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Quality of Life and Physical Activity After Total Hip Arthroplasty — A Narrative Review

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Abstract

Background:

Total hip arthroplasty (THA) is one of the most successful orthopedic procedures, providing pain relief, restoring joint function, and improving quality of life in patients with advanced hip disease. Increasing attention has been directed toward postoperative physical activity, return to sport, and long-term functional outcomes after THA.

Aim:

This narrative review aimed to evaluate the impact of THA on quality of life and physical activity, with emphasis on return to daily activities, sports participation, rehabilitation, and factors influencing postoperative outcomes.

Methods:

A narrative review of the literature was conducted using studies indexed in PubMed, Scopus and Web of Science, including systematic reviews, meta-analyses, observational studies, and original clinical studies addressing quality of life, physical activity, return to sport, and rehabilitation following THA.

Results:

Current evidence suggests that THA leads to substantial improvements in health-related quality of life, postoperative function, and physical activity in the majority of patients. A large proportion of patients are able to resume daily activities, occupational duties, and low- or moderate-impact sports after surgery, whereas return to high-impact sports remains controversial. Postoperative activity levels are influenced by patient characteristics, preoperative activity, rehabilitation strategies, and surgeon recommendations. Emerging evidence suggests that appropriately selected physical activity may be compatible with implant safety after THA.

Conclusions:

THA is associated with substantial improvements in quality of life and supports return to physical activity for many patients. Individualized rehabilitation and evidence-based activity

recommendations are essential to optimize outcomes, support safe return to sport, and meet the expectations of active patient populations.

Keywords: total hip arthroplasty; quality of life; physical activity; return to sport; rehabilitation; functional recovery

1. Introduction

Total hip arthroplasty (THA) is widely regarded as one of the most successful procedures in orthopedic surgery, particularly due to its significant improvement in pain, function, and quality of life [1]. It provides pain relief, improves mobility, and restores function in patients with advanced hip disease [1,2]. Significant improvements in health-related quality of life after THA have been demonstrated, particularly in association with pain reduction and functional improvement [3]. Favorable outcomes have also been reported regarding functional recovery and quality-of-life improvement after hip replacement, although differences may exist between healthcare settings [4]. Patient satisfaction with preoperative information, rather than objective health literacy, may influence early postoperative quality-of-life outcomes after THA [5]. Waiting longer than 6 months has been associated with a significant decline in HRQoL, as reflected by reductions in EQ-5D scores, without significant changes in hip-specific PROMs [6].

Hip osteoarthritis remains a major cause of pain, disability, and reduced quality of life worldwide [7]. Progressive joint degeneration reduces mobility, limits independence, and significantly impairs quality of life [7].

THA outcomes are commonly evaluated using patient-reported measures of pain, physical function, and quality of life [2]. However, attention has increasingly focused on patient-reported outcomes and quality-of-life measures following THA, including differences between healthcare settings [4].

Growing interest has focused on physical activity after THA, especially regarding return to sport and postoperative functional recovery [7]. Return to activities of daily living has become an important and commonly evaluated postoperative outcome after THA [8]. Early return to work after THA has been increasingly investigated, with many patients able to resume occupational activity within the first months after surgery [9]. At the same time, younger and more active patients increasingly aim to return to sports and recreational activity after surgery [10].

Many patients successfully return to low- and moderate-impact sports after total hip arthroplasty, reflecting the growing role of postoperative physical activity as an outcome measure [11]. Recommendations regarding sports participation after THA have become progressively less restrictive in appropriately selected patients [12]. Available evidence indicates that the timing of return to sport after THA varies and depends on the type and intensity of activity [13]. Sport-specific studies indicate that return to activity after THA varies by sport type, with higher return rates observed for low-impact compared to high-impact activities [14]. Recent sport-specific studies indicate that selected low-impact activities can often be resumed safely following arthroplasty [15].

Nevertheless, concerns regarding implant-related complications, particularly aseptic loosening associated with higher-impact activity, continue to contribute to ongoing debate about activity restrictions after THA [16]. Differences in surgeon recommendations regarding the timing and type of sports allowed after THA may contribute to variability in patient guidance [12].

Rehabilitation, together with appropriate postoperative activity guidance, is an important component of recovery after THA [17]. Increased postoperative physical activity has been linked to better functional outcomes following THA [18]. Evidence regarding preoperative and postoperative exercise interventions after THA remains mixed, with systematic review evidence showing no clear improvement in self-reported physical function compared with usual care or minimal intervention [19].

Patient-reported outcome measures are increasingly used to assess success after THA [2]. These measures assess broader aspects of recovery beyond implant survival, including pain reduction, restoration of function, and improvement in quality of life [3].

THA is increasingly performed in younger and more active patients, who often have higher functional expectations regarding return to work, exercise, and quality of life after surgery [20].

