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Reliability and Validity Study of the Turkish Version of the Goodman Arthroplasty Satisfaction Score

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Aim: **This study aimed to adapt the Goodman score to Turkish culture and evaluate its validity and reliability among Turkish patients undergoing total knee and hip arthroplasty.**

Methods: **A methodological, cross-sectional study was conducted with 100 primary osteoarthritis patients who underwent total knee and hip arthroplasty. The original Goodman score was first translated into Turkish and culturally adapted, after which the psychometric properties of the Turkish version were evaluated through assessment of content validity, construct validity, criterion validity, internal consistency, test-retest reliability, item-total correlation, and item discrimination.**

Results: **The Turkish version of the Goodman score showed psychometric characteristics similar to those of the original version, with strong internal consistency (Cronbach's alpha = 0.925) and test-retest reliability (intraclass correlation coefficient: 0.501). Additionally, criterion validity analysis revealed significant correlations between the Turkish Goodman score and the Oxford Knee Score and Oxford Hip Score.**

Conclusion: **The Turkish-adapted Goodman score is a valid, reliable, and applicable tool for assessing patient satisfaction in Turkish-speaking patients following primary total knee and hip arthroplasty.**

Keywords: Reliability, satisfaction, total joint arthroplasty, total knee arthroplasty, total hip arthroplasty, validity.

INTRODUCTION

Approximately 242 million people worldwide have symptomatic and activity-limiting osteoarthritis (OA) of the knee and/or hip[1]. An estimated 43% of people with OA are 65 or older, and this rate is expected to increase as the older population grows[2]. When conservative treatment approaches fail to alleviate OA-related issues such as pain and limited mobility, arthroplasty surgery becomes the most effective treatment option. Total knee arthroplasty (TKA) and total hip arthroplasty (THA) lead to substantial improvements in pain symptoms, joint functionality, functional capacity, and quality of life (QoL)[3-5].

Due to the high success of total joint arthroplasty, these surgeries are increasingly performed as primary treatment and are now the most frequently performed orthopedic procedure in the United States[6-8].Between 2000 and 2019, the estimated annual volumes of THA and TKA increased by an average of 177% and 156%, respectively[9]. The demand for knee and hip arthroplasty is expected to further increase by almost 40% by 2060[10].

Considering the growing number of TKA and THA procedures being performed, postoperative patient satisfaction has an important place in evaluating surgical success in relation to patients' needs and expectations. Assessing the results of surgery using patient-reported outcome measures is essential to optimize patient outcomes. The literature reveals that the reporting quality of postoperative patient satisfaction is undermined by the use of various measurement tools (e.g., the Short Form-36 QoL scale, Equol QoL scale, Western Ontario and McMaster Universities [WOMAC] Osteoarthritis Index, and Oxford Knee Score), which makes it difficult to effectively aggregate or compare data[11-15]. Therefore, a validated, arthroplasty-specific satisfaction instrument is necessary to evaluate and compare surgical techniques, prosthesis types, care settings, and pain management protocols. In 2020, Goodman et al. developed a well-designed scale with strong psychometric properties

that enables a rapid assessment of patient satisfaction following knee and hip arthroplasty[16]. The scale consists of only five items, four assessing patient satisfaction and one assessing quality of life after primary total joint replacement. The original Goodman score has been adapted and validated for use in Spanish[17] (THA), Italian[18] (THA/TKA), and Norwegian[19] (THA/TKA). In our country, there is no specific measurement tool to evaluate patient satisfaction after TKA and THA. This study aimed to adapt the Goodman score to Turkish culture and evaluate its validity and reliability among Turkish patients who underwent primary total knee and hip arthroplasty.

METHODS

Design and Setting

This study followed the International Test Commission (ITC) Guidelines for test translation and adaptation[20]. A two-phase methodological approach was employed. First, the original Goodman score was translated into Turkish and cross-culturally adapted. The Turkish version was then administered to the study participants and its psychometric properties were analyzed. The study was conducted in the orthopedics and traumatology clinic of a university hospital between June 1, 2023 and May 15, 2024.

