Occupational therapy for adults undergoing total hip replacement

Practice guideline

College of Occupational Therapists
Mrs Jeffries, a service user, describes her experience of total hip replacement:

Total Hip Replacements may be a common procedure but they are always life-changing and challenging for the individual concerned. As my osteoarthritis became more severe I was very concerned that I would lose my independence and, in effect, become old before my time. The success of my surgery is demonstrated by my many activities: I drive, use public transport, swim, garden and play with my grandchildren. Discussions with occupational therapists proved to be an essential part of the healing process not least because my own specific needs and lifestyle were addressed. Practical aids in the bathroom and on a steep staircase meant I could safely manage alone and realistic advice encouraged me to be bold without endangering myself. The surgical team began a process which with time, information and exercise has resulted in a busy and varied life with many choices and the freedom to enjoy time with friends and family.

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Occupational therapy for adults undergoing total hip replacement

Practice guideline

College of Occupational Therapists
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Note: The term ‘service user’ is used within this document to refer to adults undergoing a total hip replacement.

This guideline was developed using the processes defined within the Practice guidelines development manual (College of Occupational Therapists [COT] 2011a).

Readers are referred to the manual to obtain further details of specific stages within the guideline development process.

I am delighted to have been asked to write the foreword for Occupational therapy for adults undergoing total hip replacement. This guideline is the work of occupational therapists who have had the vision, enthusiasm and perseverance to address this long overdue area; we now have a benchmark of what we should be doing as well as flagging up what we should be improving.

Total hip replacement is a common procedure with statistics continuing to show large numbers of operations being conducted and, indeed, steadily increasing. From 2010–11, over 77,800 primary hip replacements and 9,000 revisions were carried out in England and Wales (National Joint Registry 2011, p35). Yet although the role of occupational therapy is well established and recognised (British Orthopaedic Association 2006), there are rapid changes in the face of practice – not only in the timings of interventions but in the age and range of people needing rehabilitation. Occupational therapists are treating more people of working age who have had hip replacements as well as continuing to treat their more traditional caseload of older patients. They seem to be seeing people earlier, and patients are being discharged more quickly because of the current emphasis on shortening hospital stay and the implementation of ‘rapid recovery’ initiatives.

Such changes on the coalface are reflected in the widespread variation that exists in national practice. Such variations reflect differences in surgical opinion, in service configurations and the dearth of robust research evidence to underpin clinical practice. This lack of research extends from addressing the most fundamental questions on the use of hip precautions to the best ways of delivering pre-operative and post-operative education and care within a service. Consequently, although this guideline tackles practical issues by examining the literature and making recommendations to guide clinicians, it also highlights the gaps in the evidence. There are key occupational therapy questions to be answered and therapists must rise to this challenge.

Professor Avril Drummond PhD, MSc, FCOT
Professor of Healthcare Research and Occupational Therapist
University of Nottingham
Foreword

Following my involvement in the service user consultation for this practice guideline for occupational therapists working with adults undergoing total hip replacement, it is a pleasure to be asked to provide a foreword.

Throughout the development of this guideline service users have been consulted in a meaningful and effective manner, being offered opportunities to share our experiences of undergoing total hip replacement, and we have appreciated clinical staff listening to our views and experiences.

The guideline provides an excellent resource for occupational therapists in the assessment and treatment of people undergoing total hip replacement surgery. It ensures the occupational therapist has the opportunity to gain knowledge of the whole person and that they take into account issues for carers and the service user's mental wellbeing. This, in turn, will benefit the service user by ensuring their care is focused on their recovery and resumption of roles, tailored to their individual needs, and most importantly that they are offered consistent and evidence-based advice and interventions.

Mrs Sue Knowles
Chair, Rushcliffe 50+ Forum Health Sub Group
Nottinghamshire
Key recommendations for implementation

The aim of this practice guideline is to provide specific recommendations that describe the most appropriate care or action to be taken by occupational therapists working with adults undergoing total hip replacement. The recommendations are intended to be used alongside the therapist’s clinical expertise and, as such, the clinician is ultimately responsible for the interpretation of this evidence-based guideline in the context of their specific circumstances and service users.

The recommendations should not be taken in isolation and must be considered in conjunction with the contextual information provided in this document and with the details on the strength and quality of the recommendations. It is strongly advised that readers study section 5 together with the evidence tables in Appendix 5 to understand the guideline methodology and to be fully aware of the outcome of the literature search and overall available evidence.

Recommendations are scored according to strength, 1 (strong) or 2 (conditional), and graded from A (high) to D (very low) to indicate the quality of the evidence. The seven recommendation categories reflect the potential outcomes for service users following total hip replacement and occupational therapy intervention, and are presented in the order of prioritisation identified from service user consultation.

### Maximised functional independence

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Strength</th>
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<tr>
<td>1. It is recommended that the occupational therapy assessment is comprehensive and considers factors which may affect individual needs, goals, recovery and rehabilitation, including co-morbidities, trauma history, personal circumstances, obesity and pre-operative function.</td>
<td>1 C</td>
</tr>
<tr>
<td>2. It is recommended that goal setting is individualised, enhances realistic expectations of functional independence, and commences at pre-operative assessment.</td>
<td>1 C</td>
</tr>
<tr>
<td>(Judge et al 2011, C; Mancuso et al 2003, C)</td>
<td></td>
</tr>
<tr>
<td>3. It is recommended that occupational therapists ensure that they provide clear communication and advice that is consistent with that of other members of the multidisciplinary team.</td>
<td>1 C</td>
</tr>
<tr>
<td>(Fielden et al 2003, C)</td>
<td></td>
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</table>
### Key recommendations for implementation

4. It is recommended that depression and anxiety status are taken into account during pre-operative and post-operative intervention due to their potential for impact on recovery.  
   *(Caracciolo and Giaqunito 2005, C; Nickinson et al 2009, C)*

5. It is recommended that cognitive status is taken into account during pre-operative and post-operative intervention due to its potential for impact on recovery.  
   *(Wang and Emery 2002, C; Wong et al 2002, C)*

6. It is recommended that service users are fully involved in decisions about the equipment required to enable them to carry out daily living activities and to comply with any hip precautions in their home environment post-surgery.  
   *(Thomas et al 2010, D)*

7. It is recommended that service users are given advice on effective pain management strategies, to decrease pre-operative pain experience and sleep disturbance, and enhance post-operative physical function.  
   *(Berge et al 2004, B; Montin et al 2007, C; Parsons et al 2009, C)*

8. It is suggested that standardised assessment and outcome measures are used, where appropriate, to determine functional outcome and occupational performance in rehabilitation settings, either inpatient or community based.  

#### Reduced anxiety

9. It is recommended that the pre-operative assessment undertaken by the occupational therapist allows adequate time for individualised questions and discussion of expectations and anxieties.  
   *(Fielden et al 2003, C; McDonald et al 2004, A; Montin et al 2007, C)*

10. It is suggested that occupational therapists offer support and advice to service users who may be anxious about an accelerated discharge home.  
    *(Heine et al 2004, D; Hunt et al 2009, D; Montin et al 2007, C)*

11. It is recommended that pre-operative assessment and education is carried out in the most appropriate environment for the service user. For the majority of service users a clinic environment is appropriate, but where needs are complex, a home assessment should be an available option.  
    *(Crowe and Henderson 2003, B; Drummond et al 2012, C; Orpen and Harris 2010, C; Rivard et al 2003, B)*

12. It is suggested that provision of equipment pre-operatively may facilitate familiarity and confidence in use.  
    *(Fielden et al 2003, C; Orpen and Harris 2010, C)*
13. It is suggested that service users may value being treated by the same occupational therapist throughout the process, from pre-operative assessment/education to post-operative rehabilitation wherever possible.  
*(Spalding 2003, C)*

14. It is suggested that occupational therapists should contribute to standardised pre-operative education interventions, providing information, advice and demonstrations where relevant (e.g. of joint protection principles, equipment).  
*(Coudeyre et al 2007, B; Johansson et al 2007, B; Spalding 2003, C; Spalding 2004, C; Soever et al 2010, C)*

### Resumption of roles

15. It is recommended that work roles are discussed at the earliest opportunity as part of a comprehensive assessment.  
*(Bohm 2010, C; Mobasheri et al 2006, D; Nunley et al 2011, C)*

16. It is suggested that for service users who are working, advice is provided relating to maintaining their work role pre-operatively, post-operative expectations and relevant information for employers.  
*(Bohm 2010, C; Mobasheri et al 2006, D; Nunley et al 2011, C; Parsons et al 2009, D)*

17. It is recommended that occupational therapists provide advice to facilitate service users to establish previous and new roles and relationships, and shift their focus from disability to ability.  
*(Grant et al 2009, C)*

### Low readmission rates

18. It is recommended that occupational therapists consult with the surgical team regarding any specific precautions to be followed post-operatively.  
*(Hol et al 2010, B; Peak et al 2005, B; Restrepo et al 2011, B; Stewart and McMillan 2011, C; Ververeli et al 2009, B)*

19. It is recommended that occupational therapists advise service users, where protocol includes precautions, on appropriate position behaviours for those daily activities applicable to the individual’s needs, ranging from getting in/out of a car to answering the telephone.  

20. It is suggested that due to the uncertainty surrounding the need for hip precautions, and the potential for an increase in satisfaction and early functional independence when hip precautions are relaxed or discontinued, occupational therapists engage in local discussion/review of the emerging evidence with their surgical and multidisciplinary teams.  
### Decreased length of hospital stay

21. It is recommended that occupational therapists optimise length of stay, with due reference to care pathways and enhanced recovery programme guidance.


22. It is recommended that the occupational therapist is involved in early multidisciplinary post-operative intervention for service users following hip replacement, providing either inpatient or home-based rehabilitation.


### Reduced demand on support services

23. It is suggested that there are potential benefits in including informal carers in pre-operative assessment/education, and post-operative intervention, to maximise service user independence and reduce carer stress.

   *(Chow 2001, C)*

### Reintegration into the community

24. It is recommended that occupational therapists encourage early discussion and goal setting for community reintegration, including social and physical activities.

   *(de Groot et al 2008, D; Gillen et al 2007, C)*

25. It is suggested that where specific needs are identified, the occupational therapist refers the service user on to community rehabilitation, reablement or intermediate care services to enhance community reintegration.

   *(de Groot et al 2008, D; Gillen et al 2007, C)*
1 Introduction

Total hip replacement has been identified as an effective treatment for the hip joint that causes pain and is no longer functioning properly, and when conservative management is no longer effective. Indications for a primary total hip replacement are pain and disability arising from osteoarthritis or inflammatory arthritis in the hip joint (British Orthopaedic Association [BOA] 2006, p5).

The National Institute for Health and Clinical Excellence [NICE] Clinical Guideline for the care and management of adults with osteoarthritis states:

Referral for joint replacement surgery should be considered for people with osteoarthritis who experience joint symptoms (pain, stiffness and reduced function) that have a substantial impact on their quality of life and are refractory to non-surgical treatment. Referral should be made before there is prolonged and established functional limitation and severe pain. (NICE 2008, p14)

Outcomes include improved symptoms and functional status with continuation in improvement for the first year after the operation (The Royal College of Surgeons of England and the BOA 2000, p8).

Hip replacement may also be indicated following trauma to the hip, such as in hip fracture, being particularly relevant for adults with pre-existing joint disease, medium/high activity levels, and who are not cognitively impaired (NICE 2011, Scottish Intercollegiate Guidelines Network [SIGN] 2009).

This practice guideline focuses on total hip replacement. It is recognised that some of the recommendations will be directly applicable to elective surgery only, rather than trauma surgery. However, the majority of the recommendations will be appropriate to service users undergoing a total hip replacement whatever the pre-disposing circumstances.

Occupational therapy staff involved in treating service users post hip fracture should, however, also refer to national hip fracture guidelines (SIGN 2009, NICE 2011) and quality standards (NICE 2012), together with national falls guidelines (NICE 2004) and professional guidance on falls management (COT 2006).

1.1 National context: hip replacement statistics

Information on hip replacement procedures in the United Kingdom (UK) is recorded; however, the data are not available as a single source.

The National Joint Registry holds details on joint replacement surgery for England and Wales, and includes procedures undertaken by both the National Health Service and the independent healthcare sector. In Scotland, the Scottish Arthroplasty Project uses Scottish Morbidity Records sent by hospitals to the Information Services Division to ascertain the number and outcome of joint replacements undertaken. Comprehensive statistics for the whole of Northern Ireland could not be sourced, but details for the Belfast Health and Social Care Trust and Southern Health and Social Care Trust provide some indication of procedures completed (Table 1).
The numbers of primary hip joint replacements completed has been increasing. In England and Wales for example, an additional 19,335 procedures were carried out in 2010/11 compared to 2006/07. Scotland has also seen an increase, with an additional 1,259 procedures undertaken in 2009 compared to 2005.

The surgical intervention statistics demonstrate that there is a high volume of service users in the UK undergoing primary total hip replacement, with these numbers continuing to rise in England, Wales and Scotland on an annual basis.

1.2 Context of service delivery

The Musculoskeletal Services Framework (Department of Health [DH] 2006), which is endorsed by the College of Occupational Therapists, focuses on best practice guidance to support people with musculoskeletal conditions, whether a result of disease, injury or development disorder. It is intended to assist in the delivery of improved access for service users, and in the reduction of waiting times for treatment. While directly applicable to England, the vision is one which can be universally shared by all occupational therapists working in this field of practice:

_The vision is that people with musculoskeletal conditions can access high-quality, effective and timely advice, assessment, diagnosis and treatment to enable them to fulfil their optimum health potential and remain independent._ (DH 2006, p6)

The framework includes a pathway for adults with hip pain, demonstrating the service user flow from pain onset to surgery (Figure 1). Multidisciplinary working and ‘shared care’ are seen as being fundamental to the approach, together with integrated care pathways based on the entire journey taken by a service user.

The framework identifies the involvement of occupational therapists early in the pathway, a requirement previously highlighted in the report _Hip replacements: An update_ published by the National Audit Office (NAO 2003). Occupational therapists should be involved in active management within the community; at the musculoskeletal interface clinic; in multi-professional pre-operative assessment with
Figure 1 Hip and knee pain patient flow from pain onset to surgery for adult elective patients
identification of potential post-operative service user concerns; in the provision of adaptive equipment and in discharge planning to prevent discharge delays following surgery.

The importance of an agreed process for continued rehabilitation where indicated is also identified as part of the flow process. It is therefore important that total hip replacement elective surgery and the guideline recommendations within this publication are seen in the context of a wider clinical pathway.

The involvement of occupational therapists, particularly in pre-admission assessment, is also highlighted in the consensus document, *Primary total hip replacement: a guide to good practice*, published by the British Orthopaedic Association (BOA 2006). It states that the involvement of occupational therapists, along with other members of the multidisciplinary team, can assist in preventing cancellation of surgery, allow co-morbidities and risk factors to be identified, and facilitate discharge planning. The home circumstances and availability of carers after discharge from hospital are also identified as being important (BOA 2006 p8 5.6). Pre-admission assessment provides an opportunity for service user education and establishing expectations, particularly with regard to the risk and benefits of the operation and the discussion of goals (BOA 2006 p8 5.2).

The period between admission and discharge for routine elective surgery has reduced in recent years, with a median length of stay recorded as 5 days for total hip replacement in England during 2009/2010 (Health Service Journal 2011). In Scotland the average length of stay in 2009 was reported as 6.2 days, with 35 per cent of service users being admitted on the day of surgery (NHS National Services Scotland 2010). Length of stay is associated with cost, and there is an expectation that clinical pathways in addition to promoting best practice will reduce length of stay and shorten post-operative rehabilitation.

Sourcing information on an indicative cost of elective hip replacement intervention across the UK is not simple. It is complicated by the different funding and payment structures within each country, and the variables in the nature of service delivery. To provide a proxy indicator of the cost of a total hip replacement for this guideline, the Department of Health *Payment by results guidance for 2011–12* for England (where the majority of hip replacements are undertaken) has therefore been used (DH 2011, p60). This defines a primary total hip replacement best practice tariff of £5,227 where no complications or co-morbidities exist (the figure is increased to £5,365 where complications and co-morbidities are identified).

Best practice tariffs have been applied to elective total hip replacements in England from 2011–12, demonstrating how clinical pathways can be potentially linked with cost. Best practice tariffs target interventions with high impact, and a strong evidence base or clinical consensus of best practice characteristics. They aim to encourage high quality and cost effective care. This includes good clinical management and reduced lengths of stay. This is identified in the payment by results guidance for hip replacements as including four key aspects:

a) **Pre-operative assessment, planning and preparation before admission.**

b) **A structured approach to peri-operative and immediate post-operative management, including pain relief.**

c) **Early supervised mobilisation and safe discharge.**

d) **Structured plans for access to clinical advice and support in the period immediately after discharge, including outreach rehabilitation.** (DH 2011, p59)
In terms of best practice approaches to intervention, ‘enhanced recovery’ (or rapid recovery) programmes provide a more ‘front-loaded pathway’ to ensure aspects of recuperation and social care are addressed pre-operatively to reduce delays post-operatively (i.e. by pre-operative equipment provision). The goal of these programmes is to achieve an improved service user experience by virtue of the service user being more informed. In some localities ‘joint schools’ operate, consisting of a multidisciplinary education session in which the service user is provided with the relevant information and encouraged to bring along a ‘coach’ (family member or friend) to assist and support them (Worrall 2010).

Enhanced recovery programmes can also lead to a more streamlined approach to care and shorter length of stay (NHS South East Coast 2012). The provision of a seven day rehabilitation service is also emerging as a part of the approach to improving quality and providing an equitable service for elective orthopaedic service users (NHS Improvement 2012).

Empowering the service user with information can be effective in assisting with motivation and developing appropriate expectations about achievements along the pathway. The need for effective pre-admission assessment and provisional discharge planning is, therefore, imperative.

1.3 The occupational therapy role

Occupational therapy involvement with adults undergoing a total hip replacement takes place in the acute inpatient or pre-operative setting, although not exclusively (Drummond et al 2012). Given the wider context of the ‘service user flow’ (Figure 1), it is, therefore, important to draw attention to the person-centred and holistic philosophy of occupational therapy.

*Occupational therapists view people as occupational beings. People are intrinsically active and creative, needing to engage in a balanced range of activities in their daily lives in order to maintain health and wellbeing. People shape, and are shaped by, their experiences and interactions with their environments. They create identity and meaning through what they do and have the capacity to transform themselves through premeditated and autonomous action. The purpose of occupational therapy is to enable people to fulfil, or to work towards fulfilling, their potential as occupational beings. Occupational therapists promote function, quality of life and the realisation of potential in people who are experiencing occupational deprivation, imbalance or alienation. They believe that activity can be an effective medium for remediating dysfunction, facilitating adaptation and recreating identity. (COT 2009, p1)*

Clinical reasoning must take account of individual preferences and needs, including the complexities of treating service users with multiple pathologies, or those with cognitive or emotional dysfunctions, dementia and learning disabilities.

Shorter length of hospital stay has necessitated, in many services, prioritisation of inpatient therapy to elements such as mobility and self-care that are essential for safe discharge, rather than adopting a more holistic stance. Occupational therapy recognises that service users have a wide range and diversity of goals, specific to their own situation. Part of the remit of the hospital-based occupational therapist, therefore, includes signposting and referral to community teams, in recognition that not all needs may be addressed within the hospital environment. This may be due to service user
functional readiness and restricted resources, and the fact that some needs related to roles and occupations may be more appropriately responded to within the service user’s usual home environment. It is also anticipated that by empowering service users to understand principles of safe movement, fatigue management and graded return to activity, they can as an ‘expert service user’, apply these principles to tasks within their individual lifestyle, returning to meaningful activity as soon as possible following surgery.

Assessment prior to surgery provides an opportunity for the service user to discuss their goals and desired outcomes with the occupational therapist. The timing of that assessment varies nationally, although the majority of service users awaiting a hip replacement are usually seen about four weeks prior to surgery (Drummond et al 2012). The assessment may include discussion of any concerns or anxieties the service user may have regarding their current functional abilities in relation to self-care, productivity and leisure, within the context of their roles, occupations and environment. Drummond et al (2012) identified within a national survey that those daily living activities most commonly discussed with service users are kitchen activities, bath or shower transfers, car transfers, strip washing and dressing techniques. Activities most practiced are bed, chair and toilet transfers, followed by dressing practice. Assessment needs to be sensitive and mindful of the cognitive functioning of the service user, and delivery of all stages of intervention adapted accordingly. Goals can then be developed and a treatment plan jointly agreed.

The home situation is discussed from the perspective that the service user is expert in this domain and their specific needs and choices. The service user can inform the occupational therapist about specific heights of their furniture (chair, bed and toilet) so that equipment may be prescribed to compensate for lack of function, or to enable activities to be continued while observing hip precautions that restrict certain movements (should this be required by team protocols). The general layout of the home, position of bathroom and toilet, and any potential areas of difficulty, such as steep stairs or difficult access can be identified by the service user and discussed with the occupational therapist in order to jointly plan agreed intervention. Where an individual has an established condition and is awaiting elective surgery, they may have already been provided with equipment to assist them in daily activities. The most common item prescribed by occupational therapists for service users receiving a primary total hip replacement is a raised toilet seat, with the other most frequently prescribed items being chair and bed raisers, perching stools, long-handled reachers and dressing aids (Drummond et al 2012).

The service user also has an opportunity to discuss issues relating to support which may be needed on discharge. This can identify if a care package could be beneficial, or whether they have arranged support from family and friends or private providers. Equally, some service users may be carers or parents and thus have responsibility for others. This stage of the intervention may take the form of a discussion with the service user, completion of a form by the service user/family, or a visit to the service user’s home.

Education to build on a service user’s current knowledge, address concerns, and provide an opportunity to discuss what their surgery will involve and how recovery will impact on their daily lives, is an important element of pre-operative occupational therapy.

Education may be delivered individually or as a group teaching session. Group sessions may be delivered in a ‘joint school’ incorporating information from the consultant (regarding the procedure) and anaesthetist, in addition to teaching and facilitation by
Introduction

other members of the multidisciplinary team. This will commonly include information on any hip precaution protocols in place to reduce the risk of dislocation. With the advance of technology there is also the opportunity to consider other options, which could increase service user choice about how they access information, such as websites/mobile apps or digital television.

Empowering the service user to take responsibility for their own health management is important, as it is believed that ‘expert service users’ will be more involved in their care and outcomes, leading to increased reablement following surgery.

The service user story:

“I was very impressed with the support I received from the occupational therapists when I was in hospital in January 2011. From the outset, their approach was pro-active and very soon after arriving at the hospital there was a group meeting with a member of the department. The purpose of this was to prepare us (pre-operation) for the pitfalls (post-operation) and how to avoid these. The do’s and don’ts were explained to us, we were shown how to dress, what aids we would have and how these could be used. This meeting helped to relieve anxiety and allowed us to prepare both mentally and physically for how we could cope post-operation. After hip surgery there were further individual meetings with occupational therapists, where I had to demonstrate my ability to dress as taught. I was also taken to the ‘home area’, to be shown how best I should move around the kitchen once home. After this demonstration, I was then observed putting this into practice. Before my discharge from hospital I had also to demonstrate that I could manage stairs using sticks/crutches as I had been taught. All the aids to support me at home had been supplied prior to my stay in hospital. However, the commodes had not been adjusted/fitted. In the hospital, my partner was given a very helpful demonstration by the occupational therapist so that he was able to adjust the equipment to suit me for my return home. All in all, I had an excellent experience as a patient at the Golden Jubilee and I am very grateful for the part the occupational therapists played in that experience. What impressed me most was the team-work displayed not only with the occupational therapy dept., but across all the departments/groups involved in my care. Nurses, surgical team, doctors, occupational therapists, physiotherapists, auxiliaries, cleaning staff – everyone seemed to know what part he/she had to play, when it was to be played and how in terms of patient care. This close working together made for efficiency and a high standard of care – all of which reduced anxiety for me and made me feel confident about my outcomes post-operation. . . .Forgot to say how useful the brochure ‘Patient Guide to Hips’ was in preparing me pre and post-surgery. Practised exercises pre-op, which made it easier post-op.”

Golden Jubilee National Hospital service user feedback

Hip precautions, which are restrictions on range of movement and activities undertaken by the service user, were traditionally implemented as a preventative measure. The aim was to reduce the likelihood of dislocation by facilitating the healing of soft tissues surrounding the replaced hip (Restrepo et al 2011).

Variations exist in practice; some services now have no routine hip precautions, but where they exist, these generally advise not to flex the hip beyond 90 degrees, and to avoid adduction and rotation of the hip. Risk of dislocation can be influenced by factors such as surgical approach, and whether surgery is completed electively or post-trauma.
Weight-bearing restrictions may also be in place. There is disparity in the length of time to which it is recommended that precautions should be adhered, but this is usually between six weeks and three months, as directed by the surgeon (this can vary from surgeon to surgeon within the same department).

As more evidence becomes available to challenge the efficacy of hip precautions, this is an area of practice likely to see ongoing change, and occupational therapists should, therefore, take this into account when implementing the recommendations in this practice guideline.

1.4 Practice requirement for the guideline

Occupational therapy is a key intervention for individuals receiving a total hip replacement, as identified within the Musculoskeletal Services Framework (DH 2006), National Audit Office report (NAO 2003), and good practice guidance (BOA 2006) outlined in section 1.2.

The number of occupational therapists specifically working across the care pathway with adults who have osteoarthritis or who receive a total hip replacement is not known. However, given the number of hip replacements across the four UK countries, it is predicted that a considerable proportion of the 32,454 occupational therapists registered with the Health and Care Professions Council (HCPC 2012a), may come into contact with service users receiving a hip replacement at some stage during their health or social care intervention. A UK national survey of occupational therapists reported that the mean percentage of department/service resources used to support service users receiving a total hip replacement was 39 per cent. It also indicated that on average, an excess of two hours was spent in face-to-face contact, and over one hour in non-direct contact (Drummond et al 2012).

To date there has been no formal national guidance for occupational therapists working with service users who have received a total hip replacement. Known evidence from both the literature (McMurray et al 2000, Drummond et al 2012), and from expert practitioners involved in the College of Occupational Therapists Specialist Section – Trauma and Orthopaedics, has, however, confirmed that differences exist in practice across the UK in areas which include pre-operative assessment and education processes, use of hip precautions and equipment provision.

The number of service users undergoing total hip replacement in the UK is high. This demand for orthopaedic services, combined with the pressures of waiting list management, means there is a constant drive for improved efficiency in service provision. In this context, and with the significant variation in practice across the UK, the publication of a practice guideline for occupational therapy and total hip replacement is intended to assist clinicians and managers in achieving the best possible outcomes for the service user, utilising resources in line with evidence and best practice.

1.5 Topic identification process

Total hip replacement, as a guideline development topic, was identified by the College of Occupational Therapists Specialist Section for Trauma and Orthopaedics (COTSS – Trauma and Orthopaedics).

A decision was made to focus the guideline on total hip replacement both as an elective procedure and following trauma (i.e. fractured neck of femur). While it is recognised that there are differences for the service user having elective compared to trauma
surgery, the role of the occupational therapist and the care pathway will have many similarities. The decision was made not to expand the guideline further to include other types of surgery following hip fracture (such as hemiarthroplasty) as it was felt this was addressed in other available national clinical guidelines (SIGN 2009, NICE 2011).

A proposal to produce a practice guideline for occupational therapy within the field of total hip replacement was developed by the COTSS –Trauma and Orthopaedics, and this was subsequently approved by the College of Occupational Therapists’ Practice Publications Group in March 2011.

1.6 Conflicts of interest

All guideline development group members (core group and co-opted), stakeholders and external peer reviewers were asked to declare any pecuniary or non-pecuniary conflict of interest, in line with the guideline development procedures (COT 2011a).

Declarations were made as follows:

- Membership of the College of Occupational Therapists Specialist Section - Trauma and Orthopaedics by five members of the core guideline development group.
- Membership of the College of Occupational Therapists Specialist Section - Older People by one member of the core guideline development group.
- Position as an Officer of the College of Occupational Therapists by the co-opted editorial lead.
- Position as an Officer of the College of Occupational Therapists by the two co-opted critical appraisers.
- A therapeutic or operational service head relationship between a member of the guideline development group and the service users consulted in Scotland.
- An external peer reviewer was an author of one of the items of evidence.
- External peer reviewers and stakeholders identified their membership of professional organisations.

The nature of the involvement in all declarations made above was not determined as being a risk to the transparency or impartiality of the guideline development.
Objective of the guideline

The guideline objective:

To describe the most appropriate care or action to be taken by occupational therapists working with adults undergoing total hip replacement.

