BACPAR

BRITISH ASSOCIATION OF CHARTERED PHYSIOTHERAPISTS IN AMPUTEE REHABILITATION

The Journal
Issue 35, Autumn 2011

see you there

see page 38 or visit www.bacpar-conference.org.uk

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Welcome

Hello and welcome to the Autumn 2011 BACPAR journal.

As ever, our thanks go to Sue Flute (Journal Editor), advertisers and contributors for helping make this journal happen.

The period since that last Journal has been fairly busy for BACPAR and the Executive committee. We are getting closer to the 2011 Conference in Leicester, if you have not booked your place yet then have a look at http://bacpar-conference.org.uk for the programme and booking forms. As usual it will be excellent value for money and includes the BACPAR AGM on the second day. I hope to see you there, on the 14th and 15th of November.

The conference of course, is only one item on BACPAR's executive committee agenda. At the meeting in March the work plan was agreed for the 2011-2012 year. This can be found in this journal. Executive committee members review the progress of work, undertaken on behalf of the BACPAR membership, at the Executive committee meetings both face to face (March and September) and through an e-meeting in the summer months utilising the BACPAR Exec iCSP site. I will report more fully re progress made, at the AGM but here are a few highlights:

- The update of the prosthetic guidelines is nearing completion and we have been asked for permission to translate the first edition into Spanish.
- The Outcome Measure Toolbox has been disseminated to other members of the amputee rehabilitation MDT for comments, and indications of interest in their further development.
- Submissions have been made to the Improving Veteran Health Outcomes review undertaken by Dr Andrew Murrison on behalf of the Prime Minister. The recommendations from which are currently being considered by the government.

Other outcomes of the year to date have included the completion of the updated BACPAR website http://bacpar.csp.org.uk. This continues to be hosted by the CSP but has improved functionality with "membership only" log-in areas which we hope to develop further. Take a look at the website, we would be pleased to receive any comments.

Although BACPAR does not have a trade union function, the executive committee has been asked for help from its membership in cases of re organisation of Physiotherapy posts. I hope that we have been able to provide useful information and peer support to individuals in these cases. There are challenging times ahead with changes in organisations as a result of Transforming Community Services, budget restrictions and changes in who is providing services to those who have undergone amputations. BACPAR aims to continue to provide a vehicle for peer support to its members through the iCSP network, its regional meetings and of course the Conference. Please let us know of any issues affecting you, Louise.Tisdale@wolvespct.nhs.uk and we will try our best to give support.

BACPAR's constitution within the reorganisation of Professional networks (PN) of the Chartered Society of Physiotherapy (CSP) is still being discussed. BACPAR is in the Client Group alliance alongside AGILE (older people), ACPOPC (Oncology and Palliative care), APCP (paediatrics) and ACPLLD (learning difficulties) amongst others. This relationship already has borne fruit with offers of collaboration on study events and inclusion in national guideline development.

Another guideline is in process; the most recent cohort of the PGCert in Amputee Rehabilitation (Bradford University) have produced a guideline for the non-pharmacological management of oedema, which we hope will be shared at the upcoming conference, congratulations to all involved. There has also been some success in getting Amputee Rehabilitation research onto the CSP research priorities list; hopefully we will see some development of this in the coming months too.

Hope to see you in Leicester on the 14th and 15th of November, remember full members are eligible for bursaries to help fund the attendance to CPD events.

Louise Tisdale - BACPAR Chair 2011

Secretary's Report – Autumn 2011

Hello everyone. Welcome to probably my last report for the journal. I will have completed my second three year term as Secretary which means I have to stand and let some one else take over at the AGM in November. I cannot believe it has been 6 years.

It has been an enjoyable time being Secretary. It is a good post to hold if you want to get involved in the working of a Professional Network. It is a busy time around the bi-annual executive meetings and the AGM, then it runs at steady pace in between times. Part of the role is moderating the BACPAR executive site on iCSP which really helps to hone IT skills and makes life very easy for information sharing.

So the Secretary's post will be up for grabs in November. I am sure there is some one out there in the membership that would like to take an active role in BACPAR and the Secretary's post is a good place to start. Get in touch for more information , you can contact me at ruth.woodruff@stokepct.nhs.uk.

Whilst I am on about elections the one other post that is in the elections is the iCSP Co-ordinator. Paula has completed one term so if you are reading this, Paula then you can be nominated for another 3 years.

So what has gone on in the last six years? BACPAR is now a Professional Network with a healthy membership. It is also a very active network and has had many achievements in my time such as:

- Production and review of Guidelines
- Representation on the Associate Lower Limb Parliamentary Group (ALLPG)
- Study days becoming a recognised conference in the Amputee Rehabilitation calendar
- Association with a successful post graduate course
- Re-introduction of the Femurret with comprehensive user instructions
- Production of a larger PPAM aid
- Consultation on the development of the new iCSP website
- Recent involvement in the publishing of a new edition of 'Therapy for Amputees'

...to name but a few. It has been a busy time when you look back.

It just remains for me to say congratulations BACPAR and best wishes for the future.

Ruth Woodruff - Secretary to BACPAR

Editorial

Here we are, I have finally left myself enough room to write something and can I think of what to say? (stop laughing all of you who know me)...

First of all a huge vote of thanks to Ruth Woodruff for the sterling job as secretary to BACPAR for the last six years, she has kept minutes, kept information flowing, kept me from making a total mess of the journal by providing articles at the right time, in fact Ruth you've been a star, so a big thank you from the Chair and the Executive Committee and me!

Of course I have to mention the retirement of Vanessa Davies from Wales, who always sends me articles for the journal - usually more than one (THANK YOU) - and has always been there to listen when I had no idea what was going on in an executive meeting (is it right to say often here)? She was also always encouraging when as a new regional representative you have no idea what you are up to. So, a huge personal thank you from me and the whole of the Executive Committee, you will be much missed but we hope you will enjoy your retirement.

Also thank you to the advertisers and those of you who submit articles that make this journal possible. (I just make it look like a journal) And of course to him indoors who is not going to like this sentence as I started it with And... Sorry....

Sue Flute - Editor

Reflecting on 36 very happy years as a Physiotherapist!

Dear BACPAR friends and colleagues,

It is with very mixed feelings that I will be retiring on 30th September 2011, following what will be almost 37 years in Physiotherapy! I have had a truly fulfilling and enjoyable career, which has provided me with hugely exciting experiences and opportunities. Over the years, I have worked with great colleagues and made many friends across the South & West Wales region; working in various specialties, including Neurosurgery, ITU, Paediatrics, Musculo-skeletal & the community – all of which have come in handy during my work with amputees in latter years.

Indeed, I think my work with amputees has proved the most rewarding – being so varied, ever challenging and often incredibly humbling – as 'patients for life' amputees become 'friends' not patients - I will miss this most of all.

Despite many organisational changes, which have at times been stressful and difficult, I consider myself very fortunate, to have worked during the 'best years' of the NHS - in my opinion. Physiotherapy being so highly respected as a profession and autonomous, I have been able to use my experience and adapt a vast number of physiotherapy skills to ensure quality and individualised patient care. I have always felt very proud to be a Chartered Physiotherapist.

Looking back, I have so enjoyed developing the Swansea ALAC service for amputees, from the 21 hour post I took up in 1991 - seeing local patients for 'walking training' – in the days of pylons and 'stubbies'- to the comprehensive 'gold' standard service we now offer. I was able to introduce pre-amputation and early rehab to both upper & lower limb amputees across a large geographical area, in addition to prosthetic rehab; both at ALAC & in the community, with domiciliary visits to amputees in their own homes, school visits for our children, even visits to the local prison when necessary! This has proved vital in facilitating transition/progression of skills into everyday environment.

Also, 'Outreach' visits to West Wales - a small team of two or three clinicians e.g Physio, OT, Nurse etc do these on a monthly basis; visiting amputees in outlying hospitals, schools etc or at their own homes. As a consequence, strong links have been created with other professionals. This has resulted in educational visits and courses being regularly provided to local staff, to promote equity of care for amputees across the region.

My obsession with early intervention, and keen interest in pain management from my previous Out-patients background, allows quick, easy access for amputees - who can self refer at any time; not only during the acute phase of rehab. LASER is always the 1st choice for phantom limb pain and/or residual limb healing, for as we all know reducing pain and promoting healing can greatly affect an amputee's capacity to exercise, which influences their potential to progress to a successful independent lifestyle, whether prosthetic or non-prosthetic user. However, at any stage an array of musculo-skeletal problems may arise, and early assessment and treatment can make all the difference to independence and quality of life.

Depending on symptoms, I may use LASER, Acupuncture, Trigger point massage, mobilisations and exercise regimes etc – making good use of kinetic control techniques developed specifically for amputees. In conjunction with pain management, I have always found Relaxation techniques and self-relaxation especially useful for amputees; particularly for stress, anxiety and insomnia.

I consider our Centre to be an 'Amputee' rather than a 'Prosthetic' centre, as I feel there are so many ways that we can provide a service to non-prosthetic amputees as well as prosthetic users. Our Amputee Self Management Group has proved incredibly beneficial to all amputees, in allowing the psychological needs to be addressed along with the physical aspects of limb loss. Attending small groups in an informal setting allows the individual to 'open up' and discuss their difficulties and concerns. Topics covered vary from group to group depending on their needs, but during the full day sessions we do facilitate discussion of issues such as effects of limb loss, low mood, pain and anxiety. The programme is based on use of the 3 P's (Prioritising, planning and pacing) Individuals are helped to set achievable, realistic goals each week, and specific functional activities identified by the group as being problematic, are discussed and practised if appropriate, or otherwise advice given.

On the final day of the programme, the group are taken out to a venue of their choice e.g ten pin bowling. Many long term friendships have been struck up as a result of the programme, involving families as well as patients.

The success of the many projects, innovations and service developments over the years has been down to the unfailing support and enthusiasm of the fantastic team we have at Swansea ALAC. I am indebted to everyone at the Centre for their unyielding dedication, motivation and hard work - a 'team' in every sense of the word.

Retirement still seems a little surreal at the moment, as I am still enjoying work & continuing to be as bossy as usual! However, I have many interests and look forward to having more leisure time, and of course more time to enjoy being with my dear, longsuffering husband John, who has always indulged my career ideas & projects! And, my two daughters Eve and Holly, although they are both now married and have busy careers themselves (Eve is a Commercial lawyer, and Holly a Doctor). It will be lovely to spend more time together, and naturally I can't wait for the day when John and I become grandparents – yet another era of our lives!

I am currently half way through a Hypnosis course. This has taken up a whole weekend per month since the beginning of the year, and is not due to finish until after December. With plenty of assignments between sessions, I've been kept pretty busy over recent months! This has pushed my golf into 2nd place, but hopefully I'll be able to reduce my handicap next year!

So, I won't be completely retiring – I hope to set up a small private clinic using mainly Hypnosis and Acupuncture – only part time and nothing too strenuous – my poor neck deserves a rest!

Lastly, thank you all for your friendship and support – it's been a privilege knowing and working with you all. Jo Burton from the Cardiff ALAC has kindly agreed to step into my shoes as Regional Rep for Wales. She is already well known to many of you, and previously held the post of Hon. Secretary.

I wish you all the very best. Enjoy your involvement with amputees and with BACPAR, which I've been so proud to be a part of. With very best wishes to you all,

Vanessa Davies MBE - Regional Rep for Wales
P.S. I will be doing a BACPAR Study Day in September before I leave, to give Jo a little time to get into the role!

"I want to wish Vanessa all the very best for her retirement. BACPAR are very proud of her and the MBE that she was awarded for her amazing career in amputee rehabilitation. Thank you for all the work that you have contributed to BACPAR and the support that you have given to all the committee members." Best Wishes, Louise Tisdale.

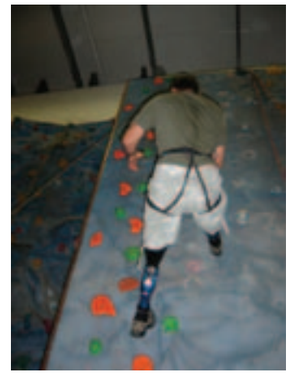
"Vanessa has been a stalwart supporter of amputee rehab for a very long time, and how fantastic and fitting that her dedication was recognised last year by an MBE.

I first met Vanessa at BACPAR national study days and she was a member of the BACPAR commitee long before I was. She has contributed significantly to the success of BACPAR, willingly and capably taking on considerable tasks and with calmness and efficiency. I have always been impressed and reassured by calm and knowelegable manner (and that lovely gentle Welsh lilt!). Vanessa, despite her considerable achievements, has always been modest. Undoubtedly, she will have been a wonderful professional role model for the many physiotherapists - and others - who know or who have worked with her. BACPAR will miss her charm and wisdom.

