UPDATE

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Insight into amputees' experiences and perspectives

LEARNING

Case Studies
Research

BRITISH ASSOCIATION OF CHARTERED PHYSIOTHERAPISTS IN AMPUTEE REHABILITATION

SPRING 2020 **ISSUE 53**

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STRANGE TIMES

Julia Earle

BACPAR Chair

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CHAIRS MESSAGE SPRING 2020

We are all finding ourselves in very uncharted waters at present as we cope with the COVID-19 situation, in all aspects of work and home life. Advice is changing on a daily, sometimes hourly basis and we are all trying to keep up.

In all the anxiety, hard work and uncertainty there are also many positives we are seeing and our ability to be flexible and work in the challenging environments we are in the midst of is a credit to us all.

One small example of this is the Exec held their latest and first ever meeting on Zoom – which was also a first for most of us individually so quite an achievement. We had to make significant changes to the agenda and rely on many more written reports, but we achieved a great deal, even if we missed out on the more open discussion and of course the many biscuits we get through. Not something I would want to do for every meeting but a good option for some or maybe for individuals to tap into who find it difficult to get to a whole meeting.

One of our agenda items was the first application for the new Postgraduate Bursary which we launched at the AGM and I hope others will take the opportunity to apply for this as well as the Research and Education Bursaries that already exist.

We also discussed the very exciting plans for our conference this year to be held as part of the Vascular Societies' Annual Scientific Meeting in November– do keep an eye on the BACPAR members Facebook and the Websites below for details as they become available. Get those abstracts flowing in so we can wow the other specialities with our amazing programme.

https://www.vascularsociety.org.uk/asm/vsasm_2020.aspx

https://bacpar.csp.org.uk/event/bacpar-conference-2020-part-vascular-societies-annual-scientific-meeting

I wish you all well as you take on the new challenges with gusto, as you always do, whether that's trying to keep abreast of the everchanging advice on PPE, the scary world of ward work after many years of outpatients or community, virtual patient contact, home schooling, working from home with all its IT challenges, self-isolating or in many cases a mixture of the above – YOU CAN DO IT.

Please keep safe and well and make the most of the opportunities these strange times offer.

Julia Earle

BACPAR Chair

WELCOME

EDITORIAL

Hello everyone and welcome to the Spring Journal!

As we write – and we are sure as you read this – the nation is in extraordinary times and those of you at the 'front line', or maybe moved nearer to the frontline than usual or into different roles, will be under incredible pressure. We take a moment to thank each other for the contribution and sacrifice everyone is making.

We hope you will have an opportunity at some point to sit down and enjoy this edition. Once again, we have a good variety of content from conference reviews, case studies and research, to product developments, charity work and to a book review.

It's good to reflect on our 2019 conference in this edition. We've published the first batch of the conference poster entries, including the winning ones. Looking forward, plans are developing for our 2020 conference to be held in partnership with the Vascular Society for the first time; more detail in the following pages. Unfortunately, due to Covid-19, SPARG's 2020 conference has had to be postponed from this year to next, but it's another event to look forward to.

Many thanks to all who dedicated time and effort to contribute to this edition.

We continue to welcome your ideas, comments and of course, contributions for your journal. Ideas received recently for the autumn edition include users' perspectives on rehabilitation, and reflections on how teams and amputees are coping with the current health crisis. Please send further ideas for content via 'Letters to the editors'. This is a page we are keen to develop as a feature of the journal. It also allows you to give feedback on current contributions. For example, it's an opportunity for readers to acknowledge contributions of good practice, and/ or say where practice may have changed as a result of reading a feature. As you read your journal, do use the 'Notes' page at the end… to make notes to this effect!

Please send your contributions, ideas and feedback to us via BACPARjournal@gmail.com

With best wishes,

Mary Jane Cole & Sue Lein

Mary Jane Cole

Joint Journal Officer

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Sue Lein

Joint Journal Officer

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GUIDANCE NOTES FOR FUTURE SUBMISSIONS:

DEADLINES for the biannual Journals (Spring and Autumn) will be announced via iCSP and our 'BACPAR Members Only' Facebook page

CONTACT the joint Journal Officers Mary Jane Cole and Sue Lein via email: BACPARjournal@gmail.com

WORD COUNT The approximate word for major articles is 2000 or 1500 words if you have the addition of figures and/or, tables, photos and references

PICTURES should be supplied as high resolution (300dpi) jpegs or PDFs as images. They should be emailed as separate files, ideally not already embedded in your text

LAYOUT Include your name (and any co-authors) and work-setting at the top of your article after the title. You may wish to add your job role/ title

TO ACCOMPANY YOUR SUBMSSION you will need to return a completed Article Submission Form and Image Consent Form (if applicable)

LETTERS TO THE EDITORS

September 2019

Oedema Management

Dear Wendy

Rigid removal dressings (RRD) are indeed a gold standard post-op treatment in places like Australia, with a body of literature to support their use. At Queen Marys Hospital, London, we are trialling the use of RRD for primary patients identified as fitting into one of the following categories; (1) Falls Risk; (2) Patient Transport; getting in and out of hospital transport has been a cause of patient falls, (3) Wound protection; (4) Significant oedema. The RRD system we use is a simple plaster/fibreglass system that can be cast for by the prosthetic department; however physiotherapists would have the skills to do this if trained. The results for vacuum and off-the-shelf RRD are the same for the plaster/fibreglass type with the added benefit of being low-cost, not requiring stocking of multiple sizes, and quick application of 5 minutes. Currently RRDs are applied in clinic when ready for rehabilitation; our next goal is to apply these directly post-op to control oedema earlier and prior to any falls incidents. The feedback we have since applying these is faster stump shrinking compared to the standard stump shrinker, which we use cocurrently; greater sense of security and confidence to transfer by the patient.

Michael Battagello

Prosthetist

Dear Editors,

From a personal perspective, Adam El-Sayed's article in the Autumn 2019 journal - *'Social Media - a brief overview of benefits, challenges and use for BACPAR'* was timely as I wanted to be able understand IT better to take advantage of the range of social media we have to communicate more effectively with peers in the *BACPAR* community. The article makes it doable which is reassuring for dinosaurs like me. However, I have remained tentative in some areas e.g. Twitter... and now need to push myself out of my comfort zone. Ironically, current circumstances are doing just this – I'm now immersed in all things IT, having to do what has been mostly normal face-to-face work e.g. teaching and assessing students, all online. For those of us in clinical practice, there would seem to be a range of opportunities to capitalise on to support our patients and colleagues e.g. 'remote' clinics. Thank you Adam for writing this – I've had to revisit it on more than one occasion!

Mary Jane Cole, London

A TRIP TO JAPAN

INTERNATIONAL SOCIETY OF PROSTHETICS AND ORTHOTICS (ISPO) INTERNATIONAL CONFERENCE 2019

Matt Fuller
Clinical Specialist Physiotherapist, Guys and St Thomas NHS Foundation trust

Thanks to a bursary from the BACPAR exec I was able to attend the ISPO international biannual scientific meeting in Japan in October 2019.

The conference was in Kobe, home to exclusive Kobe beef and where Ireland just happened to be playing their rugby world cup game against USSR the day we arrived. Unfortunately I was unable to source a ticket for the game but instead visited the Fan Zone expecting much Guinness and Vodka to be flowing. This was a first glimpse at the cultural differences vividly clear in Japan. The crowd were sat very happily watching the game supping their beers and giving the players a good clap for great play. No throwing of beer in ecstatic jubilation on scoring a try here, more a ripple of appreciative applause and definitely no throwing of plastic cups, all very reserved.

We did find the Irish support having a street party in the local shopping centre afterwards though which was a more raucous occasion with much Sake being sampled.

Having arrived a day early we had a day of sightseeing with which to fill my acclimatisation to a new time zone. So off to the train station for trip on the bullet

train. On the way to the train station I couldn't help but feel that something was missing...it takes a while to notice but in the end it sinks in, Japan must be one of the cleanest places on earth, people just do not throw rubbish on the floor, they take it away with them – a lesson for us all there.. I even saw a cleaner scrubbing the moving escalator hand rail in the underground station.

The train was, as you imagine, on time to the second, stopped in the station at the exact place the door sign on the floor was marked and in line with the specially painted boxes for queuing between, it was clean, fast and ever so slightly different to my usual British rail commute!

We visited Himeji Castle, the largest and most visited castle in Japan, which was registered in 1993 as one of the first UNESCO World Heritage Sites in the country and very pretty it was too.

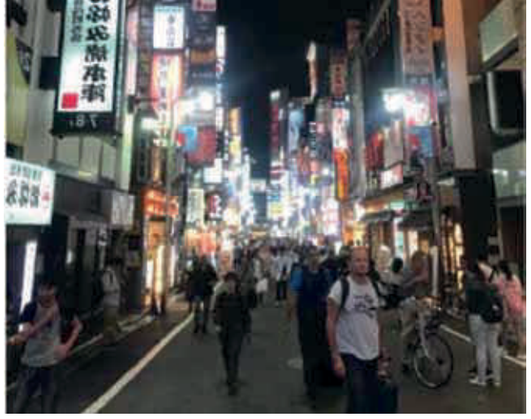
On Saturday we registered for the conference and took in the opening ceremony and welcome lecture from the inspirational David Constantine, definitely worth a google of his life story and work. Then onto the next 4 days taking in the lectures, exhibition rooms and free papers, instructional sessions and key note lectures.

Some highlights and take home messages included papers from Joseph Czerniecki and his team around re-amputation rates and contralateral amputations in diabetic foot patients which demonstrated more active patients do not have increased risks, rather its it inactive patients that undergo further intervention.

Lots of hot debate about the risks, benefits and ethics of expanding the role of osseointergration. A paper demonstrating a real under diagnosis of vestibular dysfunction in a sample of more than 100 amputees which was significantly correlated to worse outcomes. Several papers discussed return to work and community reintegration with a real push to include more rehabilitation in the community and the patients own environment. It was felt rehab workers and peer support networks were a supportive way of allowing amputees to discover the problems they may encounter in their own homes and environments once discharged from a treating team in a more supported manner. This was hoped to improve ongoing community participation and abilities in the real world.

My presentation was based upon the acute rehabilitation of a quadrilateral amputee and specifically the use of his necrotic lower limbs as a rehabilitation aid whilst we awaited demarcation of his lower limbs and medical optimisation. I got some good feedback from the audience and hope that people were encouraged to use this technique to aid acute rehabilitation for this small but complex group of patients.

It turned out that there were several other papers on multiple limb loss presented from the UK and with various different definitions of what was counted as multiple limb loss. This started some interesting conversations when I got back with our Amputee rehabilitation Pathway team from the acute, inpatient amputee rehab and community DSC colleagues, what counts and what does not in terms of limb loss and specifically when we talk and read about multilimb loss? Do digits count, partial hands, transmetatarsal amputations etc? In the somewhat sparse literature it is hard to cohort multilimbloss patients into larger groups to assess interventions and outcomes due to a lack of these clear definitions and as such we decided to try and come up with a more defined locally agreed set of criteria and labelling. This work is currently ongoing.



Conference nights are always a good way to catch up with old friends, meet new ones and network with physiotherapy colleagues from home and abroad. The conference party was only 2 hours long and finished at 9pm but left plenty of time for some photographs of the physiotherapists attending and to have a chance meeting the inventor of the C-leg over a beer.. Other nights were spent sampling some of the famous Kobe beef, tasted nice but eye wateringly expensive, karaoke (the Blatchford and Ottobock duet was a highlight…) and the local food and beers, delicious but at £10 a pint you didn't want too many.

That left a few days of the trip to fit in some sightseeing in Kyoto, another UNESCO heritage site rich city, and Tokyo –with its hedgehog and hamster café – you pet them not eat them - on our way to returning home.

We did encounter some unexpected drama when trying to get home as we raced typhoon Hagibis to the airport. The typhoon - the worst storm to hit the country in decades - meant that our flight was one of only a handful that was able to leave the deserted terminal on our day of departure, not even the duty free shop was open and the take-off was a little bumpy!

So, many thanks to BACPAR for helping me to participate and enjoy all the sights and sounds of Japan while incorporating some great CPD. Presenting is always nerve racking but practice makes perfect and spreading the good work we all do is important, therefore I'd recommend applying for some help to attend these conferences if you need it, next up for ISPO, Mexico 2021.

BACPAR CONFERENCE NOVEMBER 2019

"IT MAKES ME VERY PROUD TO BE PART OF SUCH A PASSIONATE GROUP OF PROFESSIONALS……"

Shaun Fryett
Clinical Lead Physiotherapist in Vascular Surgery and Amputee Rehab Royal Devon and Exeter Hospital

After a very early start and a long drive in the rain a welcoming face at the BACPAR Conference 2019 was on hand to start the day well. The BACPAR welcoming committee helped set the tone for those arriving at conference giving out packs and directing each of us towards refreshments and the ready and waiting sponsor stands. The two day event was planned out well and included exciting talks from specialists, patient experiences and practical group workshops. This year the planned time for regional huddles would allow those of us in each area to re-connect with our reps and other local therapists to plan for the future. The BACPAR Conference is a great opportunity to improve networks not only in the more local regions but by sharing experiences and knowledge across the whole country. In such a specialist area this is the perfect way to gain specialist CPD and motivate even more development in your own service.

Day one had a brilliant mix of presenters covering a number of different topics. Andy Brittles from LimbPower kicked off proceedings and helped to remind us of the positive effect we might have in our centres to engage our patients in more active lifestyles. LimbPower is also working hard to lead on this role in different centres working alongside us and maximising what we can offer.

This talk was followed by very recognizable recovery trajectories. This gave common themes to presentations we all see throughout the prosthetic journey. The work of Phoebe Sanders and Fiona Leggat has helped to guide recognition of different recovery pathways our patients take. More importantly they have offered a common way to recognise these presentations in our areas and offered steps to help support these patients, alongside a way to teach new and rotational staff how to continue this.

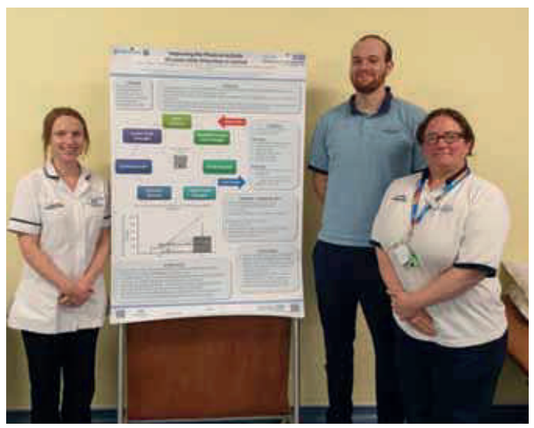
One of the most powerful presentations of the conference was from Rachel Malcolm with her case scenario of a very driven lady who defied all expectations as a quadrilateral limb wearer, to be a successful single mother. This reminded everyone how important our roles can be towards individuals achieving their full potential and quality of life. Often within the rehabilitation setting you can become slightly de-sensitised to the challenges our patients face. Stories such as this show how important we can be to each individual's life but also how important they can be to us.

