

AMPUTEE REHABILITATION

## Quick Reference Guide

# Evidence Based Clinical Guidelines for the Physiotherapy Management of Adults with Lower Limb Prostheses

**CSP CLINICAL GUIDELINE 03**

Issue date: November 2012

# Evidence Based Clinical Guidelines for the Physiotherapy Management of Adults with Lower Limb Prostheses

**About this document:** This document summarises the Evidence Based Clinical Recommendations for the Physiotherapy Management of Adults with Lower Limb Prostheses as described in the literature and expert opinion.

Please refer to the guideline document for full details of all methodology and processes undertaken in the development of these recommendations.

**Citing the full guideline document:** Broomhead P, Clark K, Dawes D, Hale C, Lambert A, Quinlivan D, Randell T, Shepherd R, Withpetersen J. (2012) Evidence Based Clinical Guidelines for the Managements of Adults with Lower Limb Prostheses, 2nd Edition. Chartered Society of Physiotherapy: London.

**Produced by:** Penny Broomhead, Karen Clark, Diana Dawes, Carolyn Hale, Amanda Lambert, Di Quinlivan, Tim Randell, Robert Shepherd, Jessica Withpetersen

## Comments on these guidelines should be sent to:

Karen Clark, BACPAR Guidelines Coordinator, Amputee Rehabilitation Centre, London Road Community Hospital, London Road, Derby, DE1 2QY

Tim Randell, BACPAR Guidelines Coordinator, Dorset Prosthetic Centre, Royal Bournemouth Hospital, Castle Lane East, Bournemouth, BH7 7DW

## Introduction

The British Association of Chartered Physiotherapists in Amputee Rehabilitation (BACPAR) is a professional network recognised by the Chartered Society of Physiotherapy (CSP). BACPAR aims to promote best practice in the field of amputee and prosthetic rehabilitation, through evidence and education, for the benefit of patients and the profession. It is committed to research and education, providing a network for the dissemination of best practice in pursuit of excellence and equity whilst maintaining cost effectiveness.

The first edition of this guideline was published in 2003. The second edition integrates new scientific evidence and current best practice into the original recommendations, using similar methodology. The Delphi consensus method was replicated to ensure that recommendations based upon expert opinion capture and continue to reflect current thinking and best clinical practice. Some previous consensus recommendations have been converted to Good Practice Points (GPPs). This quick reference guide has been developed

to enhance the accessibility of the recommendations for clinicians and stakeholders.

Guidelines do not constitute a legally binding document. The recommendations detailed within this guide are based on the best evidence currently available, and are intended as a resource to guide the selection of best practice. These recommendations should always be utilised by practicing physiotherapists in conjunction with the CSP Core Standards.

BACPAR acknowledges that not everyone who undergoes a lower limb amputation will benefit from a prosthesis. These guidelines are intended for those adults who do receive a prosthesis.

No sponsorship or funding was received during the development of this guideline and no conflicts of interest have been declared by the authors.

## Key to this document

Each recommendation detailed within this quick reference guide has been graded (A to D) according to the quality of the evidence from which it was derived.

### Grades of Recommendation:

After each recommendation the letter in brackets refers to the grade of recommendation.

- A Consistent level 1 studies
- B Consistent level 2 studies or extrapolations from level 1 studies.
- C Level 3 studies or extrapolations from level 2 studies.
- D Level 4 studies or troubling inconsistent, inconclusive studies at any level.

Where a number of sources of evidence were used to develop a recommendation the grade was based upon the highest level of evidence used.

### Updating the previous guideline:

Where recommendations have been amended or added for this update symbols are displayed next to the recommendation numbering for ease of identification.

- New recommendations in this guideline update are marked \*\*.
- Amended recommendations are marked ~.

## Good Practice Points (GPPs)

*“On occasions, guideline development groups find that there is not, nor is there likely to be any research evidence. This will typically be where the treatment is regarded as such sound clinical practice that nobody is likely to question it.”*  
NICE, 2001(31)

Some previous consensus recommendations have been converted to Good Practice Points. They are marked ‘GPP’ and can be found at the end of each recommendation section.

