases for research
• Creating a kinetic program
• Comparing initial and final results
• Reinsertion in the socio-professional plan.

2. Case presentation

Name and surename	Age	Diagnosis	Comorbidities
B.G.	63	Gonarthrosis bilateral	Overweight

3. Place of implementation and material conditions

The recovery took place at the Constantinescu physiotherapy office, after that continuing at the patient's home. Measurements were made using a goniometer and a centimeter.

The office was equipped with the following materials necessary for recovery:

• Gymnastics table
• Bags
• Elastic bands
• Wall bars
• Balance board
• Towels.

4. Duration and work stages

The program took place over a period of 12 weeks, starting with September 2024 until the end of November 2024.

The program was divided into 5 stages:

I. First stage - taking initial measurements and determining the functional remainder;
II. Second stage - establishing the objectives of the recovery program and drawing it up;
III. Third stage - increasing joint mobility and muscle strength;
IV. The fourth stage - restoration of functional capacity and increased resistance;
V. The fifth stage - reintegration into socio-professional life and comparison of initial and final results;

• Initial assessment

At the initial assessment, the patient presented vicious positions, with the affected lower limb in slight flexion and internal rotation. He presented pain and limitations in the mobility of the joint. The patient presented stiffness only after certain periods when he was sitting in a fixed position.

To assess the intensity of pain, we used the VAS scale, which includes values from 0 to 10.

Tabel nr.1. Scala VAS

Name and surename	Initial evaluation	Final evaluation
B.G.	6	3

According to the table above, the patient indicates the value 6, which means that he cannot ignore the pain, so he had to resort to analgesics to reduce the pain.

Table no. 2. Womac Scale
https://www.scribd.com/document/495015770/WOMAC [12]

Symptom	Activity	Puncture				
		0	1	2	3	4
Pain	walking			X		
	Climbing stairs			X		
	During sleep				X	
	Sitting/Supine		X			
	standing			X		
Joint stiffnes	In the morning upon waking				X	
	During the day		X			
Carrying out daily activities	Went down the stairs		X			
	Climbed the stairs				X	
	Standing up			X		
	standing		X			
	When you lean towards the floor			X		
	Walking on a flat surface		X			
	Got in/out of the car			X		
	Mers la cumpărături			X		
	Put on/Take off socks			X		
	Got out of bed			X		
	In/Out of the bathtub				X	
	seated		X			
	Sitting/rising from the toilet		X			
	Performing heavy household tasks				X	

	Performing light household tasks	X

The table above shows the WOMAC index, which aims to assess pain, joint stiffness and the way of performing daily activities. The corresponding number will be ticked, on a scale from 0 to 4.[11,12]

Using the goniometer, we evaluated the range of motion of the knee joint, because due to pain and joint stiffness, the patient has a limitation of it. The normal value of the degrees of mobility are extracted from Sbenghe's book.

In the table below, the values of the muscle balance are found. Following these values, a remainder can be found on both the flexors and the extensors.

Table no. 3. Joint balance

Knee joint	Pacient		Normal Mobility (author Sbenghe)
	left lower limb Initial evaluation	left lower limb Final evaluation	
Flexion	80°	95	120-140°
Extension	75°	100	115-135°

Table no. 4. Muscle balance evaluation

Muscle	Bilance evaluation	
Flexors	F2	F5
Extension	F3	F6

Using a centimeter, we measured the thigh and calf, as the patient had reduced daily activities, which can lead to a decrease in muscle strength. A difference of approximately 3-4 cm can be observed between the lower limbs.

Table no. 5. Measuring thigh circumference with a centimeter

Thigh circumference		Pacient
left lower limb	87 cm	92
right lower limb	84 cm	88

Tabel nr. 6. Measuring calf circumference with a centimeter

Calf circumference		Pacient
left lower limb	54 cm	58
right lower limb	52 cm	56

Tabel nr.7. Lequesne index

https://www.scribd.com/document/385594856/Scale-de-Evaluare [12]

Pain or discomfort		Puncture
	Lack	0
	At a movement or a certain position	2
A. At night	Even without movement	0,5
B. During morning movements (stretching)	Under 1 minute	0
	1-15 minute	1
	after 15 minute	2
C. When standing or sitting for more than 30 minutes	No	0
	Yes	2
D. walking	No	0
	Only after a certain distance	2
	Immediately after starting to walk, with increasing intensityv	1
E. When getting up from a chair without using your hands	No	0
	Yes	1
F. Maximum travel distance	Unlimited	0
	Limited, but possible over 1 km	0
	Approximately 1 km	0
	500-900 m	2
	300-500 m	1
	100-300 m	0
	under 100 m	0
	Only with a cane or crutch	0
	Only with 2 canes, 2 crutches or walking frame	0
G. Difficulty in performing routine tasks	Climbing stairs	2
	Going down the stairs	1
	Squatting	2
	Walking on uneven surfaces	1

The table above shows the Lequesne index, which contains daily activities. Depending on the severity of the pain and the functional remainder, the patient will indicate values between 0 and 2 (0-no weight; 0.5 and 1.5 depending on the possibility, 2-impossible).

• Physiotherapy

To prepare the patient, gymnastics exercises were performed before the physiotherapy session. The patient was given massage and ultrasound.