The objective addresses occupational therapy intervention during the service user's journey along the total hip replacement pathway with reference to:

- Pre-operative education and intervention (for elective cases).
- The inpatient episode of care and rehabilitation following surgery.
- Care in the community following discharge from the inpatient setting (including rehabilitation and reablement).

It is intended that occupational therapists use this guideline to inform their work with service users, with a particular focus on empowering the service user to be fully engaged and take responsibility for their recovery from surgery and achieving individual goals.

This guideline should be used in conjunction with the current versions of the following professional practice requirements, of which knowledge and adherence is assumed:

- Standards of conduct, performance and ethics (Health and Care Professions Council 2012b).
- Standards of proficiency – occupational therapists (Health and Care Professions Council 2012c).
- Code of Ethics and Professional Conduct (COT 2010).
- Professional standards for occupational therapy practice (COT 2011b).

It is intended that this guideline be used alongside the therapist's clinical expertise and, as such, the clinician is ultimately responsible for the interpretation of the evidence-based recommendations in the context of their specific circumstances and the service user's individual needs.
3 Guideline scope

3.1 Clinical question

The key question covered by this guideline:

*What evidence is there to support occupational therapy intervention with adults over the age of 18 undergoing total hip replacement?*

The expert practitioners within the guideline development group identified, from their knowledge of the evidence-base and own clinical expertise, that occupational therapy intervention with adults undergoing a total hip replacement in practice includes a number of clinical, health and social care areas:

- Service user engagement (i.e. empowering the service user to be responsible for their rehabilitation through education, setting and prioritisation of rehabilitation goals).
- Performance of activities of daily living (personal, domestic and community tasks); for example, discussing adaptation of tasks and practising completion of tasks using new techniques. Tasks may include getting washed and dressed, meal preparation, laundry, shopping or other activities identified by the service user.
- Post-operative functional mobility and transfers – practising walking with mobility aids, step and stair negotiation, transfers on/off bed, chair, toilet, in/out of car, etc., in line with any recommended movement precautions.
- Pre- and post-operative cognitive and emotional function and impact on occupational performance is taken into account during all stages of assessment and intervention or action, and techniques adapted or strategies employed as required.
- Environmental considerations (i.e. ensuring safe home environment for discharge, which may involve discussions with the service user regarding current set-up, access visits, home visits).
- Social considerations (i.e. ensuring adequate support in the community, and liaising with the service user, informal carers, and health and social care services as required).
- Work and leisure activities (i.e. discussion regarding adapting tasks and environment to suit the service user and maximise functional independence in both the pre- and post-operative phase, including appropriate travel arrangements and return to driving).
- Return to previous roles (i.e. discussion regarding adapting activities and environment to empower the service user to resume meaningful roles such as spouse/partner (including sexual relations), family member, caregiver, worker, community member).
- Comprehensive falls assessment (where the service user has sustained a hip fracture as a result of a fall), with interventions targeted towards modifiable risk factors (NICE 2004).

Individual service user goals are identified at the assessment stage. These are highly influential on intervention following total hip replacement, when they will be
discussed between the occupational therapist and the service user and prioritised accordingly.

The guideline scope included searching for evidence in all the above areas and did not identify specific exclusions in terms of intervention.

It is recognised that the occupational therapist works as part of a multidisciplinary team, and that there are some key areas above that overlap with the role of other healthcare professionals working with the group of service users. These include, but are not limited to:

- Personal activities of daily living, also addressed by nursing staff.
- Functional mobility and transfers, also addressed by physiotherapists.
- Social considerations and return to previous roles, also addressed by social workers.

Occupational therapy staff must work alongside these professionals in accordance with local service arrangements to ensure the needs of the service user are met.

Intervention must be compatible with desired outcomes for the service user, and this person-centred perspective underpins occupational therapy practice.

The guideline development group members identified some key outcomes of occupational therapy intervention. These were categorised as service user-centred or service delivery-centred:

**Service user-centred outcomes:**
- Reduced anxiety.
- Maximised functional independence.
- Reintegration into the community.
- Resumption of roles.

**Service delivery-centred outcomes**
- Reduced demand on support services.
- Decreased length of hospital admission.
- Low readmission rates.

It can be difficult to determine the importance of specific outcomes to individual service users, particularly as in occupational therapy those outcomes are frequently interdependent. A core part of the service user involvement in this guideline development project was to review and judge the importance of these outcomes from the service user perspective (section 4.3).

### 3.2 Target population

This practice guideline relates to adults receiving a total hip replacement.

To further define the target population:

- Adults are defined as any person aged 18 years and over.
• There are no restrictions/limitations on gender, ethnicity or cultural background.

• The condition covered by this guideline includes all types of implant/prosthesis and total hip replacement surgical approaches (such as the anterolateral approach, posterolateral approach, minimally invasive approach), and the application of enhanced recovery principles.

• There are no exclusions for co-morbidities, however, each service user should be assessed individually (taking into account relevant co-morbidities) when determining appropriate care or action in relation to the guideline recommendations.

There are no populations or sub-groups that are not covered by this guideline other than those less than 18 years of age.

3.3 Target audience

This practice guideline’s principal audience is occupational therapists working with adults undergoing total hip replacement. It is, therefore, primarily relevant to occupational therapists who come into contact with this group of service users as they progress through the care pathway for total hip replacement; from pre-operative preparation, to inpatient rehabilitation, and on to community care following discharge from hospital.

For that reason, this guideline will be applicable in many settings: community/outpatient clinics, the service user’s home, acute or community hospitals. The publication will be useful to occupational therapists working in health, as well as social services. It can be applied to National Health Service (NHS) settings, as well as the independent sector.

In addition to occupational therapy staff, it is suggested that this practice guideline will be relevant:

• To members of the multidisciplinary team; for example, physiotherapists, nursing staff, social workers, healthcare assistants and surgeons. This guideline may facilitate a better understanding of the role of the occupational therapist in total hip replacement. This could lead to better working between disciplines, with improved outcomes for service users.

• As an educational tool, orientating individuals to the occupational therapy role in total hip replacement (e.g. may be utilised by occupational therapy students, technical instructors, support workers and assistants).

• For social care providers who would also benefit from reviewing this document to support interdisciplinary working, facilitating a safe and effective discharge and transition back into the community for the service user.

• As evidence for managers and commissioners within healthcare services of the valuable role of occupational therapy with this service user group, and may be used as a reference tool to justify staffing levels, funding, etc.

• For private providers/independent sector (i.e. private discharge schemes) to specifically tailor service provision/staffing to suit this group of service users.

• To equipment providers/trusted assessors, who would also benefit from reviewing this document to better understand the needs of this specific group of service users.
• To service users themselves and their carers. The guideline has the potential to enable them to be better informed about the occupational therapy process, supporting the development of the service user as an ‘expert’. Service users will also be more aware of models of service delivery that do not meet agreed evidence-based practice, enhancing their potential to contribute to quality improvements.

It is intended that this guideline provides a comprehensive, practical resource for occupational therapists working with adults undergoing total hip replacement, as well as for the wider audience identified above.
4 Guideline development process

Detailed information on the following steps within the guideline development process can be found in the Practice guidelines development manual (COT 2011a).

4.1 The guideline development group

The membership of the core guideline development group (see Appendix 1 for full list) comprised six occupational therapists with expertise and experience in the field of orthopaedics and/or older people. It was determined that given the very specific occupational therapy nature of this practice guideline, the core group would be profession specific, with the expertise required from other stakeholders and service users most effectively obtained outside of core group meetings, via a reference group and consultation.

The core group members were all practicing therapists, undertaking the guideline development work mainly in their private time, with support from employers to attend meetings. To facilitate the progress of the guideline development, much of the liaison and activity undertaken by group members was therefore carried out at a distance, using email correspondence to effect communications.

Two members of the College of Occupational Therapists’ Research and Development Team were co-opted as additional critical appraisers. The research and development manager at the College was also co-opted to take on the role of editorial lead.

4.2 Stakeholder involvement

Stakeholders with a potential interest in the guideline development were identified by the core group membership at the preliminary guideline meeting. Specific attention was given to identifying professional colleagues who may be working as part of the multidisciplinary team, and national voluntary organisations that may represent service users.

Identified stakeholders were subsequently contacted and invited to comment on a draft scope document. Feedback was reviewed and, where indicated, incorporated into the final scope document, which was then submitted to the College of Occupational Therapists’ Practice Publications Group for approval.

Stakeholders who expressed an interest in remaining involved became the virtual guideline development stakeholder reference group. The members of this group represented professional bodies and clinical experts within medicine, nursing, physiotherapy and social work as follows:

Stakeholder reference group

- Royal College of Surgeons of England
- British Hip Society
- Royal College of Nursing
Guideline development process

• British Association of Social Work
• Chartered Society of Physiotherapy

The full draft guideline document was sent to each of the stakeholder reference group representatives for their review. All comments were duly considered for inclusion within the final guideline document.

4.3 Service user involvement

The guideline development group identified that obtaining service user perspectives was vital to the project, but it was highlighted immediately that there was no easily identifiable forum to facilitate this involvement. The occupational therapist’s contact with service users receiving a total hip replacement and their carers is normally time limited by the nature of the condition and short-term occupational therapy intervention. As such, identification of service users to be involved in the guideline project was practically difficult. Two forums were, however, known to the guideline development group, from whom it would be feasible to request involvement from service user representatives, namely the Golden Jubilee National Hospital in Scotland and the Rushcliffe 50+ Forum Health Sub-Group.

The guideline development group recognised that these groups would not necessarily be representative of all individuals undergoing total hip replacement, both in terms of experiences and cultural and ethnic diversity; however, as the national waiting times centre for Scotland, the Golden Jubilee National Hospital treats service users from across Scotland, and, as such, has a diverse population representative of individuals from the Scottish Borders to the Highlands and Islands. The group, therefore, determined that individuals from the identified populations could take on a valuable role in the guideline development process, particularly in terms of their experiences as expert service users.

Group members decided that a significant contribution to the guideline development could be ascertained by consulting service user views via two core avenues:

• Service user perspectives on the importance of the service user-centred, and service delivery-centred outcomes identified within the scope (section 3.1).
• Service user comments on the draft recommendations.

Details of the service user consultation on the outcomes are provided in Appendix 3.

The overall response rate and number of individual comments suggested service users were keen to share their perspectives of what was important to them following total hip replacement. The consultation demonstrated the high level of importance service users placed on functional independence, reduction of anxiety and the ability to resume their roles. The order of priority for the remaining outcomes, from highest to lowest, was low readmission rates; decreased length of hospital stay; reduced demand on support services; and finally, reintegration into the community. It was decided by the guideline development group that presentation of the recommendations within this guideline document would reflect the order of prioritisation identified from the service user consultation (section 7).

Service users involved in the consultation on outcomes were also given the opportunity of expressing an interest in further involvement in the project. Those individuals who intimated they would be willing to provide further information or would like to
Guideline development process

contribute more to the guideline development work being undertaken by the College of Occupational Therapists Specialist Section – Trauma and Orthopaedics were subsequently contacted and asked if they would be willing to review the draft recommendations.

A facilitated meeting was offered to members of the Rushcliffe 50+ Forum Health Sub Group, and a postal consultation carried out with those interested service users known to the Golden Jubilee National Hospital. This consultation on the draft recommendations, in addition to any general comments, sought views on three key issues:

- Do you think the recommendations are easy to understand?
- Do you think these recommendations will help service users prepare for their operation?
- Do you think these recommendations will help service users to achieve the benefits and outcomes they want after their surgery?

All comments received were duly considered for inclusion within the final guideline document (section 8). Qualitative feedback from service users has been quoted alongside the recommendations where applicable. This approach aims to enhance the user perspective as an adjunct to the published evidence.

4.4 External peer review and consultation

Two independent peer reviewers were identified by the guideline development group to review a draft of the full guideline document. Reviewers were selected for their clinical expertise in the field and/or their guideline development experience or knowledge.

A one-month consultation period was established to enable members of the College of Occupational Therapists Specialist Section – Trauma and Orthopaedics, and Older Peoples’ Specialist Section (guideline end users) to comment on a draft of the full guideline. This consultation was also open to all members of the British Association of Occupational Therapists via the College’s website.

The guideline development group considered the feedback received from all stakeholders, service users, peer reviewers and end users, when finalising the recommendations and guideline document.

4.5 Declaration of funding for the guideline development

This practice guideline, Occupational therapy for adults undergoing total hip replacement, has been developed by a group led by a Specialist Section of the College of Occupational Therapists. Specialist Sections are official branches of the College with specialist or regional interests, who, through their membership, are able to engage expert practitioners, educators and researchers in the development of guidelines, and access the required clinical and research expertise.

As a membership organisation, the major source of funding for the College of Occupational Therapists and its Specialist Sections is obtained from membership. Other sources of income are primarily from advertising and events.
Guideline development process

The development and publication of this practice guideline was funded by the College of Occupational Therapists and the College of Occupational Therapists Specialist Section – Trauma and Orthopaedics.

The College of Occupational Therapists provided specific resources to cover meeting venue, travel expenses, literature search, editorial and publication support.

Funding was also allocated and approved by the National Executive Committee of the College of Occupational Therapists Specialist Section – Trauma and Orthopaedics, to cover any other costs associated with the development and promotion of the practice guideline.

There were no external sources of funding.

Although the editorial lead was a member of staff at the College of Occupational Therapists, the recommendation decisions were made by the guideline development group, and the views of the College of Occupational Therapists have, therefore, not influenced the final recommendations within this guideline.

4.6 College appraisal and ratification process

The guideline proposal, scope and final document were all reviewed and subsequently ratified by the College of Occupational Therapists’ Practice Publications Group, in line with the requirements of the Practice guidelines development manual (COT 2011a).

The final version of this guideline was approved by the Practice Publications Group in July 2012.
5 Guideline methodology

5.1 Guideline question

*What evidence is there to support occupational therapy intervention with adults over the age of 18 undergoing total hip replacement?*

The PICO (patient/population/problem, intervention, comparison and outcome) framework was used to assist in developing the specific practice question further.

This approach clarifies the specific care group or condition being studied, and the nature of the intervention to be investigated. A comparative treatment can be defined, where applicable, together with the anticipated outcomes (the desired/undesired or expected results of the intervention). This level of specificity is important in developing the question so that it addresses the requirements of the scope (COT 2011a).

The Patient (service user), Population or Problem/circumstance:

- Adults, 18 years and over who undergo a total hip replacement.

The Intervention under investigation or action:

- Occupational therapy.

The Comparison, which is an alternative intervention or action:

- None.

The desired Outcome:

- Reduced anxiety.
- Maximised functional independence.
- Reduced demand on services.
- Resumption of roles.
- Reintegration into community.
- Decreased length of hospital stay.
- Low readmission rates.

5.2 Literature search strategy and outcomes

The literature search was carried out by a College of Occupational Therapists' librarian, an expert in the field of occupational therapy literature, using a search strategy defined following discussion and agreement with the guideline development group.

The varied clinical and academic experience of the guideline development group meant that there was prior knowledge that the occupational therapy specific evidence was likely to be limited. On the basis of this the search covered a wide remit to ensure there
was adequate sensitivity to locating any relevant articles of which the group may not have been aware.

5.2.1 Key terms
The strategy involved combining concept groups of key words. Eight key categories or concepts and their related terms were identified: hip operation; activities of daily living; home environment; client engagement; care pathways; multiple pathology; outcomes and occupational therapy (Appendix 4, Table A3).

Specific exclusions identified were: material published pre-2001; children/under 18 years of age; grey literature; language other than English (due to lack of resources for translation); hemiarthroplasty and animal surgery.

5.2.2 Databases
The databases searched reflected the most likely sources of published peer reviewed occupational therapy and total hip replacement surgery evidence. Six core databases were searched from 2001 to the date the search was carried out (2011) as detailed in Table 2.

Table 2: Database searches

<table>
<thead>
<tr>
<th>Core databases</th>
<th>Library search date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cinahl</td>
<td>18/08/11</td>
</tr>
<tr>
<td>Medline</td>
<td>08/09/11</td>
</tr>
<tr>
<td>Allied and Complementary Medicine (AMED)</td>
<td>14/09/11</td>
</tr>
<tr>
<td>PsycINFO</td>
<td>15/09/11</td>
</tr>
<tr>
<td>Social Policy and Practice</td>
<td>16/09/11</td>
</tr>
<tr>
<td>Health Management Information Consortium (HMIC)</td>
<td>16/09/11</td>
</tr>
</tbody>
</table>

Five specialist databases were also searched: OTDBASE; OT Search; OTSeeker; NHS Economic Evaluation Database (NHS EED) and the Cochrane Library of systematic reviews and clinical trials (search date 19/09/11).

In the majority of cases, title, subject heading and abstracts were searched. Where the search term combinations were more general, some limitations were then applied to provide a stronger focus on relevance. Specific search fields and search result numbers are detailed in Appendix 4 (Tables A4 and A5).

Full search histories are available on request from the College of Occupational Therapists.

5.2.3 Search results
The search findings identified a total of 3,647 results. These were scrutinised for duplicates, both within database searches and cross-database search returns, by the College of Occupational Therapists’ research and development manager. The unique results lists were provided to the project group in addition to the original search lists. A total of 1,506 duplicates were removed.
5.3 Criteria for inclusion and exclusion of evidence

The resultant 2,141 search findings (title, keywords and abstracts) were screened by two members of the guideline development group against an eligibility checklist with the following inclusion and exclusion criteria:

- **Inclusion:**
  - Adult (18 years and over).
  - Total hip replacement – either elective or following trauma.
  - Rehabilitation or occupational therapy intervention discussed.
  - Outcomes discussed (service user or service delivery related).

- **Exclusion:**
  - Primary focus on hip fracture.
  - Cultural/health system/service delivery specific.
  - Intervention specific (e.g. uni-professional [not occupational therapy], surgical or anaesthetic based).

This process enabled the identification of abstracts that would be potentially relevant to the practice guideline and should therefore be included within the critical appraisal process.

Following the screening, 2,038 items were excluded resulting in a total of 103 items identified for full paper review and critical appraisal. Subsequent to the date of the literature search by the library, the guideline development group were alerted via their professional networks to two additional and pertinent publications. These met the inclusion criteria and were therefore critically appraised.

A total of 105 articles were, therefore, critically appraised and information compiled into evidence tables (section 5.4); and 54 items of evidence were subsequently used to develop the recommendations (section 5.5).

An overview of the literature search outcomes is provided in figure 2 (see 5.4).

5.4 Strengths and limitations of body of evidence

The 105 articles identified as potential evidence were independently reviewed by two members of the guideline development group/co-opted members. Any discrepancy in grading was resolved by a third reviewer.

The quality of the evidence was initially assessed using the Critical Appraisal Skills Programme (CASP) checklists (CASP 2010). Assessment took into account factors such as the appropriateness of the study design and recruitment strategy; procedural rigour in data collection and analysis; confounding factors and potential biases; transferability; precision of results and the value of the findings.

A grade was then also assigned to the evidence within an individual article using the GRADE approach as defined within the Practice guidelines development manual (COT 2011a). The grading reflects the research design and the confidence in the research findings.
The initial grading was allocated as follows:

- Randomised trial/systematic review = High
- Observational study = Low
- Any other evidence = Very low

Limitations in the design of a study or its implementation may, however, bias the estimates of the treatment effect. If there were serious limitations, then the downgrading of the quality of the evidence was considered, using the criteria shown in Table 3.

A decision to increase or decrease the initial grade of the evidence was justified in the evidence table. The ‘moderate’ category came into play if there was a suggested change in the grading. Evidence was ultimately graded in one of four categories, as detailed in Table 4. If there was no reason to up or downgrade the evidence, then the original grading remained.

Once the methodological quality of each piece of evidence was assessed, details for each item of evidence were collated into an evidence-based review table. (Appendix 5)
### Table 3: Grading evidence up or down (after GRADE Working Group 2004)

<table>
<thead>
<tr>
<th>Decrease* grade if</th>
<th>Increase grade if</th>
</tr>
</thead>
</table>
| • Serious or very serious limitation to study quality<br>• Important inconsistencies in results<br>• Some or major uncertainty about directness of the evidence<br>• Imprecise or sparse data (relatively few participants and/or events)<br>• High probability of reporting bias. | • Magnitude of the treatment effect is very large and consistent<br>• Evidence of a large dose-response relation<br>• All plausible confounders/biases would have decreased the magnitude of an apparent treatment effect.<br *
| *Each quality criterion can reduce the quality by one or, if very serious, by two levels | Only studies with no major threats to validity should be upgraded. |

### Table 4: GRADE quality of evidence grading (after GRADE Working Group 2004)

<table>
<thead>
<tr>
<th>Quality of evidence</th>
<th>Grading</th>
<th>Characteristics</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Grade A</td>
<td>Based on consistent results from well-performed randomised controlled trials, or overwhelming evidence of an alternative source, e.g. well-executed observational studies with strong effects.</td>
<td>True effect lies close to that of the estimate of the effect. Further research is very unlikely to change confidence in the estimate of the effect.</td>
</tr>
<tr>
<td>Moderate</td>
<td>Grade B</td>
<td>Based on randomised controlled trials where there are serious flaws in conduct, inconsistency, indirectness, imprecise estimates, reporting bias or some other combination of these limitations, or from other study designs with special strengths.</td>
<td>True effect likely to be close to the estimate of the effect but the possibility that there could be a substantial difference. Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.</td>
</tr>
<tr>
<td>Low</td>
<td>Grade C</td>
<td>Based on observational evidence, or from controlled trials with several very serious limitations.</td>
<td>True effect may be substantially different from the estimate of the effect. Further research is very likely to have an important impact on confidence in the estimate of the effect and is likely to change the estimate.</td>
</tr>
<tr>
<td>Very low</td>
<td>Grade D</td>
<td>Based on case studies or expert opinion.</td>
<td>Any estimate of effect is very uncertain and may be far from the true effect.</td>
</tr>
</tbody>
</table>
5.5 Methods used to arrive at recommendations

The evidence tables were used by the guideline development group as the basis to evaluate and judge the potential contribution of each item of evidence to the development of the guideline recommendations.

The seven service user-centred and service delivery-centred outcomes (section 3.1) were used as the starting point, with identification of the relevant evidence in relation to each outcome. Where evidence was identified to support an outcome, this was reviewed. Each individual group member contributed their expert views to the discussion to develop recommendation options.

Where a number of items of evidence supported an identified outcome and subsequent recommendation, an overall quality of evidence rating was identified:

- Where the evidence outcomes pointed in different directions towards benefit and towards harm, the lowest quality of evidence determined the overall quality of evidence.
- Where the outcomes pointed in the same direction towards either benefit or harm, then the highest quality of evidence was appropriate to recommend an intervention and determined the overall quality of evidence.
- In circumstances where the balance of benefits and harm was uncertain, then the lowest grade of quality of evidence was assigned.

Strength of recommendation was the second element of the GRADE system applied using the College categories, strong or conditional, to reflect the strength (Table 5).

Table 5: Strength of grade (after Guyatt et al 2008)

<table>
<thead>
<tr>
<th>Strength</th>
<th>Grade</th>
<th>Benefits and risks</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong</td>
<td>1</td>
<td>Benefits appear to outweigh the risks (or vice versa) for the majority of the target group.</td>
<td>Most service users would want or should receive this course of intervention or action.</td>
</tr>
<tr>
<td>Conditional</td>
<td>2</td>
<td>Risks and benefits are more closely balanced, or there is more uncertainty in likely service user values and preferences.</td>
<td>The majority of service users would want this intervention but not all and therefore they should be supported to arrive at a decision for intervention consistent with the benefits and their values and preferences.</td>
</tr>
</tbody>
</table>

The development of the recommendations, including assignment of the overall quality and strength grading, was a consensus opinion obtained at the guideline development group meeting. There were no recommendations which were not agreed by all members so that no formal voting system or use of the nominal group technique was required. Fifty-four items of evidence were used to develop the recommendations.
A recommendation decision form was completed for each recommendation developed, recording key information about the evidence used to form the basis of that recommendation, the overall allocation of quality of evidence and strength of recommendation (recommendation decision forms are available on request from the College of Occupational Therapists). The recommendation decision form facilitated discussion and recording of any specific or associated risks and benefits, and this was also highlighted in the final strength of recommendation. Any judgement by the guideline development group was documented as part of this decision-making process.

5.6 Limitations and any potential bias of the guideline

Evidence included in the development of the guideline recommendations was sourced from published, peer reviewed journal articles. Relevant policy documents have been referenced within the contextual information where applicable, but it is acknowledged that any key grey literature has not been included in the evidence.

The literature search identified limited primary research specific to occupational therapy and total hip replacement interventions. There was, however, a body of occupational therapy evidence which was relevant to the outcome of reducing anxiety, and particularly pre-operative intervention.

No evidence was identified which specifically addressed economic evaluation of occupational therapy for adults undergoing total hip replacement.

Evidence was frequently medically orientated or multidisciplinary, and a prominent topic was the investigation of service user-reported outcome measures. A number of studies investigated total hip and total knee replacements together with findings from the two procedures not always being fully differentiated.

The review of the literature identified 54 items of evidence from which recommendations could be developed. The majority of this evidence was assessed as low grade (C) and was made up of predominantly cohort and qualitative studies:

- Grade A = 3.7% (2)
- Grade B = 18.5% (10)
- Grade C = 63.0% (34)
- Grade D = 14.8% (8)

The evidence did, however, provide a number of higher quality studies from a design and methodological perspective. The guideline group downgraded a proportion of the potential A grade studies due to concerns in the confidence of the estimate of the effect of the research. These decisions, and details on specific limitations of individual studies, are noted in the evidence tables in Appendix 5.

A limitation of this guideline is that evidence was not available to enable recommendations to be made about the specific contribution of occupational therapy to total hip replacement service user outcomes. This is reflective of the evidence, but also of the nature of the intervention, which has a core surgical focus, and which is essentially multidisciplinary.

The guideline development group were aware that there were some expectations, from College Specialist Section members, that this practice guideline would produce
occupational therapy specific recommendations for hip precautions. The nature of the evidence available at the time of the guideline development has not enabled this expectation to be fulfilled.

The need for a randomised controlled trial of hip precautions in occupational therapy has, however, been identified as being essential in order to determine whether precautions are effective (Drummond et al 2012).

It is also relevant to highlight that a study, sponsored by the University of Birmingham, is currently being undertaken, entitled A pilot randomised controlled trial of occupational therapy to optimise recovery for patients undergoing primary total hip replacement for osteoarthritis. This research is being funded by the National Institute for Health Research Programme Grants for Applied Research (Current Controlled Trials 2012).

The guideline development group did not identify specific evidence on expert opinion via a formal consensus activity (e.g. a nominal group consensus or Delphi survey). The members of the group could have potentially developed best practice statements, however, it was agreed that in the context of the wide variation in practice and emerging evidence, a larger scale consensus activity would have been required to reliably underpin such statements.

It is, therefore, important to highlight that this guideline is based on the available evidence and subsequently the recommendations are not able to explicitly address all clinical, health and social care areas identified within the scope.

Future emerging evidence will be reviewed to determine any impact it may have on the nature of the recommendations within this practice guideline.

The involvement of the College and the Specialist Section in the development, authoring and funding of this practice guideline, is fully acknowledged (section 4.5). This is a reflection of the organisational structure and the relationship between the professional body and its members. It should also be recognised that the practice area covered by this guideline is specialist, and that there are a limited number of experts within the field.

The potential for any bias in development and authoring was negated/minimised through the rigorous nature of the guideline development. This was achieved through the systematic methodology adopted, the contributions of stakeholders and service users, and the valued opinions of the independent peer reviewers and occupational therapy end users.
A person may require a total hip replacement due to underlying disease to the joint (usually involving a planned, elective admission), or as a result of a traumatic injury. The most common indication for having a total hip replacement is osteoarthritis. Other causes may include rheumatoid arthritis (a chronic inflammatory disease that causes joint pain, stiffness and swelling); avascular necrosis (loss of bone caused by insufficient blood supply); traumatic injury (such as a fracture); and bone tumours (which may affect the hip joint).

6.1 Anatomy of the hip

The hip joint is a ‘ball and socket joint’, which allows for a wide range of movement while at the same time providing a stable joint to facilitate weight-bearing during standing and mobility. The joint comprises an articulation between the acetabulum (a ‘socket’ shaped area of the pelvis) and the head of the femur (the ‘ball’). Stability is provided by a network of ligaments (condensations or thickenings of the joint capsule) that connect the bones of the hip joint. Smooth movement is facilitated by cartilage (a tough substance covering the bone surfaces) and synovial fluid, which provides lubrication to the joint. It is important to be aware that cartilage does not regenerate, so once it has worn away, there is no ability for it to recover.