Further into the day following a very good buffet lunch was a talk from Dr Bhaskar Basu who spoke around sepsis and the implications this has for amputation. This was an incredibly interesting talk that not only helped to improve the knowledge of sepsis but also helps to remind us of the challenges some of our patients have faced, long before limb fitting has even been considered. This emphasises the importance of early rehabilitation from the Intensive Care Unit all the way through to prosthetic centre.

After a coffee break and chance to network more around the poster presentations the group split into two seminars with a chance to access both. One talk was on intermittent claudication (IC) exercise groups and the other on 'Mindfulness', both quite different sessions but each just as interesting. The IC group had a chance to explore what might constitute an effective exercise class allowing us to explore what different hospitals already provide and what other hospitals might be able to plan for. As a key part of the NICE recommendations in treatment of this condition this could help to drive forwards a better service for this patient group. The calm nature of the mindfulness group was quite different. This really allowed us to explore a different way of thinking that in a busy healthcare setting we might not realistically have a chance to have done. This certainly gave a greater insight into the mindfulness technique and what might be offered to patients in each service as well as personally.

After a packed day of learning the evening offered the opportunity to relax and catch up with friends across the wide amputee family. A shared meal and few drinks was the perfect way to consolidate an enjoyable first day.

Day two was no less packed full of interesting talks and workshops. The NHS update from Carolyn Young instigated some interesting discussions around the future of our service provision and the organisational structure of prosthetic centres. It was clear to see that everyone remains very passionate about the service we provide for our patients and the drive to protect this.



The Bristol team then took centre stage to show some interesting research into MPK provision and the outcomes dependent on previous and new knees. This showed the beginnings of an exciting evidence base for future MPK prescription to gain the best results for our patients. Hopefully this could be developed into a wider piece of work to gain more data and statistical significance.

After an opportunity for regional groups to meet and discuss the previous year and plans for the future we split into two seminars. A talk on the Bridges Self-Management Support gave some really interesting insight into the personal experience of surviving a trauma, the significance of which can often be lost when working in this environment. Personally it has made me more aware of my language and assessment of patients not only within prosthetics but also general surgery and ITU. This talk highlighted how important the terminology is that we use and to remember how much we can offer our patients individually in support.

Finishing the day with the active group participation 'Gait Analysis' practical taught us to be more ambitious in pushing our patients. Helpful tips and reminders of common problems and compensations in prosthetic rehabilitation helped teach, remind and re-assure of how we assess our amputees who often don't present in the same way for similar problems.

After a packed two days everyone left with better networks, improved knowledge and a reminder of the brilliant job our specialist interest network provides nationwide. The ability to share both positive experiences and lessons learned allow us to progress and develop the services we provide for all of our patients. It makes me very proud to be part of such a passionate group of professionals and I am already looking forward to next year.

SUMMARY OF BACPAR ANNUAL GENERAL MEETING 2019

This year's AGM was held as usual during the BACPAR conference on the 14th November 2019.

The full AGM minutes can be found on the BACPAR website

https://bacpar.csp.org.uk/documents/2019-agm-minutes-and-report

66 members were present and apologies received from 3.

Minutes of the Previous AGM were agreed.

Matters arising:

- Although a one-day BACPAR conference had been agreed at the last AGM for November 2019 the committee had decided to run a 2-day conference due to the poor attendance at the joint event with ISPO / TIPS.
- An "opt in" for a printed journal would start from this year so members are encouraged to ensure they complete their membership renewal this year.

Chair's Report

An extensive list of BACPAR's achievements against our work plan is included in the full AGM minutes but a few of the highlights were mentioned:

- Regional and national study days had taken place
- Members Facebook, iCSP, BACPAR website had all been active
- Guidelines development was nearing completion (report had been given during the conference)
- New 'user page' on website as a result of the guidelines work
- Successful application to CSP Professional Network fund to support Guidelines production
- Posters and presentations by BACPAR members nationally and internationally
- Another excellent Journal had been produced - please submit case studies, audit findings, views on courses/ studies, learning opportunities etc. Also welcome is readers' views on current content.
- Educational and Research Bursaries being provided to members and new Post-Graduate bursary to be proposed.

Ongoing collaboration with many organisations including ISPO / TIPS.

Vascular society want BACPAR representation on their education, audit and research committees.

Joint conference with the Vascular Society, Society of Vascular Nurses and Society for Vascular Technology on 25-27th November in Brighton 2020.

ISPO 2020 – 50th Anniversary 12th-13th November

Questions asked of the BACPAR Membership during the 2019 AGM

1. The membership was asked to show interest for ARC motions. None have been submitted as yet.

Proposed constitutional changes

As a result of a change in the relationship with the CSP, following their review of the professional networks, there were proposed changes in the BACPAR constitution. Both the change in relationship and the proposed changes had been publicised to the membership in advance of the AGM as well as a brief summary at the AGM. Various questions were asked of the membership in order to agree on the proposed changes.

2. Full membership should now be open to all physiotherapists, and those in therapy support roles, not just CSP members. Agreed
3. Should at least one of the departmental members attending a meeting be a physiotherapist or are we be happy for 2 non physiotherapists to attend as delegates? Agreed that preference should be given to one physiotherapist at least attending but if unable to then would be open to 2 in the MDT.
4. Allied Associate BACPAR Members should be able to vote at the AGM. Agreed
5. Should Executive Committee roles be held by Physiotherapists working in the UK as we are a British Association? Agreed
6. Do all roles within the Exec need to be Physiotherapists? The membership voted the key members of the Exec; Chair, Vice chair and PRO need to be Physiotherapists. Other roles

could be held by Allied Associate Members as appropriate.

7. The majority of executive members must be full members. Agreed

8. BACPAR members will decide on the allocation of assets if BACPAR were to cease. Agreed

Louise Whitehead provided the membership with **SPARG Update**: SPARG Thanked BACPAR for their continued support and 2016 data is now published. They held their 58th meeting this year with 22 attending. Currently working on Shrinker Sock Protocol.

Details of the **accounts** were presented by Hayley Freeman in the (reluctant) absence of Sue Lein

A new proposed BACPAR Post Graduate Bursary- £3k Pot per annum was presented and agreed. Further details to follow on BACPAR website.

Elections

Lynsey Matthews was re-elected for a second term as Membership Secretary

Hayley Crane was re-elected for a second term as PRO

Jude Douch was elected as Secretary as Amy Tinley was stepping down.

There was no **AOB** raised.

If you have any questions about the AGM or the report please see the full minutes on the BACPAR website, if they are still not answered of course contact me via bacpar.chair@gmail.com

Julia Earle, Chair of BACPAR

THE VASCULAR SOCIETIES' ANNUAL SCIENTIFIC MEETING 2019

Hayley Crane
BACPAR Public Relations Officer
Academic Vascular Surgery Unit
Hull University Teaching Hospitals NHS Trust

As you may have heard, BACPAR will be teaming up with the Vascular Societies for our 2020 conference. In preparation for this Louise Tisdale (BACPAR Vice Chair) and I were tasked with the mission to attend The Vascular Societies' Annual Scientific Meeting (VSASM) 2019 to gather information ahead of the BACPAR 2020 conference planning meeting.

Overview

The 2019 VSASM was held at the Manchester Central Convention Complex and was a three-day meeting of the Vascular Society of Great Britain and Northern Ireland (VSGBI), The Society of Vascular Nurses (SVN) and The Society for Vascular Technology (SVT). Hundreds of talks were given to over a thousand delegates. The programme theme was a "Safe, Sustainable Vascular Service for 2020 and Beyond" which included a symposium led by the VSGBI President under the same title. The title of the Vice President's symposium was "Individual Sustainability – the robust surgeon/team preventing burnout".

What We Liked

There were multiple programmes running at once from the three different societies, which meant we could pick and choose the most relevant talks. Lou and I dashed from room to room to attend sessions on the BLARt, vascular research and an amputee symposium ran by the SVN, which included an excellent talk by our very own Liz Bouch (BACPAR member).

We spent plenty of time exploring the exhibition zone and, in an effort to be as thorough with our scoping mission as possible, left with as many freebies as we could carry.

What We Didn't Like

We were very disappointed by the lack of pudding offered at lunch time – but don't worry; we have spoken to the event organisers and that should all be sorted for 2020!

Jokes aside it was an excellent conference which Lou, as a prosthetic specialist and myself as a vascular physio, both found extremely valuable.

Watch this Space

Planning for 2020 is already underway so keep an eye out for updates!

CONFERENCE – PAST AND FUTURE

Sue Lein
BACPAR Treasurer / Joint Journal Office

We had overwhelmingly great feedback for our Conference last November with 100% rating their overall assessment of the event as "very good" or "excellent ". A huge well done and thank you to all those involved in organizing and speaking at conference. There were a few comments and ideas to improve the conference at the Wolverhampton venue which we will take forward. All the ideas given for future topics have been passed to this years' organisers.

....and speaking of this year's conference, we are delighted to be able to announce that we will be part of the Vascular Societies Annual Scientific Meeting this year joining the Vascular Society, Society of Vascular Nurses and the Society for Vascular Technology. We will have our own conference programme but the added benefits of joining other session and the wider conference facilities. The conference is in Brighton and the costs for BACPAR members are similar to this of our own conference.

We will let you know when booking is open. There will be much more information shortly and huge thanks to those committee members now working on this exciting new development.

So....Save The Date.....

BACPAR days: Wednesday 25th and Thursday 26th November 2020 Plus option of the main conference Friday 27th

The abstract submission to the BACPAR Programme is now open - we want your abstracts to support the presentations from our invited speakers, on prosthetic or non-prosthetic themes.

Select BACPAR or any relevant subject when you submit so that they reach us! The link has been sent out via our member's Facebook.

https://execbs.eventsair.com/PresentationPortal/Account/Login?ReturnUrl=%2FPresentationPortal%2Fvascular-societies-asm-2020%2Fvasabs

LIMB-ART STAND OUT STAND PROUD

Former Paralympic swimmer and medallist, Mark Williams, reflects about how LIMB-art started following a chance meeting, successes over the last two years and the positive emotional impact LIMB-art's vibrant protective leg covers have on amputees' lives.

LIMB-art is a British design and manufacturing company, based in the heart of beautiful North Wales, dedicated to producing cool prosthetic leg covers. Founded in 2018 by Mark Williams and his wife Rachael, LIMB-art was born out of an overwhelming desire to help other prosthetic users raise their confidence, be proud of what they have and very simply, but equally importantly have fun showing off whilst doing so

Mark's journey started back in 1982, at the age of 10, on the same day Prince William was born. Mark was cycling home from school when he was involved in a serious road traffic accident. He was rushed to hospital where doctors tried to save his leg, but it was not possible. Mark's left leg was amputated below the knee and his life was changed forever. However, Mark looks back at this split second event and insists, "If you took me back to that day again and put me back in the middle of the road, with my arm stretched out, waiting to turn right, I would stay there. It was the best day of my life."

Losing his leg set Mark on a different path, which would see him develop from a shy little boy into a super-confident athlete winning numerous medals in the 1988 Seoul Paralympics and 1989 Miami World Championships.

After 10 years in the British squad, Mark retired from competitive swimming and entered corporate life managing sales teams and corporate accounts across Europe, Africa and the Middle East. During this time, having to wear suits for work, Mark often experienced a problem: his trousers would never quite hang right over his prosthetic leg and would blow in the wind like a flag around a flagpole. Mark's solution was to use his right leg as a model to mould a cover for his left prosthetic leg. Problem solved.

Then, one day, after finishing restoring his beloved 1962 Land Rover, Mark recalls, "I had some green paint left over from respraying and I thought, "Why not?" I sprayed my leg cover, put some Land Rover badges on it and posted some photos online. I was surprised at the response. Other amputees immediately started asking where I got it from, and could I make them one too? I started thinking there may be a business opportunity here."

The real lightbulb moment came though, after Mark added flashing lights to his cover and was out shopping in a supermarket. A 4-year-old boy escaped from him mum and ran over shouting, "Hey mister, cool leg!" Mark laughed, "His mum was mortified, but I reassured her it was fine. I had a good chat with her and her son and let him investigate my leg and cover. He was absolutely fascinated." This chance encounter took Mark right back to his hospital bed when he was a little boy after his amputation. He recalled, "I remember looking down at where my leg should have been, feeling dread and thinking, "What am I going to do now?" How great would it have been if I could have been thinking, "Maybe I can have one of those cool legs now?" I knew then I had to do something serious about starting the business."

Mark set about gathering a team around him who could help develop a range of affordable, durable but very importantly "cool" prosthetic leg covers and so LIMB-art was born.

Working in collaboration with industrial design consultants and injection moulding experts, LIMB-art embarked on an 18-month Research and Development programme and produced four designs: Core, Vent, Wave and Ultralight. These were launched in October 2018 to critical acclaim with orders quickly following from across the UK, Europe and USA.

Almost immediately LIMB-art experienced success winning local and National awards: Stelios Disabled Entrepreneur of the Year 2018, Daily Post Business Start-up of the year 2019, Wales Manufacturing Start-up of the year 2019, two Conwy County Business Awards one for Innovation and SME Business Award for Social Inclusion.

"The responses and feedback we have had from our customers and their families has been the most rewarding though," says Mark. "We had expected lots of comments about the quality of our covers, how lightweight they are or how good they look, but what we hadn't expected was all the comments about how our covers made people feel and the impact they are having on confidence and self-esteem. We have had numerous customers say our covers have "changed their lives" which is incredible. One gentleman had not worn shorts since he was a teenager… he's now 60 years old… that's a long time to hide yourself away, but as soon as he got his carbon fibre LIMB-art cover he felt proud to show his leg off and is now wearing shorts again. We get this type of reaction from people all the time. Our motto is "Stand Out Stand Proud" and amputees really are doing this."

Mark says the covers also demystify limb loss for able bodied people. "When you wear a prosthetic, it can make people uncomfortable, as they don't know how you feel about it, but when you are wearing a bright or funky cover, they know you feel confident and feel more relaxed about speaking to you. I've lost count of the number of times strangers have stopped me in the street to shake my hand and compliment me on my Welsh Flag cover. It really breaks down barriers and sparks positive conversations."

LIMB-art covers are designed to fit all above and below knee prostheses and are available in standard and slim fit, short, medium, long and extra-long lengths. A choice of standard or completely bespoke finishes are available from natural unpainted, painted in a choice of colours, hydro dipped or vinyl wrapped in a wide range of patterns or one-off artist designed and painted "tattoo styles." The possibilities are endless and bound only by the customer's imagination.

LIMB-art covers can be ordered directly by the customer or via private limb centres and NHS limb-centres as an alternative to foam covers.

For further information visit https://limb-art.com/

LEGS4AFRICA

PARTNERSHIPS AND PROSTHETICS: HOW LEGS ARE CHANGING LIVES

Sue Pownall
Little Legs Coordinator

It started, like the best of ideas, with a simple act of kindness to an amputee friend in The Gambia - the hand delivery of a prosthetic leg. Having done it once, we knew it could be done again and so Legs4Africa was born. Seven years later the charity has delivered enough components to build or repair 6,221 legs for people who otherwise may never walk again.

