

## AUTHORS

Madri Engelbrecht <sup>a, b</sup>

<https://orcid.org/0000-0002-4606-7572>

Hester M van Biljon <sup>c, d</sup>

<http://orcid.org/0000-0003-4433-6457>

Janke van der Walt <sup>e</sup>

<https://orcid.org/0000-0001-5012-0121>

Shaheed M Soeker <sup>f</sup>

<https://orcid.org/0000-0001-5382-1855>

## AFFILIATIONS

<sup>a</sup> Centre for Disability and Rehabilitation Studies, Department of Global Health, Faculty of Medicine and Health Sciences, Stellenbosch University, Stellenbosch, South Africa

<sup>b</sup> Altitude Supported Employment (Pty)Ltd, Cape Town, South Africa

<sup>c</sup> Occupational Therapy Association of South Africa, South African Journal of Occupational Therapy,

<sup>d</sup> Work-Link Vocational Rehabilitation Practice, Netcare Rehabilitation Hospital, Aucklandpark, Johannesburg, South Africa

<sup>e</sup> Division Occupational Therapy, Department of Health and Rehabilitation Sciences, Faculty of Medicine and Health Sciences, Stellenbosch University, South Africa

<sup>f</sup> Department of Occupational Therapy, University of the Western Cape, Robert Sobukwe Road, Bellville, 7535, South Africa

## CORRESPONDING AUTHOR

Madri Engelbrecht

[madrieng@sun.ac.za](mailto:madrieng@sun.ac.za)

## KEYWORDS

lower extremity musculoskeletal disorders, hip arthroplasty, occupational engagement, functional ability, intervention evidence, good health and wellbeing

## HOW TO CITE THIS ARTICLE

Engelbrecht M, van Biljon HM, van der Walt J, Soeker SM. Occupational therapy treatment interventions for total hip arthroplasty: A rapid review of evidence. *South African Journal of Occupational Therapy*. Vol 55 No2, August 2025. DOI: <https://doi.org/10.17159/2310-3833/2025/vol55no2a8>

## ARTICLE HISTORY

Received: 24 April 2024

1<sup>st</sup> Review: 1 May 2024

Revised: 12 June 2024

2<sup>nd</sup> Review: 30 June 2024

Revised: 13 September 2024

Accepted: 19 October 2024

## EDITOR

Pamela Gretschel

<https://orcid.org/0000-0002-7890-3635>

## DATA AVAILABILITY

Data used in analysis is available upon reasonable request from the first author.

## FUNDING

The Occupational Therapy Association of South Africa (OTASA) requested the authors to do this rapid review and they were remunerated by the association

Published under an International Creative Commons License 4.0



ISSN On-Line 2310-3833  
ISSN Print 0038-2337

# Occupational therapy treatment interventions for total hip arthroplasty: A rapid review of evidence

## ABSTRACT

**Introduction:** The demand for total hip arthroplasty is increasing in South Africa and globally. Occupational therapists provide rehabilitation to promote engagement in activities of daily living following total hip arthroplasty. This review aimed to identify evidence for occupational therapy intervention for total hip arthroplasty across care settings and ages.

**Method:** Rapid review methodology was used and the Cochrane Library and MEDLINE databases were searched for articles published between 1 January 2012 and 31 March 2023. Eleven articles were selected and analysed.

**Results:** Evidence from randomised controlled trials and systematic reviews reported interventions across care settings. Pre-operative occupational therapy emphasised education and training on adaptive devices, with tele-rehabilitation identified as a promising approach for pre-operative preparation. Post-operative interventions centred on exercises, safety, activities of daily living training, and standard occupational therapy rehabilitation primarily targeting lower limb function. The review highlights the disparity between occupational therapy evidence in high versus low- to middle-income countries, emphasising the importance of contextual interpretation.

**Conclusion:** While evidence largely aligns with South African occupational therapy practices, gaps exist in upper body strengthening, return to work interventions, and pain management. The need for tailored approaches and further exploration of tele-rehabilitation for optimised outcomes in resource constrained contexts are further noted.

## Implications for practice

- Occupational therapists in South Africa need to plan total hip arthroplasty interventions based on local healthcare settings, resources, and patient priorities.
- Occupational therapists should strive for a comprehensive approach to intervention for total hip arthroplasty that includes attention to upper body strengthening, return to work, driving rehabilitation, and pain management.
- Pre-operative education-focused interventions by occupational therapists can enhance patient outcomes and show the use of occupational therapy communication skills in preparing patients for surgery and post-operative recovery after total hip arthroplasty.
- Occupational therapists should explore the use and feasibility of tele-rehabilitation in optimising outcomes for total hip arthroplasty patients in resource constrained contexts

## INTRODUCTION

Hip replacement or hip arthroplasty is often indicated when conservative treatment for lower -extremity musculoskeletal disorders fails, and a person's functioning becomes affected as a result of increased joint pain and movement<sup>1,2</sup>. Total hip arthroplasty (THA) is defined as "a complex procedure that involves the removal and replacement of both the head of the femur and the acetabulum"<sup>1</sup>. The procedure further involves the replacement of the acetabulum with a metal shell and polyethylene liner, and fitting the femoral stem into position. A carefully fitted ceramic "ball" is then secured onto the stem

and the hip is re-joined<sup>11</sup>. Different conditions, for example rheumatoid arthritis and avascular necrosis, create the need for arthroplasties as part of intervention. In high income countries the higher rates of THA could be attributed to ageing populations and the increased prevalence of obesity, which in turn result in increased incidences of osteoarthritis (OA)<sup>3</sup>. The burden of hip OA has shown a worldwide increase in the past 30 years, including in low- and medium-income countries<sup>4</sup>. In sub-Saharan Africa, THA has been found to be frequently indicated for avascular necrosis<sup>5</sup>. In line with global trends, the demand for arthroplasties has also increased in South Africa due to the ageing population. The overburdened public sector report extensive waiting lists for these procedures<sup>6</sup>.

Occupational therapists provide rehabilitative interventions for upper limb and lower extremity musculoskeletal disorders with a focus on regaining and maintaining functioning in activities of daily living (ADL) and instrumental activities of daily living (iADL) performance areas that may have become impaired<sup>1</sup>. Occupational therapists address complications associated with THA that affect patients' functional activities and independence, including fear of falling and weakness of the hip muscles<sup>2</sup>.

The National Health Act<sup>7</sup> and the Framework and Strategy for Disability and Rehabilitation services<sup>8</sup> are two policies that govern South African occupational therapy intervention for hip replacement in the local context. Stipulations of these policies protect the fundamental human right of all citizens to attain the highest standard of health stated in the Bill of Rights in the South African Constitution<sup>9</sup>. Since 2012, the National Health Insurance Policy<sup>10</sup> has started to roll out a phased implementation to promote universal health coverage for all South African people, and to realise the equal right to health for all citizens.

