BACPAR

BRITISH ASSOCIATION OF CHARTERED PHYSIOTHERAPISTS IN AMPUTEE REHABILITATION

The Journal
Issue 37, Autumn 2012

Contents

Welcome

Hello to you all and welcome to the autumn 2012 BACPAR Journal.
This publication date for this journal coincides with what we envisage will be or has been a very successful collaboration between ISPO, BAPO and BACPAR for the delivery of the 2012 conference in Sheffield. Whilst the ISPO organising committee have been responsible for the delivery of the conference, BACPAR executive committee members, Julia Earle and Mary Jane Cole have represented the CPD needs of the BACPAR membership.
Within the Annual General Meeting at the conference, the update of BACPAR's progress in achievement of the work plan for 2012 has been given. The work plan is found within the Service Portfolio available to members on the BACPAR website.
Highlights of the BACPAR year so far;
The recent publication of Guidance for the multi-disciplinary team on the management of post-operative residuum oedema in lower limb amputees – coursework of the most recent cohort of the Post Graduate certificate students
And access to amputee rehabilitation related articles for BACPAR members through the BACPAR website; it would be great to get some comments on the BACPAR site following your review of the articles as individuals or within your regional meetings, any change in practice as a result of reviewing the articles purchased on the memberships' behalf?
It is with some sadness however, that the Post Graduate Certificate in Amputee rehabilitation will no longer be provided by Bradford University, but rest assured the Education officer, Penny Broomhead and the treasurer Anne Berry will be undertaking work to have the MSc level course provided elsewhere.
The publication of the long awaited update of the 2003 BACPAR guidelines is very close. Let it be known that the work put into updating the guidelines is not in any way minor and the Executive committee is grateful to the guideline co-ordinators Tim Randell and Karen Clark for their persistence in this project.
I am sure you will join me in thanking your regional representatives for their work in organising meetings and courses; please strive to continue to support them in their efforts on your behalf in these challenging times. Many of us work in small teams, often as lone Physiotherapists, peer support is very important.
Thanks as ever to the Executive committee for their hard work on behalf of the membership and to Sue Flute (Journal Editor) and this edition's contributors for pulling together an excellent 2nd journal for 2012.
Earlier this year BACPAR was recognised as professional network, a CSP affiliated organisation following the CSP's reorganisation of Clinical Interest and Occupational Groups. Next year will be BACPAR's 20th anniversary; if you have any ideas of how best we celebrate this milestone then please contact me with your ideas; Louise.Tisdale@wolvespct.nhs.uk

Louise Tisdale - BACPAR Chair 2012

Secretary's Report

Hi everyone. I'm writing this in the midst of London 2012, its day 4 and so far 2 silvers and 2 bronzes. Surely things will improve? I have to say I'm extremely excited about the Paralympics and am lucky enough to have tickets to see Oscar Pistorius run his 400m final. I suspect I may see a few BACPAR faces there too?

BACPAR continues to be an active and thriving Professional Network and for it to continue to be so I need to make an appeal to the membership to consider taking a more active part in the running of BACPAR so that it can continue to produce top quality study days, journals, clinical guidelines and drive forwards the rehabilitation of patients with amputations

This year there are 6 executive officer posts becoming vacant in September. These are Membership Secretary, Journal Officer, Education Officer, Research Officer, Guidelines Co-ordinator and Public Relations Officer. You should have received an email by now with a nomination form and job descriptions. Please do think about becoming an active part in one of the most dynamic Professional Networks. Voting for these posts will take place at the BACPAR AGM which is being held during the joint ISPO/BACPAR/BAPO Scientific days on the 27th and 28th September in Sheffield.

For more information you can contact myself or the current post holders. Our details are at the back of the journal. Nominations will be accepted right up until the start of the elections. You don't have to attend the AGM to be nominated.

Thank you for your continued support.

Lucy Holt Secretary

Editoral

Well finally there is enough space for me to squash in an editorial! It usually gets the bullet as I have to put in lots of other things and do juggling at the last minute.
Now I have been in charge of the journal for the last three years and my term as journal editor is coming to a close. (Clearly I will be unsurprised when I actually get to write another one of these in three years time as no one wants the job)! Though I do think that tecnology will have changed a lot of things including whether the journal will still exist in its current form.

I emailed a previous author who told me not to bother to send a hard copy as she had got it off the net.
We are all reading things in different forms and the smartphone/tablet is massively on the increase. (You ask my six and four year olds, they are already familiar with technology to the point where they are trying to use the televison as a touch screen)!

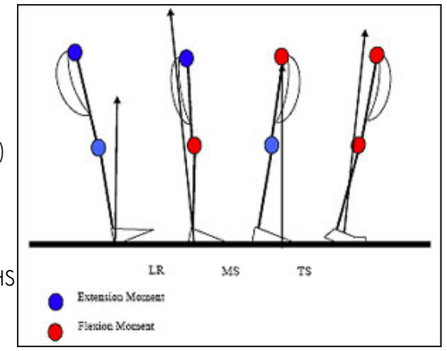
I am disgusted with myself at how easily I have made the change to reading ebooks, I love real books, but sitting in bed wanting to change my library book can now be done at the touch of a button, so much easier than going there in our time poor society! I can even read my journal on line, why waste more trees?

Thank you to all the sponsors and advertisors whom without them the journal would not happen for their continuing support. Also to everyone who has written something for the journal. Until you are editor you don't realise that there is only so much you can do with three pages of stuff and your own holiday snaps!!

Last but not least thank you to him indoors who edited quite of this whislt I was sewing on school name labels, division of labour was seen to be more efficient that way round!

Sue Flute - Journal Editor

BACPAR Study Day - Gait Analysis for the Lower Limb Amputee



Course Presenters:
Kate Primett (Msk inpatient Team Lead, Royal Free Hospital)
Natasha Brett (Senior Amputee Rehabilitation Physiotherapist, RNOH)
Christophe Cointet (Prosthetic Clinical Lead, Blatchfords, Stanmore PRU)
Paul Mclaughlin (Senior Haemophilia/ Msk Clinical Specialist, RFH)
Laura Brown (Senior Msk Physiotherapist, RFH)

North Thames regional BACPAR representatives Kate Primett and Natasha Brett held there annual study day at The Royal Free London NHS Foundation Trust. The course was well attended and a great success!

The study day was pitched as a foundation and basic concepts of gait analysis, all levels could appreciate the content from a Physiotherapy student, to therapy assistant to highly specialised amputee physiotherapists.

Kate began discussing The Gait Cycle and the critical events at each stage. I found this very helpful way to start and attendee feedback described it as a "very relevant to ensure a good knowledge of normal gait to be able to detect what is abnormal". I found the discussion on GRF (Ground Reaction Force) most interesting, and how its orientation creates an extension or flexion moment on the knee to allow ambulation.

Christophe Cointet Presenting

Following this Christophe Cointet Cointet discussed his prosthetic management of this patient group. It gave an "interesting insight into the prosthetic view point" and underlined the sensitivity of correct componentry and alignment of the prosthesis to maximise the physiotherapeutic outcomes. On a whole our core values between professions are shared and the consensus through discussion concluded that we need more involvement with surgeons and teaching to maximise post operative outcomes.

Kate Primett Presenting

The session then moved onto putting theory into practice. Small groups watched and analysed several videos of lower limb amputees mobilising in a variety of different ways. I found this the most helpful part of the day as there were a range of amputee levels and prosthesis to discuss, and the sessions prompted you to think about holistic treatment plans. Other course attendees enjoyed the "group cohesion and interaction" as they moved around the station working together and learning from one another.

The group then met for a final time to discuss findings from the gait videos then feedback was obtained. On a whole the course was very well received however I am able to make some suggestions for future study days. Organising two patients to attend, one being slightly more dynamic than the other, would be a helpful comparison. In addition to the amputee gait clips it would be helpful to show a video on 'normal' gait to discuss the stages rather than using images as it will reflect the dynamic nature of gait. Furthermore future study days should have more high functioning patients to analyse. To end the session attendees fed back they would like to have a practical session to demonstrate treatment techniques and specific exercises.

Natasha Brett Presenting

Emma Layton - Physiotherapist, Royal Free Hospital

The Views of 'Expert Patients' Regarding the Education of 5th Year Medical Undergraduates in the Field of Amputee & Prosthetic Rehabilitation

Background

The Rehabilitation Consultant and Specialist Physiotherapist based within Derby's regional Amputee Rehabilitation Centre (ARC) lead the teaching of 'Amputee Rehabilitation' to fifth year Medical Undergraduates from the University of Nottingham (Derby site). This session falls within the 'Musculoskeletal Disorders and Disability' (MDD) rotational module.

Standards and Learning Objectives for Medical Students

The educational guidelines produced by the British Society of Rehabilitation Medicine (BSRM)(2006) includes 'Rehabilitation of people with limb loss' as a learning theme that should be addressed by all undergraduate medical programmes; the specified outcomes of knowledge, skills and attitudes are summarised in Appendix I. University of Nottingham's learning objectives provide the basis upon which Derby's teaching session is planned. The university objectives relevant to Amputee Rehabilitation have been summarised in Appendix II.

Standards are specified within the BSRM guidelines that advocate the use of patient's input into the teaching of Amputee Rehabilitation. The importance of patient contact is also recognised by other professional educational guidelines with British Association of Chartered Physiotherapists in Amputee Rehabilitation (BACPAR) specifying within their educational guidelines that
'Prosthetic Centres should……provide the opportunity (for the undergraduate) to meet the multidisciplinary team which may include patients and their carers. (p.12)'.

Input of Patients into Medical Education

A patient teacher can be defined as "..a person who teaches students in the health professions…teaching from his or her perspective as someone who has been a recipient of healthcare" (Hanson & Lown, 2010)

Across the literature there has been numerous ways identified in the use of service users and carers in teaching but big variations are seen in the amount of student contact, the degree of autonomy the patient teachers have within the session and the amount of patient and carer involvement in the planning of the educational session. There is an increasing body of evidence supporting active patient involvement in many aspects of medical education and Table 1 summarises the benefits highlighted by the British Medical Association (BMA) (2008).

- Establishes a 'person centred' perspective; allows students to experience a more 'personal relationship' & recognise the importance of treating people instead of 'a disease'
- Enhances the motivation of students by emphasising the relevance of what is being taught.
- Helps develop deeper levels of clinical reasoning.
- Encourages students to value cultural diversity.
- Helps students to develop empathy and understanding of a condition.
- Helps develop professional skills including communication.
- Demonstrates how a person's social environment has a significant impact on health.

Table 1: The educational benefits of patient contact as specified by the BMA in the document 'Role of the patient in medical education' (2008)

Applying the Education Guidelines to Our Teaching Model

Given the scope of the University learning objectives and student numbers it is not feasible, within our setting, for every Medical student to individually perform a subjective and objective examination of a lower limb amputee. The teaching team has looked at ways of incorporating patients views outside of a formal examination framework and utilises an 'Expert Patient' approach. These 'Expert Patients' are service users who volunteer to attend the hospital specifically for the purpose of medical education- in educational literature these would be defined as 'simulated patients' – and the pros and cons of utilising these is highlighted in Table 2. The aim of their input is to share their experience of living with an amputation and using a prosthetic leg. An outline of the two hour teaching session run at Derby for the medical students is included in Appendix III. Thought has been given as to the running order and it was felt important to place the 'expert patient' section centrally and ensure it was never rushed or omitted if other sections overrun thus emphasising it's importance to the students (Smith et al, 2011).