The trauma of losing a leg cannot be underestimated wherever you are in the world but here in the west, particularly in Great Britain and Europe, this trauma can be somewhat offset by the knowledge that support services will swing into action from the beginning of your journey. You will be supported through physiotherapy, rehabilitation and you will receive a prosthetic leg for free through the NHS.

Sadly, in many Sub-Saharan African countries this is a rare privilege. Along with congenital defects at birth, road traffic accidents and diseases like diabetes or a simple mishap, such as a teacher stepping on a drawing pin, amputations are a common procedure. For most of these amputees the cost of a prosthetic limb makes access to one difficult, if not impossible. This leaves thousands facing an uncertain future such as small children unable to play with their peers, frustrated students no longer able to attend school, mothers and fathers who cannot work to support their families and formally independent grandparents who become a burden to their family and community.

Although the idea was simple, the logistics proved more complicated. How could we raise awareness amongst UK amputees that their cast-off prosthetics, instead of going to landfill or lingering in cupboards or under beds, could be used by someone living in Sierra Leone? We spread the word among hospitals and mobility centres and connected with international development networks and other amputee focused charities.

Many leg donations come from individuals who often go on to support us in other ways. One such is Charlie. Charlie donated several of his outgrown legs and then went on to become our champion fundraiser last year (Figure1 below).

The legs are sent to us as components so a method for dismantling them had to be found and a chance conversation with a Rotary Club member brought the Men's Shed organisation to our attention. These are groups of (mainly retired) men who meet up regularly in their hometown to form friendships and pursue activities that will benefit the local community. Although some join for the opportunity to put their skills to use, for many it is a life saver, bringing together those who may be suffering from depression or loneliness or who are just at a loose end.

As Legs4Africa becomes more well-known globally, we are regularly offered leg donations from other countries. Fortunately, Men's Shed is a worldwide initiative and we have been able to link up with Sheds in Australia and Canada so that we can take advantage of these donations as well.

Once or twice a year we send pallets of components to partner hospitals across Africa but this can be a long drawn out process, taking months to arrive at their destination and causing a consequent shortage of components available to limb centres.

To address this issue, we introduced the 'Deliver a Leg' project. Mostly through word of mouth and connecting with international development networks, we encourage anyone travelling to Africa to take a tailored suitcase of components with them. People from all walks of life have answered our appeal. We sort out all the necessary paperwork and arrange for the traveller to be met by someone from the hospital to hand over the suitcase or, if they wish to feel more involved, they can elect to personally deliver the bag to the hospital and meet the prosthetists.

"From the outset, we knew we couldn't just ship legs across continents and hope for the best. We didn't want to send legs to individuals but recognised that we needed to form partnerships with hospitals and mobility centres in the countries to which we would be shipping leg components where there is the professionally trained expertise to reassemble the components and make a properly fitting leg for each amputee followed up with ongoing physiotherapy and support. The OTC in Ghana was one of our first partnerships and we learned a great deal from the way this centre is run from the doctors and prosthetists to the support workers and even the school attended by children whilst they become accustomed to their new leg." **Tom Williams, Legs4Africa Founder**

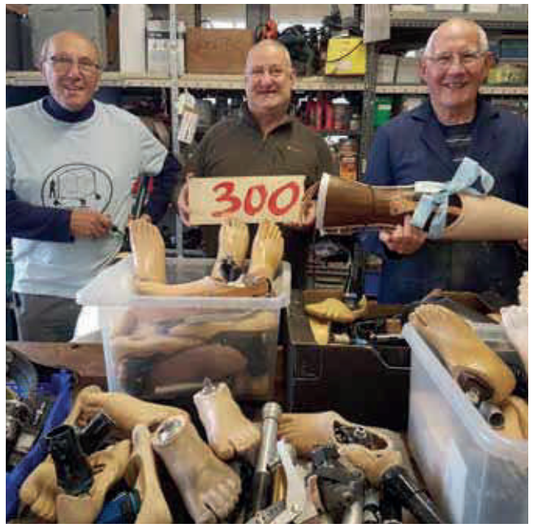


Figure 2 The prosthetic limbs come from all over the world and end up on the Men's Shed workbenches. Once dismantled these parts head to the Legs4Africa unit where they are serviced and then shipped to vetted prosthetic limb fitting centres in Africa.

Figure 3: Meredith attended our craft skills workshop in Lugazi where she learnt to make items to sell as well as being provided with a small starter pack of materials to take away with her. In a few months we will check back in to see if Meredith has been able to begin generating some regular income.

Unfortunately, in many African centres prosthetics and orthotics is a male dominated industry, and to help adjust this imbalance Legs4Africa is awarding bursaries to female amputees interested in a career in prosthetic technology. A partnership with the Tanzania Training Centre for Orthopaedic Technologies (TATCOT) has been developed to support African women to attend a Certificate Course in Lower Limb Technologies to increase female representation in the sector.

One of the consequences of being an amputee can be a feeling of alienation so in The Gambia we have been helping to set up self-governing support groups where amputees can meet regularly to help each other and address any issues they encounter. Alongside this, localised specific interest community groups are being formed such as a football team in The Gambia and a craft making group in Uganda, both of which are making a huge impact on attendees' state of mind.

So, from little acorns and all that...

Since that first single leg seven years ago, the charity has expanded massively and we are now partnered with mobility centres and hospitals in an in an ever increasing number of countries including Uganda, Kenya, Tanzania, Zimbabwe, Nigeria, Namibia, Sierra Leone, Benin, Malawi, Burkina Faso, Cameroon and Rwanda. Legs4Africa is a small charity with a big reach which couldn't be achieved without the many people and companies that support us and our vision for an improved life for all amputees in low-income African countries. (www.legs4africa.org)

CHANGE OF SECRETARY

As we say farewell and a huge 'thank you' to retiring BACPAR Secretary Amy Tinley we welcome Jude Douch to the role. Jude works at the Specialised Mobility Centre in Burslem in Staffordshire. Jude's contact details are in the Exec List at the back of this journal.

As some you may be aware Lynn Hirst has recently announced her retirement and will be finishing working at Seacroft Prosthetic Limb Centre at the end of June. Lynn has held a range of roles within BACPAR and supported all of us greatly throughout the region. As a region, we would all like to thank Lynn for all her hard work and dedication over the years and wish her luck with her future endeavours including her Total Warrior which she will be completing on her last day!

Jack Cawood, for the Yorkshire and Trent Region

New South West Region for BACPAR

We are delighted to announce we have a new and enthusiastic South-West Regional Rep – Shaun Fryett. Shaun is planning to make contact with members in his area once the membership renewals are complete. See his contact details in the Executive Committee list at the back of the Journal.

BACPAR CONFERENCE 2019 POSTER WINNERS

Congratulations to the winners of our Poster Competition at the 2019 BACPAR Conference!

You can find their posters on pages 20-22.

1st Prize, and winning the £50.00 prize: Sophie Cook - "*Does a Low Score on the MOCA Correlate with Prosthetic Mobility for Patients Undergoing Intensive In-Patient Rehabilitation?*"

2nd : James Pollen, Sarah Holder, Charlotte Issac, James Baldock, Tracy Barnett, Natasha Jones & Chris Spears – "*Improving the Physical Activity of Lower Limb Amputees in Oxford*"

3rd : Heather Waring, Chloe Shimell and Matthew Fuller – *"Is the BLART Good at Predicting Mobility 3 Months Post Amputation?".*

PHYSIOPEDIA AMPUTEE COURSE

The online Physiopedia Amputee Course has been updated and available on Physioplus: https://www.physio-pedia.com/Lower_Limb_Amputee_Rehabilitation_Course.

It is now in 4 individual courses: on completion of single courses candidates will receive a certificate and CPD points. On completion of all courses and passing the assignment candidates receive a programme certificate.

To access the course a Physioplus individual or organizational membership is needed. (https://members.physiopedia.com/learn/).

The abstract submission to the BACPAR Conference 2020 Programme (as part of the Vascular Societies Annual Scientific Meeting) is now open

We want your abstracts to support the presentations from our invited speakers, on prosthetic or non-prosthetic themes.

Select BACPAR or any relevant subject when you submit so that they reach us! The link has been sent out via our member's Facebook.

https://execbs.eventsair.com/PresentationPortal/Account/Login?ReturnUrl=%2FPresentationPortal%2Fvascular-societies-asm-2020%2Fvasabs

Helen Scott won the 'Therapist of the Year' award at the Scottish Health Awards 2019 for her contribution to amputee rehabilitation and research over the last 30 years. Helen is the team lead at WestMARC in Glasgow, chairperson for SPARG and a facilitator for the World Confederation of Physical Therapy.

Save the date

SPARG

MDT Conference 2020: *'What a pain!'*

Strategies and solutions to help people with amputation manage their pain.

5th June @ William Quarrier Conference Centre, Glasgow G51 4QD

SPARG CONFERENCE IS RE-SCHEDULED TO FRIDAY 4TH JUNE 2021

Join us to learn from experts on the theory and evidence for: -

- pharmacologic, surgical and prosthetic management
- fat injection therapy
- graded motor imagery and mindfulness (including practical)

Cost: £95 (early bird £75 before 31.03.2020)
Contact: for application and payment details email westmarc.physiotherapy@ggc.scot.nhs.uk

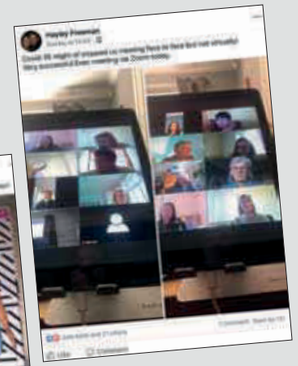
In 2015 BACPAR contributed to the 1st edition of the manual Rehabilitation in Sudden Onset Disasters; this was supported by a series of e-learning training modules.

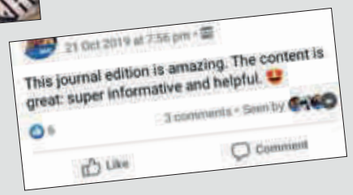
An updated version entitled Early Rehabilitation in Conflicts and Disasters Field Handbook became available this February - https://hi.org/en/early-rehabilitation-in-conflicts-and-disasters

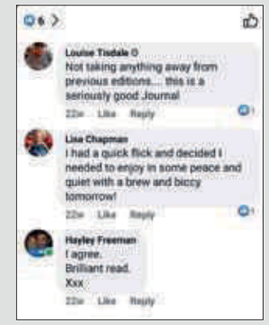
Again, BACPAR members volunteered their expertise and time contributing to the chapter 'Early rehabilitation of Amputees'. The e-learning module will be launched shortly; watch this space.

Between February and early March, the manual has been downloaded more than 549 times and in 44 countries!

The Best of Facebook Follow us at BACPAR-Members Only







…..and from the Journal Team….. thank you for your lovely comments on the Autumn 19 Journal via our Facebook page! Do keep giving us feedback – good and bad!

Does a low score on the Montreal Cognitive Assessment (MOCA) correlate with prosthetic mobility outcomes for patients undergoing intensive in-patient amputee rehabilitation?

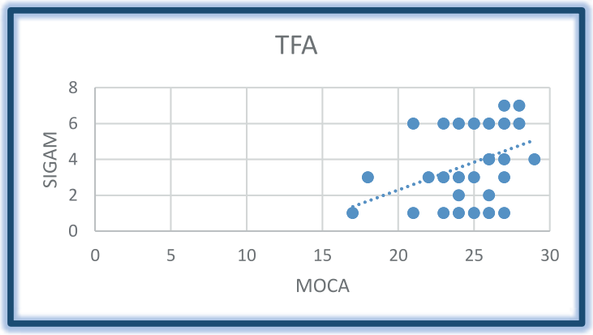
Sophie Cook Highly Specialist Occupational Therapist in Amputee Rehabilitation (sophie.cook@gstt.nhs.uk)
Amputee Rehabilitation Unit, Guys and St Thomas' NHS Foundation Trust

Background: Prosthetic rehabilitation success is dependant on many factors including comorbidities, the patient's ability to stand on one leg, motivation and physical fitness (Hamamura et al 2009). National guidelines about lower limb amputee rehabilitation suggest that cognition should be assessed as part of a multifactorial assessment (RCOT 2011). A literature review was completed and found some, but limited, evidence that better performance in cognitive assessment is associated with better functional outcomes for lower limb amputees (Williams et al 2014).

Aim: To identify if there is a correlation between scoring on a cognitive assessment completed on admission (Montreal Cognitive Assessment, MOCA) and mobility outcomes (SIGAM) on discharge for Trans-tibial (TTA) and Trans-femoral (TFA) amputees undertaking in-patient amputee rehabilitation.

Methodology: Retrospective review of admission MOCA score and discharge SIGAM score for 142 unilateral amputees (103 trans-tibial, 39 trans-femoral) who completed in-patient prosthetic rehabilitation between 2017-2019. Patients received on average 38 days of twice daily, hour long rehabilitation sessions (PT, OT and group). The MOCA was completed within 5 days of admission and the SIGAM score was completed within 5 days prior to discharge.

Results: A pearson correlation coefficient was calculated for TTA and TFA separately. SIGAM scores were converted into numerical equivalents for the purposes of data analysis (A=1 – E=8).
The results found:
r = 0.37 for TFA
r = 0.18 for TTA
The results reached statistical significance for TFA (p = 0.02) however not for TTA.



Interpretation and Conclusion:
The results indicate a correlation between MOCA score and SIGAM score with a p-value of less than 0.05 for TFA, suggesting that a lower score on the MOCA is correlated with poorer mobility outcomes. No such effect was found for TTA. This suggests that utilising standardised cognitive assessment scores, such as the MOCA, as part of prosthetic decision making for boarder-line TFAs may be beneficial to help predict prosthetic outcomes as part of a multi-factorial assessment.

