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Ukrainian-language validated scales Forgotten Joint Score-12 for patients after hip and knee arthroplasty

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The Forgotten Joint Score-12 (FJS-12) is an important tool for assessing the effectiveness of treatment of patients after large joint arthroplasty. Its main advantage is its sensitivity to the patient's subjective perception of the artificial joint, which makes it extremely useful for assessing the level of comfort after surgery. Objective. To perform an official translation of the Forgotten Joint Score-12 scale into Ukrainian, to conduct its adaptation and validation among patients who have undergone knee or hip arthroplasty. The translation was carried out within the framework of official cooperation with Forgotten Joint Scores (BGGK GmbH, Switzerland) in accordance with international standards Good Practice for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes (PRO) Measures. Results. The pilot testing was conducted among 20 patients and was aimed at identifying the clarity of the questions, ease of completion and time required to complete the survey. That is why this scale allows to assess the degree of awareness of the presence of a joint implant in everyday life, is an important addition to existing methods of studying the results of treatment. Conclusions. Due to its unique approach, the FJS-12 allows for a more accurate assessment of the results of arthroplasty, which contributes to the improvement of surgical techniques, optimisation of rehabilitation programmes and improvement of the level of medical care. Its Ukrainian-language version is now available for use in clinical practice and scientific research in our country, which will contribute to a more objective assessment of the effectiveness of treatment of patients after total arthroplasty. This also opens up new opportunities for international cooperation, as it allows Ukrainian researchers to use unified assessment methods and compare their results with those of their colleagues.

Шкала Forgotten Joint Score-12 (FJS-12) є важливим інструментом для оцінки ефективності лікування пацієнтів після ендопротезування великих суглобів. Її головна перевага полягає в чутливості до суб'єктивного сприйняття штучного суглоба самим пацієнтом, що робить її надзвичайно корисною для оцінювання рівня комфорту після операції. Мета. Виконати офіційний переклад шкали Forgotten Joint Score-12 на українську мову, провести її адаптацію та валідацію серед пацієнтів, яким виконали ендопротезування колінного або кульшового суглобів. Переклад здійснювався в межах офіційного співробітництва з Forgotten Joint Scores (BGGK GmbH, Switzerland) відповідно до міжнародних стандартів Good Practice for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes (PRO) Measures. Результати. Пілотне тестування проводилося серед 20 пацієнтів, було спрямоване на виявлення зрозумілості запитань, зручності заповнення та часу, необхідного для проходження опитування. Саме тому ця шкала дозволяє оцінити ступінь усвідомлення наявності суглобового імплантата в повсякденному житті, є важливим доповненням до існуючих методів вивчення результатів лікування. Висновки. Завдяки своєму унікальному підходу FJS-12 дозволяє проводити більш точну оцінку результатів ендопротезування, що сприяє вдосконаленню хірургічних методик, оптимізації програм реабілітації та підвищенню рівня медичної допомоги. Її україномовна версія наразі доступна для використання в клінічній практиці та наукових дослідженнях нашої країни, що сприятиме більшій об'єктивності оцінки ефективності лікування пацієнтів після тотального ендопротезування. Це також відкриває нові можливості для міжнародного співробітництва, оскільки дозволяє українським дослідникам використовувати уніфіковані методики оцінювання та порівнювати свої результати з даними колег. Ключові слова. Тотальне ендопротезування кульшового суглоба, тотальне ендопротезування колінного суглоба, Forgotten Joint Score-12, FJS-12.

Keywords. Total hip arthroplasty, total knee arthroplasty, Forgotten Joint Score-12, FJS-12

Introduction

Total hip and knee arthroplasty is an effective treatment for patients with severe osteoarthritis or other degenerative joint diseases. This surgical procedure can significantly improve the quality of life of patients, reduce pain, and restore joint function. Assessment of arthroplasty outcomes using traditional scales such as the Harris Hip Score (HHS) [1], Knee Society Score (KSS) [2], Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) [3] focuses primarily on objective parameters: pain, physical function, range of motion, and risk of complications. In contrast, the HHS and KSS scales rely solely on clinical evaluations conducted by physicians. Meanwhile, the WOMAC [3] and Oxford Hip and Knee Scores (OHS/OKS) [4, 5] incorporate patients' subjective experiences and perceptions into their assessments. However, it is the person who is at the center of attention in modern medicine, within which the quality of life and the patient's subjective perception of the results of treatment are considered an important indicator for determining the effectiveness of treatment. In this context, the Forgotten Joint Score-12 (FJS-12) [6] is a key tool for assessing the patient's ability to forget about the artificial joint in everyday life. The concept of the "forgotten joint" suggests that the more inconspicuous the joint becomes to the patient, the more successful the surgical treatment was [7]. The FJS-12 allows the assessment of not only physical functionality but also the patient's psychological comfort, making it an extremely sensitive indicator of the success of the treatment [8]. This scale was developed in 2007 by Professor Marcus S. Couste, an orthopedic surgeon specializing in joint replacement. The results of its validation were first published in 2012 in The Journal of Arthroplasty [7].