Participants

The study population consisted of 335 patients who underwent TKA (n=255) or THA (n=80) in the orthopedics and traumatology clinic of our hospital between June 1, 2021 and October 30, 2022.

According to the literature, the recommended sample size for cross-cultural validity and reliability studies is typically at least ten times the number of items in the scale[21]. As the Goodman score includes five items, a minimum of 50 participants was required. A total of 100 patients (50 TKA and 50 THA) were ultimately included in the study to strengthen the power of the analysis.

Inclusion criteria were: being aged 18 years or older; undergoing unilateral TKA or THA for due to primary OA between June 1, 2021 and October 30, 2022; having no postoperative complications; being oriented to time and place; having no hearing or speech impairments; understanding, speaking, and being at least literate in Turkish; having no diagnosed psychiatric disease or cancer; and providing voluntary consent to participate in the research.

Exclusion criteria were: undergoing revision joint arthroplasty, refusing to participate in the study, being unreachable by phone, and not being able to complete the survey form.

Data Collection

A total of 335 patients were assessed for eligibility. Medical records were screened to collect sociodemographic and clinical data, including gender, age, date of surgery, surgical procedure, and phone number. Of these, 312 patients met the selection criteria, and attempts to contact them were initiated in February 2024; therefore, all patients had at least 1 year of follow-up after TKA and THA.

Of the 255 patients who underwent TKA, we excluded 47 patients who underwent revision surgery, 20 who underwent bilateral arthroplasty, 54 who could not be contacted by phone, 70 who declined to participate, and 14 who had postoperative complications. Among the 80 THA patients, 2 had revision surgery, 4 had complications, 3 died after surgery, 3 had cognitive impairments, and 8 could not be reached.

In total, 100 patients (50 TKA, 50 THA) were successfully contacted by phone, provided both digital written and verbal informed consent to participate in the study, and completed the study assessments. Of these, 25 of them participated in the re-test (15 TKA, 10 THA). A flowchart summarizing the inclusion and exclusion process is provided in Figure 1.

Data Collection Tools

Data were collected using a patient information form, the Oxford Knee Score (OKS), Oxford Hip Score (OHS), and Turkish version of the Goodman score.
Patient Information Form: The patient information form was created by the researchers and comprised questions about sociodemographic and clinical characteristics including gender, age, education level, marital status, height, weight, body mass index (BMI), presence of chronic diseases, number of medications used, ASA (American Society of Anesthesiologists) physical status classification, type of anesthesia received, and operated side (left or right).

Oxford Knee Score: The OKS was developed by Dawson et al. in 1998[22]. The Turkish validity and reliability study was performed by Tugay et al. in 2016 (Cronbach's α: 0.90)[23]. The scale assesses pain and functional status and is used to evaluate the effectiveness of treatment and the patient's knee-related QoL. Each of the 12 items in the scale is scored between 0 (most pain/difficulty) and 4 (least pain/difficulty), for a total score ranging from 0 to 48 points. Joint function is interpreted based on this

