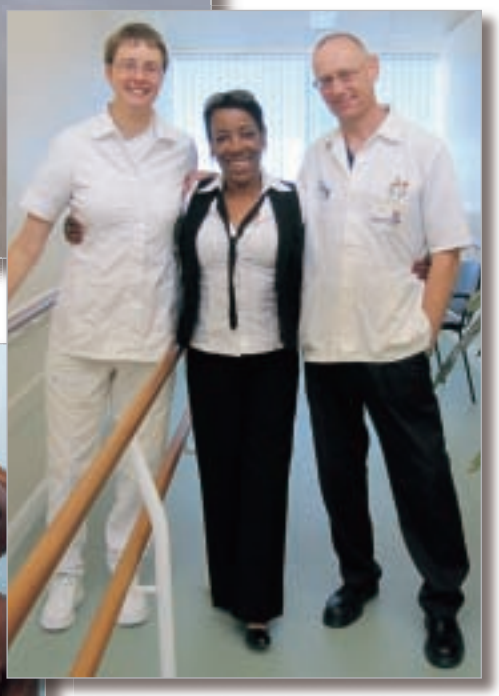
BACPAR

BRITISH ASSOCIATION OF CHARTERED PHYSIOTHERAPISTS IN AMPUTEE REHABILITATION



The Journal
Issue 33, Autumn 2010

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Welcome

A series of firsts….and a second.

Welcome to the first BACPAR journal in my Chairmanship of BACPAR. I am thankful to the Executive committee for their confidence in me and their voting me into this honorary position.

2010 has also seen the end of my first year in my new job in Wolverhampton, having spent the first 17 years of my career in Shropshire. I am grateful for the support of my colleagues and management in workplaces old and new, allowing me to take on my previous and current BACPAR duties as regional rep for the West Midlands, Clinical Interest Group Liaison Committee Officer (CIGLC) and Vice Chairman. I understand that some members are less fortunate in terms of support from their managers when they ask to attend CIG related activities, and for this reason the Chartered Society of Physiotherapy (CSP) is producing a leaflet for CIG members that will demonstrate the value to managers of their staff being involved in CIG activities whether it be educational or in supporting BACPAR in achieving its objectives. This leaflet will be distributed when it is published.

This year has also given me my first experience of teaching someone who has had bilateral transtibial amputations to walk in 5 inch heels and a first visit to the House of Commons attending the Associate Parliamentary Limb Loss Group (APLLG) meeting on behalf of BACPAR.

But enough about me, this journal is about BACPAR and its role in taking amputee rehabilitation forward, for the membership of BACPAR, written largely by BACPAR members and brought together and edited by the BACPAR journal officer.

The Executive Committee, whose officers include your regional representatives, meet twice a year, and communicate between meetings to update the committee re progress in their individual projects. In February the 2010 the BACPAR Service Portfolio was discussed, agreed and then published on iCSP (Amputee Rehabilitation). If you haven't already done so, I ask you to take a look at the 2010 Work Plan and measure the effectiveness of the Committee against these objectives.

I can verify that progress has been made toward achievement of each and every one of the objectives.
In your regions you should have been asked to contribute to a SWOT analysis of your BACPAR membership and its role, and to undertake some work to implement trials of Outcome measures following publication of the Toolbox in February this year. The outcome measures working party need your feedback re the practicality and value of the measures provided in the Toolbox to take the project into its second phase.
As individuals you have been asked to participate in the update of the 2003 BACPAR guidelines and give feedback regarding a number of consultation documents and other draft documents that have been produced by, for example, the CSP, the Centre Managers Forum and the Vascular Society. Please support your Regional Representatives and help BACPAR to achieve its objectives by responding to requests for your involvement.

A further update on BACPAR's progress toward meeting its objectives will be provided at the AGM on the 16th of November.

The organising committee of the 2010 Conference (Lucy, Marc and Jain) have reviewed the feedback from the 2009 conference and your membership application forms to produce a programme in Wolverhampton (the preferred venue) that should tick many boxes on your CPD needs list. It was decided not to proceed with organising a conference with ISPO UK (as had been hinted at in the Chairman's letter of the spring Journal) because doing so would have meant that BACPAR could not guarantee an affordable Conference for its membership, however the potential of organising a conference jointly with other members of the amputee rehabilitation MDT has not been discounted for the future.

Following your feedback at the last conference and collaboration with Ortho Europe larger PPAM aid bags and frames have been produced. BACPAR members are currently working with Ossur to produce guidelines and a DVD for the use

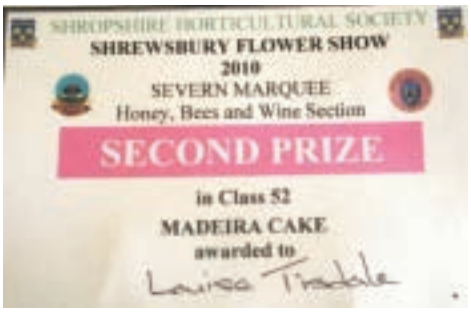
of the Femurett. It is anticipated that the dissemination of this guidance and that of the Risks to the Non Amputated foot will be part of the Conference programme. The latter being coursework of the 2007 cohort of the Bradford University/BACPAR Post graduate certificate in Amputee Rehabilitation. Scoping work is also underway regarding the development of a multi-disciplinary guideline to support amputee rehabilitation in Paediatrics.

Opportunities for members to become part of the Executive are available at the AGM in November. Please see Ruth's report as secretary and contact the current post holders for more information if you are interested. I am currently in the seat for the CIGLC officer, a position which acts as a communication link between the CSP and BACPAR. Travel expenses are funded by the CSP and a light lunch is always provided at meetings which are held at Bedford Row in London. It is a good opportunity to network with other CIG representatives and understand the workings of the CSP.

Enjoy this copy of the Journal. Heartfelt thanks go to Sue Flute for bringing together another copy. If you want to contribute to the spring edition, you don't have to wait for the deadline. Send your articles to Sue at bacpar@flutefamily.me.uk as and when they come to you.

Looking forward to seeing as many of you as possible on the 15th and 16th of November, in Wolverhampton, in the meantime if you have any comments, compliments or concerns re BACPAR, its function, communications and future plans, please do not hesitate to contact me.

Louise Tisdale - BACPAR Chair 2010



Oh, and the 2nd was my second prize for the Honey Madeira cake at the 2010 Shrewsbury Flower Show, an accolade of which I am very proud. If you want the recipe, don't hesitate to contact me.

BACPAR Secretary Report 2010

Hello everyone

Hope the summer went well and your plants didn't suffer too badly either with dry feet or wet ones!

It's been a steady year for the BACPAR secretary this year although BACPAR remains very active. Guidelines are being reviewed and new ones are being developed. Members are involved in producing new equipment and guidelines for equipment use with the manufacturers, i.e. Larger PPAM aid, more comprehensive guidelines for use of the Femurett are in the pipeline. BACPAR was invited to be involved in the producing a pathway for the Map of Medicine by the British Vascular Society and we have been approached to contribute to a new edition of 'Therapy for Amputees'. So there is high profile work going on.

There may be some changes to the BACPAR regions and the iCSP networks with the advent of the CSP networks and the creation of a new CSP website but as I write it is status quo at the moment.

The conference will soon be upon us and it looks another excellent relevant programme. I hope many of you will be able to attend in these 'spending cuts' times. The mention of the conference brings me nicely to executive posts that will be up for election this year, so if you feel the urge to become part of a small but very active CIG then please consider being nominated. Look out for the forms in this addition and on the iCSP Amputation Rehabilitation site. The posts that are going to be available are: Treasurer, iCSP Co-ordinator, Diversity Officer, CIG Liaison Officer. If you feel one of these post is appealing I'm sure the current post holders would be happy to explain their role further. Contact details are at the back of this journal. You can be nominated on the day of the AGM if you need time to think about the commitment as pressures from work and managers will continue as times threaten to get harder.

Thank you for continuing to Support BACPAR

Ruth Woodruff - Secretary

Five Inch Heels... No Problem!

45 year old Marcia is a bilateral below knee amputee who has recently been fitted with a new pair of artificial limbs to allow her to wear her desired high heels. Marcia has Buerger's disease which led to the first amputation in 2006 followed by the second in 2009. She has made great progress in the last year and continues to do so. Her prescription of Trias feet on her everyday limbs and suction suspension has helped her reach her goals of getting out and about in the community with family and friends, going to the gym and walking. She then expressed a wish to wear heels, but not just any heels, a very glamorous pair of shoes with 5" heels!

I had no experience of fitting a bilateral amputee with feet to accommodate such a heel height so this was a first for us both. The only feet available with a similar heel height were the Kingsley Hi-style SACH feet. The prostheses were manufactured and the feet fitted and then the fun began!

Initially Marcia took some time to find her balance but after a few trials in the physio gym she began to gain confidence. As for how they looked, she was a very happy young lady! This was definitely a new experience for this centre and I hope it has inspired people to go for their goals and achieve their potential and us Prosthetists to do our best to facilitate that.

Rachel Neilson - Prosthetist, Wolverhampton

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Audit of the Advice and Information Given to Amputees Concerning Falls

In September 2005 PIRPAG (Physiotherapy Inter-Regional Prosthetic Audit Group), which consists of DSC Physiotherapists from the South East, agreed to perform a retrospective audit of their patient records against the BACPAR guidelines for the advice and information given to amputees concerning falls (sections 5.5.1 – 5.5.4), using the BACPAR audit tool. A total of 58 patients notes from 6 centres were audited for the period August and September 2005. The results were poor and we felt that falls advice and practice getting up from the floor was definitely something that was taking place within treatment sessions but that we were not good at recording it in our notes. As probably with most physios we were better at recording what we physically did and evidence of us giving advice as to how to get off the floor (or in most cases actually practicing it) was more forthcoming. We decided that what was needed was a booklet particularly aimed at amputees with all the advice recommended by the guidelines, including methods, with photos, of how to get off the floor.

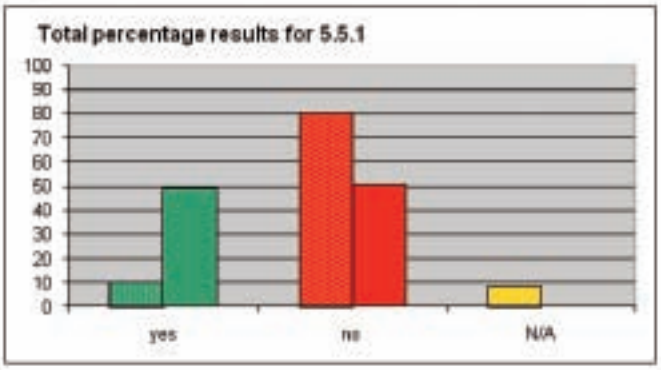
The booklet was developed from ones already in existence at Charing Cross and Harold Wood and eventually a revised version started to be used in all the centres following comments from patients and staff.

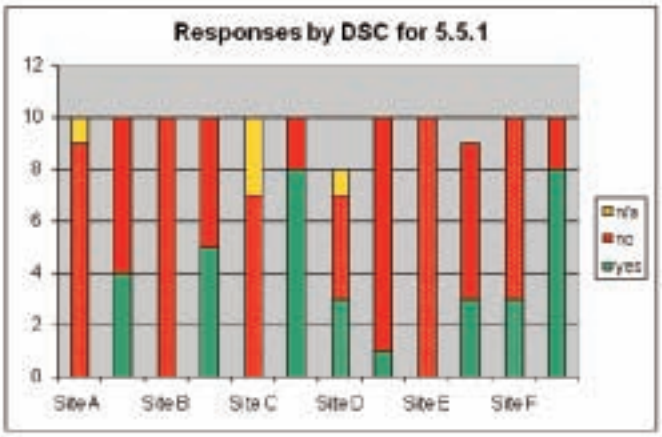
In June 2010 the first audit was repeated to assess whether we were now meeting the guidelines.

Results

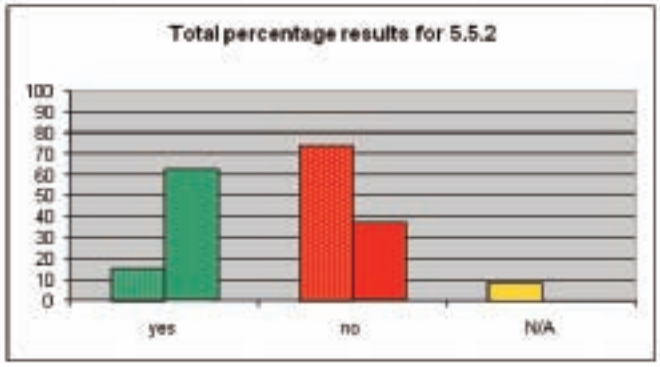
The dotted columns are the data from the first audit and the solid colour the second audit on each of the following graphs.

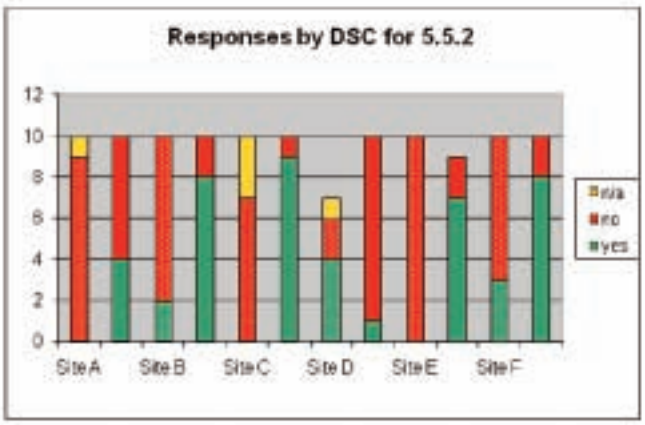
5.5.1 Is there written evidence of information provided on the increased risk of falls following amputation?



