

Amila Jaganjac<sup>1</sup>, Eldad Kaljić<sup>1</sup>, Merima Kovačević<sup>1</sup>, Mirela Bašić Denjagić<sup>2</sup>, Namik Trtak<sup>1</sup>, Dženan Pleho<sup>3</sup>, Ratko Zlatičanin<sup>1</sup>

# THE EFFECT OF PHYSIOTHERAPY ON THE QUALITY OF LIFE OF PERSONS WITH OSTEOARTHRITIS OF THE KNEE

Original research

<sup>1</sup>University of Sarajevo - Faculty of Health Studies, Sarajevo, Bosnia and Herzegovina

<sup>2</sup>Department of Gastroenterology and Hepatology, University Clinical Centre Tuzla, Bosnia and Herzegovina

<sup>3</sup>Vrazova Health Center Sarajevo, Bosnia and Herzegovina

**Correspondence to**  
Amila JAGANJAC,  
Faculty of Health Studies, Sarajevo,  
Bosnia and Herzegovina  
jaganjacamila@gmail.com

Submitted: 26.08.2025.  
Accepted: 11.11.2025.

© 2025 by the author(s).  
Faculty of Sport and Physical Education, University of Sarajevo.  
This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY).

**To cite:** Jaganjac, A., et al. (2025) The Effect of Physiotherapy on the Quality of Life of Persons with Osteoarthritis of the Knee. *Homospoticus*, 27 (2), 38-42. doi: 10.61886/1840-4324.2025.27.2.38

## ABSTRACT

**Introduction:** Osteoarthritis (OA) is a chronic, progressive and degenerative joint disease whose main cause is the breakdown and loss of articular cartilage, along with other articular and extra-articular changes such as bone hypertrophy (osteophyte formation), hypotrophy or muscle atrophy. After cardiovascular Osteoarthritis is the second most common chronic disease, primarily of the hip and knee joints. Osteoarthritis of the knee is an important factor in the occurrence of physical damage in the elderly and affects a person's functional abilities, and thus the quality of life.

**Working hypothesis:** Physiotherapy leads to an improvement in the quality of life of people with knee osteoarthritis treated at the "Reumal" Fojnica health resort, while the null hypothesis is the negation of the working hypothesis.

**Research goals:** To examine the sociodemographic characteristics of subjects with knee osteoarthritis, to assess the quality of life of people with knee osteoarthritis before and after the use of physiotherapy, to analyze the type and modalities of physiotherapy use by subjects in the study group.

**Material and methods of research:** The research was conducted in 2023 at the "Reumal" health resort in Fojnica. The research included 50 subjects of both sexes with knee osteoarthritis. The subjects completed a general and standardized questionnaire before and after the physiotherapy program.

**Research results:** Of the total number of male respondents, 16 (32.0%) were male, and 34 (68.0%) were female. The average age of the respondents in the research group was  $72.98 \pm 7.31$  years. The most commonly used physiotherapy modalities were parafango (52.0%), pearl bath (46.0%) and TENS (44.0%). The assessment of quality of life established a statistically significant improvement in quality of life after physiotherapy on the mental health scale, difficulties in performing work and the scale of impact on sexual life. Correlation analysis shows that there is a statistically significant influence of age on the improvement in quality of life according to the pain scale, in the sense that older respondents have a lower probability of improvement ( $r = -0.348$ ;  $p = 0.013$ ).

**Conclusion:** The results of our research confirmed the working hypothesis that the use of physiotherapy leads to an improvement in the quality of life of people with knee osteoarthritis treated at the "Reumal" Fojnica health resort.