## Recommendations & GPPs

### The Multidisciplinary Team:

- 1.1 A physiotherapist specialised in amputee rehabilitation should be responsible for the management of physiotherapy care. (B)

**GPP I:** The physiotherapist should contribute to MDT audit, research and education

### Prosthetic Knowledge:

- 2.1 The physiotherapist should understand the theory of prosthetic componentry and the effects of prosthetic rehabilitation on the remaining body systems. (B)
- 2.2 To provide effective gait re-education the physiotherapist should understand the principles of physiological and prosthetic gait and the factors (both physical and biomechanical) that affect them. (A)
- 2.3 The effects of prosthetic alignment on pressure distribution within the socket should be understood. (C)
- 2.4 The management of residual limb volume changes in relation to socket fit should be understood. (D)
- 2.5 The physiotherapist should understand the pressure tolerant and pressure sensitive areas of the residual limb in relation to prosthetic fit. (D)
- 2.6 ~ The physiotherapist should check the prosthesis for correct and comfortable fit prior to each treatment, until the patient (+/- their carer) is able to do this for him/herself. (D)
- 2.7 ~ The physiotherapist should examine the residual limb before and after prosthetic use, until the patient (+/- their carer) is able to do this for him/herself. (D)
- 2.8 ~ The patient (+/- their carer) should examine the residual limb before and after prosthetic use. (D)
- 2.9 ~ The physiotherapist should contribute to the decision-making process regarding prosthetic prescription taking into account specific assessment findings such as the patient’s musculoskeletal function, cognition and exercise tolerance. (D)

**GPP II:** The physiotherapist should understand the different methods of donning and doffing prostheses.

**GPP III:** The prosthetic centre should be contacted if there is malfunction of any componentry.

**GPP IV:** The prosthetic centre should be contacted if the socket requires adjustment in order to achieve a correct and comfortable fit.

■ **Assessment:**

- 3.1 There should be written evidence of a full physical examination and assessment of previous and present function (A)
- 3.2 The patients' social situation, psychological status, goals and expectations should be documented. (B)
- 3.3 ~~ Relevant pathology including diabetes, impaired cognition and hemiplegia should be noted. (C)
- 3.4 A problem list and treatment plan, including agreed goals, should be formulated in partnership with the patient. (D)
- 3.5 \*\* There should be evidence of the prosthetic MDT applying valid, reliable and responsive outcome measures to collect baseline data for each patient during the assessment period. (B)

**GPP V:** The physiotherapist should be aware of the prosthetic componentry, type of socket and method of suspension being utilised and this information documented within the patient's notes.

■ **The Prosthetic Rehabilitation Programme:**

- 4.1 Prosthetic rehabilitation should aim to establish an energy efficient gait based on normal physiological walking patterns. (A)
- 4.2 ~~ The physiotherapist should be aware that level of amputation, pre-existing medical conditions and social environment will affect rehabilitation. (A)
- 4.3 During rehabilitation the physiotherapist should take into account that prosthetic gait demands higher energy expenditure than physiological gait. (C)
- 4.4 \*\* The physiotherapist should prescribe a personalised exercise programme incorporating specific muscle strengthening and stretching exercises and maintaining/improving joint mobility (A)
- 4.5 The physiotherapist should teach efficient control of the prosthesis through postural control, weight transference, use of proprioception and exercise to prevent and correct gait deviations. (B)
- 4.6 \*\* The physiotherapist should be aware of the incidence of low back pain amongst prosthetic users and work alongside the prosthetic MDT to optimise prosthetic alignment, fit and minimise postural asymmetries (D)
- 4.7 Prosthetic rehabilitation should begin within a maximum of 5 working days after receipt of the prosthesis (D)
- 4.8 During prosthetic rehabilitation patients should receive physiotherapy as often as their needs and circumstances dictate. (D)
- 4.9 The prosthesis should be worn for short periods of time initially, increasing in use as exercise and skin tolerance allow. (D)
- 4.10 ~~ Gait re-education should commence within

the parallel bars unless there are specified reasons documented for utilising alternative strategies. (D)