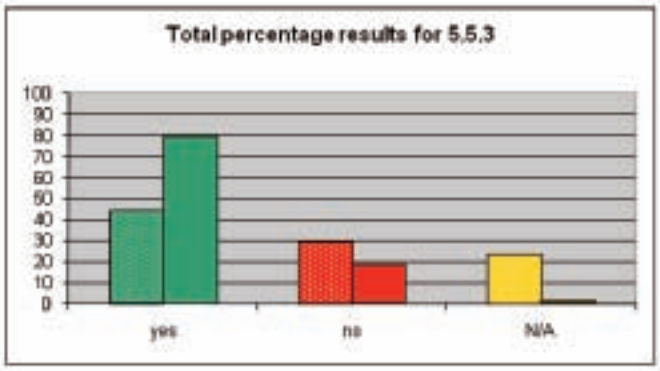


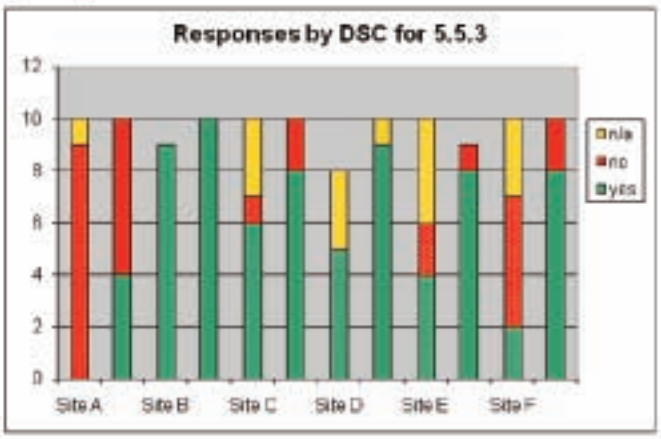
5.5.2 Is there written evidence of education on preventing falls and coping strategies should a fall occur?



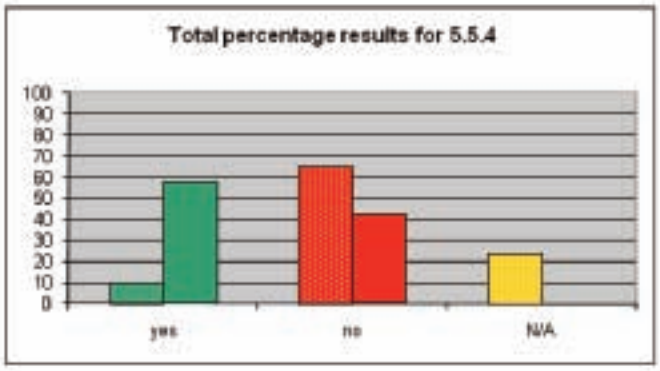


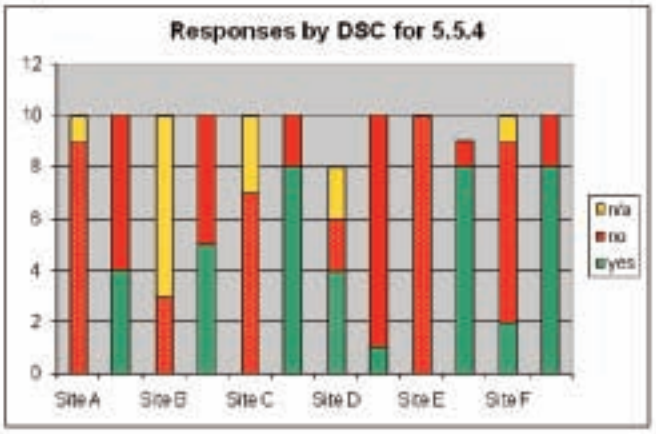
5.5.3 Is there written evidence of instruction on how to get up from the floor?





5.5.4 Is there written evidence of advice in the event the patient is unable to rise from the floor?





Discussion

From the results as a whole there has been a considerable improvement in the recording of information given although this does vary between centres. In some cases the audited notes were of patients where discussion and provision of this type of information was not appropriate at the time. There were fewer notes however where it was felt that the information was not applicable as the booklet was being given out to the majority of patients. There is still an issue that the provision of the booklet is not always being recorded in the notes. At site D the service over the period audited was being offered by a locum physio who was not aware of the booklet which unfortunately resulted in poorer results. This does however demonstrate the importance of all staff being aware of it and being encouraged to use it and draw patients attention to it in discussion.

Each of the centres are now using the booklet in slightly different ways. For example in one centre the booklet is supplied to all primary amputees as part of the information package sent to them with their primary appointment as well as being discussed at an appropriate time within the rehabilitation. Several of the referring hospitals are also now using the booklet with their inpatients.

If you would like to see, and possibly use, a copy of the booklet we developed you should be able to find it on iCSP under "falls booklet" by the time this journal is published.

Julia Earle - Gillingham DSC

BACPAR Bursaries

Bursary money will be available at the next executive BACPAR meeting in Autumn 2010. Bursaries are available to support BACPAR members. Awards may be granted towards presenting a paper at a conference, attending relevant courses and conferences, or to help with a project related to amputee or prosthetic rehabilitation.

The bursary guidelines and application form are downloadable from iCSP, or available from your regional rep.

Graded Motor Imagery Study Day

Royal Shrewsbury Hospital 19th June 2010

What a stroke of luck, a full day course on Graded Motor Imagery (GMI) within an hours drive of home and perfect timing after having my appetite whetted at last years BACPAR Conference. So off I went to Shrewsbury on a sunny but cold morning kitted out in my shorts and vest ready for the practical sessions.

The day started with a technical hitch. The physiotherapy department's power was being cut for 2 hours due to generator testing. Poor Ben Davies. It's not what you need when you are just about to launch into your performance. Anyway a very helpful maintenance man found the group a powered room adjacent to the department with comfy chairs, a great coffee machine and excellent presentation technology.

So the theory of GMI got underway. The neuromatrix and neurosignature/tag were explained; which areas of the brain are stimulated when pain is experienced; how the virtual body/homunculus can change through re-organisation of the neuromatrix representation. This change in representation of the pain neuromatrix in chronic pain conditions can cause disinhibition, increased excitation, immune reactions and unmasking latent synaptic connections – even by thoughts and visual stimuli. In more eloquent words – ' Pain is a multi-system output activated by an individual specific pain neuromatrix. The neuromatrix is activated whenever the brain concludes that the body tissues are in danger and action is required. Pain is allocated in anatomical reference in the virtual body.' Moseley 2003.

We were introduced to mirror neurones which fire on perceived and executed actions. They allow us to learn from copying, by running through actions before we physically perform them and allows us to share others emotions – hence - 'feeling others pain', 'it hurts on thinking of moving.'

Understanding the plasticity of the neuromatrix and having knowledge of mirror neurones we can treat the changes in the virtual body by normalising the neuromatrix – Neuromatrix training. This leads nicely into Graded Motor Imagery. Ben explained that GMI is structured so progression is paced to prevent triggering the pain neuromatrix. Functional activity, social situations, emotional demands all have to be considered.

Components of GMI:

- Laterality Reconstruction
- Motor Imagery
- Mirror Therapy
- Functional Rehabilitation

Laterality Reconstruction. This is training for left and right discrimination/spatial awareness as this can be lost in people suffering from chronic pain. Training can use sophisticated methods such as Recognise Online and the NOI flash cards or simply by using magazine pictures, photographs on 'phones or photographs stored on CD or memory stick.

Test for accuracy and speed. We had a practical session using the cards and the online system to test our accuracy and speed. This physio definitely needs to practice. She was showing some clear laterality deficits!

Motor Imagery. This can range from imagined positions, imagined movements/activities, watching others move, and imagining copying movements. As the Frontline article referred to becoming Indiana Jones can be of help.

Mirror Therapy. Everybody is aware of the mirror box and how its use has been linked with the treatment of phantom pain in amputees. Until a few years ago how many physios linked it as a progression of treatment?

The group tested out various techniques using the mirror box. The most strange was the stroking of the back of the hands but delaying the stroke for the hidden hand – try it, it is a most peculiar sensation/phenomenon. There was much discussion over the use of the mirror therapy particularly over the emotional response of using it for amputees and how patient would react to the illusion of seeing an intact limb then returning to amputation on removal of the mirror. The general consensus was patients may need to be selected and a clear and full explanation of its use should be given. I know that Alex Weden from Nottingham DSC, BACPAR research officer is going to be involved in further GMI research but I am unsure what aspect is being examined. There is plenty of research out there. The accompanying workbook gave 3 full A4 pages of papers.

It was an excellent day which developed my understanding of GMI. It also taught me techniques on how to introduce the concept to patient which can be difficult to describe when they are expecting a more hands on physical treatment approach – imagined movements!! I would recommend anyone to attend a course if they have the opportunity.

I must mention the resident Duck family who gave a running commentary throughout the day and no doubt thought it their lucky day to be fed at the weekend.

Ruth Woodruff - Specialised Mobility Centre, Stoke-on-Trent

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Bilateral Trans Tibial Amputees with Diabetic Mellitus

Aim

To review the evidence for the risk factors for contra-lateral amputation in people with Type 1 or Type 2 Diabetes Mellitus and a trans-tibial amputation. The paper will centre around five case studies who have all been diagnosed with Diabetes Mellitus. They have all had a unilateral trans-tibial amputation followed by a trans-tibial amputation of their contra-lateral limb at a later date. Their treatment after their first amputation will be analysed and compared to the evidence to assess if their treatment was optimal to prevent or delay their contra-lateral amputation.

Background

By the year 2010 it is projected that the number of people in the UK with diabetes will reach 2.8 million (DoH 2001). Diabetes is a major cause of lower extremity amputations in the UK (Harker 2006). This is due to various long term complications associated with diabetes (DoH 2001). The rate of lower limb amputations is 13.1 times greater in people with diabetes than for the general population (New et al 1998). Furthermore 76.3% of bilateral amputees were due to diabetic causes in the UK in 2005/6 (NASDAB 2007).

The overall prognosis for an individual after bilateral limb amputation is very poor, with high rates of disability, depression and death (Van Gils et al 1999). Peters et al (2001a), in a study with some flaws in their methodology, found that amputations in individuals with diabetes have a significant impact on function and ability to cope. Pell et al (1993) suggest that quality of life is reduced after amputation and this is related to restricted mobility. All case studies in this paper had a decline in mobility. It is considered that increasing mobility will improve the quality of a person's remaining life and encourage a return to their previous social situation (Nitz 1993). If not they may need extra care if they can no longer achieve certain tasks. They may lose some independence as they have difficulty accessing certain rooms or outdoors. A second amputation and a decline in function may also impact on their psychological status, causing depression or higher rates of anxiety. Social contacts are most limited in the people with poor mobility (Bordzka et al 1990). It is therefore essential that everything is done to preserve the remaining limb and maintain as much function and quality of life for the individual as possible.

What are the Current National Guidelines?

Current guidelines for treatment of diabetics are: 2001 NSF for Diabetes (DoH 2001), 2004 guidelines for Type 1 diabetes (NICE 2004) and 2008 guidelines for Type 2 diabetes (NICE 2008). These guidelines emphasise regular review of diabetics at the diabetic clinic. The clinic needs to ensure the correct classification of that person into the right risk stratification and provide education and monitoring/treatment of risk factors. All case studies were under the care of the diabetic clinic. As the author did not have access to the clinics records it will be assumed that all of the guidelines were followed by the clinic.

What are the risk factors for Amputation?

A summary of the papers that have been reviewed by the author and the conditions that they linked to lower extremity amputation are shown in Table 1.

Author	Neuropathy	CVD	Foot Ulcers	Previous Amp	Increased BMI	Insulin use	Retinopathy	Nephropathy
Alder et al 1999	✓	✓	✓	✓	✗	✓	N/T	N/T
Hamalainen et al 1999	✓	✓	N/T	N/T	N/T	N/T	✓	✓
Moss et al 1999	N/T	N/T	✓	N/T	N/T	N/T	✓	N/T
Peters et al 2001b	✓	✓	N/T	✓	N/T	N/T	✓	N/T
Pecoraro et al 1990	N/T	✓	✓	N/T	N/T	N/T	N/T	N/T

N/T = Not tested. ✓= Positive association ✗= Not associated

Table 1: A table to demonstrate the links between potential risk factors and amputation.

Case Study	Neuropathy	CVD	Previous Foot Ulcers	Insulin Use	Increased BMI	Retinopathy	Nephropathy
Mr B	✗	✓	✓	✗	✗	✗	✗
Mr J	✓	✓	✓	✗	✓	✓	✗
Mr W	✓	✓	✓	✗	✗	✓	✓
Mr D	✓	✓	✓	✓	✗	✓	✗
Mr R	✓	✓	✓	✓	✗	✓	✓

Table 2: A table to show which risk factors the case studies displayed

Adler et al (1999) performed a well-designed large (n=776) prospective study of outpatient veteran diabetics who could walk at least 50 feet. Although follow up was limited (median 3.3 years) they demonstrated strong correlation between cardio vascular disease (CVD), neuropathy, foot ulcers, previous amputation, insulin use with contra-lateral amputation. Hamalainen et al (1999) performed a similar sized study (n=733) on both types on diabetics aged 10 – 79. Their follow up was 7 years. They found strong association of retinopathy, nephropathy, neuropathy and weaker association of CVD with amputation. Peters et al (2001b) found correlations for CVD, neuropathy and retinopathy to amputation in their well designed and comprehensively analysed study.

Table 2 demonstrates which risk factors each of the case studies displayed when assessed after their first amputation.

The high rate of occurrence of the risk factors in the case studies seems to support the fact that these factors may increase the risk of amputation. The presence of multiple risk factors is common, since multiple mechanisms contribute to the development of a diabetic foot ulcer (Boyko et al 1999). Pecoraro et al (1990) hypothesise it maybe the interaction of each mechanism that brings about each individual limb amputation. They suggest the frequent participation of multiple factors, each of which is rarely sufficient by itself to produce amputation, may explain the limited success achieved by singular intervention e.g. foot care. Mr D is a good example. Suffering from neuropathy, CVD and retinopathy he had regular podiatric appointments after his first amputation. Despite this careful monitoring he developed a foot ulcer which did not heal and led to his second amputation.