6.2 Osteoarthritis

Osteoarthritis occurs when there is damage to the cartilage in the hip joint, which would usually provide a ‘cushion’ between the acetabulum and the head of the femur. The cartilage wears and gets progressively thinner until eventually the two bones come into contact. Wear of the bone advances, usually slowly. The process is associated with progressive pain, stiffness and loss of function.

A person generally finds themselves on a waiting list for an elective total hip replacement after months and sometimes years of worsening hip pain, joint stiffness and declining functional ability in both their movement and activities of daily living. Prior to being listed for this surgery, the service user will have trialled alternative management options with their general practitioner and orthopaedic consultant, such as use of mobility aids, medication, joint protection principles, weight loss and exercise. This can be helpful for some people; however, many opt for surgery when these options are no longer providing effective pain relief and/or improved function of the hip. The aim of surgery is to improve independent functioning and pain levels.

6.3 Total hip replacement

A total hip replacement is a surgical procedure that involves the removal of diseased bone and cartilage in the hip joint, replacing it with an artificial hip joint, known as a prosthesis. This prosthesis is made up of two parts; the ‘ball and stem’, which is inserted into the femur, and the ‘cup socket’, which is inserted into the acetabulum. The two parts together make up the new hip, which restores smooth surfaces allowing comfortable movement. Artificial hip joints can be cemented, uncemented or hybrid.
A cemented prosthesis is held in place by cement, which attaches the prosthesis to the bone; an uncemented prosthesis has a fine mesh of holes on the surface that the bone grows into; and a hybrid prosthesis has one uncemented component (usually socket), with the other (generally femoral stem) being cemented to the bone. Surgeons will decide with the individual service user which is most suitable.

The decision to proceed to surgery is one that is made between the service user and the orthopaedic consultant. The service user should receive and discuss information about the procedure in order to make an informed decision.
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The recommendation categories reflect the potential outcomes for service users following total hip replacement and occupational therapy intervention. They are presented in the order of prioritisation identified from the service user consultation (section 4.3). Where applicable, the qualitative service user feedback has been used to enhance the user perspective as an adjunct to the published evidence.

Recommendations are scored according to strength, 1 (strong) or 2 (conditional), and graded from A (high) to D (very low) to indicate the quality of evidence (sections 5.4 and 5.5). Each statement starts with either ‘It is recommended’, or ‘It is suggested’.

‘It is recommended. . .’ means that most service users would want, or should receive, this course of intervention or action.

‘It is suggested. . .’ means that the majority of service users would want this intervention but not all, and therefore they should be supported to arrive at a decision for intervention consistent with the benefits, and their values and preferences.

Additional details on individual studies (for example, on recruitment numbers and statistically significant p values) can be accessed in the evidence-based review tables (Appendix 5).

This guideline focuses on occupational therapy for adults undergoing total hip replacement, within the context of the multidisciplinary environment. As such, the intervention is specifically occupational therapy, and alternative management options are therefore not explicitly reviewed or discussed. This is in line with the clinical question which indicates that there is no comparator intervention. Benefits and any specific risks are integrally incorporated within the discussion of the evidence.

7.1 Maximised functional independence

7.1.1 Introduction

Maximised functional independence focuses on early resumption of activities of daily living (ADLs). It includes assessment and practice with mobility; transfers (from bed, chair and toilet, bath and car); washing and dressing; and domestic activities, such as hot drink preparation. Integral to this is the reinforcement of pre-operative discussions regarding safe movement, incorporating hip precautions as applicable to the individual and in line with local protocols, together with practice in using compensatory equipment. Solutions to specific issues may be discussed on an individual basis, such as whether to use a bath board to access the bath or to wash down using a perching stool.

Although traditionally the domain of the physiotherapist, occupational therapists are increasingly involved in early mobilisation of post-operative service users, including prescription of walking aids. Most service users will be fully weight-bearing, but if partial or no weight-bearing is specified by the surgeon, this must be taught and practised in a functional context.
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7.1.2 Evidence
Limited evidence was identified with respect to occupational therapy and maximising independence in the context of total hip replacement. However, assessment of individual needs underpins occupational therapy practice, and the importance of a comprehensive assessment was highlighted within the evidence.

The literature search identified a strong focus on elective hip replacements, but a number of low-level studies clearly recognised the potential complexities that may be associated with specific individual needs and co-morbidities. While the studies included in this area raised some methodological limitations, they provided evidence of the potential influence of a variety of factors on an individual's needs post-operatively. Marks (2008), for example, retrospectively examined pre-operative functional ability in those with osteoarthritis awaiting a hip replacement, from the perspective of a trauma or non-trauma history. His conclusion was that those who had a history of hip fracture were more functionally impaired prior to surgery and used more assistive devices.

Individual service user characteristics may also impact on functional independence, and additionally length of stay. Body mass index was suggested as being an important consideration when predicting functional outcomes after a hip replacement in the study by Vincent et al (2007). The study concluded that length of stay was significantly greater in the severely obese compared to non-obese, although this contradicts a retrospective cohort study in which body mass index was found to make no difference to length of stay (Lin and Kaplan 2004). That study suggested that there was a correlation between increasing age and length of stay, and that co-morbid illnesses were predictive of increased length of stay in the acute rehabilitation setting. Naylor et al (2008) identified obesity and/or severe joint disease to be associated with more compromised function, slower mobility and a greater reliance on a walking aid.

The variation in these studies, and their individual limitations, means that specific recommendations for occupational therapists have not been made regarding the predictability of functional performance and length of stay in relation to generalised service user characteristics. The main feature of the evidence in this area is to emphasise the vital importance of individualised, person-centred assessment and intervention.

The ability to predict post-operative outcomes, as a means of guiding rehabilitation options, is an area, however, which has been the focus of a number of research studies. In this context, disease specific outcome measures have featured, with reference to whether their pre-operative scores can facilitate prediction of post-operative outcomes. Johansson et al (2010) identified that a poor pre-operative Harris Hip Score was an indicator for poor early post-operative outcomes. Likewise, Wang et al (2010) investigated the factors affecting the short-term outcome of primary total hip replacement and developed a multivariate regression equation to predict those short-term outcomes. The Western Ontario McMaster Universities Osteoarthritis Index (WOMAC) was used and found to be a statistically significant measure that indicated three main factors in predicting total hip replacement outcomes at a minimum of one year follow up: pre-operative WOMAC Physical Function Score, gender and pre-operative co-morbidities. Service users with better pre-operative functional scores were likely to have higher post-operative scores, but service users with poorer pre-operative scores were likely to experience greater improvement in function. Ostendorf et al (2004), in a similar vein, set out to define the minimum set of service user reported outcome measures required to assess health status after a total hip replacement, and recommended the use of the Oxford Hip Score and SF-12® health survey in assessment of total hip replacement.
The interest in studies involving disease-specific measures is usefully put in the context of Patient Reported Outcome Measures (PROMs) reported in England (The Health and Social Care Information Centre 2011). PROMs for hip replacements have been collected in England since April 2009, aiming to provide information on service users’ perceptions of the effectiveness of care delivered in the National Health Service. The Oxford Hip Score is used as the disease specific measure, and the EQ-5D™ Index and EQ-VAS as a generic measure of self-reported health status. Data reported includes the percentage of respondents reporting joint-related or general health improvements following their operation.

Given that the occupational therapist works as a member of the multidisciplinary team, it is important that while undertaking a comprehensive assessment, the therapist establishes and confirms, but does not duplicate, information that may have already been collected. Where possible, it would be useful for occupational therapists to gain insight into the individual’s pre-operative status from any service user reported outcome measures that are being used within their service. It is recognised that access to this information may not always be practicable.

1. It is recommended that the occupational therapy assessment is comprehensive and considers factors which may affect individual needs, goals, recovery and rehabilitation, including co-morbidities, trauma history, personal circumstances, obesity and pre-operative function.


Expectations in relation to surgical outcomes are associated with subsequent post-operative satisfaction. Individual service users will have formed expectations about the likely status of their health and independence following their operation. There is consequently the potential of a mismatch between expectations and likely outcomes, resulting in dissatisfaction post-operatively. Service user expectations were the subject of two large, but low-level studies reviewed. Mancuso et al (2003) identified in an American study (1,103 participants), that those with worse hip function and overall physical health pre-operatively had greater expectations from the surgery. Decreased functional status pre-operatively was associated with greater importance on post-operative achievement of goals. The most prevalent expectations were in pain relief and improvement in walking.

“. . . after just a couple of months I was walking by myself and able to do just about everything with very little help.”

Golden Jubilee National Hospital service user feedback

In a prospective cohort study in Europe which involved 1,327 participants (Judge et al 2011), a wide variation in service user expectations was identified. Service users with more pre-operative expectations were more likely to have clinically important outcomes twelve months post-total hip replacement.

Fielden et al (2003), in a qualitative study investigating expectations and satisfaction of service users, found that clarity about the roles of the various multidisciplinary team
members, and consistent information about post-operative management and discharge planning was a key need. Although it was a qualitative study, it reinforced the fundamental requirement for effective multidisciplinary working. In the absence of good communication, there is a risk of conflicting messages or information being received by the service user, which could increase risks and decrease confidence.

“It is really important that you are given consistent advice from everyone in the team – you can be told different things by different people and this increases your fears and worries both before and after the operation.”

50+ Forum service user feedback

“Consistency is so important – being given different advice by the nurse, OT, physio and doctor destroys your confidence and trust and faith that they know what they are doing.”

50+ Forum service user feedback

Occupational therapists need to be aware of and discuss the service user’s expectations, preferably pre-operatively, as they will influence individual goal setting and satisfaction. Discussion may also include re-directing expectations to a more realistic goal.

2. It is recommended that goal setting is individualised, enhances realistic expectations of functional independence, and commences at pre-operative assessment.

(Judge et al 2011, C; Mancuso et al 2003, C)

3. It is recommended that occupational therapists ensure that they provide clear communication and advice that is consistent with that of other members of the multidisciplinary team.

(Fielden et al 2003, C)

The literature also included studies that considered mental health status, specifically in the context of anxiety and depression. These were low-level, small sample, prospective studies, with the focus being the immediate post-operative period. To determine whether psychological distress and depression were associated with reduced functional improvement following joint replacement, Caracciolo and Giaquinto (2005) measured functional recovery and distress. The WOMAC and the Hospital Anxiety and Depression Scale (HAD) measures were administered on admission to a rehabilitation facility (baseline) and then again on discharge (follow-up). They found that there was over-threshold depression in their sample of service users following total hip replacement. WOMAC gain scores (function, stiffness and pain) were, however, no different between depressed versus non-depressed service users having total hip replacement. It was suggested that there was therefore no association between psychological distress and depression and functional recovery in this group of service users.

Nickinson et al (2009) investigated the presence and rates of anxiety and depression in post-surgical hip and knee replacement service users. Their findings included that the
mean length of stay was five days for depressed or anxious service users compared with four days for non-anxious/depressed service users. On day of discharge, however, the low number of service users whose scores remained above diagnostic level for depression was minimal, suggesting that the depression was a transient phenomenon.

Inpatient occupational therapy intervention is likely to be taking place one to three days post-operatively. It is, therefore, important that the therapist duly considers the service user’s potential for depression and anxiety at that time, and that this may impact, albeit temporarily, on motivation or engagement in intervention. Reassurance for the service user and a focus on the fact that in the majority of cases this is a normal experience, rather than an exception, may facilitate recovery.

Cognitive status is also a key individual factor to be identified, and is highlighted within both the NICE and SIGN hip fracture guidelines. The NICE guideline includes a statement that total hip replacement should be offered to those ‘not cognitively impaired’ (NICE 2011, p11), while the SIGN guideline states that total hip replacement is ‘unsuitable for patients with dementia due to the higher dislocation rate’ (SIGN 2009, p21).

Wong et al (2002) found that non-confused service users were significantly more independent in performing activities of daily living. While both confused and non-confused groups showed consistent improvement in functional status over time, improvement in the non-confused group was of a greater magnitude. This study had a number of limitations, including the inability to separate out the more detailed analysis in terms of elective compared to fractured neck of femur cases, but emphasised the importance of assessment of cognitive status to assist in identifying complex needs. This is reinforced by the findings of a literature review conducted by Wang and Emery (2002), which, although limited by its lack of review strategy details, highlighted that cognitive impairment affects functional improvement. Of particular note for occupational therapists is that the ability to learn about hip precautions and the use of adaptive behaviours and equipment may be affected by cognitive status.

In the context of cognitive status, while not addressed in the evidence, if occupational therapists are concerned that there may be a lack of mental capacity in the service user to understand the implications/consent to surgery, they have a professional responsibility to ensure this is brought to the attention of the multidisciplinary team.

4. It is recommended that depression and anxiety status are taken into account during pre-operative and post-operative intervention due to their potential for impact on recovery.
   (Caracciolo and Giaqunito 2005, C; Nickinson et al 2009, C)

5. It is recommended that cognitive status is taken into account during pre-operative and post-operative intervention due to its potential for impact on recovery.
   (Wang and Emery 2002, C; Wong et al 2002, C)

Assessment and prescription of equipment to facilitate independence and support hip restrictions post-operatively, is a key role of the occupational therapist. One of the
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potential risks associated with equipment is lack of service user compliance, particularly relevant because provision is not just for independence per se, but may also be to protect the joint post-surgery (where hip precautions are in use).

Studies examining the provision and use of equipment have been reported in occupational therapy publications, though most of these have been outside of the guideline literature search period. A number of factors are likely to be related to compliance, and an American study by Thomas et al (2010) examined the most frequent reasons for non-use of adaptive equipment prescribed by occupational therapists, for service users who had returned home following hip replacement surgery. This small study involved telephone interviews with ten service users, 78 per cent of whom reported they had little or no inclusion in the decision making about equipment. While a very low-level study, which may have some lack of generalisation to the UK given that respondents in the study had to purchase equipment, it provided support for a recommendation that decisions around equipment requirements must involve the service user. The influence of the individual's home environment on non-use of equipment was also highlighted, mentioning examples such as issues of convenience for others and existing home design features.

It is important to note, however, that equipment provision in the UK is not universally a free provision, and the types of equipment prescribed or available is variable. The need to purchase equipment can add another dimension, and further highlights the importance of service user involvement in decisions. A strong focus on education and the purpose of the equipment and risks associated with non-compliance may be important to inspire use.

A potential influence on function is the experience of pain. Berge et al (2004) implemented a small randomised controlled trial, rated as a moderate level of evidence, in which a core aim was to investigate the effects and impact of a pre-operative pain management programme on pain. Information on blinding and co-morbidities was lacking and therefore the study had some methodological weaknesses. Assessment included use of the Arthritis Impact Scale (AIMS) pre- and post-operatively, one finding being that at one year follow-up, the treatment group had statistically significant better scores for the AIMS physical activity score. This study also identified that pain management advice could decrease average pain intensity, distress and pain-related sleep disturbance. The importance of pain management was reflected in another study (Montin et al 2007), in which pre-operative pain was found to have an association, though not statistically significant, with increased anxiety and reduced health related quality of life post-surgery. The impact of uncontrolled pain on mood was also highlighted in a qualitative study exploring the lived experiences of service users with severe osteoarthritis awaiting joint surgery (Parsons et al 2009).

Pain management has a number of facets and is an area of intervention which may be addressed by one or more members of the multidisciplinary team. Occupational therapists may not always contribute specifically to this intervention at pre-operative
assessment, but their role in this area, particularly in relation to joint protection and energy conservation management, should be recognised. Additionally this is relevant when considering post-operative rehabilitation, to maximise function and effective pain management. While evidence on the occupational therapist’s role in pain management was not specifically targeted in this guideline’s literature search strategy, it is an area of practice where occupational therapists can contribute to the multidisciplinary intervention.

Evidence on the use of occupational therapy standardised assessments or outcome measures as part of intervention with service users receiving a total hip replacement was lacking in the literature identified. Three small scale and low-level evidence studies were appraised. Each addressed a different issue, but all involved the use of outcome measures within their research.

The Canadian Occupational Performance Measure (COPM®) was used in one study to rate service user functional abilities in activities of daily living, specifically focusing on community activities (Gillen et al 2007). The ratings were self-reported performance and satisfaction with performance. The study identified that COPM® provides a valid and reliable method to evaluate community functioning based on self-report.

COPM® was also used as an outcome measure pre-operatively and at follow-up after total hip replacement in a Swedish study (Oberg et al 2005). Findings indicated a reduction in the number and severity of problems and a statistically significant improvement in both performance and satisfaction using this measure. This study also used the Functional Assessment System (FAS) of lower extremity dysfunction, and the generic health survey SF-36®. In the SF-36® data, service users showed a statistically significant improvement in almost all domains, and the FAS showed statistically significant improvements in the variables reflecting lower extremity functions related to hip problems. The authors suggested that all the instruments delivered important information on the functional and activity status of service users.

In the third study, Kiefer and Emery (2004) used the Functional Independence Measure (FIM™) to look at the functional gains in self care, mobility and locomotion of service users, and found that it was able to identify improvement in functional performance.

The value of standardised assessments and outcome measures in the acute setting are fully recognised. However, expert opinion from the guideline development group is that the use of these routinely would be challenging, particularly given the short length of stay and limited opportunity for therapist intervention during elective inpatient care. It is also relevant to note that given the core treatment is the total hip replacement surgery, and that intervention involves a multidisciplinary approach, it can be difficult to extract the occupational therapy specific contribution to the service user’s outcomes, particularly in the short time span.

Service users requiring further intervention or rehabilitation, potentially more likely following a traumatic history to the hip replacement or complex individual needs, may

7. It is recommended that service users are given advice on effective pain management strategies, to decrease pre-operative pain experience and sleep disturbance, and enhance post-operative physical function.  

(Berge et al 2004, B; Montin et al 2007, C; Parsons et al 2009, C)
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receive this either in the community or as an inpatient. In these situations the use of standardised assessment and outcome measures is recommended and should be incorporated as part of specific goal orientated intervention. The evidence identified from the literature search was not sufficient, however, to recommend a specific standardised assessment or outcome measure. Occupational therapists should, therefore, additionally review the general evidence available when making their decision about the most appropriate tools for their practice.

8. It is suggested that standardised assessment and outcome measures are used, where appropriate, to determine functional outcomes and occupational performance in rehabilitation settings, either inpatient or community based.

(Gillen et al 2007, C; Kiefer and Emery 2004, C; Oberg et al 2005, D)

7.2 Reduced anxiety

7.2.1 Introduction
Hip replacement surgery is seen as an ‘extensive life event’, consisting of a number of phases for the individual. Gustafsson et al (2010) explored the meaning of hip surgery to five individuals; a study which emphasised the issues involved with making the decision for surgery. The author identified a core theme from respondents of ‘choosing the challenge’, with highlighted sub-themes of getting ready for the operation and the associated hopes and fears. This ‘life event’ is for many service users accompanied by anxiety.

“This is a common and routine operation so sometimes you feel all the pre-operative assessment is a ‘tick box’ – but to you it is a major event and very worrying.”

50+ Forum service user feedback

Pre-operative assessment and intervention is encouraged within the Musculoskeletal Services Framework clinical pathway (DH 2006) and this can be an opportune time to explore those anxieties which the service user may be experiencing. Occupational therapists are frequently involved pre-operatively and it is important at this point to distinguish between pre-operative individualised assessment and pre-operative education. Individualised assessment should involve a one-to-one assessment, while education may be delivered on an individual or group basis by one or more members of the multidisciplinary team and follow a more prescribed programme. Both formats should allow the opportunity for the service user to express concerns and/or ask questions.

7.2.2 Evidence
A number of sources of evidence were identified relating to anxiety that may be experienced by a service user during the various stages of the pathway for hip replacement surgery.

A Cochrane review (McDonald et al 2004) suggested that there was insufficient evidence to support or refute the use of pre-operative education to improve post-operative outcomes, especially in terms of functioning and length of stay. There was the
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suggestion, however, that pre-operative education may have beneficial effects when targeted to reduce anxiety and for those most at need of support; for example, those with greater disability and/or limited social support. There was overall evidence that pre-operative education had a modest beneficial effect on pre-operative anxiety.

The importance of an individually tailored approach to the pre-operative assessment was also highlighted in the evidence. Montin et al (2007) found those who were older and overweight experienced greater anxiety before surgery. Given that these individuals and others with co-morbidities may have slower recovery, this study reinforced the important role of effective and individualised pre-operative assessment. The importance of time to ask questions of an individual nature was also raised in the qualitative study by Fielden et al (2003), where service users identified that there was a lack of scheduled time for them to ask questions pre- or post-operatively.

In another study, service users with accelerated discharge described concerns and anxieties about the consequences of early discharge for them or their family, especially regarding managing pain, mobility at home and support needs (Hunt et al 2009). Heine et al (2004) in a small qualitative study similarly identified that service users needed to feel safe and secure about their return home, and that this can be enhanced by providing information at a pre-operative stage as well as prior to discharge.

Occupational therapists may not always have the opportunity to discuss concerns post-operatively in detail due to the limited time that the service user is on the ward. It is important, wherever possible, to ensure these issues are addressed during pre-operative assessment.

9. It is recommended that the pre-operative assessment undertaken by the occupational therapist allows adequate time for individualised questions and discussion of expectations and anxieties.
   (Fielden et al 2003, C; McDonald et al 2004, A; Montin et al 2007, C)

10. It is suggested that occupational therapists offer support and advice to service users who may be anxious about an accelerated discharge home.
    (Heine et al 2004, D; Hunt et al 2009, D; Montin et al 2007, C)

The setting for pre-operative intervention could potentially be in the clinic or within the individual's home.

The benefits of pre-operative home-based occupational therapy intervention were explored from the perspective of ten service users in a small qualitative study (Orpen and Harris 2010). Pre-operative occupational therapy intervention consisted...
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of performance of activities of daily living, environmental considerations and social considerations. The analysis resulted in the identification of five main themes:

- Pre-operative equipment use increased independence, progress and confidence. The belief that installation of equipment pre-operatively would have relieved anxiety and provided the opportunity to try out equipment was also identified as a potential need in the qualitative work of Fielden et al (2003).
- Individual needs are better met through timely visits.
- Home intervention by a competent therapist offered reassurance regarding surgery.
- Knowing one's home environment is suitable increased confidence in planning hospital discharge after surgery.
- Establishing the social support networks available on discharge was important in pre-operative assessment and planning.

A key study limitation was the potential for recall bias given that the timing of the interviews ranged from five weeks to six months post-surgery; however, it provided useful information about what is important to service users prior to hip replacement.

A Canadian study, with well-controlled confounding variables, provided more robust evidence. Rivard et al (2003) in their case control study examined the location and nature of pre-operative occupational therapy assessment/intervention. One group received a pre-operative home visit one to two weeks prior to surgery together with one-to-one teaching in their own home when the therapists were able to assess the home environment directly. The other group attended a pre-operative assessment clinic at the hospital, also within one to two weeks of their surgery, and received their teaching in a group setting, with therapists relying on service user/family reports for information about the home environment. The outcomes of this study indicated that the allocation of resources to one-to-one pre-operative home visits cannot be supported, given that similar intervention can be carried out in a facility-based setting requiring far less resources (staff time, travel costs), and achieving the same outcomes; that is, there was no significant difference between length of stay and discharge destination.

In a second Canadian study, a randomised controlled trial similarly investigated pre-operative interventions (Crowe and Henderson 2003). The control group received one standard pre-operative clinic visit one to two weeks prior to surgery, which included any medical tests and other assessments. The service user was briefly educated about what to bring to hospital, instructions about pre-operative preparation, information about the hospital stay and immediate post-operative phase (including functional implications of surgery and temporary post-operative functional limitations). The intervention group received individually tailored multidisciplinary rehabilitation to optimise functional capacity, education about the in-hospital phase and early discharge planning. The occupational therapy component comprised environmental preparation, education, strategies to improve pre-operative functioning, energy consideration and task simplification. Some received a home visit to plan environmental changes. All service users in the rehabilitation intervention group received interdisciplinary counselling/education focused on preparation for discharge home.

The study found that a pre-operative individually-tailored rehabilitation programme reduced length of hospital stay, and that service users were less anxious before surgery.
and were better prepared in advance for their return home. The length of stay result contradicts that found in other studies, but the impact of pre-operative intervention on reducing anxiety is reinforced. While this study is a valuable piece of evidence, there were variations between the groups and the completeness of data, and not all participants received a reassessment of their anxiety.

Coudeyre et al (2007) reviewed the literature to assist in the development of guidelines for pre-operative rehabilitation for hip and knee total replacement in France. In summarising the findings Coudeyre et al indicated the importance of individualised intervention, and advocated that ‘pre-operative multidisciplinary rehabilitation, comprising at least occupational therapy and education is desirable among the most fragile patients’ (Coudeyre et al 2007, p195).

“The home visit by my local OT was extremely helpful. He explained very clearly what I might expect and ways of helping my recovery and improving my post-op mobility.”

Golden Jubilee National Hospital service user feedback

“Home visits are the single most important factor – you feel in control when the OT comes to your home and more able to talk through any worries. A home visit as part of the pre-operative assessment for those who live alone is really important.”

50+ Forum service user feedback

The framework for provision of pre-operative intervention by the occupational therapist will have geographical variations. The opportunity to provide a home visit, which may be the preferred option, may not always be feasible due to limitations of resources (staff, time available) if the service user lives outside the catchment area of the hospital; or is treated as part of a regional/national programme. A national survey of occupational therapy practice in the UK identified that home visits were not routinely carried out by occupational therapists, either pre-operatively or post-operatively (Drummond et al 2012). Home visits were ‘sporadic’ and usually associated with specific service user needs such as co-morbidities; living alone; frailty; a history of falls; or having no one to measure furniture heights. The nature of service provision and resources may also provide a barrier to the provision of equipment pre-operatively, influenced particularly by local community equipment service arrangements.

In summary, the evidence indicates that pre-operative occupational therapy intervention can be provided effectively via the clinic setting for most individuals. Where the service user has complex needs, then home-based provision should be an option to optimise pre-surgery function and enhance the rehabilitation and discharge planning process.

Given the volume of total hip replacements undertaken, routine home-based intervention would potentially be resource intensive and, therefore, prohibitively high cost. While not perhaps explicit within the evidence, it is, therefore, important that where needs are complex, the occupational therapist makes contact with any community services/agencies or family carers involved. This can facilitate the gathering of information, which may inform decision-making with respect to the need for a home assessment, and determine the potential support available to advise/prepare the service user pre-admission. It is considered essential by the guideline development group that
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there is the option of a home assessment in the management of complex individual needs.

Spalding conducted qualitative work with service users who had experienced occupational therapy in pre-operative education sessions (Spalding 2004). The study investigated the perspectives of ten service users and seven health professionals involved in a pre-education programme consisting of a two-hour session. The session included explanation, demonstration and opportunity for service user participation and questions. The beneficial outcome of service user empowerment was explored, identifying themes of confidence, trust, control, responsibility, involvement, knowledge, support and understanding.

An earlier article by Spalding reporting on the same study, focused on pre-operative education and anxiety (Spalding 2003), and found that service user education can reduce anxiety. This was achieved by enabling service users to understand the experiences that will be encountered during and after surgery; that is, the chronological experience of total hip replacement. Spalding also identified that demonstrations were easier to understand and facilitated learning, and that making the unknown familiar through an opportunity to meet staff who would be involved in care on the ward was valued by respondents.

While it is preferable that the occupational therapist who assesses the service user/provides education is the therapist who provides the intervention post-operatively, this may not always be feasible. This may be affected by pre-operative and surgery time scales, and factors such as rotational staff or staff leave.

A randomised controlled trial in Finland (Johansson et al 2007) set out to determine whether it was possible to increase service user knowledge and certainty about care-related issues; to reach a more empowering learning experience; and to exercise a more positive impact on selected clinical outcomes by additional pre-admission education. One group received standard written education and non-systematic oral education while the intervention group received face-to-face education with nurses trained in the concept map method, plus the written educational material. Pre-admission education using the concept map method and written education was found to yield better learning results than the use of written education material with non-systematic oral education. However, it was also suggested that written information is more effective than verbal, so services should therefore be employing both strategies for pre-assessment information.

Soever et al (2010) aimed to identify the educational needs of adults having hip or knee replacement surgery through a small qualitative study. This revealed that the topics of interest to service users included knowing the team; condition information and management; waiting list priorities; pre-operative activities; preparing for admission; the rehabilitation process; functional recovery; and follow up. They also identified factors affecting educational needs (why education is important); that is, fears, family information needs and expectations. Soever et al concluded by suggesting the use of a comprehensive checklist for an education programme, the content of which may be a useful reference point for occupational therapists.