Pro's	Con's
More predictable behaviour, can be trained to respond more consistently.	Higher cost attached to recruiting, training and organising teaching opportunity.
Complexity of the presentation / situation can be matched to the stage of training or specific assessment being undertaken.	Presentation may become over rehearsed and lose some value & validity that cannot be replicated outside of the acute setting.
Better availability of patients- not affected by length of hospital stay, other interventions etc.	Can be more instructive / learn how to guide the student from previous experience.
Likely to tolerate seeing higher numbers of students.	Some physical signs & symptoms cannot be replicated / acted out.
Less risk that the intervention will upset the patient/ cause harm.	
Useful in preparing students for 'real' patients	

Table 2: Advantages & limitations of using simulated patients (as opposed to 'real' patients in the acute or community healthcare setting) - Bell et al, 2009; BMA, 2008; Bokken et al, 2008; Bokken et al, 2009

Clinical Educators receive formal feedback from the students at the end of each module as one tool to monitor student satisfaction and engagement with the session. The teaching has also been subject to peer review by other Rehabilitation Clinical Educators. As far as the current Clinical Educators were aware the 'Expert Patients' had never before been invited to input into the structure and content of the teaching or asked to comment their perceptions of the quality of teaching delivered. In order to complete the 'feedback loop' (and to show our appreciation of their efforts), it was felt that the views of the 'Expert patients' should be sought and their suggestions reviewed and implemented where appropriate and resources allowed.

Aims of This Project

- To receive feedback from the existing 'Expert patients' about the content and organisation of the Amputee rehabilitation session run throughout 2008/9 academic year.
- To identify the views of Prosthetic Users attending Derby's Amputee Rehabilitation Centre (ARC) about the key areas they feel Medical undergraduates should be taught regarding Amputee & Prosthetic rehabilitation.
- To standardise and create a 'core structure' for the 'Expert Patient' discussion to fulfil the University's responsibility to try and ensure equitable teaching and learning opportunities sessions across a student cohort.

Methodology

Recruitment Strategies

In the academic year of 2008/9 there were six volunteers on a centrally held list of 'Expert Patients'. Given that all of these existing volunteers were recruited before the current Clinical Educator or Consultant came into post it is not known how they were recruited or whether any training had previously been given.
Five prosthetic users had expressed an interest in becoming involved in medical student teaching (either in response to the recruitment poster displayed or due to previous experience); these people were also invited to participate in this project.

Data Collection

A qualitative approach was adopted as it is the subjective views of the Expert patients that were being captured.

Structure of the Feedback Session

2 Clinical Educators acted as facilitators for an afternoon session.
12 people attended – 9 prosthetic users & 3 spouses/ carers.
2 apologies sent – both prosthetic users unable to attend but still interested in participating as an Expert Patient.

Format of the Afternoon

Presentation by Amputee Rehab Clinical Educator
Three discussion themes were posed to the audience (see below); discussion facilitated / documented on white board and meaning/ context of the points documented checked with the audience.
Informal discussion amongst participants (see below) & coffee.
End round up and conclusions.

Every participant was also invited to anonymously submit written comments at the end of the session in an attempt to capture views which the participant might have felt uncomfortable talking in a group setting or raising directly with the Clinical Educators.

Results

From the facilitated discussion between exisiting and new 'Expert Patients'

Discussion Theme 1 - "What do Medical Students need to know about Amputee Rehab?"

Participant response:
That patients need to know both good and bad news
How important the truth is to a patient
Patients need to speak to previous patients
Importance of patient choice
How long the process takes / different stages of rehab
To observe a rehab session
Reasons for amputation
Impact of other things (i.e – medical conditions) on rehab
Differences between acquired and congenital amputees and their function

Areas where lots of discussion occurred:
Many prosthetic users discussed feeling really frustrated/ angry / upset
that friends/ families perceptions were that once they got a prosthetic leg
they should be back to all activities they were doing pre amputation. They felt that Heather Mills and Oscar Pistorious' high public profile did not necessarily help understanding of life as an older, vascular amputee; one participant worried that people thought he was not trying hard enough as he was not "up and dancing around".

Five participants voiced how useful meeting an established amputee was pre operatively to help give them a realistic insight into the pros and cons of living with an amputation.

Discussion Theme 2 - "What areas do you think should be covered in the Amputee Rehab 'Expert Patient' session?"

Participant response:
Brief summary of life before amputation
Experience of amputation (initial feelings / who's decision it was / family reactions / initial coping mechanisms post op)
Changes to homelife / work.
Life as a Wheelchair user – feelings at the stage once home but before prosthetic decisions have been made.
Assessment period / coping with the question of will I get a limb?
Experience of rehab
Relationships – changes of role / changes of dynamics
Phantom pain / sensation
How it feels to wear / use a prosthesis – does it hurt? Weight of limb
Increased effort of activities
Reactions of others to amputation / prosthetic limb
Easy and hard activities with the prosthesis

Although showing the students their residual limb(s) & prosthetic limb(s) some participants felt uncomfortable with this- especially the trans femoral amputees where privacy and dignity issues were raised.

Discussion Theme 3 - "For those who already talk to the students: are there any comments (good or bad) you wish to make?"

Participant response:
Students that they have encountered have been polite and interested.
The student's attitude and behaviour during the volunteer patient session was, on the whole, positively reported (occasional incidents of a disinterested student or sessions where the students were slow to get the discussion started).
No-one had been asked any questions they felt uncomfortable answering.
Three participants keen to have extra time with the students as they had never managed to finish their discussion in the allocated 20 minutes.

Written comments received from the 'Expert patients':

"It helps me to talk to others about my accident"
"More information before coming in to talk would have helped me prepare- I was nervous as I wasn't sure what to expect."
"Getting students to see amputation from the patient's point of view is very valuable"
"A bit more time would be helpful"
"I feel the students would like more time with us talking about what we feel and how we cope."
"Would like you to sit in and listen some time to see if I can improve"
"I would like to know more about my artificial leg and how they are progressing with new technology".

Key Findings

The existing 'Expert patients' were very positive in their responses regarding their experiences of the session in the 2008/9 academic year. Numerous participants expressed that they enjoyed "giving something back" – responses mirrored by a different cohort of 'patient teachers' studied by Coleman and Murray (2002) and acknowledged by the BMA (2008). Although people had experienced students that had been disinterested there was no rudeness encountered and the students had maintained a professional appearance.

All existing 'Expert Patients' felt that students responded well to one to one time with them but felt that 20 minutes was not long enough with the students. They also enjoyed being left on their own with the students as they felt that the presence of the Clinical Educators could inhibit some students in asking questions.

One experienced Expert Patient did not feel that a crib sheet was necessary as he wanted to let the students lead the discussion to areas of their interest. Less experienced Expert Patients were however keen to have a 'script' to assist them and the majority of participants were in favour of developing and using a crib sheet. All participants were reassured that any crib sheet produced would not be exhaustive but merely act as a prompt. The content of the crib sheet was checked with every participant before being typed and circulated for use.

No induction had taken place for the existing Expert Patients – one participant reported that this had been a source of

anxiety. Two 'Expert Patients' wished to receive feedback on their performance but others found the thought of being 'watched and marked' daunting; it is therefore acknowledged that not everyone would want to receive feedback on their performance but there should be some review mechanism in place for those who would like to access it.

Two participants wanted to know more about their specific prosthetic limb; it was discussed that the teaching sessions were not the appropriate forum for these to be addressed as the Medical Undergraduates would not be expected to know about specific prosthetic components.

Linking the findings to practice

- The Expert Patients section of the teaching session is to be extended to 30 minutes.
- A crib sheet (see Appendix V) has been formulated from the discussion points and distributed to each person who expressed an interest in being an Expert patient.
- All new recruits should receive an induction which at it's most basic should include a letter explaining the format of each session and the discussion crib sheet.
- Expert patients shall be asked if they would like moral support and/ or feedback on their session before they speak. Where this is required the Clinical Educator shall sit in on the session and 'debrief' after the teaching session has finished.

Table 3: Changes made to the teaching session in response to the key findings

Conclusion

The value of hearing about a medical condition from those that are living with it has been reinforced time and again through professional education standards, formal student feedback and all the literature found within the references. The 'Expert Patients' utilised at Derby found talking to the students beneficial from a personal point of view and felt that they often learnt from the students. Many of the volunteers did not appreciate the pressures on the medical curriculum and were surprised at how little time was devoted to Amputee Rehabilitation. The presentation delivered at the start of the feedback session allowed the Clinical Educators to give some insight into the organisation of the medical teaching and ensured that the' Expert Patients' were aware of the key issues faced (limited time available, financial constraints & the broad scope of learning objectives) when planning the teaching session covering Amputee & Prosthetic rehabilitation..

Ultimately the primary motivation for this work was to ensure that, as a teaching team, we completed the feedback loop and gave the prosthetic users a forum by which to influence the content of the Amputee Rehabilitation teaching session at Derby. The authors gave careful consideration as to the areas that was within their power to alter and how the patient feedback would be utilised to avoid this project becoming a tokenistic gesture (Smith et al, 2011) whereby the patient views were gathered and then effectively ignored. The discussion with 'Expert patients' facilitated the creation of a crib sheet which documented the discussion themes that they, as service users and their carers, felt were most important to address.

It is acknowledged that there is still limited scope for patients to influence the medical curriculum but this project does illustrate that there are opportunities for this to occur without huge financial implications. Although the subject numbers were small within our discussion group the findings and changes made to the teaching delivered may be of interest to other inter professional groups or Prosthetic Centres involved in the planning and delivery of teaching on Amputee Rehabilitation to medical students and other healthcare professional undergraduates.

References

Bell K., Boshuizen H.P., Scherpbier A., Dornan T.(2009) When only the real thing will do: Junior medical students learning from real patients. Medical Education. 43:11; pp.1036-1043.

Bokken, Rethans, Scherpbier, Van der Vleuten (2008) Strengths and weaknesses of simulated and real patients in teaching skills to medical students: A review. Simulations in Healthcare.

Bokken L., Rethaus J., van Heurn L., Dunvier R., Scherpbie A., van der Vleuten C. (2009) Students views on the use of real patients and simulated patients in undergraduate medical education. Academic Medicine Journal of the Associated Medical Colleges. 84:7; pp:958-963.

British Association of Chartered Physiotherapists in Amputee Rehabilitation (2008) Amputee Rehabilitation: A Guideline for the education of Undergraduate Physiotherapy Students. www.interactivecsp.org.uk/network/documents.

British Medical Association (2008) Role of the patient in Medical Education. BMA Medical Education Subcommittee.
British Society of Rehabilitation Medicine (2006). Undergraduate Medical Education in Rehabilitation Medicine. London: BSRM.