How can the effect of the risk factors be minimised?

Presence of CVD

Diabetics are at increased risk of developing CVD including Peripheral Vascular Disease (PVD)(Hamalainen et al 1999, DoH 2001). The prevalence of PVD in individuals with diabetes is four times that of non diabetic individuals (Van Gils et al 1999). Carrington et al (2001) in a reliable and valid study found PVD is more closely associated with diabetic bilateral amputation than neuropathy or level of foot care knowledge. They advise placing greater emphasis on the assessment of PVD in diabetics at risk. MacNeill et al (2008) found in their study of bilateral trans-tibial amputees that the majority died of cardiovascular complications. It is therefore essential that in accordance with the NICE guidelines (2004, 2008), anyone with CVD, including PVD, is treated aggressively to try and reduce its impact. These guidelines promote the medical and educational management of CVD. All the case studies had some form of CVD (appendix A). All were on the recommended medical management for their CVD after their first amputation: all were receiving aspirin (apart from Mr R), statin therapy to help with cholesterol control and blood pressure therapy. Mr R, Mr B and Mr W still had blood pressure above the recommended level advised in the NICE (2008) guidelines.

Neuropathy

Twenty to forty percent of diabetics have neuropathy (Young et al 1993), the presence of which increases the risk of getting a foot ulcer and having an amputation (Alder et al 1999, Hamalainen et al 1999, Peters et al 2001b). Only Mr B did not have peripheral neuropathy in his remaining limb. Measures could be instituted to structure the environment to minimise the potential for injury, since it is normally a minor injury that leads to amputation in 72% of people with neuropathy (Pecoraro et al 1990). This is exampled by Mr J who sustained a scratch from a twig in his garden resulting in an infected wound. Patients with neuropathy are more likely to injure themselves during walking or standing (Cavanagh et al 1992) and have an increased risk of falling (Gregg et al 2000). Mr J and Mr R both fell whilst walking at home after their first amputation. No serious harm was sustained. Patient education regarding foot care and falls management is therefore important as well as balance exercises, as is the importance of wearing appropriate

protective footwear if they are at high risk of foot complications (NICE 2003a). Mr D, Mr J and Mr R all had specialised footwear that is discussed later in the paper.

Retinopathy and Foot Ulceration

Retinopathy maybe a risk factor for amputation as it can lead to decreased visual acuity and consequently the patient does not observe foot lesions at an early stage (Hamalainen et al 1999). Alternatively it may reflect diabetes severity, as visual acuity decreases then the disease is more severe (Boyko et al 1999, Peters et al 2001b). This may also be the likely mechanism for foot ulceration being predictive of amputation. People who have had previous problems healing foot ulcers maybe indicative of microvascular changes in the limb which will continue to deteriorate as the disease progresses (Boyko et al 1999). All the case studies had previous foot ulceration and only Mr B did not have retinopathy. Retinopathy is difficult to manage and treat. Prevention is more effective so tight glycamic control from diagnosis is important. Foot ulceration is predominately managed within the diabetic foot clinic and liasing with podiatrists/orthotists/GPs.

A Risk Classification

In order for specific intervention to be focused on the appropriate individuals who are at most risk of contra-lateral amputation, a risk assessment form could be devised for use by the prosthetic centre. A pilot form is suggested in appendix B. This form should be completed at the amputee's primary meeting with the consultant at the prosthetic centre and then again six months after taking delivery of their prosthesis.

The timing of the completion of the form is important. It is essential that high risk patients are identified early so that treatment can be started promptly. The later review will then give an opportunity to assess any changes that occur and identify their level of mobility. To fully minimise the risk of patients having a contra-lateral amputation and the debilitating effects this may bring, the patient's mobility after their first amputation must be known. Brodzka et al (1990) found that the time between first and second amputations was considerably shorter among the amputees who achieved limited mobility after their first amputation. This has mixed support from the case studies. Mr R (8 other medical conditions) and Mr J (7 other medical conditions) both achieved limited mobility and had their second amputation within a year but Mr D (5 other medical conditions) also only managed short distances after his first amputation but did not have his second amputation for 3 years. The reason the amputations are closer together maybe due to these amputees having a higher number and more severe medical conditions. It is therefore important to gain an insight to how many risk factors each unilateral amputee has, and the rest of the risk factor form concentrates on these. A guide on how the form was formulated is included in Appendix A.

The risk classification forms have been completed for the 5 case studies as if they were assessed at their six month review (Appendix B). The results demonstrate that all the case studies had the majority of risk factors for a contra-lateral amputation and would have therefore identified them as needing additional input to try and reduce this risk.

Additional Input

None of the case studies received any extra input than any other amputee attending the centre. Having gained an insight into what risk factors the high risk patient has, a specific programme could be devised for them.

Education

Specific education is essential in the high risk patient as many of the risk factors are modifiable with a change in habit/lifestyle by the amputee (DoH 2000). None of the case studies received any extra education at the prosthetic centre. Education for diabetics regarding change in lifestyle, prevention of complications and control of blood sugars has limited evidence of effectiveness over an extended period of time (Sarkadi and Rosenqvist 2004), but interventions which are more frequent and extended over a longer period are recommended (NICE 2003b). The author did not locate any papers on education for unilateral diabetic amputees. This particular group may have a contra-lateral amputation within 5 years (Meltzer et al 2002). So not only may the patient be more motivated to change habits as they had a recent serious complication (Malone et al 1989), but even short lived effects may have a significant health benefit in keeping their remaining leg and improved mobility for a longer period of time.

Further education regarding foot care and control of their diabetes to supplement what they received at Diabetic clinic could be given at the prosthetic centre. In addition specific cardiovascular risk factors should be addressed. Mr W and Mr J should have had a consultation with a dietician to try and reduce their body mass index (BMI). Mr B should have met with a smoking practitioner to discuss the options about giving up. All should have received information regarding healthy lifestyle and meet with an exercise psychologist to discuss the regular uptake of exercise.

Exercise

The physiotherapist has an important role to play in the encouragement of exercise in the amputee. Exercise tolerance and a fitness programme needs to be implemented to try and encourage the subjects to be as healthy as possible and minimise their risk of developing further cardiovascular problems (DoH 2000). Zwierska et al (2006) have proved that using an arm crank produces the same cardiovascular benefits as lower limb exercise. This is particularly useful for the less ambulate amputee. No outcome measure of exercise tolerance was used in physiotherapy for any of the case studies. Only Mr B had improvement in exercise tolerance as a treatment/goal. So

for the remaining case studies cardiovascular strengthening was poorly emphasised. This needs to be highlighted and made more prevalent in high risk amputees. Exercise has been shown to improve balance and lower limb strength, thereby reducing the risk of falls and improving physical functioning in patients with neuropathy (Richardson et al 2001). All case studies were given balance and lower limb strengthening exercises in physiotherapy.

Exercise needs to occur not only within physiotherapy but also fit in the amputees' daily life in the community (Hillsdon and Thorogood 1996). This may vary from encouragement of walking or an exercise programme at home, to access to a gym through the GP referral scheme or the Inclusive Fitness Programme. No assessment of which type of exercise would suit the case studies was made. Nor was there any attempt to encourage the uptake of daily exercise. Thus a fundamental principle of reducing a significant risk factor for contra-lateral amputation was missed.

The Vulnerable Foot

All diabetics with foot ulcers should be reviewed by the diabetic foot clinic on a regular basis (DoH 2001). The physiotherapist is in an excellent position to monitor the intact remaining foot as they see patients regularly over a number of weeks. The level of neuropathy should be documented (Broomhead et al 2006), how formed the arches are in the foot and what the muscle strength is around the foot and ankle. Presence of neuropathy in the remaining foot renders it more at risk of damage during gait, which in turn can potentially lead to the development of an ulcer (Abbott et al 1998, Boyko et al 1999). All case studies had their muscle strength assessed in their foot/ankle by the physiotherapist. All case studies were monitored and given foot care advice by the diabetic clinic. Despite this, Mr W did not initially have specialised footwear despite foot deformities. He was one of the 4 case studies classified as having high risk feet (appendix C). Mr D, Mr J and Mr R had specialised footwear as recommended by the diabetic clinic. Mr W's need for specialist footwear was recognised during physiotherapy. He was seen in the orthotic clinic in the prosthetic centre within the week demonstrating excellent communication between departments.

Conclusion

The unilateral diabetic amputee is at high risk of contra-lateral amputation. It is probable there will be multiple causes for the contra-lateral amputation. Bilateral amputees are likely to have a significant reduction in their function.

Within the prosthetic centre and physiotherapy the case studies were treated according to the guidelines set out for diabetics. To further delay or prevent contra-lateral amputation, a number of improvements in treatment could be made:

1) Re-checking the patient for PVD and rigorous treatment of all CVD.

2) Risk stratification of all vascular unilateral patients to highlight at risk patients.

3) Specific education regarding modifiable risk factors for amputation for each patient.

4) Promotion of exercise and the tailoring of activities to the individual.

5) Physiotherapy treatment to include improving exercise tolerance and lower limb strengthening for patients with neuropathy.

To be most effective this will need a co-ordinated approach between diabetic clinic, prosthetic centre, physiotherapy, orthotics, the GP and district nurses.

Tim Randell

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Appendix A - Risk Factor Assessment Form

Demographic Details:

1) Diagnosed with Diabetes: Yes: (2) Type: No: (0)
2) Date of diagnosis:
3) Diagnosed with Cardiovascular disease?
   If Yes, type: Cerebrovascular (1) Coronary Heart Disease (1) Peripheral Vascular Disease (1)
4) Neuropathy present in foot: (2)
5) Distal pulses present: Yes (0) No (1)
6) Current/previous foot ulcers: (2)
7) Presence of Charcot foot: (1)
8) BMI: Underweight/normal: (0) Overweight: (1)
9) Presence of retinopathy: (1)
10) Smoker: (1) If so, how many:
11) Blood Pressure: Normal: (0) Raised: (1)
12) Level of Mobility:
13) Foot at high risk of ulceration: Yes (2) No (0)

Total: /17

Appendix B - Guide to Risk Factor Assessment Form

1) The presence of diabetes is strongly associated with an increased risk for amputation (New et al 1998).Van Gils et al (1999) found that 94% of their diabetic cohort who had an amputation were type 2 diabetics.
2) The duration a person has had diabetes has also been linked to increased risk of amputation (Moss et al 1999, and 40 in the same paper).
3) The presence of PVD increases the risk of contra-lateral amputation (Adler et al 1999, Boyko et al 1999, Peters et al 2001b, Pecoraro et al 1990).
4) Neuropathy in the foot is associated with an increase risk of amputation (Adler et al 1999 Boyko et al 1999 Hamalainen et al 1999 Peters et al 2001b).
5) If pulses remain it is a sign of good blood supply to the foot.
6) Current/previous foot ulcers are associated with an increased risk of amputation. Please see Table 2.
7) Charcot foot is associated with an increased risk of amputation. Please see Table 2.
8) Increased BMI is associated with an increased risk of amputation. Please see Table 2.
9) Retinopathy is associated with an increased risk of amputation. Please see Table 2.
10) Smoking is closely identified to be a risk factor for the development of CVD. It is a risk factor which can be modified (Comaschi et al 2004).
11) Good blood pressure control is important to reduce the risk of CVD (Comaschi et al 2004).
12) The level of mobility is a good indicator of the level of fitness and reduced co-morbidities Brodzka et al (1990). If an amputee can maintain good fitness and mobility before their contralateral amputation, they are more likely to be more functional after (Peters et al 2001a).
13) People with neuropathy or absent pulses and with foot deformity or skin changes or previous ulcer are at high risk of ulceration which may lead to amputation (NICE 2003).

2 points were awarded to the factors with the strongest researched links to amputation.

PPAM Aid for the Larger Patient

The PPAM aid has been used as an early walking aid for the past 30+ years to assess amputees' suitability for prosthetic fitting and as an aid to rehabilitation of amputees.

It has become apparent over the past few years that there are a number of patients who are unable to use the PPAM aid due to being too large.I discussed with SPARG colleagues and posted a discussion on the icsp website and received a lot of replies from other Physiotherapists working with amputees who agreed there was a requirement for a new larger version of the PPAM aid to be manufactured.

Keith Bell from Ortho Europe was approached by BACPAR and immediately took this on board and they have already manufactured a new PPAM aid sleeve and frame to accommodate 10cm increased circumference.The new larger PPAM aid was on display at ISPO 2010 in Leipzig in May.

Please refer to Ortho Europe for details of how to order the new larger PPAM aid and this should enable us to assess and rehabilitate a greater number of amputees.

http://www.ortho-europe.com/

Louise Whitehead - Physio Team Leader, July 2010

Membership of BACPAR

Membership year runs from March 2010 to February 2011

Full Membership (£35) is available to current members of the Chartered Society of Physiotherapy, including Assistants and Technical Instructors.

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A minimum of two national and two regional study events are run by BACPAR. The Annual General Meeting takes place every November. Membership enables you to have preferential rates at these courses. The BACPAR journal is published twice a year, spring and autumn, and is sent to all current BACPAR members.

Membership forms are available from the Membership Secretary (see contact details at the back of the journal), or can be downloaded from the iCSP web site.

Amputee Literature from SPARG

Annual Reports of Amputee Activity £15. Excellent for service planning and standard setting

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Early use of the PPAM Aid assists in the reduction of stump oedema and facilitates early mobility of the patient – providing both psychological and physical advantages for the patient. The product is suitable for Below Knee, Knee Disarticulation and Long Above Knee amputees. Now, to suit the larger amputee, larger versions of the 750mm long and 850mm long frames are also available.