The expectations of modern patients have also evolved, with increasing emphasis on early functional recovery and timely return to daily activities and work after THA [10]. Many individuals seek not only pain relief but also a return to their preoperative lifestyle, including recreational exercise and sports participation, which has been increasingly reported in recent studies [11]. In some cases, patients aim to return to demanding activities such as running, tennis, or skiing after surgery, as well as lower-impact sports, including golf, as reported in sport-

specific studies [15]. These expectations highlight the importance of appropriate postoperative activity guidance and patient counseling after THA [14].

Balancing postoperative physical activity with potential implant-related risks, particularly in higher-impact sports, remains a key clinical challenge after THA, as higher-impact activity may be associated with an increased risk of implant-related complications despite the overall health benefits of regular physical activity [16]. Variability in surgeon recommendations regarding sports participation has contributed to ongoing debate about safe activity levels after THA [12].

Another important issue is variability in reported outcomes, particularly in sport-specific analyses [15]. Although high rates of return to sport after THA have been reported, limitations persist in more demanding and high-impact activities [13]. Postoperative activity levels and outcomes after THA may vary depending on patient characteristics, baseline function, and preoperative activity levels [18]. Variability in sport-specific outcomes after THA highlights the importance of consistent approaches to evaluating postoperative physical activity [14].

Despite growing evidence, important uncertainties remain. Available studies differ in patient populations, activity definitions, rehabilitation protocols, and outcome measures, particularly in sport-specific analyses [14,15]. Considerable heterogeneity in study design and patient populations complicates comparisons across studies and may limit interpretation of results [16,18]. Current evidence remains heterogeneous and largely based on studies of varying quality, highlighting the need for further research to define safe types and intensities of activity after THA [16]. Understanding factors associated with return to sport and postoperative outcomes may help inform patient counseling and postoperative management [14].

2. Aim of the Study

The aim of this review is to evaluate current evidence regarding quality of life and physical activity after total hip arthroplasty, with particular emphasis on return to daily activities, sports participation, rehabilitation strategies, factors influencing postoperative outcomes, and current perspectives on long-term functional recovery and patient-related factors associated with successful postoperative activity levels.

3. Material and Methods

This review was conducted using a narrative literature analysis focused on evaluating current evidence regarding quality of life and physical activity after total hip arthroplasty. Scientific publications were identified through structured database searches including PubMed, Scopus, and Web of Science. The literature search included studies published between 2010 and 2026 to capture both foundational and contemporary evidence relevant to postoperative functional outcomes after THA.

Search terms included combinations of keywords such as *total hip arthroplasty*, *quality of life*, *physical activity*, *return to sport*, *rehabilitation*, and *functional outcomes*. Additional manual screening of reference lists from selected studies was performed to identify further relevant publications. The search strategy focused on literature addressing patient-reported outcomes, return to daily activities, sports participation, exercise interventions, and factors influencing postoperative recovery, including preoperative prehabilitation strategies [21].

Articles were considered eligible if they were published in peer-reviewed journals and focused on postoperative quality of life, physical activity, rehabilitation strategies, or return to sport following total hip arthroplasty. Original studies, observational studies, systematic reviews, and meta-analyses were included if they provided clinically relevant evidence related to functional recovery or activity outcomes after THA. Studies not directly related to the topic, lacking relevance to postoperative outcomes, or focused primarily on unrelated surgical complications were excluded from analysis.

Particular emphasis was placed on studies evaluating patient-reported outcome measures, activity levels after surgery, return to sports participation, rehabilitation protocols, and current perspectives regarding the relationship between postoperative activity and implant safety. Publications were selected based on relevance, methodological value, and contribution to understanding both functional and quality-of-life outcomes following arthroplasty.

The included literature represented a range of study designs, including prospective and retrospective observational studies, systematic reviews, meta-analyses, and consensus-based recommendations. This approach was intended to provide a broad overview of currently available evidence and to capture both clinical outcomes and evolving perspectives regarding activity after THA. Where appropriate, findings from different study types were compared to identify consistent trends as well as areas of uncertainty.

Special attention was given to studies addressing return to sport, rehabilitation strategies, and factors associated with successful postoperative activity levels. Literature concerning implant survival, activity-related safety considerations, and functional expectations among younger and more active patients was also considered in the synthesis. A total of 26 publications were selected for final analysis and were used as the basis for this narrative review. The selected literature was synthesized qualitatively to identify major themes regarding postoperative quality of life, physical activity patterns, rehabilitation approaches, and factors associated with successful outcomes after total hip arthroplasty. This narrative review was not conducted as a systematic review and therefore did not follow formal PRISMA guidelines.

4. Quality of Life After Total Hip Arthroplasty

Total hip arthroplasty (THA) is widely recognized as one of the most successful orthopedic procedures for improving pain, mobility, and health-related quality of life (HRQoL) in patients with advanced hip disease. Multiple studies have demonstrated substantial improvements in both physical function and patient-reported outcomes following surgery, outcomes that are commonly assessed using patient-reported measures [1,2]. These findings are supported by observational data demonstrating a significant improvement in HRQoL after THA, with a mean increase of 0.062 in the 15D score at 12-month follow-up ($p < 0.001$) [1]. At 12-month follow-up, HRQoL in THA patients reached levels comparable to the general population, indicating substantial recovery of overall health status [1]. Key findings from studies evaluating quality of life after total hip arthroplasty are summarized in Table 1.