However, each time we log onto the BACPAR website, there she is, on the front page, in action! I'm sure I speak for all members in wishing her a very happy retirement." Mary Jane Cole - Vice Chair BACPAR

Amputee Rehabilitation in the Military

Over the last 6-years there have been an increasing number of amputees and polytrauma patients in the military. The Defence Medical Rehabilitation Centre, Headley Court became the centre for prosthetic rehabilitation of these patients in 2005 and since then the service has developed rapidly. The rehabilitation team managing these patients has grown from 6 staff members, and now includes 4 Consultants, 4 Senior House Officers (SHOs), 7 Prosthetists, 6 Occupational Therapists, 18 Physiotherapists, 4 Vocational Therapists, 4 Social Workers, 4 Mental Health Nurses, 12 Exercise Rehabilitation Instructors (ERI) and 1 Orthotist!



A bilateral transfemoral amputee returns to climbing

Ref: BattleBack 2009

Within the military almost all of the amputations that occur are due to trauma. This is in direct comparison with most amputations that occur in the NHS. Those injured in the military tend to be young, front-line troops with physically demanding jobs. Following rehabilitation, as the amputee returns to military work, the demands of the job require that the amputee needs several prostheses to fulfil the specific requirements of different roles; such as office work, physical exercise (expected within the remit of a military job) and adventurous and military training. Even something as basic as the weight carried in their Bergen (rucksack) can change the required weight category of the prosthetic foot - for example whilst some personnel may carry 15kg; some may carry up to 60kg. Prosthetic components used for these amputees can be more aligned to elite sports prescriptions than “standard” prescriptions, with most feet that are prescribed being energy storage and return designs.

Commonly, an amputee will receive their everyday prosthesis, a spare (of the same or a different prescription), a water-activity/shower limb and at least one sport specific prosthesis. Although provision of a sports-specific prosthesis may sound like a luxury, fitness is obviously an integral part of being in the military, with specific fitness requirements for different roles. Therefore, to remain in the military it is essential that the amputee is able to complete fitness training to an appropriate level. The prosthetists and physiotherapists work closely to ensure that all functional issues are addressed: at the delivery of the primary prosthesis through to the end of the rehabilitation process and beyond, to when the amputee has returned to work and is seen for review as an outpatient.

As previously mentioned sport is a large part of military life and in addition to the many charities that provide a re-introduction to various sporting activities, Battle Back is a military initiative that is available during and after the rehabilitation process. It reacquaints our patients with sports they participated in prior to their injury and gives them the opportunity to try new sports and adventurous training activities.

Unilateral transtibial amputees, with no other concurrent injuries, are expected to get back to full fitness. Unilateral knee disarticulation or transfemoral amputees can also get back to high levels of fitness and activity, but are less likely to return to front-line combat with prosthetic knees at the present level of development. Upper limb amputees rarely have a problem returning to physical fitness but clearly fitness for their previous jobs will depend on how manual that job was, for example weapon handling can cause some issues! Bilateral amputees, whatever their levels of amputation clearly have more difficulty returning to active duty but they can still attain impressive levels of function. Several of our bilateral transfemoral amputees have been fitted with articulated running legs and one bilateral knee disarticulation amputee has articulated ski knees and feet.

To facilitate this level of function, as with any amputees, the point to remember is that a longer lever, with relatively more intact and efficient musculature, will give more control. The ideal transfemoral length is suggested to be approximately 8cm short of the knee joint (Kelly et al, 2007), however this does not seem to account for the patient’s actual height or leg length. According to Majmunder et al. in 2008, keeping more than 50% of the original tibial length when amputating gives the best physiological cost index (PCI) and gait analysis results. Conversely it should be remembered that increased space is often required for high activity prosthetic componentry. For example the ReFlex VSP by Ossur requires 21cm of clearance for the low profile version. This evidence appears to imply that there is a fine balance between biomechanical function (long residual limb) and space required by high-activity components (20-25cm); factors that should be considered by the surgeons when there is the opportunity for elective surgery.

A number of problems arise with poly-traumatic injuries. Given that the causes of most of these injuries are from improvised explosive devices, patients rarely have only one simple problem (even if that problem is an amputation). There is more likely to be a combination of; burns; fractures; soft-tissue injuries and loss; peripheral nerve injuries; and minor

brain injuries, with or without the previously mentioned amputation. In these cases the patient may also be left with an extremely short and scarred residual limb.

Another point to be aware of with poly-trauma patients is that it is often the complex injuries of remaining limbs that present more functional problems than the amputation. For example, a combination of complex fractures, soft tissue damage and possible peripheral nerve injury in one leg will be likely to improve at a slower rate than a transfemoral amputation on the contralateral leg.

Whilst this is somewhat of a challenge for both the surgical and rehabilitation teams, Headley Court has developed efficient rehabilitation for the patient once the medical problems have been stabilised in the acute hospital setting. In-patient admissions mean that rehabilitation can be progressed at the best pace for each individual patient over whatever timeframe is required and around any ongoing surgical plans. A mix of physiotherapy, exercise therapy, occupational therapy, social work and recreational therapy take up the patients' days, with medical care (especially pain management) being overseen by the Consultant, SHOs and nursing staff. If required, patients will also be seen by a Psychologist, Mental Health Nurse and/or the Neurological team for minor brain injuries (common with blast injuries). The physical rehabilitation techniques used centre around high-level musculoskeletal and sports injury rehabilitation methodology. The perhaps overused phrases of "core control" and "muscle balance" come to the fore with ever more relevance and the physiotherapist and ERI work in unison to ensure that the amputee to progresses at the optimum pace.

Time spent by the amputee with the prosthetist is even more critical than normal in cases where there is significant scarring on the residual limbs or where the limbs are shorter than the ideal. Ensuring a secure and comfortable socket fit can be extremely challenging in these circumstances. Amputations completed in the "zone of injury" may have poorer outcomes with regard to heterotrophic ossification (HO) and soft tissue complications (MacKenzie et al 2004, Potter et al 2007). With both of these conditions being common with our patients, it can be testing for the prosthetist in their efforts to construct a prosthetic socket and suspension system that will provide the level of function that is acceptable to the amputee. In these instances our prosthetists frequently have to think "out-of-the-box" in an effort to achieve the seemingly impossible.

Every year the physiotherapy team at Headley Court host visits from military primary care and Regional Rehabilitation Units for specific training, and also from civilian colleagues for exchanges of knowledge and experience. We continue to see an increased number of patients on an outpatient basis (primarily amputees) and there are an expanded number of clinics. We accept a limited number of 3rd year or elective physiotherapy students on placements, teach military medical staff and students, and give presentations about our service in conference proceedings.

Looking to the future, Headley Court plans further building expansion to meet the emerging needs of our patients. A gait analysis laboratory is nearing full capability and we are in the process of planning the introduction of enhanced technology, which will allow us to look at the objective differences various prosthetic components make to an amputee's gait, energy consumption and functional tasks. In the physiotherapy department we will also continue to look at a variety of functional outcome measures, as our patients have a tendency to keep hitting a "ceiling effect" with all the specific amputee measures that we have tried!

Ultimately, this quote from the World Health Organisation in 1969 still holds true for all of us in 2011: "Rehabilitation is the combined and co-ordinated use of medical, social, educational and vocational measures for training or retraining the individual to the highest possible level of functional ability".

Kate Sherman - Clinical Specialist Physiotherapist, Complex Trauma

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Our friendship group for children with limb loss

Although we are all aware that adults account for the majority of amputee patients and new referrals to our prosthetic services throughout the UK (i.e. The National Amputee Statistics Database for 2006/2007 demonstrated that there was only 90 new referrals for patients under the age of 16 compared to over 3400 adults), there is growing recognition of the specific needs of children with limb loss. For example, leading on from the government and parliamentary group initiative 'Every child with limb loss matters', a paediatric limb loss guidelines group has been set up. There is also a growing body of academic research exploring both the physical needs, such as functional prognosis and prosthetic outcomes (Fisk & Smith, 2004; James et al, 2006), and psychosocial factors, such as quality of life (e.g. Herring et al, 1986; James et al, 2006; Sherriff et al, 2004) or factors related to psychosocial well-being, such as depressive symptoms and perceived social support or social competence (e.g. Varni et al, 1992, 1996, 2003). We are therefore writing this article to tell you all about a friendship group that we feel provides a unique and important source of additional support for children with limb loss in our area. The aims are to tell you, who we are, why we set the group up in the first place, and briefly outline our key aims and what we do in the group.

Who are we?

The group is run at the Portsmouth Disability Services Centre (DSC) and started in August 2009. There are three of us who are the core organisers of the friendship group and we feel that we bring very different skills and ideas to the group. Rachel Swanton is the main organiser who is a Specialist Rehabilitation Counsellor who works at the Portsmouth DSC; Maggie Donovan-Hall is a Health Psychologist who works at the University of Southampton and has specialist interest in amputee and prosthetic research (especially relating to children), and Lorraine Lambert is a trainee counsellor. Lorraine is also an amputee and we are proud to say that she is a member of the GB shooting team. In addition to us, we often have help from volunteers who come along and help with the group.

Why did we set the group up?

As with the initiation of many new services or groups, the need for the group came from various different sources. Firstly, Rachel recognised that the paediatric patients did not have the opportunity to meet each other as at the time there was no set children's clinics within the centre. As a counsellor within the DSC, Rachel often met with children and their families on a one-to-one basis, but also saw the importance of offering group support for both the children and their parents. Secondly, the importance of meeting other people with limb loss and the benefits of group support has also been echoed in several research studies that have shown that children with limb loss can feel isolated and do not like to be treated differently (Donovan-Hall et al, in preparation; Sherriff et al, 2004; Varni et al, 1992, 1996, 2003).

Over the last six years Maggie has also been working with several charities that support children with limb loss and has seen how valuable the support and fun-days are for their members. This has therefore led to development of our group which meets the first Saturday of each month, runs from 10.30 to 12 noon and is for children 0 to 16 years old. At one of our first meetings it was decided we needed a name and as it is the children's group, we let them decide on it! After several ideas, they voted on the name 'Monthly Madness', which we feel is a great name and reflects the fun we have each month.

What do we do?

The core aim of the group is to play and carry out fun activities that are mainly based around building relationships, esteem and confidence building, helping the children express difficult emotions, and helping them develop a positive sense of body-image.

Building relationships

It is frequently acknowledged by both the children and their parents that simply the opportunity to meet and make friends with other children with limb loss is one of the most important aspects of the group. It is often found that the child may be the only person in their School with limb loss and they often do not get the opportunity to meet other people. This has shown to provide an important source of support and can help develop their 'sense of self' through meeting children 'like them'. The group also provides parents with the opportunity to meet other parents and see the development progress of other children. For example, families with a younger child can see how older children cope and engage in activities.

Quote from a parent:
"Sometimes you can feel you are alone in dealing with something whereas by going to this group you quickly realise there are plenty of other people that are going

through similar issues, just talking to other people 'in the same boat' can provide a lot of reassurance in itself"

Building confidence and self-esteem

Another important aim is to create activities that help build confidence and self-esteem. We do this through lots of different activities that may involve working on something individually (e.g. an individual piece of art, such as a self-portrait or a picture of how they feel) or to do something as a team and learn how to work together. For example, we make towers and create junk models that involve the children taking in terms in being the leader, which gives them the opportunity to have a voice, feel important and offers a sense of empowerment. We hope the activities help the children become more confident in being 'themselves' and dealing with difficult experiences, such as bullying or social isolation. We also hope that the children are more confident in interacting with healthcare professionals and making choices about their prosthetic rehabilitation.

Expressing difficult emotions

We hope to offer the children (and parents) a safe and confidential place where they can express difficult emotions. We have set clear boundaries and all our members know that 'what is said in the group stays in the group'. For example, we carry out games and activities that help express emotions such as anger, grief, happiness, frustration and self-pride. We often do this through the use of puppets where a child can express how they feel through the puppet; perhaps thought selecting a puppet they feel most resembles them and discussing how they (the puppet) feel. However, you do not need to have a lot of expensive puppets to do this and we have often carried out activities involve making puppets with old sock or lemons and then expressing our emotions. We also carry out a creative activity called the 'feeling body' where the children draw around each other's bodies and draw or colour how they feel on a specific part of the body. We also have great fun playing 'spin the bottle' where we name a feeling that we often feel if the bottle points to us.

Developing a positive sense of body-image

We also play games and carry out activities that help develop a positive sense of body-image. We try and foster positive views and discussions about their body-image through reacting positively to the different issues the children want to discuss. For example, the activity that involves the children drawing around each other also provides the opportunity for them to see themselves and discuss how other people are different in other ways. We have seen that this can often help create positive social comparisons and develop social inclusion.