The Forgotten Joint Score-12 (FJS-12) scale has been tested for reliability and validity in patients after knee [9–12] or hip [11–13] arthroplasty. Due to its high sensitivity to assessing subjective comfort after total joint replacement, this scale has a minimal ceiling effect, unlike other patient-reported outcome measures (PROMs) [14]. A ceiling effect refers to the point at which the scale cannot detect improvement in a patient's condition after treatment. This is important for detecting small functional changes, especially among individuals with high activity levels.

The FJS-12 has been translated into several languages with promising results regarding validity and reliability for patients after knee [15–19] and hip [20, 21] arthroplasty, but a translation into Ukrainian has not yet been performed. This limits the possibilities for improving treatment due to the lack of feedback from the patient regarding his feeling of the artificial joint and the absence of this assessment in other used scales.

Purpose: To translate the Forgotten Joint Score-12 scale into Ukrainian and validate it for patients who have undergone knee or hip arthroplasty.

Material and methods

The study was approved by the Bioethics Commission of the State Establishment "Professor M. I. Sytenko Institute of Spine and Joint Pathology of the NAMS of Ukraine" (protocol No. 248 dated 10.02.2025). All patients signed an informed consent.

The work was carried out within the framework of a formal cooperation agreement with Forgotten Joint Scores (BGGK GmbH, Switzerland) [9], represented by the Chief Translation and Licensing Officer Dagmara Kulis. During the cooperation, we translated into Ukrainian and conducted linguistic validation of the English version of the FJS-12 scale for further use in the practice of Ukrainian doctors. This was carried out in the following sequence, in accordance with the requirements of the Good Practice for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes (PRO) Measures [22]:

– double translation: the questionnaire was translated into Ukrainian by two independent experts;

– reconciliation: both translations were combined into one optimal version;

– back translation: two independent back translations of the Ukrainian version into English were created;

– verification: a team of translators and clinicians checked the text for compliance with the original;

– expert proofreading: the text was proofread by a professional linguist;

– pilot testing: testing was conducted with the participation of 20 patients after hip (n = 10) and knee (n = 10) joint replacement;

– finalization: all necessary corrections were made based on the testing results.

Results

The result of the collaborative work is the Ukrainian-language validated Forgotten Joint Score-12 scales for patients after knee or hip arthroplasty, shown in Fig. 1 and 2.

Questions for assessing the condition of the knee joint (Forgotten Joint Score-12)

Patient: _____ Date: _____._____._____

A joint is considered healthy if it functions without you noticing it. However, even the slightest problem can draw your attention to the joint. You start thinking about it, paying attention to your feelings. The following questions concern **how often you pay attention to your affected knee joint in everyday life.**

Please choose the answer that best reflects your feelings.

No.	Do you pay attention to your knee joint…	Never	Almost never	Rarely	Sometimes	Almost always
1.	… at night, when you are in bed?	○	○	○	○	○
2.	… when you sit in a chair for an hour or more?	○	○	○	○	○
3.	… when you walk for more than 15 minutes?	○	○	○	○	○
4.	… when you take a bath/shower?	○	○	○	○	○
5.	… when you drive/travel as a passenger in a car	○	○	○	○	○
6.	… when you climb stairs?	○	○	○	○	○
7.	… when you walk on uneven surfaces?	○	○	○	○	○
8.	… when you get up from sitting on a low surface?	○	○	○	○	○
9.	… when you stand for a long time?	○	○	○	○	○
10.	… when you do housework or gardening?	○	○	○	○	○
11.	… when you go for a walk/hike?	○	○	○	○	○
12.	… when you play your favorite sport?	○	○	○	○	○

Fig. 1. Forgotten Joint Score -12 scale for the knee joint

During the pilot testing, the purpose of the survey and the meaning of all questions were well understood by all patients without exception.

Scoring algorithm

Each of the 12 questions in the scale is scored from 0 to 4 points, where the patient's answer "Never" is equal to 0, and "Almost always" is equal to 4 points. Thus, the total score obtained ranges from 0 to 48 [7]. The resulting score is linearly transformed into a scale from 0 to 100 according to the formula:

$$\text{The final score} = 100 - ((\text{sum of all points} / \text{number of questions with answers}) \times 25). \quad (1)$$

For example, if the patient answered "Sometimes" (3 points) to all 12 questions, then the final score is 25.

$$\text{The final score} = 100 - ((36 / 12) \times 25) = 25. \quad (2)$$

A high score on the FJS-12 scale indicates a good result after treatment.

If the patient did not answer more than 4 questions, the total score is not used.

The FJS-12 scale for the hip joint (Fig. 1) is aimed at assessing the level of involvement of the operated limb in the patient's usual life after total hip arthroplasty. The main attention is paid to such aspects as the feeling of discomfort in the joint while sitting, walking, climbing stairs, driving a car, standing for a long time or performing physical exercises.

The patient's responses are scored on a scale from "Never" to "Almost Always," which measures the level of awareness of the joint in various everyday situations. The total score is converted into a scale from 0 to 100 points, where 0 indicates maximum awareness (discomfort, limited movement), and 100 means complete "forgetfulness" of the joint. This approach allows us to assess not only the physical function, but also the patient's psychological comfort, in particular the ability to return to an active lifestyle.