Table 1. Summary of key studies evaluating quality of life after total hip arthroplasty

Author, year	Study design	Population	Outcome measures	Key findings	Clinical implications
Miettinen et al., 2020 [1]	Observational study	Patients undergoing THA and TKA	HRQoL (15D instrument), functional outcomes	Significant improvement in HRQoL and functional outcomes at 6 and 12 months postoperatively, with greater improvement observed after THA compared to TKA	Supports the effectiveness of THA in improving quality of life and functional status
Pronk et al., 2023 [2]	Observational study	THA patients	PROMs, PRO change scores, response rates, quality-of-care indicators	No significant improvement in overall THA care quality based on PROs despite increased PROM implementation	Emphasizes that PROM-based evaluation requires adequate response rates and high-quality data to support reliable assessment of THA care
Snell et al., 2024 [3]	Observational study	Post-THA patients	Pain, function, quality of life (PROMs)	Clinically significant improvements in pain, function, and quality of life, with the greatest gains observed in the early postoperative period	Highlights the importance of early recovery, with pain reduction and functional improvement as key drivers of quality-of-life outcomes
Kajos et al., 2024 [4]	Comparative study	THA patients (public vs private)	QoL outcomes	Significant improvement in quality of life in both public and private hospital patients, with differences observed between physical and mental health domains	Suggests that healthcare setting and system-level factors may influence postoperative quality-of-life outcomes after THA
Strahl et al., 2024 [5]	Observational study	THA patients	Health literacy, HRQoL	Subjective satisfaction with preoperative information predicted short-term HRQoL, whereas objective health literacy showed no significant independent effect	Highlights the importance of patient satisfaction with preoperative information rather than knowledge alone
Addai et al., 2024 [6]	Observational study	THA patients	Waiting time, function	Longer waiting time associated with decreased quality of life without significant changes in hip-specific functional outcomes	Highlights importance of timely surgical intervention to prevent deterioration in quality of life

Improvement in quality of life after THA is primarily associated with pain relief and restoration of functional independence. Patients frequently report significant gains in daily mobility, walking capacity, stair climbing, and performance of routine activities, with mean quality-of-life scores increasing by approximately 6.2 points within the first 6 months after surgery [3]. The majority of improvements in pain, function, and quality of life occur within the first 6 months after THA, with only minor changes observed between 6 and 12 months [3].

These benefits are reflected in improved quality-of-life outcomes, particularly in physical and, to a lesser extent, mental health domains after THA [4]. Although both groups showed significant improvement, no difference in the magnitude of improvement was observed between public and private settings according to the Oxford Hip Score, whereas differences were noted in SF-36 physical and mental health domains [4].

Improvement in HRQoL appears to be more pronounced after THA compared to TKA, as demonstrated by greater increases in 15D scores at 12-month follow-up [1].

Several studies have shown that HRQoL improvement after THA extends beyond physical recovery alone, with measurable improvements observed in both physical and mental health domains as assessed by patient-reported outcome measures [1,3,5].

Enhanced function and reduced disability are associated with improved patient-reported outcomes after THA [2].

Patient-reported outcome measures (PROMs) have become increasingly important for assessing quality of care after THA. PROM-based analyses indicate that patient-reported outcomes remain relatively stable over time despite increasing implementation [2]. In the Dutch national THA data, the proportion of hospitals collecting PROs increased from 78% in 2016 to 92% in 2019, but only 16% of hospitals achieved the advised 12-month response rate of at least 60% [2]. These findings suggest that increased PROM implementation alone may be insufficient to drive measurable improvements in the quality of care.

At the same time, variability in outcomes exists, and several factors may influence the magnitude of benefit experienced by individual patients.

Health literacy has been investigated as a potential factor influencing outcomes, although patient satisfaction with preoperative information may play a more important role in early postoperative quality-of-life outcomes [5].

Access-related factors may also influence postoperative outcomes. Longer waiting time before surgery has been associated with decreased health-related quality of life, without significant changes in hip-specific functional outcomes, emphasizing the importance of timely access to arthroplasty procedures [6].

Similarly, differences in care pathways between healthcare systems may contribute to variability in patient outcomes. Some studies have demonstrated differences in HRQoL outcomes between public and private hospital settings, possibly related to organizational factors, rehabilitation access, or patient selection [4].

Despite these differences, improvement in quality of life after THA has been consistently demonstrated across diverse patient populations [1].

Approximately 75% of patients report improvement in quality of life after THA, although a subset may experience limited or no benefit [1].

Overall, current evidence indicates that THA provides substantial and sustained improvements in health-related quality of life through pain reduction, improved function, and enhanced participation in everyday activities. Although outcomes may be influenced by patient-related and healthcare-related factors, the procedure remains highly effective in restoring quality of life for most patients undergoing treatment [1].