While it is beneficial to provide information in a variety of formats to meet, for example, learning style preferences, literacy and language skills or sensory needs, this may not always be feasible depending on the resources available to a team.
7.3 Resumption of roles

7.3.1 Introduction
Occupational roles, whether these be employment, housework or caring for others, are important to individual wellbeing. After the acute hospital phase has been completed, some service users may require support in order to facilitate resumption of activities required for those occupational roles. The continuation of therapy input, particularly relating to work and leisure needs, may be more appropriately addressed in the community.

Intervention and support in the community may be delivered by a variety of service providers, including health (hospital or community based), social services and private providers. These community services may take the form of outpatient teams, intermediate care teams, reablement/enablement teams or outreach teams. Community services may be provided within the home setting or in clinics or outpatient centres. Seamless service provision is important to enable wider goals set by the service user at initial assessment to be continued as their journey progresses from the inpatient episode through to continued rehabilitation in the community, addressing any issues for the person throughout their daily routine.

Inability to work can have a significant impact on an individual and their family. The average age for total hip replacement from the various data sources in the UK is 67–68 years, yet while many service users receiving a hip replacement are retired, there are increased numbers of younger individuals receiving surgery due to improved prosthesis life. Additionally, with the fact that in the future the retirement age will potentially be...
later, and that individuals may be involved in voluntary or other work-related activities, work roles are an area which should not be neglected.

“This [work roles] must be considered in the widest sense – some people are no longer in paid work but do voluntary work which is really important to them.”

50+ Forum service user feedback

Ideally, work-related issues should be addressed earlier in the care pathway of arthritis to facilitate adaptation to the work environment while the individual is still at work, and not yet listed for surgery.

It is important that occupational therapists, where necessary, access guidance and information on work-related assessment and intervention, such as the ‘Work Matters’ resources available from their professional body, the College of Occupational Therapists (COT and National Social Inclusion Programme 2007).

7.3.2 Evidence
Four studies provided low-level evidence on the relationship between work and total hip replacement.

Nunley et al (2011) explored the area of return to work for younger service users in America through a multi-centre telephone study. The study found that most young active individuals who were employed before their surgery could be expected to return to work (90.4%), and the vast majority returned to their pre-operative occupation. This was similar to results in the smaller retrospective study by Mobasheri et al (2006) who likewise found that nearly all service users who were working pre-operatively returned to their jobs. Nunley’s cohort enabled analysis of 790 responses, but specifically targeted younger adults, with a mean age at time of surgery of 49.5 years, considerably younger than the typical adult receiving a total hip replacement in the UK. Older respondents (although upper age limit in the study was 65 for men and 55 for women) were found to report more restrictions at work and difficulties with particular activities such as squatting, kneeling, driving and climbing. Bohm (2010) in a small cohort study also found that total hip replacement had a positive effect on work capacity for those service users who returned to work.

A further qualitative study by Parsons et al (2009) explored the experiences of service users living with severe osteoarthritis while awaiting hip and knee joint replacement surgery and highlighted the difficulty maintaining work or the need to seek premature retirement. The study also made reference to a lack of understanding on the part of the employer.

These studies reinforce that closer attention may need to be given to service users who are still in the workforce in terms of discussing their job roles and supporting return to work. In the context of the wider clinical pathway, this could mean occupational therapists providing advice on areas such as energy conservation, joint protection, pacing and possible role/task modification while awaiting hip replacement. Discussion around employment status should form part of the pre-operative assessment, to give the service user a realistic timeframe regarding return to work and allowing them to plan a return to work schedule with their employer. Post-operatively, this should also be addressed, with advice given regarding when the service user can return to completing certain tasks as opposed to others, and giving suggestions about task and
environmental adaptations to promote a successful transition back to work post-opera­tively. Where resources are available it may be appropriate to refer onto community services for return to work programme intervention.

Acute hospital staff may not always have the opportunity to gain experience in managing issues or questions related to employment. An added concern may be that a service user’s expectations may be raised and then cannot be followed up. The potential lack of community resources to which service users can be referred, where further support or advice is needed in relation to work, may be an additional barrier.

A more general focus on resumption of roles and relationships following a total hip replacement was identified as a key theme in a small qualitative study, which investigated the processes of recovery from the service user perspective (Grant et al 2009). The study highlighted that the physical domain was seen as being the main focus of recovery in hospital, but as recovery progressed, psychosocial issues, such as re-establishing roles and relationships, and shifting the focus from pre-surgical disability to post-operative ability, could be challenging. However, reliance on others for assistance with everyday activities decreased, and this facilitated the re-establishment of roles and relationships and the expansion of horizons.

Grant explores the re-establishment of relationships, although the focus reported was on activities such as going out, gardening and visiting friends. Sexual activity within relationships was not apparently raised by participants, although this is an area which can be an important aspect of resumption of roles. Service users should be given the opportunity to discuss this issue, although it is suggested this is most likely to be within the context of protocols to avoid the risk of dislocation. The national survey of occupational therapy practice (Drummond et al 2012) identified that the discussion of sexual activities was reported by only 5 out of the 174 respondents within the ‘other ADL’ category.

The focus on early discharge may mean that the issues arising in terms of resuming previous roles, and taking on new ones, may not always be apparent, or possible to address during the acute hospital phase.

15. It is recommended that work roles are discussed at the earliest opportunity as part of a comprehensive assessment.

(Bohm 2010, C; Mobasher et al 2006, D; Nunley et al 2011, C)

16. It is suggested that for service users who are working, advice is provided relating to maintaining their work role pre-operatively, post-operative expectations and relevant information for employers.

(Bohm 2010, C; Mobasher et al 2006, D; Nunley et al 2011, C; Parsons et al 2009, D)

17. It is recommended that occupational therapists provide advice to facilitate service users to establish previous and new roles and relationships, and shift their focus from disability to ability.

(Grant et al 2009, C)
7.4 Low readmission rates

7.4.1 Introduction
Dislocation is one of the potential complications of total hip replacement. A total of 7,852 hip revision procedures were reported in England and Wales in 2010, the most frequent procedure being a single stage revision (86%). Dislocation accounted for 17 per cent of single stage revisions, with aseptic loosening being 50 per cent, and infection 3 per cent causality (National Joint Registry 2011, p1920). A large multi-surgeon audit carried out in 2008 reported 3.4 per cent of service users undergoing primary total hip replacement experienced dislocation (Blom et al 2008). Of the single episodes of dislocation reported in that study, 77.3 per cent occurred within three months of surgery, highlighting that dislocation is more likely in the three months post-operatively. The National Joint Registry is planning further detailed study on the topic of dislocation.

Variations in practice exist, but to avoid the risk of dislocation, ‘hip precaution’ protocols have commonly been put in place. An inconsistency in approach to hip precautions was highlighted in particular by occupational therapists as part of the guideline topic identification process. The potential, therefore, for the development of practice guideline recommendations for occupational therapists in this area has been seen as desirable.

7.4.2 Evidence
Hol et al (2010) carried out a systematic review to examine the evidence relating to partial versus unrestricted weight-bearing following total hip replacement (using an uncemented femoral stem). The 13 studies reviewed were not all randomised controlled trials and had relatively small sample sizes. Moderate to strong evidence was suggested, however, for full weight-bearing immediately post-operatively, with subsequent benefits of faster rehabilitation and return to functional independence. Despite the variation in methods, minimal risk of stem migration with full-weight bearing was indicated and the authors recommended early rehabilitation after uncemented total hip replacement. This evidence is valuable for occupational therapists to be aware of, but in relation to specific recommendations, practice will need to be guided by local surgical protocols and joint-working with physiotherapists within the multidisciplinary team.

The evidence identified from the literature search specifically related to the requirement for hip precautions following total hip replacement was relatively limited.

An American randomised controlled trial (Peak et al 2005) involved 265 service users and identified two groups; one ‘restricted; and one ‘unrestricted’. Both groups, who had undergone anterolateral approach surgery, were asked to limit their range of movement to less than 90 degrees of flexion and 45 degrees of external and internal rotation, and to avoid adduction for the first six weeks after the procedure. Service users in the restricted group were managed with the placement of an abduction pillow in the operating room before bed transfer and used pillows to maintain abduction while in bed. They also used elevated toilet seats and elevated chairs in the hospital, rehabilitation facility and at home, and were prevented from sleeping on their side, from driving, and from being a passenger in a car. Service users in the unrestricted group were not required to follow additional restrictions, but could choose to use equipment if they wished for comfort. This choice gave rise to methodological concerns about the overlap in the intervention received by the study and control groups. The study was not strictly comparing ‘precautions’ against ‘no precautions’. From the service user perspective the results suggested that they were much more satisfied when fewer restrictions were imposed on them. Removal of restrictions resulted in lower costs and
increased service user satisfaction, and earlier return to daily functions (better sleep, return to work earlier once able to drive). There was one dislocation in the entire cohort (prevalence 0.33%), that being in the restricted group, and that occurred during transfer from the operating table post-surgery.

Ververeli et al (2009) conducted a smaller randomised controlled trial, again in America, which involved 81 service users undergoing anterolateral approach surgery. The study aimed to determine any differences between outcomes for the standard group (who were under the standard hip precautions utilised by this facility), and outcomes from the early rehabilitation group (which had relaxed precautions with only restrictions of not crossing their legs at the thighs). There were no dislocations and the relaxed precautions group was walking without a limp and driving earlier. The researchers concluded that the early rehabilitation protocol increased the pace of recovery compared to a pathway with hip precautions, without increasing complications.

The studies by Peak et al and Ververeli et al both focused on uncomplicated hip replacements and hip precautions were not fully removed. Methodological limitations mean that findings cannot be fully adopted or generalised and in both cases the evidence was downgraded from high to moderate to reflect potential for bias and some concerns regarding confidence in applicability of the findings.

Both these randomised controlled trials were included in a literature review of three studies that aimed to identify how necessary hip restrictions for avoiding dislocation were, following hemi-arthroplasty or total hip replacement in older people with a hip fracture (Stewart and McMillan 2011). In addition to the studies by Peak et al and Ververeli et al, Stewart and McMillan reviewed a study by Talbot, Brown and Treble reported in 2002. That study prospectively investigated primary total hip replacement via the anterolateral approach with no hip restrictions observed post-operatively. Stewart and McMillan noted that although the dislocation rate in this study was reported as low, at 0.6 per cent, there was no control and follow-up was only for a period of six weeks.

Stewart and McMillan, therefore, concluded that there was insufficient evidence regarding how necessary hip precautions are for avoiding dislocation following total hip replacement. There did, however, appear to be a consensus that surgical approach, surgeon skill, cognitive capacity and hospital volume had greater importance in dislocation rates. Modifying hip precautions by reducing limitations seemed to demonstrate benefits for service users as reported by Peak and Ververeli. This review also identified a higher risk of dislocation post-fracture than for elective surgery, with implications that those who experience a fractured hip tend to be frailer and with co-morbidities, and therefore less generally fit and well than those receiving elective surgery.

The anterolateral or direct anterior approach was also the surgical technique used in a study by Restrepo et al (2011). Restrepo et al evaluated the incidence of dislocation in a prospective cohort of 2,532 service users undergoing total hip replacement. This research involved a no-restriction protocol, such that there were no traditional functional restrictions applied post-operatively. Additionally, those with complications, such as a history of surgery on the contralateral hip or neuromuscular disease were included. Restrepo et al reported four dislocations in the followed cohort of 2,386 service users (rate of 0.15%) and suggested that despite some study limitations, removal of hip restrictions did not increase the incidence of early dislocation using this approach.
A national survey of occupational therapy practice for hip precautions following primary total hip replacement identified that occupational therapists generally agree on the main movements that service users are advised to avoid following primary elective total hip replacement, namely not flexing the hip beyond 90 degrees, and avoiding adduction and internal/external rotation of the hip (Drummond et al 2012). The length of time hip precautions were recommended to be observed varied, however, ranging from six weeks to over twelve weeks. The rationale for teaching hip precautions given by respondents was also varied and lacked consensus. The most common reported reason was surgical opinion, with occupational therapy policy and surgical approach the other most frequent responses. The authors highlighted that very few respondents identified an evidence-base as the reason for precautions being applied.

While the two randomised controlled trials (Peak et al 2005, Ververeli et al 2009) and the prospective study (Restrepo et al 2011) provided insight into the potential benefits of reducing or removing hip precautions, occupational therapists work as members of the multidisciplinary team; and, therefore, given the current evidence of the importance of surgical expertise and approach in possible dislocation risk, and lack of research that investigates whether precautions are effective, it is not appropriate to develop specific hip restriction recommendations that can be implemented by all occupational therapists. It is, therefore, essential that therapists consult with the surgical team with whom they are working, regarding any specific precautions to be followed post-operatively.

By sharp contrast in terms of study design, a descriptive case study report (Malik et al 2002) identified three cases where service users had dislocated post-operatively at home when turning to answer the telephone. While very low-level descriptive evidence, the report highlighted the importance of discussing hip precautions and the performance of basic daily living activities with service users; for example, placing a telephone in an easily accessible location and safe limb positioning as opposed to automatically turning to answer a call should be simple, low-risk advice.

The study by Malik et al highlights that irrespective of the level of hip precautions identified by a surgical team, occupational therapists can provide advice on appropriate positional behaviours. This facilitates good positioning and joint care and can be applicable whether specific restrictions are reduced or removed, or whether certain items of equipment are provided to meet individual need. It should be emphasised that there is always the risk that the service user will not follow precautions or advice, and, therefore, an approach that encourages good joint positioning and care, while reinforcing any hip precaution protocols in place, is potentially more empowering to the service user.

The practice of hip precautions is changing in some areas, and experts on the guideline development group are aware of the removal of hip restrictions in some UK institutions. Occupational therapists will, therefore, continue to find that the hip precaution protocols they are expected to reinforce and support will be variable dependent on where they are working. It is suggested that given the potential for emerging evidence from those services reducing their restrictions on the risks of dislocation, that occupational therapists should ensure they are actively involved in discussing the implications of any changes in practice for occupational therapy intervention and service user outcomes.

The emerging evidence is that the prescription of hip precautions is being considered increasingly unnecessary and is likely to decrease. It is, therefore, essential that occupational therapists are up to date with the latest evidence-base and actively
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contribute to and inform multidisciplinary discussion and future practice developments. An interesting article by O'Donnell et al (2006), while very low evidence, offers a descriptive account of how a Canadian team examined the available evidence and undertook a consensus process to develop primary total hip replacement guidelines for their service. It is vital that occupational therapists proactively engage in the 'hip precautions debate', and O'Donnell's therapist-led/co-ordinated consensus project could provide useful information about how this process might be taken forward locally.

18. It is recommended that occupational therapists consult with the surgical team regarding any specific precautions to be followed post-operatively.
   (Hol et al 2010, B; Peak et al 2005, B; Restrepo et al 2011, B; Stewart and McMillan 2011, C; Ververeli et al 2009, B)

19. It is recommended that occupational therapists advise service users, where protocol includes precautions, on appropriate position behaviours for those daily activities applicable to the individual’s needs, ranging from getting in/out of a car to answering the telephone.
   (Drummond et al 2012, C; Malik et al 2002, D; Peak et al 2005, B; Stewart and McMillan 2011, C; Ververeli et al 2009, B)

20. It is suggested that due to the uncertainty surrounding the need for hip precautions, and the potential for an increase in satisfaction and early functional independence when hip precautions are relaxed or discontinued, occupational therapists engage in local discussion/review of the emerging evidence with their surgical and multidisciplinary teams.
   (Drummond et al 2012, C; O’Donnell et al 2006, D; Peak et al 2005, B; Restrepo et al 2011, B; Ververeli et al 2009, B)

7.5 Decreased length of hospital stay

7.5.1 Introduction
The period between admission and discharge for routine elective surgery has reduced in recent years, with a median length of stay recorded as 5 days for total hip replacement in England during 2009/2010 (Health Service Journal 2011). In Scotland, the average length of stay in 2009 was reported as 6.2 days, with 35 per cent of service users being admitted on the day of surgery (NHS National Services Scotland 2010).

The NHS Institute for Innovation and Improvement indicates that it is difficult to improve length of stay without engagement from the multidisciplinary team involved in the care. Clinical pathways in high quality and efficient services are underpinned by a number of factors, including consistent management of service users’ expectations; surgery on the day of admission; mobilisation within 12–18 hours of surgery; and criteria-based discharge (NHS Institute for Innovation and Improvement 2006).

A procedure such as total hip replacement is relatively standardised, and has, therefore, been appropriate for the focus of care pathway activity, particularly given that variations in the process of care can potentially be reduced. Care pathways, accelerated
discharge and enhanced recovery programmes are common features of hip replacement interventions. Care pathways are also available through initiatives such as the Map of Medicine, providing evidence-based, practice-informed care maps, which connect all the knowledge and services around a clinical condition and can be ‘customised to reflect local needs and practices by commissioners looking to devise new care pathways’ (Map of Medicine 2011).

Clinical pathways should take into account national clinical guidelines that may influence intervention. A total hip replacement, for example, may be the intervention of choice for a hip fracture, and therefore relevant national guidelines for management of hip fracture should be cross-referenced (SIGN 2009, NICE 2011).

7.5.2 Evidence
A proportion of the literature reviewed made either direct or indirect references to length of hospital stay. This often focused on looking at potential individual service user factors and predictors (see section 7.1). The broader topic of clinical pathways and enhanced recovery programmes was also explored by some of the literature.

Kim et al (2003) undertook a critical review of evidence on clinical pathway effectiveness for total hip and knee replacement. All studies that reported on length of stay showed that with the implementation of clinical pathways, there were reductions in acute hospital length of stay and in hospital costs. Additionally, there were reduced or unchanged rates of complications and either improvement or no change in service user reported outcomes. There were, however, considerable variations within the 11 studies examined, with use of historical controls creating a potential for bias, hence interpretation should be cautious.

A defined joint recovery programme was examined in a Dutch low-level evidence case control study, which compared the cost-effectiveness for service users receiving the programme and those receiving usual care (Brunenberg et al 2005). This also demonstrated a reduction in hospital length of stay and an improvement in joint and function that was statistically significant.

Bottros et al (2010) carried out a retrospective study that aimed to compare an enhanced recovery programme with a traditional approach. The study supported the enhanced recovery programme and emphasised the importance of the multidisciplinary team. There was no single factor identified as being responsible for reduced length of stay; however, influencing factors included surgical approach, pre-emptive and multimodal pre-operative analgesia, type of physical therapy, service user pre-conditioning and family education. A similar finding was determined from a study (Berend et al 2004) using a multimodal approach with pre- and post-operative education, ‘aggressive’ post-operative rehabilitation and attention to pre-emptive analgesia. This low-level retrospective study was reported with only very minimal information. On critical appraisal the six-year period between data collection for the control (pre-programme) and study (post-programme) group raised concerns about confounding variables, and whether some change would have actually occurred because of the length of time between data collection. However, the study usefully confirmed that a significant reduction in length of stay could be achieved by focusing on the potential for change within a service.

Husted et al (2008) undertook a study to identify service user characteristics associated with length of stay in fast track total hip and total knee replacement surgery. This prospective Danish study involved 712 service users and found that the mean length of stay was reduced from 8 to 3.8 days. They therefore concluded that implementation of
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an accelerated programme was capable of leading to reductions in length of stay for unselected service users.

Clinical pathways are not used universally, but have demonstrated decreases in length of hospital stay. It is still essential, however, that an individual’s needs, which can influence recovery, are taken into account within the context of a pathway. While the evidence on clinical pathways has not been occupational therapy specific, occupational therapists need to be aware of pathways or programmes in place where they are working, and be clear of their contribution and role in optimising length of stay.

| 21. | It is recommended that occupational therapists optimise length of stay, with due reference to care pathways and enhanced recovery programme guidance. | 1 B |


Intervention and rehabilitation post-operatively need to be instigated at the earliest opportunity given that the length of hospital stay may only be two to three days.

Studies have investigated the role of targeted early rehabilitation provided at home in terms of influence on length of stay. Iyengar et al (2007) in a low-level prospective cohort study looked at home-based multidisciplinary rehabilitation following total hip replacement. Hospital stay was reduced without any increase in complication rates, although it should be noted that the service had a long baseline length of stay. Siggeirsdottir et al (2005) undertook a randomised controlled trial in which outcomes of service users who received pre-operative education/training and home-based rehabilitation was measured. This study had a number of limitations, including lack of information on the conventional treatment used as the control. It identified, however, that length of stay was shorter for the intervention group, and that additionally function and quality of life were enhanced compared to the conventional treatment.

A Cochrane review (Khan et al 2008) examined the evidence for effectiveness of organised multidisciplinary rehabilitation on activity and participation in adults following hip or knee replacement surgery for chronic arthropathy. Questions considered achievement of outcomes, the nature of the outcomes, and the influence and intensity of rehabilitation in relation to gains. While the high-quality review included five trials (619 participants) the studies themselves were highly heterogeneous and meta-analysis was therefore not feasible.

Occupational therapy specific findings were not identified in the review and there were no studies that provided direct evidence that multidisciplinary rehabilitation following lower limb joint replacement achieved better outcomes compared with no treatment. There was evidence for the effectiveness of multidisciplinary rehabilitation in both inpatient and home-based settings, with ‘silver’ evidence that early and/or organised inpatient multidisciplinary rehabilitation led to more rapid attainment of functional milestones in the shorter term, as well as fewer post-operative complications, shorter hospital stay and reduced cost. However, there was no evidence that earlier inpatient rehabilitation improved participation. In relation to home-based multidisciplinary rehabilitation, there was ‘silver’ level evidence for organised hospital at home care improving quality of life and disability in service users following hip replacement.
The duration of follow-up of service users after hip and knee replacement was limited to short and medium term (3 to 6 months post-operatively). It was not possible to determine if gains made by participants in rehabilitation were maintained in the longer term (greater than 12 months). From this review, it was also not possible to suggest best ‘dose’ of therapy. Further studies are needed to suggest optimum number, duration and intensity of treatment sessions.

One study in the review produced ‘silver’ level evidence for modest cost benefits arising from early inpatient rehabilitation. There was no good evidence, however, proving the overall cost effectiveness of home-based programmes.

The review found there was modest support for hip replacement service users being assessed for their need for appropriate rehabilitative intervention. Assessment, it was suggested, could potentially be undertaken by any skilled member of the multidisciplinary team in order to maximise capacity for independent living and societal participation.

In summary, the Cochrane review identified evidence that multidisciplinary rehabilitation programmes could have a positive impact on service user-related outcomes, such as function and quality or life, as well as institutional outcomes, such as length of stay and cost. Additionally, the recommendations pertained to both early inpatient and home-based multidisciplinary rehabilitation programmes having benefit.

Evidence specifically relating to the nature of occupational therapy intervention immediately post-surgery was very limited. Studies were more evident in the area of pre-operative intervention, and those that considered interventions in the inpatient environment took a broader ‘rehabilitative’ perspective. Post-operative occupational therapy intervention is normally based on the self-care, leisure and productivity needs and goals identified pre-operatively or on admission.

The ability of occupational therapy staff to provide early intervention, particularly if home-based, will be influenced by available resources.

22. It is recommended that the occupational therapist is involved in early multidisciplinary post-operative intervention for service users following hip replacement, providing either inpatient or home-based rehabilitation.

(Iyengar et al 2007, C; Khan et al 2008, A; Siggeirsdottir et al 2005, C)

7.6 Reduced demand on support services

7.6.1 Introduction
The outcome of reduced demand on support services focuses on encouraging the service user to do things they can usually do, or have the potential to manage independently, and not to unnecessarily rely on services for support. Occupational therapists, often in conjunction with social workers, will assess social considerations (i.e. ensuring adequate support in the community), liaising with the service user, informal carers and health and social care services if additional support is required.
In terms of what constitutes a support service, it is important that not only statutory services are considered. A significant amount of support is provided by informal carers, in the absence of whom there is the potential need for increased demand on support services. It is acknowledged that there is considerable research available on carers within a wider context.

7.6.2 Evidence
The literature search identified a lack of evidence that focused on support services on discharge and social considerations in the context of total hip replacement, despite pre-operative assessment of social support needs being essential to optimise length of stay through early discharge planning.

Individuals awaiting a total hip replacement will usually have experienced deteriorating physical function, increasing pain and stiffness, and, as such, this is likely to have had an impact on their functional abilities. Chow (2001) in a UK study, investigated whether carers experienced stress from looking after individuals with osteoarthritis who were waiting for a total hip replacement. He found there was a degree of stress when caring for someone awaiting total hip replacement, with 91.3 per cent of carers pre-operatively reporting some stress as measured by the Robinson Caregiver Strain Index. This had reduced by 23 per cent post-surgery but was not found to be significant. The study was, however, small scale, had a proportion of drop-outs at the follow-up measures and some confounding factors. Additionally, while the study aimed to determine the impact of the intervention (surgery) on the outcome (caregiver stress), the post-operative period examined was only three months following the hip replacement.

The needs of carers should be taken into account when completing pre-operative assessments/interventions, involving them from the start; identifying needs and potential support requirements; and providing guidance and information about available resources. The study suggested that occupational therapists could run carers groups, teaching the skills and knowledge required in assisting service users in activities of daily living, stress management, problem-solving skills and reorganising the daily routine.

Informal carers may choose not to be involved and the care receiver may also not want them to be directly involved. The dynamics around the caring relationship are often complex and the occupational therapist must be aware that this may impact on implementation of any recommendations. Opportunities to engage with carers should be offered, but may not be accepted.

The evidence suggested specific carers groups may be an option; however, the expert opinion on the guideline development group indicated that this is unlikely to be practicable in the immediate pre-operative and acute stages of intervention. Identifying potential carers could be feasible at the pre-operative assessment, but the logistics of...
subsequently organising a group would be complex and resource heavy. In the absence of specific evidence regarding carers groups in this clinical context, there is no indication that they would necessarily be any more effective than the involvement of informal carers individually in the pre-operative assessment/education and post-operative intervention. While there may be a barrier for occupational therapists to provide carers groups, they can ensure family members/carers are informed of support services in the local area that may be able to offer advice and support, and told of their right to a carer assessment. More formal opportunities for occupational therapy advice and contribution to carer education and support may be extremely pertinent earlier in the overall care pathway for arthritis.

23. It is suggested that there are potential benefits in including informal carers in pre-operative assessment/education, and post-operative intervention, to maximise service user independence and reduce carer stress.

(Chow 2001, C)

7.7 Reintegration into the community

7.7.1 Introduction
Facilitating longer term reintegration into community activities is not an area where occupational therapy intervention is routinely implemented following a hip replacement. Specific indications for post-operative rehabilitation are more likely to be indicated following a hip fracture, or when there are complex needs following elective surgery. It is important, however, that the service user is encouraged to consider activities they wish to engage in subsequent to the immediate post-operative period, and to discuss how they may re-engage in past occupations or become involved in new physical or social activities.

Post-operative rehabilitation to facilitate community reintegration is frequently most appropriately, and more likely, to be provided via reablement, community services and day hospitals. However, resources may not always exist, which may cause a barrier to provision. Further rehabilitation may, therefore, need to be promoted by encouraging the service user and their family to be proactive in facilitating self-rehabilitation.

7.7.2 Evidence
Two low-level quality studies were identified via the literature search that considered activity post-surgery. Although quite different in their context, they both highlighted issues around engagement in physical activity or the wider community following hip replacement.

A total hip replacement, with its impact on reducing pain and increasing physical function, could be predicted to result in an increase in physical activity post-operatively. A cohort study in the Netherlands (de Groot et al 2008) identified that actual physical activity on objective measurement had not increased as much as expected at six months following hip surgery (0.7% improvement compared to baseline measures). The activity measured, using an activity monitor, included movement-related activities (for example, walking and cycling) together with body postures (sitting and standing) and changes in body posture (for example, sit to stand movements). Service users self-reported the time
spent in recreational, household and occupational activities, using a modification of the Physical Activity Scale for the Elderly. There was, however, variation between the objectively measured activity data and service user self-reported accounts. Service users reported an 86 per cent increase in activity. The outcomes were measured six months post-operatively, a relatively short period of time following major surgery, and there may have been some self-report bias. Given the potentially low level of physical activity it is considered important that service user’s needs and goals for ‘activity’ be identified.