Based on physiotherapists' recommendations, the girth of the top ring on the 750mm and 850mm frames has been increased by 10cm, increasing the circumference of this ring to 72.5cm. Larger BK and AK Bags and Cushion Bags are also available for use with these larger frames.

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My Leg My Life

My patient walked in the gym the other day with a great big grin on his face and a new limb cover to show me.

His comments were "I love it... ...it looks amazing and it's so much better than my other leg". This is from a man who is not known for his enthusiasm over prosthetics! Graham lost his limb in a motorcycle accident and feels that, whilst he copes with his amputation, there is no point trying to pretend the prosthetic is a real limb. So, he reasons, why not do something different and regain ownership.

Now, somewhat curious as his prosthesis did indeed look a very different shape (one wants to say ...leg shaped!) under his trousers, when I got him to roll his trouser leg up, I see a limb which matches the paint work on his truck (which is covered in lightening strikes and not shy of being seen)! I also see a huge grin, because says Graham, "When I want to be different I can wear shorts, but when I don't I put on my trousers and I have a normal shaped leg". I didn't make my usual point about what is normal, because he points out to me this at least gives him the choice.

So, what was this new leg and where did it come from?

Though knowing my patient as I do it wasn't going to be eBay!! He actually was told about this man who makes exciting leg covers by his prosthetist, and the last time he went down to see him, he was introduced to a man who was certainly not letting his amputation stand in his way!! A man who was determined to produce something that was as individual as he was and that he owned but could allow you to be able to be lost in a crowd so you can choose....are we hearing something familiar here?

Carbon Stride was formed by Anthony Calvey in 2009. Anthony says, "I lost my leg (or should say had it removed) following a motorcycle accident in 1974, and felt my world had ended there and then... After too long in hospital and numerous operations, I finally was released to face the world and get fitted with a prosthetic leg. In those days they were aluminium and easy to paint, so that's what I did. As this was the late seventies I could be seen in summer with a metallic purple leg, with gold coach lines... mmmm very tasteful! I also decided that I needed a safe pastime so took up motorcycle sidecar racing... which I did for 11 years, ending my career with 88 wins - not bad for a monoped".

Having retired from racing Anthony took up flying biplanes and, as composites started to be used to make component limbs, realised that, although this improved limbs, it made the cosmetics even harder to look "good". Anthony says, "With this in mind I have experimented with many ideas, until one day I was looking at my Ducati and realised that a fairing like my bike would be practical and stylish". After many prototypes and testing of methods and materials the 832 was born.

Then the imagination is the bit that gets going because basically if you can describe it they can make it!! It's not cheap but as Graham points out, "It'll last and it's as individual as me!" And from the man who invented them " I hope you will like it as much as I do....the feeling I get when normal people (who is normal) look at my leg and their jaw drops or they smile...fantastic, it almost makes you feel sorry for them not having one themselves."

To find out more you can see the Carbon Stride web site - www.carbonstride.co.uk or contact the UK distributors, Pro Active Prosthetics - www.proactiveprosthetics.co.uk

Sue Flute - Physiotherapist

Another German Victory! - Leipzig ISPO 13th World Congress, May 2010

The 13th ISPO World Congress and the ORTHOPÄDIE + REHA-TECHNIK Exhibition 2010 in Leipzig was an overwhelming success for exhibitors, participants and visitors alike. Interested parties from 108 countries used this major industry gathering to keep abreast of the latest developments, receive training and swap information.

There were 630 lectures given by speakers from 55 countries, attended by approximately 2,600 visitors. There were 244 poster presentations and 20,000 visitors for the trade show, where 554 exhibitors from 45 countries were presenting. On the Public Paralympic Day, there were 85 different exhibitions. I challenge anyone not to have found something interesting to see and hear!

This article will outline the sessions that I found most rewarding and most applicable to physiotherapy practice. I hope you find them thought provoking too. Full abstracts of all presentations can be found on http://www.ispoint.org/.

Exercise after Amputation - S Deans, R Gailey, P Hersch & C Hirons

Sarah Deans at Strathclyde University asked me to present along side her, with Bob Gailey, USA physical therapist and BACPAR hero!, and Peter Hersch, a prosthetist with the USA military and keen triathlete. What prestigious speakers – how could I refuse? Our topic was to be 'Physical Activity Exercise in Sports, The Bar is Being Raised in Prosthetic Rehabilitation'. Sarah discussed the barriers to participation in exercise for people with amputation, Bob looked at advance training techniques, Peter considered the prosthetic implications and I described the role of fitness training within prosthetic rehabilitation. There will be more of this at the BACPAR Scientific Study days in November 2010…

Guidelines for Physical Fitness Levels Required for Older Hip Disarticulation (HD) Patients to Achieve Successful Prosthetic Walking in a Community - T Chin (Coauthors: Y Maeda, Y Azuma, T Iguchi, S Sawamura)

In general, the underlying diseases leading to HD are malignancy, severe infections and/or ischaemia. Most older HD amputees have various coexisting conditions in all parts of their bodies, which add to the physiological deterioration brought about by age. Therefore, they experience difficulties recovering from their deconditioned state, and maintaining the physical fitness required to walk with a prosthesis.

In this paper, successful walking was measured as outdoor walking. The fitness evaluation was measured by one-leg cycling, examining VO2 max. Walking energy was measured in the 5-minute walk test and speed at comfortable walking speed (CWS). In other comparable papers, Waters (TF), Nowroozi (hip disarticulation) and McAnelly (hip disarticulation) all report using comfortable walking speed, oxygen rate and oxygen costs as measures of fitness. It is suggested a physical fitness of around 60% VO2max is necessary for older HD amputees to successfully walk. The authors suggested that rehabilitation needs to continue until they are fit enough for their prosthetic provision and they should stay as an inpatient for this.

Many authors have reported that adequate physical fitness is required for elderly amputees to meet the energy consumption demands necessary for prosthetic walking. Patients who abandoned the prosthesis had lower % VO2max values.

Hip Abductor Strength for Gait and Balance in Unilateral Transfemoral Amputees - T Pauley

Transfemoral amputees are at risk of falls and they favour their intact limb by 50-70%. The abductor torque is 30% less on the amputated side. In this research the outcome measures used were Timed Up and Go (TUG), 2-minute walk test (2MWT), Activities Balance Confidence (ABC) scale and Houghton scale. The subjects had to be older than 50 years, with diabetes mellitus and at least six months post-prosthetic. They were measured and exercised using the modified Cybex VR3 cycle and arm cycle. They repeated three sets of 10 repetitions at 10 RM twice a week. Strengthening of hip abductors showed improvements in the TUG, the 2-minute walk test and the ABC scale.

Strengthening using the Cybex abductor machine with the prosthesis got the best results compared with strengthening with Thera-Band.

There were many questions raised regarding the influence of the surgical technique, the influence of the adductors, the length of the stump and the position of the femur in the socket on strength.

Össur Rheo Gait Training - S Möller

n this study, microprocessor knee (MPK) users were changed onto a Össur Rheo. Users of the Rheo prostheses were observed with respect to step length, step width, knee and pelvic movement, arm swing and stair descent. It was noted that users new to Rheo need gait training during prosthetic fitting, approximately a half to one hour, in spite of their previous free knee experience. The author recommended that they need long-term review to see if they are maintaining use, and that six hours of training are built into the cost of the provision/rehabilitation with a Össur Rheo knee.

A question was raised within the audience as to whether people would require top-up training and what criteria could prosthetists use in order to indicate when to refer to physiotherapy. The physiotherapists at ISPO Leipzig felt that they could develop guidelines for prosthetists to help them know when to refer existing prosthetic users back to physiotherapy. Perhaps this is something BACPAR might wish to produce?

Improving Outcomes for Bilateral Transfemoral Amputees: A Graduated Approach to Prosthetic Success - K Carroll (Coauthors: K Carroll, R Richardson)

Over the past few years, there has been a significant increase in the number of high-functioning bilateral transfemoral users. Some of the factors that have contributed to this increase are advances in technology and higher expectations from the prostheses users themselves. The increasing number of bilateral transfemoral amputees is due to the on-going conflicts around the world.

In this multi-media presentation, the presenter and his team illustrated their approach to the rehabilitation of bilateral transfemoral prosthetic users, which includes four phases:
1. Building confidence
2. Walking on short legs (shorties)
3. Graduated increase in height
4. Walking on full length prosthetic legs

They recommend that bilateral transfemoral amputees start on short stubbies or pylons to develop confidence. They need to learn how to fall and get up. To progress, they can descend a ramp backwards to stop simple free knees from jack-knifing. Raise their height gradually, aiming for microprocessor knees for ramps and stairs. Climb the stairs through active knee extension using hip muscles. They showed a rather alarming but completely inspiring video of a bilateral Otto Bock C-leg wearer driving a manual car!

Effectiveness of a Evidence-based Amputee Rehabilitation Program - R Gailey

Individuals who receive prosthesis are typically discharged from initial rehabilitation when they can walk 150 feet. Most do not progress beyond this level of function after discharge. The purpose of this project was to determine whether an evidence-based amputee rehabilitation program could improve the functional mobility of transtibial amputees who had already completed standard rehabilitation and prosthetic training.

The intervention had five components 1) cardiopulmonary endurance, 2) core strengthening and power, 3) balance and coordination, 4) weight bearing and stance control, and 5) prosthetic gait training. Subjects received the programme intervention 3 days a week for 8 weeks.

This randomized control trial used the 6-minute walk test, the Prosthetic Observational Gait Analysis (POGA) and Amputee Mobility Predictor to detect the significant improvements over 8 weeks. This further fitness training was recommended.

Reliability of Five High-level Activity Measures established for Military Service Members with Traumatic Lower Limb Loss - A Linberg, W Reed (Coauthors: C Scoville, C Gomez-Orozco, K E Roach)

Functional assessment tools for individuals with lower limb loss such as the Amputee Mobility Predictor (AMP) are widely used to determine readiness to ambulate with a prosthesis and to guide the rehabilitation process. Military Service members who have sustained traumatic amputation frequently demonstrate physical capabilities beyond those measured by current assessment tools such as the timed up and go, the 6-minute walk test, the AMP Pro, and sensory organisation test – all of which had ceiling effects in military amputees.

In an uninjured population, the following five tests have been utilized to measure balance, coordination, power, speed, and agility: Single Limb Stance (SLS), Medicine Ball Put (MBP), modified Edgren Side Step Test (mEST), T-Test (TT), and Illinois Agility Test (IAT)*. The purpose of this study is to examine the interrater and test-retest reliability of these five tests among Military Service members with and without lower limb loss. The results demonstrated excellent inter-rater and test-retest reliability for the five tests, meaning they would be appropriate tests to use on the military with limb loss.

The aim of measuring outcome in this client group in this study was to predict the readiness of these limb users to return to active duty. The authors looked at both recreational and combat activities and based on the results above designed an outcome measure called CHAMP which stands for Comprehensive High Activity Mobility Predictor using the existing tools. They believe CHAMPs is a quick and clinical tool.

*The test descriptions are:

1. One leg stance test (Single Limb Stance aiming for 30 seconds).

2. Medicine ball (shot) put. This is a seated chest throw of a medicine ball for testing the power of the upper body. Patient sits on floor.

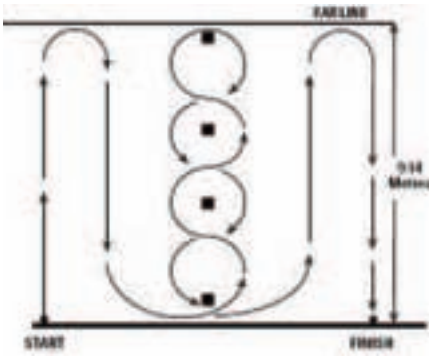
3. Edgren side step test. This is a 4 metre course with cones 1 metre apart and measures how many cones are passed in 10 seconds with the subject rapidly moving side to side.

4. The T test. This involves running forwards, to the side left and to the side right and back again. It is often used in sports medicine testing.

5. Illinois Agility Test (IAT). This includes getting on and off the floor and running in multi directions, turning and figure of eight. It measures balance, power, strength and agility. The level of amputation is not the primary indicator of mobility in tests 3, 4 or 5. Subject starts and finishes on the floor.

Figure. 7

Figure. 8



Poster exhibition findings

- Leg length discrepancy in prosthetic or orthotic use leads to medial osteoarthritis of the remaining knee due to the adduction moment at the knee.
- Berg scale and the 6-minute walk test are appropriate outcome tools for amputees.
- Leg length discrepancy can lead to temporomandibular joint problems.
- Shock absorbing pylons for useful for running.
- Outcome measure developed – CHAMPS.

In summary

This information here is just a tiny fraction of what was on offer. How could you not want to go to the next ISPO World Congress in Hyderabad, India, in February 2013? Watch http://www.ispoint.org/ for details.

Carolyn Hirons - Funded by ISPO UK bursary, BACPAR, Össur and Pace Rehabilitation

Strike It Lucky!

On a day out to celebrate the end of a five week self management course, new amputees discovered that determination can conquer all obstacles. On the final day of their course the group decided to try out their new skills and go bowling.

ABM physiotherapist, Vanessa Davies said:

"We have been running this programme successfully for some time now and had excellent feedback from every group to date.

To complete each group programme, the last day is spent doing an activity of their choice. So far, we have had trips to Mumbles, gone out for lunch, visited the National Botanic gardens, gone shopping etc

This small group however, chose indoor bowling. I had reservations about this at first, as a few members of the group were confined to wheelchairs and I wasn't sure how they would manage at the bowling alley.

I needn't have worried - they all had a fantastic time! We had two teams who were very competitive - they threw themselves into the bowling, and had a thorough workout without even realising it!"

(Picture left to right back row: Ray Jones , Vanessa Davies, Deborah Perry, Christine Jones, Gary Pakington. Front row: Paul Jones, David Perman & Gordon Howells)

"They had to demonstrate newly acquired physical skills with their new prosthetic limbs, and their wheelchairs. Having to use balance, coordination, concentration and strength to ensure they reached maximum scores for their teams!"

