

4th Evidence Based Physical Therapy Conference,

Imperial College London,

May 10th 2008,

Aimed primarily at physiotherapists, I attended this expensive conference as usual, to see what new developments in the world of therapy might help inform my practice not only as a physiotherapist but as a massage therapist and teacher also. It was quite a challenging day, with much of the material focusing on the nature of research. However, it was worth attending for I picked up some great tips from the last speaker who described how to treat rotator cuff tears, and enjoyed very amusing lectures from the sports nutritionist and consultant neurologist. I attended eight lectures in all:

1. Treatments for common musculoskeletal conditions: current state of play and what is on the horizon?
2. Food supplements for patients with musculoskeletal conditions. Does supplementation improve outcome?
3. Joint manipulation. Is it all its 'cracked' up to be?
4. Outcome Measures in Low Back Pain: A Pilot Study
5. The Neurological Examination: is it reliable? Is it valid?
6. Achilles tendinopathy. Understanding, treating and preventing the condition
7. Full thickness tears of the rotator cuff: To treat or not to treat?
8. Case study of client with rotator cuff tear

Based on the Conference Abstracts here is a summary of each of the eight lectures. Note that whilst I have shortened and paraphrased certain sections to make this material more accessible to Massage and Sports Massage Therapists, the majority of the text is from the lecturers' own notes, provided in the Conference Abstracts. My own comments are also included.

1. Treatments for common musculoskeletal conditions: current state of play and what is on the horizon?

Dr Nadine Foster DPhil BSc(Hons) PCGE MCSP, Senior Lecturer and DoH Primary Care Career Scientist arc Centre for Primary Care Musculoskeletal Research, Keele University
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Preventing common musculoskeletal problems such as low back pain has proven difficult. Randomised controlled trials (RCT) are a good way to measure the effects of different interventions. Such trials reveal that physiotherapy interventions provide only moderate benefits for patients with musculoskeletal problems. However, such findings do not match the experiences of physiotherapy practitioners who see individual patients improve, leading practitioners to believe in the effectiveness of their physiotherapy



treatments. Dr Foster put forward suggestions as to why the trials did not reflect the experiences of practitioners. This included:

- the natural history of common musculoskeletal problems
- the heterogeneity of patients within trials making it difficult to capture true treatment effects and/or

inadequate identification of important patient subgroups leading to insufficient targeting or individualisation of treatments.

- There may be overestimation of the specific effects of interventions on individual patients and underestimation of the contribution of the non-specific effects of the interventions.

- despite using a core set of recommended outcome measures, such trials may fail to capture what is important to patients.

2. Food supplements for patients with musculoskeletal conditions. Does supplementation improve outcome?

Professor Ron Maughan, School of Sport and Exercise Sciences, Loughborough University, UK

An interesting lecture in which we were shown amusing slides of bodybuilders miraculously turning from 'weeds' to muscle men having supposedly taken nutritional supplements. Of course the audience knew a fair deal about supplementation and what I found particularly interesting was the fact that many athletes do not know what they are taking when they take supplements, as the supplements often include many undisclosed chemicals. The horrors of what is actually in the supplement 'spirulina' were revealed (it's high vit B content unsurprising and perhaps due to the fact that it gets contaminated with animal and human faeces).

Physical therapy in the absence of appropriate nutrition is less effective than it could otherwise be if nutritional supplements are used for some muscular conditions. For the normal renewal and repair of tissues the body needs about 0.6 grams of protein per kilogram of body mass, or about 40 grams per day for an average 70 kg individual. An adequate protein intake is also essential after training to facilitate repair and allow adaptations to take place. Athletes mistakenly believe that increasing protein intake will help. However, this only helps if the normal diet is inadequate.

The manufacture of specific proteins lead to local adaptations following training activity. Such synthesis is stimulated for some time after exercise. Six g of essential amino acids ingested after an exercise stimulus (either in supplement form or as foods containing whole proteins) can increase the rate of protein synthesis in the exercise muscles in the hours after exercise without affecting the rate of protein degradation, thus improving muscle protein balance.

Athletes seeking to build and repair skeletal muscle are attracted by a wide variety of dietary supplements. Importantly, in most cases, there is no clinical support (in humans) for the effects claimed by these supplements.

Supplements sold to athletes with the aim of promoting adaptation to training leading to improved performance are: Boron, Branched chain amino acids, Chromium, Chrysin, Colostrum , Creatine, Hydroxymethylbutyrate (HMB), Ornithine alphaketoglutarate, Tribulus terrestris, Vanadium and Zinc.