Coleman K., Murray E. (2002) Patient's views and feelings on the community based teaching of undergraduate medical students: a qualitative study. Family Practice. 19:2; pp.183-188.

Gibson J., Lin X., Clark K., Fish H., Phillips M.(2010) Teaching medical students rehabilitation medicine. Disability and Rehabilitation. pp.1-7

Hanson J.L., Lown B.A.(2010) Research and Evaluation of Service users and Carers involvement in Health Professional Education in McKeown M., Malihi-Shoja L., Downe S (Eds) Service User and carer involvement in education for Health and Social Care. Singapore: Caipe.

Smith G., Hughes J., Greenhalgh. Patients as Teachers and mentors in Greenhalgh T., Humphrey C., Woodard F (Eds) (2011) User involvement in Healthcare. Singapore: BMJ Books.

Appendix I: Knowledge, Skills and Attitudes Specified by the BSRM (2003)

Knowledge: Causes of limb loss
Types of limb amputation & level
Types of prosthesis
Common medical problems
Factors governing functional recovery after amputation.

Skills: Assess the stump
Check for second medical complications
Check for arthritis, diabetic and vascular complications in the other leg.

Attitude: Appreciate the patients perspective on issues such as cosmetic appearance.

Clinical context: Vascular amputee
Traumatic amputee.

Appendix II: University Specified Learning Objectives for Final Year Medical Students Regarding Amputee Rehabilitation

The student should be able to:
List the types of amputation of the lower limb and contrast their rehabilitation potential.

List the indications for amputation and discuss the clinical and laboratory methods for selection of amputation site.

Outline the typical symptoms of phantom pain and list the available drug treatment.

Outline the rehabilitation of a patient with a below knee or above knee amputation including the fitting of artificial limbs.

Discuss the psychological effects of limb amputation on the patient.

Appendix III: The layout of the Amputee Rehabilitation session as run by the Rehabilitation Team at Derby

The Amputee Rehabilitation Session:
Up to 10 students attending at any one time

14.00 - 14.50 Incidence & causes
- Doctors role in Rehab
- Phantom pain & sensation
- Case studies: the impact of levels and other medical conditions on rehab potential

14.50 - 15.20 Interview with Expert Patient(s)

15.20 - 16.00 Amputee Rehab
- Psychological impact of amputation
- Early Rehab & Early Walking Aids
- Introduction to Prosthetics

Questions & final discussion.

Appendix IV: The Crib sheet devised with patient input to assist standardise the contents of the 'Expert Patient' session.

Core structure for 'Expert Patient' talk: Amputee Rehabilitation

- **Introduction:** Brief summary of life before amputation and reasons for your amputation.
- **Experience of amputation** - initial feelings / who's decision it was and your time in hospital.
- **Changes to home life / work** – personal coping strategies & changes that you have had to make.
- **Life as a Wheelchair user** – feelings at discharge when you were at home but before you had your prosthesis.
- **Relationships** – changes of role/ changes of dynamics
  - Reactions of others to amputation / prosthetic limb (this may include family, friends, other Health Care Professionals)
- **Phantom pain / sensation:** How you cope with this? What does it feel like? What makes it better or worse?
- **Experience of rehabilitation** – coping with the assessment period & the question of 'Will I get a limb or not?'
- **How it feels to wear / use a prosthesis** – does it hurt? Weight of limb, increased effort of activities.
  - Easy and hard activities with the prosthesis
  - Do you opt to use the wheelchair for some activities?
- **Optional:**
  Showing stump & prosthetic limb (please consider how comfortable you feel doing this & how feasible it is)

Karen Clark - Specialist Physiotherapist & Senior Clinical Educator, Helen Fish - Senior Clinical Educator, Amputee Rehabilitation Centre, Derby Hospitals NHS Foundation Trust

Limbfitting Discharge Questionnaire - Regional Disablement Services, Belfast

It has been our practice in the Regional Disablement Services at Musgrave Park Hospital in Belfast, to let our inpatients take their prosthesis home for temporary discharge over a weekend prior to a family meeting and final discharge with their limb. This gives the patient an opportunity to use their prosthesis in their home environment and to discover if they experience any difficulties with mobilising or Activities of Daily Living in their home. On the patient's return to the ward it is possible to discuss any problems that arose and further rehabilitation that is required before final discharge. This may have resulted in the patients staying for a further couple of days or for a further week of treatment. RDS in Belfast covers the whole of Northern Ireland so this may involve patients travelling up to 100 miles to return to the ward after the weekend.

Due to the large number of patients on our waiting list at the end of 2011 it was proposed to trial a system whereby the patient would simply phone a member of the Multi-disciplinary team on the Monday morning following the TD to discuss the patient's progress at the weekend. If the patient was happy with how they had managed with the prosthesis at home, they would be discharged without returning to the hospital.

It was felt that in order to improve the consistency of the information shared by the patient over the phone, a short multidisciplinary questionnaire should be compiled. After discussion with the multidisciplinary team the following questions were included:

- Did you have any problems putting the limb on and/or taking it off?
- Did you wear your prosthesis every day and manage your daily activities?
- Did you experience any pain?
- Did you have any problems with your skin?
- Did you have any falls or issues with safety?
- Did you have any issues with equipment provided (i.e. toilet equipment)?

To improve compliance, the patients were given a copy of the questionnaire before they left the ward. This questionnaire was piloted starting in March and so far it has been used with 13 patients. Of these 2 did not 'phone on the Monday. Of the 11 remaining only one required to return to the ward as an inpatient for further practice using the prosthesis and the rest were permanently discharged.

It is our plan to continue using the questionnaire for the rest of the year and then audit our findings.

Patients Temporary Discharge Questionnaire

You are taking your prosthesis home on temporary discharge over the weekend but if you need to return to the ward, your bed on 3A will be kept for you until Monday. However if you do not have any problems with the prosthesis over the weekend you may be discharged on Monday morning. This may be done by phoning the physiotherapist in RDS on Monday at 9.30am and answering the questions listed below. If both you and the physiotherapist are happy with progress, you will be discharged.

Did you have any problems putting the limb on and/or taking it off?
Did you wear your prosthesis every day and manage your daily activities?
Did you experience any pain?
Did you have any problems with your skin?
Did you have any falls or issues with safety?
Did you have any issues with equipment provided (i.e. toilet equipment)?

Physiotherapy Department, RDS, Musgrave Park Hospital, Belfast

BACPAR Journal Issue 37, Autumn 2012

A Tribute to Sam Gallop CBE

Sam volunteered for the Royal Air Force in 1940 as a pilot. However in 1944, returning to base in his damaged aircraft, he sustained various injuries resulting in the amputation of both legs below the knee, third degree burns, spinal crush fracture, maxillo-facial injuries, both arms were broken, and with left ring finger missing, and partial hearing loss amongst other impairments. Despite Sam's misfortune, he good fortune was that he became a patient of the late Sir Archibald McIndoe at Queen Victoria Hospital in East Grinstead, and I know that he is still honoured and feels privileged to have become a member of McIndoe's RAF Medical "Guinea Pig" Club (www.em-pow-er.org/guinea-pig-club.html).

After the second world war, Sam studied at Brasenose College, Oxford graduating in 1949. Sam worked from 1949 until his retirement in 1977 where he pursued other interests included charitable work. I could say: *"..and the rest is history"* but I know from personal experience that a significant number of Sam's achievements are modestly passed over and are not shouted about as the satisfaction to Sam was in the knowledge of a job well done. So here are a few examples:

The formation of Employment Opportunities now the Shaw Trust; a national charity helping people with disabilities find and retain work whilst providing a wide range of support and advice to employers on disability and employment. This work being supported by it Patron His Royal Highness the Duke of Edinburgh.

Sam created Aim Hi, a charity for hearing-impaired students, linked with Schools and Colleges in Wandsworth, which also reached out internationally.
Sam created the emPOWER charities consortium, and Initiated the All Party Associate Parliamentary Limb Loss Group, for the prevention of limb loss, and the provision of prosthetic, orthotic, wheelchair and other vital rehabilitation services both in the UK and internationally.

Importantly, Sam took it upon himself to become the guardian of the standards and quality for the national prosthetic rehabilitation services more than 20 years ago, and today still remains a recognised committed ambassador and a prominent voice nationally for both international and national issues surrounding complex disability in particular limb loss. Sam's drive, determination and enthusiasm, coupled with his seemingly never ending innovation and creativity continue to play an important role in the delivery of solutions to often difficult issues.

With age comes experience and wisdom and Sam has plenty of both, and as a widely respected, trusted and inspirational individual, he is often used as a sounding board by many leaders within and across the limb loss communities and service providers of the United Kingdom. Sam uses his network of contacts to instigate discussion which is very quickly followed up by a plan of action. Sam's unstinting and resourceful approach to a problem or issue is unflustered yet dogged, supportive and sympathetic, enthusiastic but diligent.

His unselfishness, enthusiasm , determination and energy would put many people half his age to shame. This is even more impressive in that, the work he has and continues to do, is almost exclusively on issues that he does not and will not benefit from himself.

Sam would want me to add, that he could not have achieved what he has without the support of his beloved wife Renée, expert surgical and rehabilitation services, and the many skilled and caring healthcare professionals, friends, tutors and leaders.

I hope this article can in some way celebrate 'Sam' and what he has given so many with little or no reward particularly given his recent 90th birthday, and so I would finish by saying that I believe such individuals are extremely rare, and it is continues to be my privilege to know and collaborate with such a role model and friend!

Steve McNeice - Double above knee amputee

A Patient's Prosthetic Journey Following Multi Trauma and Heterotrophic Ossification of Both Hips and Knees

Oxford Prosthetics Service first met Alan Curtis in February 2010 when he attended our department seeking advice on whether an amputation would be of any benefit to him. Alan's words are written in Italic alongside my narrative.

"My story starts back in May 2009 when I was out for a morning motorcycle ride with a few friends. Three of us were involved in a road traffic accident with a Volvo estate. I suffered multiple injuries, the relevant ones to this case study being:

Several broken ribs and a pnuemothorax
Sacro iliac joint disruption requiring open reduction and internal fixation (ORIF)
Bilateral acetabular fractures requiring ORIF
Right femoral fracture repaired with intramedullary nail
Ligamentous injuries both knees
Right tibial plateau fracture
Right fibular head fracture
Thigh and leg wounds needing skin grafting
Bilateral lumbosacral plexus injuries resulting in bilateral toe numbness, drop foot on the left and bilateral foot dysaesthesia
4 fractured metacarpels in left hand
Left fractured wrist

I was on ICU for a month, followed by 2 months on a trauma unit and then transferred to an intermediate care ward. As a result of the trauma I developed a lot of heterotrophic ossification (HO) in and around both hips and knees. This caused a large limitation to movement of these joints and I also suffered a lot of knee pain. My local hospital had reached an impasse and wasn't sure how to proceed. I had my first contact with Oxford Prosthetics Service in February 2010 after I requested I be referred there to be assessed for suitability for an amputation. At this stage I was very immobile and in a large wheelchair. Due to the lack of movement in my hips and knees I was very long in the chair (I'm 193cm tall) with both legs raised on elevated footplates whilst my upper body was leaning back as far as practical".