**Keywords:** knee osteoarthritis, quality of life, physiotherapy procedures.

## INTRODUCTION

Osteoarthritis (OA) is a chronic, progressive and degenerative joint disease whose main cause is the breakdown and loss of articular cartilage, along with other articular and extra-articular changes such as bone hypertrophy (osteophyte formation), muscle hypotrophy or atrophy. After cardiovascular diseases, osteoarthritis is the second most common chronic disease, primarily of the hip and knee joints. Symptoms that occur are progressive pain that is aggravated or caused by movement, stiffness and swelling of the affected joints. The diagnosis is confirmed radiologically, and if the radiological findings show that osteoarthritis is present in the knee joint, this does not mean that clinical symptoms must also be present

**HOMO**  
**SPORTICUS**

**OPEN**  **ACCESS**



in the knee joint, this does not mean that clinical symptoms must also be present (Muftić M. 2020). There are a large number of factors that influence the onset, progression and treatment of the disease. Osteoarthritis, unlike inflammatory rheumatic diseases, does not cause systemic diseases of the whole body but remains in the joints. As a rule, any joint in the body can be affected by degenerative changes, but this most often occurs in the load-bearing joints. Osteoarthritis of the knee is one of the most common localizations, and the disease affects one or both joints. Degenerative changes caused by aging, frequent trauma to the joint, and heavy loads on the surface of the joint surface play a significant role in the development of knee joint disease. Osteoarthritis first develops in the patellofemoral joint, which is more common in younger people, and then develops in the femorotibial joint. The symptoms and signs of knee osteoarthritis are variable. In the early stages of the disease, milder symptoms such as fatigue and painful sensations first appear, and as the disease progresses, the symptoms intensify and the pain becomes stronger, and a certain level of hypotrophy or atrophy of the quadriceps muscle develops, which is mainly due to inactivity and pain. In addition to pain and muscle atrophy, joint contracture can also occur. In more severe cases of the disease, blockage of the knee joint can also develop (Bilać G. 2016). Degenerative changes generally occur equally in men and women, regardless of race and social class, but over the age of 55, it has been proven that it occurs more often in women. Women have a higher prevalence (42.1%) than men (31.2%). Osteoarthritis of the knee has a higher prevalence rate compared to other types of osteoarthritis. The incidence of knee osteoarthritis increases with age and with longer life expectancy and higher average weight of the population (Lespasio MJ et. al., 2017). Osteoarthritis of the knee is an important factor in the occurrence of physical damage in the elderly and affects the functional abilities of a person, and thus the quality of life (Rusac Kukić S., et. al., 2020). Pain is the leading symptom in rheumatic diseases and is an important determinant of quality of life. Patients with osteoarthritis of the hip or knee experience a progressive decrease in function, which is manifested by an increase in dependence on walking on the level or on stairs, and the risk for cardiovascular diseases increases (Mađarević T et. al., 2009). Osteoarthritis can be treated with pharmacological, non-pharmacological and surgical methods of treatment. In most cases, the emphasis is on non-pharmacological treatment, i.e. exercise and the use of certain physiotherapy procedures. Physiotherapy is a key and integral part of the life of people with knee osteoarthritis (Bilać G. 2016). The goal of physiotherapy is to prevent further damage in order to enable the patient to perform functional movements and improve the quality of life

with the application of various physiotherapy procedures. It is also important to educate the patient and his family, as well as motivation and support during rehabilitation. If a person has an advanced disease that is accompanied by joint contractures, it is recommended to use aids that are adapted to the patient's remaining functional capabilities in order to facilitate daily activities and achieve as much independence as possible.

## METHODS

### Sample and Procedures

50 subjects of both sexes with osteoarthritis of the knee were included in the research. The research was conducted in the period from October to December 2023 in the spa "Reumal" Fojnica. Before participating in the research, all respondents were thoroughly informed about the research plan and procedure, and only those respondents who gave their consent for voluntary participation in the research were included. The respondents filled out a questionnaire on the general sociodemographic data of the respondents and a standardized AMIQUAL questionnaire before and after the physiotherapy program. Ethicality was confirmed through the consent of the ethical committee of the spa "Reumal" Fojnica on the ethical aspects of the final work. The survey is individual, anonymous with the voluntary written consent of each respondent.