There is some evidence to support the effect of creatine, some (but not strongly supportive), for HMB, and little or no evidence for most of the others.

Creatine can help by improving anaerobic energy production in muscle and may also help athletes by promoting protein synthesis. This may mean that creatine is effective in supporting training and enhancing adaptations to training. 95% of the body's creatine is found in skeletal muscle: about two thirds is in the form of creatine phosphate and the remainder is free of creatine. (that's why meat is a good source of creatine in the diet) Degradation to creatinine which is excreted occurs at a rate of about 1.6% per day (2 g/d). The non-vegetarian diet provides about 1 g/d. The remainder of the requirement can be synthesised from amino acids (methionine, arginine and glycine)

3. Joint manipulation. Is it all its 'cracked' up to be?

David Evans PhD, BSc(Hons) Ost ©, School of Health and Rehabilitation, Keele University, Research Centre, British School of Osteopathy. Email: dwe@backpainclinic.co.uk

I really enjoyed this lecture which included a video clip of the comedian Eddy Izzard describing his experiences of chiropractic. The use of passive joint motion as a therapeutic intervention is used by chiropractors, osteopaths and musculoskeletal physiotherapists. Evidence suggests that spinal manipulation generally has a positive effect in the treatment of low back pain. The safety of cervical spine manipulation remains debatable.

The question many therapists ask is, "what IS that crack sound?" This is the cavitation of bubbles in synovial fluid which rapidly collapse due to a local reduction in pressure, a consequence of 'gapping' the joint. Such cavitation does not occur during physiological movement (ie as rather than to passive, therapeutic movements). The author explained tests that had been performed on cadavers and on a real subject where the pressure within the intervertebral discs was measured. Interestingly, the pressure was often higher in the joint NOT being manipulated. Pressure in ALL discs went up during manipulation. The author explained that pressure often goes up to a greater extent than during manipulation, during normal, everyday physiological tasks.

4. Outcome Measures in Low Back Pain: A Pilot Study

Elaine Maughan MSc MMACP MCSP. Head of Musculoskeletal Physiotherapy, Lambeth PCT, London, UK

Whilst appreciating the necessity for this kind of study, I found it particularly difficult to get excited about this lecture. I guess you really need to be 'into' your research to want to investigate best research methods. When I'm warming soup I don't actually care whether I use gas, electricity or a friend's microwave. It would be fun to cook it on an open campfire too. But in the end, all I care about is having warm soup. I feel that way about statistical methods. Lets let the statisticians do what they do best. When I next to research, probably for the PhD, I'll hire the best research methodologist money can buy. I'll pay out my research protocol, take advice, and make necessary amendment. After all, it's a specialism and we can't all be specialist in everything. That's surely the whole point? Massage therapists and physiotherapists on the whole, tend to want to work with people and not mathematical models. I support the need for an evidence based approach to care. Research is essential. Generally, we're not great at research. Researchers are great at research, but are perhaps not so good at individual therapeutic interventions.



Paramount to the process of scientific study. If I have the money to build myself a brand new house I would probably spend a long time coming up with references and ideas and then approach an architect and building firm to design and build it for me, making sure that the crux of my desires were satisfied. I'd take on board their comments, change a flat roof for a sloping roof if necessary, lower a wall by a foot or so, make the garden round not elliptical, but I wouldn't actually try to draw up the plans and mix the concrete. I just hate the underlying emphasis that we must all understand and carry out research ourselves, its so depressing. I value the fact that there are people who do get excited by research methods. Let's not deprive them of this opportunity.

Here's the authors summary of this lecture:

"The current emphasis in healthcare is to show long-term clinical and cost effectiveness of therapeutic interventions. Randomised control trials (RCTs) and evidence reviews of different treatment approaches for LBP rarely show more than a small to moderate improvement from treatment. One possible explanation for small to moderate treatment effects seen in RCTs is the lack of consensus on what constitutes a 'successful' outcome, how an important improvement has been defined and which specific outcome measures best measure this. A clear understanding of score changes in patient-based outcome measures is essential for clinicians to measure treatment effect in chronic low back pain (LBP). Responsiveness refers to the ability of a measurement tool to detect real or important change over time when it has occurred (and equally when it has not occurred) in the concept being measured (Terwee, 2003). This has led to a search for the elusive 'minimally clinically important difference' (MCID) in the scores of these measures, which ideally would identify when an individual or a group is 'better' above and beyond change due to measurement error (Hagg, 2003). Methods of exploring responsiveness can be classified either as those that measure change alone (distribution-based methods) or those that measure clinically meaningful change (anchor-based methods). The purpose of this pilot study was to compare the measurement properties of the Numerical Rating Scale (NRS), Roland Morris Disability Questionnaire (RMDQ), Oswestry Disability Index (ODI), Pain Self-Efficacy Questionnaire (PSEQ) and the Patient Specific Functional Scale (PSFS) to identify both clinical and statistical score changes in outcome measures used in LBP that best represent a clinical improvement. Forty eight patients with chronic LBP referred to a back exercise and education class participated in this study. The five questionnaires were administered initially and after the five week back class intervention. Also at five weeks, both patient and clinician completed a Global Impression of Change (GIC) as a reflection of meaningful change in patient status. Score changes in the five different questionnaires were subjected to both distribution and anchor based methods: standard error of measurement (SEM) and receiver operating characteristic (ROC) methods to define clinical improvement. From these methods, the smallest detectable change (SDC) defined as the minimal amount of change required between two points in time to be confident that a patient had truly changed beyond measurement error and the minimal clinically important difference (MCID) defined as the smallest difference that patients and clinicians perceive to be worthwhile are presented for each instrument. Overall the PSFS was the most consistent measure to detect clinically important change beyond measurement error in patients with chronic LBP."

5. The Neurological Examination: is it reliable? Is it valid?

Dr Mark Roberts, Consultant in Neurology, Greater Manchester Neurosciences Centre, Humphrey Booth Building, Hope Hospital, Stott Lane, Manchester M6 8HD Email: markrob@doctors.org.uk

I loved this lecture. It was really amusing. Dr Roberts demonstrated many of the gait patterns characteristic of the neurological pathologies he was describing, with sensitivity and humour. It brought the entire lecture to life. It brought back to me the reflection I have had time and time again, that it is easy to see why some people make consultants: they are inherently great at what they do and the best of them are humble and humorous.



At the end of the lecture someone asked how many times one should test for reflexes and Dr Roberts advised to hit the tendon once, with confidence, and make your decision (rather than repeat hits to elicit a stronger reflex or to confirm lack of reflex.)

He also mentioned that if you find weakness in the lower limb this can be extremely significant (as the lower limb is less weak than the upper limb.)

6. Achilles tendinopathy. Understanding, treating and preventing the condition

Associate Professor Jill Cook, Centre for Physical Activity and Nutrition Research, Deakin University, Melbourne, Victoria, Australia jill.cook@deakin.edu.au

Working with clients who suffer tendon problems and having attended a conference in 2005 on the subject, I was curious to learn more about this topic. Swimmers get Achilles tendon problems due to increased plantarflexion and the tough posterior retinaculum. Changed tendons become more cartilage like with an increase in tenocytes and ground substance and a proliferation of nerves and vessels. With repeated loading tenocytes get exhausted and die. There is no evidence that foot biomechanics increase the risk of tendinopathy. In degenerative tendons there is disintegration of the tendon itself whereas acute injury may heal with no or little intervention.

Achilles tendinopathy is a common condition and can occur in both active and inactive individuals, in the mid tendon or at the insertion into the calcaneus. Exercise intervention is successful in those individuals that are moderately active and seems more effective in treating mid tendon pain than insertional pain.

Overload is implicated as a stimulus, possibly frequent load being most significant. Following injury is an adaptation to compression, manifested by a change in cell structure and an increase in fibrocartilage, with a change in collagen type and proteoglycans. There is also change in the neurovascular components of tendon. Morning stiffness and pain are an excellent talisman of tendon health and capacity to tolerate load. The use of 24 hour pain behaviour can assist the clinician in effective exercise prescription. Recent research into variations of exercise prescription give the clinician more treatment strategies than just eccentric exercise programs. As compression is a key factor, reducing compression during exercise is important in making exercise effective.

7. Full thickness tears of the rotator cuff: To treat or not to treat?

Dr Jeremy Lewis PhD MAPA. MMPA. MCSP. MMACP. Consultant Physiotherapist and Visiting Professor, Visiting Reader, St George's University of London, Research Lead, Chelsea and Westminster Hospital

As I had already read, we were reminded that much of the power provided by the shoulder comes from the abdominals and lower limbs. (A good argument for tennis players and those needing shoulder power to also improve lower limb strength).