At Alan's first appointment at Oxford a full assessment was undertaken by the whole multi-disciplinary team (MDT). He was found to have the following active range of movement:

Left hip:	20°- 50° flexion with fixed 35° lateral rotation / power grade 3
Right hip:	20°- 60° flexion with fixed 25° lateral rotation / power grade 3
Left knee:	45°- 60° flexion / power grade 2
Right knee:	35°- 45° flexion / power grade 2

On the Locomotor Capabilities Index 5 (LCI5) Alan scored 1/56

It took Alan 2 minutes 30 seconds to walk 5 metres with a pulpit frame and 3 to assist. The total length of Alan in his wheelchair was 145cm which made it extremely difficult for him to manoeuvre in a normal environment, a point proved when our Consultant struggled to get Alan into his consulting room.

The MDT agreed that a right through knee amputation would be beneficial as this would reduce Alan's overall length in the wheelchair but the whole team strongly advised Alan that we doubted he would walk again and that pain levels may not be altered. If I was a betting woman – at this point I would have lost a lot of money!

> *"Thankfully I was seen as a suitable candidate for a through knee amputation. This level of amputation was selected to give me the pain relief I desired, with an improved seating and transfer position. I was told at this point that it seemed unlikely that I would be able to stand or walk again. At the time I thought to myself - I beg to differ".*

On the 2nd June 2010 at Nuffield Orthopaedic Centre (where Oxford Prosthetics Service is based) Alan underwent a right through knee amputation with a left femoral de-rotation osteotomy and a manipulation under anaesthetic (MUA) of the left knee gaining 0 - 70° of movement (pre-op 45°- 60°).

Alan began a program of rehabilitation that involved the whole MDT. He was seen for pain management by the occupational therapist as he had severe phantom pains in the early weeks post amputation. Early physiotherapy sessions were always accompanied with his bottle of oramorph. His physiotherapy included active and passive exercise, CPM, PNF, pilates and hydrotherapy and slowly Alan regained the mobility and strength needed to be discharged home on the 9th July , 5 weeks post-operative after having been an inpatient for 14 months.

Alan continued to attend twice a week as an out- patient and once sufficient healing of his residuum had occurred we started the prosthetic process. Early key markers were:

July 2010

Standing from an elevated plinth onto pulpit frame end weight bearing on the right through a padded stool. The left knee needed bracing at this point due to continued pain and weakness.

September 2010

Fitted with a an Ottobock 3R42, which is a 4 bar locking knee prosthesis, progressing walking with pulpit to parallel bars to rollator frame to elbow crutches with comfy handles, gradually decreasing height of plinth as his hip and knee range of movement continued to improve. Issued with an Ankle Foot Orthosis.

November 2010

Sit to stand independently from wheelchair.

"Gradually my walking ability improved, though I was still held back by the inability to stand upright due to hip stiffness and left knee stiffness and pain. I returned to my original surgeon and he decided to operate to remove some of the HO firstly from my left hip and then later from my left knee. I had the first surgery in March 2011, which ended up being slightly more complex than originally planned, leaving me with left hip replacement. I continued with physiotherapy and my strength and flexibility began to really improve as was my ability to stand and walk. The left knee surgery was planned for October 2011.

> *However, in August 2011 I was participating in the Amputee Games at Stoke Mandeville Hospital and got a little over competitive while throwing the javelin. I fell from my wheelchair and snapped my left femur. I underwent a further ORIF of the femur and at the same time the surgeons removed some of the HO from my left knee. After a couple of months off my feet, I was much more flexible with much less pain in my left knee. This gave me the ability to stand upright and walk with the prosthesis more easily".*

Alan continued with a full exercise program independently at home during the period of non weight bearing. When he returned to our department he had increased range of movement throughout and strength had also improved so

in February 2012 Alan was issued with an Ossur TOTAL free knee. Alan found this much easier to walk with than the locked knee. Alan now walks with 2 Fischer sticks both indoors and outdoors. He is also able to go up and down stairs. At his last appointment he had the following active range of movement:

Left hip: -10 - 55° flexion with 10° fixed lateral rotation / power grade 5
Right hip: 0 - 60° flexion with 10° fixed lateral rotation / power grade 5
Left knee: 0 - 100° flexion / power grade 5
Length of Alan in his wheelchair: 109cm

Outcome Measures:

LCI5 has increased from 1/56 to 30/56
Two minute walk test distance is 85 metres with 2 sticks
Timed Up and Go is 21 seconds with 2 sticks

Alan's main limiting factor is the remaining dysaesthesia of his left foot and decreased cardio vascular fitness. If walking at speed Alan can walk for approximately 10 minutes before it becomes too painful to continue however he can now saunter through Asda pushing a trolley and do a whole shop! Alan's progress has made the whole of our MDT rethink what is possible with the right combination of surgery, access to the correct rehabilitation facilities and most importantly patient motivation. As I said earlier I would be a poor woman now with my old hat on!

> *"I'm still not a full time walker and spend a lot of time in the wheelchair, but I have the ability to walk reasonably short distances when I need to. This far exceeds my expectations of how mobile I might ever have been. I am still improving though".*

Alan Curtis - patient and Lucy Holt - Physiotherapist at Oxford Prosthetics Service

BACPAR South Thames Study Day - 3rd April 2012

'My prosthesis and I'…Including - Intro to High Activity and Sport in the Lower Limb Amputee.

Bowley Close Rehabilitation Centre, Crystal Palace was the venue for this year's South Thames Regional Study Day. Organized by new joint South Thames Rep Jodie Georgiou, it had guest speakers from Blatchfords as well as James Catchpole Southern England Rep for the English Amputee Football Association.

This day was split into two parts, the morning focusing on lower level rehabilitation. Presentations from Amy Jones, Clinical Lead Prosthetic Physiotherapist, Bowley Close Rehabilitation Centre, focused on when it is appropriate to refer for a prosthesis and when a patient is ready for casting. A workshop led by Jodie Georgiou, Senior Prosthetic Physiotherapist, Bowley Close Rehabilitation Centre, titled 'My prosthesis and I' included small groups working with volunteer patients to assess prosthetic fit and gait deviations. This provoked good discussion and problem solving about both amputee and prosthetic reasons for gait deviations. A range of patients had volunteered demonstrating different prosthetic knees commonly seen in the south thames area and different suspension techniques of both TTA and TFA. Socket fit and volume fluctuations were discussed in detail, such as indications when a patient is plugging out or sinking in to the prosthesis.

Later on in the day saw a move towards higher level rehabilitation, with presentations form Alan McDougall, R&D Prosthetist, Blatchfords, and Matthew Fuller, Specialist Amputee Physotherapist, GSTT about Yielding Knees for high activity. This combined a presentation of the function of two different types of Yielding knees (KX06-endolite, 3R80 Otto Bock) with a practical physio session on how to teach a patient to activate the Yield, ie on Stand to Sit/Stairs/Slopes. Richard Bradbury, a Blatchford Technician and prosthetic user of a KX06 prosthetic knee assisted in the practical session.

Following on from this, Amy Jones, Clinical Lead Prosthetic Physiotherapist, together with Alastair Hall, Blatchford Prosthetist held a running workshop including a build up exercise program, teaching how to move quickly using the 'hop hop skip' method for Trans Femoral patients, jumping on and off the prosthesis in the parallel bars and building up to

jogging and running techniques. The importance of suitable prosthetic components were discussed, such as carbon fibre products and suitable knee units. Alastair Hall, Prosthetist demonstrated running techniques on his Ossur Flex Run.

The day came to an end firstly with a presentation from Laura Brady, Blatchford Prosthetist, and Jodie Georgiou, Senior Prosthetic Physiotherapist about Water Activity Limbs and Swimming for the Amputee. It was highlighted that Water Activity Limbs are not always indicated or appropriate, and that many patients do not use these for accessing the water or swimming. It was also highlighted the importance of therapists encouraging a return to swimming and taking patients to their local pools as part of therapy treatment sessions. It was emphasized that planning is the most important thing to consider, such as calling ahead to find out logistics as pools vary hugely. The importance of Upper limb strength and ability to get up/down to floor was also discussed.

Finally, James Catchpole, Guest Speaker from the English Amputee Football Association (EAFA) talked of his role as Southern England Rep and player for the EAFA. This passionate presentation highlighted that any patient can play. James explained that players do not wear a prosthesis to play, but use elbow crutches only. Players swing on the crutches whilst kicking the ball with the remaining leg. It was explained that the Goal Keeper is an Upper Limb Amputee.

James was very keen to pass on to all amputee/prosthetic physiotherapists that himself as Southern England Rep and his Northern Counterparts are keen to recruit more amputees and to spread the word. Please see the link below for an action packed video of what patients can expect! More information can be sought through www.theeafa.co.uk.
http://www.youtube.com/watch?v=dPIWIuOVrFE

Many thanks for all those who attended and to all speakers and patients who contributed to the success of the day. I hope those that took part in the practical Amputee Football session enjoyed it as much as I did and do not have too many bruises to show for it!!

Jodie Georgiou - Senior Prosthetic Physiotherapist, Bowley Close Rehabilitation Centre Joint South Thames BACPAR Rep.

SPARG

The next SPARG meeting is on Thursday 25th October 2012. There will be a business meeting in the morning, followed by a study afternoon that non-members are welcome to attend (£10). The topic is Diabetes and will cover a review of the basics, care of the remaining foot and risk stratification, outcomes after amputation for Diabetes and orthotic provision.

The SPARG website is now up and running – log in and register with your Athens password on http://www.knowledge.scot.nhs.uk/sparg.aspx

Documents / Guidelines for sale

- Annual report - Electronic copy available
- Clinical Guidelines for the Physiotherapy Management of Intermittent Claudication (revised 2012) £20
- PPAM aid Guidelines £15
- Prosthetic Knee Guide (2 left!) £15

For further details on any of the above:-
- log in to the SPARG website and register with your Athens password on http://www.knowledge.scot.nhs.uk/sparg.aspx

- Or contact Louise Whitehead (SPARG rep for BACPAR) on 01382 660111 ext 36149 or lwhitehead@nhs.net

Using the Reintegration into Normal Living Index in the Follow Up of Patients Who Abandon the Use of Their Prosthetic Limb and Those Who Are Not Provided With a Prosthesis

Introduction

Non limb wearers' account for 32% of all individuals who have undergone lower limb amputation referred to the amputee rehabilitation service (MMC) in Wolverhampton (Tisdale 2012). In early 2011 it was agreed to implement the use of a quality of life (QOL) measure as part of the follow up process of lower limb amputees that are not provided with a prosthesis (NLU) or of those who cease to use their prosthetic limb (CLU).

When the patient status is made NLU or CLU the individual is followed up by the service for about six months. At the end of this period a 6-month notes only review of the patient is carried out. Prior to this review the patient's current circumstances are ascertained; the outcome of any intervention over the preceding 6 months toward goals set is reviewed. A checklist is utilised to gain information from the patient and their carers and a copy of the QOL measure is sent out. On receipt of the QOL it is reviewed and scored in preparation for the meeting.

