

Assessment of Recovery following Rehabilitation in Orthopaedic Surgeries: A Review of Existing Tools

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ABSTRACT

With the rise in musculoskeletal problems, orthopaedic surgeries have increased. Successful recovery after such surgeries depends not only on the operation itself but also on proper rehabilitation. Two types of assessment tools are used to track patient recovery: Performance-Based Measures (PBMs), which evaluate physical abilities like walking or balance, and Patient-Reported Outcome Measures (PROMs), which reflect pain levels, mental well-being, and daily function. This literature review looked at peer reviewed research from 1985 to 2025, analyzing widely used PROMs such as the Oxford Scores, WOMAC, SF-36, LEFS, KOOS, DASH, and others that also consider psychological and pain-related factors. The review found that while each tool is helpful in specific ways, none of them fully capture the complete picture of post-surgical recovery, especially where patients may have multiple joint issues and face unique social and cultural challenges. These gaps point to the need for a comprehensive, easy-to-use tool that considers all key aspects of recovery.

Keywords: post-surgery recovery, orthopedic surgery, rehabilitation, patient reported measures

INTRODUCTION

Orthopaedic surgery includes interventions for fractures, ligament or tendon repairs, joint replacements, and spinal surgeries, aimed to restore the musculoskeletal structure and function.¹ Global prevalence of conditions that require these procedures are on a peak, driven by factors including older people, injuries from trauma, and the increasing incidence of degenerative diseases like osteoarthritis.² India, with its diverse population, has observed a consistent growth in the number of orthopaedic surgeries due to the increased prevalence of musculoskeletal disorders and enhanced access to surgical services.³ Following these surgical interventions, postoperative rehabilitation is important to

ensure the functional recovery.⁴ Outcomes such as enhanced joint mobility, muscle strength, balance, and functional independence, are instrumental in decreasing disability and improving quality of life of patients.^{5,6} Efficacy of physiotherapy is dependent upon assessment of recovery status to tailor treatment, long-term prognosis, and make personalized rehabilitation protocols.⁷

Postoperative recovery status assessment typically employs functional tools which can be one by two primary instruments: Performance-Based Measures (PBMs) and Patient-Reported Outcome Measures (PROMs).⁸ PBMs are based on objective measurement of physical function, examples via the Timed Up and Go (TUG) test⁹ and

Six-Minute Walk Test (6MWT)¹⁰. PROMs such as the Oxford Knee Score,¹¹ WOMAC,¹² and SF-36¹³ inform about subjective insight into pain, function, and quality of life. These measurement types are complementary, each describing different aspect.

There are many existing assessment tools that are specific to particular joints, but they fail to account for the multifaceted rehabilitation requirements by physiotherapists post upper limb or lower limb surgery.¹⁴ Recovery needs to be seen in many facets like physical, cognitive, functional and communication domains. Tools such as Timed Up and Go (TUG) test and Readiness for Hospital Discharge Scale (RHDS) have demonstrated responsiveness and utility in early functional recovery post-arthroplasty, yet still fall short in covering multidimensional recovery aspects comprehensively.¹⁵ Moreover, subjective experiences such as pain and psychological status are key influencers for rehabilitation outcomes that are often inadequately captured or poorly interpreted, especially when relying on maximum intensity scores without considering their temporal variation.¹⁶ Rehabilitation professionals often treat patients with multi-joint involvement or those undergoing diverse orthopaedic surgeries within resource-constrained settings. This literature review undertakes a critical analysis of existing research in tools to assess post-operative orthopaedic rehabilitation.

MATERIALS & METHODS

A methodological study for the review of literature was conducted using sources such as Google Scholar, PubMed, Cochrane Library and Science Direct including studies from 1985-2025. Keywords used were: “post-operative”, “orthopaedic rehabilitation”, “orthopaedic surgery”, “physiotherapy outcomes” “depression”, “cognition”. Original, peer-reviewed

research articles in the English language where full text articles on research involving use or validation of patient reported scales/measures for assessment of function were available were included. Duplicate and non-relevant articles, case reports, and non-controlled trials were excluded.

RESULT

Figure 1 shows the flowchart of articles that were retrieved. Table 1 describes the Patient-Reported Outcome Measures (PROMs) that are being used to assess function of upper and lower limbs and assessment of other domains post-operatively.

DISCUSSION

Twelve tools were found in the present study. There are five scales to assess the function of lower limb, two to assess function of upper limbs. Other scales that are used assess pain, quality of life, anxiety, depression. One scale was found for assessment of recovery post- surgery. Other tools do exist but mostly cover the same domains.

Post operative recovery from orthopaedic surgery requires an integrative approach including physical, functional, and psychological aspects of health. In the early in-hospital phase cognition, orientation, speech, independence may be affected. Certain scales which are available are focused on the recovery from anesthesia rather than a focus on functional independence. Communication is also seen to be affected. Current outcome measures have served valuable roles in different dimensions. Existing tools are not designed for use across diverse clinical settings of the early phase and late phase of rehabilitation to get a comprehensive picture. This review identified significant gaps in a single integrative tool to assess post operative orthopaedic recovery.