Supporting parents

It addition to supporting the children, a second key aim of the group is to support the parents and provide them with the opportunity to chat to each over a cup of coffee while the children are taking part in the group activities. It is clear from the feedback from the parents being able to meet other parents with a child with limb loss is really important and an undervalued resource. They see it as an idea opportunity to gain advice, swap ideas and obtain general reassurance.

Quotes from parents:
"The group can be a place just to chat about your concerns and questions can often be answered by people who genuinely know what they are talking about either because of specialist knowledge or their own relevant experience"

"It's good to go somewhere and know that you will be with people who truly understand how you feel"

Final thoughts

We hope you see from this article that we are very proud of our friendship group and we have illustrated how much fun we all have. We are also very lucky as the group is very well supported by the DSC and we have frequent visits from the healthcare professionals (e.g. the OT, PT and Prosthetists) who come along and talk to the parents and meet the children in this fun and informal setting and join in the fun. We hope that this article has inspired you to consider running something similar in your own centre; it doesn't take a lot of money or work and is seen as a valuable source of support for both the children and their families.

Thoughts from a parent:
"We recently took our son of 5 months for his first prosthetic fitting and whilst we were there Rachel told us about the monthly friendship group. Our son is obviously too young to get fully involved in all the activities but my wife and I were really keen to meet other children and parents who are in the same position as us. We had a lot of fun in our first group – it is a very relaxed and friendly atmosphere. We will certainly continue to bring our son along to the group each month and I'm sure as he gets older he will form some great friendships with the other children, as we will with the grown-ups!"

Please feel free to contact us to talk about our group and get any advice:
Rachel Swanton: rachel.swanton2@porthosp.nhs.uk
Maggie Donovan-Hall: mh699@soton.ac.uk
Lorraine Lambert: lorraine.lambert3@ntlworld.com

Maggie Donovan-Hall, Rachel Swanton and Lorraine Lambert

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Carbon Stride

Remember the elegant limb cover produced for the transfemoral amputee (www.carbonstride.co.uk)? Well, Tony Calvey obviously thought that the transtibials should not miss out!

So next time someone asks you for something a little bit different... you can point them to Carbon stride for both transfemoral and transtibial patients.

BACPAR Bursaries

Bursary money will be available at the next executive BACPAR meeting in Spring 2012. 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.

Acupuncture in the Treatment of Residual Limb Pain

Introduction

This case study will aim to demonstrate the considerations and clinical reasoning undertaken when planning and undertaking the acupuncture treatment for a patient experiencing pain in his residual limb. The use of acupuncture in the management of residual limb pain (RLP) has not been widely documented. Its use in Phantom Limb pain (PLP) has largely been described through case studies (Monga (1981), Bradbrook (2004) and O'Neill (2010)). In an overview of pain management for the lower limb amputee Walsh (2005) reports that acupuncture should be considered as a treatment of RLP caused by neuroma, but no further detail is given. Some cases of RLP will respond to prosthetic adjustment. Some cases of RLP e.g. that as a result of bony abnormalities and infection may require surgery. RLP can perpetuate PLP and may prevent an individual from wearing their prosthesis, so it is important that it can be treated successfully.

Patient Details

The seventy-six year old male with type two diabetes and ischaemic heart disease, underwent a second transtibial amputation in May 2010 for gangrene. His previous amputation was in 2007. Prior to the second amputation the patient was mobilising on a regular basis.

Patients are seen early post operatively and the Physiotherapy treatment plan aims to prepare the patient for prosthetic use, if this is appropriate. Part of this plan is to reduce post operative oedema and improve muscle function in the both the limb that has undergone amputation and the remaining limb and trunk. Patients are advised to undertake imagined movements, as described in two small but informative studies (MacIver (2008) and Ulger (2009)), which, in practice, cause the patient to contract the muscles of the residual limb; serving to assist in the reduction of oedema, improve the muscle tone in the residual limb and minimise the frequency and severity of phantom limb pain.

Post operatively the suture line failed to heal and required surgical debridement four months later. This wound healed, albeit slowly, and the patient commenced prosthetic rehabilitation in October. The patient experienced intermittent shooting, burning residual limb pain along the distribution of the superficial peroneal nerve (Williams 1989) post amputation (see figure one), and this persisted following the debridement of the wound. He experienced difficulty wearing the prosthesis, limiting the amount of weight he was able to take through that side and maintaining a need for support through his upper limbs thereby reducing his function. Two of the goals set by the patient included walking with two prosthetic limbs and a return to crown green bowling.

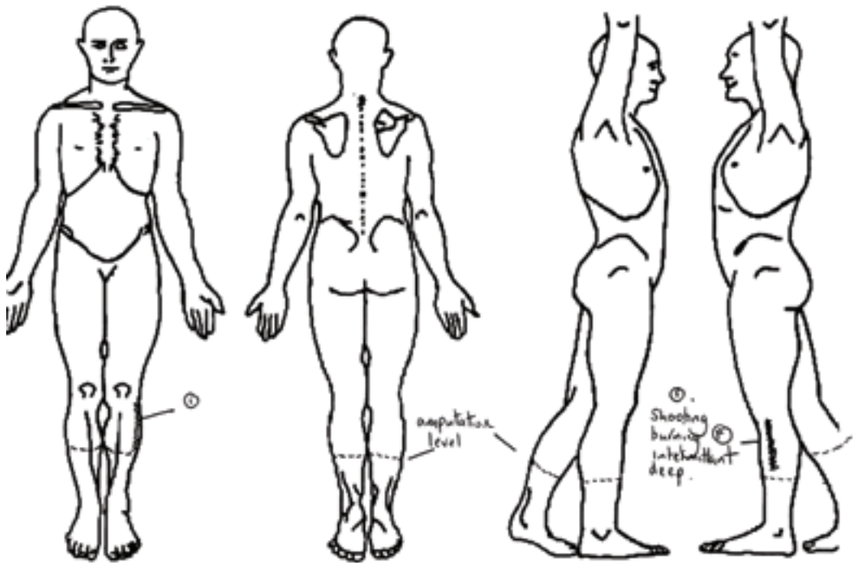

Figure 1: Distribution of patient's symptoms

Prosthetic adjustment to reduce loading on the sensitive tissue and residual limb massage (Wolverhampton City PCT 2008) and exercise had reduced the symptoms but, they persisted, presenting as residual limb pain on weight bearing, worst initially in the morning and having rested for any length of time during the day.

The residual limb was reviewed by the vascular surgeon to rule out osteomyelitis and the presence of any bony spurs or other abnormalities, I was then able to offer acupuncture treatment to the patient as a modality for pain relief.
A pain rating scale was completed (The British Pain Society 2011) .The patient reported his pain as of moderate severity but low irritability. In view of the time post operatively and the behaviour of the symptoms, I considered the problem a chronic one, but I would be mindful of the likely neural source of his symptoms; neuropathic pain.

Acupuncture Point Selection

Acupuncture points were considered. BL 62 was suggested by Hecker (2008) for peroneal neuralgia but not possible to undertake due to amputation bilaterally. A further review of this text and a number of potential segmental points were selected based on the derivation of the superficial peroneal nerve (L4, 5, S1 and S2), the dermatome supply of the area of the symptoms (L5), and the cutaneous nerve supply of the same (Lateral Cutaneous of Calf of the Leg L4, 5 S1) (Williams 1989). See table 1 and table 2 to illustrate this process.

ST 38 and 40 were not appropriate as these points are located at the very distal part of the residuum, and the patient's distal circulation could be challenged. Popliteal arterial flow was present on Doppler ultrasound assessment but there was a bruit present, indicative of turbulence in local blood flow and therefore significant vascular disease in the vessel (Hill 1990).

ST 36 is thought to be a safer point than GB34 (Peuker 2003b). The Common Peroneal nerve (CPN) intersects the placement of GB34 in 10-20% of individuals (Peuker 2001).

There have been cases of paralysis of the CPN which has led to foot drop. Although foot drop would not be of importance in the case of the trans tibial amputee paralysis of the crural muscles innervated by the CPN would result in a low toned residuum, making socket fit challenging.

Treatment and Outcomes

Having taken informed written consent, the initial segmental points selected were ST35 and ST36. LI4 was selected as the non-segmental point. Peuker (2003b) states that the target tissue of this point is likely to be connective tissue between the first interosseous muscle (hand) and adductor pollicis longus (Peuker 2003b); innervated by T1. The dermatome of the area is C6 (Williams 1989), therefore LI4 is a non segmental point. The patient was positioned in long-sitting. The initial treatment time was fifteen minutes, and needles were stimulated once. DeQi was attained at all points. No adverse effects were reported or noted. The patient reported that the severity of the symptoms had improved by 50% after the first treatment on weight bearing through the prosthesis.

At the second attendance, three days later ST36 and LI4 were again used, and with consent, two points were changed to BL 40 (54) and BL25. This decision was made following advice from the course tutors by email, advising re the difficulty of the point ST35 and potential danger of the needle breaking in the joint if the patient moved his residual limb (Catherine Plant 2011)and the second tutor advocated the use of BL25, a spinal point sharing innervation with the source of the symptoms whilst being at a distance from the same to prevent aggravation of the injured tissue (Stephanie Griffiths 2011).

The target tissue of BL25 is Erector Spinae, supplied by the dorsal rami of L5 (Peuker 2003a). The starting position was changed to side lying to accommodate these changes, and the treatment time increased to thirty minutes, providing a bigger dose of acupuncture as a result of more episodes of needle stimulation; DeQi.

The patient continued to report some improvement in the severity of pain, but the nerve continued to be tender to palpation. For the following two treatments the number of needles was increased by using LI 4 bilaterally, increasing the dose.

At the fifth treatment an additional segmental point was added; (GB 30 (70mm needles that had been ordered had arrived)), because chronic pain indicates the need for more segmental needles (Bradham 2007). Having reported a 100% improvement in his symptoms on review, again using the pain rating scale, three days later, the same treatment was repeated. Ten days later, he reported some return of his symptoms though much less irritable. A top up treatment (as

per the 5th) was provided with resultant improvement in his symptoms again.

It seems that the patient had only noted real benefits of treatment after five treatments, an outcome perceived as probable in MacPhersons's study (1998), where it was reported that chronic problems required more treatments before an effect may be reported. Ezzo (2008) agreed with this, reporting that six or more treatments were significantly associated with a positive outcome in the treatment of chronic pain; though uncertain about the theory behind this: a cumulative effect or increasing commitment from the patient with increased total treatment time?

The patient continues to be reviewed as his treatment continues; developing the quality of his gait, through improving balance and adjustments to his prostheses to accommodate the increased weight bearing. Should his symptoms return, further acupuncture treatment will be offered.

Segmental and Extra-segmental Effects of Acupuncture

In selecting points for acupuncture treatment for the management of chronic pain, a combination of segmental and non segmental points is required. When the acupuncture needle is inserted into the skin and then, usually, deeper into the muscle toward its target tissue, sensory nerve endings in these tissues are stimulated (White 2008). Those most commonly stimulated in acupuncture, because it is a painful stimulus, are A delta fibres (usually felt by the patient as heaviness and aching) and when more soreness is elicited, C fibres are being stimulated. The effects of this stimulation in the tissue local to the needle is not thought to be the most relevant when hoping for a long term effect in the treatment of pain, but are most useful in cases where acupuncture is being used to promote healing. Carllson (2002) states that if there is no tissue injury the local mechanisms are unlikely to have a substantial role. Of the acupuncture points used the most local to the symptomatic tissues was ST36. However the treatment time and level of stimulation given would not constitute a local treatment (White 2008).

Following stimulation of the nerve endings, the action potentials generated travel directly up to the level of the spinal cord (substantia gelatinosa), representing the segment/s innervated by the tissue in which the needle is inserted (White 2008). Therefore (following a review of tables one and two) the placement of a needle in ST36 would also generate axon potentials that would travel to L4 level of the spinal cord. Through the release of encephalin, which inhibits the transmission of pain in the substantia gelatinosa, activity in the dorsal horn of the spinal cord is reduced as is its response to painful stimuli arising from the same segment/s; the patient's experience of pain in the residual limb on weight bearing. This is segmental analgesia. The use of segmental acupuncture points is thought to be of the most benefit when planning treatments for a patient with chronic pain.