Any further areas of action on behalf of the patient are then agreed by the team within the 6-month notes only appointment, if any are outstanding following a review of all of the above.

The Reintegration into Normal Living (RNL) index (Wood-Dauphinee et al 1987 and Wood-Dauphinee et al 1988) asks individuals to respond to each of the following 11 statements:

- I move around my home environment as I feel is necessary
- I move around my community as I feel is necessary
- I am able to take trips out of town as I feel are necessary
- I am comfortable with how my self-care needs (dressing, feeding, toileting, bathing) are met. (Adaptive equipment, supervision and/or assistance may be used)
- I spend most of my days occupied in work activity that is necessary or important to me. (Work activity could be paid employment, housework, volunteer work, college etc.)
- I am able to participate in recreational activities (hobbies, crafts, sports, reading, television, games, computers etc.) as I want to.
- I participate in social activities with family, friends and/or business acquaintances as is necessary or desirable to me.
- I assume a role in my family which meets my needs and those of other family members. (Family means people with whom you live and/or relatives with whom you don't live but see on a regular basis)
- In general, I am comfortable with my personal relationships
- In general, I am comfortable with myself when I am in the company of others
- I feel that I can deal with life's events as they happen

Questions 1-8 relate to daily functioning, 9-11 relate to an individuals perception of themselves.

The RNL index was selected by the team as the QOL measure to be utilised because:

- It is a self-report measure, quick and easy to complete by the patient.

BACPAR Journal Issue 37, Autumn 2012

- Self-report measures are considered to be favoured by the Department of Health.
- It is easy to interpret by the reviewer.
- It is freely available - http://www.medicine.mcgill.ca/strokengine-asses/module_rnli_indepth-en.html
- It has been utilised in research involving lower limb amputees. (Nagarajan et al 2009, Malek et al 2012, Nissen and Newman 1992, Swanson et al 2005, Gauthier-Gagnon and Grise 1994)
- The content relates to the outcomes of MDT intervention provided to this group of patients- it measures the patient's perceptions of their own capabilities and objective indicators of physical, social and psychological performance.
- It could be administered by telephone or face to face interview if necessary.

Audit

In April 2012 an audit was carried out to evaluate the degree to which non limb wearing and ceased limb wearing patients have been able to return to normal life using the Reintegration into Normal Living (RNL) index.

Methodology

A review of records was undertaken to ascertain the degree to which patients who are registered to attend the centre in Wolverhampton that had been declared as NLU or CLU patients in 2011/2012 had been set up with a 6 month notes only review.

CLU 100% of patients had been assigned a 6-month notes only review
NLU 92% of patients had been assigned a 6-month notes only review (1 patient had not)

An RNL index had been sent out in advance of the 6 months notes only appointment in 8 out of 9 of the patients who had ceased the use of their prosthesis 89%.

This was the case in 10 out of the 11 patients who had not received a limb (it was not the appropriate point in time to send 1 RNL index questionnaire in 1 case).

The questionnaire had been returned by 5 of the individuals who had abandoned the use of their prosthesis (63%) and by 4 of the individuals who had not been provided with a prosthesis (50%).

The following table shows the scores for the returned RNL index questionnaire. The scoring is divided into 2 scales: Daily functioning scale (out of 80) (DFS) and Perception of Self Scale (out of 30) (POS).

Patient number	ALU/NLU	DFS	POS
1	NLU	31.5	19.2
2	ALU	42.3	26.2
3	NLU	20.4	8.2
4	NLU	49.5	25.7
5	ALU	41.5	28.7
6	ALU	59.7	19.6
7	ALU	25.8	14.6
8	NLU	31.7	28.5
9	NLU	45.4	26.4

Key Notes from the audit

- The 6 month notes only review has been well implemented by MMC staff
- There is a reasonable rate of return of the RNL index
- Those who have ceased the use of the limb are more likely to return it than those who have not had a prosthesis

On the whole patients have a better response to the perceptions of Self scale than the daily functioning scale. Items that feature in the DFS relate to mobility and self care, hobbies and other activities of daily living. Achievement of which is usually facilitated by the provision of appropriate equipment and adaptations. Our role in respect of these issues is usually appropriate referral to appropriate agencies and follow up following provision of the necessary equipment.

Action Plan

A process has been agreed and instituted to manage the patient following their cessation of use of their prosthesis. This includes contacting the patient to ascertain if they have any new problems as a result of their stopping the use of the prosthesis. Any issues are followed up alongside the 6 months notes only review booked at the time of limb collection; documentation of reasons for limb abandonment and collection of the prosthesis.

All patients who are not provided with a prosthesis will be followed up by the service for 6 months. A 6-month notes only appointment will be made at the time that it is decided by the MDT that this is the case. The decision to not provide a prosthesis will be documented within the medical notes.

The RNLI will be sent out to patients earlier than it is currently to allow for returns to be reviewed and action undertaken before the 6-month notes only appointment happens. Issues relating to the elements of the daily functioning scale can then be addressed as appropriate with relevant agencies both locally and wider as appropriate to the patient's reported issues.

The RNL index will be sent out shortly after the decision to CLU or NLU is made. This will support the setting and review of goals at the start of the 6-month review period.

Louise Tisdale - Physiotherapist, Maltings Mobility Centre, Wolverhampton

References

Gauthier-Gagnon C and Grise MC (1994) Prosthetic profile of the amputee questionnaire validity and reliability. Arch Phys Med Rehabil Dec 75(12) 1309-14.

Malek F, Somerson JS, Mitchel S, Williams RP (2012) Does limb salvage surgery offer patients better quality of life and functional capacity than amputation? Clin Orthop Relat Research July 470 (7) 2000-6.,

Nagarajan R, Mogil R, Neglia I, Robison L and Ness K (2009) Self-reported global function among adult survivors of childhood lower-extremity bone tumors. J.Cancer Survivors: 3 (1) 59-65.

Nissen SJ and Newman WP (1992) factors affecting re integration to normal living after amputation. Arch Phys Med Rehabil Jun 73 (6) 548-51.

Swanson E, Stube J and Edman P (2005) Function and body image levels in individuals with transfemoral amputations using the C-leg. JPO Vol 17, 3; 80-44.

Tisdale L (2012) Measuring patient satisfaction in lower limb amputees after one year of prosthetic use; using the Trinity Amputation and Prosthesis Experience Scales (TAPES). BACPAR Journal 36, 33-35

Wood-Dauphinee SL, Williams JI (1987) Reintegration to normal living as a proxy to the quality of life. J Chron Dis. 40; 491-9.

Wood-Dauphinee SL, Opzoomer MA, Williams JI, Marchand B, Spitzer WO (1988) Assessment of global function, the Reintegration to Normal Living index. Arch Phys Med rehabil; 69 583-90.

Extract from Dissertation "The Effect of Adding Upper Limb Exercises into a Vascular Rehabilitation Exercise Class for Those With Intermittent Claudication"

Extended Literature Review

Exercise therapy has long been advocated as a different way to treat intermittent claudication (IC) (Skinner and Strandness 1967). Despite this it has been found that physical exercise levels in those suffering from Peripheral arterial disease (PAD) are lower than those of the general population (Regensteiner and Hiatt 1995). From personal experience it has been found that there still exists a misunderstanding over the best type of exercise to benefit claudicants. Whilst on a clinical placement a class was run for those with IC. There were several lower limb exercises and one upper limb exercise in the programme; after two weeks the upper limb exercise was removed from the programme as there did not seem to be sufficient evidence to back it up. Also the patients were wondering why, when they had pain in the lower limbs they were asked to do upper limb exercises. There is also a misunderstanding apparent of the mechanisms whereby physical exercise relieves the symptoms of IC. This literature review will look at the evidence for the best type of exercise for claudicants, the mechanisms that improve the physical manifestations of IC and attempt to justify the proposed investigation, which will look at the effect of adding upper limb exercises into a vascular rehabilitation exercise class for claudicants.

Definition and Epidemiology

Intermittent claudication is a term used to describe pain and an altered gait pattern caused by decreased blood flow to the lower limbs due to PAD (Tortora and Derrickson 2009). PAD affects around 20% of the population in the UK of adults over 70 years old (Diehm 2004), and the disease progresses with increasing age. (Regensteiner and Hiatt 2002) The number of people over 65 in the UK is expected to increase by around ten times the overall population growth rate in the next 40 years (Dean 2003) which indicates that this is a problem which can be expected to increase over time (Zwierska et al 2006).

Causes and Pathology

IC is the earliest manifestation of PAD (Garcia 2006), symptoms include calf, thigh or buttock pain induced by exercise and relieved by rest. The pain is caused by restricted blood flow to the exercising muscle, due to obstruction of the peripheral arteries. Obstruction is mainly caused by atherosclerosis (Cassar 2006). The painful areas indicate the arteries which are affected, for example pain in the calf would suggest superficial femoral artery involvement; this is the most common finding (Cimminiello 2002). The risk factors for PAD are similar to those for cardiovascular arterial disease: age, gender, diabetes, smoking, hypertension and hyperlipidemia (Garcia 2006). However diabetes and smoking tend to play more of a major role in IC (Cimminiello 2002).

The risk of a cardiovascular arrest is much higher in this patient group (Cimminiello 2002) and PAD is a high risk factor for both stroke and myocardial infarction (Davies 2000). As the age of this patient group is likely to be high and due to the nature of the disease there are several restrictions to the patients entering the study. For example the patient may have a significant cardiac history, or co-morbidities that exclude them from being able to exercise to the intensity which is required by the proposed study.

Treatment Options

There are two types of treatment available for those with IC, a conservative or surgical approach. Claudicants are started on the conservative approach and few, even after ten years, undergo any revascularisation procedure of the affected limb (Cassar 2006). The conservative approach consists of control of the cardiovascular risk factors for example: smoking cessation, diabetes control, antiplatelet therapy (SIGN 1998) for which aspirin is commonly used (Serracino-Inglott et al 2007), statins (Staessen 1997) and blood pressure control. Current evidence for drug therapy is based on those with ischaemic heart disease or those at strong risk of vascular disease (Davies 2000). The other component to the conservative approach is exercise therapy which is widely accepted (Gardner et al 2005). The surgical approach gives one of two options, a percutaneous transluminal angioplasty (PTA) or bypass surgery (Cassar 2006). Angioplasty is a surgical method whereby an occluded or stenosed artery is dilated (Fowkes and Gillespie 2008).

Proposed Mechanisms Whereby Exercise Improves Symptomatic IC

It now seems obvious to those dealing with patients suffering from IC that exercise therapy is an excellent alternative to invasive procedures. In the past, patients were advised to rest (Clifford et al 1980) but over time research has shown that this is not the case and exercise, although painful to claudicants, is of paramount importance (Hiatt et al 1990). There is a mine of research to back this up (Skinner and Strandness 1967, Alpert et al 1969,Gardner and Poehlman 1995, Gardner et al 2000, Gardner et al 2005). Although these papers agree that exercise does help to improve intermittent claudication the mechanisms by which this occurs is disputed.