The Occupational Therapy Association of South Africa (OTASA) was approached to describe and define the profession's roles and practices within quality healthcare. In response an OTASA task team was commissioned to identify and compile occupational therapy practice evidence for interventions in various areas of healthcare, including for occupational therapy for total hip arthroplasty. The OTASA Standards Protocol Group developed and maintains the standard operating protocols for occupational therapy interventions for health conditions, including THA, and as such guide occupational therapy intervention<sup>11</sup>. This rapid review reports the outcomes of a systematic search for evidence related to occupational therapy services for individuals who have undergone THA. The aim of this review was to identify level 1 evidence-based occupational therapy practices and interventions for total hip arthroplasty across all care settings and ages, without a focus on partial hip arthroplasty.

## METHODOLOGY

Rapid review methodology addresses research questions by producing evidence in a resource-efficient manner<sup>12</sup>. Compared to traditional systematic review procedures, this methodology enables quick knowledge synthesis through the omission of, or streamlining, specific methods of producing evidence for stakeholders<sup>12</sup>. A rapid review approach enabled the researchers to produce high level evidence to answer questions aiming to inform contextually relevant occupational therapy for THA. The researchers (all authors of this paper) met weekly to ensure consistency and uniformity in their review approach. They are all occupational therapists with clinical and academic experience in various fields of practice. The first author was the principal researcher for this review and was assisted by the other authors during all phases of the review.

The reviewers utilised the Department of Health method guide for rapid reviews and the Protocol Template for Rapid Reviews<sup>13</sup> to guide the review process. The Cochrane Rapid Reviews method guide<sup>12</sup> further informed the review process. The World Federation of Occupational Therapists' (WFOT) delineation of the occupational therapy profession as a client-centred discipline concerned with the promotion of health and well-being through occupation, was used the definition of the profession<sup>14</sup>. The WFOT stipulates that the primary goal

of occupational therapy is to enable participation in activities of daily living (ADL) by enhancing the ability of people and communities to engage in meaningful activities<sup>14</sup>. OTASA's outline for where occupational therapists work was used to guide the scope of practice areas included in this review, namely, interventions offered in a variety of settings (primary health care to community settings) across the lifespan of persons who had undergone hip replacement<sup>15</sup>.

## Setting the research question and topic refinement

The review question was set with consideration of the OTASA Hip Rehabilitation Standard Operating Protocol for Occupational Therapy<sup>11</sup>, and the Cochrane Rapid Reviews Methods Group<sup>12</sup> suggestion for stakeholder involvement in formulating the question. The review question was, therefore, *What evidence exists for occupational therapy intervention for THA?*

Intervention was defined per the WFOT<sup>14</sup> and OTASA<sup>11</sup> scope and descriptions of occupational therapy for THA and the outcome of interest was functional ability in the engagement in occupations after THA.

## Eligibility criteria

Only peer reviewed, full text articles that reported systematic reviews and randomised controlled trials (RCTs) from two databases, The Cochrane Library and MEDLINE, were included. As such, Level 1 and 2 evidence were the focus of this review<sup>16</sup>. Population, intervention, and outcome elements (PIO) were considered as follows: *population* included human beings from all ages, genders, and cultural groups who had undergone THA; *intervention* involved any occupational therapy as described by the WFOT and OTASA; *outcome* was defined as occupational therapy treatment that enables the functional abilities of persons with THA to participate and engage in occupations of choice. Articles available in English language and that were published between 1 January 2012 and 31 March 2023 were included for review.

## Searching

Search terms and search strings were developed by the authors through research team discussions, through the use of PIO (population, intervention, outcome) term elements, and MeSH (Medical Subject Headings) terms. The Cochrane Library Reviews were searched using the following search string: "hip replacement or hip arthroplasty AND occupational therapy"

This search rendered 50 results. A screen of the article titles excluded 43 articles which did not include "occupational therapy". Therefore, seven (n=7) out of the 50 reviews were included in the next phase of the review. The same search string further rendered seven Cochrane intervention protocols which were screened, and two protocols (n=2) were included in the review.

Cochrane Trials were then searched with the search string "hip replacement or hip arthroplasty AND occupational therapy AND randomised control trial" which rendered 3115 (n=3115) publications.

The Medline database was searched with the search string "hip replacement or hip arthroplasty or hip replacement surgery AND occupational therapy or occupational therapist or occupational therapists or OT AND systematic review or meta-analysis or randomized controlled trial". This search rendered 40 articles (n=40) for review. Grey literature and supplemental searching were not included after the original searches rendered a large number of articles.

The PRISMA diagram<sup>17</sup> in Figure 1 (page 3) shows the results of the search, screen, and selection of articles.

## Study Selection

The 3164 articles' references and abstracts were imported to Rayyan.ai<sup>18</sup> and the software detected 375 duplicate documents which were resolved. The remaining 2789 articles' titles along with abstracts were then screened for inclusion by the first author. A second author (Janke van der Walt) screened just over 20% (n=597) of the titles and abstracts in accordance with common practices for rapid reviews<sup>19</sup>. Fifteen (n=15)

conflicts were identified between the first and second reviewer. The third reviewer, Hester van Biljon, resolved these conflicts.

After title and abstract screening, 21 (n=21) articles remained for inclusion in the review. The first author did a full text screen of articles and 10 (n=10) more were excluded due to the full text article not being retrievable (n=2), interventions reported indicated no occupational therapy involvement (n=4), and an article having been published outside of the set data range of this review (n=1). One further article was excluded due to its reporting of an incomplete trial (n=1), and another reported on a different methodology from systematic review or

randomised controlled trial (n=1). Figure 1 (below) shows the selection process followed.

During the final selection stage, interventions conforming to the OTASA Hip Rehabilitation Standard Operating Protocol for Occupational Therapy<sup>11</sup> were considered as a guide for reported interventions by South African occupational therapists. The authors discussed and took the decision to include four articles that mentioned other rehabilitation practitioners (for example, physiotherapists) where there was strong overlap with South African occupational therapy practice relevant to hip rehabilitation.