External rotation helps improve clients with increased compression of the shoulder. Internal rotation helps clients with subluxing shoulders as it increases subacromial compression.

The purpose of this lecture was to review the evidence for the effectiveness of therapeutic exercise for the treatment of massive (inoperable) tears of the rotator cuff. Although there are many surgical approaches for the management of full thickness rotator cuff tears, there is little consensus as to the most effective method for repairing massive cuff tears. There is a consensus that the outcome of rotator cuff tendon surgery in the elderly is generally very poor. Exercise therapy is usually recommended for this



patient group. The aim of this study was to conduct a systematic review of the literature to determine the efficacy of exercise therapy for the management of full thickness rotator cuff tears. Some evidence exists that supports the use of exercise in the management of rotator cuff tears. There is a definite need for well planned randomised controlled trials investigating the efficacy of exercise in the management of massive (inoperable) rotator cuff tears.

8. Rehabilitation of Massive Rotator Cuff Tears

Roberta Ainsworth MSc FCSP, Consultant Physiotherapist, Torbay Hospital, Devon UK

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This was one of my favourite lectures. An elderly lady with a rotator cuff tear had volunteered to be our model and helped the speaker demonstrate some of her rehabilitation tips and tricks.

Interesting things I learned from this lecture were:

- resisted supraspinatus turns off the posterior deltoid
- use punch balloons (much less expensive than body blades) to help lower trapezial fibres reset the scapula.
- placing one finger on the acromion and one on the humeral head you can feel them roll together in abduction
- to improve forward flexion have the client in supine and do flexed elbow protraction, or flexion with a short lever. So, for example, to switch on an overhead wall light, the client flexes their elbow fully, positioning the elbow towards the switch, extends the elbow, thus already being in considerable shoulder flexion having done so with a short lever.
- another subscapular test is to position the palms against the abdomen and have the client protract their elbows, trying to keep their palms against their belly.
- use an assisted theraband to increase forward flexion and eventually elevation. Tie a theraband above the client with one end of the band hanging down. Ask them to pull the band down using their good hand. The hand of the problem shoulder grips the theraband above the good hand and the good hand guides the band up and down, providing resistance. Because the less good side is also attached, as it were, there is increasing, controlled passive flexion at the shoulder.

“The rotator cuff is commonly considered to be a group of four muscles whose tendons insert into the tuberosities of the humeral head. The four tendons connecting the muscles to the bone fuse and therefore the tendons form a hood over the humeral head rather than being four individual tendons. Rotator cuff tears are a common cause of shoulder pain in patients over the age of 40. The incidence of rotator cuff tears has been identified in a number of studies and these degenerative tears are so common that they could be

considered to be a normal part of the ageing process. Age related tendinopathies are the most commonly faced shoulder pathology in the older population. Clinical observation of patients with massive cuff tears has identified that some individuals function well and are asymptomatic in spite of having no active rotator cuff function, whereas others have very little shoulder function and considerable pain (Fuchs, Chylarecki, & Langerbrinck, 1999). It has long been recognised that muscles such as deltoid which are



used for power and speed often create subluxing shear forces as well as the desired anatomical movement (Perry, 1983). The loss of the rotator cuff compressive function can lead to upward migration of the humeral head in the glenoid. Some patients present to physiotherapy with a history of sudden onset shoulder pain and dysfunction. The X-ray appearance of some of these patients shows an upward migration of the humeral head with erosion of the under-surface of the acromion. This suggests that the massive cuff tear is long standing and that some unidentified factor has made it become symptomatic. In 2003 a rehabilitation programme was developed at Torbay Hospital for patients with irreparable rotator cuff tears and a pilot study was carried out to evaluate the programme (Ainsworth, 2006). A randomised placebo controlled trial to evaluate the programme is nearing completion with the 3 month results showing an overall improvement in all patients recruited to the study with statistical significance being achieved in the intervention group at 3 months. To date this is the first randomised placebo controlled clinical trial that has been conducted investigating exercise in the management of patients with massive rotator cuff tears. The presentation will demonstrate the assessment and treatment principles of the rehabilitation programme.”

Jane Johnson MCSP, MSc, BSc, BA (Hons)

Co-Director and esteemed author of *Soft Tissue Release: Hands-on Guides for Therapists*