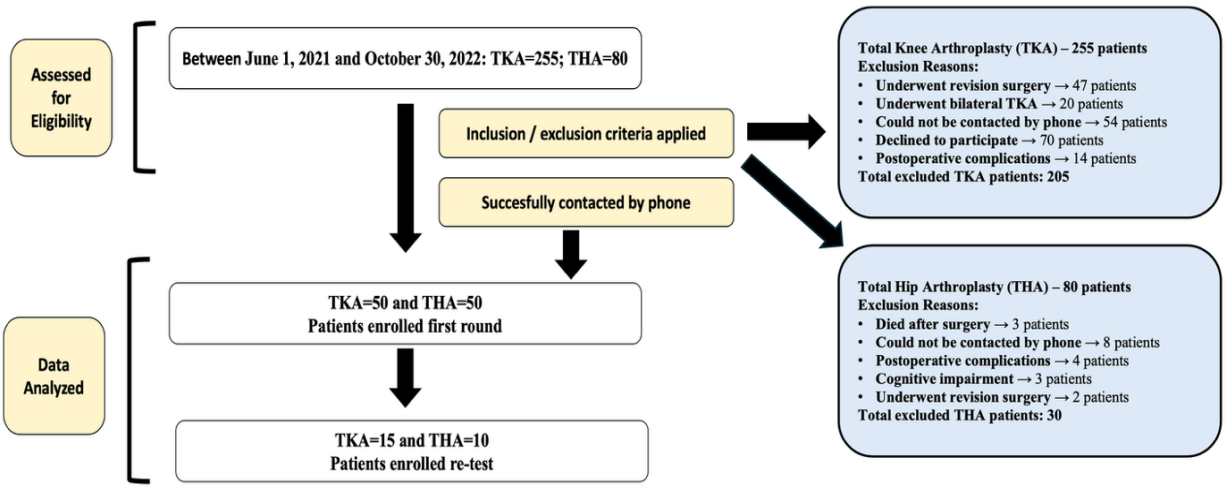

Fig. 1 — Flow Chart of the Study Methodology.

score as poor (0-19 points, severe knee arthritis), moderate (20-29 points, moderate-to-severe knee arthritis), good (30-39 points, mild-to-moderate knee arthritis), and excellent (40-48 points, satisfactory joint function)[22].

Oxford Hip Score: The OHS was developed by Dawson et al. and the validity and reliability of the survey was conducted by the same researchers in 1998[22]. The Turkish validity and reliability study was conducted by Tugay et al. (Cronbach's α: 0.93)[24].It consists of 12 items about pain, walking, physical activity, function, QoL, and psychological wellbeing. Based on their pain and functional ability over the previous four weeks, patients rate each item on a 5-point Likert type scale ranging from 1 (least difficult) to 5 (most difficult). Item scores are summed to give a total score ranging from 12 and 60. Lower scores reflect better outcomes.

Goodman Score: This instrument was developed by Goodman et al. in 2020 to evaluate patient satisfaction after TKA or THA. The score consists of two parts. The first assesses satisfaction with 4 items, each rated on a 5-point Likert-type scale ranging from 0 (very dissatisfied) to 4 (very satisfied). These scores are multiplied by 25 and averaged to yield the satisfaction summary score of 0, 25, 50, 75, or 100. The second part is a single item to assess QoL. The scale has been shown to be valid and reliable, with high internal consistency and feasibility, and can be used postoperatively to evaluate the impact of total joint arthroplasty[16].

Data Analysis

The data were analyzed using the SPSS v.26.0 (released 2016; Armonk, NY, USA: IBM Corp.) and AMOS v.26.0 (modified 2022; Armonk, NY, USA: IBM Corp.) programs. Number, percentage, mean, and standard deviation were used as descriptive statistics. The linguistic validity of the score was ascertained through a rigorous process including translation and back-translation, followed by expert opinion and content validity index (CVI) analysis. Construct validity was evaluated using scree plots, exploratory factor analysis (EFA) to determine item-factor relationships, and confirmatory factor analysis (CFA) to determine whether the items and factors explained the original structure of the scale. Kaiser-Meyer-Olkin (KMO) test, Bartlett's sphericity test, root mean square error of approximation (RMSEA), degrees of freedom, comparative fit index (CFI), and goodness-of-fit index (GFI) values were analyzed. To evaluate internal consistency reliability, we determined Cronbach's α coefficients. To assess discrimination, item-total correlations were calculated and item discrimination indices was determined by comparing the 27% highest-scoring and lowest-scoring groups. For criterion validity, the OKS was used for knee arthroplasty patients, and the OHS was used for hip arthroplasty patients.

Ethical Consideration

This study was conducted in accordance with the Declaration of Helsinki. Prior to the study, we obtained permission from the score developers to adapt the instrument to Turkish. The study protocol was approved by XXX University Health Sciences Non-Interventional Research Ethics Committee (date: XXX, decision number: XX/XX). Permission was also obtained from the hospital (date: XXX, number: XXX). All participants were contacted by phone and gave informed consent for the research. The consent was obtained both via Google form and verbally.