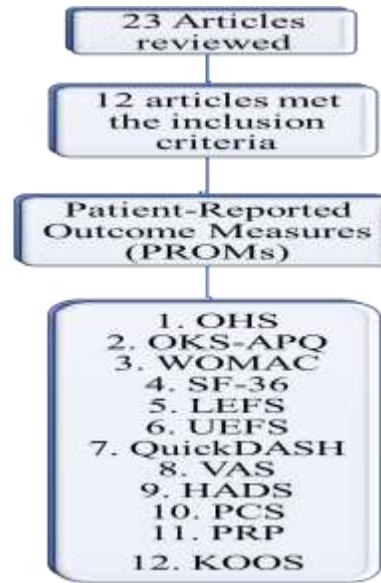


Figure 1: Flowchart of articles found

Name	Author and Year	Purpose	Method	Sample	Findings	Uniqueness	Name
1	Oxford Hip Score (OHS) ¹⁷	Dawson et al., 1996	Assess pain and function	12 item questionnaires on 1-5 Likert Scale	Post total hip replacement patients	Practical, reliable, valid and sensitive to clinically important changes.	Hip joint specific ADLs and limitations
2	Oxford Knee Score-Activity & Participation Questionnaire (the OKS-APQ) ¹⁸	Dawson et al., 2014	To assess higher level of activity and participation to supplement OKS	8 item questionnaires	Post total knee replacement patients	Reliable, valid and responsive.	Focuses on activity and participation along with pain related to knee joint
3	Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) ¹²	Bellamy et al., 1988	Assesses pain, stiffness and physical function	24 item questionnaires	Patients with osteoarthritis	Validated WOMAC is a useful tool to track patient outcomes and evaluate treatment effectiveness in clinical practice.	Widely used in hip and knee OA
4	Short Form Health	Ware &	To assess quality of	36 item questionnaire	General and clinical	Valid for many diseases	Covers physical,

	Survey (SF-36) ¹³	Sherbourne, 1992	life	– 8 domains	population		emotional, social and mental health
5	Lower Extremity Functional Scale (LEFS) ¹⁹	Binkley et al., 1999	To assess lower limb function	20 item questionnaires	Patients with lower extremity musculoskeletal dysfunction	Reliable and sensitive to change	Focuses on physical activity limitations
6	Upper Extremity Functional Scale (UEFS) ²⁰	Pransky et al., 1997	To assess upper limb function	8 item questionnaires	Patients with upper extremity musculoskeletal dysfunction	Reliable and sensitive to change	Clinically relevant for upper limb rehabilitation
7	Quick DASH Disabilities of the Arm, Shoulder and Hand (DASH) ²¹	Beaton et al., 2005	To assess upper limb function	11 items derived from the original 30-item DASH questionnaire	Patients with various upper-limb conditions	Reliable and valid across various condition	Facilitates quicker assessment
8	Visual Analogue Scale (VAS) ²²	Hayes et al., 1921	To assess intensity of pain	A 10 cm line with description of No pain to Pain as bad as it could possibly be	Patients with pain post various surgical or musculoskeletal conditions	Sensitive to change depending on subject	Subjective measurement
9	Hospital Anxiety and Depression Scale (HADS) ²³	Snaith et al., 2000	To measure anxiety and depression in hospital patients	14 item questionnaires	Post op patients in surgical wards	Sensitive in detecting psychological distress	Distinguishes between anxiety and depression in non-psychiatric hospital settings.
10	Pain Catastrophizing Scale (PCS) ²⁴	Sullivan et al., 1995	To evaluate how individuals perceive and respond to pain	13 items questionnaire	On many clinical and non-clinical populations	Reliable predictor of chronic pain	Helps identify patients at risk for poor pain coping
11	Postoperative Recovery Profile (PRP) ²⁵	Allvin et al., 2011	To assess multidimensional recovery post-THR/TKR	19 item questionnaires	Patients of post TKR/THR	Reliable	Tracks recovery in IPD setting
12	Knee Injury and Osteoarthritis Outcome Score (KOOS) ²⁶	Roos et al., 2003	To assess patient relevant outcomes in knee injury and OA	42-item questionnaire	Patients with TKR, OA ACL injury	Valid, reliable	Includes sports/recreation and QOL domain

Table 1: Patient-Reported Outcome Measures (PROMs) that are being used to assess function of upper and lower limbs.

The goal of any surgery in orthopedics ultimately aims for functional independence. A scale or tool to assess a progress of functional recovery from first post -orthopedic surgery day one to the complete functional independence is lacking.

CONCLUSION

The study concludes that there is a gap in assessment of multiple domains like pain, mobility, functional activities, and psychological status of patients following orthopedic surgeries. A single tool to assess the patient for various domains through out the phase of rehabilitation is needed.

Declaration by Authors

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