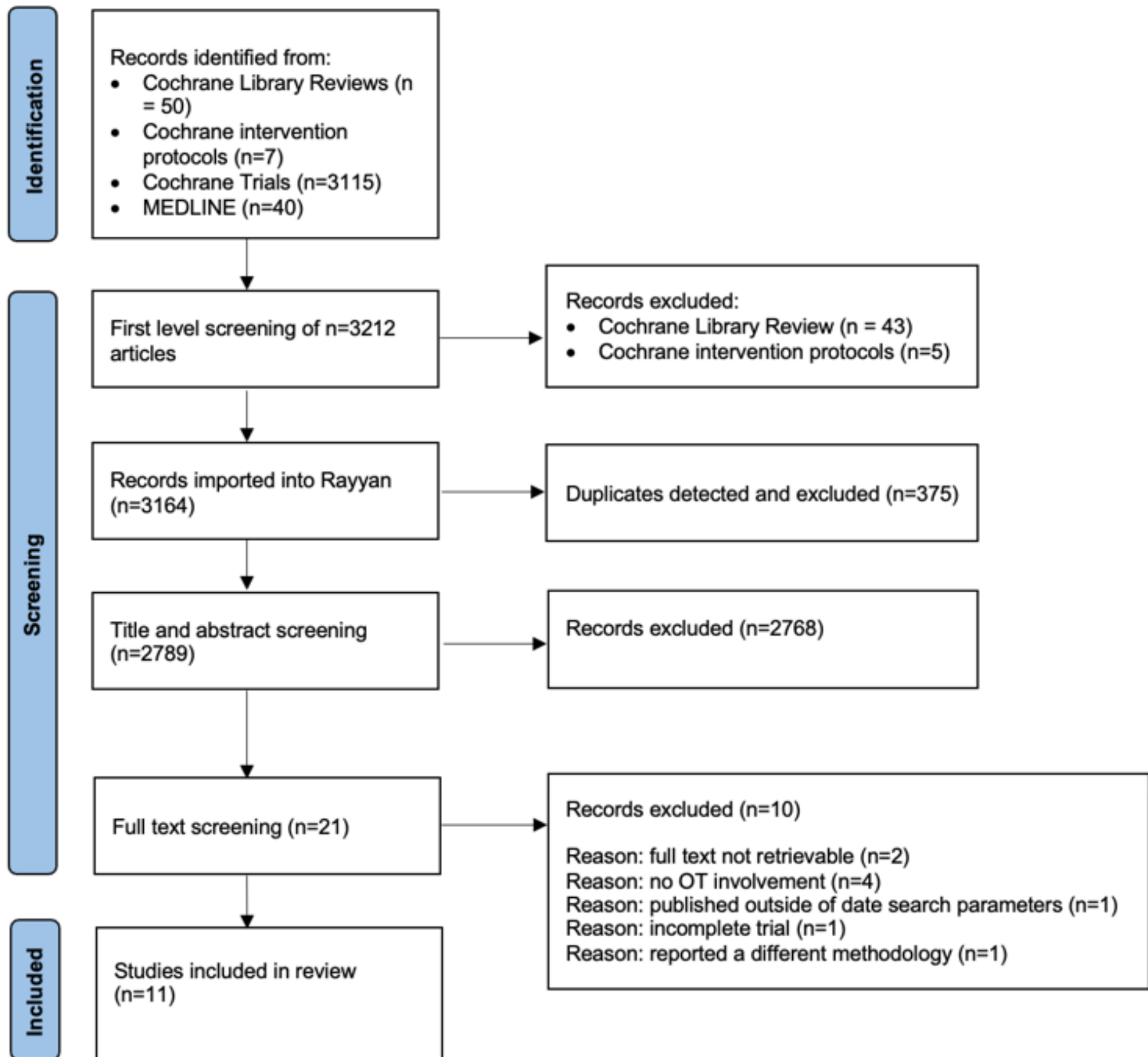


Figure 1: PRISMA diagram

#### Risk of bias assessment, quality appraisal, and data extraction

An Excel data extraction sheet was developed to record quantitative and qualitative data from articles for analysis. Data items included publication information, study settings, participant characteristics, interventions, and outcomes. The first author used the Critical Appraisal Skills Programme (CASP) appraisal tool for Systematic Review<sup>20</sup> to

evaluate the quality of systematic reviews, and the CASP Randomised Controlled Trial (RCT) Standard Checklist<sup>21</sup> for quality evaluation of RCTs. Table I (page 4) shows the quality scores given to articles according to three answer options: Yes = 2, Can't tell = 1, and No = 0. The total score of each article was converted to a percentage value. A higher percentage indicated a better quality article.

**Table I: Type of evidence and CASP rating of included articles.**

Article	Type of evidence	CASP rating
Wales et al <sup>22</sup>	Systematic review	90%
Dorsey and Bradshaw <sup>1</sup>	Systematic review	90%
Sheth et al <sup>23</sup>	Systematic review	40%
Smith et al <sup>24</sup>	Systematic review	90%
Mitrovic et al <sup>25</sup>	RCT	69%
Bozorgi et al <sup>2</sup>	RCT	69%
Marcu et al <sup>26</sup>	RCT	69%
Jepson et al <sup>27</sup>	RCT	85%
Elmoghazi et al <sup>28</sup>	RCT	69%
Eren et al <sup>29</sup>	RCT	85%
Doiron-Cadrin et al <sup>30</sup>	RCT	61,5%

**Synthesis**

Excel was used in the quantitative analysis of articles to derive meaningful insights from frequency and percentages. Concurrently, qualitative data that described occupational therapy interventions in articles were examined for textual elements related to intervention procedures. The researchers held weekly group discussions to share and deliberate on the outcomes of analyses, and to address emerging patterns or discrepancies. The first author integrated the insights gleaned from analyses into a coherent whole.

**Ethics**

Ethical clearance for this review was not required as secondary data were used and no human participants were involved.

**Table II: Articles included in the review**

Authors & Publication information	Study population	Intervention	Findings
Wales et al. (2021) <sup>22</sup>  Economic effects of occupational therapy services for adults in acute and subacute care settings: a systematic review  American Journal of Occupational Therapy	People awaiting hip replacement receiving additional pre- and post-operative occupational therapy and physiotherapy	<ul style="list-style-type: none"> <li>• (Sub-acute) Pre- and post-operative occupational therapy and physiotherapy for clients with hip replacement</li> <li>• Pre- and post-operative training and information on post-operative exercises</li> <li>• Home visit at discharge (if required); then visited at a median of 4 times to monitor adherence to rehabilitation programme</li> </ul>	Preliminary evidence supports the economic value of occupational therapy services in rehabilitation before and after hip replacement
Dorsey and Bradshaw (2017) <sup>1</sup>  Effectiveness of occupational therapy interventions for lower-extremity musculoskeletal disorders: a systematic review  American Journal of Occupational Therapy	Fourteen articles about people who had undergone knee or hip replacements	<ul style="list-style-type: none"> <li>• Client education by the occupational therapist</li> <li>• Individually tailored pre-operative education focused on self-care, adaptive equipment, and home modifications</li> <li>• Early mobilisation by occupational therapist as part of accelerated peri-operative care</li> <li>• Community reintegration programme focused on new task training in natural environments</li> <li>• Occupational therapy focused on ADL performance, compensatory strategies for functional limitations, joint protection strategies, use of adaptive equipment as part of multidisciplinary approach</li> </ul>	<ul style="list-style-type: none"> <li>• Client education by occupational therapist affected decreased pain intensity, increased general, physical, and mental health scores, decreased disability, increased self-management of health condition, decreased number of occupational therapy visits</li> <li>• Individually tailored pre-operative education focused on self-care, adaptive equipment, and home modifications in addition to standard pre-operative clinic visit reduced length of stay after total hip or knee arthroplasty</li> <li>• Early mobilisation by occupational therapist as part of accelerated peri-operative care decreased length of stay and increased health-related quality of life scores</li> </ul>