- 4.11 ~~ Gait re-education should progress through walking within a supported rehabilitation setting to walking within the home environment. (D)
- 4.12 Walking aids should be provided to ensure that prosthetic users, where possible, progress to being fully weight bearing through their prosthesis. (D)
- 4.13 Functional skills progressing in complexity should be taught within the patients' limits. (B)
- 4.14 Rehabilitation should be functional and integrated with activities of daily living. (D)
- 4.15 ~~ The physiotherapist should instruct the patient in a range of functional tasks which
  - are relevant to the goals set with that individual
  - deemed by the Physiotherapist as being within the patient's physical capabilities to safely undertake a trial of the task.

These activities may include:

- obstacle crossing (C)
- getting in and out of a car
- going up and down stairs, kerbs, ramps and slopes
- walking in a crowded environment
- carrying an object whilst walking
- walking over uneven ground outdoors
- changing speed and direction
- picking up objects from the floor
- opening and closing a door
- the use of public transport
- the use of escalators (D)

- 4.16 Prosthetic users should be encouraged and assisted to resume hobbies, sports, social activities and driving. (C)
- 4.17 \*\* Where applicable prosthetic users should be encouraged and assisted to return to work. (B)
- 4.18 \*\* Prosthetic users progress throughout the rehabilitation programme should be measured using outcome measures validated for lower limb amputees. (B)
- 4.19 The physiotherapist, alongside other professionals, should contribute to the care of wounds during rehabilitation. (D)
- 4.20 The physiotherapist, alongside other professionals, should treat scar problems when these occur during rehabilitation. (D)
- 4.21 The physiotherapist, alongside other professionals, should contribute to the management of residual limb pain. (D)
- 4.22 The physiotherapist alongside other professionals, should contribute to the management of phantom sensation/pain. (D)

**GPP VI:** Where a prosthesis is provided for transfers only (or to assist with Nursing care) instruction and advice on its safe use should be given by the Physiotherapist.

■ **Patient Education**

**5.1 Use of the Prosthesis**

- 5.1.1 Patients/carers should be given information about the prosthesis, its functions and limitations. (D)
- 5.1.2 Patients/carers should be given information regarding the care of their prosthesis. (D)
- 5.1.3 Patients/carers should be given instruction on achieving correct socket fit, considering pressure tolerant and pressure sensitive areas of their residual limb. (D)
- 5.1.4 Fluctuations in residual limb volume and its management should be explained. (D)
- 5.1.5 Guidance should be given on the length of time the prosthesis should be worn and how this should be increased. (D)
- 5.1.6 An explanation should be given on how changing footwear may alter prosthetic alignment and the distribution of pressure within the socket. (D)
- 5.1.7 ~~ The patient/carer should receive instruction in the use and care of prosthetic socks and liners. (D)
- 5.1.8 Instruction should be given in the correct use of the type of suspension used. (D)

**5.2 Care of the Residual Limb**

- 5.2.1 Techniques for the self-management of phantom pain/sensation should be taught. (D)
- 5.2.2 Advice should be given to the patient/carer on the factors influencing wound healing. (D)
- 5.2.3 Instruction should be given to the patient/carer on methods to prevent and treat adhesion of scars. (D)
- 5.2.4 Information should be given on skin care of the residual limb and the potential problems related to poor hygiene, inadequate or overzealous skin care. (D)
- 5.2.5 Patients/carers should be informed that sockets that no longer fit correctly, for whatever reason, can cause skin problems. (D)

**5.3 Care of the Remaining Limb**

- 5.3.1 The patient/carer should be taught to monitor the condition of the remaining limb (D)
- 5.3.2 Vascular and diabetic patients, and their carers, should be made aware of the risks to their remaining foot and educated in how they can reduce them. (A)

**GPP VII:** Physiotherapists should establish links with their local podiatry/chiropractic services to ensure that information and education given to patients and carers is accurate and consistent.