RESULTS

The 100 participants (50 TKA, 50 THA patients) in the study had a mean age of 66.06 ± 5.84 years and a mean BMI of 30.34 ± 4.69. Additionally, 75% were women, 83% had chronic disease, and 51% were ASA class 2. Mobility assistive devices were used by 36% of the TKA patients and 44% of the THA patients preoperatively. The TKA patients had a mean OKS of 37.34±7.19; the THA patients had a mean OHS of 34.84±9.88. Mean Goodman satisfaction scores were 81.12 ± 13.26 for the TKA patients and 81.37 ± 17.42 for the THA patients. On the QoL item, "great improvement" was reported by 23 TKA patients (46%), and "more improvement than I ever dreamed possible" was reported by 19 THA patients (38%).

Validity Analysis

Translation and cross-cultural adaptation: Translation and cross-cultural adaptation of the Goodman Score were carried out using the five-step technique recommended by Brislin et al.[25] First, the scale was translated from English to Turkish by two health professionals who are familiar with the terminology in the scale, have good command of Turkish and English, and are experienced in English to Turkish translation. A single Turkish version of the scale was created and examined by three experts who had a good command of both languages, were familiar with both cultures, and were knowledgeable about the scale's content and how it is administered. The experts evaluated the items in terms of clarity, word choice and sentence structures, and cultural appropriateness, and approved the Turkish version. Finally, the Turkish version of the scale was back-translated by two English language specialists who had not seen the original scale. The back-translated version was compared to the original version to ensure linguistic validity and establish the final version.

Content validity: For content validity, expert opinion was sought from 11 academicians with doctoral degrees to determine whether each item and the whole scale were appropriate for measuring the target construct. The experts compared the original and translated versions and scored the appropriateness of each item between 1 and 4 points (1 = requires substantial editing, 2 = requires minor editing, 3 = good, 4 = excellent). Using the Davis technique, item-level CVI values were determined by dividing the number of experts who scored an item either 3 or 4 by the total number of experts. The scale-level CVI was also determined by averaging the item CVI values. The resulting scale CVI for the Turkish Goodman score was 0.90. Minor corrections were made in line with the expert opinions. As a result of these corrections, it was determined that the Goodman score had adequate linguistic and content validity. The final version of the score was piloted with 25 people not included in the study sample, and the items were found to be understandable.

Construct validity: EFA and CFA were conducted to assess the construct validity of the Turkish Goodman score. KMO and Bartlett's sphericity tests were used to assess whether the sample size was sufficient for EFA. The results of the KMO (0.775) and Bartlett's sphericity (χ 2 = 347.291, df = 6, $p < 0.001$) tests demonstrated sufficient sample size and data suitability for EFA (Table I).

In factor analysis, the number of factors is decided according to the line graph and the eigenvalues of the factors. According to our EFA results, a single-factor structure consisting of four items was obtained. The single-factor structure of the score explained 82.292% of the total variance. Factor loadings of the items varied between 0.893 and 0.922 (Table I).

CFA was first conducted to evaluate the unidimensional structure of the Turkish version of the Goodman satisfaction score. The initial model demonstrated a poor fit, with goodness-of-fit indices falling outside acceptable limits (χ^2/df = 16.495, GFI = 0.865, AGFI = 0.323; Table II). Based on modification indices, we added covariance between the error terms of two items (e2 and e3). The revised model showed an excellent fit to the data (χ^2/df = 2.236, GFI = 0.989, AGFI = 0.890, NFI = 0.994, CFI = 0.996, RMSEA = 0.112, SRMR = 0.0069). These results confirmed the unidimensional structure of the scale (Figure 2).

Although most fit indices indicated very good model fit after the modification, the RMSEA value remained relatively high at 0.112. This result may have been a result of the relatively small sample size (n = 100) and the low degrees of freedom in the model, both of which are known to inflate RMSEA in CFA. According to simulation studies, RMSEA values above 0.10 can occur in well-specified models under such conditions, especially in models with few parameters or in single-factor solutions[26]. In contrast, other indices such as CFI, GFI, and SRMR supported a strong model fit. Based on this, the overall structure of the model was considered acceptable and theoretically justified.