**RESULTS**

Eleven articles with Level I evidence were included in the rapid review (Table II, below). Seven of the articles reported RCTs that were conducted in low- to middle income countries (Turkey, Serbia, Iran)<sup>29,25,2</sup>, and high-income countries (Romania, UK, Germany, and Canada)<sup>26,27,28,30</sup>. No articles from South Africa were available. The four systematic reviews considered evidence for hospital-based occupational therapy in acute and sub-acute care environments<sup>22</sup>, in inpatient rehabilitation facilities<sup>1</sup>, and in home-based settings<sup>1</sup>. One systematic review rated low on the CASP scoring because the full text article could not be located. It was included in this review, nonetheless, due to the relevance of the detailed contributions about occupational therapy interventions for hip replacement<sup>23</sup>.

Four articles (36%) reported rehabilitative interventions by physiotherapists<sup>25,28,29,30</sup>, and two (18%) described combined interventions by occupational therapists and physiotherapists<sup>22,23</sup>. One further article (9%) reported occupational therapy interventions in association with physiotherapy<sup>26</sup>, and the remaining four articles (36%) focused on occupational therapy interventions exclusively<sup>1,24,2,27</sup>. Evidence about specific physiotherapy interventions were included in the review due to the similarities and overlap found with occupational therapy interventions in the OTASA Hip Rehabilitation Standard Operating Protocol for Occupational Therapy<sup>11</sup>.

OA as a cause leading to THA was premised by four of the articles<sup>25,27,28,29</sup> (36%) and one of these reported a focus on older adults (> 60 years) with OA<sup>25</sup>. One other article focused on an older population who had undergone THA<sup>2</sup>. Studies reported a range of both pre-operative and post-operative occupational therapy interventions.

<p>Sheth et al. (2020)<sup>23</sup></p> <p>The role of OT in an interdisciplinary team care approach, used to rehabilitate elective hip and knee arthroplasties: a systematic review</p> <p>American Journal of Occupational Therapy</p>	<p>Five studies about patients with elective joint replacement surgery</p>	<ul style="list-style-type: none"> <li>Occupational therapy and physiotherapy intervention combined: transferring the skills of balance, gait training, general strengthening into the client's daily occupations</li> <li>Occupational therapy interventions: education, safety, environmental modifications, car transfers, proper elevation techniques</li> </ul>	<ul style="list-style-type: none"> <li>Strong evidence for the inclusion of occupational therapists in interdisciplinary teams especially for addressing safety with ADL</li> <li>Functional outcomes led to reduction in in-patient length of stay, overall hospital costs, and patient physical and psychosocial outcomes</li> <li>Occupational therapy interventions provide positive outcomes for patients with elective joint replacement surgery</li> </ul>
<p>Smith et al. (2016)<sup>24</sup></p> <p>Assistive devices, hip precautions, environmental modifications and training to prevent dislocation and improve function after hip arthroplasty</p> <p>Cochrane Database of Systematic Reviews</p>	<p>Three studies reporting on 492 people who had received 530 total hip arthroplasties</p>	<ul style="list-style-type: none"> <li>The provision of hip precautions, equipment (e.g. raised toilet seats, rails), functional restrictions</li> <li>The provision of hip precautions with, versus without, prescription of post-operative equipment and restrictions to functional activities</li> <li>The provision of an enhanced post-operative education and rehabilitation service on hospital discharge to promote functions ADL, versus conventional rehabilitation intervention in the community</li> </ul>	<ul style="list-style-type: none"> <li>There may be some benefit for earlier recovery for post-operative functional capability in participants that receive no advice on hip precautions</li> <li>It is uncertain whether receiving no advice on hip precautions and the provision (or not) of equipment has an important effect on dislocation rates or adverse events</li> <li>There is insufficient high-quality evidence to support or refute the adoption of hip precautions, equipment or post-operative community rehabilitation and education, compared to conventional rehabilitation strategies</li> </ul>
<p>Mitrovic et al. (2017)<sup>25</sup></p> <p>The effectiveness of supplementary arm and upper body exercises following total hip arthroplasty for osteoarthritis</p>	<p>Patients (&gt;60 years) in orthopaedic and rehabilitation departments who underwent hip replacement in Serbia</p>	<ul style="list-style-type: none"> <li><i>Study group:</i> standard rehabilitation - 30min. exercises from day 1 PLUS supplementary exercises; 45min. sessions and given brochure with instructions for exercises</li> <li><i>Control group:</i></li> </ul>	<ul style="list-style-type: none"> <li>Study group had significantly better Harris Hip Score after intervention</li> <li>Also significantly higher mean changes in handgrip strength (bilaterally), and significant positive correlation between hand grip strength and Harris Hip Score</li> </ul>
<p>in the elderly: a randomized controlled trial</p> <p>Clinical Rehabilitation</p>		<p>standard rehabilitation</p>	<ul style="list-style-type: none"> <li>Near significant level of improvement in physical functioning and bodily pain with significant positive correlation between all dimensions of Health Survey</li> <li>Arm and upper body exercises in addition to standard rehabilitation significantly improve functional ability, muscle strength, and self-reported quality of life in the physical role 12 weeks after hip arthroplasty</li> </ul>
<p>Bozorgi et al. (2016)<sup>2</sup></p> <p>Effectiveness of occupational therapy supervised usage of adaptive devices on functional outcomes and independence after total hip replacement in Iranian elderly: a randomized controlled trial</p> <p>Occupational Therapy International</p>	<p>Individuals with OA and THA (&gt; 60 years) in Iran</p>	<ul style="list-style-type: none"> <li><i>Study group:</i> received conventional occupational therapy, PLUS additional supervision on the use of adaptive devices</li> <li><i>Control group:</i> Received conventional occupational therapy (incl. ADL instruction, assessment of living environment, education of carers on surgery complications, and postures to avoid)</li> </ul>	<p>The study group showed significantly more improvement in all dependent variables post-operatively (physical function, muscular strength, reduced disability and pain intensity)</p>
<p>Marcu et al. (2021)<sup>26</sup></p> <p>Benefits of combining physical therapy with occupational therapy in hip arthroplasty</p> <p>Journal of Personalized Medicine</p>	<p>Patients with hip arthroplasty in a hospital in Romania</p>	<ul style="list-style-type: none"> <li>Occupational therapy focused on ADL: <ul style="list-style-type: none"> <li>- cooking</li> <li>- intimate hygiene</li> <li>- shopping</li> </ul> </li> <li>Adaptive changes in homes to promote activity performance and prevent falls</li> <li>Combined with physiotherapy programme</li> </ul>	<p>The positive impact of individualized rehabilitation programme (IRP) in recovery after hip replacement was underlined, compared to the group that did not receive/comply with IRP.</p>