**5.4 Informed Goal Setting**

- 5.4.1 Patients/carers should be made aware that concurrent pathologies and previous mobility affects realistic goal setting and final outcomes of rehabilitation. (D)
- 5.4.2 Patients/carers should be made aware that the level of amputation affects the expected level of function and mobility. (C)
- 5.4.3 Patients/carers should be made aware that they will experience lower levels of function than bipedal subjects. (B)
- 5.4.4 Patients/carers should be informed that the energy cost of prosthetic walking is related to the amputation level. (C)

**5.5 Coping Strategies following falls.**

- 5.5.1 All parties involved with the patient should be made aware that the risk of falling is increased following lower limb amputation. (C)
- 5.5.2 Rehabilitation programmes should include education on preventing falls and coping strategies should a fall occur. (C)
- 5.5.3 Instructions should be given on how to get up from the floor. (C)
- 5.5.4 Advice should be given in the event that the patient is unable to rise from the floor. (C)
- 5.5.5 \*\* All patients should be asked if they have a fear of falling and, if indicating that they do, further therapy incorporating balance work should be considered (C)
- 5.5.6 \*\* Where a reduction in the individuals balance confidence is observed all of the Prosthetic MDT should be made aware of the issue and, where indicated, further therapeutic input provided to address modifiable factors. (C)

**5.6 Further information**

- 5.6.1 Patients/carers should be made aware of the possible psychological effects following amputation and how and where to seek advice and support. (D)
- 5.6.2 Patients/carers should be educated in how to prevent secondary disabilities that may occur as a result of prosthetic use. (D)
- 5.6.3 ~~ Information on the following should be made available:
  - National & local amputee support & User groups
  - Health promotion
  - Sporting & leisure activities
  - Driving after amputation
  - Employment/Training
  - Benefits
  - Access to local Social Services (D)

**GPP VIII:** Patient information should be available in a format suitable to that individual.

**GPP IX:** All advice/information given to the patient should be recorded

■ **Discharge, Maintenance and Long Term Needs:**

- 6.1 A system should exist for the review of patients after discharge from regular physiotherapy (D)
- 6.2 There should be a process in place for the patient to self-refer to physiotherapy after initial rehabilitation. (D)
- 6.3 ~~ The physiotherapist should be aware that secondary musculoskeletal disorders (such as low back pain) can develop over time and adversely affect prosthetic functioning. (C)
- 6.4 ~~ Access to further physiotherapy assessment should be made available if an individual's circumstances change (i.e. medical, environmental, prosthetic, physical, return to work or sport) to determine if further rehabilitation is indicated (D)

**GPP X:** A summary of the patient's function and mobility at transfer or discharge from active rehabilitation should be documented in the treatment notes.

**GPP XI:** The prosthetic user should be provided with the necessary contact details to seek help and advice when required.

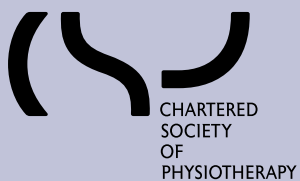
**GPP XII:** If prosthetic use is discontinued during the rehabilitation programme the reasons should be documented by the MDT.

**Utilising these guideline recommendations:**

It is suggested that readers refer to the full guideline document for greater methodological details and access to the references included.

*BACPAR propose that any clinician providing physiotherapy treatment to adults using a lower limb prosthesis should adhere to 100% of the GPP's presented in this document as a minimum for safe practice.*

Please also refer to the 'Audit & Implementation Guide' for key review criteria that individual practitioners and managers could utilise in the monitoring and auditing of their own service/clinical practice.



© Chartered Society of Physiotherapy, 2012. All rights reserved. This material may be freely reproduced for educational and not-for-profit purposes. No reproduction by or for commercial organisations, or for commercial purposes, is allowed without the express written permission of CSP.

ISBN: 978 1 904400 35 6

**THE CHARTERED SOCIETY OF PHYSIOTHERAPY**

**Web** [www.csp.org.uk](http://www.csp.org.uk)

**Email** [enquiries@csp.org.uk](mailto:enquiries@csp.org.uk)

14 Bedford Row London WC1R 4ED

**Tel** +44 (0)20 7306 6666

**Textphone** +44 (0)20 7314 7890



INVESTOR IN PEOPLE