Future research:
- Reviewing a larger data set to see if a stronger correlation is found
- Consider age/ comorbidities/ cause of amputation as contributing factors

References:
- Williams, R. M., Turner, A. P., Green, M., Norvell, D. C., Henderson, A. W., Hakimi, K. N., Blake, D. J. and Czerniecki, J. M. (2014) Relationship between cognition and functional outcomes after dysvascular lower extremity amputation, *American Journal of Physical Medicine and Rehabilitation*, DOI: 10.1097/PHM.0000000000000235
- College of Occupational Therapists (COT) (2011) *Occupational therapy with people who have had lower limb amputations: Evidence-based guidelines*. London: COT
- Hamamura S, Chin T, Kuroda T, Akisue T, Iguchi, T., Kohno H., Kitagawa A., Tsumura N and Kurosaka M (2009). Factors Affecting prosthetic rehabilitation outcomes in amputees of age 60 years and over. Journal of international medical research, 37 (6), pp 1921 - 1927

Improving the Physical Activity of Lower Limb Amputees in Oxford

James Pollen[1,4], Sarah Holden[1], Charlotte Isaac[1], James Baldock[2,3], Tracy Barnett[3], Natasha Jones[2,3], Chris Speers[2,3]
1: Oxford University Hospitals NHS Foundation Trust, Prosthetics Service, Oxford, UK. 2:Oxford University Hospitals NHS Foundation Trust, Sport and exercise Medicine, 3: Moving Medicine, 4: Oxford University Hospitals NHS Foundation Trust, Physiotherapy Research Unit

1) Purpose
To promote and improve levels of physical activity in lower limb amputees at The Oxford Prosthetics Centre

2) Rational
- A collaboration in April 2018 between the Oxford Prosthetics Service and Sport and Exercise Medicine team to promote physical activity
- Lower limb amputees have a greater risk of morbidity and mortality and high rates of physical inactivity
- Well documented evidence that Physical activity improves; physical function, cardiopulmonary function, quality of life and reduces the risk of falls in lower limb amputees

3) Method
- A class for 6-8 patients
- 12 week duration

Pre-Class:
- Initial Safe to exercise form
- Motivational Interview
- Goal Setting
- Exercise Vital Sign[1],
- Questionnaires
- Activity Booklets

Post-Class:
- Motivational interview/ Goal review at:
  - 0, 3, 6, and 12 months after finishing the class
- Exercise Vital Sign

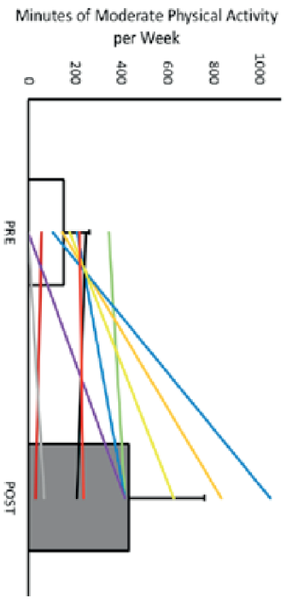
4) Results - September 2019
- 28 patients enrolled in the class
- 10 completed full programme
- 6 on-going

Reasons for non-completion
- Medically unfit
- Returned to high functioning level early
- Attendance whilst inpatient only
- Social circumstances

5) Discussion
- Post class activity levels increased
- Medical co-morbidities the main reason for non-completion of class
- Positive feedback from patients, relatives and staff
- Class programme offers unique opportunities of; peer support, motivational interviewing and close links with the community

6) The Future
- To gather more descriptive data to demonstrate meaningful impact on patient pathways (Quality of Life)
- Collaboration with community organisations and other Prosthetic centres to further develop the pathway (LimbPower)
- Analyse longitudinal data - at what point does physical activity decline after the physical activity class has ended?
- At what point do people need an intervention (exercise referral/ motivational interview) to maintain levels of physical activity

Lower Limb Strength
Static Balance
Flexibility/ Lower Limb Strength
Warm Up
Cardiovascular
Exercise Class Video
Cardiovascular
Dynamic Balance
Upper Limb Strength
Cool Down



Exercise Vital Sign before and after a 12-week Physical Activity Programme

(1)Exercise Vital Sign:
Coleman KJ, Ngor E, Reynolds K, Quinn VP, Koebnick C, Young DR, et al. Initial validation of an exercise "vital sign" in electronic medical records. Med Sci Sports Exerc. 2012;44(11):2071-6.

Reference:

@PRUOxford
Moving Medicine
Prosthetics Department Oxford University Hospitals NHS Foundation Trust
Physiotherapy Research Unit
Oxford University Hospitals NHS Foundation Trust

Is the BLARt good at predicting mobility 3 months post amputation?

Heather Waring[1], Chloe Shimell[1], Matthew Fuller[1]
[1]Guy's & St Thomas' NHS Foundation Trust (GSTFT) Physiotherapy Dept
BACPAR NATIONAL CONFERENCE 2019, Wolverhampton, UK

Introduction

BACPAR 2016 [1] guidelines state "To provide effective rehabilitation the physiotherapist needs a good understanding of the factors that may influence the outcome of rehabilitation". The Blatchford Leicester Allman Russel tool (BLARt), which references many of these factors, was developed to predict the likelihood of post amputation prosthetic function at 12-months [2]. Therapists plan on-going rehabilitation from the acute phase and a tool that predicts rehabilitation potential during the initial 3 months in primary amputees would be useful to assist setting realistic patient expectations, therapy goals and guide discharge planning.

Aim

The predictive value of the BLARt has not been tested within the acute phase of amputee rehabilitation therefore our aim was to review the use of the BLARt to answer two questions:

- Is the pre amputation BLARt a good predictor of potential prosthetic rehabilitation at 3 months post amputation?
- Is 3 months post amputation an adequate time period to assess the predictive nature of the tool for prosthetic rehabilitation potential?

Method

Prospective data collection of patients' under-going major lower limb amputation (MLLA) in a vascular hub. Information for the BLARt was obtained via hospital records and direct observation of the patient prior to amputation. The BLARt comprises of 8 variables which provide the individual with a score; age, sex, body mass index, level of amputation, indication of amputation, mobility prior to amputation, cognition & special risks (co-morbidities). These scores are converted to provide a percentage likelihood of a patient progressing to prosthetic use at 1 year.

≤13 - 85% Likelihood of walking with a prosthesis (with or without walking aids)
14-21 – 21% Likelihood of walking with a prosthesis (with a walking aid)
≥ 22 – Will not use a prosthesis

BLARt scores were completed for 45 patients, only final amputation level was used to evaluate performance of the tool (trans-femoral/TFA, trans-tibial/TTA).

Inclusion: All patients undergoing MLLA between February-July' 2019, final amputation level scores e.g post revision surgery and data available on 3 month follow up.

Exclusion: Nil.

Outcomes were divided into 6 functional categories 3 months post-op; prosthesis use, early walking aid use (femurrett/PPAM aid), transfers (pivot, slideboard), hoist, bedbound, RIP. Length of stay was also calculated for these groups.

Results

Twenty-eight amputees were included in the results as they reached the 3 month follow-up period (Table 1). A further seventeen were omitted due to 3 month data not being available.

	Function					
BLARt Scores	Prosthesis	EWA	Transfers	Hoist	Bedbound	RIP
< 13	12	2	1			
14 - 21	1		3	1	1	
> 22				1	3	3

Table 1. BLARt score and functional outcome at 3 months

BLARt	Length of Stay
< 13	47
14 – 21	56
> 22	49

Table 2. BLARt score related to Length of Stay (LOS)

	BLARt Scores		
	< 13	14 – 21	> 22
Trans-tibial Amputation	8	1	1
Trans-femoral Amputation	7	5	6

Table 3. BLARt score related to level of amputation

Fifteen patients scored <13: 11 going on to be independent prosthetic users, 1 prosthetic use suspended due to stump pain, 2 under-going early walking aid (EWA) trials and 1 transfers only due to patient choice.

Seven patients scored 14-21: 1 mobilising with a prosthesis within therapy, 3 transfers without prosthesis, 1 hoist due to post-op delirium, 1 bedbound as unable to tolerate sitting out for long periods due to pressures sores, however did tolerate hoisting and 1 hoist due to delirium. Eighty-three percent of amputees within this category were trans-femoral. Average length of stay (LOS) was highest in this group (Table 2). Table 3 demonstrates that TTA have a higher probability of prosthetic success.

Six patients scored >22: 1 hoist transfer, 2 bedbound and 3 died (1 <90 day mortality and 2 <30 day mortality post amputation).

Discussion and Conclusion

Prosthetic/non-prosthetic use categories are good predictors of function at 3 months post amputation. Within our pathway, which can include a dedicated inpatient amputee rehabilitation facility, 90% of patients' scoring < 13 achieved independently mobility with a prosthesis at 3 months when following the dedicated pathway. Demonstrating that 3 months is an adequate time period to assess the predictive quality of the tool for prosthetic rehabilitation potential for this category in our cohort. Category 14-21 is harder to predict prosthetic function at 3 months. This group have longer and more complex hospital stays as well as other confounding factors such as; level of amputation, cognition and engagement in rehab. The BLARt needs to be used alongside clinical experience for this group e.g. wound healing and revision surgery limited the sensitivity of the tool at 3 months. Longer term follow up of this category may show validation of the tool at 1 year for these slower stream rehabilitation patients.

References:
BACPAR (2016). Clinical guidelines for the pre and post operative physiotherapy management of adults with lower limb amputations. 2nd edition, published 2016. Chartered Society of Physiotherapy, London.
BOWREY, Sarah et al. (2018). Development of a scoring tool (BLARt score) to predict functional outcome in lower limb amputees. Disability and rehabilitation, 41 2324-2332

PHYSIOTHERAPY Rehabilitation Team

Guy's and St Thomas' NHS

Benchmarking: Supervised Exercise Programmes for Intermittent Claudication

Bethan Jones, Laura Burgess, Matthew Roberts
Vascular & Amputee Rehabilitation, Charing Cross Hospital

Background & Aim

The 2018 NICE guideline for Peripheral arterial disease (PVD) reports that those with intermittent claudication should be offered to attend a supervised exercise programme (SEP) 2 hours a week for a 3 month period. Current research (Strijbos 2018) suggests an inadequate level of health literacy in the PVD population. Suggesting we need to deliver information in the best way to convey medical information. Our service issues exercise leaflets but does not provide formal education sessions.
This benchmarking survey explored how SEPs are currently delivered across the UK and if education is part of the programme. The aim is for our service to provide an education component to empower patients.

Method

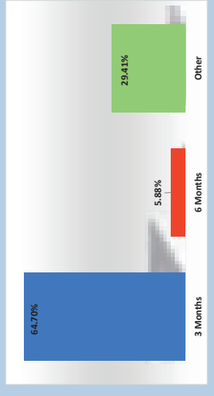
8 questions were sent out via a Survey Monkey questionnaire link by email to:

- 5 NHS Trusts that deliver a SEP. This list was shared by the Vascular Clinical Trial Manager at Imperial College London.
- Members of the Society of Vascular Nurses.
- On a social media platform via the BACPAR member Facebook group.

Respondents were asked about the frequency/duration of classes; who runs the class; whether education/exercise leaflets are provided and outcome measures used. The results were collated using the survey monkey tool and were analysed using excel.

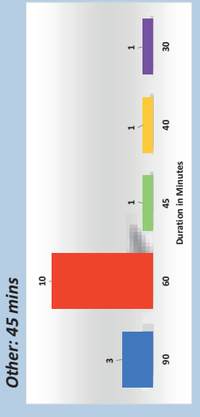
Results

Who is your Intermittent Claudication Class supervised by?
Other (6%) Personal trainer with qualification in medical conditions.

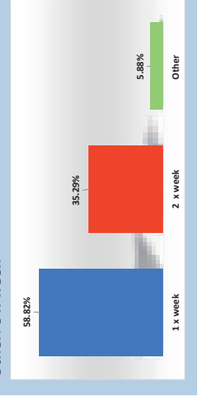


What is the duration period of the Intermittent Claudication Class?
Other: 8 weeks, 1 year, flexible, 9 weeks.

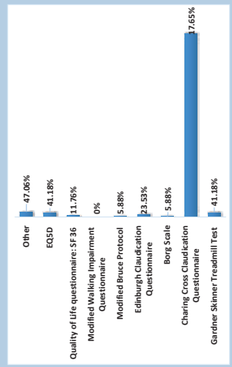
What is the duration (in minutes) of each supervised Intermittent Claudication Class?
Other: 45 mins



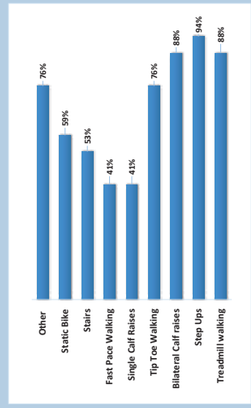
What is the frequency per week of your Intermittent Claudication Class?
Other: 3 x week



What outcome measures do you use?
Other: None, 6 minute walk test, VascuQOL, Unsure, Constant load treadmill test, patient's own goals.

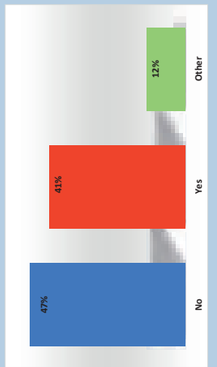


Please list all of the exercises included in your Intermittent Claudication Class?
Other: Sit to stand, Cross Trainer, Wobble board, Lunges, Trampette, Marching, Step Machine, Resisted calf raises, Upper limb exercises, Cardiovascular exercises, squats, lateral step ups, Calf stretch .



Is there a patient education component during your Intermittent Claudication Class?
Other: Informally during the assessment, each class.

Do you give out an exercise leaflet in addition to the class?



Conclusion, The Future & Developments

There is a variation in how SEPs are delivered. Focusing on the education component- 82% issue exercise information leaflets to patients but only 44% offer education sessions to patients.
Some responses report they present a small health topic every other week E.G. Fitness, diet, medication.
Our service will commence 15 minute monthly education sessions to help empower patients and improve their understanding of their condition. Topics will include: , what is IC, why is exercise important, smoking cessation, diet and medications.
We will review this with patient satisfaction questionnaires along with looking at compliance rates.

References
(Strijbos 2018) Inadequate Health Literacy in Patients with Arterial Vascular Disease. European Journal of Vascular and Endovascular Surgery. Volume 56, Issue 2, August 2018, Pages 239-245

'Peripheral arterial disease: diagnosis and management' (2018) NICE Guidelines

NHS Imperial College Healthcare

Intermittent Claudication Supervised Exercise Class: Review of activity, compliance and outcomes

Bethan Jones, Laura Burgess, Matthew Roberts
Vascular & Amputee Rehabilitation, Charing Cross Hospital

Background

The 'Peripheral arterial disease' (2018) NICE guidelines reports that those with diagnosed intermittent claudication (IC) should be offered attendance of a supervised exercise programme (SEP). A research study by Cheetham et al. (2003) from Imperial College Healthcare NHS Trust (ICHNT) concluded that a weekly, SEP for a 6-month period provides a significant improvement in patients' symptoms, quality of life and distance walked. Therefore, our service offers a weekly 45 minute exercise class in a circuit for 6 months.

Aim

To review the SEP delivered at Charing Cross Hospital in 2018, focusing on referrals, compliance, DNA rate and outcome measures. Highlight ways we can improve the current service.

Method

Data was collected January-December 2018 on referral numbers, attendance and outcome measures. The data was recorded /analysed using an excel spread sheet.

The following Outcome Measures were taken at baseline, 3 and 6 months:

- Gardner Skinner Treadmill Test- records Initial Claudication Pain and Absolute Walking Distance in metres.
- The Charing Cross Claudication Questionnaire (CXCQ) - a patient reported outcome measure (PROM), 16 questions where patients are asked to rate aspects of their leg pain and how the pain limits activities. The responses are scored numerically, giving a total score and a reduction in the total score indicates improved quality of life.

Research

Our SEP is part of an on-going vascular research trial 'NESIC': 'Does Neuromuscular Electrical Stimulation Improve the Absolute Walking Distance in Patients with Intermittent Claudication compared with best treatment available? A multicentre Randomised Controlled Study'. The first NESIC trial participants commenced the SEP in April 2018.