### Statistical Analysis

The obtained data were presented as means and standard deviation and frequencies and percentages. Differences between the initial and results were determined using Chi-square test and t test if data distribution was normal (determined by using K-S test). Simple Spearman's  $r$  correlation was used to determine the relationship between quality of life and research relevant questions. The level of statistical significance was set at the conventional 95% confidence level ( $p < 0.05$ ). All collected data were processed using SPSS version 21.0 (IBM Corp., New York).

## RESULTS

The study included a total of 50 subjects who were treated at the "Reumal" Fojnica health resort in the period from October to December 2023. Of the total number of subjects, 16 (32.0%) were male, and 34 (68.0%) were female. Statistical analysis using the chi-square test indicates that there is a statistically significant deviation in the gender structure compared to the expected distribution ( $\chi^2 = 3.348$ ;  $p = 0.067$ ).

(Table 1). The average age of the subjects in the study group was  $72.98 \pm 7.31$  years, with the youngest subject being 56 years old and the oldest being 89 years old. Statistical analysis using the Student's t-test indicates that there is no statistically significant deviation from the expected distribution ( $t=0.254$ ;  $p=0.074$ ). (Table 2). A total of 161 physiotherapy procedures were applied to 50 subjects.

Table 1. Gender structure of respondents

Gender structure	N	%
Male	16	32.0
Female	34	68.0
In total	50	100.0

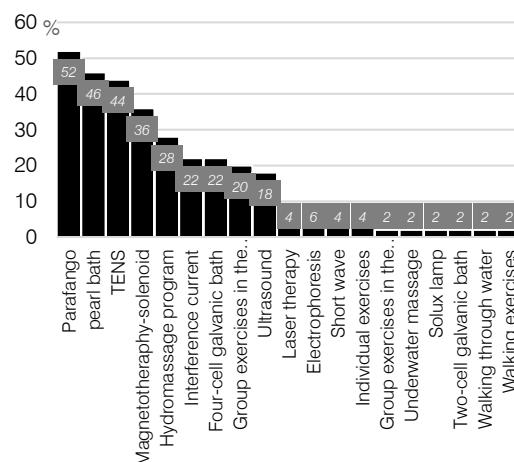
$\chi^2=3.348$ ;  $p=0.067$

Table 2. Age structure of respondents

Age structure
$\bar{x}$ 72.98
SD 7.31
Minimum 56
Maximum 89
$t=0.254$ ; $p=0.074$

The analysis of the modalities of physiotherapy found that the most frequently used parafango in 26 (52.0%) subjects, pearl bath in 23 (46.0%) subjects and TENS in 22 (44.0%) subjects. Statistical analysis using the chi-square test indicates that there is a statistically significant deviation in the applied procedures in relation to the expected distribution (38.319;  $p=0.0001$ ). (Figure 1).

Figure 1. Usage of physiotherapy modalities



The review of the quality of life before the therapy according to the scales of the AMIQUAL questionnaire shows that the respondents showed the best quality of life on the social functioning scale  $59.74 \pm 25.8\%$  (range 0.03-100.0%), followed by social support

$50.31 \pm 23.96\%$  (range 0.0-100.0%), the mental health scale  $38.05 \pm 25.74\%$  (range 0.03-99.99%), pain scale  $35.63 \pm 25.5\%$  (range 0.0-100.0%) and the smallest on the physical activity scale  $33.24 \pm 23.7\%$  (range 0.0-100.0). (Table 3).

Table 3. Overview of the quality of life of people with osteoarthritis of the knee before the therapy

	Physical activity	Mental health	Pain	Social support	Social functioning
$\bar{x}$	33.24	38.05	35.63	50.31	59.74
SD	23.70	25.74	25.50	23.96	25.80
Min	0.00	0.03	0.00	0.00	0.03
Max	100.0	99.99	100.0	100.0	100.0

The review of the quality of life before the therapy according to the supplementary items of the AMIQUAL questionnaire shows that the respondents showed the best quality of life on the issue of impact on life with a partner  $50.0 \pm 29.38\%$  (range 0.0-100.0%), then the impact on sexual life  $49.11 \pm 32.77\%$  (range 0.0-100.0%), and the lowest on difficulties in performing work  $29.6 \pm 27.1\%$  (range 0.0-100.0%). (Table 4).