Initially the concept of IC improving via physical exercise was thought to be due to an increase in the perfusion of collateral blood vessels (Skinner and Strandness 1967) and this is commonly reported today as a rationale for patients participating in exercise. However, this study only looked at five participants which is a very small sample size and no ankle brachial pressure index (ABPI) measurements were taken throughout the study making the conclusions drawn very subjective. Alpert et al (1969) agree with this view but indicate that although an increase in collateral blood flow does play a part in improving walking distances other physiological factors have a role to play in improving walking distances. Alpert et al (1969) used the Xenon-133 clearance method to measure changes in blood flow in the gastrocnemius; this method involves injecting radioactive isotope into part of the gastrocnemius and following the clearance of this by means of a scintillator detector strapped onto the leg. This study suggests that muscle co-ordination may be improved by daily exercise therapy which reduces the amount of muscle mass involved in walking. It also suggests that muscle adaptation to exercise may take place. Hiatt et al (1990) back this up with the finding that in subjects that undertook exercise therapy maximal calf blood flow did increase but not in correlation to the participant's peak walking time. Increase in the participants walking time was linked to improvement in the skeletal muscle to utilise oxygen. Perkins et al (1996) state that not only does collateral blood flow increase, but at a cellular level the size and amount of mitochondria increase and changes take place in the rate of enzyme activity, this promotes a more efficient use of oxygen within the muscles. Exercise also encourages the fibres within the muscle to change to type one fibres which have a larger capillary network, allowing the muscle to receive greater supplies of vital nutrients. A reduction in blood viscosity is also encouraged by exercise training (Ernst at al 1987).

Exercise training has the additional benefit of promoting a general feeling of well-being (Larsen and Lassen 1966). Another advantage of exercise training is that there are no complications associated with it which is one of the major drawbacks of surgical procedures (Perkins et al 1996). For example Mazari et al (2012) found that participants undergoing a PTA had a higher incidence of restenosis and complications following surgery. They also stated that surgery was less cost effective.

Exercise vs. Invasive Surgery

Despite the functional impairment that is caused by IC there is only a two percent risk (Trans-atlantic Inter-Society consensus 2000) of amputation of the affected limb (Stewart and Lamont 2001). Therefore conservative treatment of claudicants has been advocated (Davies 2000). Nevertheless there has been significant debate over whether invasive surgery or conservative treatment (inclusive of exercise training) is of most benefit to claudicants (Gelin et al 2001).
A randomised controlled trial (RCT) by Lundgren et al (1989) investigating the benefits of surgery over exercise training had three treatment arms: reconstructive arterial surgery plus exercise training, reconstructive arterial surgery alone or exercise training alone. Surgery plus exercise training conferred a greater symptom free and maximal walking distance than either surgery or exercise training alone. But surgery alone was found to confer a greater maximal walking distance than exercise training alone, conflicting with results by Perkins et al (1996). The exercise classes were similar to the RCT by Perkins et al (1996), but it does not state whether the exercise intensity was increased over time which would have changed the participants exercise tolerance. On the negative side this study had no power calculation and a small sample size which making the results less reliable.

A RCT by Mazari et al (2012) had three similar treatment arms, except the surgery was specifically a PTA. This study found that a PTA, a supervised exercise group and a PTA plus a supervised exercise group were all equally beneficial, with no significant differences in improvements in quality of life and walking distance in participants with femoropopliteal arterial disease at one year follow up. However it was found again that in the groups involving a PTA the ABPI measures were significantly increased in comparison with the exercise group ABPI. In contrast to Lundgren et al (1980) this study had a large sample size with an 80% power calculation using previously published trials. Also the exercise group only lasted for three months which is half the recommended length of time; but this trial still gained significant results for the exercise group alone.

A review of the literature performed by Fowkes and Gillespie (2008) to compare angioplasty with conservative management revealed only two RCTs which met the inclusion criteria. Both of these trials showed a greater increase in mean ABPI post surgery in the angioplasty group compared to the control group, which matches with the findings above.

One of the trials (Whyman et al 1997) showed that at six month follow up the angioplasty group had an improved walking distance compared to the control group but this benefit did not carry over at the two year follow up assessments. Also the control group was not an exercise group; participants were given daily low dose aspirin and advice on smoking and exercise.

A RCT carried out by Perkins et al (1996) investigated the benefits gained from exercise training versus a PTA. Overall only four percent of the participants from this study eventually had an amputation which correlates with the figure stated above. They concluded that exercise training gave a greater functional improvement, with greater achievements in walking distance. However, increases in ABPI were most significant in those patients who underwent a PTA. In contrast to this Gelin et al (2001), compared surgical intervention to supervised physical exercise and a control group. At one year follow up significant improvements were only found in the invasively treated group of patients. The outcome measures significantly improved were maximum walking distance, maximum exercise power, ABPI, big toe systolic pressure and maximum post-ischaemic calf blood flow. These results directly contradict one another; both are randomized trials but the group studied by Gelin et al (2001) was much larger and a power calculation had been used; however there is the possibility of bias as there is no mention of blinding of the participants or assessors. The exercise regime used by the two studies was also different; the exercise group studied by Perkins et al (1996) performed dynamic leg exercises with increasing exercise intensity as the patients exercise tolerance improved, compared to a specific walking training class, yet the frequency and duration of the exercise classes were similar. This brings into question the type of exercise that is of greatest benefit to claudicants.

Lower Limb vs. Upper Limb Exercise

There appears to be conflict over whether lower limb exercise may cause deleterious effects due to evidence that people with IC develop an inflammatory type response after walking. Tisi et al 1997 report that with regular exercise this appears to ease and a claudicants walking distance is improved. In contrast a RCT by Nawaz et al (2001) found that the inflammatory response was not attenuated by regular lower limb exercise, as there was no significant improvement found in inflammatory markers after a six-week exercise programme. However they discovered that the increase in walking distance produced by upper limb exercise occurred in the absence of the acute inflammatory responses associated with lower limb exercise. A more recent paper by Saxton et al (2008) agrees with this view.

Another issue with lower limb exercise training is the motivation of patients to maintain an exercise programme (Davies 2000). Long term benefits of patients undergoing exercise training and having a PTA are the same simply because patients tend to stop exercising once unsupervised (Perkins et al 1996). If a patient with symptomatic IC is able to exercise with less discomfort and yet still gain the advantages of exercising with the lower limb this would surely increase their motivation, as it will not involve exercising into pain. Indeed from personal experience patients with IC have been moved to tears at the extent of pain through which they are exercising.

Therefore the proposed study will look into the effects of adding upper limb exercises into the vascular exercise programme. As upper limb exercises involve exercising muscles which are not ischaemic so the patient should not experience ischaemic pain. Consequently they will also be able to work to a higher intensity. If exercising the upper limb is as beneficial as lower limb exercises then upper limb exercise can be utilized either instead of or as well as lower limb exercise.

Walker et al (2000) carried out a RCT with three treatment arms; an upper limb exercise group, a lower limb exercise group and a control group with exercise advice alone. The upper and lower limb exercise group both showed similar improvements in the upper limb and lower limb ergonometry assessments, the post training walking distances and improvement in cardiovascular exercise tolerance. They also assessed quality of life using the Short-Form 36 this also showed similar improvements in the physical functioning and role limitation-physical domains for both upper and lower limb training. The untrained control group showed no significant changes for any outcome measures. This clearly denotes that a supervised physical exercise group with either upper or lower limb exercise produces favourable outcomes in those with IC. It does not, however, clearly demonstrate whether upper limb exercise has an additional benefit above lower limb exercise.

Recommendations for Type and Duration of Exercise for Claudicants

In the proposed study a supervised exercise class will take place with participants required to carry out weight-bearing lower limb exercises and to exercise to near maximal claudication pain. The exercises will be supervised as several studies clearly show that supervised exercise classes are of greater benefit than exercise advice (Serracino-Inglott et al (2007), Cheetham et al (2004) and Clifford et al (1980)).
Moreover weight-bearing lower limb exercises appear to be the most effective type of exercise as described by the Scottish Physiotherapy Amputee Research Group (2002). Furthermore this is the same type of exercise performed in the

RCT by Perkins et al (1996) which gave the best benefit, as previously mentioned. Each session will last for 60 minutes in total as advised by Gardner and Poehlman (1995), they stated that sessions were to be at least 30 minutes long to be most beneficial.

Whilst the literature implies that the most effective length of exercise programme is six months with classes occurring three times per week (SPARG 2002), it is reported that the participants start to show changes before six months; but training is prolonged to ensure an exercise habit is developed. The proposed study will have an exercise programme lasting for eight weeks with classes twice per week. This is because the intervention is not looking at the long-term effects of exercise on IC, but if upper limb exercises have any added benefit when added to lower limb exercise. Eight weeks will be sufficient time to indicate any change as Walker et al (2000) found significant differences between the untrained and trained groups in an exercise group which lasted for only six weeks with classes twice weekly.

Although lower limb exercises are advocated as being the way forward for claudicants as outlined above there is not sufficient evidence to prove that lower limb exercise is the only form of exercise which can benefit these patients; and there is a need for further research into the area of upper limb pain-free exercise. Consequently the proposed study will have a treatment arm with lower and upper limb exercise combined.

Justification of Outcome Measures

Three outcome measures will be used in the proposed study. A graded treadmill test using the Modified Bruce protocol (see Appendix) will be used to assess a claudicant's walking performance as advocated by the Scottish Intercollegiate Guidelines Network (2002). This measure was used by used by Parr et al (2008) and was found to be a useful indicator of a claudicant's level of function. Also treadmill testing is a useful objective measure to assess the severity of disease rather than a participant's history which can be variable (Fowkes and Gillespie 2008). Additionally the study by Perkins et al (1996) used treadmill testing and ABPI measurements, which were sensitive to the changes brought about by upper and lower limb exercise.

The Short-Form 36 will be used to assess a participant's quality of life; this outcome measure tool is often used with patients with PAD (Mehta 2006) and has good reliability and construct validity (Brazier et al 1992). Moreover it was used to good effect in the study previously mentioned, by Walker et al (2000).

The final outcome measure that will be used is a participant's ABPI; this is a non-invasive technique that is advocated by McDermott et al (2002) which is a useful measure to assess the difference between the blood pressure in the upper and lower limb. They argue that the ABPI is more closely associated with leg function in PAD sufferers than IC.

Gill Cottingham - Student Physiotherapist University of Brighton

References

ACSM. 2010. *ACSM's Guidelines for Exercise Testing and Prescription*. 8th ed. Philadelphia, PA: Wolters Kluwer, Lippincott Williams & Wilkins: 112-115.
American College of Sports Medicine. 2005. *Guidelines for Exercise Testing and Prescription.* 7th ed. Philadelphia, PA: Lippincott Williams & Wilkins: 107.

Alpert, J.S., O.A. Larsen and N.A. Lassen. 1969. Exercise and Intermittent Claudication. Blood flow in the Calf Muscle During Walking Studied by the Xenon-133 Clearance Method. *Circulation* 39: 353-359.

Bick, C. 2003. Intermittent Claudication. *Nursing Standard* 17 (42): 45-53.