(Picture left to right: Ray Jones, Kim Roberts, Gary Pakington, Gordon Howells, David Perman)

"We will definitely encourage more groups to try bowling, as it provides a very sociable activity for all amputees to participate in - helping them to reach their full potential and assisting their return to normal lifestyle and independence, and making this fun!"

(Picture: Paul Jones, a bilateral amputee demonstrating how active you can still be from a wheelchair)

Morriston Hospital Artificial Limb and Appliance Centre run a self management programme, in addition to patients' usual rehab sessions. Patients attend for the whole day, one day a week for 5-6 weeks.

A whole day allows time for relaxation sessions, advice on hygiene and skin care, group work with specifically tailored exercise regimes, and any other topics that the group request information on.

(Picture: Gary Pakington, demonstrating his balance and coordination on his first prosthesis)

The programme aims to deal with the more sensitive issues surrounding amputation as well; emotional/psychological effects e.g. changed body image, loss of confidence and self esteem, anxiety, stress, low mood and depression etc. are explained and can be discussed openly within the group. Also more practical and functional things such as getting out and about, getting on/off the floor or into a car, driving etc.

Pain management is also featured, with explanation of and reassurance about phantom limb sensations.

(Picture: Ray Jones & Davied Perman)

Social activities and hobbies are discussed. Advice on finance and employment and also 'Benefits and Entitlements' etc.

The programme is offered to every new amputee. Patients attend small groups of approximately six people. Numbers are purposely kept small to encourage free discussion and interaction within the group.

The Morriston ALAC team would like to thank the Parc Tawe Bowling Alley staff for being most helpful.

An Experience of "Uniting Frontiers" ~ Panama, 24th-27th May 2009

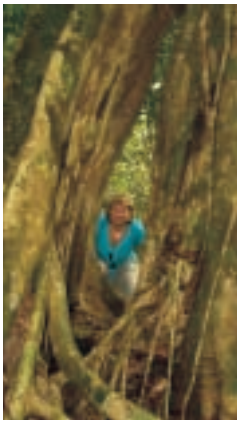
"Panama: Bridging the world with its passionate soul"... The adventure started with a conversation between myself and a prosthetist, John Ross at the BACPAR national study day in Wolverhampton, 2008... It was an incredible and very touching experience and I feel privileged to have been part of Uniting Frontiers 2009.

The story to date is that a long time ago a group of Panamanian professionals had a vision that they could, somehow, try and alleviate the countless problems of the population with special needs in Panama who were not receiving the proper support from the government. Under the hugely motivational drive of Rosie Jovane this group of professionals began to give technical support to the medical evaluation of paediatric patients and the adult population and managed to occasionally obtain a prosthesis or orthopaedic brace as it was needed. In 1994 a link with ISPO International was established. In 1999 ISPO Panama organized a programme "With your help, I can walk", helping Panamanian amputees.
Together with a group of enthusiastic Guatemalans, ISPO

Panama organized the first event with the idea of "Uniting Forces, Uniting Frontiers". The first Forum Uniting Frontiers was held in Guatemala in June 2005. The forum was a great success and helped open dialogue between professionals in the region, allowing evaluation of the service being offered and starting the process of making it better. Both ISPO Guatemala and ISPO Dominican Republic were established and then the second Forum of Uniting Frontiers and a new chapter of ISPO in Mexico happened in 2007.

Next was the 2009 "Uniting Frontiers Forum" held in Panama with the theme ~ Action is the challenge... A short quote from the forum magazine is ~ "Action is the challenge. And changes are not possible unless each of us does our part. Make your contribution as a professional, as a citizen and human being plus a little extra, because no matter what your speciality, race or social position, if you have the joy of living and ageing... do so without fear of getting old with a severe limitation, an amputation, or the anguish about the quality of service that you will receive". These are group of people so endearing, incredibly passionate, multicultural, hospitable and full of laughter. They know about the spice of life, enjoy the wealth of their country's nature and because of the Panama Canal it is a place of international business that helps enrich the multicultural aspect of the country. The Panamanians say "Panama is the bridge of the world and the heart of the universe".

The meeting was held at the Intercontinental Playa Bonita Resort and Spa and had wide representation of delegates from central and southern America. John Ross, Richard Proborsky (Blatchfords) and I met at the airport on Friday 22nd May and flew to Panama City via Miami. On arrival at Panama City Airport at the luggage carousel I waited for my large pink case... and waited...and waited, but it was sadly not to be... So having reported the loss we were transferred to the hotel. A sense of doom was coming over me... not even a toothbrush to my name let alone the trekking shoes and clothing required for the next morning's outing to Barro Colorado ~ a tropical island!! Not to be defeated, Rosie and John came to my rescue ~ feet clothed in John's



socks and Rosies waterproof snorkelling shoes, only a few sizes too big!! (that is the best way I can describe them!!) I headed off for the Panamanian jungle!! It was a fantastic first day and an early 6.30 am start followed by a trip up the Panama Canal, including a simulation of the Titanic with the internationally renowned orthopaedic surgeon Professor John Bowker! The magnitude of the canal is beyond words and it is a truly magnificent wonder of the modern world. I have never before seen such enormous vessels carrying such a vast and diverse cargo. We then arrived at Barro Colorado island which is a research facility studying a huge number of different

aspects of tropical jungle and rain forest, the flora and fauna. We had a great time exploring some of the trails and seeing monkeys, a vast array of trees and plants and best of all the famous Panamanian tree cutting ants. Tiny ants carrying large carefully carved portions of leaf ~ quite amazing! Great relief on my return to the hotel as my large pink suitcase had arrived!

On the first morning of the conference Rosie had organised a walk of delegates and local people using prostheses and wheelchairs to raise awareness in the local area of what prosthetics and orthotics can offer. Flag bearers were appointed from all the countries represented and so John and I held our Union Jack high in a procession with many others. It was led by a few Panamanian leaf cutting ants and at the rear was the band!

At the opening ceremony we were all given a very warm welcome from the ISPO Panama committee and Rosie. A huge surprise were the several different dance groups and

live music which concluded with members of the audience being invited up to dance, including me!

There was a fairly large exhibition area and representatives from the large prosthetic and orthotic companies, some of which attend the world ISPO congress. Soon after the meeting began I was introduced to a young female transtibial amputee who was being fitted with a new prosthesis. Prostheses are generally purchased privately in Panama and physiotherapy input is fairly minimal. She had had very little physiotherapy input and had poor weight transference over her prosthesis with a resulting lateral tilt bend and uneven gait pattern. John and I saw her in one of the hotel's conference rooms where he made do with the tools he had available and I used various people who spoke English to translate the finer points of gait re-education. It was a new experience working through a translator and must have made an interesting spectacle with me doing various demonstrations up and down the hotel corridor! I managed to teach her some exercises on the floor of the hotel exhibition area, which was thankfully carpeted and we improvised using the last step of a flight of stairs for lateral weight transference work. During the meeting I was also introduced to a young man in his 20's who some months after transtibial amputation was still walking with a stick. A few sessions with me and some realignment from John and he was able to walk unaided. The final result for both young amputees was an improved gait pattern and some motivation to progress their activity level ~ both of them and their families were very happy by the end of the meeting!

John and I ran two workshops lasting approximately 2 hours, which focused on rehabilitation following transtibial and then transfemoral amputation. John presented some of the current commonly used componentry relevant for the central and southern American market and I gave an overview of preprosthetic and prosthetic physiotherapy input, using a powerpoint presentation and patient demonstration. The workshops were set up for a

maximum of 50 participants but as I had been warned we actually had approximately 80 people squeezed in to the room. The audience was made up of a mixture of physiotherapists ("Therapia fisica" or "Fisioterapeuta" as we are known in that part of the world), student physiotherapists, prosthetist/ orthotists and doctors. A big learning curve for me was the challenge of having my presentation translated a couple of sentences at a time in to Spanish which resulted in needing to speak slowly, use less complicated language and the fact that it takes much longer to present a topic! I produced CD Roms which included relevant guidelines, some outcome measures and patient information leaflets. I managed to enlist the help of a Spanish speaking therapy assistant at work to translate the PIRPAG exercise sheets for transtibial and transfemoral amputees in to Spanish. Both the CD Roms and exercise sheets were a great hit and I was somewhat mobbed at the end of the session ~ the enthusiasm of the audience was fantastic and made it a very rewarding experience...

Speakers at the meeting came from many of the central and southern American countries as well as the United States of America and John and myself from the United Kingdom. Topics were similar to those seen at the ISPO world congress meetings and included multidisciplinary management of the diabetic foot, Marlo Anatomical Socket for Hip Disarticulation Prosthesis, importance of diversity in the educational field and creating an orthosis to offer functional heel-to-toe gait for children. In addition to the workshops, I gave a cast study presentation about the complex rehabilitation of a transtibial amputee who required Ilizarov fixation of his residual limb and a fillet of foot flap which although very nerve racking particularly being faced by a large audience of non-English speaking professionals wearing headphones!) was very well received.

Finally the closing ceremony named – "The Afternoon of Miracles" was another event filled with wonderful Panamanian sprit, music, dancing, streamers and plenty of Panama hats! Attending the Uniting Frontiers meeting was a fantastic and at times challenging experience giving me an insight in to prosthetic provision in a different part of the world, focusing my appreciation of the great service amputees receive in our country and providing an opportunity for me to share some of the knowledge I have gained in my time working with amputees in the UK. I met some fantastic people and built links which I hope will only become more valuable in my forthcoming chairmanship of the ISPO UK national members society.

Laura Burgess - Clinical Specialist Physiotherapist, Imperial College NHS Trust, London

Book Review – The AMPUTEE Coach: Empowering you to walk well, be fit and enjoy life!

This book was presented to BACPAR by the Associate Parliamentary Limb loss group (APLLG) as recommended reading. The APLLG have given their own review it and I hope the following is useful.

This book is produced by an experienced physiotherapist working with amputees in Australia, and is in the genre of a motivational book and therefore written in that style. It covers the mental and emotional side of rehabilitation, as well as the physical, and seeks to link the 3 together. It is written as a conversation and the expectation is the reader will use the book as a record of their progress, with space to write dreams, frustrations, challenges, goals etc. Each chapter has a summary of "Amputee Coach Keys"- outlining what the author is encouraging the amputee to do. The author also uses a "Real Inspiration" at the end of each chapter using the story of one of her patients to highlight the message of that chapter. Whilst the stories are motivational, nearly all the examples are the younger fitter amputees, who go on be high activity users.

The book is written for the prosthetic user and does not consider the independent wheelchair user. Although the author suggests the book could be read at any stage during an amputees rehabilitation, it would be very challenging for a primary amputee.

The book needs to be read in its entirety and builds on the messages outlined. There is a fair amount of repetition especially in the first 3 chapters and it takes till chapter 7 before any exercises are outlined.

In Chapters 1-5 the author seeks to prepare the amputee for exercise.
She starts by outlining the possible emotional responses to amputation and encourages the amputee to confront these and "clear the way to getting on with walking well and enjoying life". Whilst the chapter is comprehensive in the responses it covers, it does not offer any models of coping strategies and could stir up feelings otherwise buried with very little advice as to how to deal with these.

The amputee is then encouraged to identify their short and long term goals and to expect challenges along the way
There are some good explanations regarding how exercise helps with regards to a healthy heart, managing blood pressure, diabetes and weight management. The amputee is shown how to calculate their "target heart rate" and BMI and makes reference to the Borg scale. Whilst this information is already in the public domain use of these measures in conjunction with a professional is always preferable. The author proposes common myths about amputees and exercise, and again offers some good advice. Certain aspects are quite subjective. Goal setting is returned to and the author is keen to outline how it is primarily the responsibility of the amputee to ensure their progress. Throughout the book this message is repeated and very clear and a key part of the motivational aspect.

At this stage the reader was beginning to get restless and wanted to see what "Exercises" were going to "empower the amputee to walk well, be fit and enjoy life".

Chapter 6 outlines how to implement an exercise programme and is clear in how to progress exercise safely and what measures an amputee should take to ensure they are safe to exercise.

Chapters 7 – 11 cover Balance, Core stability, Strengthening, Cardiovascular fitness and Stretching.
The falls advice and how to get up from the floor is clear and corresponds to UK advice, however it only covers how to get up using a prosthesis and misses the opportunity to outline backward chaining as a method.
As with all advice on exercise programmes, individualised progressive exercise programmes, tailored to the patients needs and practised with a professional to ensure the exercises are carried out correctly is desirable. None of the exercises outlined are unsafe and the author highlights how not to do an exercise well with the use of photos of good and bad execution of the suggested exercises, however there is always the concern that an amputee may try to attempt an exercise they are not capable of.

Core stability is a difficult concept to get across to most amputees and this could be covered more comprehensively and the concern would be poor understanding of how to recruit core muscles effectively with out the feedback from a professional.

The topics of cardio vascular disease, stopping smoking and diabetes and its management are comprehensively covered with very good advice regarding what the amputees responsibilities are in relation to these and how CV exercise can help. Again for an amputee to benefit from 2 of the suggested forms of CV exercise, the reader would suggest involvement of a professional initially would be preferred to ensure safety and optimisation of the exercise.
As the book is clearly aimed at the prosthetic user all the stretches are performed with the prosthesis on. This could be seen as a limitation.

The final chapters provide more motivational advice and a summary of what has gone before.

This book will only be of interest to a small part of the UK amputee population and whilst has many qualities to recommend it, the reader would suggest an amputee uses it in conjunction with their Multidisciplinary team and as with any person, seeks medical advice when starting on a new progressive exercise regime.

The reader would suggest that most DSCs buy this book for their information, and so they can advise patients IF the patient asks them about it.

Sara Smith

THE AMPUTEE COACH (already 2nd Edition) ISBN: 9781921630163 (pbk)
Published by Global Publishing Group, info@GlobalPublishingGroup.com.au

Surfing USA... ...Well UK Actually!!