Table 4. Overview of the quality of life before the therapy - additional items

	Difficulty in doing work	Influence on life with a partner	Influence on sex life
$\bar{x}$	29.60	50.00	49.11
SD	27.10	29.38	32.77
Min	0.00	0.00	0.00
Max	100.00	100.00	100.00

The review of the quality of life after the therapy according to the scales of the AMIQUAL questionnaire shows that the respondents showed the best quality of life on the social functioning scale  $57.81 \pm 27.01\%$  (range 0.04-100.0%), followed by social support  $49.31 \pm 24.18\%$  (range 0.0-100.0%), the mental health scale  $41.59 \pm 25.35\%$  (range 0.06-100.0%), physical activity scale  $35.39 \pm 24.05\%$  (range 0.06-100.0%) and the smallest on the pain scale  $34.84 \pm 26.31\%$  (range 0.0-100.0). (Table 5).

Table 5. Review of the quality of life after therapy

	Physical activity	Mental health	Pain	Social support	Social functioning
$\bar{x}$	35.39	41.59	34.84	49.31	57.81
SD	24.05	25.35	26.31	24.18	27.01
Min	0.06	0.06	0.00	0.00	0.04
Max	100.00	100.00	100.00	100.00	100.00

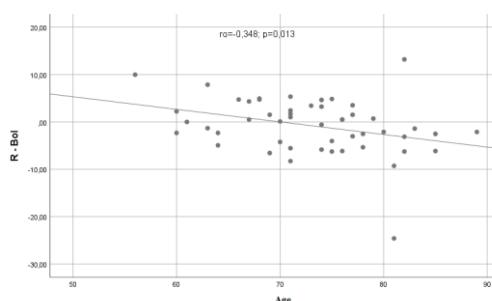
The review of the quality of life after therapy according to the supplementary items of the AMIQUAL questionnaire shows that the respondents showed the best quality of life in terms of the impact on their sexual life  $55.11 \pm 29.52\%$  (range 0.0-100.0%), then the impact on life with their partner  $51.0 \pm 31.32\%$  (range

0.0-100.0%), and the lowest in terms of difficulties in performing work  $37.0 \pm 27.72\%$  (range 0.0-100.0%). (Table 6). Correlation analysis shows that there is a statistically significant influence of age on the improvement of the quality of life according to the pain scale in the sense that older respondents have a lower probability of improvement ( $r_o = -0.348$ ;  $p = 0.013$ ). (Figure 2).

Table 6. Review of the quality of life after therapy - additional items

	Difficulty in doing work	Influence on life with a partner	Influence on sex life
X	37.00	51.00	55.11
SD	27.72	31.32	29.52
Min	0.00	0.00	0.00
Max	100.00	100.00	100.00

Chart 2. Correlation analysis of the influence of age on improving the quality of life



## DISCUSSION

The research was conducted at the "Reumal" Fojnica health resort from October to December 2023, and included 50 subjects of both sexes with knee osteoarthritis. Analysis of the gender structure determined that out of the total number of subjects in the study, 16 (32.0%) were male and 34 (68.0%) were female, and a statistically significant difference in the gender structure of the subjects was determined. Analysis of the age structure determined the average age of the subjects, which was  $72.98 \pm 7.31$  years, with the youngest subject at the age of 56 and the oldest at the age of 89. The research conducted by Rusac Kukić S. et al. involved 74 elderly people ( $71.47 \pm 6.99$  years), of which 79.7% were female and 20.3% were male. The youngest respondent was 66 years old, and the oldest was 84. The average age of the respondents was 71.47 years old ( $SD = 6.99$ ). The results of this study determined a slight positive correlation between the occurrence of symptoms of stiffness in people with OA and age ( $r = 0.366$ ;  $p < 0.01$ ). Symptoms of stiffness are significantly more prevalent in older people (Rusac Kukić S et. al., 2020),