<p>Jepson et al. (2016)<sup>27</sup></p> <p>A feasibility randomised controlled trial of pre-operative occupational therapy to optimise recovery for patients undergoing primary total hip replacement for osteoarthritis (PROOF-THR)</p> <p>Clinical Rehabilitation</p>	<p>UK patients awaiting primary THA due to OA</p>	<ul style="list-style-type: none"> <li>• <i>Study group:</i> <ul style="list-style-type: none"> <li>- pre-operative home visit by occupational therapist to discuss expectations and anxieties (also discussed with carer)</li> <li>- gave explanations about surgery, hospital stay, and post-operative in-patient rehabilitation</li> <li>- in-depth discussion about planned recovery when returned home</li> <li>- assessed home safety</li> <li>- provided appropriate adaptive equipment and education on how to use</li> <li>- explained how layout of home might need temporary adapting</li> <li>- usual care</li> </ul> </li> <li>• <i>Control group:</i> <ul style="list-style-type: none"> <li>- usual care (i.e. pre-operative MDT education packages given at hospital; post-operative adaptive equipment given by occupational therapist)</li> </ul> </li> </ul>	<p>Feasibility study provided information required to conduct a definitive trial.</p> <p>Pre-operative occupational therapy assessments and interventions can be effectively delivered and were well received.</p>
<p>Elmoghazi et al. (2022)<sup>28</sup></p> <p>Conventional versus fast track rehabilitation after total hip replacement: a randomized controlled trial</p> <p>Journal of Orthopaedics, Trauma and Rehabilitation</p>	<p>German patients undergoing THA for the treatment of OA</p>	<ul style="list-style-type: none"> <li>• <i>Both groups:</i> <ul style="list-style-type: none"> <li>same post-operative pain therapy, i.e. <ul style="list-style-type: none"> <li>- successful verticalisation and mobilisation followed by</li> <li>- daily physiotherapy</li> <li>- gait training on crutches,</li> <li>- range of motion exercises for hip joint</li> <li>- group exercises as tolerated</li> <li>- started with MDT orthopaedic rehabilitation programme after discharge</li> </ul> </li> </ul> </li> <li>• <i>Fast-track group:</i> <ul style="list-style-type: none"> <li>- mobilisation on day of surgery (3 - 5 hours after leaving theatre)</li> </ul> </li> </ul>	<p>Fast track rehabilitation after THA was associated with early patient mobilisation and rapid functional recovery with better outcome and less risk of complications or readmission.</p>
		<ul style="list-style-type: none"> <li>• <i>Conventional group:</i> <ul style="list-style-type: none"> <li>- mobilisation 1 - 3 days after surgery (mean days 1.1)</li> </ul> </li> </ul>	
<p>Eren et al. (2022)<sup>29</sup></p> <p>The effect of video-assisted discharge education after total hip replacement surgery: a randomized controlled study</p> <p>Scientific Reports</p>	<p>Turkish patients who underwent THA</p>	<ul style="list-style-type: none"> <li>• <i>Physiotherapy group:</i> <ul style="list-style-type: none"> <li>- breathing exercises</li> <li>- hip range of motion and strengthening exercises</li> <li>- positioning</li> <li>- information about walking and ambulation</li> <li>- programme taught practically and verbally to patients and their relatives</li> <li>- information about added exercises at end of first and fourth week</li> <li>- physiotherapy booklet given and questions answered</li> <li>- continued for 12 weeks</li> </ul> </li> <li>• <i>Video-assisted discharge education group (VADE):</i> <ul style="list-style-type: none"> <li>- VADE created as a written and video presentation with professional model demonstrating information</li> <li>- received VADE added to physiotherapy group interventions</li> <li>- information about THA</li> <li>- preventive rehabilitation approaches</li> <li>- transfer activities,</li> <li>- using stairs,</li> <li>- self-care activities</li> <li>- home settings</li> </ul> </li> </ul>	<p>VADE reduced pain perception and kinesiophobia, improved hip function, and increased patient satisfaction.</p> <p>VADE and physiotherapy groups had similar ADL outcomes.</p>

		<ul style="list-style-type: none"> <li>- presentation interrupted when questions from patients</li> <li>- instructional booklet given in addition to physiotherapy booklet</li> </ul>	
<p>Doiron-Cadrin et al. (2020)<sup>30</sup></p> <p>Feasibility and preliminary effects of a tele-prehabilitation program and an in-person prehabilitation program compared to usual care for total hip or knee arthroplasty candidates: a pilot randomized controlled trial</p> <p>Disability and Rehabilitation</p>	<p>Canadian patients awaiting THA or TKA</p>	<ul style="list-style-type: none"> <li>• <i>In-person prehabilitation group</i> <ul style="list-style-type: none"> <li>- 12 week rehabilitation program at orthopedic clinic, incl. ROM of hip and knee, strengthening of hip and knee muscles, proprioceptive exercises, cardiovascular warm-up, education regarding medication usage, ice application</li> <li>- After initial evaluation, received 2 supervised physiotherapy sessions per week</li> <li>- Asked to repeat these exercises on the other days without supervision and to log exercises in a book</li> </ul> </li> <li>• <i>Tele-prehabilitation group</i> <ul style="list-style-type: none"> <li>- Same exercise program followed at home and advice (supervision) through internet-based telecommunication mobile application</li> </ul> </li> <li>• <i>Control group</i> <ul style="list-style-type: none"> <li>- provided with hospital's usual care (1 home visit by community-based physiotherapist)</li> <li>- documentation before Total Joint Arthroplasty (i.e. information about pre- and post-surgery course and medication-use)</li> <li>- no prehabilitation</li> </ul> </li> </ul>	<p>Prehabilitation is efficient in significantly improving physical performance, especially walking speed or stair performance for patients with hip or knee OA - this effect can be considered clinically important.</p> <p>No statistically significant differences between experimental and control group for any self-reported questionnaires, incl. LEFS. This may suggest that, although there was objective improvement in function after in-person rehabilitation and tele-prehabilitation, the improvement does not translate into decreased pain, increased self-perceived functional status, or improved QoL before the surgery.</p>