Reliability analysis: The Cronbach's α reliability coefficient of the Turkish Goodman score was determined to be 0.925, indicating excellent internal reliability. Item analyses included item-total correlation, item discrimination index (27% upper-

Table I. — Exploratory Factor Analysis of Goodman Score.

KMO= .775; Barlett's Test of Sphericity (x^2=347.291; df=6; sig. =.000) Eigenvalue=3.292; Explained of the Total Variance=82.292	Factor Loadings
Overall, how satisfied are you with the results of your knee surgery?	.922
For relieving pain?	.916
For improving your ability to do house work or yard work?	.897
For improving your ability recreational activities?	.893

Table II. — Post-Modification Fit Indices of the Goodman Satisfaction Score CFA Model.

Fit Index	Value	Threshold (Cutoff)	Interpretation
χ^2/df	2.236	< 3	Acceptable fit
GFI	0.989	> 0.90	Excellent fit
AGFI	0.890	> 0.80	Good fit
NFI	0.994	> 0.90	Excellent fit
CFI	0.996	> 0.95	Excellent fit
RMSEA	0.112	< 0.08–0.10	Moderate fit
SRMR	0.0069	< 0.08	Excellent fit
Q: Question; X2: Ki Kare; df: Degrees of freedom; GFI: Goodness of Fit Index; AGFI: Adjustment Goodness of Fit Index; NFI: Normed Fit Index; CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation; SRMR: Standardized Root Mean Square Residual.			

X^2=2.236; df=1; X^2/df=2.236; GFI=,989; AGFI=,890; NFI=,994; CFI=,996; RMSEA=,112; SRMR=,0069

Fig. 2 — Confirmatory Factor Analysis of Goodman Score.
(Q: Question; X2: Ki Kare; df: Degrees offreedom; GFI: Goodness ofFit Index; AGFI: Adjustment Goodness ofFit Index; NFI: Normed Fit Index; CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation; SRMR: Standardized Root Mean Square Residual).

lower group comparisons), and Cohen's kappa values. Item-total correlations varied between 0.816 and 0.846, and the Cronbach's α of the scale did not increase after removing any of the 4 items (Table III).
Cohen's kappa was calculated for the QoL item and indicated good reliability (0.829, p < 0.001).

Comparison of mean scores from the highest-scoring 27% and lowest-scoring 27% of the sample using the independent samples t-test revealed significant differences for both the satisfaction and QoL parts of the Goodman score (p<0.001; Table IV).

For test-retest reliability analysis, the scale was readministered to 25 participants (19 women and 6 men; mean age 65.24 ± 5.395 years; 15 TKA and 10 THA patients) after an interval of 2 weeks. In this patient subgroup, the mean satisfaction score was 85.00 ± 14.77 in the first test and 85.00 ± 13.44 in the retest (p > 0.05), indicating excellent temporal stability. The test and retest results were also strongly correlated (r = 0.925) (Table V). Test–retest reliability was further evaluated using ICC, calculated with a two-way mixed-effects model for absolute agreement. The ICC was found to be 0.959 (95% CI: 0.906–0.982; p < 0.001), confirming excellent reliability of the scale.

Criterion validity: Pearson correlation analysis revealed a strong positive correlation between the Turkish Goodman satisfaction score and the OKS (r = 0.806, p < 0.01) and OHS (r = 0.926, p < 0.01) (Table VI). There was also strong negative correlation between the Goodman QoL score and the OKS (r = -0.748, p < 0.01) and OHS (r = -0.879, p < 0.01) (Table VI). This negative correlation resulted from the reverse scoring structure of the QoL item, in which higher scores reflect poorer quality of life, in contrast to the OKS and OHS, where higher scores represent better outcomes.

Table III. — Factor Loads, Cα, Item-Total Score Correlation, AVE and CR Values of Goodman Score Items.

Variables	İtems	Factor Loads	Cα	AVE	CR	If Item is Deleted Cα	Item-total score correlation
Goodman Satisfaction	Q1	.935	0.925	0.736	0.917	.838	.838
	Q2	.770				.823	.823
	Q3	.759				.816	.816
	Q4	.949				.846	.846
AEV: average extracted variance; CR: composite reliability.							