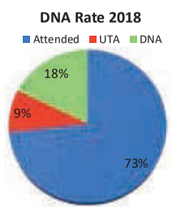
Results

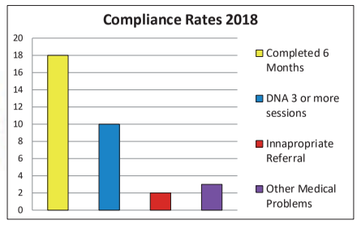
In 2018 a total of 33 new participants were referred to the SEP.

20 of these were referred from the Vascular clinic. The other 13 were recruited as part of the NESIC research trial.

Out of the 33 participants that started the class, 18 completed the 6 month programme (54.5%).

12/18 (67%) participants demonstrated improved distances for initial claudication pain after 6 months. (Median = 175m ;Range 40-710m).





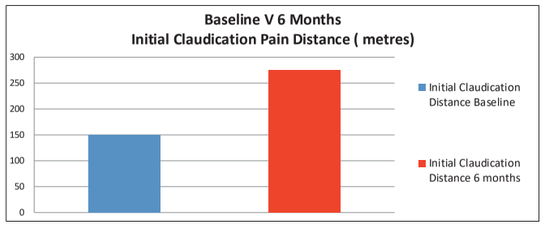


Figure 1. The median scores at baseline (150m)and 6 months (275m).

Results (continued)

11/18 (61%) participants demonstrated improved distances for Absolute Walking distance after 6 months (Median = 200m ; Range 40-700m).

13/18 (72%) patients demonstrated lowered CXCQ scores at 6 months, indicating that they are less limited by pain and report an improved lifestyle.

3/5 patients demonstrated a decline in their lifestyle with the CXCQ (Median = 9.25 ; Range 2.5-17.25). However they demonstrated improved Initial claudication pain and absolute walking distance results.

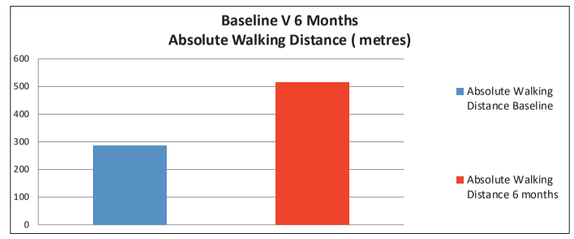


Figure 2. The median scores at baseline (285m) and 6 months (515m).

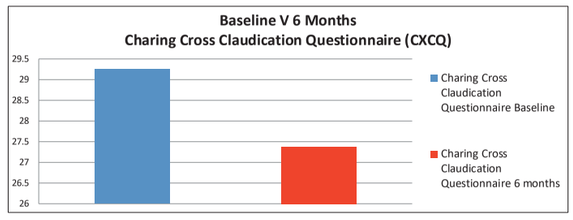


Figure 3. The median scores at baseline (29.25)and 6 months (27.35).

Discussion & Conclusion

The results show changed scores for Initial Claudication Pain, Absolute Walking Distance and Charing Cross Claudication Questionnaire.

The reasons for those who did not improve were:

- Musculoskeletal problems such as sciatica.
- Cardio-respiratory reasons such as shortness of breath.
- Poor attendance: Health issues (cellulitis, queried TIA, tinnitus) or booked holidays away.

Current service improvement projects:

- Patient Satisfaction Questionnaire
- Benchmarking our SEP against others
- Developing patient education talks
- Investigating poor compliance and DNA rate

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Imperial College Healthcare NHS Trust

Investigating the Similarities and Differences in Quality of Life of Through-Knee and Above-Knee Amputees: A Protocol

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HULL YORK MEDICAL SCHOOL

BACPAR

Background

Less than 3% of lower limb amputations performed in Great Britain and Northern Ireland are through-knee (Moxey 2010; NCEPOD 2014; SPARG 2019) despite the potential functional advantages gained from a longer, end weight bearing residuum. Recent studies comparing through- knee and above-knee amputation have focused on surgical outcomes (Lim 2018; Nijmeijer 2017) and quality of life studies have not, so far, reported outcomes for though-knee amputees (Davie- Smith 2017; Sinha 2011). The similarities and differences in quality of life of through-knee and above-knee amputees, from the perspective of the individuals living with these types of amputation, are yet to be compared.

Aims

1) To explore lived experience post amputation including perceptions of body image and prosthetic satisfaction of both groups.

2) To assess the similarities and differences surrounding quality of life outcomes of through knee and above knee amputees.

Methods

Sampling

A sampling frame (figure 1.) will be used to find 24 to 36 participants from two artificial limb centres. A similar number of through-knee and above-knee, community dwelling, amputees are required to enable comparison of their experiences. Groups will be specified further by gender and mobility level to capture the important variations between the sample.

Interviews

Semi-structured interviews will be used to explore the lived experience of participants with both types of amputation. Interviews will preferably be face to face, directed by a topic guide and audio recorded.

Focus Groups

Focus groups with six to eight through-knee and above-knee participants will then be arranged to further investigate key issues identified during the interviews.

Analysis

Thematic analysis with an inductive approach will be taken to draw conclusions from the data. Once themes have been identified the researcher will explore the similarities and differences of the experiences of the through-knee and above-knee participants. A second researcher will assist with coding to ensure transparency and rigour within analysis.

Multiple surgical variations of through-knee amputation have been developed. All types will be included in this study. Two examples are shown below:

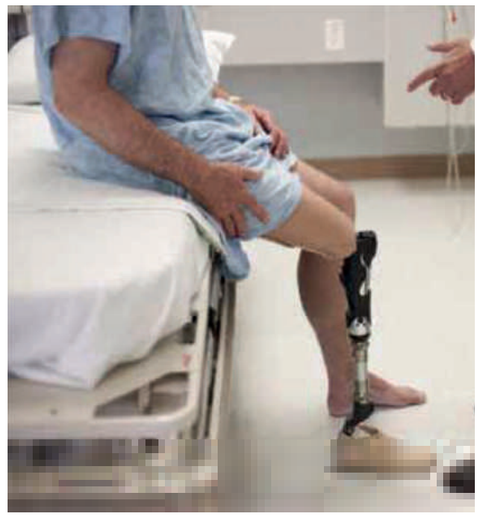
Knee disarticulation with sagittal flap — Gritti-Stokes

Figure 1. Sampling Frame

	3 - 4	3 - 4
	3 - 4	3 - 4

Results

The study aims to better understand the experiences of living with each type of amputation, quality of life from the amputee's point of view and any similarities and differences between the two types of amputation. The results will be used to assess the suitability of a future randomised control trial prospectively comparing further surgical and rehabilitation outcomes.



Acknowledgements

BACPAR awarded this project a research bursary which will support all costs for participants.

For further information please contact:
Hayley Crane – hyhc12@hyms.ac.uk

REGIONAL REPORTS

NORTH WEST/MERSEY

From Sophie Racz....

The Conference Huddle generated discussion regarding topics for, and structure of, future study days.

The October 19 Study Day had good attendance of 28 and covered 'No Health Without Mental Health', Plastic Surgery : limb salvage vs Amputation, Stages of wound healing and Early Mobilisation Protocol, Early Amputee Management and Rehab and Diabetic Foot Ulceration and Pathway to Amputation. A Future Study Day will be rescheduled focusing on prosthetic feet and prosthetic alignment.

I will be looking to step down my role as NW Regional Rep – I will be going on maternity leave in the summer. Sarah Bradbury has kindly agreed to take on the role.

IRELAND

From Carolyn Wilson.....

November 19's Amputee Rehabilitation Study Day for physiotherapists and occupational therapists (OTs) in Northern Ireland welcomed a total of 16 Physiotherapists and 16 OTs, mostly from the community. It was a truly multi-disciplinary day with presentations from the Prosthetist, Podiatrist, Psychologist, Nurse, Rehabilitation Consultant as well as Physiotherapists and OTs.

As always, the most popular sessions were those where the patients told their stories. OPCARE prosthetists provided tours of the workshops, for an opportunity to see the manufacturing process first-hand (and OPCARE provided lunch!).

In the afternoon the group split into professions for practical sessions. The physiotherapist cohort had demonstrations of P.I.R.P.A.G exercises, use of the PPAM aid and treatment of MSK issues associated with prosthetic use.

Feedback comments included:

"Excellent training with all areas covered", "Very informative, good talks from all MDT involved", "Great course, highly recommend", "Very informative day – all talks very relevant and practical PPAM aid demonstration very useful!".

February 2020

A Multidisciplinary Quality Improvement Project in Amputee Rehabilitation was successful in being accepted for inclusion in a quality improvement training programme in the Belfast Trust. The project aims to determine how we can better support patients in the community following discharge from inpatient rehabilitation.

WEST MIDLANDS

From Louise Tisdale.....

11 of the West Midlands BACPAR membership met on the 13th February, hosted by Jeanette Pimm at Stafford Hospital - her last BACPAR meeting - because she retires in March. All the very best for your retirement Jeanette. The group were reminded about membership renewal and BACPAR's conference within that of the Vascular Society in November.

We had discussion re our progress with Microprocessor Knees so far and those of us attending the PACE Rehab MPK training day in April promised to share our learning at our next WM meeting.

Advice for running training and sports participation was shared and some useful resources from previous WM meetings were provided.

3 case studies were given:

•Kim Ryder- A Rheo XC trial -consideration and outcome
•Sammy Mann - Vascular IP amputee perspective
•Louise Tisdale - TFA after CRPS diagnosis

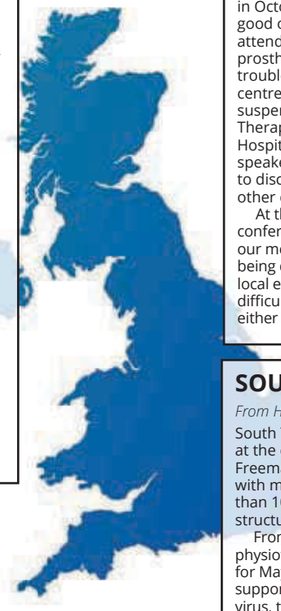
Our next meeting on June 8th will be held in Stoke including a session from Keele University staff "Individualised approach to exercise testing and prescription"

NORTH THAMES

From Kirsten Griffiths

We are in the process of contacting all our members now that we have an up to date membership list to enquire as to what they would like from the group going forwards.

Once things return to normal, we have plans for a study day at Harold Wood Prosthetic Centre with Rachel Humpherson, Clinical Specialist at OSSUR leading on prosthetic feet.



SOUTH CENTRAL

From Tim Randell.....

Our regional clinical supervision meetings have continued with more members coming from a variety of hospitals. This is a regular opportunity to meet with other physiotherapists with an interest in amputee rehabilitation. The meetings usually take place in Southampton hospital.

We hosted our second Children's Sports Day which was a great success. The AFC Bournemouth disability outreach coaches came and completed some drills. They would like to develop an amputee football team in Dorset if possible. We also had a Paralympic long jumper demonstrating some of his training routine that the children thoroughly enjoyed.

If you have any questions or would like to get involved in any way please let me know.

TRENT

From Wendy Leonard.....

Our last meeting was October in which we reviewed paperwork for assessment purposes and information issued to patients and it appears consistent throughout the regions.

Trent is now developing into a better network for questions, information sharing and problem solving. The next meeting was scheduled for April but may need to be an on-line meet now.

For the future, Derby are hoping to host an amputee study day - Encore running, and Nottingham are planning a second children's activity day in the school holidays.

YORKSHIRE & HUMBER

From Jack Cawood.....

Our last Regional Therapy Meeting was held on the in October 2019 at Seacroft Hospital with another good overall turn out with around 15 members attending. The session was led by Seacroft prosthetist Jen Hunt and was based on prosthetic trouble shooting for physiotherapists in the local centres and also an update on different types of suspension currently in use. The next Regional Therapy Meeting is due to held again at Seacroft Hospital on Wednesday 25th March with the main speaker coming in from the William Merritt Centre to discuss driving adaptions for amputees and other equipment that can be offered.

At the regional huddle at the recent BACPAR conference in November unfortunately only three of our members were able to attend with attendance being difficulty with study leave and funding from local employers. Members also reported the difficulty of completing the return journey in a day either by driving or public transport.

SOUTH THAMES

From Hayley Freeman & Pip Joubert.....

South Thames met together as a regional huddle at the conference last year. It was led by Hayley Freeman and we were split in to 2 groups of those with more than 10 years' experience and less than 10 years' experience to discuss topics and structures for meeting throughout the year.

From the meeting, a study day for physiotherapists with less experience was planned for May at Medway on exercise progression and peer support. However, given the situation with Coronva virus, this has been postponed to later in the year.

Pip Joubert is to plan a study day for later in the year, aimed for those with more experience which will be based in London. This is likely to be based around prosthetic company updates, especially on feet.

If you have any questions about either study day or for any peer support, please email us at souththames.bacpar@gmail.com.

EAST ANGLIA

From Jess Withpetersen and Anna Cue

The East Anglia region is large geographically but small in therapist numbers which can make meeting up difficult.

We enjoyed a successful meeting during the 'Regional Reps' huddle at the fantastic BACPAR conference in November 2019 and decided to produce a map of the services we provide across the region to see the caseload/clientele we treat, how we receive our referrals and who we refer on to. This will be useful to see what services currently exist.

We met in February for a very useful training session on Prosthetic feet from OSSUR's Rachel Humpherson. This was followed by a very productive meeting where we have all agreed to align our MPK data collection allowing us to collect and compare our data across the East Anglia area. This will provide an interesting analysis of a large geographical area with a focus on the outcome measures that mean the most to the amputees themselves.

CASE STUDY

COMPLEX INPATIENT REHABILITATION AND DISCHARGE PLANNING FOLLOWING RIGHT TRANS-FEMORAL AMPUTATION.

Sammy Mann & Anya White
Queen Elizabeth Hospital, Birmingham: February 2020

Initial Presentation

55-year-old male transferred to vascular ward for debridement, following presentation to A & E on 11th December 2019 with severe right foot pain.

Surgical History

- Right hallux and 2nd toe amputation with debridement (2018)
- C3 – C6 decompression (2017)
- NSTEMI with angioplasty (2016)

Previous Medical History

- CVA (2016)
- Peripheral Vascular Disease
- Cervical Myopathy
- Increased Alcohol Intake

Social History

- Living alone in a ground floor flat
- No support from family or friends
- Sleeping in a chair in living room for > 3months due to right foot pain.
- Smoking at least 20 cigarettes daily
- Normally independent and self-caring
- Mobile unaided but recent reduced mobility
- Medically retired factory worker (5 years ago)
- Extremely socially isolated
- Decreased Right hip flexion (AROM/PROM 60 degrees) due to long-term shortening

On initial admission to ward, patient underwent debridement and was informed of need for amputation. Patient declined amputation following discussion with medics. He declined to engage with Physiotherapy and Occupational Therapy teams and self-discharged mobilising short distances with a zimmer frame.

He re-presented to Russell's Hall Hospital, Dudley, 2 weeks later with worsening infection and pain to his right foot and was transferred back to the vascular ward at QE, Birmingham. The medics requested during our routine vascular MDT meeting that physiotherapy teams discuss amputation and the post-surgical process with the patient to allow him greater understanding of the rehab pathway, potential life changing progression and discharge plan. This conversation took place alongside provision of written information. Following discussion, the patient agreed to amputation and underwent a short period of chest physiotherapy for pre-surgical respiratory and ventilatory optimisation. The patient underwent a right trans-femoral amputation on the 23rd January 2020 under spinal anaesthetic.