A study carried out in the United States of America (Gillen et al 2007) examined the effect of occupational therapy intervention that focused on improving community skills post-operatively. Activities targeted were based on five pre-determined goals, specifically entering and exiting a vehicle; shopping; managing outdoor obstacles; participating safely in the community and travelling to and from outpatient appointments. The intervention took place in a single 45 minute session and the study involved 107 individuals who had received either a hip or knee replacement. Performance and satisfaction with performance were measured using an adapted version of the Canadian Occupational Performance Measure. Confidence was measured with a researcher-designed scale. Outcomes were positive with overall higher ratings on all measures post-intervention, indicating the benefit of practice within the natural environment. It should be noted that the occupational therapy intervention was provided via a private rehabilitation centre, that the measures were self-reported and there was no follow-up to determine the longer term benefits. To optimise rehabilitation outcomes, there should be a focus on enhancing community participation and decreasing activity limitations.

The focus of acute intervention is likely to mean a strong concentration on fitness for discharge. It is, however, important that the pre-operative assessment in particular provides advice and suggestions for goals that the service user can work towards once they have returned home. The acute sector occupational therapy service is unlikely to have the resources available to provide the kind of follow up community intervention as described by Gillen et al, and therefore onward referral is most likely to be indicated. The potential of reablement/rehabilitation services post-total hip replacement may be significantly impacted on by the availability of local services and the eligibility criteria. Encouraging and empowering the service user with tools and confidence to be proactive in achieving long-term goals without therapist input is therefore important.

24. It is recommended that occupational therapists encourage early discussion and goal setting for community reintegration, including social and physical activities.
   (de Groot et al 2008, D; Gillen et al 2007, C)

25. It is suggested that where specific needs are identified, the occupational therapist refers the service user on to community rehabilitation, reablement or intermediate care services to enhance community reintegration.
   (de Groot et al 2008, D; Gillen et al 2007, C)
8 Service user perspectives of the recommendations

8.1 Overall service user opinions

Service users involved in the consultation on outcomes were given the opportunity of expressing an interest in further involvement in the project. Those individuals who intimated they would be willing to provide further information or would like to contribute more to the guideline development work being undertaken by the College of Occupational Therapists Specialist Section - Trauma and Orthopaedics were subsequently contacted and asked if they would be willing to review the draft recommendations.

A facilitated meeting was offered to members of the Rushcliffe 50+ Forum Health Sub Group (two attended the meeting, one completed the consultation by post and one via a telephone discussion and subsequent completion of the questionnaire), and a postal consultation was carried out with those interested service users known to the Golden Jubilee National Hospital (responses returned by 23 out of 40 people contacted).

This consultation on the draft recommendations, in addition to any general comments, sought views on three key issues:

<table>
<thead>
<tr>
<th>Key issue</th>
<th>‘Yes’ response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you think the recommendations are easy to understand?</td>
<td>85%</td>
</tr>
<tr>
<td>Do you think these recommendations will help service users prepare for their operation?</td>
<td>89%</td>
</tr>
<tr>
<td>Do you think these recommendations will help service users to achieve the benefits and outcomes they want after their surgery?</td>
<td>89%</td>
</tr>
</tbody>
</table>

A number of respondents provided remarks on each key issue, and 15 provided further additional comments. Some of these comments have been incorporated in the relevant recommendation sections as service user feedback statements.

8.2 Understanding the recommendations

The majority of service users felt that they were able to understand the recommendation statements. This guideline’s target audience is occupational therapy personnel, and therefore the response that 85 per cent of the service users indicated the recommendations were easy to understand, was a positive outcome. It is appreciated that some respondents nonetheless found the language ‘jargonistic’, suggesting that if the target audience was service users, the language could be usefully reviewed.
8.3 Preparing for the operation and achieving benefits and outcomes after surgery

The views received by service users reviewing the draft recommendations highlighted the relevance of the statements in preparing service users for their operation, and in their contribution to enabling service users to achieve the benefits and outcomes they want after their surgery.

Respondents did not specifically comment on all recommendations, but feedback included common themes of the importance of being treated as an individual; receiving information; and effective communication. These principles of practice should essentially underpin every recommendation.

“It is really important you are treated as an individual. In a group the information seems very generalised and you think ‘well my home or lifestyle isn’t like that’ so you don’t necessarily get the benefit. But if someone talks and LISTENS to you then these recommendations will make a lot of difference.”

50+ Forum service user feedback

“Being able to ask questions without feeling stupid is so important – everyone is different so some people will be worried about getting back to work – others will be thinking how can I make a cup of tea in my tiny kitchen with a zimmer frame.”

50+ Forum service user feedback

“Feeling like you matter as an individual cannot be underestimated – it really impacts on your belief you can do it and get back to normal.”

50+ Forum service user feedback
Service user perspectives of the recommendations

“By recommending areas to be addressed pre-op, this will give patients an insight into what is best for their individual and collective needs.”

Golden Jubilee National Hospital service user feedback

“Communication is of key importance both in pre-operative and post-operative education of the patient’s wellbeing and I think the recommendations cover most aspects required.”

Golden Jubilee National Hospital service user feedback

The objective of this guideline is to describe ‘the most appropriate care or action to be taken by occupational therapists working with adults undergoing total hip replacement’ (see section 2). Taking that objective in the context of the person-centred and holistic philosophy of occupational therapy, it is pertinent to conclude this section of the guideline document with a comment from a service user:

“By outlining the areas best served to promote the patient’s wellbeing after surgery, it gives the patients more chance of achieving their post-op aims of maximum recovery.”

Golden Jubilee National Hospital service user feedback
9 Implementation of the guideline

This practice guideline aims to support occupational therapists to take the most appropriate care or action when working with adults who are undergoing total hip replacement.

Familiarisation with the guideline document will be an important first step for both individual practitioners and their managers. It is, therefore, imperative that occupational therapists and managers working in this clinical area take responsibility to review the guideline recommendations within the context of their practice.

Bringing the guideline to the attention of colleagues within the multidisciplinary team and service commissioners should also be a priority.

A further action to facilitate implementation must be for lead therapists to consider the ‘levers’ and ‘barriers’ within their local organisation and culture that may have an impact on any changes that may be necessary to practice. Section 9.2 identifies some potential barriers that may be applicable, while section 9.3 provides details of resources to facilitate implementation.

9.1 Dissemination and promotion

Awareness and implementation of this practice guideline are important if it is to influence and have an impact on occupational therapy practice.

To facilitate dissemination, the full practice guideline is available to download freely from the College of Occupational Therapists’ website.

Following publication in November 2012 the guideline will also be promoted to its key target audience of occupational therapists and to relevant others using professional networks and publications, internet and social media channels.

9.2 Organisational and financial barriers

The recommendations stated within this guideline document are intended to facilitate occupational therapy staff to contribute effectively to service user-centred, and service delivery-centred outcomes following total hip replacement. Service user-centred outcomes may be affected if the individual does not receive pre-operative assessment and education, or early post-operative occupational therapy intervention.

It is recognised, however, that there will be potential barriers, both organisational and financial, which may influence application of the recommendations. It is important that occupational therapists take these into account when implementing this guideline.

The recommendations are varied and any specific organisational or financial barriers have been described within the relevant sections.

In terms of the overall most critical resource required to implement these guideline recommendations, this is undoubtedly the availability of occupational therapy...
personnel within the multidisciplinary team. Care pathways are underpinned by interdisciplinary working and appropriate skill mix within the team. While ‘generic working’ may be a driving force in some services, it is important to recognise the value and contribution of specific skills and the experience of different professions and bands of staff in delivering the various elements of the pathway. For example, an individualised comprehensive occupational therapy assessment requires the experience and knowledge of a skilled therapist, while a trained support worker can effectively deliver components of a standardised education programme.

Staffing resources will be important in facilitating implementation, particularly where there may be an increased throughput of service users receiving a total hip replacement, or introduction of a seven-day service within an ongoing climate of cost efficiencies.

In particular, occupational therapy personnel may be faced with implementing recommendations within the context of elective services that are constantly changing, with the drive for enhanced recovery programmes aiming to decrease length of stay and providing earlier rehabilitation. This can mean providing intervention for service users who feel less prepared for surgery, who have less time to recover on the ward, and where there is less time for the multidisciplinary team to arrange plans post-operatively.

The variations in service focus and in resources available within the community, particularly post-surgical rehabilitation options and equipment provision, may also result in challenges to implementing the recommendations without compromising care. This may be relevant for those recommendations which focus on holistic assessment and intervention, and those which also address longer term goals for the service user.

### 9.3 Implementation resources

Three core implementation resources are available to support this practice guideline. All implementation resources can be downloaded, together with the full guideline document, from the COT publications section (Practice guidelines) of the College of Occupational Therapists’ website.

#### 9.3.1 Quick reference guide

The quick reference guide lists the recommendations and indicates their strength and the quality of the evidence leading to their development.

This is intended to be used by practitioners as an easily-accessible reminder of the recommendations for intervention. It should be ideally used once the practitioner has read the full guideline document. This is important to ensure an appreciation and understanding of how the recommendations were developed and their context.

#### 9.3.2 Audit form

The audit form provides a template for individual occupational therapists or services to audit and review their current interventions against the recommendations.

The aim is to encourage a reflection on current practice and to consider, where this does not follow the recommendations, the clinical reasoning in place to support decisions.

A baseline assessment conducted using the audit tool can be repeated to enable actions identified from the audit to be monitored.
The audit form, while initially providing a tool for use within an individual/service context, offers the potential for future benchmarking and wider comparative analysis.

**9.3.3 Continuing professional development session**

A set of PowerPoint slides and supporting documentation provides the resources for an individual or service to conduct a continuing professional development session focused on the practice guideline.

The learning outcomes for the session are:

- To explore aspects of the evidence-based guideline/recommendations in relation to current practice.
- To develop an understanding of the importance of using an evidence-based guideline to inform practice.
- To explore and develop an understanding of how to use the College of Occupational Therapists' audit tool for the evidence-based recommendations.

The PowerPoint slide set can also be valuable in increasing awareness about the guideline, and additionally can be tailored to meet local needs.

A feedback form is also available to provide comment or updates to the College of Occupational Therapists.
10 Recommendations for future research

The review of the evidence identified a lack of occupational therapy primary research specific to occupational therapy and total hip replacement.

‘The effectiveness of occupation-focused interventions continues to be the major priority identified by occupational therapists for research activity.’ Establishing that effectiveness is closely linked to the use of standardised assessments and outcome measures in the provision of services, and to cost-effectiveness studies which support the commissioning of occupation-focused services (COT 2007, p12).

The evidence reviewed has clearly identified the need for further research in relation to occupational therapy and the impact of relaxing hip precautions on rehabilitation outcomes and dislocation rates (Drummond et al 2012). Research is also currently in progress to investigate home versus hospital-based occupational therapy intervention (Current Controlled Trials 2012).

The guideline development group additionally recommend a number of potential topics where further research could be focused.

Outcome measures in the acute setting:

• The need for an appropriate standardised assessment and outcome measure for acute, fast-tracked rehabilitation post-total hip replacement, in the context that the National Institute for Health and Clinical Excellence are recommending home-based over bed-based rehabilitation (NICE 2011).
• An outcome measure that extends beyond the acute stage and into the community, which can promote a seamless rehabilitation programme that builds on achievement without unnecessary duplication.

Role in work and employment related interventions:

• Interventions aimed at enabling service users to maintain work roles while waiting for surgery.
• The effectiveness of community-based services that facilitate return to work for those in employment prior to surgery and the unemployed.

Focus on complex needs and occupational therapy intervention:

• Use of outcome measures and intensive rehabilitation programmes post-operatively, either inpatient or at home with full support.
• The effect of comprehensive pre-operative assessment, home visits and care management planning prior to surgery on service user and service outcomes.
Recommendations for future research

Other:

- The occupational therapy role in pain management.
- What service users and carers particularly value in the delivery of the occupational therapy service.
- The occupational therapy role in standardised care pathways following total hip replacement.
- The impact of acute interventions on levels of dependency and the need for services to support discharge.
- Models of service delivery including the effectiveness of seven-day working.
- The job roles and responsibilities for qualified compared to unqualified staff in the delivery of occupational therapy for adults undergoing total hip replacement.
11 Updating the guideline

The National Executive Committee of the College of Occupational Therapists Specialist Section – Trauma and Orthopaedics is responsible for ensuring future review of this guideline, and will also provide a focal point for any feedback received on the guideline following its publication.

This guideline is scheduled for update by September 2017; however, the review date may be brought forward if there is significant new evidence which may impact on practice.

Members of the College of Occupational Therapists Specialist Section – Trauma and Orthopaedics will be notified of any significant development in evidence in the period prior to review through dissemination of information on their website, newsletter distributions and an update on the evidence base presented at their annual conference.

The wider membership of the British Association of Occupational Therapists will also be made aware of any significant developments via the publication OTnews.

Information about the College of Occupational Therapists Specialist Section – Trauma and Orthopaedics is available at: http://www.cot.co.uk/cotss-trauma-orthopaedics/cot-ss-trauma-orthopaedic. Accessed on 13.04.12.
Appendix 1: Guideline development group

Lauren Porter BSc Occupational Therapy, Project Lead

- Senior Occupational Therapist, Orthopaedics, Abergele Hospital, Betsi Cadwalader University Health Board
- COTSS – Trauma and Orthopaedics: National Executive Committee Wales representative (Acting Chair 2010 – February 2012)

Christine Gibb DipCOT

- Occupational Therapist/Team Leader, Imperial College Healthcare NHS Trust, London
- COTSS – Trauma and Orthopaedics: Member

Sheila Harrison MScOT, BA, DipCOT

- Senior Occupational Therapist, Trauma and Orthopaedics, Birmingham Heartlands Hospital, Heart of England Foundation Trust
- COTSS – Trauma and Orthopaedics: Member

Shirley McCourt BA(Hons) Health and Social Care, BSc Occupational Therapy

- Head Occupational Therapist, Golden Jubilee National Hospital, Scotland
- COTSS – Trauma and Orthopaedics: National Executive Committee Scotland and Northern Ireland representative

Jade Cope BSc Occupational Therapy

- Occupational Therapist Lead – Trauma and Orthopaedics, Guy’s and St Thomas’ Hospital, London
- COTSS – Trauma and Orthopaedics: Chair (February 2012 to date)

Kate Robertson Msc, PGCert (Falls and Osteoporosis), DipCOT

- Consultant Therapist in Falls Prevention, County Health Partnerships, Nottinghamshire
- COTSS – Older People: Falls Clinical Forum Lead
Appendix 2: Acknowledgements

The guideline development group would like to thank all those who have contributed to the development of this practice guideline.

A2.1 Stakeholder reference group

- Mr John F Nolan MB, BS, FRCS, FRCS(Orth), Consultant Orthopaedic and Trauma Surgeon and Clinical Director, Orthopaedic Department, Norfolk and Norwich University Hospital NHS Foundation Trust. Member, Executive Committee, British Hip Society
- Brian Lucas RGN, PhD, Lead Nurse Practice and Innovation, The Queen Elizabeth Hospital, Kings Lynn NHS Trust, Norfolk; Chair RCN Society of Orthopaedic and Trauma Nursing
- Joe Godden, Professional Officer, Adults, British Association of Social Work; Training Co-ordinator Trafford Carers Centre, Manchester
- Janet Thomas, Chair: Chartered Society of Physiotherapy; Chartered Physiotherapists working with older people (AGILE)
- Carolyn Naisby, Chair, Vicky Cattell, London Branch Secretary: Chartered Society of Physiotherapy; Association of Orthopaedic Chartered Physiotherapists (AOCP)
- Royal College of Surgeons (England): Head of Communications – Policy and Communications

A2.2 Service user reference groups

- Golden Jubilee National Hospital Scotland service users
- Rushcliffe 50+ Forum – Health Sub Group, Nottinghamshire

The Clinical Governance and Risk Management Development Unit (CGRMDU), arthroplasty team and volunteers at the Golden Jubilee National Hospital are acknowledged for their assistance in the service user consultation and support for the project.

Mrs Sue Knowles, Chair of the Rushcliffe 50+ Forum Health Sub Group is acknowledged for her assistance in facilitation of the consultation with service users and members of the Health Sub Group.

A2.3 External peer reviewers

- Lisa Stewart, MSc Primary Care, BScOT, Falls Co-ordinator, Edinburgh Community Health Partnership
- Vicki Cattell, MSc, MCSP, Clinical Specialist Physiotherapist Orthopaedics, Guy’s and St Thomas’ NHS Foundation Trust, London
A2.4 Co-opted critical appraisers

• Dr Elizabeth White PhD, Head of Research and Development, College of Occupational Therapists

• Mandy Sainty MSc, DipCOT, Research and Development Manager, College of Occupational Therapists

A2.5 Additional thanks

The guideline development group would also like to thank the following:

• Members of the British Association of Occupational Therapists who contributed their views and comments on the draft guideline during the consultation period.

• The College of Occupational Therapists’ Practice Publications Group and supporting officers Julia Roberts, Quality Programme Manager, and Tessa Woodfine, Publications Manager.

• The College of Occupational Therapists Library Service.
Appendix 3: Service user consultation

A3.1 Service user groups

The consultation process involved two service user groups.

**Group 1: Golden Jubilee National Hospital in Scotland service users**
The Golden Jubilee National Hospital (GJNH) is the National Waiting Times Centre for Scotland and provides elective hip replacement surgery for service users from across Scotland. Service users undergoing elective total hip replacement at GJNH are clinically reviewed through the arthroplasty service 12 weeks post-surgery and then at yearly intervals.

The Scottish representative on the guideline development group worked with the clinical governance and risk management development unit (CGRMDU) at GJNH to develop a process for service user engagement as part of the development of this guideline. Ethical approval was not deemed necessary as the service user involvement was defined as evaluation/consultation, with all stages of the process monitored through the clinical governance and risk management development unit.

**Group 2: Rushcliffe 50+ Forum – Health Sub Group**
The Rushcliffe 50+ Forum is a group of people aged over 50 who are registered with a general practitioner within the Rushcliffe Principia Clinical Commissioning Group (CCG) locality, and who work in partnership with statutory, voluntary and community organisations to develop and improve public services. Rushcliffe borough is the most southerly borough in the county of Nottinghamshire, bordering Lincolnshire and Leicestershire. The Health Sub Group is a subcommittee of the 50+ forum, which focuses on local health issues.

A guideline development group member worked with the Chair of the Forum to facilitate involvement of the Health Sub Group in the consultation.

A3.2 The consultation documentation

The aim of the consultation was to seek service user perspectives on the importance of the service user-centred, and service delivery-centred outcomes identified within the scope:

- **Reduced anxiety**
  Feeling confident about what was going to happen and how I would manage.

- **Maximised functional independence**
  Being independent with everyday tasks; i.e. getting washed, dressing, making something to eat.

- **Reduced demand on services**
  Not having to rely on services for support with things I can usually do myself.

- **Resumption of roles**
  Getting back to my usual occupations; i.e. employment, housework, caring for others.

- **Reintegration into community**
  Resuming social activities with family and friends.
• **Decreased length of hospital stay**
  Not being in hospital any longer than necessary.

• **Low readmission rates**
  Not needing to go back into hospital because of unexpected problems after going home.

The guideline development group member working with the Chair of the Rushcliffe 50+ Forum, arranged to attend a meeting of the Health Sub Group in August 2011. The purpose of this was to explain the total hip replacement guideline development project and to seek opinion on the form to be used in the consultation with service users and the accompanying letter.

The consultation form asked service users to consider the outcome statements identified by the expert practitioners in the guideline development group, and rank them in order of importance by putting a number in the column beside each one to indicate which they considered to be the most important (for example, if maximised functional independence was most important to them, put a 1 in the box, if reduced anxiety was least important put 7, etc.).

The guideline development group member was able to consult with the group (23 members were in attendance) regarding the content of the draft letter and consultation form. Members of the group gave feedback and, where possible, comments were incorporated within the final version used in the consultation.

### A3.3 Consultation process

#### Group 1: Golden Jubilee National Hospital in Scotland service users consultation

All activities were approved by the CGRMDU and carried out with the support of the clinical governance team, arthroplasty service and volunteers at the hospital. The CGRMDU was able to produce a list of service users undergoing total hip replacement during January 2011. A review of the occupational therapy documentation did not identify any concerns about the appropriateness of contacting these individuals. An introductory letter, consultation form and freepost return envelopes were sent in August 2011 to the first 50 service users on that list. Individuals were given one month in which to respond. A further 50 service users who attended the arthroplasty clinic for their 12 week clinical review appointment were also asked to complete the consultation form during November and December 2011.

#### Group 2: Rushcliffe 50+ Forum – Health Sub Group consultation

Fifty copies of the letter and consultation form were taken to a wider meeting of the 50+ forum in September 2011. The Chair of the forum identified that there was no need for this process to seek governance approval from the Primary Care Trust as it had been agreed that the consultation information would be left for people to take if they wished, and that a freepost envelope would be provided for any replies.

### A3.4 Results of the consultation

Support was received from the clinical governance and risk management development unit at GJNH to collate and analyse the returned consultation forms (Table A1).
Appendix 3: Service user consultation

Table A1: Consultation method and response

<table>
<thead>
<tr>
<th>Method</th>
<th>Issued</th>
<th>Returned</th>
<th>Completed</th>
<th>Partially completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>GJNH Postal</td>
<td>50</td>
<td>28</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>GJNH Arthroplasty Clinic</td>
<td>50</td>
<td>50</td>
<td>31</td>
<td>19</td>
</tr>
<tr>
<td>Rushcliffe</td>
<td>39</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>139</strong></td>
<td><strong>83</strong></td>
<td><strong>44</strong></td>
<td><strong>39</strong></td>
</tr>
</tbody>
</table>

The responses were grouped (Table A2) to produce three levels of importance:

High = Ranking 1 and 2  
Moderate = Ranking 3, 4 and 5  
Low = Ranking 6 and 7

Table A2: Service user priorities for outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Level of importance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Maximised functional independence</td>
<td>32</td>
</tr>
<tr>
<td>Reduced anxiety</td>
<td>18</td>
</tr>
<tr>
<td>Resumption of roles</td>
<td>14</td>
</tr>
<tr>
<td>Low readmission rates</td>
<td>11</td>
</tr>
<tr>
<td>Decreased length of hospital stay</td>
<td>7</td>
</tr>
<tr>
<td>Reduced demand on support services</td>
<td>5</td>
</tr>
<tr>
<td>Reintegration into community</td>
<td>3</td>
</tr>
</tbody>
</table>

The overall response rate and number of individual comments suggested service users were keen to share their perspectives of what was important to them following total hip replacement. The consultation demonstrated the high level of importance service users placed on functional independence, reduction of anxiety and the ability to resume their roles. The order of priority for the remaining outcomes, from highest to lowest, was low readmission rates; decreased length of hospital stay; reduced demand on support services; and finally, reintegration into the community.

In addition to the ranking of the outcomes, a number of qualitative comments were received. Many of these related to the overall experience of receiving a hip replacement.

The responses received from individuals involved will have been influenced by their own expectations, experiences and personal circumstances, and therefore cannot be said to be totally representative of the population of service users who experience occupational therapy in the context of a total hip replacement. Additionally, the sample does not
profess to provide a fully culturally representative perspective. Nonetheless, the consultation provided some invaluable insights into the views of the service user group; views which have influenced the development and presentation of this guideline’s recommendations.
### Appendix 4: Literature search strategy

#### Table A3 – Search terms

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip operation and related terms</td>
<td>ADL and related terms</td>
<td>Home environment and related terms</td>
<td>Client engagement and related terms</td>
<td>Care pathways and related terms</td>
<td>Multiple pathology and related terms</td>
<td>Outcomes and related terms</td>
<td>Occupational therapy and related terms</td>
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<tr>
<td>1.0</td>
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<td>5.0</td>
<td>6.0</td>
<td>7.0</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>NOT</strong></td>
<td>activities of daily living</td>
<td>home environment</td>
<td>fear adj patient*</td>
<td>preoperative</td>
<td>multiple pathology*</td>
<td></td>
<td></td>
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<td></td>
<td>ADL</td>
<td>safe environment</td>
<td>patient*</td>
<td>pre-operative</td>
<td>cognitive dysfunction</td>
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<td></td>
<td>functional status</td>
<td>mobility aids</td>
<td>client centred</td>
<td>periperaoperative</td>
<td>dementia</td>
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<td></td>
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<tr>
<td></td>
<td>functional ability</td>
<td>mobility transfer</td>
<td>client* needs</td>
<td>post-operative</td>
<td>learning disab*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>physical activity</td>
<td>adaptive equip*</td>
<td>client* preference</td>
<td>pre-operative</td>
<td>depression</td>
<td></td>
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<tr>
<td></td>
<td>mobility mobilisation</td>
<td>equip*</td>
<td>client* satisfaction</td>
<td>post-operative</td>
<td>psycho*</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>return adj to work or</td>
<td>assistive device*</td>
<td>client* expectation*</td>
<td>pre op* assessment</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>role resum*</td>
<td>assistive technolog*</td>
<td>expert patient*</td>
<td>pre op* intervention</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>resum*</td>
<td>adapt* adj home</td>
<td>patient centred</td>
<td>pre op* education</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>adj 3 role carer</td>
<td>bathboard</td>
<td>patient-centred</td>
<td>risk adj reduce*</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>perch stool</td>
<td></td>
<td>patient education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>walking aid</td>
<td></td>
<td></td>
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### Table A4: Database search strategy

The search strategy combinations were replicated across the six core databases. The number of findings per search is detailed in this table.

In each case terms were searched within the title, subject headings and abstract unless there was an indication to apply restrictions or additional search strings to improve sensitivity and relevance of the search for that particular database. Exceptions are detailed below.

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<th>Search no.</th>
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<th>AMED</th>
<th>PsychINFO</th>
<th>Social Policy</th>
<th>HMIC</th>
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<td>AMED</td>
<td>PsyINFO</td>
<td>Social Policy</td>
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### Table A5: Additional and specialist searches

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<th>Search description</th>
<th>Search date</th>
<th>Results</th>
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<tbody>
<tr>
<td>Cochrane Library of systematic reviews and clinical trials. String 1.0 and Recover* or rehabilitat* or outcome or activit* or function</td>
<td>19/09/2011</td>
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<tr>
<td>OTDBASE. Search terms: “hip replacement” or “hip operation” or “hip arthroplasty”</td>
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<td>OT Search. Search terms: “hip replacement” or “hip operation” or “hip arthroplasty”</td>
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<tr>
<td>OTSeeker. Search terms: (“hip replacement” or “hip operation” or “hip arthroplasty”) AND (recover* or outcome or “Activities of Daily Living” or function or mobility) AND NOT (Child or hemiarthroplasty)</td>
<td>19/09/2011</td>
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## Appendix 5: Evidence-based review tables

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<th>Source</th>
<th>Design and participants</th>
<th>Intervention</th>
<th>Outcomes</th>
<th>Results</th>
<th>Quality and comment</th>
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<tbody>
<tr>
<td>Berend et al (2004)</td>
<td>Retrospective study</td>
<td>Enhanced recovery programme for total hip replacement</td>
<td>Length of stay (LOS) and readmission rates</td>
<td>• No statistically significant differences noted between groups for height, weight or age (p&gt;0.05)</td>
<td>Grade C – Low</td>
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<td>Details poor but programme appeared to include multimodal approach with pre-operative and post-operative education and 'early and aggressive rehabilitation'.</td>
<td>Discharge location.</td>
<td>• Length of stay was reduced significantly in the study group from 4.04 days in 1997 (range 2–9 days, SD 1.1 days) to 2.66 days in 2003 (range 1–7 days, SD 0.86, p&lt;0.0001)</td>
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<td>• Rate of readmission to hospital within three months was significantly lower in the study group (3.9% compared to 8.3%, p=0.05).</td>
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<td>Suggests holistic, peri-operative enhanced recovery programme can reduce length of stay and lower hospital readmission rates.</td>
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<td>Limitations:</td>
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<td></td>
<td>• Poor information – mostly descriptive/bordering on audit</td>
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<td>• Retrospective sample with 6-year period between data for control group compared to the study group</td>
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<td>• May have confounding variables during 6-year period that may have also impacted on results, not just the introduction of the enhanced recovery programme</td>
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<td>• No power calculation.</td>
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<tr>
<td>Berge et al (2004)</td>
<td>Randomised controlled trial</td>
<td>Total hip replacement</td>
<td>Assessment focus on pain, disability and quality of life through tools:</td>
<td>At pre-operative follow up:</td>
<td>Grade B – Moderate</td>
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<td></td>
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<td>Treatment group:</td>
<td>• Pain management programme</td>
<td>1. Treatment group decrease in average pain intensity, pain distress and pain-related sleep disturbance – statistical significance p=0.003 to p=0.005.</td>
<td>Downgraded from Grade A due to limitations:</td>
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<tr>
<td></td>
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<td>• 6 weeks</td>
<td>• Arthritis Impact Measurement Scale (pre- and post-operatively)</td>
<td>No statistical significance with pain relief. Arthritis Impact Measurement score (AIMS) total, mobility, depression or physical activity</td>
<td>• Small numbers</td>
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<td>• Two mornings a week</td>
<td>• Mobility (timed walk)</td>
<td>2. Nil difference between groups in decision to delay surgery</td>
<td>• Drop-outs/exclusions not clear</td>
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<td>• Total 21 hours input.</td>
<td>• Sleep</td>
<td>3. 1 year post-operative follow-up the treatment group had statistically significant results (p=0.02) scoring better in AIMS score (physical activity) however no significant differences in other variables.</td>
<td>• Small numbers in final analysis – 18 treatment and 15 control</td>
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<td></td>
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<td>• Analgesia consumption</td>
<td></td>
<td>• Reasons for exclusions not stated</td>
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<td>• Delays to surgery due to improved condition.</td>
<td></td>
<td>• No information re blinding in the randomisation</td>
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<td>• No measurement of co-morbid problems which might affect function outcomes.</td>
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</table>

**Source:** United Kingdom. **United States of America.**
### Source: Bohm (2010)

**Design and participants**
- Prospective cohort study
- Aim: to investigate the impact of total hip replacement on a service user's work ability
- 84 service users on waiting list who were in work pre-operatively (working age only)
- Response rate 54/60 at the one year follow-up. Not all data provided by respondents
- Return to work group:
  - Mean age 49.9 years
  - Male: female ratio = 21:19
- Not returning to work group:
  - Mean age 60.3 years
  - Male: female ratio = 1:5
- Canada.