5. Physical Activity and Return to Sport After Total Hip Arthroplasty

Restoration of physical activity has become an increasingly important outcome after total hip arthroplasty, particularly in younger and more physically active patients seeking return to preoperative activity levels [7].

Beyond pain relief and functional recovery, many individuals expect early return to daily activities and restoration of independence after surgery [8].

Evidence regarding return to physical activity and sport after total hip arthroplasty is summarized in Table 2.

Table 2. Evidence on return to physical activity and sport following total hip arthroplasty

Author, year	Study design	Population	Outcome measures	Key findings	Clinical implications
Matsunaga-Myoji et al., 2023 [7]	Cross-sectional study	Revision vs primary THA patients	Physical activity (accelerometer), HRQoL	Lower physical activity and HRQoL after revision THA; positive correlation between PA and HRQoL	Emphasizes importance of promoting physical activity
Zampogna et al., 2022 [8]	Systematic review & meta-analysis	Patients after THA	Return to ADL, time to recovery	Earlier return to ADLs was observed with the direct anterior approach, without statistically significant differences	Highlights uncertainty regarding the impact of surgical approach on early return to daily activities
Peters et al., 2023 [9]	Prospective cohort	Working-age patients	Return to work and activity	Most patients returned to daily activities and work within 3 months after THA	Supports early postoperative mobilization
Fawley et al., 2024 [10]	Prospective multicenter study	Patients after primary THA	Early functional recovery, return to work	High rates of early functional recovery; most patients regained independence in daily activities and many returned to work within 12 weeks	Supports early recovery and provides timelines for return to daily activities and work
Donner et al., 2019 [11]	Prospective observational study	Patients after single-stage bilateral short-stem THA	Sports participation, activity level, clinical scores	Increased participation in sports after THA, predominantly in low-impact activities	Supports return to recreational and low-impact sports after THA

Author, year	Study design	Population	Outcome measures	Key findings	Clinical implications
Thaler et al., 2021 [12]	Survey study	Orthopedic surgeons	Sports recommendations after THA	Considerable variability in recommendations regarding permitted sports and timing of return after THA	Supports individualized and progressively less restrictive postoperative activity recommendations
Vu-Han et al., 2021 [13]	Survey study	Orthopedic surgeons	Return-to-sport recommendations, timing, and sport type after THA	High proportion of surgeons support return to sport after THA; considerable variability exists regarding high-impact activities and timing of return	Supports individualized and progressively less restrictive return-to-sport recommendations after THA
Lin et al., 2025 [14]	Observational study	Athletically active patients after primary THA	Return to sport rates, sport type, activity level, satisfaction	High overall return-to-sport rates; higher return rates for low-impact compared to high-impact activities; no significant differences between surgical approaches	Supports return to sport after THA and highlights the role of sport type in postoperative activity recommendations
Pioger et al., 2021 [15]	Observational study	Patients after THA (golf players)	Return to golf, performance	High return to golf after THA, with reduced pain and preserved or improved performance	Supports return to low-impact sports and demonstrates favorable sport-specific recovery after THA
Sowers et al., 2023 [16]	Umbrella review	Patients after THA	Return to sport, activity type, complications, prognostic factors	High rates of return to sport after THA, predominantly in low- and moderate-impact activities; high-impact sports remain controversial; prior activity identified as a key predictor of successful return	Supports individualized return-to-sport recommendations and careful patient counseling regarding activity type and associated risks
Magan et al., 2021 [22]	Meta-analysis	Patients after THA	Time to return to sport	Progressive increase in return-to-sport rates over the first postoperative year, with most patients returning to sport within this period	Provides evidence-based timelines for return to sport and supports patient counseling regarding expected recovery
Robinson et al., 2023 [23]	Systematic review & meta-analysis	Golf players after hip, knee or shoulder arthroplasty	Return-to-golf rates, timing of return, handicap change	High return-to-golf rates were reported after arthroplasty, particularly after THA, with successful return occurring within the postoperative recovery period and minimal change in performance	Supports feasibility of returning to golf after THA and provides guidance regarding postoperative return to sport

A high proportion of patients returned to daily activities and work within 3 months after THA, although variability across specific activities was observed [9]. A high proportion of patients were able to resume basic activities of daily living, with reported independence rates reaching up to 94–99% in the early postoperative period [10]. Objective measurements indicate that patients after revision THA demonstrate lower levels of light physical activity and fewer daily steps compared to primary THA, which is associated with reduced health-related quality of life, with moderate correlations observed between activity levels and HRQoL [7]. High return-to-golf rates following arthroplasty have been reported, particularly after THA (approximately 90%), with mean return occurring at around 4.4 months postoperatively and minimal change in handicap performance [23].

Increased participation in sports after THA, predominantly in low-impact activities, has been reported in observational studies [11]. A total of 82% of patients returned to sport at a mean time of 6 months after THA [16]. In a large observational cohort, approximately 73.2% of patients who were active preoperatively returned to sport after THA [14].