The same action potential also travels on from the dorsal horn , crossing to the opposite side of the spinal cord onto the brain stem , some fibres ending in the mid brain and then on to the thalamus. Descending Inhibitory Pain Control, activated by beta endorphins, begins in the mid-brain in the area known as the Peri Aqueductal Gray (PAG). From here Descending Inhibitory Pathways descend to the dorsal horn of every level of the spinal cord. Neurotransmitters, for example serotonin and nor-adrenalin are released at every segmental level of the spinal cord, dampening the pain response through inhibition of the substantia gelatinosa. This is extra- segmental analgesia, this reinforces the segmental effects. Strong (painful) stimulation may produce diffuse noxious inhibitory control (DNIC) which gives a short lasting inhibition effect (Carllson 2002) and depends upon achieving enough stimulation, a strong DeQi effect. The placement of needles in the point LI4 (non- segmental point) may achieve this as it is a strong, usually uncomfortable point. Zhao (2008) differentiates between what nerve endings are being stimulated in strong and gentle stimulation of the needle to achieve DeQi. A type fibres respond to gentle stimulation and C fibres are stimulated when local muscle tissue is injured by more vigorous twisting and moving the needle up and down in the tissues, following the release of pro-inflammatory mediators, in response to the injury, which excite the nociceptive C fibres. White (2008) states that there is no requirement to treat so vigorously that C fibres are stimulated.

Conclusion

In this case study, chronic, neuropathic residual limb pain responded well to acupuncture treatment. An understanding of the number of treatments required to effect chronic pain has given me confidence as an acupuncture practitioner to persist with treatment when only short term effects are attained in the early stages of a course of acupuncture, and in administering the first treatment for subsequent patients, I have increased the number of needles I used in this case study.

Segment	Muscles Innervated
L4	Quadriceps ,Tensor Fasciae Latae, Adductor Magnus, Obturator Externus, Tibialis Anterior, Tibialis Posterior
L5	Gluteus Medius, Gluteus Maximus, Obturator Internus, Semimembranosus, Semitendinosus, Extensor Hallucis Longus, Extensor Digitorum Longus, Peroneus Tertius, Popliteus
S1	Gluteus Maximus, Obturator Internus, Piriformis, Biceps Femoris, Semitendinosus, Popliteus, Gastrocnemius, Soleus, Peroneus Longus and Brevis, Extensor Digitorum Brevis.
S2	Piriformis, Biceps Femoris, Gastrocnemius, Soleus, Flexor Digitorum Longus, Flexor Hallucis Longus, Intrinsic Foot Muscles.

Table 1: Segmental Innervation of muscles in limbs (Williams 1989)

Segmental Acupuncture Points	Target Structure of Point
BL36	Hamstrings' Origin
BL40 (54)	Gastrocnemius
ST34	Vastus Lateralis
ST35	Knee Joint capsule (L,3,4,5)
ST36	Tibialis Anterior
ST 38*	Tibialis Anterior
ST40*	Extensor Hallucis Longus
SP6*	Flexor Digitorum Longus/ connective tissue planes between the flexor muscles of the calf
SP10	Vastus Medialis
LR3*	1st Dorsal Interosseous (Foot)
LR8	Semimembranosus
GB29	Tensor Fasciae Latae (TFL)
GB30	Piriformis
GB31	Vastus Lateralis or Intermedius Iliotibial Band (TFL)
GB32	Vastus Lateralis or Intermedius Iliotibial Band (TFL)
GB34	Peroneus Longus
GB39*	Peroneus Brevis
KI3*	Epineural tissue tibial nerve
Heding	Rectus Femoris
Xiyan	Knee Joint capsule (L,3,4,5)

Table 2: Some acupuncture points relevant to the innervation of the site of the patient's symptoms (White 2008 and Peuker 2003b). (*Points not available through limb amputation or perceived a vascular risk to the patient)

Louise Tisdale - Specialist Amputee Physiotherapist

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Standing on top of a continent – The climbing of Mount Kilimanjaro

In October 2009 the charity Limb Power launched a challenge for a group of amputees to climb to the summit of Mount Kilimanjaro in Tanzania.

Kilimanjaro is a popular challenge for able bodied trekkers and is becoming more and more popular as an extreme challenge for people with a whole range of disabilities including lower limb amputation.

The summit of Mount Kilimanjaro is 5895 metres above sea level and is the highest free standing mountain in the world. Many routes ascend through the national park to the snow capped summit of this huge volcano. Limb Power had chosen the Rongai Route as the path our group would take. It was felt to be more manageable and allow us the best chance of acclimatisation to altitude which is often the main cause of failure to reach the peak.

We embarked on a gruelling 12 months of preparation including regular walks, training in the Brecon beacons in the worst rain Wales could throw at us and perhaps the most gruelling of all was the fundraising.

In October 2010 a final team of 15 people, including 6 amputees, boarded a plane for Tanzania. We had trained hard and the amputees amongst us were well prepared with spare legs, crutches, walking poles, socks, liners and a sack full of blister dressings. Our team consisted of one transtibial amputee, one bilateral transtibial amputee and four transfemoral amputees.

I had to admit I felt entirely unsure about how our group would manage. I was also entirely unsure of how I would manage and I didn't have to contend with the increased energy expenditure of prosthetic gait, a potentially unstable knee joint and a potentially uncomfortable socket.

Our trek started very positively, walking over well trodden paths through forests and farmland. The group faired well, all using walking poles for safety and support. Camping overnight was a real challenge for the guys with them having to get on and off the floor all the time and don and doff legs in the cold at night. A special toilet was carried all the way up with us by porters to allow our amputee walkers to sit rather than use the long drop toilets which were generally quite hard for them to access.

The views each morning of the ever nearing Uhuru peak, soaring above us, appearing unimaginably steep and covered in snow, were a huge excitement and kept us all motivated. Each day the terrain became rockier and more challenging for the group. They had to climb over and down large boulders and move through narrow gaps in the rocks where prosthetic feet kept getting caught.

The commonest problems the group encountered were blisters on their stumps, and keeping dressings in position within the socket as they became hot and sweaty with the effort of climbing. They never ceased to amaze me at what huge rocks they could negotiate and they truly changed my opinion of what was possible with a transfemoral prosthesis.
Each of our amputee walkers had two guides/porters with them at all times helping them with difficult terrain which was an essential part of the trip, not only for their safety but also for their motivation as we all began to tire.

After 5 days of climbing we reached the base camp at Kibo Hut at around two 'o' clock in the afternoon. We ate then retired to our tents to sleep as

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much as we could before attempting the final and most demanding climb to the summit. We climbed out of our tents at 11pm to find snow everywhere, bright moonlight and views out of a fairytale story.

Five of the six amputees attempted the summit that night where we ascending from base camp at 4700 metres up to Uhuru Peak at 5895 metres. We walked in darkness, with head torches to guide us, in the most unbelievable cold listening to the guides and porters singing through the night.

As you looked up the mountain you could see a trail of lights from the head torches of the many people already on the path ahead. We walked slowly on steep, shale paths with the altitude making every step feel like thirty steps. At 5000 metres we all felt the sheer exhaustion of the climb and a number of our group turned back and were carried off the peak.

We struggled on through nausea, freezing temperature and exhaustion like I had never known before. At 5600 metres the last of the transfemoral amputees reluctantly had to stop and again be carried down.

At eight o' clock in the morning we finally made it to the famous Uhuru sign at the peak. One of the transtibial amputee walkers was with us to watch the sun rise and celebrate the completion of an unbelievable challenge not only taking on the highest mountain in Africa but also our own bodies and minds.

It took two days to descend the mountain and many of the amputees were carried down on stretchers as the exhaustion of ascending made the descent slow and dangerous in the time allowed.

The amputees in the group who failed to reach the summit were bitterly disappointed and reflected for hours on the route we had taken, on their own techniques, and their health and fitness. They are currently planning a re-attempt in 2013 where they will follow a more direct but less rocky route which they felt would better conserve their energy. They are also planning to sleep in the huts which follow this route as camping was felt to be a contributing factor to their exhaustion. They still plan to take the longest time possible to reach the summit to fully allow for acclimatisation to altitude.
Looking back I don't think I have ever been quite so amazed by one trip. Not only the beauty of the national park, the friendliness and hospitality of the African Walking Company, the sheer all consuming exhaustion I felt at the summit but most amazingly the determination, adaptability and sense of fun from the amputees amongst the group.

I spend a lot of time in my work telling people about the limitations of prosthetic limbs so it was fantastic to see this group of people overcome so many of those limitations. Not through the technology of their limbs but through their own strength, agility and single mindedness. I will be forever impressed by this mountain but more so by the group of people I climbed it with.

Chantel Ostler – Amputee Specialist Physiotherapist, Portsmouth Prosthetic Service

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ADVENTURE REHAB – An alternative approach to rehabilitation after trauma

In May 2001, whilst on a service mountaineering expedition to Alaska, Captain Jim Bonney (Royal Marines) fell 1000 feet down Mount Hunter. Jim was lucky and his only significant injury was a fracture dislocated ankle. However the bone he broke was his talus, a notoriously poor healing bone, and after 18 months on crutches Jim was faced with the reality that it wasn't going to reunite and so was looking at the prospect at having his ankle fused at 90O to his leg. Given the limitations this would make to his previously active lifestyle Jim made the decision to have his right leg amputated below his knee, and this is where the story of ADVENTURE REHAB begins.

After his amputation Jim attended a rehabilitation programme at Headley Court. Here he experienced firsthand the benefits of multi-disciplinary residential rehab, and discovered that the peer support he experienced throughout this process was as critical to his recovery as the input he received from the professionals. During this period Jim and his wife Kirsty, then at medical school training to be a doctor, often reflected on how fortunate he was to have been in-service when his accident happened, as the rehabilitation he would have received as a civilian was absolutely no match to that available to service personnel. They also often discussed how in the future that situation could be changed!

Once physically rehabilitated Jim return to the Royal Marines where he returned to active service and was promoted to Major. As time went on he become increasingly interested and involved in the provision of military rehabilitation. Initially he commanded Royal Marine recruits injured during training and then in 2009 he participated in a multi-disciplinary rehabilitation expedition to Nepal. On return Jim became passionate about how, with the right team, group rehabilitation in the real world could produce very positive rehabilitation outcomes. He began sharing these thoughts with, amongst others, Rich Howard- a Royal Marine Major who he was working alongside. Rich was a passionate advocate of using adventure as a vehicle for personal development, having trained as an Outdoor Education teacher. He saw the strength of this approach to rehabilitation and to prove the concept they organised a sailing expedition to the west coast of Scotland taking with them several naval personnel with physical and acquired brain injuries. The expedition was a great success and was to prove to be the foundation stone for ADVENTURE REHAB.

In 2011 both Jim and Rich left the Royal Marines and set up ADVENTURE REHAB. The aim being to provide civilians with the opportunity to experience residential, multi-disciplinary, group rehabilitation, in a real world environment. They began hand picking their multi-disciplinary team and with the whole team's input they set about designing a rehabilitation programme that would not only rehabilitate the clients physically but also psychologically.

The programme the team devised consists of a 3-day assessment course followed by a six-month rehabilitation programme that includes five residential weeks spread throughout the six-month period. During this time the clients have on hand a host of professionals: physiotherapists, psychologists, doctors, councillors, coaches and mentors. Occupational therapists and prosthetists also join the clients during the assessment process. And of course they also have their greatest resource, each other.

The weeks are designed to challenge the clients both physically and mentally. During the assessment process clients are often pushed to limits they had not thought possible since their accident or illness. Even in this short period of time mindsets begin to change from "I can't do that" to instead "I am not sure how I am going to do that, but I will give it a go and find a way!" From this moment the clients begin their journey from dependence to independence.

ADVERT

The ADVENTURE REHAB programme is designed to keep clients motivated and rehabilitation interesting. The activities chosen are designed to replicate the exercises often performed in physiotherapy rooms or gyms, but in an outdoor active environment. For example to build core stability, rather than sitting on a physio ball in a sterile physio room or gym, clients are taken out in kayaks where the constant movement of water around the boat forces them to continuously use their core strength to stop themselves falling in! And when deliberate foot placement is an area to be worked on clients are taken out of their comfort zone of a horizontal floor where movements can be hurried, to a vertical climbing wall where every foot placement has to be carefully thought about and planned.

The environments used for delivery of the courses are also very important. Tranquil surroundings give clients the time to reflect and assess what their recovery means to them, their family and their friends. Working in these locations the psychologists, councillors, coaches and mentors begin to give the clients the tools they need for their psychological recovery. As the weeks progress the locations, activities and psychological tools used all become progressively more challenging. The assessment courses and initial residential weeks are run in South Devon and Dartmoor, but by the fifth residential week the clients are challenging themselves in North Wales.

However not the whole course is delivered on water or in the mountains. The ADVENTURE REHAB team work with the clients to determine individual specific skills and goals to work towards and this can mean providing a diverse range of additional skills and coaching. Some of the other areas covered on courses to date have included driving lessons, hands-on cooking tutorials, questions and answer sessions on pain and its management and vocational coaching.