Borg, G. 1998. Borg's Perceived Exertion and Pain Scales. Leeds, UK: Human Kinetics: 47.

Brazier, J.E., R. Harper, N.M.B Jones, A. O'Cathain, K.J. Thomas, T. Usherwood, L. Westlake. 1992. Validating the SF-36 health survey questionnaire: new outcome measure for primary care. *British Medical Journal* 305: 160-164.

Cassar, K. 2006. Intermittent Claudication. *British Medical Journal* 333: 1002-1005.

Cheetham, D.R., L. Burgess, M. Ellis, A. Williams, R.M. Greenhalgh and A.H. Davies. 2004. Does Supervised Exercise Offer Adjuvant Benefit Over Exercise Advice Alone for the Treatment of Intermittent Claudication? A Randomised Trial. *European Journal of Vascular and Endovascular Surgery* 27: 17-23.

Cimminiello, C. 2002. PAD: Epidemiology and pathophysiology. *Thrombosis research* 106: V295-V301.

Clifford, P.C., P.W. Davies, J.A. Hayne and R.N. Baird. 1980. Intermittent claudication: Is a supervised exercise class worth while? *British Medical Journal* 21:1503-1505.

Davies,A 2000. The Practical Management of Claudication. BMJ. 321: 911-2.

Dean, M. 2003. *Growing older in the 21st century: An ESRC research programme on extending quality of life.* Economic and social research council, Swindon UK.

Diehm C., S. Kareem and H. Lawall. 2004. Epidemiology of peripheral arterial disease. *Vasa* 33:183-9.

Ernst, E.E.W., A. Matrai, 1987. Intermittent claudication, exercise, and blood rheology. *Circulation*: 76: 1110-1114.

Faculty of Health and Social Science Research Ethics and Governance Committee. 2010. *Guidance Notes for Applicants*. [online] FREGC. Available from: http://www.brighton.ac.uk/hss/fregc [23 April 2012]
Fowkes, G. and I.N. Gillespie. 2008. Angioplasty (versus non surgical management) for intermittent claudication. *The Cochrane Library* 4: 1-13.

Garcia, L.A. 2006. Epidemiology and Pathophysiology of Lower Extremity Peripheral Arterial Disease. *Journal of Endovascular Therapy* 13: 113-119.

Gardner, A.W. and E.T Poehlman. 1995. Exercise Rehabilitation Programs for the Treatment of Claudication Pain. *JAMA* 274 (12): 975-980.

Gardner A.W., L.I. Katzel, J.D. Sorkin, L.A. Killewich, A. Ryan, W.R. Flinn and A.P. Goldberg. 2000. Improved Functional Outcomes Following Exercise Rehabilitation in Patients With Intermittent Claudication. *Journal of Gerontology* 55A (10): M570-M577.

Gardner, A.W., P.S. Montgomery, W.R. Flinn and L.I. Katzel. 2005. The effect of exercise intensity on the response to exercise rehabilitation in patients with intermittent claudication. *Journal of Vascular Surgery* 42: 702-709.

Gelin, J., L. Jivegard, C. Taft, J. Karisson, M. Sullivan, A.G. Dahllöf, R. Sandström, B. Arvidsson and K. Lundholm. 2001. Treatment Efficacy of Intermittent Claudication by Surgical Intervention, Supervised Physical Exercise Training Compared to No Treatment in Unselected Randomised Patients I: One Year Results of Functional and Physiological Improvements. *European Journal of Vascular and Endovascular Surgery* 22: 107-113.

Hiatt, W.R., A.T. Hirsch, J.G. Regensteiner and E.P. Brass. 1995. Clinical Trials for Claudication Assessment of Exercise Performance, Functional Status, and Clinical End Points. *Circulation* 92: 614-621.

Larsen, O.A. and N.A., Lassen. 1966. Effect of daily muscular exercise in patients with intermittent claudication. *Lancet*: ii: 1093-1096.

Leng, G. and F. Fowkes. 1992. The Edinburgh claudication questionnaire: an improved version of the WHO/Rose questionnaire for use in epidemiological surveys. *Journal of Clinical Epidemiology* 45:1101-1109.

Lundgren, F., A-G. Dahllöf, K. Lundholm, T. Scherstén and R. Volkmann. 1989. Intermittent Claudication- Surgical Reconstruction or Physical Training? *Annals of Surgery* 209 (3): 346-355.

Mehta, T., A. Venkata Subramaniam, I. Chetter and P. McCollum. 2006. Assessing the Validity and Responsiveness of Disease-specific Quality of Life Instruments in Intermittent Claudication. European Journal of Vascular and Endovascular Surgery 31: 46–52.

Nawaz, S. R.D Walker, C.H. Wilkinson, J.M. Saxton, A.G. Pockley and R.F.M. Wood. 2001. The inflammatory response to upper and lower limb exercise and the effects of exercise training in patients with claudication. *Journal of Vascular Surgery* 33 (2): 392-399.

Parr, B. T. D. Noakes and E. W. Derman. 2008. Factors predicting walking intolerance in patients with peripheral arterial disease and intermittent claudication. *South African Medical Journal* 98 (12): 958-962.

Perkins, J. M. T., J. Collin, T. S. Creasy, E. W. L. Fletcher and P. J. Morris. 1996. Exercise Training Versus Angioplasty for

Stable Claudication. Long and Medium Term Results of a Prospective, Randomised Trial. *European Journal of Vascular and Endovascular Surgery* 11: 409-413.

RAND Health. 2008. *RAND 36-Item Short Form Health Survey (SF-36)* [online] RAND Health. Available from: http://orthodoc.aaos.org/DrAlShaikh/SF36.pdf
[16 May 2012]

Regensteiner, J.G. and W.R. Hiatt. 2002. Current medical therapies for patients with peripheral arterial disease: A critical review. *American Journal of Medicine* 112: 49-57.

Regensteiner, J.G. and W.R. Hiatt. 1995. Exercise rehabilitation for patients with peripheral arterial disease. *Exerc Sport Sci Rev* 23: 1-24.

Saxton, J.M., I. Zwierska, K. Hopkinson, E. Espigares, S. Choksy, S. Nawaz, R. Walker and A.G. Pockley. 2008. Effect of Upper- and Lower-limb Exercise Training on Circulating Soluble Adhesion Molecules, *hs*-CRP and Stress Proteins in Patients with Intermittent Claudication. *European Journal of Vascular and Endovascular Surgery* 35: 607-613.

Scottish Intercollegiate Guidelines Network. 1998. *Drug therapy for peripheral vascular disease: a national clinical guideline.* Edinburgh: SIGN.

Scottish Intercollegiate Guidelines Network. 2002 see Fiona brett email

Scottish Physiotherapy Amputee Research Group. 2002. *SPARG Guidelines: exercise therapy for patients with intermittent claudication*. Glasgow: SPARG: WE134

Serracino-Inglott, F., G. Owen, A.Carter, F. Dix, J.V.Smyth and I.V.Mohan. 2007. All Patients Benefit Equally From a Supervised Exercise Program for Claudication. Vascular and Endovascular Surgery: 41 (3): 212-216.

Skinner, J.S. and D.E. Strandness. 1967. Exercise and Intermittent Claudication II: Effect of Physical Training. *Circulation* 36: 23-29.

Staessen J.A., R. Fagard, L.Thijs. 1997. Randomised double-blind comparison of placebo and active treatment for older patients with isolated systolic hypertension.
Lancet : 350:757-64.

Stewart, A.H.R. and P.M. Lamont. 2001. Exercise for intermittent claudication. *British Medical Journal* 323: 703-704.

Tisi, P.V., M. Hulse, A. Chulakadabba, P. Gosling, C.P. Shearing. 1997. Exercise training for intermittent claudication: does it adversely affect biochemical markers of the exercise-induced inflammatory response? *European Journal of Vascular and Endovascular Surgery* 14: 344-350.

Tortora, G.J and B. Derrickson. 2009. Principles of anatomy and physiology. 12th edition vol 2 maintenance and continuity of the human body. John Wiley and sons (Asia) pg 826

Trans-atlantic inter society consensus. (TASC) Int Angiol 2000; 19 (suppl 1): 1-304. Management of peripheral arterial disease (PAD).

UoB. 2007. *Guidance on Research Governance in Health*. [Online] University of Brighton. Available from: http://staffcentral.brighton.ac.uk/xpedio/groups/public/documents/staffcentral/doc007530.pdf
[26 April 2012]

Walker, R.D., S. Nawaz, C.H. Wilkinson, J.M.Saxton, A.G Pockley and R.F.M. Wood. 2000. Influence of upper- and lower-limb exercise training on cardiovascular function and walking distances in patients with intermittent claudication. Journal *of Vascular Surgery* 31 (4): 662-669.

Whyman, M.R., F.G.R. Fowkes, E.M.G. Kerracher, I.N. Gillespie, A.J. Lee, E.Housley and C.V. Ruckley. 1997. Is intermittent claudication improved by percutaneous transluminal angioplasty? A randomised controlled trial. *Journal of Vascular Surgery* 26 (4): 551-557.

Zwierska, I., S. Nawaz, R.D. Walker, R.F.M. Wood, A.G. Pockley and J.M. Saxton. 2004. Treadmill versus shuttle walk

tests of walking ability in intermittent claudication. *Medicine and Science in Sports and Exercise* 36 (11): 1835-1840.

Zwierska, I. R.D Walker, S.A. Choksy, J.S. Male, A.G. Pockley and J.M Saxton. 2005. Upper- vs lower-limb aerobic exercise rehabilitation in patients with symptomatic peripheral arterial disease: A randomised controlled trial. *Journal of Vascular Surgery* 42 (6): 1122-1130.

Zwierska, I. , R. D. Walker, S. A. Choksy, J. S. Male, A. G. Pockley and J. M. Saxton. 2006. Relative Tolerance to Upper and Lower-Limb Aerobic Exercise in Patients with Peripheral Arterial Disease. *European Journal of Vascular Endovascular Surgery* 31: 157-163.

Genium Study Day ProActive Prosthetics

"I'm getting a Genium knee I think" announces my patient, "Oh good, what exactly does that mean?" I ask with trepidation! This is the patient that I had to learn what a C-leg is all about as we don't get many of them on the NHS in Norfolk. The sinking feeling returned when he says brightly "Oh don't worry, they are having a course for you to learn how to use it and I am demonstrating so you need to come!"

So I get up at some very early hour (even the children weren't up!) to drive to ProActive Prosthetics in Surrey to learn all about the new wonder knee. A few hours later I arrived in Surrey to be greeted by Kevin Shaw from ProActive and a bunch of fairly familiar Physiotherapists who were all very keen to learn all about this knee and what it can do.

Franziska Hertzberger was the lady in charge, she is a dual qualified Physiotherapist/Occupational Therapist who has been working with patients and teaching them about the knee for the past few years, along with Ken Hurst from Otto Bock. We started with a welcome and a technical introduction to the Genium where Ken talked us through what it was all about from the prosthetic point of view and then Franziska took over to talk to us about the basics of using the Genium.