### Pre-operative occupational therapy intervention for THA

The pertinence of occupational therapy interventions before THA is evident from the reviewed articles. Occupational therapists provide pre-operative training and information about post-operative exercises<sup>22</sup> with patients awaiting hip replacements in acute and sub-acute care settings. The training is in the form of educational materials about joint replacement surgery with individually focused education in self-care, adaptive equipment, and home modifications<sup>1</sup>. Bozorgi et al.'s RCT<sup>2</sup> focused on the effectiveness of usage of assistive devices under occupational therapy supervision after THA, and noted how occupational therapists educated patients a day before surgery in the use of adaptive devices, specifically, abduction pillows, reachers, elevated toilet seats, and cushion seats. Occupational therapists also instructed patients in ADL, assessed their living environment, and educated carers on complications associated with surgery, and postures to avoid<sup>2</sup>. Another RCT recorded pre-operative multi-disciplinary team education packages as usual care before THA at a hospital in the UK<sup>27</sup>. Importantly, usual care by occupational therapists in the study included the conduct of pre-operative home visits to discuss the expectations and anxieties of patients and carers. The intervention also involved explaining the surgery to the patient and carer, providing information about the expected hospital stay, and the planned post-operative in-patient rehabilitation<sup>27</sup>. An in-depth discussion was also held with the patient about their planned recovery after discharge, and the occupational therapist assessed home safety and then followed this with an explanation of how the home layout may need to be adapted temporarily<sup>27</sup>.

The use of tele-prehabilitation by therapists in preparation of patients for THA surgery was reported by one pilot RCT<sup>30</sup>. Patients performed exercises at home, such as strengthening of hip and knee

\*Ice application was done by the client themselves under instruction from an online physiotherapist. Occupational therapists in South Africa in some instances use ice application in hip replacement interventions.

muscles, range of motion of hip and knee joints, proprioceptive exercises, cardiovascular warm-up, education regarding medication usage, and ice application<sup>4</sup>, while being supervised or advised by a therapist via internet-based telecommunication mobile applications. Descriptions of usual care, typically offered in person to the same population, involved a home visit by a community-based therapist, and the provision of documentation with information about pre- and post-operative rehabilitation and medication-use<sup>30</sup>. The researchers concluded that prehabilitation, delivered through tele-rehabilitation, is efficient in significantly improving physical performance of patients with hip or knee OA, especially in walking speed or stair performance.

### Post-operative occupational therapy intervention for THA

A focus of occupational therapy interventions after THA was education and training to patients on a variety of aspects. For example, occupational therapists educate patients on how to do post-operative exercises<sup>22</sup>, safety, environmental modifications, car transfers, and proper elevation techniques<sup>23</sup>. They further guide patients on hip precautions and functional restrictions during recovery<sup>24</sup>. Where physiotherapists and occupational therapists work together and offer similar or the same interventions, occupational therapists are reported to facilitate the transferring of skills of balance, gait training, and general strengthening into the daily occupations of patients<sup>23</sup>. Occupational therapists further provide education materials to patients about joint replacement<sup>1</sup> and ambulation<sup>29</sup>. Occupational therapists regularly include the relatives or carers of patients in the practical and verbal information sessions, answer their questions, and provide therapy booklets to supplement education and training<sup>29</sup>. In one study, occupational therapists utilised video-assisted discharge education (VADE), which included a written presentation and a professional model demonstrating the given information, in addition to usual pre-discharge interventions after THA<sup>29</sup>. Video fage demonstrated preventive rehabilitation approaches, transfer activities, using stairs, self-care activities, and home settings. Patients asked questions and

presentations were then interrupted for therapists to address these questions. An additional instructional booklet was also given to patients together with the usual therapy booklet. The researchers found that VADE reduced pain perception and Kinesio phobia with patients, and improved hip functions and patient satisfaction<sup>29</sup>.

Reviewed studies further reported occupational therapy post-operative interventions as visits, and follow-up visits, to patients' homes after discharge to monitor patients' adherence to prescribed rehabilitation programmes<sup>22,2</sup>. Interventions at home further included making adaptive changes to promote patients' activity performance and to prevent falls<sup>26</sup>.

Therapists' role in the early mobilisation with clients as part of accelerated peri-operative care, is highlighted by two studies<sup>1,28</sup>. Fast-tracked patients are mobilised three to five hours post-surgery as opposed to one to three days later<sup>28</sup>. These studies concluded that early mobilisation after THA is associated with rapid functional recovery, better outcomes, and less risk of complications or readmission<sup>28</sup>. Early interventions also decreased clients' experience of pain intensity, disability, and number of occupational therapy visits, while conversely increasing clients' general, physical, and mental health scores, and self-management by clients of their health condition<sup>1</sup>.

Occupational therapy intervention in relation to the prescription of assistive and adaptive devices after THA is highlighted in the reviewed studies. Occupational therapists prescribe raised toilet seats, rails, walkers, canes, and crutches, and prepare for and train clients in their use<sup>24,2,26,27</sup>. In one study, occupational therapists utilised tele-rehabilitation to remind and check the use of adaptive devices by patients after discharge<sup>2</sup>.

Standard rehabilitation offered by occupational therapists after THA involves daily exercises with the patient from one day post-surgery that are focused on lower limb range of motion (passive or active not specified) and muscle strength, function, balance, coordination, and gait with weight bearing<sup>25,28</sup>. Lower limb interventions further include passive hip flexion and extension to increase range of movement (ROM), strengthening exercises for flexor, extensor, and abductor muscles of the hip, knee extensors, ankle plantar flexors, and positioning<sup>2,29</sup>. Therapy is also offered in the form of group exercises as tolerated by patients<sup>28</sup>. In a study with older adults (> 60 years) therapists also offered additional physical chair exercises for arms and upper body, with or without resistance, to improve posture and upper limb flexibility and range of motion and muscle strength, as well as regular, deep breathing exercises<sup>25</sup>. Functional ability outcomes, muscle strength, and self-reported quality of life were significantly improved for patients who received arm and upper body exercises in addition to standard rehabilitation after THA<sup>25</sup>.

Occupational therapists retain an intervention focus on function by facilitating patients' participation post-THA in ADL, for example cooking, intimate hygiene, and shopping<sup>26</sup>. One study in particular reported how therapists utilised VADE to address ADL, functionality, and patient satisfaction after THA caused by OA<sup>29</sup>.

## DISCUSSION

Level I research evidence on occupational therapy intervention after THA from the past decade included in this review, reflect more studies from high income countries than low- to middle income countries, and none from the African continent or the Global South. Interpretation and application of evidence in the South African context should therefore be considered in relation to healthcare settings, approaches and priorities that are reflective of local occupational therapy service provision aligned to a community-based rehabilitation focus<sup>31</sup> and primary healthcare approaches<sup>32</sup>. Nonetheless, reported evidence correlates positively with documented intervention protocols for occupational therapists in South Africa<sup>11</sup>. Articles that reported physiotherapy intervention for THA did so in the context of multi-disciplinary rehabilitation teams with the former interventions being similar or the same as those described by South African occupational therapists.