**Intervention**
- Total hip replacement.

**Outcomes**
- Self-administered questionnaire emailed to participants at 12 months post-operatively
- Measures varied and included employment status aspects, physical function, hip function, job motivation and satisfaction, workplace demands and flexibility and productivity.

**Results**
- 38 out of 44 service users who were working pre-operatively had returned to work one year post-operatively (86%)
- Only one service user attributed stopping work to the hip condition (2%)
- 34 out of the 38 service users who returned to work returned to doing the same job
- Two of the ten service users who were off work pre-operatively had returned to work 1 year post-operatively (20%). Those who were working pre-operatively returned to work at a much higher rate than those not working pre-operatively (p<0.001).
- Those who returned to work reported better Oxford-12 hip scores, better general physical function scores and fewer limitations from medical conditions.

**Quality and comment**
- Grade C – Low
- Limitations:
  - No details of how sample selected
  - Possible volunteer and self-reporting bias
  - Other factors may have influenced the service user's ability to return to work, such as co-morbidities
  - Small sample size – no multivariate regression analysis to investigate the individual effects of each variable.

### Source: Bottros et al (2010)

**Design and participants**
- Retrospective cohort study
- Aim: analysis of how implementing an enhanced recovery programme affects length of stay and early post-operative pain control and function
- 103 service users who had a total hip replacement
  - Enhanced recovery n=30
  - Traditional programme n=73
- Average age 59 years
  - Male: female = 53%:47%
- United States of America.

**Intervention**
- Total hip replacement
  - Enhanced recovery: combines surgical approach, protocols focusing on early safe mobilisation of service user and anticipated discharge home on day two or three
  - Traditional approach: bed restriction on day of surgery, and anticipated discharge to rehabilitation or home on day four.

**Outcomes**
- Collected on each post-operative day:
  - Visual analogue scale for pain
  - Walking distance.
- LOS and discharge destination (home or rehabilitation facility)
- Harris Hip Score collected at 4 and 12 weeks post-operative visits.

**Results**
- Service users treated with the enhanced recovery programme had:
  - A decreased average LOS 3.5 days average compared with 4.47 average in traditional group (p=0.02)
  - Improved walking distance (p=0.01)
  - Achieved longer walking distances earlier (p=0.05)
  - Lower visual analogue scale pain ratings on the 2nd post-operative day (p=0.01)
  - Trends towards improved Harris Hip Scores also observed in the enhanced recovery group (not statistically significant).

**Quality and comment**
- Grade C – Low
- Limitations:
  - Did not assess complications and readmissions
  - Cannot attribute these improvements to any single factor as did not examine the enhanced recovery components individually
  - Absence of long-term data.
<table>
<thead>
<tr>
<th>Source</th>
<th>Design and participants</th>
<th>Intervention</th>
<th>Outcomes</th>
<th>Results</th>
<th>Quality and comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brunenberg et al (2005)</strong></td>
<td>Case control study – before and after trial</td>
<td>Total hip or knee replacement</td>
<td>Cost-effectiveness of the joint recovery programme</td>
<td>In relation to THR:  • Mean joint improvement at 1 year was significantly higher in the JRP group (difference p=0.035)  • Course of improvement in joint function statistically significantly different between groups (p=0.012)  • The reduction in hospital length of stay was statistically significant (p&lt;0.001)  • Quality of life measures were in favour of the intervention group but not statistically significant  • Statistically significant in the areas of joint and functional improvement and length of stay</td>
<td>Grade C – low  Limitations:  • Small sample size from a single hospital (ten drop-outs)  • Deemed unfeasible for randomised controlled trial due to high risk of contamination of data  • Single site study  • No reference is made to the potential effect of any individual component of the programme or changes in the physiotherapy programme that resulted in an increased intensity of rehabilitation.</td>
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<td>Joint recovery programme:  • Pre-operative screening and assessment of home/care needs  • Information and education (40 minute session, 1–2 weeks pre-operatively)  • Group rehabilitation.</td>
<td>• Joint improvement  • Functional improvement via Harris Hip Score  • Quality of life via EQ-5D™  • Hospital length of stay.</td>
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<td>Control usual care:  • No pre-operative screening or education  • Conventional physical therapy.</td>
<td>Costs: pre-admission, admission and post-discharge (up to 1 year post-operatively).</td>
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<td>THR group n=98: Mean age 64.4 years  JRP n=48 Male: female ratio = 35.4%:64.6%  Controls n=50 Male: female ratio = 24%:76% Netherlands.</td>
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<tr>
<td></td>
<td>Prospective cohort study</td>
<td>Total hip replacement or total knee replacement.</td>
<td>Administered on admission (baseline) and on discharge (follow-up)</td>
<td>Results for THR:  • 44% of THR service users showed over-threshold HAD scores on admission  • Proportion even higher when the HAD Depression sub-scale examined, 55% of THR service users scoring over-threshold  • No difference found between THR depressed versus non-depressed service users on WOMAC gain scores on follow-up  • No association found between psychological distress and depression and functional recovery in this group.</td>
<td>Grade C – Low  Limitations:  • Possible confounding variable of time between surgery and admission to rehabilitation unit which could have impacted function/psychological state  • Length of follow-up not adequate to observe effect  • No information re referral criteria or if service users consecutively enrolled.</td>
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<tr>
<td>Chow (2001)</td>
<td>Prospective cohort study</td>
<td>Total hip replacement.</td>
<td>Completed prior to and 3 months following the hip replacement</td>
<td>Care receivers: • NHP – 52.6% significant improvement in mean score post-operatively (p&lt;0.001)</td>
<td>Grade C – Low</td>
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<td></td>
<td>Aim: to investigate whether carers experienced stress from looking after individuals with osteoarthritis who were waiting for a THR</td>
<td></td>
<td>Service user outcomes: • The Nottingham Health Profile (NHP)</td>
<td>• 82.4% reduction in pain intensity score (p&lt;0.001).</td>
<td>Limitations: • Sample size was small</td>
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<td>Convenience sampling 72 participants – initial response rate of 58% gave 34 pairs of caregivers/receivers 23 out of the 34 pairs participated in second stage</td>
<td></td>
<td>• Visual Analogue Pain Scale.</td>
<td>Carers: • 23% reduction in mean stress score post-operative, but not significant (p&lt;0.06)</td>
<td>• Data was only collected for a three-month period post-operatively which is too short to measure outcome</td>
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<td>Carers: mean age 63 years Male: female ratio = 10:13</td>
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<td>Caregiver outcomes: • Robinson’s Caregiver Stress Index</td>
<td>• Correlation between the health profile of care receivers and carer’s stress level pre-operatively high (r=0.82, p&lt;0.05), but almost no relationship 3 months post-THR (r=0.1)</td>
<td>• Possible reporter bias as volunteers</td>
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<td>Care receivers: Mean age 70 years Male: female ratio = 8:15</td>
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<td>• Visual Analogue Pain Scale (completed with level of pain caregiver perceived the care receiver to be in).</td>
<td>• Intensity of pain that the caregiver perceived the care receiver to be in reduced by 65.5% at 3-month post-operative mark (p&lt;0.0001).</td>
<td>• Confounding factors (pre-existing co-morbidities, or complications that arose from surgery)</td>
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<td>United Kingdom.</td>
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<td>• There is no evidence of calculation of confidence intervals in this study.</td>
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<tr>
<td>Coudeyre et al (2007)</td>
<td>Systematic literature review</td>
<td>Rehabilitation pre-operatively for total hip or knee joint replacement</td>
<td>Outcomes considered: • Impairment – restricted range of movement or muscular strength</td>
<td>Overall results relevant to THR: • Pre-operative rehabilitation has benefit in terms of length of the stay in hospital and destination at discharge</td>
<td>Grade B – Moderate</td>
</tr>
<tr>
<td></td>
<td>Aim: development of clinical practice guidelines for pre-operative rehabilitation for total hip and knee joint replacement</td>
<td>Interventions were heterogeneous regarding healthcare professional involved, intervention duration and modality</td>
<td>• Disability as measured by validated questionnaire, gait analysis, discharge criteria</td>
<td>• A programme comprising at least physical therapy and education is recommended</td>
<td>Downgraded from Grade A due to limitations: • Not all studies RCTs and mixed approach</td>
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<td></td>
<td>Ten studies (nine were randomised controlled trials). Quality assessed – French Agency for Accreditation and Evaluation in Healthcare.</td>
<td>Occupational therapy was delivered at home or in hospital. Usually practical evaluating material and human environment, counselling or advice</td>
<td>• Medico-economic implications for length of stay, discharge destination and cost of peri-operative care</td>
<td>• Prior to THR occupational therapy should be proposed</td>
<td>• Difficulty isolating the impact of pre-operative rehabilitation from global care consisting of pre- and post-operative rehabilitation</td>
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<td>Some intervention multidisciplinary.</td>
<td>• Post-operative complications.</td>
<td>• Multidisciplinary rehabilitation, comprising occupational therapy and education is desirable for those service users with major disability, co-morbidity or social problems</td>
<td>• Lack of analysis of post-operative complications as an outcome measure</td>
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<td>• Pre-operative evaluation of service user’s needs important and advise use of predictive tool such as Risk Assessment and Prediction Tool.</td>
<td>• No written evidence of external review by multidisciplinary team experts.</td>
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<tr>
<td>Source</td>
<td>Design and participants</td>
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<tr>
<td>Crowe and Henderson (2003)</td>
<td>Randomised controlled trial (RCT)</td>
<td>Total hip or knee replacement – random allocation to:</td>
<td>Pre-operative baseline measures:</td>
<td>Rehabilitation intervention group less anxious before surgery and better prepared in advance for return home</td>
<td>Grade B – Moderate</td>
</tr>
<tr>
<td></td>
<td>Aim: What is the effect on length of stay of individually tailored pre-operative rehabilitation for clients with more complex needs undergoing hip or knee replacement?</td>
<td>Usual care group: standard pre-operative clinic visit 1-2 weeks prior to surgery</td>
<td>• Oxford Hip Score</td>
<td>• Average number of days to achieve discharge criteria was significantly shorter among pre-operative rehabilitation group (p=0.021)</td>
<td>Downgraded from Grade A due to limitations:</td>
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<tr>
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<td>Rehabilitation group: individualised and multidisciplinary</td>
<td>• Spielberger State Anxiety Inventory (state component).</td>
<td>• Length of stay was significantly shorter on average among service users receiving rehabilitation (p=0.032)</td>
<td>• Significant differences between groups</td>
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<td>Counselling/education</td>
<td>Post-operatively:</td>
<td>• Average number of days to meet each individual discharge criteria lower, but most not statistically significant</td>
<td>• No power calculation</td>
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<td>Occupational therapy: environmental preparation, education, strategies to improve pre-operative functioning, energy consideration and task simplification. Some received a home visit.</td>
<td>• Number of days to meeting discharge criteria</td>
<td>• Significant difference seen in the mean number of days required to have made plans for discharge (equipment, arranged provision of meals), with most in the rehabilitation group having made arrangements prior to admission (p&lt;0.000).</td>
<td>• Could have more follow-up data</td>
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<td>• Actual length of stay</td>
<td>• Self-reported outcomes may be less reliable than standardised measures</td>
<td>• Incompleteness of follow-up in discharge destination</td>
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<td>• Discharge destination</td>
<td>• Results combined for THA and TKA groups.</td>
<td>• Some difference in type of information or support given pre-operatively</td>
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<td>• Post-operative complications.</td>
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<td>• Not all received re-assessment of anxiety</td>
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<td>• Blind status not possible to achieve but person collating scores blind to the allocation.</td>
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<td>de Groot et al (2008)</td>
<td>Cohort study</td>
<td>Total hip or knee replacement.</td>
<td>Assessed before surgery, at 3 and 6 months post-operatively</td>
<td>• 0.7% improvement in actual physical activity (p=0.03) – the effect of this was smaller than had been anticipated for 6 months</td>
<td>Grade D – Very Low</td>
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<td></td>
<td>Aim: to assess the effect of THA/TKA on physical activity via use of an activity monitor</td>
<td></td>
<td>• Activity Monitor</td>
<td>• One THA service user not accounted for at 6 months. Felt by researchers to be too short to show relevant changes in actual activity levels</td>
<td>Downgraded from Grade C due to limitations:</td>
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<td></td>
<td>Long-standing osteoarthritis</td>
<td></td>
<td>• WOMAC pain, stiffness and physical function subscales</td>
<td>• Self-reported activity increased by 86% – discrepancy between self-report and measured activity</td>
<td>• Likely to be underpowered</td>
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<td>Excluded co-morbidities</td>
<td></td>
<td>• 6-minute walk test</td>
<td>• Body function, capacity and self-reported physical functioning improved. Larger effect on pain and stiffness.</td>
<td>• Body mass index may be a confounding factor</td>
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<td>80 (36 THA) service users from pre-assessment to six months post-surgery</td>
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<td>• Chair rising/stair walking</td>
<td></td>
<td>• Sample size small and excluded over 80 years</td>
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<td>Mean age 61.8 years</td>
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<td>• Physical Activities Scale for Individuals with Physical Disability</td>
<td></td>
<td>• Follow-up of 6 months too short for general application</td>
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<td>Male: female ratio = 33:47</td>
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<td>• SF-36® function subscale</td>
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<td>• Self-reported outcomes may be less reliable than standardised measures</td>
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<tr>
<td></td>
<td>Netherlands.</td>
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<td>• Harris Hip Score.</td>
<td></td>
<td>• Results combined for THA and TKA groups.</td>
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<tr>
<td>Drummond et al (2012)</td>
<td>National postal survey</td>
<td>Hip precautions post elective total hip replacement.</td>
<td>• Approximate proportion of caseload THR treated and therapy hours/ine services users told to avoid.</td>
<td>Response rate of 72% – 174 suitable for analysis (66%) • Generally national agreement on movements service users asked to avoid: flexion, adduction and internal/external rotation</td>
<td>Grade C – Low</td>
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<td></td>
<td>Aim: What is routine practice in UK occupational therapy in advising on hip precautions following primary THR?</td>
<td></td>
<td>• Common activities discussed kitchen activities, bath/shower transfers, car transfers, strip-washing/dressing techniques.</td>
<td>• Common practised: bed, chair and toilet transfers and dressing</td>
<td>Limitations:</td>
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<td>Recruitment: advertising at conferences, COT Specialist Sections, personal contacts and 233 UK NHS hospitals</td>
<td></td>
<td>• Activities discussed and practised</td>
<td>• Service users seen pre-surgery from over 8 weeks to 1 week</td>
<td>• Responses dependent on interest – may not be complete response</td>
</tr>
<tr>
<td></td>
<td>n=236 Postal questionnaire designed by authors and based on literature and expert opinion</td>
<td></td>
<td>• When and why precautions taught</td>
<td>• Reasons for precautions – most popular surgical opinion (72.4%)</td>
<td>• The questionnaire not included – difficult to appraise objectivity of questions</td>
</tr>
<tr>
<td></td>
<td>Pilotled prior to main survey</td>
<td></td>
<td>• Provision of equipment/home visits and follow-up</td>
<td>• Most common equipment prescribed raised toilet seat (94.8%)</td>
<td>• Excluded private hospitals – shorter waiting times and access to a range of providers may make rationale for not including less viable</td>
</tr>
<tr>
<td></td>
<td>United Kingdom.</td>
<td></td>
<td>• Estimated effect of precautions on LOS</td>
<td>• Majority of services did not routinely carry out home visits</td>
<td>• Did not appear to take into account those services with no precautions.</td>
</tr>
<tr>
<td>Fielden et al (2003)</td>
<td>Qualitative study</td>
<td>Total hip replacement</td>
<td>• Length of time precautions applied</td>
<td>Precautions observed range from 6 weeks to over 12 weeks.</td>
<td>Grade C – Low</td>
</tr>
<tr>
<td></td>
<td>Aim: to investigate service user expectations of and satisfaction with in-hospital discharge planning after THR in early and late discharge service user groups</td>
<td>Early discharge group – fewer than 5 days in hospital</td>
<td>• Use of protocols and service user information.</td>
<td></td>
<td>Limitations:</td>
</tr>
<tr>
<td></td>
<td>Purposive sample: 33 (over 18 years) recruited during visit to pre-assessment clinic</td>
<td>Late discharge group – 5 or more days in hospital.</td>
<td></td>
<td></td>
<td>• Only two hospitals sampled – can’t generalise</td>
</tr>
<tr>
<td></td>
<td>19 in early discharge group and 14 in late group, Two metropolitan hospitals</td>
<td>In-depth semi-structured interview</td>
<td></td>
<td></td>
<td>• Minimal information on sample characteristics.</td>
</tr>
</tbody>
</table>
### Gillen et al (2007)

**Source:** Gillen et al (2007)  
**Design and participants:** Cohort study  
Aim: to examine effect of occupational therapy intervention focused on improving community skills after a lower extremity major joint replacement (hip and knee replacement)  
Recruitment: n=107  
THR n=32  
TKR n=72  
Mean age 63.7 years  
Male: female ratio = 33.6%:66.4%  
Private rehabilitation centre  
United States of America.  

**Intervention:** Total hip or knee replacement  
Occupational therapy – community reintegration programme – range of external activities  
Five predetermined goals:  
- Entering and exiting a vehicle  
- Shopping  
- Managing outdoor obstacles  
- Participating safely in the community  
- Travelling to and from outpatient appointments.  
One session of 45 minutes.  

**Outcomes:** Pre- and post-intervention  
Adapted version of Canadian Occupational Performance Measure (COPM©) used pre- and post-test  
Client rates functional abilities in activities of daily living, rating level of performance and satisfaction with performance  
Confidence scale researcher devised.  

**Results:** Following practice of community skills in a natural environment, satisfaction with performance, and performance of community skills – rated higher (p<0.0001)  
Confidence also higher. Some individuals did report decrease in perceived performance  
COPM© provides valid and reliable method to evaluate community functioning based upon self-report  
To optimise rehabilitation outcomes, should focus on enhancing community participation and decreasing activity limitations.  

**Quality and comment:** Grade C – Low  
Limitations:  
- No details provided on recruitment process which was from one institution and all elective surgery  
- Self-reported measures only  
- Confidence measure not validated  
- No control group for comparison  
- Need longitudinal follow-up.

### Grant et al (2009)

**Source:** Grant et al (2009)  
**Design and participants:** Qualitative study – grounded theory approach  
Aim: to investigate the processes of recovery from total hip replacement from service user perspective  
Purposive sampling n=10  
Age range 65–84 years  
Male: female ratio = 4:6  
Total hip replacement in previous 4–6 months  
Regional hospital  
Australia.  

**Intervention:** Total hip replacement.  
Interview guide focused on topics related to recovery.  

**Outcomes:** Recovery process – three key themes emerged as interrelating processes within the recovery experience:  
- Reclaiming physical ability (pacing self, using mobility aids, accepting assistance, maintaining an awareness of risk of injury)  
- Re-establishing roles and relationships and  
- Refocusing self.  
Intervening conditions affecting recovery process include co-morbid conditions, the personal outlook of the service user, service user’s relationships and social support.  