Following on the theme of sporting activity for the amputee population I thought I would share our experiences with BACPAR members. We run an amputee group here in the far South West of the country. It is very low key but the main aim is to have fun!!!! So far we have kayaked, ate several Sunday lunches, been out on a tall ship, visited the Eden Project and solved a murder on a steam train not to mention the weekly swim. Our latest venture was to make use of Cornwall's greatest natural resource – the beach.

So, on July 13th some brave souls ventured onto the wind lashed beach at Fistral and met up with Joe from Freedom Surf. After struggling into wetsuits and hitching a ride down to the waters edge on the Lifeguards truck we were ready to launch!

Freedom Surf have plenty of helping hands and are keen to support the disabled surfer by customising boards and increasing confidence in the waves.

After some initial trepidation (I could caption this picture as "Gracious me what have I done" or similar!) our group had a great time, caught some waves and one member has signed up for a 12 week course. It can't have been that bad. If anyone has been inspired to have a go. There is a website for Freedom Surf www.freedomsurf.org

Jain Ord

Regional Reports

Wales

Our last Study day on 29th June entitled 'Rehab Challenges' aimed to promote discussion of problem-solving approaches to ever increasing challenges presented by obesity in our amputee population.

Topics included 'Rehab for all – regardless of shape or size' – because we always aim to provide our usual high standard of care, and follow the usual rehab pathway; adapting programmes accordingly and to our best ability. The presentation did also discuss the more rare instances of very small patients, and how we deal with these.

Our centre staff nurse prepared a table of fabulous cakes which she had baked – suitable for diabetics - for delegates to sample, together with recipes to take away with them. The cakes were delicious and it was hard to imagine that they were actually healthy!

Continuing the theme, our Dietician gave a very interesting and informative talk entitled 'Food for thought – a heart-felt approach'. This included a number of useful tips to pass onto our amputees (as well as to delegates themselves!) to help them deal with their weight problems.

We managed to talk a couple of companies into sponsoring our day; Snowdrop Care & Mobility – who brought along all their 'bariatric' equipment and discussed associated costs etc, and 'Oakhouse' home shopping who provided an excellent lunch! They also provided delegate packs which included lots of leaflets and information about their home delivery service for delicious frozen meals, essential groceries, home-ware and other products – anything in fact that you may need in your weekly shop – at very reasonable prices – and excellent for patients being discharged home, who live alone and don't have anyone to stock up on basics such as bread and milk! They even brought along a fridge and microwaves so that delegates could sample some of their products!

Slightly deviating from the theme of the day, but thought to be very relevant was a presentation by John Reid from the Limbless Association entitled 'Physical & Emotional Challenges'.

After lunch, a problem-solving workshop was held – which enabled delegates to discuss and consolidate some of the issues covered in the morning sessions.

As always the day provided an excellent opportunity for physios, OT's and nurses from the South & West Wales region to network, and feedback was good.

Vanessa Davies MBE - Swansea ALAC

South West

Our latest regional study day and meeting was held at Exeter Mobility Centre on 22nd April. It was well attended by members who travelled from as far afield as Bodmin and Bristol!

Our first speaker was Andy who has worked abroad for several years as a prosthetist in some less than ideal situations!! He regaled us with tales of life in Angola, Afghanistan, Sri Lanka and other exotic places... and we complain about the NHS!

The second speaker was Sally, a physiotherapist with experience working with professional ballet dancers. She used her knowledge of Pilates and related it to treating amputees. This was mainly a practical session which gave us an insight as to how use the principals behind the technique and how to adapt it to our needs.
Both excellent speakers and a brilliant morning was followed by a regional meeting. Feedback from the executive committee meeting and discussion of current issues followed.

Next meeting has yet to be arranged.

Jain Ord and Helen Jones

West Midlands

The West Midlands Region currently has 20 members. Our last regional meeting was on 15th April 2010 at the West Midlands Rehabilitation Centre, Selly Oak. We discussed our current practice with outcome measures, and reviewed the "Toolbox". We also contributed our opinions on BACPAR through the SWOT analysis, and forwarded a summary to the Executive Committee.

Our next meeting is planned for 14th October 2010, 1.30pm at the Maltings Mobility Centre in Wolverhampton. We plan to discuss the Falls Guidelines and our current risk assessment.

We sent a report and summary on BACPAR to our West Midlands Regional Network meeting in June.

Our next Introductory Study Day will be held at the Maltings Mobility Centre on 25th January 2011.
All enquiries to hilarysmith341@hotmail.com

Hilary Smith - West Midlands Regional Rep

South Thames

Regional Study Day Wednesday 4th August 2010

The day started with a warm welcome from Nichola Carrington (South Thames Regional Rep), introducing Bowley Close Rehabilitation Centre, facilities and outlining the agenda ahead. Who then gave feedback from the BACPAR exec on current topics and the upcoming National Study Day.

The first lecture of the day, 'Therapy in the Upper Limb Amputee or Congenital Limb Deficient Patient', was presented by Melissa Leong (Clinical Specialist OT, Bowley Close), and Kate Lancaster (Band 7 Physiotherapist, Roehampton). This outlined the importance of therapy input with this population, and the roles that both Occupational Therapy and Physiotherapy had to play. Key learning points to take from a physiotherapy view point was to use previous knowledge from other areas of physiotherapy and apply to the amputee, ie: MSK assessment skills and treatments along with the functional treatment methods used in stroke rehabilitation. Secondly, to be aware of overuse injuries common in upper limb amputees. Additionally, an over view of Cosmetic, Body-powered and Myoelectric Prosthesis with an emphasis on appropriateness of prescription was highlighted. The key point that patients should learn to increase independence first and foremost without prosthesis was welcomed.

A group session discussing BACPARs Outcome Measure tool box followed. All centres were using Outcome Measures to assess functional ability. It was highlighted that the OM tool box concentrated on functional and mobility outcomes and not patient satisfaction and opinion. Given the emphasis placed on patient reported outcome measures by the White Paper, July 2010 this may be something for BACPAR to consider. Key points expressed were that the tool box does not provide many outcome measures for pre-prosthetic and acute management of amputees. A measure being used at one acute trust was the Physiotherapy Functional Mobility Profile, however this has not been validated in the use of amputees. Other OMs of interest were to re-instate the SIGAM to the tool box, and investigate the use of GAS as an outcome measure.

Melissa Leong fed-back about lectures of interest at the International ISPO Conference 2010.

A very interesting presentation by John Ross (Consultant Prosthetist, Blatchfords) discussing the use of LAM (Long-tem Activity Monitors) with patients followed lunch. This highlighted the usefulness of these devices in both reasoning appropriate componentry for patients depending on activity levels, and assessing compliance with physiotherapy outside of sessions. A comparable study was presented using the LAM to look at mobility levels prior to an intensive course of physiotherapy and post intervention. This showed significant improvement in mobility and activity levels. This data had previously been used to assist in gaining funding for an additional physiotherapy post at a prosthetic centre.

To close the day there was an expert MDT panel to answer complex patient questions consisting of; Nancy Pretty (Senior Prosthetist, Bowley Close), Melissa Leong (Clinical Specialist OT, Bowley Close), Sara Smith (Therapies Manager/Clinical Specialist, Roehampton), Dr A.Niaz (Consultant in Rehabilitation, Bowley Close), Dr R.Luff (Consultant in Rehabilitation).

The day was an overwhelming success with positive feedback given from those that attended. Thank you to those who presented and to Nichola Carrington (South Thames Regional Rep) for organising the day.

Jodie Georgiou - Prosthetic Physiotherapist Bowley Close Rehabilitation Centre

East Anglia

Meeting held in Newmarket with three therapists present, covering such a big geographic area with such a few people it is very hard to get people together!
But it was a useful meeting as we fed back from the Executive committee meeting and agreed a way forward as a region with the Outcome measures.

It was agreed that we would use the Timed Get up and go test and the LCI 5 to be carried out a certain times and for Jess Withpeterson from Peterborough to design the forms and then we would circulate it and then trial this so as a region we could have some comparative figures.

We also discussed setting up a local study day based on Exercise, and getting this to run next year.
There was also discussion about the region and whether we should try to expand or stay as we are, it was agreed that if we got any bigger it would not benefit our levels of attendance, just get those who did attend to have to travel further!

We also talked about things to go in the journal and debating issues within the journal. But as I has to cut the Editorial page due to lack of space..maybe next time!

The meeting agreed that there would be a pilot within the East Anglian Region for Outcome measures starting in September.

Sue Flute and Lysa Downing

Yorkshire Report

Last therapy meeting was at Seacroft Hospital Leeds on the 31st March. The clinical manager Carl Elliott demonstrated the CAD/CAM system and discussed making a limb in a day. You may have seen that Leeds recently replaced a pair of transtibial prostheses which had been stolen in 6 hours, so the patients could walk his sister down the aisle the next day.

We then reviewed prosthetic fitting problems from both prosthetist and physiotherapy point of view. In the afternoon we discussed the BACPAR tool kit. The tools agreed for the regional centre were SIGAM, TUG and functional outcomes. The group then agreed a protocol for use of the TUG which are different from the Roehampton protocol and those suggested by the BACPAR tool Kit. The main differences where the height of seating, when to start the stop watch and not locking SAKL knee before standing.

The filming of the Ossur femurett DVD will take place on Tuesday the 6th July at the Leeds regional centre, with agreed launch of the DVD at the BACPAR conference. Bev Sweeney Senior Physiotherapist from Halifax has kindly agreed to be filmed with our femurett model. Most of the criteria and training for the use of the femurett which will be highlighted on the DVD is based on previous work by Laura Burgess, Amanda Edmondson and Bev Sweeney.

BACPAR Report on Paediatric guidelines meeting 23rd June 2010 as request by Louise Tisdale BACPAR Chairman .

Thirteen delegates attended the meeting, including representatives from Limbless Association, steps, OT, Doctors, prosthetics and physiotherapy. Penny Broomhead chaired the meeting setting out the aims and objectives of the day.

a. To complete draft proposal for the project

b. To outline the project, decide if it is feasible and whether it is possible to construct an MDT (Multi disciplinary team) guideline.

Four of the delegates gave presentations, Melissa Leong and Lindsey Barker OTs, Sue Banton Director of Steps, and Vincent MacEachen prosthetist. The conclusions of the presentations were the need for MDT guidelines which can be used by agencies, parents and professionals.

It was agreed that delegates on the working party should represent a professional body, but individuals may contribute as members of a sub group or as a reviewer if their expertise is required.

The delegates agreed this was a worth while project. The agreed aims and format for the proposed document were
1. The document should be available for clinicians, parents, commissioners, government, lawyers and other interested parties.
2. Mapping the child's developmental needs may be a useful frame work for the guideline.
3. Standards of treatment would be appropriate for the age and development of the child.
4. The document would highlight what should be addressed but not how to do it. Taking into account smaller centres may have fewer resources
5. That the mapping layout within the guideline would make easy access to the areas of interest i.e. baby, toddler, school age children, and teenage to adult.

The agreed working title became "What constitutes best practice in the holistic multi disciplinary team intervention for upper and lower limb congenital and acquire limb deficiencies from pre-natal to 18 years".

The Temporary core Team volunteers are Sue Banton, Vincent MacEachen, Melissa Leong and Lynn Hirst and their action plan is to complete draft proposal and send out to all identified interested parties by mid July 2010.

November 2010 identify all professional bodies representatives and organise next meeting, identifying suitable venue.

Next meeting February 2011 elect chairperson and working party. Identify areas of expertise and allocate responsibilities. Identify training needs and organise for these to be met.

Conclusion of the day
It is a new concept to formulate MDT guidelines, which will raise the standards of national paediatric care throughout the prosthetic service.

Lyn Hirst

Review and Analysis of Patients Assessed with Femurett in Regional Disablement Services, Musgrave Park Hospital, Belfast

Aim

A retrospective study to review the outcomes of trans-femoral patients assessed with a Femurett

Introduction

The Regional Disablement Services in Belfast purchased a Femurett in 2002 and have been using it as an early walking aid and assessment tool.

It was decided to review the patients that have been assessed with the Femurett and to determine how effective the Femurett is in assessing suitability for a trans-femoral prosthesis by auditing their outcome measures.

The Femurett

The Femurett is an early walking aid specifically designed for the trans-femoral amputee. It consists of an adjustable plastic laminate socket in a variety of sizes, both right and left, a telescopically adjustable thigh and shin tube, a semi automatic knee locking system and a neutral SACH foot. Suspension is provided by the attachment of a shoulder strap and further enhanced by means of a TES belt. Its use as an early walking aid has been documented by Ramsay in 1988 and its use as an assessment tool by Parry and Morrison in 1989.

Parry and Morrison (1989) commented that because the fit and function of the Femurett were similar to a prosthesis it gave the patient a more realistic impression of what a prosthesis would be like compared to the PPAM aid.

Further subjective clinical evidence supporting use of the Femurett as an assessment tool can be found on the amputee rehabilitation iCSP site. The following quotes are from physiotherapists who have contributed to the discussion.

"…I have been using the Femurett for years…I find it invaluable and worth the expense…It is an excellent assessment tool…"

"…a Femurett is a fantastic assessment tool… I use it for all our trans-femoral amputees…"

"…it is an excellent assessment tool… it will pay for itself by avoiding issuing prostheses to borderline patients who abandon in a few months…"

Prosthetic Use Outcome

A review of the literature on prosthetic use outcome has shown that mobility can be very poor, particularly in the trans-femoral vascular amputee population.

Houghton et al (1992) concluded that only 10-15% of vascular amputees achieve mobility around the home with only 5% becoming truly independent of their wheelchair. Kald et al (1989) recorded that 40% of users abandoned their prostheses after 2 years.

Holden and Fernie (1987) reported that at the time of discharge from the inpatient gait training program, trans-femoral amputees over 65 years old, were not able to walk the minimal 600 steps a day necessary to manage with a moderate level of support in the home.