Considerable variability in surgeon recommendations regarding permitted sports and timing of return has been reported, which may influence postoperative sports participation after THA [12]. Approximately 81.9% of surgeons supported return to sport after THA, although recommendations varied substantially depending on activity type and intensity [13]. In many cases, prior participation in a given sport has been identified as one of the strongest predictors of successful return to sport after THA [16].

The number of permitted sports activities increases over time after THA, with recommendations varying depending on sport type and timing of return [12]. Observational data indicate that return to sport after THA is more frequent for low- and moderate-impact activities than for high-impact sports (72.4% vs 50.0%, $p < 0.001$) [14]. However, return to high-impact sports remains limited, with lower return rates compared to low-impact

activities [14]. In survey-based data, approximately 34% of surgeons did not recommend high-impact sports at all, while others allowed them under specific conditions [13].

The timing of return to sport also varies across studies. Return-to-sport outcomes varied widely across studies, ranging from 20% to 98.5% after THA [17]. Most surgeons recommend waiting at least 6 months before returning to high-impact sports [13]. Meta-analytic evidence indicates that return-to-sport rates after THA increase over time, reaching approximately 40% at 2–3 months, 76.9% at 6 months, and over 90% between 6 and 12 months postoperatively [22]. At 3 months after THA, approximately 80% of patients had returned to daily activities, 70% to work, and 50% to sports [9].

An important area of debate concerns the relationship between postoperative activity and implant safety, with concerns regarding implant-related complications, particularly aseptic loosening in higher-impact sports, contributing to activity restrictions after THA [16].

High return-to-golf rates after THA were observed (98.5%), with reduced pain and improved performance [15]. Less restrictive activity recommendations have been reported; however, variability in recommendations and heterogeneity of the available evidence persist across studies [16].

Return-to-sport outcomes vary across sport types, with substantially lower return rates in high-impact compared to low-impact activities [14].

Approximately one in five patients reported postoperative activity restrictions, underscoring persistent variability in activity patterns after THA [14].

Overall, current evidence indicates that many patients can successfully return to physical activity and selected sports after THA, particularly low- and moderate-impact activities. Although concerns remain regarding higher-impact activity and long-term implant safety, high return rates and patient satisfaction have been consistently reported [14,15].

6. Rehabilitation and Functional Recovery

Rehabilitation remains an important component of recovery after total hip arthroplasty; however, evidence regarding the effectiveness of specific exercise interventions remains inconsistent. A systematic review and meta-analysis including 32 randomized clinical trials found no significant improvement in self-reported physical function at 4, 12, or 26 weeks postoperatively (SMD ranging from -0.08 to 0.01) [19]. Prehabilitation before THA has been increasingly investigated as a strategy to improve functional status before surgery. A network meta-analysis including 21 randomized controlled trials and 1061 patients demonstrated beneficial effects particularly for Tai Chi, multidomain exercise, and lower-extremity strength training. Tai Chi significantly improved preoperative physical function (SMD = 0.94) and TUG performance (SMD = 1.50) compared with standard care [21].

THA provides substantial pain relief and is associated with improved postoperative activity levels [18].

Exercise-based rehabilitation interventions have shown mixed effects on muscle strength, gait performance, balance, and functional recovery following arthroplasty, with no consistent improvements compared with usual care reported in meta-analytic evidence [19]. Similar findings have been reported in a systematic review and network meta-analysis evaluating prehabilitation strategies before THA, where selected interventions demonstrated beneficial effects on physical function, pain, and HR-QoL [21]. A review including 1 guideline, 8 systematic reviews, and 5 randomized controlled trials highlighted substantial heterogeneity in rehabilitation protocols and emphasized the need for more evidence-based postoperative rehabilitation strategies after THA [24].

Higher postoperative activity levels have been associated with improved patient satisfaction and mental health outcomes after THA [17].

Functional recovery after THA is influenced by patient-related factors, including age, BMI, and preoperative activity levels [18]. Patients with different baseline functional status may require individualized rehabilitation strategies, as evidence regarding uniform effectiveness of exercise interventions remains inconsistent [19]. Key evidence on rehabilitation strategies and factors influencing functional recovery after total hip arthroplasty is summarized in Table 3.