At the end of the first week of the most recent course a video of the things the clients had achieved during the week was shown to the clients and the ADVENTURE REHAB team. It was very moving for everyone there to see in 5 minutes, a snapshot of all the things they had achieved in those five days; the massive leaps of confidence, the beginnings of acceptance of situations and the acknowledgement that a rehab journey involves more than just the injured party, but that family and friends have their own journeys to make in accepting how the people they love have changed. In summary they had begun the journey to getting their lives back on track.

And when whilst watching that film I turned round, I saw a wet streak down Jim's cheek, the vision first created over a bottle of wine nearly ten years ago had come to fruition and Jim's own rehabilitation journey is now that bit closer to the end.

www.**ADVENTURE**REHAB.co.uk

Hosting a BACPAR study day: The Gymnastic Ball (16/07/2011)

Behind the Scenes

Yesterday, as fledging BACPAR North Thames regional representatives myself and Natasha Brett (Band 6, Amputee Rehabilitation, Stanmore RNOH) took on the challenge of organising our first study day. Following a brainstorming discussion with other regional reps at the last Wolverhampton conference we decided to ask Janice Champion if she would kindly come and present her 'Use of the gymnastic gymball for rehabilitation with amputees' course. Luckily she said yes. Phew, first decision sorted!

We decided to the host the course on July 15th on a Friday afternoon/ evening 1-7pm, primarily due to gym and instructor availability but also in the hopes of attracting more interest with the requirement of only a half day study leave. Due to hospital accessibility (and with the thought that we will probably rotate course venues) we choose the Royal Free hospital for the course venue. So this left me in charge with sorting out room locations, organising attendees and liaising with Janice. While Natasha got on the case with the three F's food, finances and finding patient demonstrators!

We didn't appear to have too many glitches in the organising, other than a five minute panic about not enough attendees (thanks to Julia Earle for sending out the global BACPAR email to scavenge members from other regions. We even had a couple of members come from Ireland, good effort ladies!), multiple broken projectors and issue with limited room availability. So with only a few new grey hairs sustained and 18 willing attendees (slimmed down from the desired 20 due to two late drop outs) we were ready for the day.

The Day

The course day started in the library (fittingly studious!) with an hour lecture on the historical use, advantages and consideration of gym ball use. From a practical element we also learnt about the makeup of the gym ball, the hazards of over-pumping and how much air should actually be in the balls. On reflection it is probably pretty obvious that a 55cm ball should measure 55cm in height once pumped. This is knowledge that has however appeared to evade me in my eight years of physiotherapy practise and a clear indicator of why I needed to attend this course! I can only put it down to sheer luck and am obviously very thankful that I haven't had a patient and exploding ball scenario in the past.....should I be admitting this!

We then had a quick tea and coffee break (phew it arrived!) before heading to the gym where we had an opportunity to practise the aptly named 'hula hula' (a combination of anterior and posterior pelvic tilt (APT/PPT) and then lateral pelvic tilt) , 'cowboy' (a controlled ball bounce), 'the unrest' (advanced single leg bridge) and 'the scissors' (press up position over the ball, advancing with lateral trunk rotation. An exercise definitely not for the faint hearted or for those, like myself who may need to work on their core control).

Natasha had done an excellent job of sourcing five very willing, able and enthusiastic patient demonstrators, with a good mix of transfemoral, transtibial and variable activity level patients. So over the next 90 minutes we then had the opportunity to trial out our new found gymnastic ball skills to assess and treat the patients, utilising the array of new exercises. Trialling out new techniques on willing participants is always the most fun part of courses and it also enabled us to fully appreciate Janice's amazing knowledge and witness her unbelievable 'Neuro touch' (she made it look all very easy and there were a lot of 'of course why didn't I think of that' moments!)

Clinical Learning

Making myself ever ready as course host actually gave me the opportunity to follow Janice around the different workshop groups and therefore dip in and out of a few patient sessions. For each of the patients key learning points were:

Patient 1 ('Bridging')

Right Transtibial (TTA), amputation due to heel tumour. The patient mobilised unaided, however presented with increased lateral trunk flexion and lateral pelvic shift towards the prosthetic side, with erector spinae (ES) overuse and an exaggerated lumbar lordosis. As a home exercise he was independently practising sitting unsupported on the gym ball with no floor point of contact, stabilising his position with iliopsoas, Hamstring and trunk extensor over activity, thereby reinforcing his muscle imbalance.

We therefore looked at relaxing his APT position by flexing his upper trunk (bed head up) and elongating his lower limbs by taking his pelvis into PPT in order to achieve more postural height. From there we progressed onto assessing his bridging technique, sitting on the gym ball in front of the patient (no room for embarrassment here) to enable us to achieve more patient body length by giving proprioceptive feedback to his hamstrings. Finally we progressed onto the 'Unrest' to explore future progression options.

Patient 2 ('Seated trunk flexion')

Left Transfemoral (TFA), post RTA, C-leg. Musculoskeletal damage, pain and limited range of movement to remaining knee. The patient mobilised very well unaided however demonstrated reduced pelvic rotation compensated by increased upper trunk mobility. The patient had never used the gym ball.
Due to increased patient anxiety and concurrent over activity of bilateral hip flexors and trunk extensors we looked at sitting the patient in a supported position on the ball, with the therapist behind to facilitate upper trunk flexion and lateral trunk and pelvic disassociation. We had a therapist stabilising the patient's feet to facilitate hip flexor elongation and enable floor proprioceptive feedback. From there we progressed to the 'Hula. The patient soon visibly relaxed and report that he felt that the lateral pelvic movement achieved with the 'Hula Hula' carried through into his gait.

Patient 3 ('Knee rolling')

16/12 months post RTA, left TTA. Completed no exercise at home but felt like he wanted to get back into doing something.

Sitting on the gym ball he presented with a stiff thoracic spine, limited movement into APT/PPT and an abduction prosthetic hip position. We therefore looked at facilitated knee rolling, stabilising his ribcage to initiate PPT and reduce ES over activity. Relaxation of the paraspinals into PPT enabled the patient to adduct his prosthetic leg.

The patient reported that he *"found the gym ball a lot more interesting than normal gym exercises"*

Patient 4 (sit to stand, STS)

R TFA, post RTA. Mobilising unaided. Reported that in sitting he often suffered from low back pain. He sat in an APT position with increased lumbar lordosis and an abducted prosthetic leg.

We generally assessed the patient on the ball, looking at the cowboy and the Hula Hula again. We then assessed his STS and determined that by elongating his prosthetic length on the right and taking the patient into PPT relaxed his paraspinals and enable him to sit with his prosthesis in a more adducted and comfortable position.

Patient 5 ('Hula Hula')

Young right TTA. 10 yrs history post RTA. Very high activity user. Echlon foot. Patient unhappy with running style and felt he ran *"with a limp"*.

We hypothesised that lack of propulsion from the prosthetic foot 'versus' potential reduced pelvic mobility and over activity of his

trunk were contributing to his running deviations. We therefore looked at his pelvic and trunk disassociation in the 'Hula Hula' exercise to facilitate increased pelvic rotation. Time was definitely against us with this assessment but the patient reported that it had given him 'food for thought' and that he was keen to investigate these exercises further.....that was after he put us all to shame with his amazing scissors demonstration!

The Discussion

With new inspiration on how to improve our handling and our minds overflowing with exciting ideas and techniques to trial on our unsuspecting patients on Monday we sat down to discuss and share our findings. This enabled us to learn what other groups had experimented with on their patients and for Janice to consolidate her theory.

I collated some quotes from attendees to get a general consensus of what people learnt, what they could use and ideas for improvement. A summation of the findings included:

"...I really liked the patient practicals. Some of the higher level exercises I might not get to use but I will definitely be able to use the ball as an assessment tool with my caseload"

"...the course has made me think about assessing my patients with a more neuro head and thinking about the importance of trunk and pelvic disassociation"

"...seeing the difference in how the patient felt about exercise and how the gym ball can rejuvenate the patient's enthusiasm with exercise was very inspiring"

"...the course has given me more confidence and ideas of how to use the gym ball with my patients, especially as an assessment tool. In future it would have been better if we could have rotated around different patient rather than staying with the same patient"

On Reflection

On reflection I thought the day went really well. Janice was an excellent tutor and I would definitely recommend other regional reps to book her to complete the course in the future. All attendees seemed very pleased with the course and other than the very noisy fan system in the gym and the overpriced parking (a little out of my control!) I think the venue worked well.

Following discussion with Janice perhaps having four patients rather than five would have enabled her more time to rotate around patients and for the groups to rotate around patients. In response to requests for a booklet of gym ball exercises Jodie Georgiou (Band 6, Amputee Rehabilitation, Bowley Close, Crystal Palace) has very kindly offered to email me their exercise booklets so I can disseminate them to the course attendees.

From a course organisation viewpoint I think myself and Natasha have sighed a huge sigh of relief that we have successfully hosted our first course. Yeah us! In hindsight perhaps we should have charged more to account for attendee drops-outs and maybe we over did the food a little (although I think the cleaners were very pleased with us as they packed their bags full of left over sandwiches and biscuits!).

So all it leaves now is for me to say thank you to:

- The Royal Free hospital for letting me host the course on site and for tea and coffee donation money.
- Natasha Brett for being my partner in crime and doing a fantastic job at her organisational end.
- And last but not least to Janice Champion for presenting an excellent course. Thank you, it was a truly excellent afternoon.

Kate Primett - Amputee Rehabilitation, Royal Free Hospital, London

Up the creek without a leg?

We took some of our user group on an escorted trip up the River Fowey. A total of 5hours was spent on the water but fortunately not all of it was paddling (as you can see!!) We stopped several times along the way to taste rock samphire, look at the very secluded Sawmills (a recording studio where the likes of Blur and Oasis have produced albums) King Edward V11s hideaway (Allegedly there is a fair amount of Royal blood locally !!) and on towards the pub.

After a short break everyone piled into the kayaks and paddled back to some dry clothes and the minibus. A really enjoyable day and one we are hoping to repeat – this time from Loe Beach. I'll keep you posted!!

Jain Ord

Here you see a very happy man. He has just kayaked up the river from Fowey to Golant and is just about to slug down a pint of his favourite tipple, Betty Stoggs.

Life just doesn't get any better!

(Photo:Gill Price)

Ben Parkinson is a hero

Perhaps Ben Parkinson was always destined to become a hero, but how we know he is a hero happened in a way no-one would wish for.

Ben went to the Army's Foundation College in Harrogate in 2000 at 16 years old. After a year at Harrogate, he went to his Regiment at Catterick and began basic training. Ben decided, however, that the infantry was not for him, so he left to join the Artillery. His worth had obviously been spotted, for on completing his training at Larkhill, he was headhunted by 7 Para, Royal Horse Artillery.

Ben was posted to Iraq in 2003, still only 18years old, and was in the first military vehicle to cross the border into Iraq. On his 19th birthday, Ben fought in the battle of Romalia Bridge, one of the fiercest battles of the war. During the seven-month tour in Iraq, 7 Para had a "very busy war", and was said to be Britain's "most significant unit".
On returning to the UK, Ben took the step of becoming a career soldier, and concentrated on passing "P Company" to gain his full wings. The selection process is known as Hell Week, and each candidate is made to pass, fail or retire injured. Injured personnel are allowed to re-take the process, and because of Ben's size: he is huge; and his habit of being first to try anything, at every opportunity, he was injured often during Hell Week. Before Ben, no one had ever attempted Hell Week more than three times. He gained his wings on his 7th attempt.

After a spell in Kosovo seeking war criminals, Ben volunteered for a seven-month tour in Afghanistan with I Battery in 2006.
Six months and two weeks into the tour, whilst crossing a wadi, Ben's light armoured car hit a huge "legacy" mine, left over from the Russian occupation. As rear gunner, Ben's legs were wrapped around the gun post. As the light vehicle

was hurled into the air, his legs suffered massive trauma, and were both amputated above the knee later that day.
As well as the bilateral amputations, Ben suffered a catalogue of injuries, many of them life threatening:

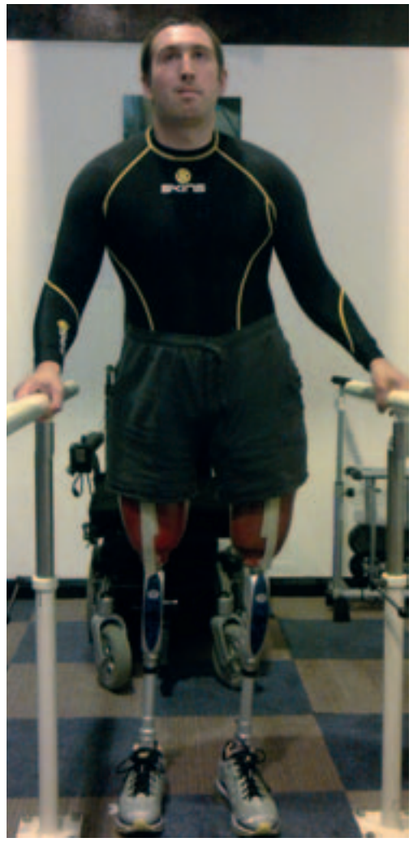
- His pelvis and coccyx were fractured
- Shrapnel caused a splenectomy
- Four vertebrae and every rib were fractured
- Both lungs were punctured
- The left elbow was fractured, as were three fingers and one thumb
- He suffered four fractures to the jaw, four to the cheek, and four to the skull

In all, thirty-eight injuries were documented; by the military's own medical points system, the most injured soldier ever to survive. Interesting, even tragic; but why does this make Ben Parkinson a hero?
Because, despite all his injuries, Ben keeps on fighting!