It was all very interesting and seeing the Genium in action was really good, with a real live patient who was clearly using it well and able to adapt to being asked to do things to demonstrate which he hadn't tried before but could manage after a few minutes instruction.

We went through sitting function and standing function with lots of tips and tricks of how to get the Genium to work. Then back to the drawing board to get the ability to teach people to walk up and down stairs and there followed a lot of interactive discussion about how the knee was walking down slopes and how it differed from a C-leg as the patient was a previous C-leg wearer.

The knee itself was very impressive and appeared to second guess a lot of what the patient was trying to do and he himself admitted he wasn't aware that he was using all the functions a lot of the time.

We then progressed to walking up stairs and stepping over objects, there is a knack to doing this bit and it took a few practise sessions of stepping over foam blocks to get the patient to be able to activate his knee, but it was interesting watching him try and adapt to get the desired effect. Being a fast learner he got there pretty quickly, but I can see how it might take other patients a lot longer to master the

techniques required. But also if the patient was starting from new on a Genium they wouldn't have to relearn techniques which were certainly required from the C-leg user point of view as the patient stated that it was a totally different feeling walking on both legs which took a bit of getting used to. But he also felt the Genium was much more intuitive and required less thinking and more trying to do things.

There was some excellent debate and discussion throughout the afternoon and we finished with a stair climbing demonstration.

When asked after the days training what he thought, the patient said that he would have stuck with the C-leg if it had a longer battery life. As his therapist I think he walks much better with the Genium, his gait is better and he walks down slopes and can stop on the way down now, something he struggled with before.

In summary this was an excellent course with a patient who could demonstrate everything asked of him well and provide verbal feedback clearly and consicely to enable us to learn more about what we need to to to get the best out of the Genium. With some really useful real life pointers from Franziska and Ken.

But who I am kidding, my patient knows how to work the Genium better than me! He can also probably explain the technical bits better and articulate what he feels is wrong no worries. So if we ever get another Genium in Norfolk, I'll be calling him to teach them what to do! From my point of view though his gait is definitely better with a Genium, but that much more expensive better... I'm not qualified to answer that!

Sue Flute - Physiotherapist, Norwich

BACPAR Honory Officers 2011/12

CHAIRMAN: Louise Tisdale
Physiotherapy Dept, Maltings Mobility Centre, Herbert Street, WOLVERHAMPTON, WV1 1NQ
Tel: 01902 444721
E-mail: Louise.Tisdale@wolvespct.nhs.uk

VICE CHAIRMAN: Mary Jane Cole
Tel: 07884232330
E-mail: Maryjrcole@aol.com

HON SECRETARY AND DIVERSITY OFFICER: Lucy Holt
Prosthetic Services, Mary Marlborough Centre, Windmill Road, Headington, OXFORD, OX3 7LD
Tel: 01865 227272
E-mail: Lucy.Holt@noc.anglox.nhs.uk

HON TREASURER: Anne Berry
Harold Wood DSC, Harold Wood Hospital,Gubbins Lane, ROMFORD, RM3 0AR
Tel: 01708 796217
E-mail: Anne.Berry@haveringpct.nhs.uk

HON PRO: Matthew Fuller
Physiotherapy Department, Vascular Gym, 3rd Floor Lambeth Wing, St Thomas' Hospital, Westminster Bridge Road, LONDON, SE1 7EH
Tel: 0207 188 7188
E-mail: matthew.fuller@gstt.nhs.uk

HON MEMBERSHIP SECRETARY: Julia Earle
DSC, Medway Maritime Hospital, Windmill Road, GILLINGHAM, Kent, ME7 5NY
Tel: 01634 830000 ext. 3926
E-mail: julia.earle@nhs.net

HON JOURNAL OFFICER: Sue Flute
Pine Cottage, Colman Hospital, Unthank Road, NORWICH, Norfolk, NR2 2PJ
Tel: 01603 251270
E-mail: bacpar@flutefamily.me.uk

HONORARY RESEARCH OFFICER: Alex Weden
Mobility Centre, Nottingham City Hospital, Nottingham University Hospitals, Hucknall Road, Nottingham, NG5 1PB
Tel: 01159 691169 ext. 57535
E-mail: alexanderweden@hotmail.com

EDUCATION OFFICER: Penny Broomhead
E-mail: pennybroomhead@googlemail.com

IGUIDELINES CO-ORDINATOR: Karen Clark
Amputee Rehabilitation Centre, Derby Royal Infirmary, Derby Hospitals Foundation Trust, London Road, DERBY, DE 2QY
Tel: 01332 347141 ext 2975.
E-mail: Karen.clark4@nhs.net

GUIDELINES CO-ORDINATOR: Tim Randell
Clinical Specialist Physiotherapist, Dorset Prosthetic Centre, Royal Bournemouth Hospital, Castle Lane East, BOURNEMOUTH, Dorset, BH7 7DW
Tel: 01202 704363
Fax: 01202 704364
E-mail: tim.randell@rbch.nhs.uk

SPARG REPRESENTATIVE: Mary Jane Cole
Tel: 07884232330
E-Mail: Maryjcole@aol.com

REGIONAL REPRESENTATIVES 2011/12:

NORTHWEST/MERSEY
Liz Bouch, Vascular Outreach Team, Platt Rehabilitation, Manchester Royal Infirmary, Oxford Road, MANCHESTER, M13 9WL
Tel: 0161 276 3642.
E-mail: Elizabeth.bouch@cmft.nhs.uk

Marc Hudson, Physiotherapy, Disablement Services Centre, Cavendish Road, MANCHESTER. M20 1JB
Tel: 0161 611 3769
E-mail: marcmywords@gmail.com

TRENT
Sarah Drury/Clare Williams, Physiotherapy department, Doncaster Royal Infirmary, Armthorpe Road, DONCASTER, DN2 5LT
Tel: 01302 366666 ext. 4136 bleep 1461
E-Mail: sarah.drury@nhs.net, clare.williams4@nhs.net

WEST MIDLANDS
Hilary Smith, Physiotherapy Department, Queen's Hospital, Belvedere Road, BURTON-on-TRENT, DE14 0RB
Tel: 01283 566333 Ext. 5032
E-mail: hilary.smith@burtonh-tr.wmids.nhs.uk

Wendy Mayhew, West Midlands Rehabilitation Centre, Oak Tree Lane, Selly Oak BIRMINGHAM. B29 6JA
Tel: 0121 371 2000
E-mail: wendy.mayhew@bhamcommunity.nhs.uk

NORTH THAMES
Kate Primett, Royal Free Hospital, Hampstead Heath, Pond Street, LONDON, NW3 2QG
Tel: 020 779 40500 Blp: 2368
E-mail: kate.primett@nhs.net

Natasha Brett, Physiotherapy Department, Royal National
Orthopaedic Hospital, BrockleyHill, STANMORE, HA74LP
Tel: 020 909 5820
E-mail: Natasha.brett@rnoh.nhs.uk

YORKSHIRE
Lynn Hirst, Physiotherapy, Prosthetics Service, Seacroft Hospital, York Road, LEEDS, LS14 6UH
Tel: 011320 63638
E-mail: Lynn.Hirst@leedsth.nhs.uk

NORTHERN
VACANT

EAST ANGLIA
Sue Flute, Pine Cottage, Colman Hospital, Unthank Road, NORWICH, Norfolk, NR2 2PJ
Tel: 01603 251270
E-mail: bacpar@flutefamily.me.uk

Lysa Downing, Addenbrooke's Rehabilitation Clinic, (Clinic9) Addenbrooke's Hospital, Cambridge University Hospitals NHS Foundation Trust, Hills Road, CAMBRIDGE, CB2 0QQ
Tel: 01223 217 879
E-mail: lysa.downing@addenbrookes.nhs.uk

WESSEX
Chantel Ostler
E-mail: Chantel.ostler@sky.com

Katharine Atkin,
Portsmouth DSC., St Mary's Hospital, Milton Road, PORTSMOUTH. PO3 6BR
Tel: 02392 286000 ext. 3970
E-mail: katharine.atkin@porthosp.nhs.uk

SOUTH THAMES
Fiona Brett, Vascular Clinical Specialist, Physiotherapy OP Department, Kent and Canterbury Hospital, Ethelbert Road, Canterbury, Kent.
Tel: 01227 766877 ext. 73032
E-mail: Fiona.Brett@ekht.nhs.uk

Jodi Georgiou, Bowley Close Rehabilitation Centre, Farquar Road, Crystal Palace, LONDON
Tel: 020 3049 7724
E-mail: jodi.georgiou@southwarkpct.nhs.uk

OXFORD
Lucy Holt, Prosthetic Services, Mary Marlborough Centre, Windmill Road, Headington, OXFORD, OX3 7LD
Tel: 01865 227272
E-mail: Lucy.Holt@noc.anglox.nhs.uk

SOUTH WEST
Helen Jones/Jain Ord, Community Rehab Team/Lamona Ward, Camborne/Redruth Community Hospital, Barncoose Terrace, REDRUTH, Cornwall, TR15 3ER
Tel: 01209 881647/881630
E-mail: Helen.jones@CIOSPCT.cornwall.nhs.uk
Jain.ord@CIOSPCT.cornwall.nhs.uk

IRELAND
Carolyn Wilson
RDS Musgrave Hosptial Stickman's Lnae Belfast BT9 7JB
Tel: 028902702
E-mail: carolyn.wilson@belfasttrust.hscni.net

WALES
Jo Burton, ALAC, Rookwood Hospital, Fairwater Road, Llandaff, Cardiff, CF5 2YN
Tel: 02920 313921
E-mail: jo.burton@wales.nhs.uk

SCOTLAND
Louise Whitehead
Email: lwhitehead@nhs.net

APLLG REP.
Nichola Carrington
E-mail: Nichola.carrington@southwarkpct.nhs.uk

Guidelines for Journal Article Submission

Submitting a document:

- Please send the article as a Word or PDF file.

- If your article includes pictures please also send these as separate files (JPEG, BMP, GIF, PNG etc format) at the highest quality you have.

- If your article includes graphs please also send these as separate Excel files and name these the same as your article followed by a number in the sequence that they appear in the article (as with pictures). If all the graphs are in one Excel file this is fine.

- Finally, if there is anyone out there who would like to advertise in The Journal, or if you know anyone who you think would like to, please let me know.

Please email bacpar@flutefamily.me.uk with your submissions and any queries

DEADLINE for SPRING 2013

15 February 2013

1C63 Triton Low Profile

Life in motion.

The 1C63 Triton Low Profile offers excellent flexibility and dynamic response. It sets itself apart through a combination of flexible carbon fibre composite materials and the base spring made of high-performance polymer. The adapter of the Triton Low Profile consists of high-quality titanium, making the foot extremely robust and water-resistant with a high load capacity. The low structural height of the Triton Low Profile makes it especially well suited for users with limited available space for installation. It is suitable for a wide range of users and applications ranging from everyday use to recreational sports.

www.yourlife-youradventure.com

Up to 100 kg
Size 21–24 cm

Up to 150 kg
Size 25–30 cm

provider
Paralympic Games

Ottobock · 0845 600 7664 · www.ottobock.co.uk