Gauthier- Gagnon (1999) reports a more encouraging 62% of trans-femoral patients using their prostheses outdoors but noted that they had significantly greater difficulties donning their prostheses than the trans-tibial patients and were more at risk of falling.

Hagberg et al (1992) found that only 50% of trans-femoral amputees used their prostheses daily, 56% were able to don independently and 39% had no use whatsoever of their prostheses.
Christensen and colleagues (1995) also found that only half of trans-femoral amputees were able to don independently.

Again, comments on the topic of trans-femoral prosthetic prescription can be found on the amputee rehabilitation iCSP site.

"… It is a very small proportion of older people who achieve functional and useful mobility at the trans-femoral level…"

"… we are finding higher numbers of patients who are prescribed a limb (in particular trans-femoral) in 1-3 months are deciding not to continue…"

"… sometimes our consultant has issued a limb after we have advised that the patient is unlikely to succeed in walking… the consultant can be swayed by the patients request…"

This high prosthetic rejection rate will obviously drain already limited NHS resources.

Criteria for borderline patients and outcome measurement tools are available to assist with predicting prosthetic use including the Amputee Mobility Predictor created by Bob Gailey (2002).

Marzoug et al (2003) note while various scoring systems have tried to predict amputees' functional outcome, none of these are ideal and that even with careful multidisciplinary team assessment, outcome prediction of prosthetic use can be difficult. He observes that prosthetic rejection is financially costly to already stretched NHS funding because an abandoned prosthesis can not be reused, due to fear of liability.

Campbell WB and Ridler BM (1996) in their study to predict the use of prostheses by vascular amputees discovered that the multidisciplinary approach to predicting prosthetic usage was 85% accurate.

There is therefore a need to more accurately predict prosthetic outcome in borderline patients. It was hoped this audit would determine how using the Femurett as an assessment tool has influenced our decisions in clinical practice to issue limbs to trans-femoral amputees.

Method

Patients who used the Femurett for assessment were identified from physiotherapy records. Patients who used the Femurett as an early walking aid and not for assessment purposes were not included.

The time period included in the study was from when the Femurett was first purchased by RDS in Belfast in October 2002 to June 2009.

Data collected:-

- Patient name
- Age
- Cause of amputation
- Assessment as in patient or out patient
- Number of treatment sessions with the Femurett the patient had before a decision regarding a prosthesis was made
- Whether a functional prosthesis was ordered or not
- SIGAM score at discharge from physiotherapy (see Table 1)
- SIGAM score at 6 week review for those patients that were fitted with a prosthesis

Assessment

The assessment process using the Femurett was conducted by an experienced Clinical Specialist. Patients could attend as either an inpatient or an outpatient depending on individual circumstances.
Assessment included:-

- The ability of the patient to transfer from sit to stand
- Informal assessment of their cognitive ability to follow simple instructions and to process and retain new information
- Motivation
- Balance
- Exercise tolerance
- Cardio-vascular fitness,
- Gait practice within the parallel bars and with a walking aid.

Not all patients progressed through all the stages of the assessment.

Table 1 - SIGAM Activity Level Scales

Grade	Disability	Definition
A	Non-limb User	Those who have abandoned the use of an artificial limb or use only non-functioning prostheses
B	Therapeutic	Wear prostheses ONLY in the following circumstances; for transfer, to assist nursing, walking with the physical aid of another OR during therapy
C	Limited / Restricted	Walks up to 50m on even ground with or without walking aids; a= frame, b=2 crutches/sticks, c=1 crutch/stick, d= no walking aids
D	Impaired	Walks 50m or more on level ground in good weather with walking aids; a=frame, b=2 sticks/crutches, c=1 stick/crutch
E	Independent	Walks 50m or more without walking aids except to improve confidence in adverse terrain or weather
F	Normal	Normal or near normal walking

Analysis of data

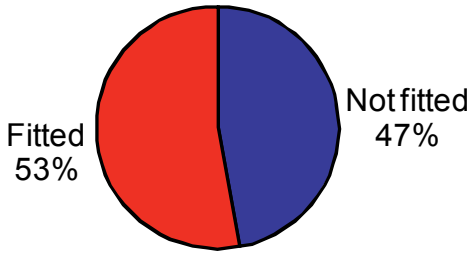
32 patients were identified as having used the Femurett for assessment.

31 patients had their amputation due to peripheral vascular disease

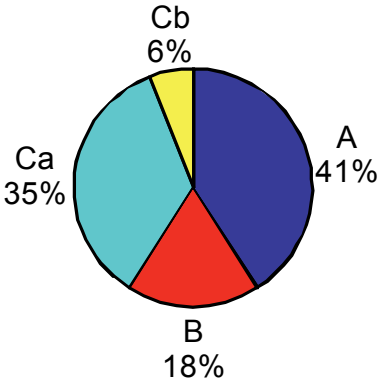
1 patient had quadruple amputations due to meningococcal septicaemia

53% (17 patients) were fitted with a prosthesis
47% (15 patients) were not fitted with a prosthesis

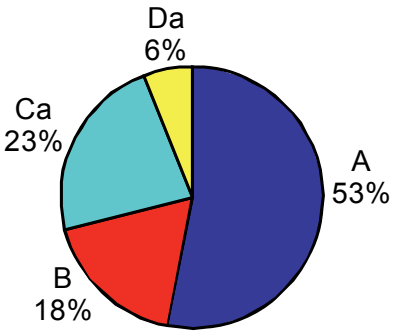
Patients fitted with a prosthesis versus patients not fitted with a prosthesis following assessment with Femurett



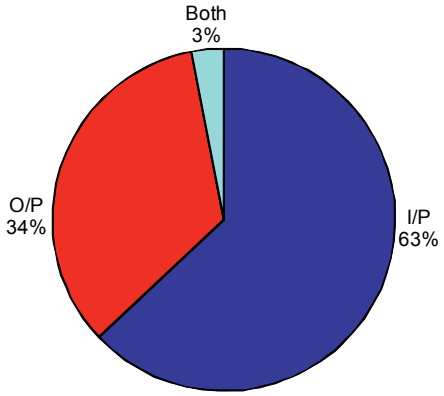
SIGAM Grades at Discharge from Physiotherapy for patients fitted with a prosthesis following assessment with Femurett



SIGAM Grades at 6 weeks review for patients fitted with a prosthesis following assessment with



Attendance for Femurett assessments as in patient or out patient

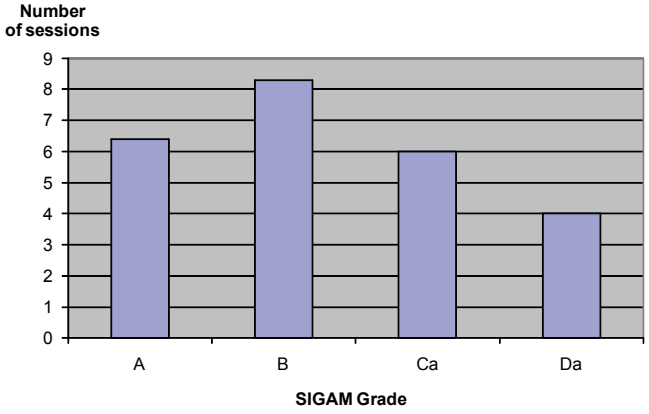


Average number of assessment sessions in days		
Total	Fitted with prosthesis	Not fitted with prosthesis
5.6	6.5	4.6

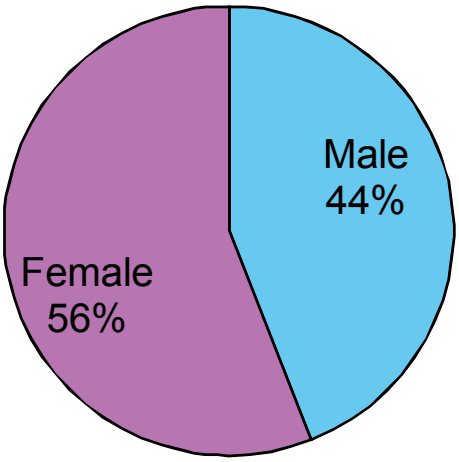
Average number of assessment sessions for in patients/out patients fitted with prosthesis/not fitted with prosthesis				
In patients (n= 20)		Both (n = 1)	Out patients (n = 11)	
Fitted	Not Fitted	Fitted	Fitted	Not fitted
6.2	6.3	10	6.2	1.4

Number of in patients/out patients which were fitted/not fitted				
I/P		Both	O/P	
Fitted	Not Fitted	Fitted	Fitted	Not Fitted
10	10	1	6	5

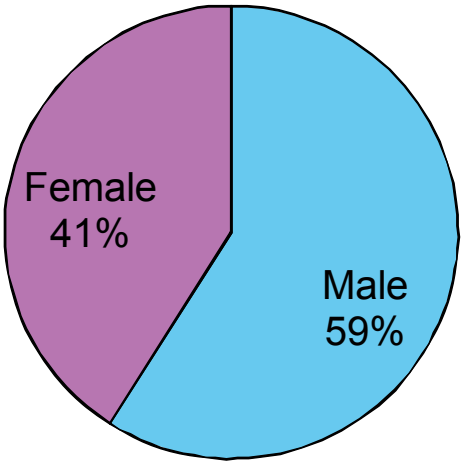
Average number of assessment sessions per SIGAM Grade at 6 week review for patients assessed with Femurett



Gender of patients assessed with Femurett



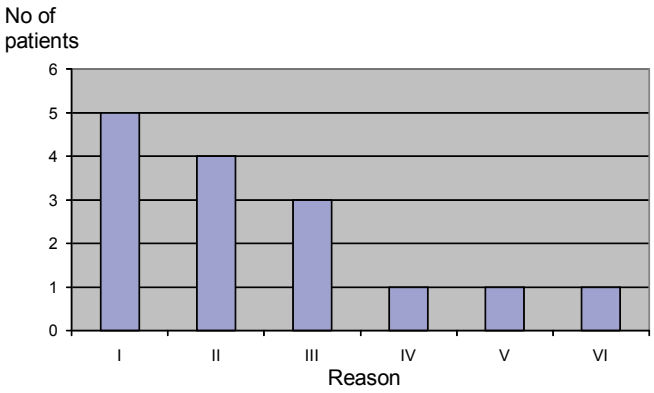
Gender of patients fitted with a prosthesis following assessment with Femurett



Age of patients assessed with Femurett			
	Total	Fitted	Not Fitted
Average age	72.5	71.4	73.9
Age range	54-90	54-88	58-90

Average age of patients fitted and not fitted with a prosthesis following assessment with Femurett	
Male fitted	69 years
Female fitted	74 years
Male not fitted	73 years
Female not fitted	82 years

Reasons for patients not being fitted with a prosthesis following assessment with a Femurett



I Maximum assistance of 2 to stand and mobilise

II Medically unfit

III Femurett too heavy / difficult / tiring

IV Severe ulceration contra-lateral limb leading to second transfemoral amputation

V Rheumatoid Arthritis with severe deformity of foot on contra- lateral side

VI Femurett discontinued as too painful on residual limb due to flexion contracture and prominent distal end of femur. Patient deemed not suitable for prosthesis

Summary of results

Conclusions

- 47% of patients assessed were not fitted with a prosthesis this can be compared with the 28% not fitted in Parry and Morrison's study and the 64% who decided to abandon prosthetic use in the trial by Marzoug et al.
- 41% of the patients fitted with a prosthesis following assessment with a Femurett discontinued use of the prosthesis prior to discharge from physiotherapy. This had risen to 53% by the six week review.
- Only 29% of those patients fitted with a prosthesis following Femurett assessment had functional use of it at six weeks post discharge. Functional use is defined as mobilizing independently i.e. SIGAM C or above.
- There is no apparent difference in the percentage of in patients and out patients fitted with a prosthesis.
- Although more females (56%) than males (44%) were assessed with the Femurett more males (59%) than females (41%) were fitted with a prosthesis following assessment. This concurs with research done by R Singh et al (2008) which has shown that women are less likely to be successfully fitted with a prosthetic limb at discharge than men- 42.9% vs. 68.6% and that gender is an independent significant factor in the success of limb fitting.
- There was no difference in the average number of assessment sessions between males and females.
- Males assessed with the Femurett had a lower average age than the females.
- Only one patient improved between discharge from physiotherapy and the six week review. One male patient improved from SIGAM Ca on discharge to Da at review.
- The one patient who had quadruple amputations due to meningococcal septicaemia (54 year old female) was fitted with a prosthesis following assessment with the Femurett. Prosthetic use was discontinued prior to discharge from physiotherapy.

Table comparing the results of three studies

	Parry and Morrison - 1989	Marzoug et al (2003)	RDS audit - 2009
Prospective/retrospective study	Prospective	Prospective	Retrospective
Cohort size	47	33	32
% Male : Female	63 : 37	59 : 41	59 : 41
Age range	19-89	19-91	54-90
Assessment Process Document	yes	no	yes
Duration of assessment	-	1-31 weeks	Ave 5.6 days
% patients issued with prosthesis	72	42	53
Outcome measures recorded	No	Yes (Hanspal)	Yes SIGAM
Reasons given for drop out	No	Yes	Yes

Discussion

The Femurett has proven to be a useful tool for assessing the suitability of a borderline patient for prosthetic use without the expense of prescribing a prosthesis which may be rejected at a later date. It can be used in conjunction with other borderline criteria and predictive scoring systems. Almost half of the borderline patients were filtered out using the Femurett assessment.

Since the high numbers of prosthetic rejection among the elderly dysvascular amputee population is a well documented fact perhaps more patients should be considered 'borderline' by the multi-disciplinary rehabilitation team who may be over prescribing prostheses to these patients.

The fact that over half of the patients fitted with a prosthesis following the Femurett assessment process had discontinued use by the 6 week review, may suggest that the assessment may not be rigorous enough or perhaps long enough.