On his repatriation, Ben was not expected to survive; at least five of his injuries were life threatening. He was in a coma for weeks; in intensive care for months. Rehabilitation was hardly a consideration for the medical team. Yet he survived.

He was in the Royal Putney Hospital for many months; in Headley Court for a year and a half. Operations to straighten his spine were needed but delayed over and over again, only being performed when the increasing curvature of his spine began to threaten his breathing.
He and his family had to fight to have his care package and compensation increased to allow an acceptable, more normal life style. This is likely to have a profound effect on the care of other injured servicemen and women.

Why is Ben Parkinson a hero? Because, despite all these problems, Ben remains first and foremost a soldier. He works tirelessly for military charities, some of which bear his name in honour of his tenacity and his will to improve the lot of injured military personnel.



He has made the provision of artificial legs his priority, so that he can stand up to be counted as a soldier. He has also made learning to speak "properly" a priority, so that he can communicate not only his needs, but also the needs of fellow servicemen and women who may find themselves in similar situations. He spends between 30 and 40 hours every week with his rehabilitation team; prosthetist, physiotherapist, chiropractor, speech therapist and fitness instructor. In doing so much, he has persuaded the military that the NHS is poorly equipped to understand the needs of young, fit, highly motivated military personnel. Now all his rehabilitation is delivered from the Private sector.

Why is Ben Parkinson a hero? Because he keeps trying and he keeps smiling.

If you ever doubt that the British Bulldog spirit still exists, take a look at Ben Parkinson. If you ever doubt that rehabilitation is worth fighting for, take a look at Ben Parkinson.

Ben Parkinson is a soldier; although wounded, he remains "Best of British".

Ben Parkinson is Hero.

R. A. Shepherd - Director, REHAB Prosthetics

A Systematic Review of Core Stability Training for the Treatment of Lower Back Pain

A Beneficial Intervention for the Lower Limb Amputee?

Introduction

Lower back pain (LBP) is a common problem encountered by physiotherapists; every year one third of the UK population experiences it (NICE 2009) and the Office for National Statistics (1998) found that 1 in 15 had sought medical intervention due to LBP which lasted throughout the year. A number of systematic reviews of core stability training (CST) as a treatment for LBP have been conducted; May and Johnson (2008); Slade and Keating (2006); Liddle et al (2004) and Van Tulder et al (2000) reviewed strengthening exercises for LBP. Ferreira et al (2006) and Hubley-Kozey et al (2003) examined the method of stabilisation. The studies conclude by stating that core stability training is effective for treating chronic LBP, but details of interventions are lacking.

It is accepted that LBP amongst lower limb amputees (LLAs) is more prevalent than in the non-amputee population (Gailey et al 2008; Ephraim et al 2005; Kulkarni et al 2005; Ehde et al 2001). Ephraim et al (2005) state that 52%-71% of amputees experience LBP compared to the 12%-41% of the general population. Ehde et al (2001) state that 52% of respondents to their questionnaire reported constant LBP and 25% described it as severe enough to impact on activities of daily living. Kulkarni et al (2005) reported that 81% of transfemoral amputees and 63% of transtibial subjects had constant LBP. The population of LLAs in the United Kingdom was 54000 in 1986 (Cowley and Kerr 2001) and in 2007 a further 4574 lower limb amputations were carried out (National Amputee Statistical Database 2007) highlighting the size of the population in question.

The evidence base regarding CST for LBP has been the subject of controversy. Brukner and Khan (2007) define core stability as the muscular control required around the lumbopelvic-hip region; however, Standaert and Herring (2007) argue that "core stabilisation" is an amorphous term, lacking definition. They go on to criticise the limited discussion of patient recruitment, dose response and reporting of long term outcomes. Conversely, Akuhota and Nadler (2004) advocate CST for treating LBP. CST was part of a collection of interventions for LBP that resulted in a success rate in 96% of cases in Saal and Saal's (1989) study; Kulkarni (2005) advocates postural training of the back musculature in order to reduce LBP in LLAs and Springer and Gill (2007) recommend that physiotherapists should prescribe CST in order to address LBP as a musculoskeletal consequence of amputation.

This systematic review is an original piece of research because there is a higher incidence of LBP in LLAs and no research into amputee specific CST as a treatment in spite of recommendations. The functional benefits of CST training in LLAs are outlined by Donachy et al (2004) who argued that trunk stability in amputees increased distal mobility. Psychosocially, CST could be beneficial due to the adverse effect LBP can have on social function. LBP can further disable via a reduction in self efficacy (Bandura and Cervone 1983), depression (Desmond and MacLachlan 2002), immobility leading to emotional disability (Ehde et al 2000) and altered family dynamics (Robinson 2006). Miller et al (2002) note it is the chronic pain accompanying amputation that hinders a return to pre-amputation activities. Kulkarni et al (2005) recommend postural training should take place early to prevent amputees from becoming demotivated and disabled by chronic LBP.

Kulkarni et al (2005) investigated the prevalence of LBP in traumatic LLAs. Kulkarni et al (2005) quotes Smith et al (1999) who state that LBP was found to be more bothersome than phantom limb pain or stump pain. Kulkarni et al's (2005) aimed to determine the prevalence and cause of LBP in amputees via a physical examination, MRI scan and gait/standing analysis. The participants were post traumatic amputees recruited from a subregional rehabilitation centre, aged between 20 and 65 years. All participants underwent physical examination; however, due to funding, only 40 (20%) of the amputees underwent magnetic resonance imaging (MRI) and gait analysis. 63% of participants reported moderate to severe LBP, as determined by visual analogue scores. Interestingly, 60% reported onset within 2 years of amputation. Significant hypertrophy of iliopsoas on the non-amputated side and corresponding atrophy on the amputated side was of primary interest. The gait and standing analysis indicated that amputees in the LBP group continually shifted their weight to alleviate back/stump pain, implying that back muscles may work asymmetrically increasing the susceptibility to worsening LBP. Kulkarni et al (2005) conclude that LBP is most likely due to a myofascial component associated with asymmetry of the postural muscles. On this basis they recommend postural training for the back muscles. However, Kulkarni et al (2005) stop short of postulating the form that this postural training might take. This is emblematic of the state of research into CST in LLAs with LBP; the problem is acknowledged, training of the musculature of the trunk is

recommended (Kulkarni et al 2005; Springer and Gill 2007) but no research into potentially effective training protocols for amputees has yet been undertaken.

This systematic review will attempt to answer the question; is there evidence that CST could be an effective intervention to treat LBP in LLAs based on CST in the non-amputee population?

Aims and Objectives

Whilst searching, it became apparent that there was no published research for core stability training in amputees. The lack of research into CST in LLAs came as a surprise, given the volume of research into LBP within the amputee population (Kulkarni et al 1996; Kulkarni et al 2005, Gailey et al 2008; Ehde et al 2001).

The aims of systematic review are:

- Comparison of a core stability training regime with either a programme of general exercises or no intervention in non-amputees.
- Assessment of the intervention's impact on pain and perception of disability.
- Analysis of the results to ascertain whether core stability training may be beneficial for LLAs.

Methodology

Study Design

A systematic review was deemed the most suitable methodology because of the use of methods such as; reproducible methodology, eligibility criteria and searches identifying all relevant eligible sources. Searches were carried out between the 7th and 9th March 2011 using the following medical databases:

- PubMed
- Allied Health and Complimentary Medicine Database (AMED)
- Cochrane library database
- Cumulative Index to Nursing and Allied Health (CINAHL)
- Physiotherapy Evidence Database (PEDro)
- Applied Social Sciences Index and Abstracts (ASSIA)
- Proquest
- iCSP

The researchers initially worked in a pair to carry out searches using the search terms in table 1. One researcher entered the search terms into the relevant search engine and the other read the abstracts.

Population	Intervention	Control	Outcome
Low* LBP.	Core stabili*, Core strengthening, lumb* stabilisation, pilates	Exercise, Training, prevention.	Visual Analogue Score, an outcome measure relating to LBP.

Table 1: Key search terms

Study Selection

For an article to be considered for the systematic review it had to relate to core stability for the treatment and prevention of lower back pain and had to be a randomised control trial (RCT) with quantified results published between 1995 and 2010. For valid comparison to be made the studies must include one of the following outcome measures: visual analogue scale (VAS) for pain, the Oswestry Disability Index (ODI) or the Roland Morris Disabiltiy Questionairre (RMDQ). All the subjects had to be adults, i.e. over the age of 18. RCTs were deemed ineligable if they included surgical intervientionfor back pain, the use of a concurrent therapy or the use of large scale gym machines.

Literature Quality Assessment

The articles were assessed for quality in a pair to minimise the effect of bias. Critical Appraisal Skills Program (CASP) for randomised controls trials (RCTs) (Solutions for Public Health 2010) was utilised since it was the most relevant to our inclusion criteria of assessing only RCTs.

Data Extraction

Data extraction was conducted on all full text articles deemed appropriate so as to ensure that all relevant information was assessed to enable analysis, comparison and discussion. The researchers carried out data extraction individually prior to comparison in order to minimise potential bias.

Results

Four studies met the eligibility criteria. Rasmussen et al (2009) used facilitation of muscle activation and low loading spinal exercises over an eight week period and defined transverse abdominis and multifidus as comprising the core musculature. Koumantakis et al (2005) used stabilising exercises on core musculature, defined as transverse abdominis and multifidus as in the case of Rasmussen et al (2009), over an eight week period. A physiotherapist facilitated the selective activation of the muscle by palpating either side of the spinous processes of L4 and L5. Gladwell et al (2006) trained the core musculature through a program of modified Pilates in the intervention group and "normal activity" in the control group. As stated in the introduction, there is controversy over the definition of core musculature, Gladwell et al (2006) differ from Koumantakis et al (2005) and Rasmussen (2009) by stating that the core is composed of transverse abdominis, multifidus and also the diaphragm and the pelvic floor. Henchoz et al (2010) took a different approach to the intervention by implementing a 3 month core stability program after implementing a three week functional multidisciplinary rehabilitation (FMR) concept involving general exercise and back education.

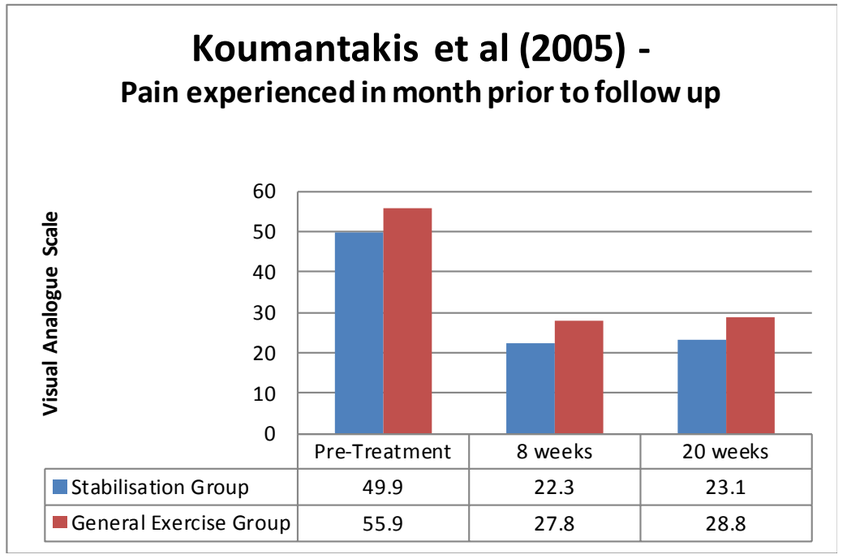


Figure 2: Pain experienced in month prior to follow up (Koumantakis et al - 2005)

Koumantakis et al (2005) (Figure 2) illustrates the VAS scores for both groups at the pre-intervention stage and at the 8 and 20 week follow up. The trend for both groups is a decrease in the levels of pain that they experience between the beginning and end of the treatment. Notably, both groups also experience an increase in their pain scores at the 20 week follow up. 35 of the 45 participants who made it through to the end of the trial had carried on exercising at home, with inter-group differences. For other self reported measures the interaction of time with exercise was not significant ($P > 0.05$), indicating both groups had achieved similar results. Koumantakis et al (2005) reported a statistically significant ($P = 0.027$) between group difference in RMDQ scores indicating a greater decrease the general-exercise group immediately after exercise.