The Post-Surgical Rehabilitation Journey

During the initial post-surgical physiotherapy assessment (Day 1), the patient transfer method was established as full passive hoist. This was secondary to an inability to weight bear through his left lower limb, even with maximal assistance of two persons. He was hoisted out and encouraged to continue daily with nursing staff and nursing assistants (this included making him aware of mortality rates in the event of not sitting out). He presented with reduced right hip active range of movement (see table) due to a pre-existing hip shortening. He was commenced on the therapy departmental document for new amputations known as the 'vascular pathway'. As such he was provided with the following:

Day	Rehabilitation
Pre-operatively	Information sheets provided that explained: ■ The role of the physiotherapist and occupational therapist ■ The rehabilitation process on the ward ■ Measurement for long-term wheelchair and provision of short-term loan chair ■ Pain and phantom limb sensations information ■ Discharge planning information ■ Referral to a local prosthetic limb service on discharge

continued on p28

Day	Rehabilitation
1	■ Measured for wheelchair (Long-term) ■ Short-term wheelchair provision from in-house 'Wheels' service ■ Education regarding the importance of sitting out of bed day 1 post-operatively ■ Physiotherapy & Occupational therapy joint initial session that culminates in sit out ■ Transferred out of bed into a wheelchair via a hoist transfer ■ Initial referral was completed to his local prosthetic limb centre (The Maltings, Wolverhampton)
2	**Created a Physiotherapy plan with assistance of 2 staff which included:** ■ Sitting balance work ■ Sit to stand practice ■ Transfer practice +/- slide board ■ Hip Stretches particularly flexion **Created an individualised exercise plan for patient completion with Physio Assistant support which included:** ■ Hip range of movement (Flexion, Extension, Abduction, Adduction) with stretches ■ Flat supine lying daily for 3 hours (total) ■ Core stability exercises
3-6	**Created a programme for completion daily within our inpatient physiotherapy gym area with physio assistant which included:** ■ Sit to stand practice at parallel bars ■ Single leg standing dips at parallel bars ■ Standing balance work ■ Upper limb strengthening using hand weights or bar in sitting completing a mixture of upright rows, bicep curls, lateral raises ■ Lower Limb stretching/ strengthening exercises as above (On plinth & standing)
7	**Attendance to once weekly in-house 'Amputee class' completing:** ■ Wheelchair mobility practice ■ Dynamic sitting balance work with wobble cushions ■ Socialising with the other amputee patients **Continued programme with physio assistant support (As above with increased times/reps)**
8	■ Practised backward chaining with the Occupational Therapists in the gym ■ Continued programme with physio assistant support (As above)
9	■ Education session on stump care, changes in body image and discussion around prostheses. ■ Continued programme with physio assistant support (As above)
10	■ Completed joint assessment with Occupational Therapists to plan for discharge ■ Continued programme with physio assistant support (As above)

Patient made significant progress during his inpatient stay as demonstrated below:

Outcome Measure	Day 1	Day 10
BAMS	3/8	8/8
Transfers	Full hoist	Pivot transfer independently
Hip AROM (Degrees)	Flexion 10 Extension 60 Abduction 5	Flexion 30 Extension 110 Abduction 20
HADS	18	8

Discharge Plan

The patient was discharged home following an access visit by the Occupational Therapist. This visit identified the following:

■ He would not be able to access his bathroom on discharge in his wheelchair due to reduced turning space, therefore a glide-about commode would be provided

■ He required a food hamper from the chaplaincy team on discharge

■ He was strongly advised to sleep in his bed on discharge rather than in his chair

■ He was referred to the 'home from hospital service' in Sandwell to assist with shopping on discharge

■ He required a social worker referral for
- A package of care to assist with washing and dressing
- A key safe on his property for carer access

He was provided with a written physiotherapy document on discharge which detailed:

■ How to care for his stump

■ Care of his contralateral leg

■ Importance of quitting smoking

■ Importance of completing regular exercises (as per regime given)

■ Guidance on falls prevention

■ Psychological support that could be accessed via prosthetic limb centre

■ Information regarding his referral to local prosthetic limb centre

On discharge a 'Therapy Transfer Summary' document was completed and sent to Louise Tisdale (Physio) at The Maltings Prosthetic Limb Centre, Wolverhampton to hand the patient over to their care and provided information regarding his medical progress, physical and emotional progress and discharge plan.

This case has generated several reflections and learning points for our service. Firstly, the pre-op discussion we had with this gentleman was written up to a formal handout for use with future patients experiencing the same unease with the thought of amputation. It was created in line with BACPAR recommendations and we are finding the medics are asking us more regularly for involvement in these kinds of discussions. Also, the treating physiotherapist felt that this conversation built rapport early which aided the rehabilitation journey throughout its entirety. Secondly the post-op advice that we offer patients (stump care, contralateral leg care, smoking, falls, exercise and limb centre referrals) has also been written up into a formal advice sheet to be provided to patients on discharge. This was born from this gentleman and several others who demonstrated a lack of retention of important information disseminated to them during their inpatient stay. This was also bought to our attention recently by our physio colleagues at local prosthetic limb centres. The feedback on both handouts that we have received from patients, staff and peers has been very positive. Finally, the once weekly amputee class has only recently been reinstated as part of a service review we are undergoing. The benefits this gentleman conveyed to us from a social inclusion, emotional support and mood point of view have further demonstrated the necessity and importance of such a class alongside the physical outcome measures we gather (Barthel, MMS, EQ5D).

CASE STUDY

A TRANS-FEMORAL AMPUTATION FOR PATIENT WITH CRPS

Louise Tisdale,
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Complex Regional Pain Syndrome (CRPS) is a painful condition in a limb with symptoms described as sensory, motor, and autonomic also affecting the skin and bone. CRPS commonly follows injury to that limb but there is no relationship to the severity of the injury and in some cases there is no precipitating injury at all. The International Association for the Study of Pain (IASP) agreed on diagnostic criteria for reflex sympathetic dystrophy (RSD) and causalgia in 1994 and renamed them complex regional pain syndrome (CRPS) types I and II. Currently individuals without a confirmed nerve injury are classified as having CRPS-I (previously known as RSD). CRPS-II (previously known as causalgia) is when there is an associated, confirmed nerve injury.

The following describes the early pre prosthetic and prosthetic rehabilitation of a 20 year old female who underwent a Trans-femoral amputation following the development of CRPS 1 after an appendectomy. Whilst chronic abdominal pain is not uncommon after appendectomy, its development into CRPS 1 is rare.

Pre Amputation

Our patient was signposted to us prior to the amputation; the operating surgeon had sought advice from our local vascular team re who would follow the patient up post amputation and we took the opportunity to meet her and her family. A surgical date had been accepted in a Trust remote from home - the surgeon had offered an assessment after the family had contacted him directly having had had no surgical offer from Trusts closer to home. Amputation had been offered following psychological assessment and discussion with the amputee rehab service in the surgeon's Trust.

She had experienced some stomach, hip and groin pain for 5 years – this pain had deteriorated in the previous 12 months. The pain was aggravated by contact with bed sheets or water from the shower. Sensation of paraesthesia and ranges of freezing cold to burning in the limb were reported. Objectively she was unable to weight bear through the limb, unable to move the ankle and toes and reduced range of the knee, yet able to fully extend and abduct the hip (thank goodness). Mobilising with elbow crutches or an attendant propelled wheelchair. There was discolouration of the foot and lower leg and she could tolerate a sock but not a shoe. These signs and symptoms met with the Budapest criteria for a CRPS diagnosis . There were no issues with upper limb range of motion and power. The BLARt score was 8.

Our case had had to withdraw from an access to Public Services course in college- her wish to be a Police Officer challenged. In post op goal planning – a role in the Police Service continues as a goal alongside participating in foreign holidays, rifle shooting, partaking in sport both as a player and as an active supporter of her favourite football team.

The post op follow up and likely treatment plan was outlined, discussion re pain management and referral for a self-propelling wheelchair made. She was hoping for improved quality of life whilst accepting of the risk of persistent pain and different pain (Phantom limb pain).

Post Op

Some initial difficulties with residual limb pain were experienced but not her CRPS pain. Gabapentin, which she had been taking for some time pre amputation, was continued alongside Morphine Sulphate based medications and the addition of a Lidocaine patch – sited on her residual limb. The pain delayed her attending her appointments in their own vehicle because she needed to be brought downstairs by transport staff; until pain was under more control and confidence gained in coming down the stairs on her bottom facilitated by an early OT and Physiotherapy review at home to practice this.

A compression sock had been provided as an inpatient and this was tolerated well, but there was difficulty in donning this because of pain – she required assistance from mum. Exercises commenced as an inpatient were reviewed and progressed to ensure through range control of her hip and lumbo-pelvic movements in all directions.

A very steady progression of PPAM aid pressure testing was started – 4 sessions to reach 40mmHg non-weight bearing. Residual limb pain and phantom limb paraesthesia were "coped" with by pre PPAM aid upper limb bike use – the increased time of which was paced. The PPAM aid was used because of the presence of eschar on the suture line; around which emollient was used to encourage the lifting of the eschar so the suture line could be better visualised.

PPAM aid gait was achieved in the parallel bars; the distance achieved gradually increased in a paced way to avoid unexpected residual limb pain and paraesthesia increases. All sessions were preceded by use of the exercise bike. Smaller compression socks were provided as a result of reduction in oedema (she is now able to don this independently). The residual limb suture line was fully healed and the Femurett commenced with progression from SAKL setting to free knee and increased weight transference to the amputation side through the use of a walking stick in conjunction with 1 parallel bar. Again the number of lengths of parallel bars walked increased in a paced way and other activities, weight transference step ups, target practice, backward and side stepping, were added with care. The PPAM aid pressure test to Femurett free knee with 1 stick and 1 rail took almost 2 months to achieve but there was no concern re CRPS pain throughout.

Prosthetic Rehab

Having achieved free knee Femurett use, demonstrating excellent proprioception and hip and lumbo-pelvic range control during EWA use, prosthetic provision was commenced. Suspension through a TES belt, Endolite Multiflex foot and ankle and a polycentric knee with pneumatic swing phase control. The Otto Bock 3R78 was chosen as a light weight knee unit (our patient weighs just 36kg) giving stance phase stability whilst not asking "weight" transfer to the prosthesis to give that stability , but relying on good hip and lumbopelvic rotation and extension control and consistent placement of the prosthetic foot. This knee does not feature in the Westmarc knee guide – but the document was a useful resource in understanding the implications of Physiotherapy for this knee type.

Excellent progress has been made to date, the limb having been fitted at the end of January at the time of writing (1st March) our patient is walking independently with 2 sticks, has an excellent quality of gait, has taken the prosthesis home and is managing stairs at home with supervision.

Our immediate aims of treatment are now to progress to walking with 1 stick, increase the time in the prosthesis and distance walked whilst respecting the CRPS diagnosis. We will continue with some bed-based exercises whilst working on weight transference to the prosthesis through weight bearing and balance development exercises. An exercise bike has been bought for home to self-manage phantom limb symptoms when she is not attending the centre.

Reflections

Our case had been seen by another amputee rehabilitation service as part of the assessment process to give the go ahead to her Trans-femoral amputation. The RWT amputee rehab team has carried out a number of CRPS pre-amputation assessments where we were the first rehabilitation service to see the patient following their request to have an amputation. There is a big responsibility on the rehabilitation team to provide the patient with information to support the consent process.

Bodde et al (2014), Goebel et al (2018) and Schrier et al (2018) make recommendations for the assessment and planning for amputation of the CRPS-affected limb; services developing or updating their CRPS pre amputation strategy may find useful to review

It is widely accepted that amputation of a limb and its likely outcomes for CRPS are "tricky" to inform an individual about. There is little literature available to predict the outcomes of amputation and we often rely upon experiences of individuals with whom we have already had involvement however few they may be.

Some papers report disappointing results in terms of successful prosthetic provision. Others report persistent phantom limb pain, some recurrence of CRPS in the residual limb despite being able to use a prosthetic limb. However the majority of patients are reported to state that they would elect to have an amputation again in spite of the outcomes of persistent pain or prosthetic use (or lack of) Is this because the majority of patients who undergo amputation for CRPS have struggled to gain a diagnosis, travelled far and wide to find a surgeon who will undertake the procedure and may have paid for it themselves? Have they earned the right to be satisfied with the outcome even if it's different to what we would expect them to accept?

The rehabilitation of a patient who has had a CRPS limb amputated may take longer. Pacing treatment progressions is key.

More individuals are asking for amputation of their CRPS affected limbs? The SPARG data from 2016 records CRPS as the reason from amputation in 0.7% of cases – having not been listed as an isolated aetiology in previous reports. It will be of interest to note how this statistic changes in future reports.

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LITERATURE REVIEW

HINDFOOT AMPUTATIONS AND PROSTHETIC INTERVENTION

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Introduction

According to publications by the Scottish Physio Amputee Research Group (SPARG)[1-4], only 7 ankle disarticulation amputations were recorded from 2007 – 2015. This accounted for 0.1% of the overall incidence of amputation in Scotland. Comparatively, there were 3,760 transtibial amputations documented during the same period. While statistics indicate that conditions such as peripheral arterial disease and diabetes mellitus more often result in transtibial amputations, research has suggested that hindfoot amputations, including ankle disarticulation, remain a viable treatment option for many patients[5-17]. Hudson et al (2002) stated that amputation at the level of the ankle joint was a valuable but underused procedure for a variety of conditions[7]. Consequently, this research paper aimedto understand why hindfoot amputations were found to be so infrequent in modern surgical practice.

A literature review was performed to explore the peer-reviewed literature associated with three approaches of hindfoot amputation from Syme, Pirogoff and Boyd. Whilst some studies had previously examined the literature relating to Syme's and Pirogoff's amputations[16, 18, 19], no research had evaluated the effectiveness of all three hindfoot amputations. The objective was to examine the outcomes of hindfoot amputations. For this research paper outcomes were considered as:

- Surgical results of each amputation technique:
  - Number of amputation wounds healed
  - Complications related to the amputations
  - Rate of re-amputation
- Functional outcomes:
  - Leg length discrepancy (LLD)
  - Ability to weight-bear on the residual limb
  - Prosthetic ambulation
  - Prosthetic intervention

Methodology

A literature search was performed using the Cochrane Database, Medline, Science Direct, Embase, Web of Science and PubMed. A predetermined selection criteria was applied to studies found in the literature search to ensure that only peer-reviewed literature relevant to the research aims was included. Additional searches were performed through other sources e.g. Google Scholar, and literature not retrieved in the main database search was included.

Results

A total of 77 studies were included in this literature review. Of the studies identified which matched the selection criteria, 49 described the outcomes of Syme's ankle disarticulation, 12 studies discussed Pirogoff's amputation and a further 8 studies reported on Boyd's amputation. The outcomes of more than one of the amputation techniques were mentioned in 8 studies. There were also three published reviews of existing literature, 2 of these were on Syme's ankle disarticulation and 1 on Pirogoff's amputation. There were no previous reviews of the literature on Boyd's amputation.