The first stage aimed at the first objectives, namely, pain relief and maintaining trophism. For this stage, we started with passive-active mobilizations, then we performed light exercises performed passively and passively. Weight exercises will not be performed, but the number of sets and repetitions will be gradually increased.

Stage II

The second stage includes flexion, extension, abduction exercises with resistance to increase joint mobility and muscle strength.

Stage III

During this stage, exercises are performed to increase resistance to effort, balance education and re-education, and reintegration into daily activities.

• Final evaluation

After completing the recovery program, the patient was re-evaluated and the following effects were obtained: the patient no longer had severe pain, stiffness had disappeared, resulting in improved range of motion.

2. Socio-familial and professional reinsertion

Although the condition is common among the elderly, this condition can affect even the easiest daily activities. Gonarthrosis can even leave its mark on the psyche, because in advanced stages, the elderly can become dependent on other people.

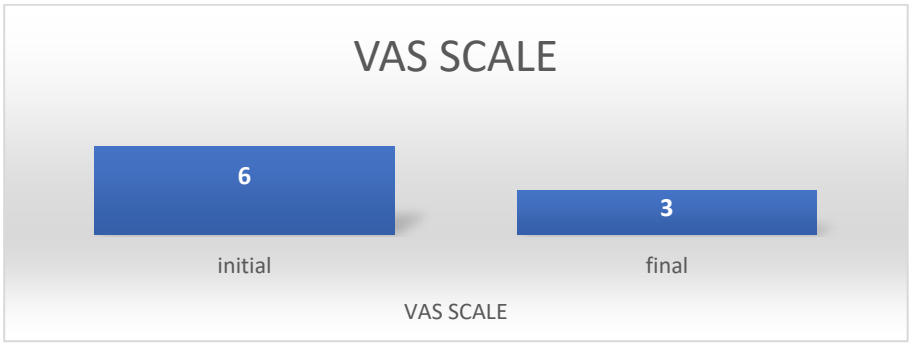
Fortunately, the above patients respected the recovery program and the doctors' recommendations and did not need surgery, the condition improving.

. Presentation of results

At the end of the recovery period, we compared the initial and final results. The recovery program was carried out over 3 months, with over 40 hours of recovery. Therefore, the graphs below represent the differences between the initial and final values. The patient continued his recovery at home.

Interpretation of results

To analyze record and represent the data, we used the "data processing and graphical representation method", which resulted in the following results:

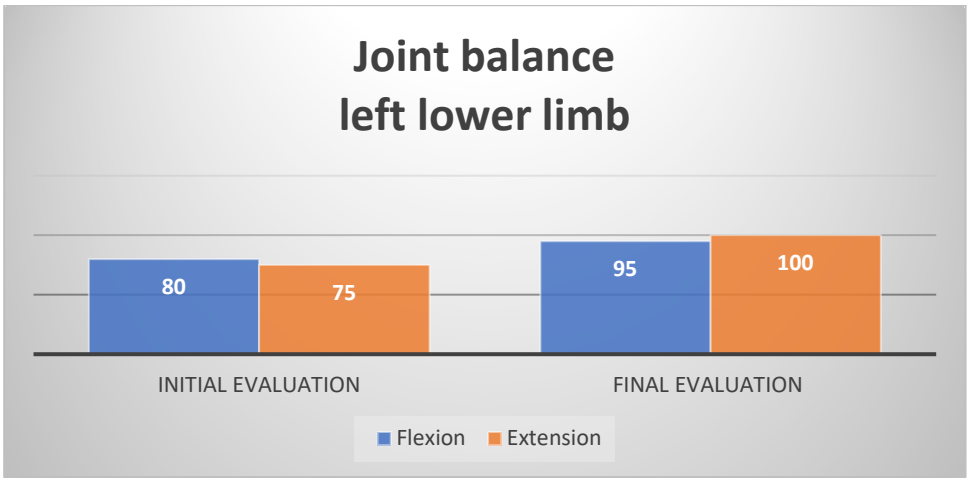


Graphic no. 1 VAS scale

The graph above shows the VAS scale, which shows reduced pain values, meaning that patients can perform their daily activities without taking painkillers. In the initial assessment, the VAS scale values indicated 6, and now the pain correspond to values 3.

The muscle balance shows an increase in muscle tone. Thus, the assessment was performed on both flexors and extensors.

The table below show the joint balance values for both flexion and extension. A difference of approximately 40° can be observed in the flexion movement of the left limb. At the level of the right lower limb, the following differences of 20° were determined.



Graphic no. 2 Joint balance

On the extension movement, the left lower limb recorded differences of 25°. The right lower limb presents values 15° higher.

The values of the thigh perimeters are entered in the table above. Between the initial and final values, a difference of at least 3 centimeters and a maximum of 6 cm is noted. This represents an improvement in muscle tone.

The values of the calf perimeters are indicated in the table above. Between the initial and final values, an increase of approximately 4 cm is observed.

CONCLUSIONS AND PROPOSALS

Conclusions

After the treatment, the following conclusions were found:

• Pain improved, from values 5 and 6 to 3, 2, and 1, respectively.

• Range of motion improved by approximately 20° in flexion and 25° in extension.

• Muscle strength increased from F1-F2 to F4-F5.

• Patients returned to daily activities, this aspect being the most important aspect.

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