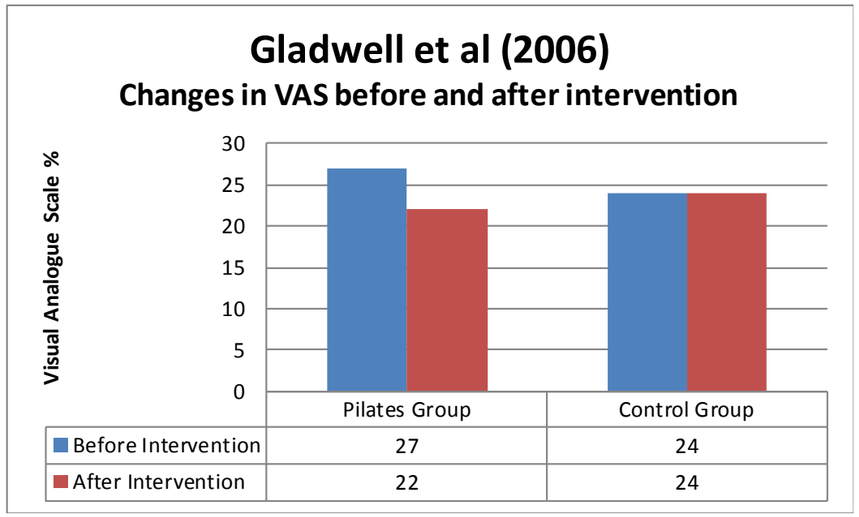


Figure 3: Changes in VAS before and after intervention (Gladwell et al - 2006)

Gladwell et al (2006) (Figure 3) highlights the mean VAS score in the Pilates and control groups. It can be clearly seen that the level of self reported pain in the Pilates Group saw a statistically significant ($P < 0.05$) decrease by the end of the 6 week course, whereas the control group had no reported changed in the level of pain experienced. As well as the decrease in pain, Gladwell et al (2006) reported significant increases in general health, sports functioning, flexibility and proprioception ($P < 0.05$).

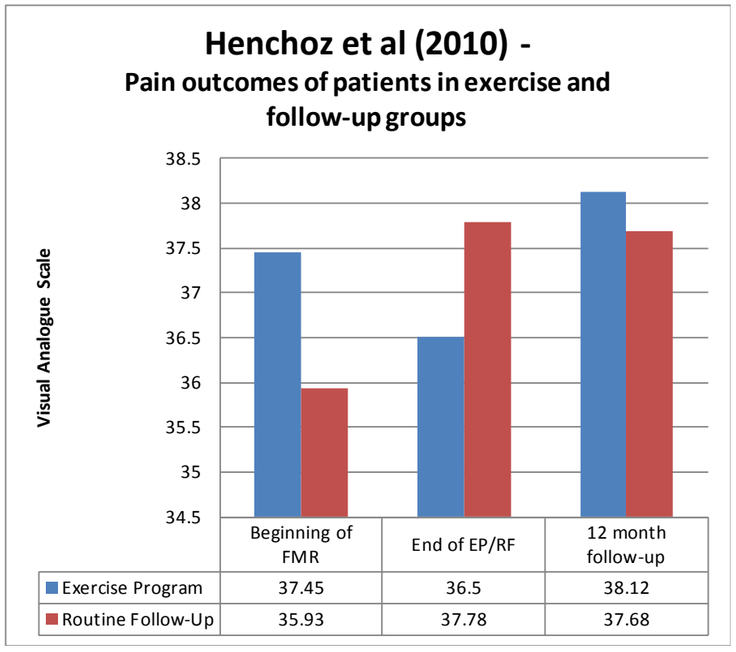


Figure 4 : Pain Outcomes of patients in exercise and follow up groups (Henchoz et al - 2010)

Henchoz et al (2010) reported that there was a none-statistically significant change in LBP for either group, as illustrated in the bar chart (figure 4). However; Henchoz et al note that there was a statistically significant change in the in ODI scores in the exercise group, indicating a reduction in perceived disability that was not seen in the control group. As well as this, there was also a statistically significant change in the trunk muscle endurance of the exercise group.

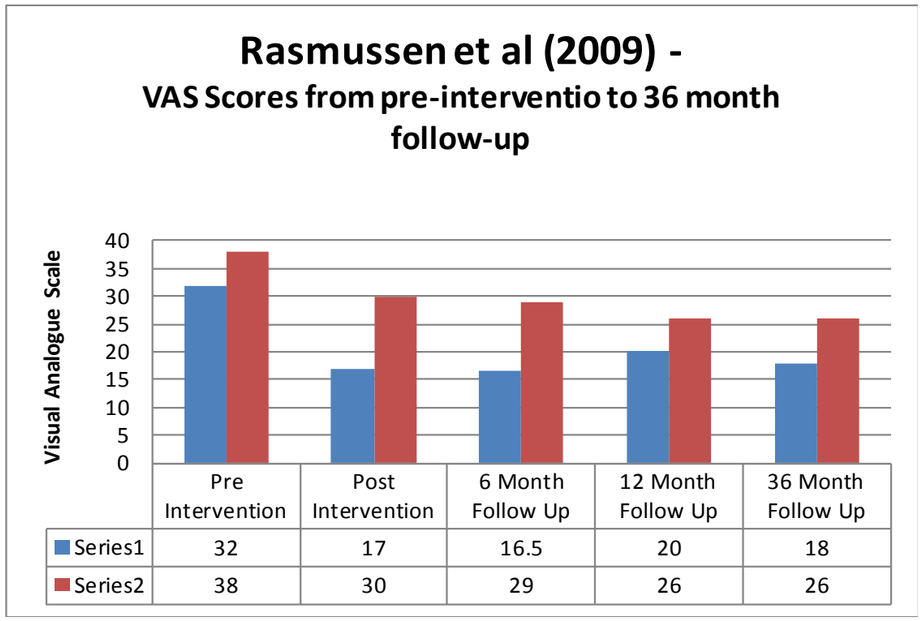


Figure 5 : VAS scores from pre-intervention to 36 month follow-up (Rasmussen et al - 2009)

Figure 5 illustrates the visual analogue score results from Rasmussen et al (2009). Statistical significance was set to $P \leq 0.05$. At 12 months 55% of the exercise group and 26% of the reference group had reduced their pain level by 50% or more ($P = 0.01$). Also, both groups significantly improved over time concerning perceived disability ($P = 0.01$). 22% of the exercise group and 46% reference group reported the need for new treatment 12 months ($P = 0.03$). At the 36 months the values were 36% and 40% ($P = 0.73$) respectively.

Discussion

LBP is experienced by approximately 30% of the UK population every year (NICE 2009) and Ephraim et al (2005) places the figure between 52% - 71%. Thus, it can be argued that LBP in LLAs has a higher incidence than LBP in non-amputees and, as will be discussed later, LBP has a greater impact on LLAs. The search process resulted in the RCTs of Gladwell et al (2006), Henchoz et al (2010), Koumantakis et al (2005) and Rasmussen et al (2009) being deemed suitable for inclusion in this systematic review.

Gladwell et al (2006) is methodologically sub-optimal, for example, participant selection risked a socioeconomic bias as subjects were recruited from around Essex University and may not be representative of a typical NHS LBP population. There was also a statistically significant difference in age between the intervention and control group, potentially skewing results. A common flaw in all 4 studies is the lack of blinding and the potential for bias; however, blinding in this context would not be feasible. The intervention periods were only between 6 and 8 weeks in Gladwell et all (2006), Koumantakis et al (2005) and Rasmussen et al (2009), potentially too short a period to on which to base clinical decision making. Three of the RCTs were set in private clinics, the exception being Koumantakis et al (2005), which begs the question of how applicable CST would be in an NHS setting. However, implementation by physiotherapists would be cost effective as none of the studies required investment in equipment. For statistical analysis all the studies used the Mann Whitney U Test to compare data sets between group and they compared in group analysis with a mix of Friedman's ANOVA test and SPSS. P values were stated in all studies ensuring that results could be deemed statistically significant.

Childs et al (2005) suggest that changes of greater than 2 points on a 10 point analogue scale represent a significant change in pain. With the exception of Henchoz et al (2010), each of the articles reported a statistically significant decrease in pain in and between the intervention and control groups. However; Henchoz et al (2010) did report a between group significant reduction in ODI scores for the exercise group at the 1 year follow-up. Rasmussen et al (2009) was the only study to set a minimal clinically important change of VAS $\geq$ 15mm and ODI of $\geq$ 10 points based on a Mann-Whitney U Test and ANOVA. Rasmussen et al (2009) found that at the 12 month follow up 55% of the exercise group and 26% of the reference group had reduced their pain level by 50% or more (VAS$\geq$15mm; P=0.11). There

was a greater decrease in pain in the exercise group, but there was no significant difference at the 2 months follow up. ANOVA regarding decreased ODI scores showed a statistically significant decrease in the exercise group, the Mann Whitney test confirmed significant difference between groups in favour of the exercise group at the 6, 12 and 36 month follow-up. Gladwell et al (2006) reported a statistically significant difference ($P < 0.05$) decrease in pain in the Pilates Group post intervention and a significant improvement in ODI scores for the control group. This was due to the mild disabilities of each of the groups. Koumantakis et al (2005) found that the general trunk muscle exercise alone, without the addition of the stabilisation exercises was enough to reduce patient reported levels of pain and RMDQ scores immediately after treatment and at the 2 month follow-up. Both groups made improvements, but the improvement in the stabilisation group was less than that seen in general-exercise group and was not evident at the 1 year follow-up.

The results give a mixed indication as to whether they are applicable to amputees. Rasmussen et al (2009) and Koumantakis et al (2005) both attempted recruitment of the multifidus and transverse abdominis with differing effects. This is implies that Rasmussen et al's (2009) stabilisation regime would be applicable to amputees with segmental spinal instability, whereas the general exercise regime of Koumantakis et al (2005) would be more suited to muscular deconditioning and abnormality described by Miller et al (2002), Kulkarni et al (2005) and Friel et al (2005). Iliopsoas dysfunction appears to play a significant role in LBP in amputee and non-amputee populations. Akuhota and Nadler (2004) state that due its attachment to the transverse processes, intervertebral disc and vertebral body of T12-L5 it is well placed to cause LBP if shortened or there are increased stability requirements. Gailey et al (2008) hypothesize that iliopsoas tightness resulted in amputees experiencing difficulty initiating swing phase, thus promoting hip hitching and increasing posterior tilt of the pelvis. Conversely, Friel et al (2005) attribute LBP in amputees to increased iliopsoas length and decreased back extensor strength and endurance. MRIs conducted by Kulkarni (2005) found hypertrophy of iliopsoas on the non-amputated side and atrophy on the amputated side, implying that iliopsoas works asymmetrically in amputees. Miller et al (2002) comment that patients undergoing amputation due to peripheral vascular disease are likely to have strength deficits because of generalised deconditioning secondary to a sedentary lifestyle increasing the likelihood of developing chronic lower back pain.

There is a requirement for managing LBP in LLAs related to Miller's (2002) contention. One of the leading causes of amputation is peripheral vascular disease (PVD), a leading and increasing contributory factor in the development of PVD is type II diabetes. Projections suggest an epidemic expansion (Prassa 2002), with the potential to increase the number of amputees who are undergo amputation in a deconditioned state and thereby a predisposition to LBP. Between 2006 and 2007, PVD was the leading cause of amputation, with 3300 undergoing the removal of a lower limb (NASDAB 2007).

Kulkarni et al (2005) found that 63% of traumatic amputees reported moderate to severe LBP. Survival after trauma is also increasing as can be seen in the steadily decreasing mortality rate for road casualties (Office for National Statistics 2007) and increased survival rates of members of the armed forces. From 2001 – 2011 there were 500 seriously injured servicemen in Afghanistan, including amputations (Ministry of Defence 2011). Between 2006/2007 there were 337 traumatic amputations in the United Kingdom (National Amputee Statistical Database 2007). Returning to work after amputation is a priority for many amputees. Psychosocially, people with chronic disabilities emphasize the importance of work for self respect and providing a stable income (Schoppen et al 2001). Millstein et al (1985) identified secondary pain in amputees, as a barrier to returning to previous occupations, with 75% of amputees changing to a job that was less physically demanding. In summary, there is an estimated increase in the number of amputees who are facing challenges that depend on the reason for their amputation, for example, trauma vs PVD. As a result of this, differing approaches to management of LBP in LLAs is required.