**Results:** Grade C – Low  
Limitations:  
- Unclear re any bias from research and participant relationship  
- Processes and structures related to THR surgery may be contextual  
- All participants returned home after surgery (while some of THR population as a whole require continuing care).
<table>
<thead>
<tr>
<th>Source</th>
<th>Design and participants</th>
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<th>Quality and comment</th>
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</thead>
<tbody>
<tr>
<td>Heine et al (2004)</td>
<td>Qualitative study – grounded theory to explore service user perceptions</td>
<td>Total hip replacement.</td>
<td>In-depth unstructured interviews – 30–75 minutes</td>
<td>Three major categories emerged from the data:</td>
<td>Grade D – Very Low</td>
</tr>
<tr>
<td></td>
<td>Aim: participants’ views of what factors contribute to a feeling of readiness for discharge if sent home 5–7 days post-operatively</td>
<td>Due to be discharged in 1–2 days</td>
<td>Due to be discharged in 1–2 days</td>
<td>a) Feeling safe</td>
<td>Limitations:</td>
</tr>
<tr>
<td></td>
<td>Purposive sampling of five participants from a single acute setting</td>
<td>Prior to discharge participants were asked:</td>
<td>c) Confidence</td>
<td>No pilot study and analysis reported all relevant topic areas covered after only five participants</td>
<td>Essentially case study accounts</td>
</tr>
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<td></td>
<td>Age range 43–79 years Male: female ratio = 3:2</td>
<td>‘When are you going home’, and ‘Tell me how you feel about going home’.</td>
<td>These categories represented the general pattern of readiness for discharge, despite the discharge process being unique for each service user</td>
<td>No tape recording of interviews – field note only</td>
<td></td>
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<td></td>
<td>Australia.</td>
<td></td>
<td>Service users need to feel safe or secure about their return home – can be enhanced by providing information at a pre-operative stage as well as prior to discharge.</td>
<td>Not clear if researcher involved in treatment.</td>
<td></td>
</tr>
<tr>
<td>Hol et al (2010)</td>
<td>Systematic review</td>
<td>Uncemented primary total hip replacement</td>
<td>Degree of subsidence and osseous integration of femoral stem after THR and full weight-bearing protocol.</td>
<td>Subsidence of femoral stem – all occurred within the first 3 months and after that was stable</td>
<td>Grade B – Moderate</td>
</tr>
<tr>
<td></td>
<td>Aim: to determine whether immediate post-operative unrestricted weight-bearing may have an influence on bony consolidation and eventual loosening of uncemented femoral stem in total hip replacement</td>
<td>Full weight-bearing immediately post-operatively.</td>
<td>Main result is that immediate unrestricted weight-bearing is not contra-indicated in people with primary uncemented THR</td>
<td>Main result is that immediate unrestricted weight-bearing is not contra-indicated in people with primary uncemented THR</td>
<td>Downgraded from Grade A due to limitations:</td>
</tr>
<tr>
<td></td>
<td>Criteria:</td>
<td></td>
<td>Moderate – strong evidence for full weight-bearing immediately post-operative with uncemented THR – can allow quicker rehabilitation and return to functional independence</td>
<td>Moderate – strong evidence for full weight-bearing immediately post-operative with uncemented THR – can allow quicker rehabilitation and return to functional independence</td>
<td>Not all studies were randomised controlled trials</td>
</tr>
<tr>
<td></td>
<td>1. THR for osteoarthritis</td>
<td></td>
<td>Despite variety of methods study shows minimal risk of stem migration with full weight-bearing</td>
<td>Despite variety of methods study shows minimal risk of stem migration with full weight-bearing</td>
<td>Small sample sizes (range 23–80)</td>
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<td></td>
<td>2. Intervention post-operatively full weight-bearing with aid</td>
<td></td>
<td>Supportive of accelerated rehabilitation programs.</td>
<td>Supportive of accelerated rehabilitation programs.</td>
<td>Pooling not considered to be feasible due to differences in studies</td>
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<td></td>
<td>3. Primary outcome was osseous integration, loosening of subsidence and femoral migration.</td>
<td></td>
<td></td>
<td>Different methods of quantifying migration of femoral stem used.</td>
<td>Use of assistive device and exact description of weight bearing status unclear</td>
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<tr>
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<td>Hunt et al (2009)</td>
<td>Qualitative study&lt;br&gt;Aim: to describe service user experience of accelerated discharge after hip replacement in order to test the acceptability to service users of economically driven shortening of post-operative stay&lt;br&gt;Belfast n=20&lt;br&gt;Mean age 70 years&lt;br&gt;Male: female ratio 9:11&lt;br&gt;Liverpool n=15&lt;br&gt;Mean age 71 years&lt;br&gt;Male: female ratio = 8:7&lt;br&gt;United Kingdom.</td>
<td>Total hip replacement&lt;br&gt;Two groups from two hospitals:&lt;br&gt;1. Belfast – accelerated discharge programme, aiming for a post-operative stay of 3-4 days (cases)&lt;br&gt;2. Liverpool – traditional regimen of discharge after 6–7 days (controls).</td>
<td>Semi-structured interviews of service users’ feelings and experiences relating to their intervention.</td>
<td>Service users primarily concerned with how attentive and informative hospital staff had been, and did not spontaneously refer to LOS&lt;br&gt;When prompted, they did not question their discharge time, though those with traditional care could not countenance more rapid discharge&lt;br&gt;Service users with accelerated discharge described concerns about consequences of early discharge for them or their family – especially regarding managing pain and mobility problems at home and needing more support.</td>
<td>Grade D – Very Low&lt;br&gt;Downgraded from Grade C due to limitations:&lt;br&gt;• Differences in surgical, anaesthetic/pre-operative occupational therapy&lt;br&gt;• Time post-surgery and interview length varied&lt;br&gt;• Unclear if any researcher and participant bias&lt;br&gt;• Small sample size&lt;br&gt;• Awareness service users rarely criticise their care when asked overtly&lt;br&gt;• Continuing inflammatory response at least 7 days after surgery: Liverpool sample (longer stay) response would be lower re feeling unwell at discharge.</td>
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<td>Husted et al (2008)</td>
<td>Prospective cohort study&lt;br&gt;Aim: to identify service user characteristics associated with LOS and service user satisfaction after total hip and knee replacement surgery&lt;br&gt;Facility: dedicated fast track joint replacement unit&lt;br&gt;712 unselected consecutive service users&lt;br&gt;Mean age 69 years&lt;br&gt;Male: female ratio = 272:440&lt;br&gt;Denmark.</td>
<td>Total hip replacement or total knee replacement with fast track therapy and early discharge home within 5 days&lt;br&gt;Standardised protocol throughout multidisciplinary team approach.</td>
<td>• Length of stay&lt;br&gt;• Service user satisfaction (11 parameters via written questionnaire completed on discharge).&lt;br&gt;22 service user characteristics were examined.</td>
<td>92% discharged home in 5 days, 41% in 3 days. 88/712 didn't attend pre-operative meeting. No difference in LOS found between those who did and didn't attend, or between service users with different surgeons or operations at different times of day&lt;br&gt;Age (older p=0.01), gender (females p=0.01), marital status (living alone p=0.02) had increased chance of staying longer than 3–5 days. There were similar outcomes for use of walking aids (p=0.004) and day of surgery (p=0.001)&lt;br&gt;Study concluded that the accelerated discharge reduced LOS for unselected THR and TKR service users. High service user satisfaction was found for all parts of the stay with a readmission rate similar to other studies.</td>
<td>Grade C – Low&lt;br&gt;Limitations:&lt;br&gt;• Service user satisfaction tool not validity/reliability tested&lt;br&gt;• No discussion on population specifics and what happens with complex service user discharge&lt;br&gt;• No follow-up&lt;br&gt;• No mention of outcomes for 8% who stayed more than 5 days&lt;br&gt;• Difficult to determine generalisability of results.</td>
</tr>
<tr>
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| Iyengar et al (2007)   | Prospective cohort study Aim: role of targeted early rehabilitation at home for service users admitted for elective total hip replacement or total knee replacement – in terms of reduced LOS, reduced cost, readmission rates, complication rates and costs of running scheme considered (cost effectiveness) | Total hip or knee replacement, early discharge with home based multidisciplinary team rehabilitation | • Length of stay (days)  
• Duration of home rehabilitation (days)  
• Number of hospital bed days saved  
• Complications detected  
• Readmissions  
• Cost of home therapy programme. | • Targeted early rehabilitation resulted in reduced hospital stay (from 14 to 8.17 days for THR), without any increase in complication rates  
• THR service users had mean length of stay on rehabilitation scheme of 2.84 days.  
Targeted early rehabilitation at home after elective THA and TKA releases acute care beds and reduces healthcare costs  
No evidence of increased complication or readmission rates  
A multidisciplinary team working closely together was believed to be the key to success of the scheme. | Grade C – Low                                                                                       |
|                        |                                                                                         | Went home with service user on day of discharge and then saw service user in the home according to individual needs |                                                                             |                                                                                   | Limitations:  
• Need more information about the population of the study  
• Critical functioning criterion screening tool was not tested for validity and reliability  
• Targeted selection of service users – hence bias to shorter LOS  
• Long baseline LOS at beginning of study  
• Study did not compare with a similar selected cohort from the past. |                                                                                                        |
|                        |                                                                                         | Screening in pre-operative clinic by occupational therapist to identify service users who could be discharged earlier with home rehabilitation if resources available in the community. |                                                                             |                                                                                   |                                                                                                        |
|                        |                                                                                         |                                                                                                                                     |                                                                             |                                                                                   |                                                                                                        |
| Johansson et al (2007) | Randomised controlled trial Aim: to determine whether it is possible to increase service user knowledge and certainty about care-related issues, to reach a more empowering learning experience and to exercise a more positive impact on selected clinical outcomes by additional pre-admission education | Total hip replacement Randomised to: Group A – face-to-face education with nurses using the concept map method with written educational material Group B – written education and non-systematic oral education (standard). | Data collected 4 weeks before admission, on admission and discharge:  
• Orthopaedic Patient Knowledge Questionnaire (OPKQ) prior to admission, admission and shortened version on discharge  
• Modified Empowerment Questionnaire (MEQ) on admission  
• Clinical outcomes (LOS, length of admission discussion and need for further care) – from medical record. | At 2nd post-test n=55(A); n=51(B)  
At first post-admission test Group A had significantly better knowledge and certainty of care related issues (p=0.021) than Group B, as well as reporting more positive learning experience (p<0.001)  
In 2nd post-test at discharge – Group A had better knowledge and certainty of care related issues (p=0.022)  
Pre-admission education using concept map method and written education yield better learning results than the use of written education material with non-systematic oral education. Written is more effective than verbal, should employ both strategies for pre-assessment. | Grade B – Moderate                                                                                   |
|                        |                                                                                         |                                                                                                                                     |                                                                             |                                                                                   | Downgraded from Grade A due to limitations:  
• Potential bias as Group B able to contact nurses as well  
• Both groups received education and even those who received only standard input had a good outcome  
• Proportion of drop-outs quite high at 27. |                                                                                                        |
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</table>
Aim: examine impact of pre-operative functional status on early post-operative outcomes after total hip replacement  
n=75  
Mean age: 67 years  
Male: female ratio = 39:36  
Body Mass Index of <35 who underwent an uncemented THA for osteoarthritis  
Three surgeons involved, similar procedures  
Follow-up for at least 2 years  
Germany. | Total hip replacement  
Classified into three groups based on pre-operative Harris Hip Score – poor, intermediate and good. | Self-administered measures pre-operatively and at 6, 12 and 24 months:  
• Harris Hip Score (HHS)  
• SF-36®  
• WOMAC.  
Included pain, function, range of movement, quality of life, stiffness. | • Poor pre-operative Harris Hip Score is an indicator for poor early post-operative outcomes  
• Longer waiting times are detrimental to achieving the full benefit of surgery  
• Only pain and function (Harris Hip Scores) were significantly improved after THR at all time points for the evaluation (p<0.001)  
• Highlights importance of awareness of service users pre-operative Harris Hip Score in order to plan interventions and goal setting  
• Possible use of SF-36® and WOMAC measures. | Grade C – Low  
Limitations:  
• Exclusion criteria only account for select co-morbidities with no reason given for this. The presence of other co-morbidities has a possible confounding effect on results  
• Limited information regarding recruitment of cohort  
• No information how approached to complete the measures or about completeness of study (i.e. drop-outs over 24-month period). |
| Judge et al (2011) | Prospective cohort study  
Aim: to identify patient characteristics associated with pre-operative expectations of total hip replacement, and whether those expectations predict surgical outcomes (pain, stiffness and physical function) 12 months post-operatively  
n=1327  
THR in 20 European orthopaedic centres  
Mean age 65.7 years  
Male: female ratio = 44.1%:55.9%  
Europe. | Total hip replacement.  
WOMAC Score  
EQ5D™ Score  
Outcome measures in rheumatology  
Body mass index  
Medication use. | Used Patient Reported Outcome Measures (PROMs) to evaluate success from the service user’s perspective  
There is wide variation in service user expectations  
Service users with more pre-operative expectations are more likely to have clinically important outcomes 12 months post-THR (95% confidence interval)  
Younger women with increasing Body mass index and education have higher levels of expectation  
Greater numbers of pre-operative expectations are associated with improvement following THR. | Grade C – Low  
Limitations:  
• Unable to measure the importance attributed to different expectations by individuals  
• Does not consider the role of changes to lifestyle/behaviours in achieving expectations  
• Potential halo effect from the expectation question at the end. |
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</tr>
</thead>
</table>
| Khan et al (2008)   | Cochrane Systematic Review                                                              | Total hip or knee replacement followed by multidisciplinary rehabilitation defined as:  
  • Two or more disciplines involved  
  • Home, hospital or outpatient  
  • Early or late timing  
  • Use of critical pathways  
  • Use of pain management strategies.  
 Control intervention – lower level or different type of intervention, equivalent in a different setting or waiting list conditions.  
 Studies: United Kingdom, Iceland, Australia and United States. | • Impairment (e.g. joint range of movement and muscle weakness)  
 • Activity limitation (e.g. mobility transfer skills, independence in activities of daily living)  
 • Restriction in participation (e.g. extended activities of daily living, societal reintegration, quality of life).  
 Others: cost of episode of care, length of stay, service utilisation, readmission, mortality rates, carer burden. | • No studies providing direct evidence that multidisciplinary rehabilitation following THR/TKR achieved better outcomes compared with no treatment  
 • Evidence for the effectiveness of multidisciplinary rehabilitation in both inpatient and home-based settings  
 • Not possible to suggest best ‘dose’ of therapy  
 • Modest support that following hip replacement people should be assessed for need for appropriate rehabilitative intervention.  
 Evidence that multidisciplinary rehabilitation programmes can have a positive impact on service user-related outcomes, such as function and quality of life, as well as institutional outcomes, e.g. length of stay and cost. | Grade A – High  
 Limitations:  
 • Studies themselves were low quality  
 • Small numbers and methodological weaknesses  
 • Difficulties with combining information due to heterogeneity of studies – could not perform meta-analysis  
 • Best evidence synthesis using a qualitative analysis completed. |
 Functional Independence Measure (FIM™)  
 Jamar Dynamometer  
 Measures at baseline and discharge. | • FIM™ subscale scores improved 2.1 points on average. Statistically significant improvement made in 10 subscales of self-care, mobility and locomotion (p≤0.05)  
 • Grip strength significantly less than expected norms in 6 of 14 subgroups after surgery  
 • No significant correlation between grip strength and FIM™ subscale (at 0.05). Improvement of functional performance made on all FIM™ subscales. Grip strength after THR was moderately decreased from the norm  
 • Significant improvement in all FIM™ areas other than eating and cognition where score was independent at baseline (p≤0.05). | Grade C – Low  
 Limitations:  
 • Small sample size  
 • Exclusion criterion makes it difficult to generalize – no upper limb issues  
 • No pre-surgery measures to compare against  
 • No control group to compare. |
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<tr>
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<tr>
<td>Kim et al (2003)</td>
<td>Literature review Critical review of evidence on clinical pathway effectiveness for total hip and knee replacement Study designs prospective, retrospective or randomised control trials with either historical or concurrent controls Eleven included in review ten historical, one concurrent RCT.</td>
<td>Use versus the non-use of clinical pathways following total hip or knee replacement.</td>
<td>Four outcomes: • Length of stay in acute facility • Total cost of acute hospitalisation • Complications (factors affecting recovery requiring readmission or variation from the clinical pathway) • Functional outcomes and pain (physician-administered, or service user-reported questionnaire).</td>
<td>Reviewers found that implementation of clinical pathways for total hip and knee replacement service users was associated with: • Reduced LOS and hospital costs • Reduced or unchanged rates of complications • Either improvement or no change in service user-reported outcomes. Evidence supported use of clinical pathways.</td>
<td>Grade B – Moderate Downgraded from Grade A due to limitations: • Pre-assessment/pre-operative input not considered • There is no evidence of a clear, pre-determined strategy or scoring system for full assessment of the quality of the studies • Failure to account for LOS in rehabilitation facilities • The use of historical controls in the studies creates the potential for bias due to secular trends in cost and resource use.</td>
</tr>
<tr>
<td>Lin and Kaplan (2004)</td>
<td>Retrospective cohort study Aim: to explore which characteristics and factors are associated with increased length of stay at an acute rehabilitation hospital Single rehabilitation hospital n=808 Hip replacement (48%) or knee replacement Mean age 69.4 years Male: female ratio = 29%:71% United States of America.</td>
<td>Total hip or total knee replacement Rehabilitation in acute rehabilitation facility post-operatively.</td>
<td>Length of stay in acute rehabilitation facility (admission to discharge) Collection of data from data base including a range of demographic factors, surgical factors and significant co-morbidities.</td>
<td>• Correlation between age and LOS – particularly for oldest group (p=0.004) • Gender (male p=0.055), co-morbid medical disease (p&lt;0.001) found to be predictive of increased LOS • Marital status (single p=0.001) and race (black p=0.029) had influence in longer LOS • Body Mass Index makes no significant difference to LOS. Multivariate linear regression model was statistically significant, but a poor predictor of exact length of stay in rehabilitation for individual service user. It is more useful in examining groups of service users as a general guide to which groups may have increased LOS.</td>
<td>Grade C – Low Limitations: • Confounding variables (service user motivation in therapy; discharge destination and set up; social needs and issues) • Data not available for transfer to other settings, rehabilitation facility, nursing care, etc. • The study acknowledges that they could only include factors that lent themselves to modelling – so aspects such as service user motivation and family issues were not included.</td>
</tr>
<tr>
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<tr>
<td>Malik et al (2002)</td>
<td>Case description</td>
<td>Total hip replacement</td>
<td>Dislocation.</td>
<td>Service users dislocated at 14, 19 and 23 days post-operatively, when turning to answer the telephone. It was assumed that the dislocation was due to postural reasons. The authors recommend that when discussing hip precautions and performance of activities of daily living post-operatively, specific mention should be made regarding the need to place the telephone in an easily accessible location, and think of safe limb positioning prior to automatically using the telephone without prior thought.</td>
<td>Grade D – Very Low</td>
</tr>
<tr>
<td></td>
<td>Describes three service users who, in the immediate post-operative period, dislocated their THRs. All three service users, two female and one male (aged 77, 40 and 64), underwent Charnley THR via the Hardinge approach. All had no cerebral dysfunction, no radiological evidence of component malposition and leg length discrepancies of less than 1 centimetre. United Kingdom.</td>
<td></td>
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<td>Limitations:</td>
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<td></td>
<td>• Descriptive only</td>
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<td>• Case series but very limited information provided.</td>
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<tr>
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| Marks (2008) | Retrospective cross-sectional | Total hip replacement. | Pre-surgery: factors considered included body mass index, co-morbidity, duration of condition, pain, baseline hip flexion and internal rotation range of movement, pre-surgical walking status, leg strength | Those with traumatic fracture history reported:  
• More frequent use of mobility devices and dependency on wheelchair  
• Pre-surgical device use more prevalent (p=0.023) and poorer ambulatory function and stair climbing ability (p=0.001)  
• Lower rate of functional recovery post-operatively.  
Overall suggests those with prior hip fracture history have longer duration of disability and are more functionally impaired pre-surgery (p<0.05). | Grade C – Low  
Limitations:  
• No evidence of any calculations to determine sample size  
• One hospital location and cohort over restricted time period  
• Retrospective self-reported data obtained from case records  
• Only one researcher extracted data  
• Short term hospital-based outcome only  
• Some contradiction in results. |
| McDonald et al (2004) | Cochrane review | Pre-operative education delivered within 6 weeks of total hip or total knee replacement. | • Post-operative pain  
• Length of hospital stay  
• Compliance with post-operative exercise routine  
• Service user satisfaction  
• Deep vein thrombosis occurrence  
• Range of motion  
• Pre-operative anxiety  
• Post-operative anxiety  
• Post-operative mobility. | Insufficient evidence to support or refute the use of pre-operative education to improve post-operative outcomes, especially in terms of functioning and LOS  
• Insufficient evidence from available studies to support the use of pre-operative education over and above standard care to improve post-operative outcomes (pain, function and LOS)  
• May be beneficial effects when targeted at reducing anxiety, and for those most at need of support (greater disability and limited social support)  
• Moderate evidence that pre-operative education has moderate beneficial effect on pre-operative anxiety. | Grade A – High  
Limitations:  
• Small number of studies  
• Use of active comparator in most studies where control groups also received some form of pre-operative education also to result in smaller effect sizes than if control group had no input  
• Meta-analysis showed pre-operative education is beneficial in reducing pre-operative anxiety, but in the one case reviewed, effect was small and didn’t support other research. |
<table>
<thead>
<tr>
<th>Source</th>
<th>Design and participants</th>
<th>Intervention</th>
<th>Outcomes</th>
<th>Results</th>
<th>Quality and comment</th>
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<tbody>
<tr>
<td>Mobasheri et al (2006)</td>
<td>Cross sectional design – retrospective</td>
<td>Total hip replacement.</td>
<td>Questionnaire via telephone or at clinic post-operatively, items related to:</td>
<td>Nearly all service users who were working pre-operatively returned to their jobs 49/51</td>
<td>Grade D – Very Low Downgraded from Grade C due to limitations: • Limited information on methodology • Length of time until follow-up (up to 10 years) possible bias in recall • Unclear if everyone responded • Single centre.</td>
</tr>
<tr>
<td></td>
<td>Aim: to examine effect of THR on work status of service users under 60 years</td>
<td></td>
<td>• Profession</td>
<td>Of the 30 who were not employed pre-operatively, 13 returned to the workforce. 17 remained unemployed</td>
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<tr>
<td></td>
<td>n=86</td>
<td></td>
<td>• Employment status pre- and post-operatively</td>
<td>Only 12/30 who were not working pre-operatively were due to hip pain, therefore 18/30 had other reasons for not working. Of these 12, 11 returned to work post-operatively. Of the 19 not at work post-operatively – 5 were retired, 4 housewives and 10 reported they were not working for non-hip related reasons</td>
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<tr>
<td></td>
<td>Service users post-operative between 6 months and 10 years</td>
<td></td>
<td>• Length of time to resume work</td>
<td>Return to work rates were average 10.5 weeks for those working pre-operatively, and 35 weeks if not working pre-operatively.</td>
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<tr>
<td></td>
<td>Mean age 51.4 years</td>
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<td>• Changes in working patterns</td>
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<td></td>
<td>Male: female ratio = 56:30</td>
<td></td>
<td>• Reasons for not returning to work where relevant.</td>
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<tr>
<td></td>
<td>Questionnaire via telephone or in person</td>
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<td>Notes from pre-operative used</td>
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<tr>
<td></td>
<td>United Kingdom.</td>
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<tr>
<td>Montin et al (2007)</td>
<td>Cohort study – longitudinal follow-up</td>
<td>Total hip replacement.</td>
<td>Anxiety – measured by State-Trait Anxiety Inventory (STAI)</td>
<td>Mean trait anxiety (STAI score) before surgery = 42.8 (Standard deviation 4.9). Age and pre-operative pain associated with trait anxiety, with a significant correlation (p&lt;0.001 and p=0.003 respectively)</td>
<td>Grade C – Low Limitations: • No co-morbidities • One specialist hospital • Drop-out rate 13%.</td>
</tr>
<tr>
<td></td>
<td>Aim: to identify whether service users undergoing THR for osteoarthritis were anxious and whether anxiety was associated with service users health-related quality of life before and after surgery or with other background factors</td>
<td></td>
<td>Changes in health-related quality of life were evaluated by Sickness Impact Profile (SIP)</td>
<td>Service user's anxiety increased slightly – not significant 3 and 6 months post-operatively</td>
<td></td>
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<tr>
<td></td>
<td>n=100 consecutively recruited</td>
<td></td>
<td>Background, environmental and surgery factors.</td>
<td>Before surgery, older (p=0.028) and overweight service users (p=0.030) experience greater state anxiety</td>
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<td></td>
<td>Mean age 63.9 years</td>
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<td></td>
<td>The longer length of stay the less state anxiety – significant at 3 months post-operatively (p=0.020) Pre-operative pain increases anxiety and reduces health-related quality of life after surgery – not significant statistically.</td>
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<td></td>
<td>Male: female ratio = 46%:54%</td>
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<td>Source</td>
<td>Design and participants</td>
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<td>Outcomes</td>
<td>Results</td>
<td>Quality and comment</td>
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</table>
| Naylor et al (2008) | Prospective, cohort, longitudinal study                                                 | Total hip or knee replacement.| Measured 2, 6, 12, 26 and 52 weeks post-operatively:  
• Visual analogue scale for pain  
• 15m Walk Test  
• Timed Up and Go  
• Walking aid utilisation (at 52 weeks only)  
• Global improvement – using a five-level scale, (taken at 52 weeks only).  
Subset questionnaires:  
• WOMAC  
• SF-36®. | Participants with severe other joint disease recovered more slowly in terms of mobility than the non-severe group (p=0.005). They also walked more slowly on the Walk Test, and took longer on the Timed up and Go Test. They also had a greater chance of using a walking aid at 52 weeks (95% confidence interval)  
A similar profile was obtained for the obese compared to non-obese group  
Participants with severe other joint disease had significantly higher body mass index (p=0.01) and recovered more slowly (walking, stiffness, function). Rate of recovery in terms of pain and mobility were similar. | Grade C – Low  
Limitations:  
• Not possible to control for extrinsic influences; surgeon volume, etc.  
• Subset who completed additional self-reported outcomes not clearly identified  
• Lack of ability to blind the trial received but two observers trained to carry out the observation. |
| Nickinson et al (2009) | Prospective cohort study  
Aim: to investigate the presence and rates of anxiety and depression in post-surgical service users  
Hip and knee replacement service users within a one-month period at specialist orthopaedic hospital  
n=56  
Mean age 67 years  
Male: female ratio = 33:23  
27 were undergoing THR (22 primary, 5 revision)  
United Kingdom. | Total hip or knee replacement. | • Anxiety  
• Length of stay.  
Hospital Anxiety and Depression Scale – score of $\geq 8$ was deemed to be diagnostic  
Completed on the day prior to surgery, then on each post-operative day up to and including day of discharge.  | Anxiety:  
• Post-operatively 17/39 anxious prior to discharge. No variables were significant predictors of anxiety (p>0.05)  
• Mean time point for development of anxiety 1.94 days. Service users most anxious at 2.47 days.  
Depression:  
• No subjects depressed pre-operatively – post-operatively 28 service users (50%) became depressed prior to discharge  
• Mean time point for development of depression 2.43 days  
• On day of discharge only three scores remained above diagnostic level for depression – suggests depression transient.  | Grade C – Low  
Limitations:  
• Small study sample limits applicability  
• Limited information re surgery  
• Responder bias  
• Service users not followed up after discharge  
• Not possible to separate out THR from TKR within final results and findings. |
<table>
<thead>
<tr>
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</tr>
</thead>
</table>
| Nunley et al (2011)    | Retrospective, multi-centre study | Primary total hip replacement       | Telephone interviews            | • Most young active service users employed before surgery can expect to return to work (90.4%), most to pre-operative occupation  
• Mean time off work 6.9 weeks  
• 13 ‘permanently disabled’ after surgery, none stated due to hip  
• Very few (2.3%) limited in their ability to return to work because of their operative hip  
• Dramatic decrease (significant difference) in the number of service users working with job restrictions prior to surgery compared with after surgery (p<0.0001)  
• 3.2% described some form of permanent job restriction post-operatively  
• 1.7% indicated unable to work at their usual job because of hip  
• Some statistically significant findings relating to age/gender. |
|                        |                         | Controlled for potential bias such as co-morbidities, post-operative complications. | No formal standardised tools     |                                                                                                                                  | Grade C – Low       |
|                        |                         | Telephone questionnaire comparing pre-operative and post-operative employment-specific and service user-derived outcomes. |                                                                                   | Limitations:  
• Potential for recall bias  
• Variations in centres, surgeons, implants and regional differences re jobs  
• Excluded cemented implants as less likely to be employed pre- or post-operatively  
• Respondents to surveys tend to be those more satisfied  
• More active service users selected. |

| Oberg et al (2005)     | Mixed-study design – methods quantitative and qualitative | Total hip replacement.             | Four outcome measures used:  
• SF-36®  
• FAS (Functional Assessment System of lower extremity dysfunction)  
• Canadian Occupational Performance Measure (COPM\textsuperscript{©})  
• Unstructured interviews. | • All instruments delivered important information on the functional and activity status of service users  
• All were responsive to change in function and activity after surgery  
• The interview strengthened validity of the instruments  
• All instruments showed a lower quality of life and reduced function and activity status before surgery, changes were statistically significant for most variables despite small numbers  
• After surgery service users showed increased quality of life, especially in domains related to bodily function, mobility and pain and individual areas of COPM\textsuperscript{©}. |
|                        |                         |                                      |                                                                                   | Grade D – Very Low       |
|                        |                         |                                      | Limitations:  
• Unable to determine whether any exposure intervention bias  
• Confounding variables: differences in surgery, post-operative complications, rehabilitation regimes, etc.  
• Unable to determine whether any drop-outs  
• Small sample size  
• No other medical conditions. |
## Appendix 5: Evidence-based review tables

<table>
<thead>
<tr>
<th>Source</th>
<th>Design and participants</th>
<th>Intervention</th>
<th>Outcomes</th>
<th>Results</th>
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</thead>
<tbody>
<tr>
<td>O’Donnell et al (2006)</td>
<td>Describes a formal consensus process, used to incorporate the scientific evidence and practitioner experience for the development of primary total hip replacement guidelines at a specific specialised orthopaedic tertiary care facility. Rehabilitation team occupational therapists and physiotherapists took the role of leading and coordinating the process. Canada.</td>
<td>Development of post-operative primary total hip replacement rehabilitation management guidelines. Involved identifying gaps and inconsistencies, a literature review, development of a survey followed by a consensus meeting based on nominal group technique.</td>
<td>Survey addressed key areas, organised by prosthetic configuration and surgical approach. These included: hip precautions, early functional activity (e.g. weight-bearing status in relation to activities of daily living) and later activity recommendations such as driving, gardening and various athletic endeavours.</td>
<td>The guidelines were developed in response to service user satisfaction data that identified a need for improved information relating to the resumption of usual activities. They include positional precautions 0–6 weeks, and timelines for post-operative functional activities and the resumption of leisure activities.</td>
<td>Grade D – Very Low Limitations: • Descriptive of consensus process to achieving hip precaution guidelines and therefore relevant to a specific locality.</td>
</tr>
<tr>
<td>Orpen &amp; Harris (2010)</td>
<td>Qualitative study: phenomenological approach. Aim: focus on service user accounts of their perceptions and experience of pre-operative assessment prior to hip replacement. n=10 (age 16 and over) hospital setting. Age 53–85 years. Male: female ratio = 4:6 United Kingdom.</td>
<td>Total hip replacement. Home-based pre-operative occupational therapy intervention. Intervention areas: • Performance of ADL • Environmental considerations • Social considerations.</td>
<td>Semi-structured interviews. No specific outcome measures used.</td>
<td>Five main themes generated: • Pre-operative equipment use increases independence, progress and confidence • Individual needs are better met through timely visits • Competent therapist home intervention offers reassurance regarding surgery • Knowing home environment is suitable increases confidence in planning hospital discharge after surgery • Levels of social support require pre-operative assessment.</td>
<td>Grade C – Low Limitations: • Recall bias – difference in time periods between intervention and follow-up • Two service users suffered post-operative complications, which may have led to a more negative experience.</td>
</tr>
<tr>
<td>Source</td>
<td>Design and participants</td>
<td>Intervention</td>
<td>Outcomes</td>
<td>Results</td>
<td>Quality and comment</td>
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<tr>
<td>Ostendorf et al (2004)</td>
<td>Prospective cohort study</td>
<td>Total hip replacement.</td>
<td>Self-reported measures pre-operatively, post-operatively at 3 and 12 months</td>
<td>All outcome scores showed significant improvement at one year (p&lt;0.001) apart from SF-36®</td>
<td>Grade C – Low</td>
</tr>
<tr>
<td></td>
<td>Aim: to define minimum set of service user-reported outcome measures required to assess health status after a total hip replacement. Focus on pain and activities of daily living function</td>
<td></td>
<td></td>
<td>One year after operation very large effect sizes for OHS, WOMAC and Physical domains of SF-36®/12 and EQ-5D™</td>
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<tr>
<td></td>
<td>Recruitment via THR waiting lists, three hospitals</td>
<td></td>
<td></td>
<td>Recommend use of OHS and SF-12® in assessment of THR</td>
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</tr>
<tr>
<td></td>
<td>n=147 (data for 114) Mean age 67.6 years Male: female ratio = 43:71 Netherlands.</td>
<td></td>
<td></td>
<td>At conclusion 114 included. Non finishers were accounted for. Extensive results section on all the tools.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aim: to explore the lived experiences of service users with severe osteoarthritis of the hip or knee joint while awaiting joint replacement surgery</td>
<td></td>
<td></td>
<td>• Coping and living with pain</td>
<td></td>
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<tr>
<td></td>
<td>Purposive sampling n=6 service users (three THR and three TKR) referred to National Health Service waiting list for primary hip or knee replacement</td>
<td></td>
<td></td>
<td>• Not being able to walk (and difficulty continuing to work)</td>
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<tr>
<td></td>
<td>Median age 68.5 years Male: female ratio = 3:3 Unstructured interviews United Kingdom.</td>
<td></td>
<td></td>
<td>• Coping with everyday activities</td>
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<td>• Body image</td>
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<td></td>
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<td></td>
<td>• Advice and support available</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>• The effect of their disease upon family, friends and helpers.</td>
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</tr>
<tr>
<td>Source</td>
<td>Design and participants</td>
<td>Intervention</td>
<td>Outcomes</td>
<td>Results</td>
<td>Quality and comment</td>
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<tr>
<td>Peak et al (2005)</td>
<td>Randomised controlled trial</td>
<td>THR – both groups: limit range of flexion, external and internal rotation, and avoid adduction during first 6 weeks</td>
<td>Self-administered survey/diary to check compliance</td>
<td>At 6 month follow-up, unrestricted group reported a much greater degree of satisfaction re return to pre-operative daily activities. (p&lt;0.001). 89.4% of unrestricted group believed recovery was easier than if restrictions applied.</td>
<td>Grade B – Moderate</td>
</tr>
<tr>
<td></td>
<td>Hypothesis: dislocation is more likely to occur in service users who are not placed on post-operative functional restrictions (PFR) following total hip replacement</td>
<td>Restricted group: to maintain abduction while in bed, used raising equipment, prevented from sleeping on side, from driving or being a car passenger</td>
<td>Completed surveys returned at first post-operative visit – 6 weeks after surgery</td>
<td>Compliance with restrictions – high in both groups, but higher in restricted group. Basic restrictions for all service users in first 6 weeks believed by authors to be critical</td>
<td>Downgraded from Grade A due to limitations:</td>
</tr>
<tr>
<td></td>
<td>Randomised pre-operatively Of 630 eligible consecutive service users, 265 (303 hips) consented to be randomised into ‘restricted’ or ‘unrestricted’ group</td>
<td>Unrestricted group: not required to follow additional restrictions, could choose to use equipment for comfort.</td>
<td>Final survey at second follow-up visit about 6 months after surgery</td>
<td>Anterolateral approach likely to be associated with a low dislocation rate. Removal of restrictions did not increase dislocation prevalence</td>
<td>• Serious concerns re overlap of treatment received by intervention v control group</td>
</tr>
<tr>
<td></td>
<td>Restricted group n=152 Unrestricted group n=151 Mean age 58.3 years Male: female ratio = 139:126</td>
<td></td>
<td>• Number of dislocations</td>
<td>Length of hospital stay – no difference. 3.5 days average for each group</td>
<td>• Did not examine ‘no precautions’ v ‘precautions’, as all service users were advised to limit range of movement for first 6 weeks, but intervention group had further restrictions</td>
</tr>
<tr>
<td></td>
<td>United States of America.</td>
<td></td>
<td>• Service user satisfaction related to maximised functional independence/ resumption of roles</td>
<td>Additional expenditure in the restricted group due to equipment costs.</td>
<td>• Low dislocation rate may have been due to surgical approach, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Length of hospital stay</td>
<td></td>
<td>• Study only evaluated uncomplicated cases.</td>
</tr>
<tr>
<td>Restrepo et al</td>
<td>Prospective cohort study</td>
<td>Total hip replacement via direct anterior approach or modified Hardinge anterolateral approach</td>
<td>Number of dislocations in 6-month period post-operatively. Determined by physician diagnosis, and self-reported where service user unable to attend follow-up</td>
<td>Four dislocations occurred 0.15% (four of 2,612 total hip arthroplasties) at a mean of 5 days post-operatively</td>
<td>Grade B – Moderate</td>
</tr>
<tr>
<td>(2011)</td>
<td>Aim: evaluation of the incidence of early dislocation following primary total hip replacement, with the observance of a no-restrictions protocol</td>
<td>No restrictions protocol post-operatively; i.e. service user able to move operated hip through range of movement if comfortable, no use of elevated seats, no abduction pillows, no restrictions from driving.</td>
<td>Analysis included age, gender, body mass index, co-morbidities, diagnosis at time of surgery and implant design.</td>
<td>One dislocation was service user with history of dysplasia of the hip, two occurred while on the toilet (one with a previous hip fracture treated with a modular system) and one dislocation was idiopathic</td>
<td>Upgraded from Grade C due to:</td>
</tr>
<tr>
<td></td>
<td>Context of the development of practice guidelines</td>
<td></td>
<td>Conclusion that no restriction protocol did not result in an increase in early dislocation</td>
<td>Conclusion that no restriction protocol did not result in an increase in early dislocation</td>
<td>• Large sample size</td>
</tr>
<tr>
<td></td>
<td>n=2532</td>
<td></td>
<td>Suggestion that controlling for pre-operative planning, correct prosthesis selection, surgical technique and accurate component positioning may alleviate need for hip restrictions.</td>
<td></td>
<td>• Inclusion of individuals with co-morbidities</td>
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<tr>
<td></td>
<td>Mean age 63.2 years Male: female ratio = 1223:1541</td>
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<td>• Only 6 month follow-up, but likely to capture most dislocations</td>
</tr>
<tr>
<td></td>
<td>United States of America.</td>
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<td></td>
<td></td>
<td>• Expands on earlier study by same authors.</td>
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<td>Limitations:</td>
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<td>• 146 lost at follow-up</td>
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<td>• Single institution</td>
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<td>• Senior surgeons operate</td>
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<td></td>
<td>• No information on other outcomes of surgery</td>
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<td></td>
<td>• Service users may have implemented own precautions</td>
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<td>• Can't generalise outside of anterolateral approach.</td>
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</tbody>
</table>
### Appendix 5: Evidence-based review tables