which correlates with the results of our study. In a study conducted by Drugović D. et al., it was confirmed that knee osteoarthritis occurs significantly earlier in women ( $47.1 \pm 9.8$  years) than in men ( $53.2 \pm 5.2$ ;  $P < 0.01$ ) (Drugović D et. al., 2008), which is similar to the results of our study. In our research, a total of 161 physiotherapy procedures were applied to all subjects. The analysis of the modalities of physiotherapy found that the most frequently used parafango in 26 (52.0%) subjects, pearl bath in 23 (46.0%) subjects and TENS in 22 (44.0%) subjects. The review of the quality of life in our research before the therapy carried out according to the scales of the AMIQUAL questionnaire shows that the respondents showed the best quality of life on the scale of social functioning  $59.74 \pm 25.8\%$  (range 0.03-100.0%), then social support  $50.31 \pm 23.96\%$  (range 0.0-100.0%), mental health scale  $38.05 \pm 25.74\%$  (range 0.03-99.99%), pain scale  $35.63 \pm 25.5\%$  (range 0.0-100.0%) and the smallest on the physical activity scale  $33.24 \pm 23.7\%$  (range 0.0-100.0). The research by Varela J. aimed to assess the quality of life of patients with IV. by the degree of arthrosis of the knee joint using the WOMAC questionnaire. Patients over 60 years of age with degenerative changes in the knee joint were included in the study. The study was conducted on 51 subjects, of whom 13 (26%) were men and 38 (75%) were women. Based on the conducted study and the analysis of the results obtained using a standardized questionnaire, it was found that the vast majority of subjects had severe pain, severe immobility and increased difficulties when performing physical activities, and a very poor quality of life (Varela J. 2016), which is consistent with the results of our study. In our study, an overview of the quality of life before the therapy according to additional items of the AMIQUAL questionnaire shows that the subjects showed the best quality of life in terms of impact on life with a partner  $50.0 \pm 29.38\%$  (range 0.0-100.0%), then impact on sexual life  $49.11 \pm 32.77\%$  (range 0.0-100.0%), and the lowest in terms of difficulties in performing work  $29.6 \pm 27.1\%$  (range 0.0-100.0%). After the therapy, the review of the quality of life according to the scales of the AMIQUAL questionnaire shows that the respondents showed the best quality of life on the scale of social functioning  $57.81 \pm 27.01\%$  (range 0.04-100.0%), then social support  $49.31 \pm 24.18\%$  (range 0.0-100.0%), mental health scale  $41.59 \pm 25.35\%$  (range 0.06-100.0%), physical activity scale  $35.39 \pm 24.05\%$  (range 0.06-100.0%) and the smallest on the pain scale  $34.84 \pm 26.31\%$  (range 0.0-100.0).

Kapidžić-Bašić N. et al. conducted a study involving 60 subjects who were undergoing physical therapy for knee osteoarthritis with the most severe degree of structural changes. Structural changes were assessed using the Kellgren-Lawrence scale, functional ability with the Lequesne index, and pain with the Visual