Post-THA intervention protocols described in the OTASA protocol show focus on the lower body of patients before and after surgery, with little attention to upper body strengthening to enhance functional outcomes as described in Mitrovic et al.'s study<sup>25</sup>. Certain areas of intervention included in South African protocols were not described or considered in included studies though, for example, interventions aimed at addressing work readiness and return to work after THA, and occupational therapy intervention for return to driving after THA. Pain management as a factor in recovery and intervention after THA was also not found in the evidence, but is highlighted for South African occupational therapists in the standard operating procedure for protocols after THA.

The evidence reviewed demonstrate an emphasis on interventions offered before surgery with five articles reflecting positive outcomes for patients in relation to functional recovery after pre-operative interventions by occupational therapists. In most instances, these interventions are education-focused with some involving pre-emptive strengthening of patients' muscles before surgery. The scope and detail included in pre-operative education and training by occupational therapists with THA patients, and the pertinence of these interventions in the reviewed studies, may indicate the value of occupational therapists' education and communication skills for application in THA protocols. Education of patients by the occupational therapist after surgery is also highlighted in evidence of post-operative occupational therapy protocols, especially in relation to assistive and adaptive devices. occupational therapy interventions for THA described in the OTASA Standard Operating Protocol<sup>11</sup> do not reflect the same pertinence of pre-operative interventions by South African occupational therapists, and available evidence may need to be considered further in developing local protocols further that will enhance outcomes for patients after THA.

Standard occupational therapy rehabilitation interventions after THA that were found in the evidence show a traditional focus on the rehabilitation of body function and structures (for example, ROM and muscle strength of hips) which correlates with protocols set out for South African occupational therapists. However, while ADLs and IADLs are listed frequently in the South African protocol for occupational therapists in THA, limited descriptions of ADL-focused occupational therapy interventions were found in the evidence of this review, compared to other intervention foci, for example, improved physical functioning.

Evidence for tele-rehabilitation with THA, specifically in relation to pre-operative occupational therapy intervention that enhances post-operative functional outcomes, was found in this review. This mode of intervention is not described or noted for South African occupational therapy intervention for THA, although it has been found to be useful and effective in occupational therapy for other health conditions, for example, cerebrovascular accidents (CVA)<sup>33</sup>. Given the constraints of South Africa's underfunded public health system<sup>5</sup> it would important to assess how local occupational therapists utilise technology in interventions for THA to ensure that clients receive optimal benefit from such interventions.

## Limitations

This review focused on occupational therapy interventions aimed at treatment for THA and did not include protocols, methods, and instruments/tools for assessment by occupational therapists.

## CONCLUSION

This rapid review considered evidence for occupational therapy interventions with THA in the local context of South Africa across care settings and age groups. The review revealed a notable lack of studies from low- to middle income countries, that underscores the importance of cautiously interpreting and applying existing evidence within the context of local healthcare settings, priorities, and resources in South Africa. The reported evidence aligns positively with documented interventions for THA by South African occupational therapists.

However, in South African occupational therapy intervention for THA, additional attention was shown to upper body strengthening, interventions for work readiness and return to work, driving rehabilitation, and pain management. The reviewed articles' emphasis on pre-operative interventions, particularly education-focused interventions, suggests the value of occupational therapists communication skills in promoting outcomes for THA clients. There is also a need for further consideration of evidence regarding ADL-focused interventions and potential for tele-rehabilitation to optimize outcomes within the constraints of the country's healthcare system.

### Conflicts of Interest

The authors have no conflict of interest to declare.

### Author contribution

All authors planned and participated in the review. Shaheed M Soeker initiated and supervised the review and Madri Engelbrecht wrote the article.