Table IV. — Independent Sample t-Test Results for Lower and Upper Group Means.

Items	Group	n	Mean	sd	df	t	p
Q1	Upper Group	27	100.00	0.00	52	12.542	0.000
	Lower Group	27	69.4	12.66			
Q2	Upper Group	27	100.00	0.00	52	17.207	0.000
	Lower Group	27	59.26	12.30			
Q3	Upper Group	27	100.00	0.00	52	19.025	0.000
	Lower Group	27	57.41	11.63			
Q4	Upper Group	27	100.00	0.00	52	12.447	0.000
	Lower Group	27	68.52	13.14			
Total	Upper Group	27	100.00	0.00	52	21.350	0.000
	Lower Group	27	63.66	8.85			
QoL	Upper Group	27	3.41	0.64	52	19.667	0.000
	Lower Group	27	1.00	0.00			
Sd: standard deviation; df: degrees of freedom.							

DISCUSSION

TKA and THA are standardized, cost-effective procedures that are widely used to treat advanced OA and typically result in favorable outcomes[27]. Consequently, postoperative patient satisfaction has emerged as a crucial metric for assessing surgical success and healthcare service quality. A systematic review by Kahlenberg et al. indicated that studies evaluating post-arthroplasty satisfaction exhibit significant heterogeneity, lacking a standardized measurement approach[15]. The satisfaction assessment instrument developed by Goodman et al. for patients undergoing total joint arthroplasty is a specific, standardized measure of satisfaction after arthroplasty[16].This study presents a valid and reliable Turkish adaptation of the Goodman score that can be used to evaluate patient satisfaction and QoL after TKA and THA among Turkish speakers.

Interpretation of the results

Based on the results, our findings indicate that the protocol is manageable and practical to implement in clinical setting in terms of its application by healthcare professionals. Although completing and reviewing the clinically-related questionnaires took time, which varied depending on the clinical experience of the individual, this was not perceived as disruptive by the participants. The medical jargon was considered manageable by all physicians and paramedics, which made the protocol easy to read. Practitioners appreciated the clear guidelines and the flexibility the protocol allowed to adjust the treatments based on individual patients needs and responses. An effective adjustment could be the implementation of an adaptive protocol, in which achieved milestones are omitted in subsequent assessments. This would progressively shorten the protocol over time, making follow-up assessments more efficient. To facilitate broader adoption across centers, it is essential to shorten the overall protocol, as recommended by 6 out of 10 respondents. Additionally, providing a clear explanation of all abbreviations would enhance usability. Interestingly, while primary clinicians considered the protocol rather lengthy and time-consuming, paramedical staff described it as comprehensive. To support further implementation, it was suggested to offer a one-time training sessions or presentation to address potential questions in advance. Moreover, the development of a pocket card summarizing the protocol's flowchart could aid in quick reference and reduce the time needed for

Table V. — Goodman Score Pre-Post Test Paired Group t-Test Results.

	N	x̄±sd	t	p	r*
Q1 Pre Test	25	86.00±14.58	-.242	.810	.941
Q1 Post Test	25	87.00±14.65			
Q2 Pre Test	25	84.00±18.93	.573	.569	.857
Q2 Post Test	25	81.00±018.09			
Q3 Pre Test	25	84.00±17.50	.652	.518	.781
Q3 Post Test	25	81.00±14.93			
Q4 Pre Test	25	86.00±16.27	.664	.510	.866
Q4 Post Test	25	83.00±15.68			
Total Pre Test	25	85.00±14.77	.501	.619	.925
Total Post Test	25	85.00±13.44			
QoL Pre Test	25	2.00±1.00	-149	.882	.938
QoL Post Test	25	2.04±0.89			
x̄: mean; sd: standart deviation; r*: correlation coefficient.					

Table VI. — Pearson Correlation Analysis Findings on Criterion-Related Validity.