Analogue Scale. Physical therapy lasted four weeks. The following physiotherapy procedures were used: paraffin, interferential currents, and kinesitherapy. The examination was performed before and after therapy, with special attention to changes in patients with the most severe clinical and structural changes. Pain intensity was significantly reduced in all patients after the therapy, including class IV patients ( $p < 0.05$ ). The average pain score in all patients studied was reduced by 3.4, and this reduction did not depend on the severity of structural changes. After therapy, functional ability determined by the Lequesne index also improved (Kapidžić-Bašić N et. al., 2011). The research does not correlate with the results of our study. An overview of the quality of life in our study after the therapy according to additional items of the AMIQUAL questionnaire shows that the best quality of life was shown by the respondents in terms of the impact on sexual life  $55.11 \pm 29.52\%$  (range 0.0-100.0%), then the impact on life with a partner  $51.0 \pm 31.32\%$  (range 0.0-100.0%), and the lowest in terms of difficulties in performing work  $37.0 \pm 27.72\%$  (range 0.0-100.0%). Correlation analysis shows that there is a statistically significant influence of age on the improvement of quality of life according to the pain scale, in the sense that older respondents have a lower probability of improvement ( $r_o = -0.348$ ;  $p = 0.013$ ).

## CONCLUSION

Based on the results obtained from the research, and in accordance with the set objectives, we have reached the following conclusions:

In terms of gender, the study showed a higher proportion of female respondents (68.0%) than male respondents (32.0%), and a statistically significant difference in the gender structure of the respondents was established. The average age of the respondents in the study group was  $72.98 \pm 7.31$  years, with the youngest respondent being 56 years old and the oldest being 89 years old. The most commonly used physiotherapy modalities are parafango (52.0%), pearl bath (46.0%) and TENS (44.0%). The quality of life assessment established a statistically significant improvement in the quality of life after the therapy on the mental health scale, difficulties in performing work and the scale of impact on sexual life. However, statistical analysis shows that there is no significant difference in the quality of life after compared to the values before the therapy on the scale of physical activity, the scale of pain, social support, social functioning and the scale of impact on life with a partner. The results of our study confirmed the working hypothesis that physiotherapy leads to an improvement in the quality of life of people with knee osteoarthritis treated at the "Reumal" Fojnica health resort.

## REFERENCES

Bilac G. Physiotherapy procedures in knee osteoarthritis [Final paper]. Split: University of Split, University Department of Health Studies; 2016. Available at: <https://urn.nsk.hr/urn:nbn:hr:176:587555>.

Drugović D, Krapac L. Osteoarthritis of the knee with regard to some risk factors. *Rheumatism* [Internet]. 2008;55(2):102-103. Available at: <https://hrcak.srce.hr/125278>.

Kapidžić-Bašić N, Džananović Dž, Kapidžić-Duraković S, Kikanović Š, Mulić-Bačić S, Hotić-Hadžefendić A. The effect of physical therapy in the most severe structural changes in the knees due to osteoarthritis. *Rheumatism* [Internet]. 2011;58(1):15-20. Available at: <https://hrcak.srce.hr/124558>.

Lespasio MJ, Sultan AA, Piuazzi NS, Khlopas A, Husni ME, Muschler GF, et al. Knee osteoarthritis: A primer. *The Permanente Journal* [Internet]. 2017; 21:16183. Available at: doi: 10.7812/TPP/16-183.

Mađarević T, Čubelić A, Gulan G, Šestan B, Mikačević M. Knee mobility after total cement endoprosthesis implantation. *Medicina*. 2009;45:160-4.

Muftić M. *Rheumatology*. University edition. Sarajevo: Faculty of Health Studies, University of Sarajevo; 2020.

Rusac Kukić S, Rusac S, Buljevac M. Self-assessment of health status and some aspects of quality of life in older people with knee osteoarthritis. *Journal of Applied Health Sciences* [Internet]. 2020; 6(1):63-76. Available at: <https://hrcak.srce.hr/file/341685>.

Varela J. Assessment of quality of life in patients with knee osteoarthritis [Final thesis]. Osijek: Josip Juraj Strossmayer University of Osijek, Faculty of Medicine Osijek; 2016. Available at: <https://urn.nsk.hr/urn:nbn:hr:152:110720>.

## Conflict of Interest

The authors do not have any conflicts of interest to disclose. All co-authors have reviewed and concurred with the manuscript's content, and no financial interests need to be reported.