Table 3. Evidence on rehabilitation strategies and functional recovery after total hip arthroplasty

Author, year	Study design	Population	Intervention / focus	Key findings	Clinical implications
Telang et al., 2024 [17]	Systematic review	Patients after THA	Postoperative activity and activity restrictions	No clear evidence supporting strict activity restrictions; similar or improved outcomes observed in more active patients	Supports individualized, less restrictive activity recommendations after THA
Streck et al., 2023 [18]	Observational study	THA patients	Postoperative activity levels	Higher activity levels were associated with improved functional outcomes and did not increase revision risk	Emphasizes the importance of maintaining activity and supports an

Author, year	Study design	Population	Intervention / focus	Key findings	Clinical implications
					active lifestyle after THA
Saueressig et al., 2021 [19]	Systematic review & meta-analysis	THA patients	Preoperative and postoperative exercise interventions	No consistent improvement in self-reported physical function compared with usual care; heterogeneous and low- to moderate-quality evidence	Supports individualized rehabilitation approaches rather than routine supervised exercise for all patients
Galloway et al., 2024 [20]	Observational study	Young adults after THA	Postoperative satisfaction, return to activity, work ability, and functional outcomes after THA	High satisfaction rates and return to pre-morbid activity levels were reported after THA, although some patients continued to experience limitations in work and recreational activity	Supports individualized postoperative counseling and realistic expectations regarding recovery and return to activity after THA
van der Vorst et al., 2026 [21]	Systematic review & network meta-analysis	Patients awaiting THA	Prehabilitation strategies before THA	Selected prehabilitation modalities, particularly Tai Chi, multidomain exercise, and lower-extremity strength training, demonstrated beneficial effects on preoperative physical function, pain, and HR-QoL, although evidence quality remained limited	Supports individualized and targeted prehabilitation strategies before THA and highlights the need for further high-quality evidence regarding preoperative rehabilitation interventions
Colibazzi et al., 2020 [24]	Review	THA patients	Evidence-based rehabilitation protocols after THA	Rehabilitation is considered important after THA, although uncertainty remains regarding the optimal timing, duration, and structure of rehabilitation programs	Supports individualized rehabilitation planning and highlights the need for further high-quality evidence regarding postoperative rehabilitation after THA
Sabaghian et al., 2025 [25]	Systematic review & meta-analysis	THA patients	Bearing surfaces and implant-related functional outcomes after THA	Different bearing surfaces were associated with differences in functional outcomes and quality-of-life scores; MoM implants showed higher functional scores but were limited by safety concerns	Highlights the importance of considering implant-related factors and long-term safety when interpreting functional outcomes after THA
Gernert et al., 2026 [26]	Prospective cohort study	Working patients after THA/TKA	Work ability trajectories during the first postoperative year	Distinct patterns of postoperative work ability recovery were identified, including delayed and limited improvement trajectories after arthroplasty	Highlights heterogeneity in occupational recovery and supports individualized rehabilitation and work-related recovery planning after arthroplasty

An important aspect of rehabilitation after THA is supporting safe progression toward higher activity levels, as appropriately designed rehabilitation programs may facilitate return to recreational activity while reducing excessive fear of movement and unnecessary activity restriction, thereby improving patient confidence in postoperative activity [24].

At the same time, uncertainty remains regarding the optimal type, intensity, and duration of rehabilitation after THA [19]. Functional recovery after THA may influence long-term participation in physical and recreational

activities, particularly in younger and more active patient populations, with approximately 75.5% of patients returning to premorbid exercise levels after surgery [20].

In addition, patient education regarding exercise progression, joint protection strategies, and long-term activity modification may contribute to safer functional recovery and improved postoperative self-management after THA [24]. These components may be particularly relevant in supporting individualized rehabilitation and activity progression after arthroplasty, given the heterogeneity and inconsistent effectiveness of exercise interventions reported in current evidence [19].

7. Discussion

7.1 Interpretation of Quality-of-Life Outcomes

Current evidence consistently indicates that total hip arthroplasty provides substantial improvements in health-related quality of life for patients with advanced hip disease [1]. Pain reduction and improved patient-reported outcomes remain key contributors to postoperative improvement [2], while restoration of mobility and functional independence are also consistently reported in the literature [1]. Moderate correlations were observed between reductions in pain, improved functional status, and better postoperative quality-of-life outcomes ($r \approx 0.38-0.39$), suggesting that these factors are closely interconnected after THA [3]. Improvements in broader quality-of-life domains, including general well-being and daily functioning, have been demonstrated using patient-reported outcome measures following THA [3]. Favorable findings regarding quality-of-life improvement and functional outcomes have likewise been reported in the early postoperative period after THA [4].

An important aspect of these outcomes is that improvement in quality of life after THA extends beyond physical recovery alone. Some studies suggest that postoperative gains may also include improvements in psychosocial domains such as social participation, self-esteem, and confidence in daily functioning, as measured by patient-reported outcome measures [3].

Other authors have highlighted the importance of both physical and mental health domains in postoperative quality-of-life outcomes after THA, with differences observed between healthcare settings [4].

This broader interpretation of success has contributed to the increasing emphasis on patient-reported outcome measures (PROMs) in the evaluation of arthroplasty outcomes [2].

Available evidence also suggests that quality-of-life outcomes after THA may be influenced by multiple patient-related factors. Age may also influence postoperative outcomes, with older patients demonstrating slightly smaller improvements in quality of life ($r \approx -0.23$ to -0.26) [3].

Health literacy has been investigated as a potential determinant of postoperative outcomes; however, patient satisfaction with preoperative information appears to play a more important role in early postoperative quality-of-life outcomes after THA [5]. In one study, subjective satisfaction with preoperative information predicted physical HRQoL at 1 month after THA ($p = 0.022$), whereas objective health literacy showed no significant independent effect [5].