The longer assessment time described by Marzoug et al (2003) appears to result in fewer prostheses being prescribed and may be of further benefit with patients who still continue to be considered 'borderline' after a week.

We have found the Femurett to be a useful tool in assessing trans-femoral patients for their suitability for receiving a prosthesis. Longer assessment times may further improve prediction accuracy and help continue to make savings in these times of austerity.

In light of the literature reviewed perhaps it could be considered if anything further could be done to prevent over prescription of prostheses to the elderly dysvascular patients or to prevent the high rejection rate.

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DEADLINE for Spring 2011 edition - Friday 11th February 2011

Interventions for Lifestyle Change - Literature Review

Introduction

The purpose of this review was to explore the literature available providing evidence about the physical activity patterns of people with the disability of amputation and current recommendations for a physically active lifestyle.

The review was also to find information about established methods or protocol of determining physical fitness in amputees and how physical fitness in amputees might compare to norms.

The review was specifically related to the questions about what are the physical activity patterns of amputees in the Auckland area covered by the Auckland Artificial Limb Centre and do they meet the recommendations for physical activity.

A literature search was performed using the Medline data base and Cochrane data base of systematic review using the words physical activity, physical fitness, lower limb amputees, health promotion for disabilities, disabled sports rehabilitation, energy methods ,exercise tests, scales Google search engine was used to identify NZMOH guidelines, NZ statistics and Artificial Limb Board report, NZ Disability Strategy.

The results returned approximately 42 journal articles which were judged to be relevant.

Definition of physical activity and physical fitness
We need to define the difference between physical activity and physical fitness.

"Physical activity has been defined as any bodily movement produced by skeletal muscles that results in energy expenditure" (Pate, 1995). Moderate physical activity is activity that is performed at 3 to 6 METS the equivalent of a brisk walk. Physical activity is closely related but distinct from exercise and physical fitness.(Caspersen, 1985)

Physical fitness is a multi dimensional concept that has been defined as a set of attributes that people possess or achieve that relates to a persons ability to perform physical activity(Armstrong, 2006; Caspersen, 1985)

Exercise is part of physical activity but is described as planned and repetitive body movement which improved one or more components of physical fitness. (Caspersen, 1985)

Current recommendations of physical activity
The current recommendation by the Surgeon General.(Services, 1996), A.C.S.M. (Armstrong, 2006), MOH emphasizes the benefits of moderate activity in most, preferably all days of the week for 30minutes or more for health benefits. It emphasizes the benefits of moderate activity that can be accumulated in short bursts. The 30minute total can be accumulated in short burst corresponding to brisk walking e.g. gardening, walking upstairs housework. It can also include recreational and sports activities e.g. golf. The health benefits of physical activity appear to accumulate in approximate proportion to total amount of activity performed and measured as caloric expenditure or minutes of physical activity i.e. there is a dose response. People who wish to achieve an increase in their fitness levels will need a dose response of 20-60minutes moderate or high intensity endurance exercise (60-90% maximum heart rate) 3 or more times per week (Armstrong, 2006; Services, 1996).

Epidemiological and Experimental evidence for exercise
A number of cross sectional epidemiological studies and controlled experimental studies show physically active adults develop and maintain higher levels of physical fitness compared to sedentary adults. Markedly increased all cause mortality rates have been shown to be related to reduced levels of lifelong activity (Paffenbarger, 1986). Many epidemiological studies show protective effects to varying degrees between physical activity and the risk of developing chronic diseases such as hypertension, cardiovascular disease and diabetes as well as some mental health illnesses (Blair, 1989; Paffenbarger, 1986). Epidemiological studies are supported by experimental studies which show exercise training decreased cardiovascular risk factors and other health related factors such as decreased blood pressure (Tipton, 1991) decreased insulin resistance, better lipid profiles (Duncan 1985).

Patterns of physical activity vary between sex, age, population sample and socioeconomic status. (Caspersen, 1986) It was reported that more males are active and involved in regular activity. Total amount of activity decreases with age. According to U.S. Behavioural Risk Surveillance System 1986-1990, ethnic groups are less active than white Americans and the difference in socioeconomic status and education accounts for most of the difference in leisure time physical activity associated with ethnicity. (Caspersen, 1986; "Trends in Physical Activity Patterns among Older Adults: The Behavioural Risk Survellience System 1986-1990," 1992; White, 1987)
The current burden of physical inactivity in New Zealand is estimated to be 9% of all deaths or 2600 deaths. By 2021 the prevalence of inactivity is expected to increase by 4% due to demographic trends (Tobias, 2000). The overall prevalence of inactivity is 35 per 100 persons (2001). This information in his study was based on data from 1996/97 NZ health survey and NZ statistics from NZ population used and does not incorporate any disability groups. M.O.H. (Ministry of Health) in conjunction with S.P.A.R.C (Sport and Recreation New Zealand) run biannual surveys called on physical activity in NZ which does include a profile on disability persons as a group.

Despite the many studies none of the major epidemiological studies completed have incorporated people with disabilities in to the research design (Rimmer, 1999) It is demonstrated that people with disabilities are highly susceptible to secondary health conditions(Pate, 1995).

According to Rimmer (Rimmer, 1996) no evidence exists that physical activity can achieve the same benefits or prevent secondary complications.
My current literature search reveals no further updated studies or data about physical activity patterns in amputees.

Energy expenditure in amputation
The energy expenditure in walking with a prosthesis is much higher than walking with legs Huang (Huang, 1979) reports a 9% higher oxygen consumption in unilateral below knee amputees, 49% in unilateral above knee and 280% higher consumption in a bilateral above knee amputation The higher the level of amputation the greater the energy expenditure. Other studies report varying levels of increased oxygen consumption.(Gailey 1994; Waters 1976).

Ching (Chin 2002, 2003) investigated cardio respiratory fitness of amputees and able bodied subjects of same age and demonstrated decreased level of fitness in amputees. The subjects all were young had traumatic amputation and had no other comorbities. Ching cites Kurdibaylo (Kurdibaylo, 1994) as stating that physical fitness is highly important in the acquisition of walking and this is related to cardiovascular endurance. Exercise testing is a method of determining aerobic capacity and exercise limitation for exercise prescription. Validated protocols are still being developed for amputees but include arm ergonometry and leg ergonometry (Davidoff 1992; Vestering 2005).There are currently no normative data about physical fitness in amputees and no model of promotion for physical activity for people with amputation.

The amputee needs to improve physical fitness to be able to meet energy needs for walking and optimal function.

Conclusion

Physical activity has been designated as one of 13 priority heath objectives for NZ to improve the health burden.(Tobias, 2000). It is recommended by the Surgeon General , ACSM (Armstrong, 2006) M.O.H. The current evidence supports physical activity as a major health benefit in the normal population but there are no major studies and lack of data about the effect of exercise in the disabled population let alone the amputee population The dose response of amputee persons may be different than the general population in the amount of physical activity that may be achieved or endured.

There is currently no evidence as to what amount of physical activity is beneficial to amputees and the absence of information could have an impact when applying guidelines and stage of change models to amputees There is evidence that walking with prosthesis requires more energy consumption and that optimal mobility requires a degree of physical fitness.

For some people with amputations there is probably a limit in which physical activity may no longer be beneficial but may be harmful.

There is no current data in NZ about the physical activity patterns of approx 4000 amputees Of those amputees approx 50% are traumatic amputees (Centre, 2006) who will have no comorbities initially and will have a long life as an amputee as opposed to vascular elderly amputee. According to Pate(Pate, 1995) persons with disability have a higher risk of secondary conditions and it may be that amputees with initially no comorbities will develop them at a higher proportion than the general population with aging.

There is also a lack of validated tools and protocols for data collection for improving our information in this area.

Areas for study

- To identify the physical activity patterns of amputees compared to the general population
- To identify protocols for data collection
- To assess norms for fitness levels of amputees
- How many amputees participate in sport or recreational activities?
- What might be the barriers to physical barriers?

Karen Wilson

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The development of a poster to support the team approach to amputee pain management

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Background

Commonly, amputees can present with pain – residual limb and/ or phantom limb (Ehde et al 2000) – which may influence the ability to walk, function or participate in activities of daily living, and can affect overall health, well being and quality of life (Hanley et al 2006). There are considerable resources of clinical expertise at Roehampton available to treat these types of pain effectively. Through team discussions and in service training it was agreed that a systematic approach to pain management which includes assessment, selection of treatment options based on sound clinical reasoning, and thorough evaluation of treatment choice, contributes to quality care.

Method

A poster based on a pain algorithm (Meier and Atkins 2004) was designed to graphically inform and guide the centre's clinicians with this process. The aim of the poster is to act as an aide-memoire, prompting clinicians to reflect on potential causes of pain and consider the most appropriate pain management approach following assessment and clinical reasoning. The poster illustrates an overview for pain management for both residual limb pain and phantom limb pain via two pathways. The pathways present facts, findings or questions, which lead by way of arrows, to further assessment strategies or treatment recommendations and resources e.g. physical modalities or medications. The pathways propose alternatives if pain is not successfully managed at any one stage.

The poster – in A2 format – is now displayed in specific areas in the centre for easy reference for the clinicians; on the ward, in a clinic room, in the rehabilitation gym (therapy) and in the prosthetists' office for example. Alongside the pathways, the purpose of the poster itself plus guidance on assessment and evaluation is highlighted.

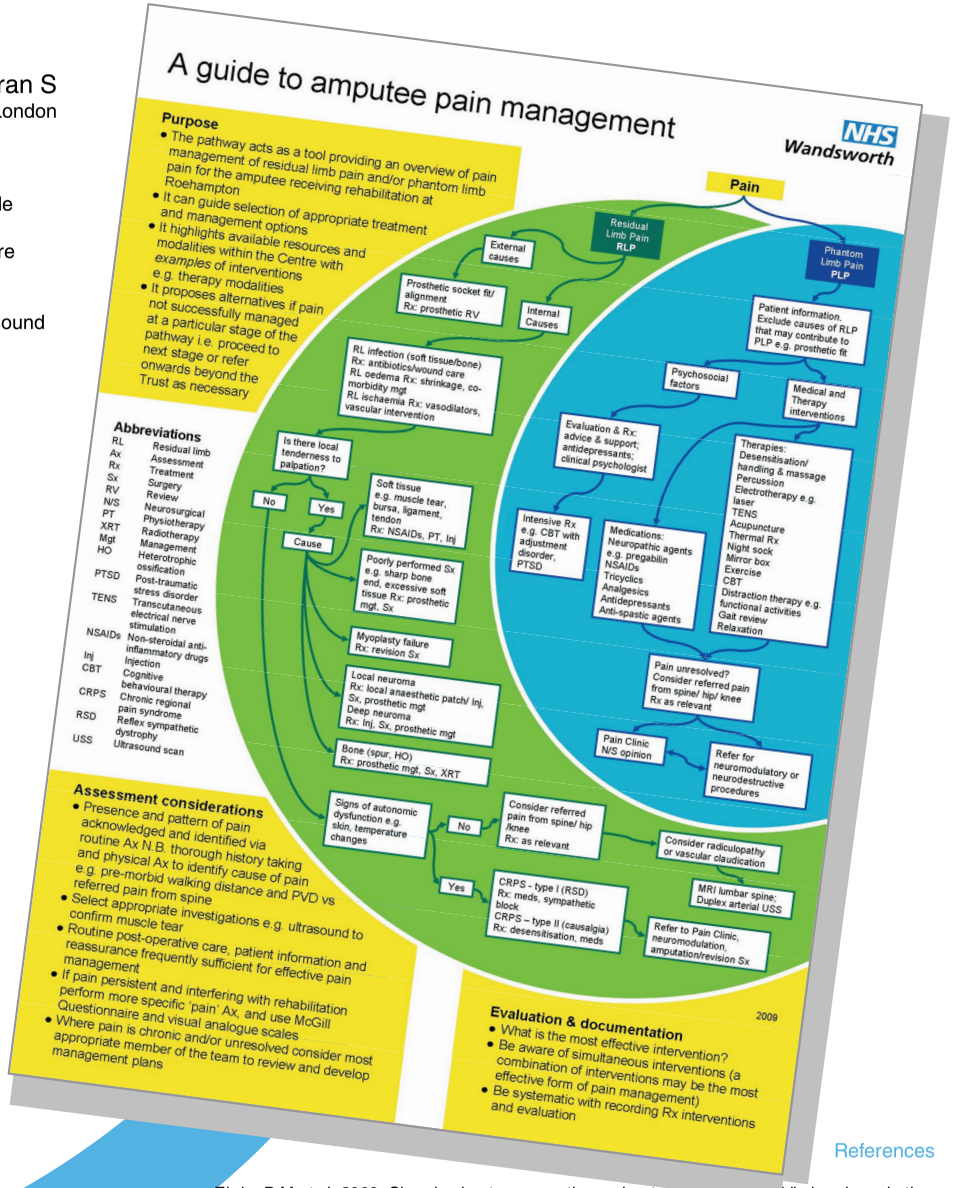
The poster may identify gaps in an individual clinician's knowledge of specific modalities, causes of amputee pain, assessment or evaluation strategies. It is anticipated that this will encourage clinicians to seek relevant knowledge via self-directed reading and/or research based evidence, or via structured in service training within the centre.

Clinical effectiveness

Now that the poster is accessible its usefulness as an educational tool for clinicians will be evaluated after a year via a questionnaire survey. Findings will identify if changes are required to either the poster and/ or to clinical practice in relation to the evidence base and how the poster relates to issues of continuing professional development.

Conclusion

The poster is designed to be used as a prompt for clinical practice, illustrating an overview of pain management for the amputee experiencing residual or phantom limb pain. It emphasises a systematic approach to patient assessment, treatment and evaluation of treatment choice and highlights a multidisciplinary approach.



Acknowledgements

The prosthetic MDT for their knowledge and skills.

Tom Collins, pre-registration Clinical Scientist for graphic design.

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