Conclusion

There is a requirement for CST in the rehabilitation of LLAs due to a potential increase in the number of deconditioned PVD amputees, increased serious trauma and traumatic amputation survival rates and the psychosocial and financial impact that secondary LBP from amputation can cause. In 3 of the 4 studies there was a decrease in pain and self reported disability. The current state of evidence into physiotherapy interventions to manage LBP in LLAs notable by its absence. Thus, research into effective strengthening and stabilising protocols is strongly recommended. Research needs to be carried out in matching the intervention to the spinal pathology, since stabilising and strengthening exercises appear to benefit different patient groups. Specific stabilisation may be appropriate where there is spinal instability, as in the study of Rasmussen et al (2009). Where LBP is related to extensor muscle fatigue, or iliopsoas abnormality, the general exercise approach of Koumantakis et al (2005) may be appropriate. Future research should focus on assessing the patient to establish which type of CST will benefit the lower limb amputee with LBP. In summary, amputations may increase due to PVD and increased trauma survival rates and LBP has been identified as a problem with biopsychosocial effects that physiotherapists require the CST protocols to manage.

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BACPAR Conference 2011 Programme

CURVE, Leicester, 14 - 15 November

Day one – Monday 14 November

8.30 Registration
9.00 Welcome House keeping
9.15 OT Amputee Guidelines
10.00 Neuro linguistic programming (NLP)
10.45 Coffee
11.15 NLP (continued)
11.45 A systematic review of core stability training for the treatment of Lower back pain in the amputee. See article in journal, presented by Anthony Bath
12.05 Support for children with amputation. Presented by Maggie Donovan-Hall
12.25 Oedema guidelines From the Bradford PG Cert in Amputee Rehabilitation Cohort (comp 2011)
13.00 Lunch
14.00 Instructional Course Knees With a panel of prosthetists and physiotherapists, chaired discussion by Penny Broomhead, wth Richard Hirons Prosthetist from Ossur
15.00 Coffee
17.30 Close
19.30 Dinner Jim Bonney after dinner speaker

Day two – Tuesday 15 November

8.30 Registration
8.50 Housekeeping Welcome
9.00 Adventure Rehab
9.30 Duplex scanning Yvonne Sensier on Scanning for Vascular patients
10.00 Coffee
10.30 Lower Limb Issues with respect to vascular surgery. Mr Mark McCarthy
12.00 AGM/Lunch
13.30 Instructional courses Fitness Guide for amputees, aimed at the older age group and how to increase their fitness levels
15.45 Close

Conference prices:

	Members	Non-Members
2 days	£130	£170
1 day	£70	£90
Dinner (Mon night)	£25	£30

For further information and accomodation at preferential rates go to www.bacpar-conference.org.uk

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Name and correspondance address:			
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BACPAR Membership No (max 2 places per Departmental membership):			
Attendance (tick):	Monday 14 November	Tuesday 15 November	BACPAR Dinner
Special mobility/dietary requirments:			
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You will receive email confirmation of a place after your application and monies have been received (providing you have supplied an email address). **No refunds will be given after 30 September 2011**

Next step in prosthetics as first POWER KNEE is fitted in UK

Össur's new POWER KNEE™ became the focus of media attention in June, when major news outlets learned of the first British amputee to benefit from the Bionic prosthesis' ground breaking technology. The story of David Jonsson, of Össur's native Iceland, was documented on Channel 4 News and ITN, as well as appearing in various national newspapers.

David Jonsson, from Reykjavik, was the first amputee to try the Power Knee and even assisted in the development of the product. He became an amputee five years ago and now works in Össur's mechanical testing facility.

Diagnosed with bone cancer in 2006, David had his knee and lower leg amputated aged 18 and was at first fitted with a RHEO KNEE. He spent six months learning to walk again through an intense physiotherapy programme. David was first fitted with a POWER KNEE in 2009, when the product was still in development, but since 2010 he has used it almost every day.

David comments:

"I love the POWER KNEE; I definitely prefer it to any other knee that I've tried. It has improved my gait symmetry and increases my walking stamina. It has meant that I can continue my hobbies, which include going to the gym, walking in the countryside and shot put. It has given me the confidence to walk up mountains, I did an 800m climb two years ago and the knee felt great!

The POWER KNEE offers some key benefits for an amputee. The knee assists you in late stance by propelling you a little bit into the next step which reduces the force on my hip and gives a smoother gait. It assists me out of a chair - you stand up around 50 times a day, difficult to do that on one leg every time - and as a bonus it gives a realistic walking gait when going upstairs by powering you up the steps, step over step. The stability of it is also better than I have ever had before."

Following David's successful trial of the updated design, the first POWER KNEE in the UK was fitted through PACE Rehab, following a three-way assessment of the patient from Toby Carlsson, Carolyn Hirons and Jamie Gillespie.

The patient soon began physiotherapy and prosthetics appointments at PACE, and within a few weeks of the above-knee amputation, he was learning how to walk again using a RHEO KNEE. The POWER KNEE was not yet available in the UK, but he had read about it and was keen to give it a go.

"Having already used a microprocessor knee (the RHEO) for several months, I realised the enormous benefits a microprocessor can bring to a prosthetic knee, for example, the RHEO automatically adjusts its resistance as you walk, which allows you to walk naturally at just about any speed you like. It can also detect a stumble, instantly stiffening to prevent falls.

The RHEO knee was great, but it can only vary its level of stiffness. The POWER KNEE contains motors so it can actively move the knee. This gives you the ability to climb stairs 'normally'; amputees typically climb stairs by leading every step with the 'good' leg, dragging the prosthesis up behind them. The POWER KNEE also provides power assistance as you walk: it bends the knee a little further than a passive knee would, which lifts the foot further off the ground, allowing you to more easily clear uneven terrain without stumbling.

The POWER KNEE also provides a slight push off each step, and during swing phase swings itself forward without much

ADVERT

effort from the user. All of this results in my having to expend less energy to walk the same distance and it therefore allows me to walk further than before."

I still haven't learnt to use the POWER KNEE to its full potential, but it has already had a massive impact on my life. It's given me the confidence to walk on uneven pavements without looking down at every little bump. In the future I hope it will enable me to continue activities I enjoyed before, such as hiking."

The second generation of the POWER KNEE is the world's first and only motor-powered, artificially intelligent prosthesis for above-knee amputees that restores lost muscle function and enables amputees to perform normal daily functions without even thinking about their next movement. This breakthrough provides unprecedented stability, safety and confidence for any above knee amputee.

How does it work?

Advanced Torque and Accelerometer Sensors: Through advanced sensor technology, optimised safety is realised as Ground Contact Sensors allow the user to control and manage the action of walking naturally without thinking about it. The POWER KNEE will provide maximum support in any given angle of flexion as soon as contact with the ground is established. This is essential for amputees who feel unstable or need to walk with canes.

Artificial intelligence: The artificial intelligence of the POWER KNEE operates on high and low-level layers in order to continuously observe the whole state of the respective human-system interface. The improved intelligence allows the prosthesis to focus, even more than before, on user safety, system stability and system adaptability.

Actuator Technology: Powered knee motion through actuator technology is possible simply by lifting the thigh muscle. It generates power according to the patients needs to adequately endure different portions of locomotion. Portions requiring specific power management are level ground walking, stair- and incline a- or descending, sitting down and standing up. In other words, the amputee can now call upon muscles to actively lift and stimulate simultaneous muscle activity of the residual limb and the POWER KNEE to walk up stairs, inclines and ramps. It also allows amputees to naturally move from a sit to stand movement with ease and without negative impact on the sound side.

Natalie Spedding - Marketing Executive, ÖSSUR UK

The BACPAR WORK PLAN 2011 includes:

- Complete and disseminate the update of 2003 Evidence Based Clinical Guidelines for the Physiotherapy Management of Adults with Lower Limb Prostheses
- On-going input into the development of the Paediatric Prosthetic Rehabilitation guidance – currently discussing the organisation of this project with MDT stakeholders in the project.
- Outcome measures working party to disseminate Toolbox to the MDT and initiate discussion re developing some consensus within the Amputee Rehabilitation MDT.
- Continue to collect information regards research development (currently a small database of audit/research projects) and its dissemination.
- Dissemination and implementation of evidence based practice across the membership through access to relevant online articles published by SAGE, promoting discussion re the same.
- On-going review of support mechanisms and role of regional representatives. Supporting the reps with a networking opportunity at Conference.
- Review of the requirement for larger circumference PPAM aid frames for individuals requiring short frames. Liaison with Ortho Europe re their manufacture if proven necessary.
- Continued representation and/ or consultations with CSP, APLLG, Centre Managers Forum and others.
- Representation at World Congress ISPO 2013.
- Plan and deliver a successful conference in 2011
- Plan a successful joint conference with ISPO UK for 2012.
- Explore requirement for a 4th edition of Therapy for Amputees with Elsevier.
- Maintain healthy membership
- Encourage uptake of bursary applications

Executive Committee - March 2011

Regional Reports Autumn 2011

Northern Ireland

In March BACPAR member Carolyn Wilson from Musgrave Park Hospital in Belfast was interviewed for UTV Live, the local news station on Northern Ireland. The report was concerning a 15 year old bilateral amputee who lost his legs following a ruptured aortic aneurysm in November. The keen footballer had been given only a 10% chance of survival by the vascular surgeons. UTV have followed his progress from ICU to his rehabilitation in the Regional Disablement Services Unit and walking on short prostheses. Although the patient has only started on his rehabilitation journey it is positive for the press to highlight this inspirational story.

You can watch the whole interview at:
http://www.u.tv/News/Teen-amputee-makes-inspirational-recovery/fc3c2fa3-b3fd-4b64-805f-24d3fd7d147d

Wales

A 'Back to Basics' Amputee study day was held in May at the Swansea ALAC – this seems to be the most popular theme, and is repeatedly requested by delegates.

Many therapists and nurses in rotational posts are keen to develop their knowledge and skills in this highly specialised field, and the day as always was well attended and provided an excellent forum for discussion and networking.

Practical sessions on early walking aids proved particularly successful, with delegates getting a chance for some 'hands-on' practice. Our Clinical nurse specialist presented an excellent session on 'Dealing with limb loss' and as usual, the session on 'Prosthetics' was also very popular, with delegates enthralled by latest technology.

We were once again supported by 'Snowdrop Care & Mobility' who provided an excellent lunch and interesting exhibition for the day. We plan to do a very similar programme in September, as we were unable to accommodate the number of applications!

Vanessa Davies M.B.E. - Swansea ALAC

AMPUTEE REHAB COURSE

WEDNESDAY, September 21st 2011

ALAC, MORRISTON HOSPITAL

Topics to be covered:

Psychological aspects of limb loss
Role of the ALAC nurse
Role of the ALAC OT
Prosthesis or Wheelchair? – Criteria for prescription
Early walking aids – Theory & Practice
Prosthetic fitting
Gait deviations/Correction
Progression of Physiotherapy in Amputee Rehab

LUNCH PROVIDED

BACPAR members FREE!
Non-Members £40

For further information contact Vanessa Davies MBE
Vanessa.davies@wales.nhs.uk Tel: 01792 703315 or 703015
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NB: BACPAR membership forms can be found on www.bacpar.org.uk

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- Split forefoot offering high flexibility whilst maintaining stability at all times
- Heel wedges allow simple adjustments for the fine tuning of the users requirements
- Choice of foot shells available with split toe in normal and slim fitting sizes
- The Triton is suitable for various walking speeds and surfaces in everyday life as well as recreational sporting activities

(Mobis 3_4): Max. 100kg
Size 21-24 cm

(Mobis 3): Max. 150kg
Size 25-30 cm

(Mobis 4): Max. 125kg
Size 25-30 cm

Life in motion

1C60 Triton Prosthetic Foot

When developing the new 1C60 Triton, our experts worked with technicians and amputees to create a prosthetic foot that provides excellent support both for leisure sports activities and for daily use. The quick and simple system for adapting the foot to the user's individual needs allows a high level of mobility – providing active control of their own life.

www.yourlife-youradventure.com

provider Paralympic Games

Official Prosthetic, Orthotic and Wheelchair Technical Service Provider of the 2012 Paralympic Games

Otto Bock Healthcare PLC

For more information call: **0845 430 1231** • **www.ottobock.co.uk**