The FJS-12 scale for the knee joint (Fig. 2) is aimed at assessing the functionality and sensation of the joint in patients after arthroplasty. It covers aspects such as the ability to climb and descend stairs, walk on uneven surfaces, do household chores, play sports, or stand for long periods of time.

Each response is scored in the same way as in the hip joint scale. Due to the high sensitivity of the scale, it is possible to accurately detect the patient's level of recovery, differentiating even the slightest changes in the condition of the joint. The FJS-12 for the knee joint is extremely useful for individuals seeking to restore physical activity, including sports.

Discussion

The FJS-12 scale can be used to assess the results of clinical studies aimed at improving the quality

Questions for assessing the condition of the hip joint (Forgotten Joint Score-12)

Patient: _____ Date: _____._____._____

A joint is considered healthy if it functions without you noticing it. However, even the slightest problem can draw your attention to the joint. You start thinking about it, paying attention to your feelings. The following questions concern **how often you pay attention to your affected hip joint in everyday life.**

Please choose the answer that best reflects your feelings.

№ з/п	Do you pay attention to your hip joint…	Never	Almost never	Rarely	Sometimes	Almost always
1.	… at night, when you are in bed?	○	○	○	○	○
2.	… when you sit in a chair for an hour or more?	○	○	○	○	○
3.	… when you walk for more than 15 minutes?	○	○	○	○	○
4.	… when you take a bath/shower?	○	○	○	○	○
5.	… when you drive/travel as a passenger in a car	○	○	○	○	○
6.	… when you climb stairs?	○	○	○	○	○
7.	… when you walk on uneven surfaces?	○	○	○	○	○
8.	… when you get up from sitting on a low surface?	○	○	○	○	○
9.	… when you stand for a long time?	○	○	○	○	○
10.	… when you do housework or gardening?	○	○	○	○	○
11.	… when you go for a walk/hike?	○	○	○	○	○
12.	… when you play your favorite sport?	○	○	○	○	○

Fig. 2. Forgotten Joint Score -12 scale for the hip joint

of life of patients after joint replacement. The effectiveness and benefits of using the FJS-12 scale are based not only on the subjective experience of orthopedic surgeons but also have practical application in clinical studies. Behrend et al. [7], using the FJS-12 scale, showed the influence of the year of manufacture of hip joint endoprostheses on the outcome of patient treatment, indicating the possibility of using the FJS-12 for studies of different options for prostheses. This scale can be used to assess the results in studies of different durations. Thus, using the FJS-12, J. Manara et al. [23] revealed the advantages of using a robotic system during partial knee replacement over a 2-year follow-up period. The use of FJS-12 for long-term observation was evaluated in patients with total hip arthroplasty due to femoral head aseptic necrosis over a period of 10 years [24].

The internal consistency of the FJS-12, according to Cronbach's alpha, is high [14] and is 0.95 in the first publication [7], for the knee joint from 0.97 to 0.86 [11, 15, 25], demonstrating its reliability as a self-report instrument for patients. The construct validity of the FJS-12 is confirmed by the presence of strong correlations with WOMAC ($r = –0.75$) [7], and with OHS/OKS ($r = 0.79$ and $r = 0.75$, respectively) [11]. Moreover, the FJS-12 scale has a high sensitivity to detect minimal changes in the condition of patients after arthroplasty [15].

The advantage of the FJS-12 is that it takes into account the patient's subjective comfort in everyday life and is more sensitive to minor changes and problems, which eliminates the limitations of its use for assessing long-term results of arthroplasty, especially in individuals with a high level of functionality, which is impossible when using traditional scales [14].

Conclusions

The Forgotten Joint Score-12 scale is a reliable and sensitive tool for assessing the results of hip and knee arthroplasty. It allows obtaining accurate data on the subjective perception of patients about their condition, contributes to the improvement of surgical techniques and helps to determine the optimal approaches to the treatment of patients who are indicated for knee or hip arthroplasty. The Forgotten Joint Score-12 scales for knee and hip joints translated by us into Ukrainian are absolutely correct and validated, which provides a guaranteed opportunity for Ukrainian-speaking specialists to use them correctly in their daily practice.

Conflict of interest. The authors declare no conflict of interest.

Prospects for further research. Conducting clinical trials using the FJS-12 to evaluate the results of treatment of hip/knee diseases in Ukraine.

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Contribution of the authors. Bondarenko S. E. — development of the study concept, patient survey, participation in data collection, analysis of results; Filipenko V. A. —

development of the study concept; Maltseva V. E. — analysis of results; Sereda D. I. — patient survey, participation in data collection; Pryimak D. V. — patient survey, participation in data collection. All authors participated in writing the article and approved the final manuscript.

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UKRAINIAN-LANGUAGE VALIDATED SCALES FORGOTTEN JOINT SCORE-12 FOR PATIENTS AFTER HIP AND KNEE ARTHROPLASTY

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