### REFERENCES

- Dorsey, J. and Bradshaw, M. (2017). Effectiveness of occupational therapy interventions for lower-extremity musculoskeletal disorders: A systematic review. *American Journal of Occupational Therapy*, 71, 7101180030. <https://doi.org/10.5014/ajot.2017.023028>
- Bozorgi, A.A.J., Ghamkhar, L., Kahlaee, A.H. and Sabouri, H. (2016). The effectiveness of occupational therapy supervised usage of adaptive devices on functional outcomes and independence after total hip replacement in Iranian elderly: a randomized controlled trial, *Occupational Therapy International*, 23 (2016), 143-153, <https://doi.org/10.1002/Oti.1419>
- Wijnen, A. Bouma, S.E., Seeber, G.H., Van der Woude, L.H.V., Bulstra, S.K., Lazovic, D., Stevens, M. and Van den Akker-Scheek, I. (2018). The therapeutic validity and effectiveness of physiotherapeutic exercise following total hip arthroplasty for osteoarthritis: A systematic review, *PLoS ONE*, 13(3), e0194517, <https://doi.org/10.1371/journal.pone.0194517>
- Fu, M., Zhou, H., Li, Yushi, Jin, H. and Liu, X. (2022). Global, regional, and national burdens of hip osteoarthritis from 1990 to 2019: estimates from the 2019 Global Burden of Disease Study, *Arthritis Research & Therapy*, 2022, 24(8), <https://goi.org/10.1186/s13075-021-02705-6>
- Davies, P.S., Graham, S.M., Maqungo, S. and Harrison, W.J. (2019). Total joint replacement in sub-Saharan Africa: a systematic review, *Tropical Doctor*, 49(2): 120-128, <https://doi.org/10.1177/0049475518822239>
- Sekeitto, A.R. and Aden, A.A. (2021). Costing total hip arthroplasty in a South African state tertiary hospital, *South African Medical Journal*, 111(3):250-254, <https://doi.org/10.7196/samj.2021.v111i3.14931>
- South African Government. National Health Act 61 of 2003. South Africa; 2003; [Accessed 2023 Jun 10]. Available from: [https://www.gov.za/sites/default/files/gcis\\_document/201409/a61-03.pdf](https://www.gov.za/sites/default/files/gcis_document/201409/a61-03.pdf)
- National Department of Health. Framework and strategy for disability and rehabilitation services [homepage on the Internet]. 2015 [Accessed 2023 Jun 10]. Available from: [http://ilifalabantwana.co.za/wp-content/uploads/2016/07/Framework-25-may\\_1\\_3.docx](http://ilifalabantwana.co.za/wp-content/uploads/2016/07/Framework-25-may_1_3.docx)
- South African Government. The Constitution of the Republic of South Africa. The Bill of Rights Republic of South Africa: <https://www.gov.za/documents/constitution/chapter-2-bill-rights;1996> p. 243.
- National Department of Health. White Paper: National Health Insurance Policy - Towards Universal Health Coverage. Dep Heal. 2017;1-67.
- OTASA Standards Protocol Group (n.d.). Hip Rehabilitation Standard Operating Protocol for Occupational Therapists, OTASA
- Garrity, C., Gartlehner, G., Kamel, C., King, V.J., Nussbaumer-Streit, B., Stevens, A. and Hamel, C.A.L. Cochrane Rapid Reviews. Interim Guidance from the Cochrane Rapid Reviews Methods Group. 2020.
- South Africa Department of Health. Methods guide for rapid reviews for COVID-19 medicine reviews. 2021
- WFOT. WFOT Definition of Occupational Therapy [Internet]. 2012. Available from: <https://wfot.org/resources/definitions-of-occupational-therapy-from-member-organisations>
- OTASA. Occupational Therapy Association of South Africa Position statement on rehabilitation [Internet]. 2023. Available from: [https://www.scielo.org.za/scielo.php?script=sci\\_arttext&pid=S2310-38332017000400010#:~:text=Rehabilitation%20occurs%20in%20a%20variety,homes%2C%20schools%20and%20work%20places](https://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S2310-38332017000400010#:~:text=Rehabilitation%20occurs%20in%20a%20variety,homes%2C%20schools%20and%20work%20places)
- Forrest, J.L. and Miller, S.A. (2009). Translating evidence-based decision making into practice: EBDM concepts and finding the evidence, *Journal of Evidence Based Dental Practice*, 9:59-72, <https://doi.org/10.1016/j.jebdp.2009.03.017>
- Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D. et al. The PRISMA guideline for reporting systematic reviews. *BMJ*. 2021; 372: n71. <http://doi.org/10.1136/bmj.n71>
- Rayyan Systems I. Rayyan Intelligent Systematic Review. Rayyan <https://rayyan.qcri.org/>. 2020.
- King, V.J., Stevens, A., Nussbaumer-Streit, B., Kamel, C. and Garrity, C. (2022). Paper 2: Performing rapid reviews, *Systematic Reviews*, 11(1):1-10
- Critical Appraisal Skills Programme. CASP Systematic Review [Internet]. 2018. Available from: <https://casp-uk.net/casp-tools-checklists/systematic-review-checklist/>
- Critical Appraisal Skills Programme. CASP Randomised Controlled Trial (RCT) Standard Checklist [Internet]. Available from: <https://casp-uk.net/casp-tools-checklists/randomised-controlled-trial-rct-checklist/>
- Wales, K., Lang, D., Rahja, M., Somerville, L., Laver, K. and Lannin, N.A. (2021). Economic effects of occupational therapy services for adults in acute and subacute care settings: A systematic review, *American Journal of Occupational Therapy*, 76, 7601180080, <https://doi.org/10.5014/ajot.2022.049078>
- Sheth, M., Simone, R., Shimoda, B., Dalusung, D., Peralta, J. (2020). Role of OT in an Interdisciplinary Team Care Approach, Used to Rehabilitate Elective Hip and Knee Arthroplasties: A Systematic Review, *The American Journal of Occupational Therapy*, 1;74(4\_Supplement\_1):7411505116p1-7411505116p1. <https://doi.org/10.5014/ajot.2020.74s1-po2732>
- Smith, T.O., Jepson, P., Beswick, A., Sands, G., Drummond, A. Davis, E.T. and Sackley, C.M. (2016). Assistive devices, hip precautions, environmental modifications and training to prevent dislocation and improve function after hip arthroplasty, *Cochrane Database of Systematic Reviews* 2016, 7, CD010815, <https://doi.org/10.1002/14651858.CD010815.pub2>
- Mitrovic, D., Davidovic, M., Erceg, P. and Marinkovic, J. (2017). The effectiveness of supplementary arm and upper body exercises following total hip arthroplasty for osteoarthritis in the elderly: A randomized controlled trial, *Clinical Rehabilitation*, 31(7), 881-890, <https://doi.org/10.1177/0269215516655591>
- Marcu, F.M., Negrut, N., Uivaraseanu, B., Ciubara, A., Lupu, V.V., Dragan, F., Lupu, A. and Ciubara, A.B. (2021). Benefits of combining physical therapy with occupational therapy in hip arthroplasty, *Journal of Personal Medicine*, 11(1131), <https://doi.org/10.3390/jpm11111131>
- Jepson, P., Sands, G., Beswick, A.D., Davis, E.T., Blom, A.W., Sackley, C.M. (2016) A feasibility randomised controlled trial of pre-operative occupational therapy to optimise recovery for patients undergoing primary total hip replacement for osteoarthritis (PROOF-THR). *Clinical Rehabilitation*, 30(2):156-66. <https://doi.org/10.1177/0269215515576811>
- Elmoghazy, A.D., Lindner, N., Tingart, M. and Salem, K.H. (2022). Conventional versus fast track rehabilitation after total hip replacement: A randomized controlled trial, *Journal of Orthopaedics, Trauma and Rehabilitation*, 29, 1-6, <https://doi.org/10.1177/22104917221076501>
- Eren, O.C., Buker, N., Tonak, H.A. and Urguden, M. (2022). The effect of video-assisted discharge education after total hip replacement surgery: a randomized controlled study, *Nature Portfolio: Scientific Reports*, 12(3067), <https://doi.org/10.1038/s41598-022-07146-y>
- Doiron-Cadrin, P., Kairy, D., Vendittoli, P-A., Lowry, V., Poitras, S. and Desmeules, F. (2020). Feasibility and preliminary effects of a tele-prehabilitation program and an in-person prehabilitation program compared to usual care for total hip or knee arthroplasty candidates: a pilot randomized controlled trial, *Disability and Rehabilitation*, 42(7), 989-998, <https://doi.org/10.1080/09638288.2018.1515992>
- OTASA (2017). Occupational Therapy Association of South Africa Position Statement on Rehabilitation, *South African Journal of Occupational Therapy*, 47(3):63-64, <http://dx.doi.org/10.17159/2310-3833/2015/v45n3/a11>

32. OTASA (2015). Position paper: Occupational Therapy Association of South Africa (OTASA) - Position Statement on Occupational Therapy in Primary Health Care (PHC), South African Journal of Occupational Therapy, 45(3):58-59, <https://doi.org/10.17159/2310-3833/2015/v45n3/a11>
33. Engelbrecht, M., Van der Walt, J., Van Biljon, H.M. and Soeker, S.M. (2024). Occupational therapy treatment protocols for cerebrovascular accidents: a rapid review of evidence, South African Journal of Occupational Therapy, 54(2): 87-97, <https://doi.org/10.17158/2130-3833/vol54no2a10>