Discussion

It was determined from research papers published in the past fifteen years, that problems secondary to diabetes mellitus such as; infection, ulceration and Charcot arthropathy, were the most frequent causes of amputation across the three hindfoot techniques. Despite the misconception that diabetes mellitus and poor vascularity are contraindications for amputation, there was evidence to suggest that each technique could achieve a successful outcome[5, 6, 8-17]. Yet, hindfoot amputations were not suitable for every patient. Several authors inferred that a positive correlation existed between predictors of success, for example; palpable pedal pulses, ankle-brachial indexes, transcutaneous oxygen pressure, total lymphocyte count and serum albumin[6-8, 11-17, 20-23]. It may, therefore, be indicated that hindfoot amputations are an appropriate surgical treatment, provided that preoperative predictors suggest a successful outcome can be achieved.

Similar results were found for wound healing, with a range of 76.9-100% for Syme's ankle disarticulation, 87.5-100% for Pirogoff's and 81.3-100% for Boyd's amputation in the adult population. In some studies, a failure at the primary healing stage was noted if there were any complications or delays in the healing process, whereas, in others, failure was simply when re-amputation to a more proximal level was required. Thus, the number of amputation wounds healed could not be used as an indicator of success and other factors were considered in evaluating the outcomes of hindfoot amputations.

Wound dehiscence, infection, ischaemia, ulceration and osteomyelitis accounted for the majority of complications linked with the hindfoot amputations in the past fifteen years. A similar pattern was proposed by Braaksma et al[18] after reviewing the literature on Syme's technique in the adult population. Heel pad migration was recorded in 8.3-10% of patients with ankle disarticulation[24, 25].

In this review, the re-amputation rate of Syme's amputation was found to be between 0-38.5%, similar to findings highlighted in previous reviews of 22% and 15.5% in the adult population[16, 18, 19]. The re-amputation rate for Pirogoff's amputation ranged from 0-16.7%, compared with 13.3% found in a previous review. Superior results were seen for Boyd's amputation with between 0-6.7% re-amputation in the adult population, however, it is worth taking into account that only 27 amputations were recorded and there was a lack of any previous reviews.

When considering the functional outcomes of hindfoot amputations, there were no restrictions to the date in which the research paper was published. The hindfoot amputation technique with the most functionality was unclear; while Pirogoff's and Boyd's amputations may provide a more efficient gait pattern without a prosthesis, there would be a greater challenge in selecting a prosthetic foot with a suitable build height. Even though the LLD for Syme's was not quantified in this review, the increased anatomical loss was described in several studies[26-28]. It could, therefore, be debated whether Syme's amputation is a more practical solution because a prosthetic foot can be more easily fitted.

One of the main advantages of hindfoot amputations is the ability to weight-bear through the end of the residual limb. This can become useful, "particularly in emergencies and when getting out of bed to go to the toilet"[29]. It was found that 91.3-100% of patients with Boyd's amputation, 70-100% with Pirogoff's amputation and 50-100% with Syme's amputation were able to weight-bear on their residuum. It was also discovered that for each amputation technique a significant number of patients were fitted and later able to ambulate with a prosthesis. However, there were far fewer patients in the samples of Pirogoff's (11) and Boyd's (2) amputations when compared to Syme's ankle disarticulation (254).

In the research papers considered there were a wide variety of prosthetic interventions that patients with hindfoot amputations were prescribed. Amputations performed within the child population were related to congenital abnormalities, such as proximal focal femoral deficiency (PFFD), and were often prescribed Trans-femoral-style prostheses with knee joints[30-35]. For patients that underwent amputation at a later stage in anatomical development, the prosthetic intervention was purposefully designed to accommodate the bulbous residual limb and allow for easier donning and doffing. The prosthetic socket designs most frequently prescribedwere; Canadian-type prostheses[7, 36-38], prostheses with medial panels/windows[7, 8, 29, 34, 37, 39, 40], prostheses with push-fit liners[7, 21, 29] and clamshell prostheses[20, 21, 41](Figures 1-2 above). The prosthetic interventions output from this review were concurrent with the standards published in the 'Prosthetics Best Practice Guidelines' (2011)[42].

In a recent comparative literature review of transtibial and Syme's amputations, Walker [43]found that there was a reduced mortality rate following Syme's compared with transtibial amputations. Similar views were shared by Finkler et al (2017) [44]when investigating amputations in the diabetic population. Walker[43]also found that although Syme's amputation posed a greater risk of re-amputation in the past, the latest research had provided evidence to suggest this has been significantly reduced, with similar results to those found in this review of papers published in the past fifteen years.

It has been said, however, that with further amputation, patients will be more exposed to complications associated with anaesthesia, surgical amputation and the length of time spent in a hospital. Therefore, a transtibial amputation maybe a more logicaloption because of the reduced risk of re-amputation[45].

Several papers suggested that transtibial amputations were more detrimental to mobility when compared to hindfoot amputations. Reid et al [46] used outcome measures to investigate motion in adults with lower-limb amputations. They discovered in a six-minute walking test, the mean distance for participants with a transtibial amputation was 383.1 metres compared to 503.4 metres for the participants with Syme's disarticulation. Similar results were found in a study by Waters et al [47]when exploring energy efficiency. It was determined that participants with Syme's walked with superior velocity, cadence and stride length, and with a reduced metabolic cost of ambulation compared to similar participants with transtibial amputations [13, 37, 47].

Conclusion

To summarise, hindfoot amputations remain a viable treatment option, with evidence suggesting that positive surgical outcomes can often be achieved for a diverse array of aetiologies. Similar rates of re-amputation were found in previous literature reviews on Syme's and Pirogoff's amputations in the adult population, with wound dehiscence, infection and necrosis accounting for the most common complications. It was determined that amputation techniques from Syme, Pirogoff and Boyd offer unique functional advantages. For instance, it was speculated that Syme's ankle disarticulation may provide more space to fit a prosthetic foot, whereas a more energy-efficient gait pattern may be achieved following Pirogoff's or Boyd's amputations when ambulating without a prosthesis. Several studies found that participants were able to walk with an increased stride length, cadence, velocity and improved energy-efficiency. Despite this, there is evidence to suggest that Syme's ankle disarticulation poses a greater risk of re-amputation in comparison to transtibial amputation. It could, therefore, be said that the infrequency of hindfoot amputations in surgical practice is related to the associated risks of undergoing further amputation if a successful outcome can be achieved with a single amputation at transtibial level.

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THE PERCEPTION OF BODY IMAGE AND USE OF MIRRORS IN AMPUTEE REHABILITATION

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What makes you, you? Is it what you have achieved professionally through your work? Is it your personality and characteristics? Is it how you dress or your physical appearance? Maybe it is all of that, in varying proportions. For amputees, therefore, it can vary from person to person how their amputation impacts their sense of identity based upon how they formed that identity. Of course, that's simplistic as other factors such as mental health and cultural ideas can impact it too, but it is an interesting and hugely complex notion. Especially when considered in the context of how frequently mirrors are used in gait re-education for amputee rehabilitation.

The world we live in today is very focused on aesthetics, especially with the rise of social media. Our perception of beauty and what we want to look like has a huge impact on not only our physical condition but our psychological well-being and social life too. If you google "amputee" the first images that come up are depictions of people performing at the higher level of functioning and sport, mainly with a prosthesis, and creating an ideal and a very high standard of achievement to try to match or compare yourself to.

So, what is body image?

Holzer et al. (2014) theorized that the main pillars of the perception of someone's appearance are body image and self-esteem. Body image is a person's individual perception of his/her own body and is a multidimensional dynamic process that can be affected by internal factors such as age, sex, physical condition as well as external factors such as social or environmental influences. Self-esteem is a positive or negative orientation toward oneself: an overall evaluation of one's worth or value. It encompasses beliefs and emotions such as triumph, despair, pride and shame. Body image disturbance, therefore, is the result of social values emphasizing vitality, physical appearance and fitness. So, for amputees, following their surgery they have to adapt physically, socially and psychologically to alterations in structure, function and body image. Holzer et al. (2014) discussed in their study that some people who have had an amputation may see their body as being a failure, because it does not match what society depicts it should look like.

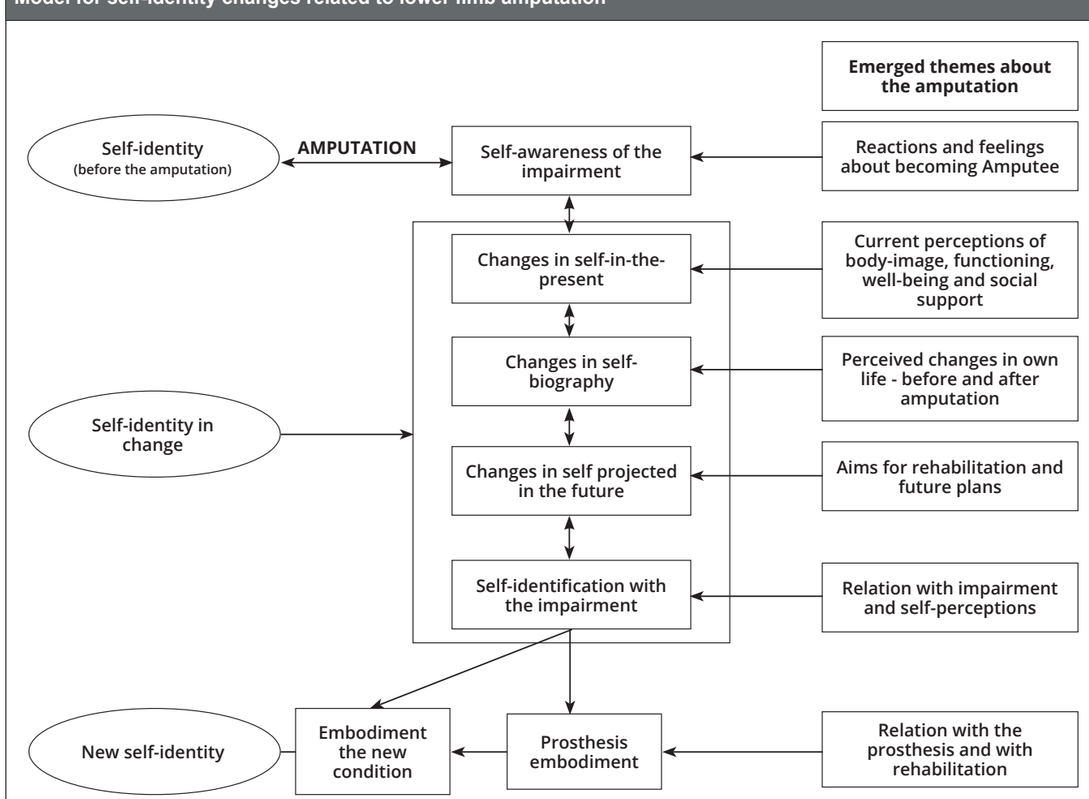
There has been quite a lot of research into body image and amputees, although there are a limited number studies in the past 10 years. From the literature, however, key themes can be identified: meanings of being an amputee, identity change, meanings of using a prosthesis, coping with the loss, relation with own body, relations with the prosthesis and embodiment of an artificial limb, phantom pain, feelings of vulnerability. Transformations in body image and the embodiment of the prosthesis are two important milestones of the adjustment process, emphasising how important this concept of body image is in the rehabilitation process following an amputation (Senra et al. 2011). Senra et al. also created a model of identity change for people who have had a lower limb amputation which they state points to clues concerning the adjustment process (Figure 1). Body image is part of the very initial identity change process. A recognised limitation of this study is that most of their participants had suffered an amputation due to vascular disease. So, this may have to be generalised with caution to individuals who have lost a limb due to trauma or another cause, whose experience may be slightly different.

Older studies suggested there was a relationship between a negative body image and psychological maladjustment to a leg amputation. A very old study in 1994 by Kudar, found that when they asked amputees to 'draw-a-person', those who were considered to be poorly adjusted to their amputation drew the limb that corresponded to the limb they were missing as larger or more exaggerated than individuals who were well adjusted. This does tie in with a more recent study in 2008 by Mayer et al. looking into body schema and body awareness of amputees. In this paper the authors discussed that individuals, and this accounts for all people not just amputees, will focus disproportionately more on specific body areas than others. For example, people

who participate in weight lifting and judo showed more of a focus on their arms, which can be related to their chosen sport. For amputees, they found that injured body part, as they refer to it, becomes part of the structure of body awareness. It becomes a point of reference because of the effect of the injury – loss – and consequently hinders motions and requires adaptations to the environment them. Consequently, they have a heightened awareness of this body part. It is no surprise, therefore, that body image has been found to be an independent predictor of depression, quality of life and also prosthesis ratings (Murray and Fox 2002).

It has been suggested a that the use of a prosthesis can not only restore a person's physical appearance to make it closer to "normal" but also, help to repair a persons damaged body image. Murray and Fox's 2002 study into body image and prosthesis satisfaction found that a higher level of satisfaction with a prosthesis was correlated with lower levels of body image disturbance. This satisfaction was divided into four sub categories of: total satisfaction, functional satisfaction, aesthetic satisfaction and weight satisfaction. In the past, it has been thought that women placed more importance on the aesthetic part of the prosthesis to retain a feminine body image, whilst this study did in part support that theory, it also concluded that women, like men, also found the functional satisfaction an important factor. But interestingly, they found that men find their prosthetic to be less aesthetically pleasing over time. A study investigating upper limb prosthesis use with body image and found that participants reported an ongoing awareness of difference in appearance and ability (Saradjian et al. 2009). Consequently, they were highly invested in portraying a normal appearance that served to maintain a normal identity and offset a self-image as disfigured or disabled. Prostheses played an integral role in this process through facilitating participants' form, function and body image, although the emphasis of which varied between individuals. While not necessarily 'replacing' the missing part, for participants, prostheses helped to restore a person's body image through being functionally useful and cosmetically acceptable, even becoming integrated to participants' body image.

Model for self-identity changes related to lower limb amputation



The use of mirrors in rehabilitation

Freysteinson et al.'s (2017) recent study explored the experience of amputees viewing themselves in the mirror. For their study mirror viewing was defined as viewing one's own body, including the missing limb in various sized mirrors. It was not mirror box therapy. The incentive for this study was based on the outcome measure of the Amputee Body Image Scale, which has one question related to mirror viewing: "I avoid looking into a full-length mirror in order not to see my prosthesis". They argued that this question does not fully capture the body image disturbances that appear in some individuals who have had an amputation. They used interviews with questions specific to viewing oneself in a mirror in a focus group setting.

They found that the act of viewing self in a mirror at any time after an amputation had 3 key elements:

- Decision
- Seeing self
- Consent

There are 4 key reasons to decide to view oneself in a mirror: curiosity, appearance, care of incision or residual limb and gait/posture assessment. In terms of seeing self, when you look in the mirror you see through your mind's eye and there is an understanding of self and that initial understanding is accompanied by powerful emotions. Consent to what you see in the mirror they argue can range from devastation to acceptance. They also reported that there was a mirror trajectory of shock, anguish, recognising self and accepting a new normal. For those that experienced mirror anguish regarding an initial mirror viewing feelings of revulsion, devastation, depression, discouragement, sadness and hopelessness were all reported.