Prolonged waiting periods before surgery may negatively affect preoperative health-related quality of life, although they do not appear to substantially alter hip-specific functional outcomes [6].

In addition, differences between public and private healthcare settings may influence postoperative quality-of-life outcomes after THA [4].

These findings suggest that interpretation of quality-of-life outcomes after THA should consider both traditional surgical outcomes and broader patient-centered perspectives. Current evidence supports the view that improvement in quality of life remains one of the central strengths of THA [1]. At the same time, variability in outcomes highlights the influence of factors such as baseline functional status, psychological condition, and patient satisfaction with preoperative information on postoperative recovery after THA [5].

7.2 Interpretation of Physical Activity and Return to Sport

Current evidence suggests that restoration of physical activity has become an increasingly important component of success after total hip arthroplasty [7]. Beyond pain relief, return to recreational exercise and sports participation has become an increasingly important consideration after THA [12]. Evidence suggests that many individuals successfully resume low- and moderate-impact activities after THA, with sports participation increasing from approximately 60% preoperatively to over 75% at follow-up [11].

Return to daily activities and work after THA has been widely reported, with evidence suggesting that most patients resume these activities within the first months following surgery [8,9]. Early functional recovery has been demonstrated in a high proportion of patients, with most individuals regaining independence in basic activities (up to 94–99%) and approximately 60% returning to work within 12 weeks after THA [10]. The surgical approach may influence early recovery, although current evidence does not demonstrate clear statistically significant differences in return to daily activities [8].

An important finding across the literature is that return to sport after THA appears to be influenced by multiple factors. Patient expectations, particularly among younger and more active individuals, may influence postoperative counseling and decision-making regarding return to sport [11,13]. Preoperative participation in a given sport has been identified as one of the strongest predictors of successful return to sport after THA [16].

Meta-analytic evidence indicates that return to physical activity after THA occurs within the first postoperative months in many patients, although the timing varies according to activity type and patient-related factors [22]. Sport-specific studies have also reported high return-to-golf rates after arthroplasty, particularly following THA, supporting the feasibility of returning to selected low-impact sports after surgery [23]. In younger adults, 78.2% reported that THA met their expectations and 69.1% returned to their previous level of work, highlighting the importance of functional recovery beyond pain reduction alone [20]. Recent studies have demonstrated heterogeneous postoperative work ability trajectories following arthroplasty, with approximately 24.5% of patients showing no improvement in work ability during the first postoperative year, highlighting the complexity of functional recovery beyond basic activity measures [26]. Another important consideration is that postoperative activity outcomes may be influenced by multiple factors, including patient-related characteristics such as age and motivation, as well as sport-specific demands and the timing of return to activity [12,13]. Interpretation of these findings should also consider the ongoing debate regarding implant safety and activity-related risk. These safety considerations, including the risk of complications such as aseptic loosening, continue to influence recommendations regarding higher-impact sports after THA [16]. However, more recent evidence suggests that appropriately selected physical activity, particularly low-impact sports, is well tolerated in many patients after THA [15].

Another important issue is variability in recommendations and reported outcomes. This variability is reflected in survey data, where the majority of surgeons support return to sport after THA, but differ substantially in recommendations regarding high-impact activities and timing of return [13]. Differences in surgeon guidance may partly explain inconsistent findings across studies [12]. Observational studies have highlighted variability in return-to-sport outcomes across different activity types, with overall return rates of approximately 73% and lower return rates observed in high-impact sports [14].

Overall, many patients can successfully return to physical activity after THA, particularly low- and moderate-impact exercise [11]. Most sports activities are permitted after THA, with up to 37 out of 47 evaluated activities considered acceptable at 6 months postoperatively [12]. High-impact and contact sports such as soccer, basketball, and martial arts are generally not recommended after THA [12]. At the same time, uncertainty persists regarding participation in higher-impact sports and their potential impact on long-term implant safety after THA [16]. These findings support individualized counseling and evidence-based recommendations, particularly for higher-impact activities where return rates are lower and uncertainty remains, when advising patients regarding postoperative activity [14].

7.3 Role of Rehabilitation and Functional Recovery

Current evidence suggests that postoperative activity and rehabilitation strategies play an important role in functional recovery after THA [17]. Emerging evidence also highlights the potential role of prehabilitation in improving preoperative function and supporting postoperative recovery after THA [21].

Although pain relief is achieved through the surgical procedure itself, Streck et al. reported that 40.9% of patients achieved a high level of activity 2 years after THA, and higher activity levels were associated with improved functional outcomes and better revision-free survival without an increased risk of revision ($p < 0.001$) [18]. Therefore, postoperative activity and rehabilitation may contribute to restoring mobility and improving functional performance. However, evidence regarding the effectiveness of specific exercise interventions remains inconsistent [19].