	Variables	1	2	3	4
1	Goodman Satisfaction	1			
2	Goodman Quality of Life	-.813**	1		
3	OKS	.806**	-.748**	1	
4	OHS	.926**	-.879**	-.315*	1
*p<0.05, **p<0.01					

familiarization. Additional recommendations include the automatic monitoring of the flag system of the development of a digital tool to support this process. Furthermore, incorporating patient feedback and experiences during treatment, guided by the protocol, could provide valuable insights and enhance patient-centered care.

Another point of feedback was the terminology used. The variability in language, for example about load bearing, complicates clinical-decision making and leads to diverse therapeutic approaches. Load bearing is not specifically defined for the upper extremity in this context and is dependent on the advice given by specialists and physiotherapists. The variance in language complicates the clinical decision-making process, leading to the application of numerous therapeutic approaches. A standardized terminology/ protocol would facilitate consistent patient guidance and prevent any confusion during the rehabilitation process, consequently leading to optimal recovery and quicker reintegration into daily routines. With this protocol, we aimed to take a first step in the right direction. It is important to keep these considerations in mind for future adaptations to further improve the protocol for rehabilitation.

Clinically, prolonged immobilization was standard, but recent trends favor shorter immobilization for fractures[18–21]. A study on the immobilization of non-displaced distal radius fractures demonstrated that a shorter immobilization period of one week, compared to the current 4-5 weeks, results in higher patient satisfaction and improved functional outcomes[22]. In our cohort, functional recovery shows significant progress in light daily activities within the first six weeks, and in more complex activities (strength, range of motion, etc.) within three months. Only one complication was observed. While still underpowered to support any clinical claims, clinical data is comparable or better than reported in literature[17,23,24], and complications[25-27], contributing to the previously available evidence of a clinical benefit or shorter, individualized rehabilitation.

Future research must evaluate this (adapted) protocol in a controlled setting and appropriately powered on relevant parameters; this study is currently ongoing. The observed variability in outcomes (e.g. 30% did not achieve PASS-scores) requires further investigation towards differential efficacy between patients and further need for assessing and implementing relevant effect-modifiers. In line with this suggestion, previous

papers have called for the need to assess the appropriate load and utilization of the affected arm[9,25].

Limitations of the study

The most important limitation of the protocol is the lengthiness and complex terminology associated with various components within the protocol, a concern also highlighted by the physicians. Simplifying the protocol could enhance its manageability, potentially facilitating its integration into diverse healthcare settings and contributing to broader accessibility and utilization in clinical practice. Additionally, a limitation of the study is the uneven distribution between the number of DRF and PHF cases. As a result, it is not possible to draw conclusions about PHF. Furthermore, no power analysis was conducted, as this is a feasibility study; therefore, no statements can be made regarding the complication rate in our population.

CONCLUSIONS

To our knowledge, this is the first performance based protocol for operatively treated UE fractures focusing on performance based rehabilitation. Unlike other protocols, this one serves as a flexible guideline, allowing for adaptations based on individual patient factors. The positive findings of the qualitative results from this feasibility study suggest that it is safe and feasible in practice according to our findings for at least DRF. A standardized protocol would facilitate consistent patient guidance and prevent confusion during the rehabilitation process. The PERFoRM protocol provides this standardized assessment of load bearing capacity, performance and individualization in rehabilitation, serving as a functional step in this process. Future research will also explore the protocol's applicability to a broader patient population as suggested by the practitioners in hope to create a broadly accepted performance based rehabilitation protocol.

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Conflicts of Interest: The authors declare no conflicts of interest.

Competing interests: The authors declare no competing interests.

Ethics approval and consent to participate: This study conducted in accordance with the Helsinki Decleration Priciples. Prior to the study, we obtained permission from authors who developed the score to adapt the instrument to Turkish. The study protocol was approved by Balıkesir University Health Sciences Non-Interventional Research Ethics Committee (Date: 13.06.2023 and Decision No: 2023/55). Permission was acquired from the Balikesir University Health Practice and Research Hospital (Date: 03.11.2023 and No: 309787). All the participants were contacted by phone and gave informed consent for the research. The consent was obtained both via Google form and verbally.

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