<table>
<thead>
<tr>
<th>Source</th>
<th>Design and participants</th>
<th>Intervention</th>
<th>Outcomes</th>
<th>Results</th>
<th>Quality and comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rivard et al (2003)</td>
<td>Case control study</td>
<td>Total hip replacement</td>
<td>Discharge disposition</td>
<td>No significant difference in either discharge disposition or length of stay between Group A or Group B</td>
<td>Grade B – Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group A – Intervention: pre-operative home visit 1–2 weeks prior to surgery. 1:1 teaching and assess home environment directly</td>
<td>Length of hospital stay.</td>
<td>Issues raised re the complexity of resource allocation and the importance of qualitative dimensions of care</td>
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<tr>
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<td></td>
<td>Group B – Control: attended pre-operative assessment clinic within 1–2 weeks of surgery. Received teaching in a group setting, and therapists relied on client/family reports for information about the home environment.</td>
<td></td>
<td>The study found that length of stay or whether the service users were discharged directly home was not affected by the location of pre-operative teaching</td>
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<td></td>
<td>As confounding variables controlled, could assume that any differences in outcomes post-operatively are as a result of the intervention differences.</td>
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</tr>
<tr>
<td>Siggeirsdottir et al (2005)</td>
<td>Randomised controlled trial</td>
<td>Total hip replacement</td>
<td>Day before the operation and 2, 4 and 6 months after operation</td>
<td>Hospital stay for the study group significantly shorter than the control group (p&lt;0.001)</td>
<td>Grade C – Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Study group (SG):</td>
<td>• Function</td>
<td>All service users in the SG returned directly to their homes, whereas only 10/23 of the CG did</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pre-operative education/training</td>
<td>• Pain</td>
<td>5/27 in the SG and 11/23 in the CG developed a complication – not statistically significant</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Occupational therapy and physiotherapy follow-up at home</td>
<td>• Quality of life.</td>
<td>No statistically significant results of the OHS between the groups pre-operatively, but results were in favour of the SG post-operatively (p=0.001 at 6 months)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Daily outpatient nurse visits for as long as required</td>
<td>This included:</td>
<td>Health-related quality of life (NHP) increased for both groups after the operation. Overall score indicated a lower quality of life in the CG</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provision of a telephone number to contact with any questions.</td>
<td>• Oxford Hip Score</td>
<td>No significant difference between groups on the HHS. Score was better for the SG both pre- and post-operatively.</td>
<td></td>
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<tr>
<td></td>
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<td>Control group (CG):</td>
<td>• Function</td>
<td></td>
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<td></td>
<td></td>
<td>• Treatment according to the clinical procedures already in use.</td>
<td>• Nottingham Health Profile (part 1)</td>
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<td></td>
<td></td>
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<td></td>
<td>• Functional scores of Meurle d’Abuigne and Postel</td>
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<td>• Harris Hip Score</td>
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<td></td>
<td>• A general questionnaire was also used.</td>
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### Notes
- **Source Design and participants**
    - **Aim:** to determine difference in discharge destination and overall LOS between service users having a total hip replacement receiving pre-operative assessment or teaching at home compared to pre-admission clinic
    - **n=268 (analysis 206)**
      - Intervention group: n=102
        - Mean age 66.97 years
        - Male: female ratio = 39%:61%
      - Control group: n=104
        - Mean age 67.4 years
        - Male: female ratio = 41%:59%
    - **Canada.**
- **Siggeirsdottir et al (2005)**
  - **Aim:** to compare the outcome in a group of service users who experienced a shorter hospital stay with pre-operative education (augmented with home rehabilitation and nursing) with that in a group of service users who were subjected to current practices in post-operative rehabilitation
  - **n=50 – random allocation to:**
    - Study group (SG) n=27
      - Mean age 68 years
      - Male: female ratio = 24:26
    - Control group (CG) n=23
      - Mean age 68 years
      - Male: female ratio = 24:26
  - **Iceland.**
- **Quality and comment**
  - **Grade B – Moderate**
    - Upgraded from Grade C due to:
      - Well conducted study with comparative groups of good size
      - Considered age, number of co-morbidities and living alone as variables that could impact length of hospital stay
      - Administered WOMAC – no significant differences between the two groups
  - **Grade C – Low**
    - Downgraded from Grade A due to limitations:
      - Small sample size – insufficient power
      - No details re control ‘conventional’ treatment
      - Unequal distribution of numbers in groups at one hospital, deviated from original protocol
      - Different implants and surgical approaches at the two hospitals
      - The numbers of service users accounted for fluctuation
      - Lack of blinding
      - No separation of pre-operative and post-operative education together with home visits.
### Appendix 5: Evidence-based review tables

<table>
<thead>
<tr>
<th>Source</th>
<th>Design and participants</th>
<th>Intervention</th>
<th>Outcomes</th>
<th>Results</th>
<th>Quality and comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soever et al (2010)</td>
<td>Qualitative study&lt;br&gt;Aim: identification of the educational needs of adults having hip or knee replacement surgery&lt;br&gt;Purposive sampling, self-selected service users at two hospitals – one academic, one community. Pre- or post-surgery. Hip replacement – two pre- and seven post-operatives&lt;br&gt;n=15&lt;br&gt;Age range 23–89 years&lt;br&gt;Male: female ratio = 2:13 Canada.</td>
<td>Total hip or knee replacement.</td>
<td>Semi-structured interviews&lt;br&gt;Perceptions of educational needs related to joint replacement surgery&lt;br&gt;Pre-operative or post-operative (3–6 months after surgery)&lt;br&gt;No standardised measures.</td>
<td>Several themes relating to educational needs and factors affecting educational needs:&lt;br&gt;Educational needs – topics of interest, e.g. knowing the team, condition information and management, access, pre-operative activities, preparing for admission, rehabilitation process, functional recovery and follow-up&lt;br&gt;Factors affecting educational needs (why education is important) – fears, family information needs and expectations&lt;br&gt;Suggests clinical checklist of educational topics for all stages.</td>
<td>Grade C – Low&lt;br&gt;Limitations:&lt;br&gt;• Large proportion of female compared to male participants&lt;br&gt;• Joint replacement did not distinguish between hip and knee requirements.</td>
</tr>
<tr>
<td>Spalding (2003)</td>
<td>Qualitative study&lt;br&gt;Aim: to gain understanding of how pre-operative education process is beneficial in reducing anxiety for service users awaiting total hip replacement surgery&lt;br&gt;Recruitment: via NHS Trust Health professionals n=7&lt;br&gt;Service users attending pre-operative sessions run by the health professionals n=10&lt;br&gt;United Kingdom.</td>
<td>Pre-operative education session within 3 months of planned total hip replacement surgery&lt;br&gt;Session for 2 hours&lt;br&gt;Up to 12 service users per group&lt;br&gt;Explanation, demonstration and opportunity for service user participation and questions.</td>
<td>Pre-operative education sessions observed five times&lt;br&gt;Health professionals – interviewed twice via semi-structured interviews&lt;br&gt;Team meetings – three observed&lt;br&gt;Service users – two semi-structured interviews (30min each) 2 weeks after pre-operative class and 1 week post-operatively.&lt;br&gt;Service user evaluations&lt;br&gt;Data coded for themes.</td>
<td>Service user education can make the unknown familiar and reduce anxiety through:&lt;br&gt;• Being able to understand experiences that will be encountered during and after surgery – provide chronological experience of THR&lt;br&gt;• Opportunity to meet staff who will be involved in care on ward – familiar face&lt;br&gt;• Familiarity with environment.</td>
<td>Grade C – Low&lt;br&gt;Limitations:&lt;br&gt;• No details provided on the backgrounds of the health professionals and their involvement in the educational session delivery&lt;br&gt;• No information about age and gender of service users&lt;br&gt;• No standardised instruments used.</td>
</tr>
<tr>
<td>Source</td>
<td>Design and participants</td>
<td>Intervention</td>
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<td>Results</td>
<td>Quality and comment</td>
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<tr>
<td>Spalding (2004)</td>
<td>Qualitative study</td>
<td>Pre-operative education session within 3 months of planned total hip replacement surgery</td>
<td>Pre-operative education sessions observed five times</td>
<td>Themes identified focus on empowerment of service users. This was coded into the following areas: confidence, trust, control, responsibility, involvement, support, knowledge and understanding. Empowerment enables service users to take responsibility for their post-operative needs through providing a relaxed educational atmosphere, encouraging responsibility and choice, providing information booklets and involving peers and carers for additional support.</td>
<td>Grade C – Low</td>
</tr>
<tr>
<td></td>
<td>Aim: to gain understanding of how the pre-operative education process achieves beneficial health and wellbeing outcomes previously proven in research</td>
<td>Session for 2 hours</td>
<td>Health professionals – interviewed twice via semi-structured interviews</td>
<td></td>
<td>Limitations:</td>
</tr>
<tr>
<td></td>
<td>Recruitment: via NHS Trust</td>
<td>Up to 12 service users per group</td>
<td>Team meetings – three observed</td>
<td>• Limited peer examination due to time constraints</td>
<td>• Service users given opportunity to make changes – nil made</td>
</tr>
<tr>
<td></td>
<td>Health professionals n=7</td>
<td>Explanation, demonstration and opportunity for service user participation and questions.</td>
<td>Service users – two semi-structured interviews (30min each) 2 weeks after pre-operative class and 1 week post-operatively</td>
<td>• Credibility through triangulation not achieved from programme documentation</td>
<td>• Occupational therapy specific contribution not identified</td>
</tr>
<tr>
<td></td>
<td>Service users attending pre-operative sessions run by the health professionals n=10</td>
<td></td>
<td>Service user evaluations</td>
<td>• No information about age and gender of service users.</td>
<td>• No information about age and gender of service users.</td>
</tr>
<tr>
<td></td>
<td>United Kingdom.</td>
<td></td>
<td>Data coded for themes.</td>
<td></td>
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</tbody>
</table>
• Peak: insufficient evidence re how necessary hip precautions are for avoiding dislocation, but consensus that surgical approach, surgeon skill, cognitive capacity and hospital volume have greater importance. Modifying precautions by reducing limitations seemed to benefit service users 
• Ververeli – for THR following fracture, dislocation rate higher than electives.  
No study available re the necessity of hip precautions to avoid dislocation with hip fracture. Cannot generalise from elective. | Grade C – Low                                                                                                           |
|                              | Aim: to investigate factors influencing dislocation for hip fracture service users who had undergone hemiarthroplasty or THR | Only three studies found that focused on hip restrictions and dislocation rate – related to elective cases.                             |                                                                                           |                                                                                                                                                                                                 | Downgraded from Grade A due to limitations:                                                                                                                                       |
|                              |                                                                                       |                                                                                         |                                                                                           | • Not a full systematic review  
• Not all RCTs, plus flaws in studies  
• No summary of papers or methodology  
• Search strategy and appraisal details limited  
• Did not state how many assessors reviewed each study  
• Insufficient studies – all relate to elective cases each with their own weaknesses and approaches. | • Service users given opportunity to make changes – nil made                                                                                                                     | • Occupational therapy specific contribution not identified                                                                                                                        |
<p>|                              |                                                                                       |                                                                                         |                                                                                           |                                                                                                                                                                                                 | • No information about age and gender of service users.                                                                                                                               |                                                                                                |</p>
<table>
<thead>
<tr>
<th>Source</th>
<th>Design and participants</th>
<th>Intervention</th>
<th>Outcomes</th>
<th>Results</th>
<th>Quality and comment</th>
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</thead>
</table>
| Thomas et al (2010) | Case study/evaluation                                                                    | Occupational therapy prescription of adaptive equipment following total hip replacement. | Semi-structured telephone interview carried out post-surgery varying from 3 months to 4 years after intervention. Questions developed by researchers.                                                                 | • 72% stated always used their adaptive equipment  
• 78% stated little or no inclusion in decision making about equipment.  
• 85% stated adequate instruction given on use  
• 51% felt improvement in their medical condition affected length of time using equipment  
• 57% expressed home environment influenced non-use of equipment.                                                                 | Grade D – Very Low  
Limitations:  
- Audit/service evaluation.  
- No standardised measures used  
- Small sample, limited information on recruitment  
- Period post-surgery varied extensively  
- Number of confounding variables not explored  
- American healthcare system – all equipment purchased. |
| Ververeli et al (2009) | Randomised controlled trial                                                              | Total hip replacement surgery and allocation by random numbers tables to either:  
  Standard rehabilitation group  
  Early rehabilitation group | Assessed at approximately 4 weeks pre-operatively, and at 1 month, 3 months and 1 year post-operatively  
  Service users completed:  
  - Short Form 12-question Health Questionnaire (SF-12®)  
  - Harris Hip Score  
  - Diary of the number of days until they walked with a cane, walked without a cane, drove and walked without a limp.  
  Service users also instructed to write any comments regarding their level of satisfaction and status of recovery. | • Early rehabilitation group were faster to ambulate with only a cane (p=0.03, moderately strong effect 0.48) and walked without a limp sooner (p=0.003, strong effect size 0.70)  
• Overall correlation between number of days walked with and without any assistive equipment (r=6), and early rehabilitation group were also faster to walk without a cane (p<0.001, effect size strong 0.89)  
• Early rehabilitation group began driving earlier (p=0.02). Strong effect size of 0.72  
• Harris Hip Score indicated both groups regaining full range of motions/functions at same rate  
• Results from SF-12® were found to recover with the same physical strength and mental stamina  
• No incidences of dislocation. Early rehabilitation protocol increased pace of recovery without increasing complications. | Grade B – Moderate  
Downgraded from Grade A due to limitations:  
- Small sample size/underpowered to have full confidence in terms of detecting a margin of difference in hip dislocation prevalence  
- Single centre study  
- Exclusions to service user enrolment  
- Service users who consented might be less at risk  
- Larger number of men  
- The mean age quite low  
- Concerns about the lack of blinding  
- Differences in physical therapy provision between the two groups. |
<table>
<thead>
<tr>
<th>Source</th>
<th>Design and participants</th>
<th>Intervention</th>
<th>Outcomes</th>
<th>Results</th>
<th>Quality and comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vincent et al (2007)</td>
<td>Retrospective comparative study</td>
<td>Total hip replacement</td>
<td>Data analysed against:</td>
<td>• Revision THR service users had lower FIM™ score on admission and discharge</td>
<td>Grade C – Low</td>
</tr>
<tr>
<td></td>
<td>Aim: does obesity affect inpatient rehabilitation outcomes after total hip replacement?</td>
<td>Interdisciplinary rehabilitation programme – 3 hours of daily supervised therapy from physical and occupational therapists</td>
<td>• Functional independence FIM™ scores (at admission and on discharge)</td>
<td>• Changes in FIM™ scores between admission and discharge were not significantly different between four sub-groups (p&gt;0.05)</td>
<td>Limitations:</td>
</tr>
<tr>
<td></td>
<td>178 medical records analysed</td>
<td>Occupational therapists instructed activities of daily living for 30–45 minutes in the morning</td>
<td>• Length of stay</td>
<td>• Length of stay was significantly greater in the severely obese group compared with the non-obese group (p&lt;0.05)</td>
<td>• No information about surgical approaches</td>
</tr>
<tr>
<td></td>
<td>Subjects stratified into four groups:</td>
<td>Group session of upper extremity activity</td>
<td>• FIM™ efficiency scores were found to be lower in severely obese (p&lt;0.05)</td>
<td>• Non-obese and severely obese service users were less frequently discharged to home (non-obese had some co-morbidities)</td>
<td>• Not clear which service users were new referrals and which were THR revisions</td>
</tr>
<tr>
<td></td>
<td>Non-obese n=46</td>
<td>Additionally three times a week advanced activities of daily living.</td>
<td>• Hospital charges</td>
<td>• Body mass index influences the outcomes of THR service users during inpatient rehabilitation.</td>
<td>• Study did not attempt to match all subjects and control for confounders</td>
</tr>
<tr>
<td></td>
<td>Overweight n=62</td>
<td></td>
<td>• Discharge disposition location.</td>
<td></td>
<td>• Some occupational therapy interventions not transferable to UK setting (ball bouncing, stretching).</td>
</tr>
<tr>
<td></td>
<td>Obese n=50</td>
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<td></td>
<td>Severely obese n=19</td>
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<tr>
<td></td>
<td>Gender and age varied across the groups</td>
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<tr>
<td></td>
<td>United States of America.</td>
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<tr>
<td></td>
<td>Focus on cognitive status and its effect on recovery of functional performance following hip replacement</td>
<td>and interventions to promote functional performance</td>
<td>Four measures to evaluate cognition:</td>
<td>The ability to learn about precautions and use adaptive equipment may be affected by cognitive status.</td>
<td>Limitations:</td>
</tr>
<tr>
<td></td>
<td>Examined evaluation instruments to measure cognition and occupational therapy intervention to promote functional performance and how it is influenced by cognitive status</td>
<td>Occupational therapy – training and practice with adaptive equipment, education related to hip precautions and activities of daily living directed intervention.</td>
<td>• MMSE – Mini mental status examination</td>
<td></td>
<td>• Review not considered systematic and design of studies included could not be determined – assumption has to be made that these were mixed methodologies</td>
</tr>
<tr>
<td></td>
<td>‘Older people’ not defined</td>
<td></td>
<td>• Functional Independence Measure – cognitive subscale</td>
<td></td>
<td>• No details provided for the literature review strategy</td>
</tr>
<tr>
<td></td>
<td>United States of America.</td>
<td></td>
<td>• SPMSQ – Short Portable Mental State Questionnaire</td>
<td></td>
<td>• No assessment of the quality of the studies.</td>
</tr>
<tr>
<td>Source</td>
<td>Design and participants</td>
<td>Intervention</td>
<td>Outcomes</td>
<td>Results</td>
<td>Quality and comment</td>
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</table>
| Wang et al (2010) | Prospective cohort study  
Aim: to investigate factors affecting the short-term outcome of primary total hip replacement and develop a multivariate regression equation to predict the short-term outcome  
Elective primary total hip replacement – single service  
82% had concurrent pre-operative co-morbidities  
n=97 (101 THR)  
Mean age 61.65 years  
Male: female ratio = 35:65  
United States of America. | Total hip replacement  
Four surgeons involved. | Self-administered WOMAC at enrolment, 3 months, 1 year and 2 years post-operatively. | Statistically significant measure that indicates three main factors in predicting THR outcomes are: pre-operative WOMAC Physical Function Score (p=0.0001), gender (p=0.0159) and pre-operative co-morbidities (p=0.0246)  
Predictive model derived and trialled however needs further study on its validity to THR  
Service users with better pre-operative functional scores likely to have higher post-operative scores, and service users with poorer pre-operative scores likely to experience greater improvement in function. | Grade C – Low  
Limitations:  
• Sample size – only 101 hips in regression analysis  
• Have not stated what is meant by outcome post-operatively, e.g. independent, working, back to normal  
• The pre-operative WOMAC scores had a large standard deviation therefore possible decrease in accuracy of prediction. |
| Wong et al (2002)    | Prospective study  
Aim: to describe the hospital recovery pattern of older confused and non-confused service users after hip surgery  
Recruitment: consecutive admissions to a teaching hospital for emergency/elective hip surgery  
n=54 (not confused on admission). 28 admitted for osteoarthritis, 4 for revision THR and 22 fractured neck of femur  
Mean age 75.6 years  
Male: female ratio = 19:35  
Canada. | Hip surgery – both elective and trauma  
Measurement of the effect of post-operative acute confusion on recovery pattern of older confused and non-confused service users after hip surgery. | Assessed at baseline and on first 4 post-operative days  
• Cognitive status (using Confusion Assessment Method)  
• Physiological status  
• Functional ability (Katz index of Activities of Daily Living)  
• Sleep satisfaction (using adapted form of Bowan’s method)  
• Perceived discomfort (Discomfort Screen-Dementia Alzheimer Type).  
LOS examined in context of acute confusion. | Older confused and non-confused service users recover from hip surgery differently. Majority of service users who developed acute confusion were hospitalised for fractured neck of femur  
• Of 54 service users, at least 12 (23%) developed acute confusion at some point after surgery  
• Confused and non-confused differed significantly in age, admission diagnosis and LOS (p<0.005)  
• Non-confused service users significantly more independent in activities of daily living  
• Confused service users had longer LOS (p=0.0039)  
• Both groups showed consistent improvement in functional status over time, but improvement of non-confused group is of greater magnitude (p<0.005). | Grade C – Low  
Limitations:  
• Replication of this study with a larger sample size needed to confirm findings  
• Inadequate instruments and methods used to evaluate discomfort and sleep satisfaction  
• Limited information about outcome measures (reliability and validity)  
• Analysis does not permit THR to be separated from fractured neck of femur – lack of details re variations in surgery  
• Longer follow-up period may have resulted in more definitive results. |
Appendix 6: Glossary and abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AIMS</td>
<td>Arthritis Impact Scale. Self-administered scales covering physical, social and emotional wellbeing, proving an indicator of the outcome of care for people with arthritis.</td>
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<tr>
<td>BAOT</td>
<td>British Association of Occupational Therapists. The professional body for all occupational therapy staff in the United Kingdom.</td>
</tr>
<tr>
<td>CASP</td>
<td>Critical Appraisal Skills Programme. Programme aiming to support the development of skills in the critical appraisal of scientific research, which provides a number of critical appraisal tools to support this activity.</td>
</tr>
<tr>
<td>COPM®</td>
<td>Canadian Occupational Performance Measure. An individualised outcome measure which is designed to detect change in an individual's self-perception of their occupational performance over time.</td>
</tr>
<tr>
<td>COT</td>
<td>College of Occupational Therapists. A wholly owned subsidiary of BAOT operating as a registered charity. The College sets the professional and educational standards for the occupational therapy profession and represents the profession at the national and international levels.</td>
</tr>
<tr>
<td>COTTSS – Trauma and Orthopaedics</td>
<td>College of Occupational Therapists Specialist Section – Trauma and Orthopaedics. A branch of COT that promotes best practice in occupational therapy within the specialty of trauma, orthopaedics and rehabilitation of amputees.</td>
</tr>
<tr>
<td>CSI</td>
<td>Caregiver Strain Index. Robinson's index consisting of 13 items that describe stressful aspects of caring.</td>
</tr>
<tr>
<td>EQ-5D™</td>
<td>Generic health status measure. A standardised instrument for use as a measure of health outcome, providing a descriptive profile and a single index value for health status.</td>
</tr>
<tr>
<td>EQ-VAS</td>
<td>Visual Analogue Scale component of the EQ-5D™. Records an individual's self-rated health on a visual analogue scale.</td>
</tr>
<tr>
<td>FAS</td>
<td>Functional Assessment System of lower extremity dysfunction. An instrument designed for physiotherapists to evaluate lower limb problems focusing on hip, knee, functional and social variables and pain.</td>
</tr>
<tr>
<td>FIM™</td>
<td>Functional Independence Measure. An 18-item ordinal scale, which measures independent performance in self-care, sphincter control, transfers, locomotion, communication and social cognition.</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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</table>
| **HAD** | **Hospital Anxiety and Depression Scale**  
 *A screening tool, which measures separately the severity of anxiety and depression.* |
| **HHS** | **Harris Hip Score**  
 *A disease-specific measure covering four domains of pain, function, deformity and motion.* |
| **LOS** | **Length of stay**  
 *Period of time from admission into hospital to discharge.* |
| **OHS** | **Oxford Hip Score**  
 *A short 12-item self-administered outcome tool to assess function and pain for people undergoing total hip replacement.* |
| **PROMs** | **Patient Reported Outcome Measures**  
 *Measures to provide information on an individual's perceptions of the effectiveness of care delivered in the National Health Service.* |
| **RCT** | **Randomised controlled trial**  
 *An experimental study in which the participants are randomly allocated to two or more different intervention groups, usually either the treatment of interest (intervention) group or the control (usual treatment) group.* |
| **SF-36®** | **Health survey**  
 *A 36-question health survey which produces an 8-scale profile of functional health and wellbeing scores as well as psychometrically-based physical and mental health summary measures, and a preference-based health utility index.* |
| **SF-12®** | **Health survey**  
 *Shortened version of SF-36®.* |
| **THR/THA** | **Total hip replacement/Total hip arthroplasty**  
 *A surgical procedure in which a damaged hip joint is replaced with an artificial one (known as prosthesis).* |
| **TKR/TKA** | **Total knee replacement/Total knee arthroplasty**  
 *A surgical procedure in which a damaged, worn or diseased knee joint is replaced with an artificial one.* |
| **WOMAC** | **Western Ontario McMaster Universities Osteoarthritis Index**  
 *A self-administered disease-specific, health status measure covering pain, stiffness and physical function in people with hip or knee osteoarthritis.* |
References

Evidence references


Accessed on 12.06.12.


Accessed on 12.06.12.


**Supporting information references**

Belfast Health and Social Care Trust (2011) E-mail communication on 21st April 2011 from Information Department, Belfast Health and Social Care Trust, Northern Ireland to College of Occupational Therapists Specialist Section – Trauma and Orthopaedics.


Accessed on 01.06.12.


Accessed on 01.06.12.


Accessed on 01.06.12.


Accessed on 01.06.12.


Accessed on 01.06.12.
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Accessed on 01.06.12.


Accessed on 01.06.12.

Accessed on 01.06.12.


Accessed on 20.08.12.

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Occupational therapy for adults undergoing total hip replacement

Practice guideline

This publication is an evidence-based resource to support occupational therapists working with adults undergoing total hip replacement. It provides a practice guideline with recommendations for those occupational therapists currently working in this speciality, as well as offering a useful reference document for students. It can also be used to inform service users and carers, together with other health professionals, managers and commissioners working in trauma and orthopaedics, about the roles and responsibilities of the occupational therapist in this clinical area.