An important consideration is that rehabilitation after THA should not be viewed solely as early postoperative exercise, but also as a broader process involving patient education, progression of activity, and long-term strategies supporting maintenance of function after surgery [24]. These aspects may be particularly relevant in supporting individualized progression toward higher levels of activity after arthroplasty, given the heterogeneity of current evidence [19].

The reviewed literature suggests that rehabilitation outcomes may be influenced by multiple patient-related factors, including baseline functional status and activity levels [18], while additional factors such as adherence and motivation may also play a role. The effectiveness of supervised and home-based rehabilitation approaches may vary across patient groups, supporting individualized rehabilitation planning [19]. These findings suggest there may not be a single optimal rehabilitation model for all patients and support more individualized approaches to recovery. Recent evidence suggests that postoperative work ability trajectories may be influenced by preoperative pain intensity and baseline functional status, with 38.9% of patients demonstrating early improvement and 36.6% showing delayed recovery during the first postoperative year after arthroplasty [26].

Another important issue is the relationship between rehabilitation and long-term activity maintenance. Patients achieving better functional recovery may be more likely to sustain regular physical activity and return to recreational activities after THA, particularly in younger and more active populations [20]. This may have implications not only for functional performance but also for long-term quality of life and patient satisfaction.

An additional consideration is the potential role of rehabilitation in reducing fear of movement and improving confidence related to postoperative activity [24]. Some patients may limit activity not because of objective

functional deficits, but due to concerns regarding implant safety or reinjury. In this context, rehabilitation may support physical recovery and promote confidence in postoperative activity.

Overall, current evidence supports the view that rehabilitation plays an important role in optimizing functional recovery and supporting return to activity after THA [17]. At the same time, uncertainty remains regarding the optimal intensity, duration, and structure of rehabilitation interventions after THA, reflecting the heterogeneity of current evidence [19]. These findings support continued emphasis on individualized postoperative recovery strategies and realistic activity expectations after THA, particularly in younger and more active patient populations [20].

7.4 Limitations and Future Directions

The findings of this review should be interpreted in light of several limitations. A key limitation is the substantial heterogeneity of the available literature, including differences in patient populations, study designs, rehabilitation protocols, and inconsistent definitions of physical activity and return to sport, which may limit comparability across studies [13].

Heterogeneity of the available evidence, including variability in outcome measures and follow-up duration, together with the relative lack of long-term data, may limit direct comparison across studies and contribute to uncertainty regarding the relationship between postoperative activity levels and implant survival, particularly in the context of higher-impact sports after THA [16].

Additional limitations relate to variability in rehabilitation approaches and differences in surgeon recommendations, which may influence patient counseling and contribute to heterogeneity in reported postoperative outcomes after THA [17]. These factors may complicate interpretation of available evidence and highlight the need for more standardized approaches to postoperative activity guidance, particularly in the context of variability in return-to-sport outcomes and differences between activity types [14].

Additionally, variability in implant characteristics, including bearing surfaces, may influence functional outcomes, although available evidence remains heterogeneous. Implant selection may also influence complication profiles after THA, with osteolysis reported as the most common complication (43 cases) and dislocation as the most frequent reason for revision (36 cases) in the analyzed studies [25].

Future research should focus on optimizing rehabilitation strategies and identifying patient subgroups that may benefit most from specific interventions, given the heterogeneity of current evidence [19]. Greater standardization in outcome measures and clearer definitions of return to sport, particularly across different activity types and levels of intensity, may improve comparability across studies [14].

Another important area for future research involves improving response rates, data quality, and the clinical integration of patient-reported outcome measures to better evaluate THA outcomes [2]. More consistent evaluation methods may improve interpretation of functional outcomes across studies. In addition, further research is needed to clarify the effectiveness of rehabilitation interventions across different patient subgroups, given the heterogeneity of current evidence [19].

Further long-term prospective research is needed to better understand the relationship between activity level, particularly higher-impact sports, implant durability, and functional outcomes after THA [16].

8. Conclusions

Total hip arthroplasty remains one of the most effective orthopedic procedures for improving pain, mobility, and health-related quality of life in patients with advanced hip disease [1]. Available evidence indicates that THA supports substantial functional improvement and enables many patients to return to daily physical activity, work, and selected sports participation [11].

Postoperative outcomes may be influenced by rehabilitation strategies and postoperative activity guidance, highlighting the importance of individualized approaches after THA [17,19].

Available evidence suggests that appropriately selected physical activity may be compatible with implant safety in many patients after THA, although uncertainty remains regarding higher-impact activities and long-term outcomes [14,16]. Individualized rehabilitation strategies remain essential to optimize recovery and support safe, sustained physical activity after THA, given the heterogeneity of current evidence [17,19].

Overall, current evidence supports an individualized approach to postoperative activity recommendations after THA, particularly in the context of variability in return-to-sport outcomes across different activity types [14].

Further research is needed to better define safe activity thresholds, optimize rehabilitation strategies, and improve long-term functional outcomes in increasingly active and younger patient populations after THA [20].

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