In terms of recognising self, all the patients reported that they felt it was essential to be able to view oneself in a full-length mirror to solidify the reality of a lost limb and fully understand the change to one's body image. The findings reported that initially many of the participants focused solely on the missing limb and referred to the missing limb as 'it' or 'that'. This supports the earlier notion of a body schema and a heightened awareness on the missing limb. However, this study found that with focus participants were able to start to view the whole body in the mirror. The authors also investigated the use of the mirror in gait training and how it affects patients. They concluded that the mirror may act as a motivator or reinforcement and can be useful in highlighting gait deviations to patients. They also found that using a small mirror can be helpful for patients to monitor their own residual limb health by allowing them see it.

In conclusion, having a greater awareness of the potential body image disturbance that a patient may be experiencing can help physiotherapists not only form a better therapeutic relationship with the patient but also provide more holistic treatment. It is of great importance that it is recognised that viewing oneself in a mirror for the first time, and perhaps for a long period afterwards, following an amputation can be an extremely traumatic experience for a patient and a process which should be carefully planned and discussed with a patient before it is implemented.

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INTERVIEW
ANDREW GREGORY

After a motorcycle accident 15 years ago and following multiple operations, Andrew had a below-knee amputation in 2018. He is a pole dancer, artist, model and the gold medal winner at the 2019 International Pole Sports Federation world championships.

In contact with our PRO Hayley Crane, Andrew kindly answered questions sent by our members:

How did you get involved in pole sports?

I discovered pole before my amputation: I was looking for a fitness class I could do with my leg in the condition it was in. I came across antigravity yoga which was a cross between yoga and aerial skills- it was perfect. This was taught in a studio that also teaches pole. After a while I decided to try it, especially when a new teacher with one arm started work there!!!

My leg was deteriorating as time passed and eventually, I took the decision to amputate. I knew my day to day life would be better but wasn't sure how it would affect my pole training. I needn't have worried. It took quite a while to readjust to train without my leg, but part of the fun has been finding new ways to do tricks that may well be unique to me.

What is the best thing about competing at such a high level?

Competing has added a whole new layer to my training. I decided I wanted to aim high and go for para-pole world champion. First qualifying to represent the British team, then taking gold at the world championships. I was also awarded male athlete of the year (from 27 countries) this meant even more to me than anything else! I love being able to show what can be achieved by people with disabilities, especially on the world stage. I hope to inspire others to find something that works for their bodies, abled or disabled

Would you/do you recommend pole sports to other amputees?

I think pole, as well as other aerial disciplines, work well for amputees: it's a great form of exercise and with the patience of the right teacher a lot can be achieved. I am now a qualified teacher, teaching at the studio I train at.

Has your sport helped your rehabilitation?

I'm convinced my training helped with the healing process. I was back training 11 days after the operation. I wouldn't recommend that but I couldn't sit around and do nothing. I trained very carefully and with a lot of support: it definitely helped my state of mind to keep moving. My swelling reduced very quickly, the operation site healed really well and I had my first prosthetic after six weeks.

Have you had any physiotherapy input with your pole sports?

I've never had any physiotherapy input with my training, I'm pretty sure most would freak out if they could see what I'm doing with my residual limb and the pressures I'm putting my prosthetic through. I wear out liners very quickly!!!

Can you tell us about your current prosthetic components?

I'm currently using the Ossur x5 vacuum system. I have 3 prosthetics, one with a Maverick foot, one with an Endolite blade, and I've just received another with an Ossur flex-run blade. I like my prosthetics to look like prosthetics, the blades bring my favourite!!!!

What is your favourite amputee life hack?

My top amputee life hack? I leave my leg right next to my bed so when I get up in the night I can't possibly stand up without standing on it. That way I never forget I have a missing limb and so far haven't had a fall!!!

Find Andrew on Instagram at https://www.instagram.com/tattoo_pole_boy

IMPLEMENTING COMMUNITY-BASED EXERCISE FOR LOWER LIMB AMPUTEES
THE EXPERIENCE OF THE KEEP MOVING PROGRAMME IN HULL

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Background

People with a lower limb amputation fall more frequently than age-matched, able-bodied adults. Miller et al. (2001) reported that 52% of amputees experienced at least one fall in a year, with 75% of these falling two or more times (Miller, Speechley, & Deathe, 2001). These numbers likely still under-represent the problem as many falls go unreported. Falls and their consequences, such as fear of falling, activity avoidance and a more sedentary lifestyle, negatively affect quality of life, and can present a significant socioeconomic burden.

The benefits of exercise, for physical and mental health and well-being, are well known. Exercise can also be important for reducing falls and their related consequences. In older (> 60 years) able-bodied adults, exercise programmes designed to prevent falls also decreased injuries and the need for medical care (El-Khoury, Cassou, Charles, & Dargent-Molina, 2013). However, there is little research investigating the effects of exercise for people who have had a lower limb amputation. Some studies have exclusively used physically active participants and/or with a traumatic amputation (Corio, Troiano, & Magel, 2010; Darter, Nielsen, Yack, & Janz, 2013; Matjacic & Burger, 2003; Nolan, 2012) or required participants to have access to a treadmill at home (Darter et al., 2013). Nevertheless, their findings revealed gait, balance and strength benefits, including increased self-selected and maximal walking speeds. Yet the results are also difficult to generalise to most amputees because of their exclusively traumatic population or the necessary equipment involved in their exercise intervention. Our recent randomised controlled trial demonstrated that a 12-week personalised exercise programme for a heterogeneous group of lower limb amputees significantly reduced falls, even at one-year follow-up (Schafer, Perry, & Vanicek, 2018). Participants in the exercise group also walked significantly more quickly (increase of 0.21 m/s) and exhibited improved gait biomechanics after the exercise intervention. The results from these studies suggest exercise has positive effects for falls prevention and daily activities for people with a lower limb amputation.

Poor access to exercise facilities, inappropriate instruction, and lack of motivation are known barriers to participation in physical activity for people living with physical disabilities (Bragaru et al., 2013). Individuals with a lower limb amputation also have musculoskeletal limitations unique to their condition, such as muscle atrophy and/or tightness, altered balance, and problems with prosthetic fit, often in addition to multiple health comorbidities. Therefore, any future exercise programme must acknowledge these limitations in order to be successful. In the Hull and East Riding of Yorkshire area, there was no community-based exercise programme for people following their prosthetic rehabilitation phase. Following on from the success of our randomised controlled trial, we decided to implement a novel exercise programme, called "KEEP MOVING" at the University of Hull. The aim of KEEP MOVING was to reduce falls, improve mobility and quality of life for all adults following lower limb loss.

Community-exercise programme delivery

Raising awareness of KEEP MOVING was our first challenge. All patients who visited the Artificial Limb Unit in Hull were made aware of the programme through posters, leaflets and word-of-mouth. Patients who were interested were asked to complete a referral form, designed as a physical activity readiness questionnaire (PAR Q; short version) asking them to self-report any medical conditions and confirm their commitment to exercise, and then to contact the University of Hull Sports Centre to arrange for their first visit. All adults, with any level and cause of amputation, were eligible to participate as long as they had no medical contraindication to exercise. Wheelchair users could also be accommodated for.

KEEP MOVING was initially offered free of charge, as part of the University of Hull's commitment as an anchor-institution, to enhance and promote healthcare in the local region and beyond. The cost for providing one hour of supervised group exercise is approximately £25-30. The programme has been

ongoing since July 2019 and is delivered twice weekly for one hour on weekday mornings at the Sports Centre. Free and ample car parking is available, and local buses service the route. Each session is delivered by one qualified fitness instructor (e.g., level 4 GP referral, strength and conditioning, fitness instructor and personal trainer qualifications) and two to four volunteer 2nd and 3rd year undergraduate students on a BSc (Hons) Sports Rehabilitation degree programme.

In order to assess each participant's ability, and monitor their progress, simple physical assessments are measured at baseline and every four weeks thereafter. The assessments include the following outcomes: 2-minute walk distance, Timed Up and Go time, number of sit-to-stands in 30 seconds, and time to complete a 10 m tandem walk task. Exercises are personalised according to each participant's physical capacity and goals, and supervised by an instructor or volunteer as required. During the session, participants move around the Sports Centre, learning to use standard gym equipment such as motorised treadmills, stationary cycles, elliptical trainers, and upper body ergometers. Strengthening and balance exercises involve resistance machines and free weights, resistance bands, medicine balls, Swiss and Bosu balls, or simply body weight during activities of daily living (i.e., sit-to-stand, getting up from the floor, reaching up and down, shifting body weight during standing tasks). These are sometimes performed in a room separate to the main gym hall, such as a strength and conditioning suite or an exercise studio. The programme has taught participants how to use the different equipment confidently within a gym environment.

Participant feedback

Participants on the KEEP MOVING programme have gained significant physical, mental and social rewards from their involvement. These are best captured by the following thoughts from one of our participants, when interviewed on the BBC Radio Humberside drive time show in February 2020:

"It's been great, it's a social group of similar people who have got the similar sort of problems. One of the things you find when this happens, you can become a bit cut off and isolated. Mentally, I think it's a huge benefit as well. For myself, predominantly, it's mentally. I was depressed, felt cut off because I had moved to a house in the country with no neighbours so I've now got a social group that I mix with. We've got the WhatsApp group, so there are messages flicking backwards and forwards. There's just all round, general improvements in all aspects [of my life]."

"How quick has that transformation been, to see those changes start to happen?"

"I think it's quite quick. I joined later, because I travel from Lincoln to here, because there's nothing where I live. So I've been doing it for five weeks. I can walk a long way, but what I found is that you become fit to walk, and that's not necessarily all you need to do, because I've rediscovered some muscles I didn't think I had before. I think my all-round level of fitness has improved. There are still lots things that are affected by general fitness, and one of the big things with this is that it will cut down the number of falls that you have, because it's predominantly the core muscles that we're trying to improve, which affect your balance."

Some of the KEEP MOVING participants and student volunteers. Still smiling at the end of the day's session.

Implementing an exercise programme in your area

University sports centres could provide the ideal environment in which to offer a bespoke exercise programme. They are usually accessible by public transport, may be less crowded than council-run leisure centres, and many offer gym memberships at reduced costs compared to private clubs. The success of KEEP MOVING in Hull is very encouraging. We have demonstrated that a supervised exercise programme offers meaningful physical and mental benefits to its participants, and that it can be delivered at relatively low cost within the community. Our participants are willing to pay a monthly membership cost (~£25) to guarantee its future. Students enrolled on Sports Science and/or Rehabilitation or similar degree programmes could volunteer to help teach the programme, fulfilling learning outcomes and/or hours towards their work placement, or similar modules. It also gives them the valuable opportunity to gain experience of working with groups with different physical abilities. Our student volunteers, who are working towards their BASRaT (British Association of Sports Rehabilitators and Trainers) graduate membership, have contributed to the design of the exercise programme, leading some sessions. They have learned practical skills to prepare them for future careers in physiotherapy, trauma rehabilitation, and potentially the Ministry of Defence. The sense of fulfilment that students gain is meaningful. In their words: *"The [participants] are incredibly self-motivated and have such a positive attitude that has influenced me in both academic and non-academic ways"*, and *"The results we see at the end of each session have been astounding, not only the physical and functional ability of the participants has improved, but also their confidence".*

Final thoughts

Exercising within the community can make people feel able, not dis-abled. Bringing together a group of people, with a similar life experience, to achieve a common goal (physical and mental well-being) can prove very fulfilling for them and others around them (e.g., participants' family members, fitness instructors, and volunteer students).

As I write this article, at home, under lockdown because of COVID-19, the KEEP MOVING WhatsApp group have been sending frequent messages of support to each other. Participants have organised weekly Skype calls to stay in touch and our instructors have produced a home-based exercise programme for everyone to do in the safety of their own home (with the option of some Skype video-based exercise). At this time, in the absence of physical contact, I still get a real sense of camaraderie and support that did not exist a year ago. And it all started with the desire to exercise and KEEP MOVING.

If you are interested in implementing a similar programme, please get in touch with me. I would like to share our experience and explore ways of delivering a bespoke exercise programme in your area.

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BOOK REVIEW

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'Landing On My Feet – A Personal Story About Overcoming the Mental and Physical Journey of Amputation'

by Lasse Masden

The book is available as a Kindle Edition ASIN: B07VQSPYRS https://www.amazon.co.uk/gp/product/B07VQSPYRS/ref=dbs_a_def_rwt_hsch_vapi_taft_p1_i0

The author can also be followed on Instagram https://www.instagram.com/landingonmyfeet where he posts pictures, videos, tips and tricks.

This book is as a personal story told by a man who underwent a Trans-femoral amputation in 2005 aged 14 following a road traffic collision. It details his life briefly before the accident, the accident itself including thoughts and feelings in the immediate aftermath and then his journey to getting and adapting to using a prosthesis. Through this book he aims to inspire patients as they face an amputation or alter habits for the better for the established amputee: it also gives a valuable insight for the professional.

He was the first gymnast in the world to be a power tumbler with an above knee prosthesis and went to a school for gymnasts post-amputation, training with the Paralympic Team.

Since his amputation the author has been a motivational speaker for students, assisted patients and families in similar situations pre- and post-operatively and participated in training other amputees to "get back on their feet".

The book is divided into two distinct sections. The first deals with thoughts and feelings following an amputation and focuses on the importance of a positive attitude and strategies to achieve this including meditation and goal setting. It signposts readers to apps and information that the author has found to be of benefit to himself in the hope that other readers in a similar situation will find the process easier. He recommends goals are set in a backward fashion using a 12 step approach starting with the ultimate goal for example being able to run and then breaking this down until a realistic goal for the specific week is achieved. This is not something we would usually do but since reading this I have tried it and it has proven to be incredibly effective.

The second section goes on to detail the rehab process giving invaluable advice such as "find a strict physiotherapist who will not listen to your excuses and self-pity....do not quit your training if you do you will suck at walking and will regret it for the rest of your life". From now on I think I will just direct any patients who don't agree with our methods to this page.

There is a very positive tone throughout, the author is someone who obviously has a lot of strength and determination but he does also make it clear that his journey has not been easy and that he continues to struggle at times, recognising these as "downward spirals" he has developed strategies to accept and deal with these in order to maintain a happy and fulfilled life. Interestingly the author does say that it is only recently that he has become aware of the part his family, in his case his father, played in the rehab process and, as we all know working in this field, family engagement is essential for successful outcomes.

One point to note is that the book is aimed mainly at traumatic, not vascular amputees as some of the advice may not always be appropriate for all patient groups for example hopping with crutches...so I would advise caution before letting some patients loose with this book.

This is an inspirational and motivational read packed full of practical advice from someone with first-hand experience of traumatic amputation. I would highly recommend this to therapists and patients: there are some parts of the book that would be relevant to every one of them from the high-level athlete to a patient requiring a hoist to transfer.

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