Tri-annual review of sports therapy theory and practice

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Contents

Editorial Welcome

Welcome to Volume 6, Issue 1 of the JST – The 2013 Winter Issue!

Keith Ward, School of Sport and Creative Services, University College Birmingham

It is with great pleasure that I can finally present to you what was originally going to be our Autumn Issue. Because we are now well into the new year of 2013, it only makes sense to release this particular issue under the revised Winter Issue title. Some things are not necessarily written in stone, and most things are better late than never. We still maintain our pledge, as an aspirational tri-annual publication, to produce 3 issues per year – it's just that we are still in our 'teething issue' phase of development (new website, new software, new editorial board and new contributors).

This Winter Issue is actually sub-titled 'The Conference Special'. 2012 was a great year for sports therapy. Wheels are turning all around us, moving the profession ever forward. Our Summer Issue of 2012, and its feature article – The United States of Sports Therapy – generated a fair amount of positive interest, but beyond that, 2012 saw a certain consolidation of presence. As sports therapy is so establishing itself – not only in health, fitness and sporting settings, and in collaborative networks, but also importantly in academic settings – it is only fitting (and fantastic) that now in our calendars, we can all mark out one, two or more sports therapy specific conferences to attend. Such gatherings of like-minded professionals, students, practitioners, researchers, specialists and protagonists can only elevate knowledge, practice and patient/athlete outcomes. So much can be gained from attending a good conference, and for this issue of the JST, we can celebrate just that.

We have assembled detailed reviews of 5 quite different sports-focused conferences: Lucy Hammond brings us detailed proceedings from the exciting Moulton College Applied Rehabilitation and Sports Performance Conference; Greg Littler critically appraises From Pain to Performance 2012, held at London's Heathrow, Marriot Hotel; Philip Smith introduces the Coventry University Strength and Conditioning and Sports Therapy Research Symposium; and I myself have reviewed both the first European College of Sports Medicine Physicians' (ECOSEP) Student Congress, held at the Centre for Sport and Exercise Medicine, Queen Mary University in London, as well as our very own JST inaugural CPD Afternoon held in July in Birmingham. I feel that I must add that readers should be impressed by the high calibre of speakers on show at each of the reviewed events; and that, within each of the articles, a multitude of extremely applicable and immediately useable information can be discovered.

Now that we have finally been able to incorporate new software for publishing each issue of the JST, it is now simple and straightforward to download individual articles to your own device. We hope that you find the articles interesting, and again, we invite all readers to contribute to what we are doing. This can be as simple as submitting comments to our discussion forum, but we also welcome both new and experienced authors and researchers to submit material for consideration for future publication.

All the best in health and positivity,
Keith Ward
Managing Editor, Journal of Sports Therapy

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Conference Review

Moulton College Applied Rehabilitation and Sports Performance Conference

Lucy Hammond
Lecturer in Sports Therapy, Moulton College.

On Thursday 7th June, undergraduate and postgraduate students, academics and professionals from the fields of sports therapy, physiotherapy and strength and conditioning travelled from across the country to Moulton College, Northamptonshire for a conference focussing on the themes of 'Applied Rehabilitation and Sports Performance'. Set in the rolling countryside of Northamptonshire, Moulton College's sports subject area has a growing international reputation. Delivered in Moulton's impressive facilities, Sports Therapy and Sports Performance and Coaching degrees have been awarded through partner institution, University of Northampton, for the past 4 years. To coincide with the launch of the MSc in Sports Therapy and the opening of the Chris Moody Centre, a specialist injury and rehabilitation facility, a day-long free conference was organised by the faculty to welcome colleagues, share information, and stimulate professional discussion.

Morning session

The morning session began with a talk entitled 'Risk and reward: does training really help? by Simon Mills, Performance Development Manager from British Triathlon. A former GB skier himself, Simon discussed his experiences from the perspective of both the athlete and the coach. Simon explored the '10,000 hours rule', the importance of hard work, developing talent, and presented the audience with the question: *how much and how quickly can we push athletes?* This led to an interesting analysis of planning and periodization – a process traditionally based upon linear, mechanistic principles – however because of the biological complexity of humans, they do not always respond in a linear and mechanistic way. Simon emphasised the importance that training should be tailored to the individual, and recommends that coaches *'do something, watch carefully'*. The presentation then moved to issues around overtraining, burnout, staleness and eating disorders, and advice on athlete monitoring. Monitoring athletes' weak signals can be through trend analysis and performer self-reporting, but on-going discussions between coaches and support staff such as the medical, massage and strength and conditioning team are hugely important, as these individuals may be most likely to pick up on the weak signals given off by the athlete. Simon summarised his coaching philosophy with a quote from Einstein: *"I never teach my pupils, I only try to provide the conditions in which they can learn"*.

Fig. 2.1 Left to right: Marc Evans, Joseph Lightfoot, David Sutton, Serita Shone, Richard Moss, Simon Mills and Lucy Hammond

Moulton College lecturer Richard Moss and physiotherapist to Moulton's Sports Academies, Marc Evans, delivered a lively, interactive practical: 'Run yourself better', a whistle-stop tour of lower limb examination and rehabilitation. After some discussion around gait analysis videos, conference attendees removed their shoes and rolled up their trousers to assess lower limb function and control, from gluteus medius to flexor hallucis longus. Marc gave his top tips for assessment, including spotting the common *'athlete cheats'* that he often sees in his practice. This was followed by a circuit of 12 stations of exercises led by Richard to challenge the attendees' balance, strength (and brains)! Simple exercises such as 'Jonny Wilkinson's', 'gluteus medius pulleys', 'theraband walks', 'side-planks with resistance', tibialis posterior strengthening, 'hamstring pole rotations', flexor hallucis longus strengthening, and foam rolling can be easily translated into practice with little or no equipment required, providing practitioners with a wide range of ideas to implement within their future work.

The third presentation was given by Moulton College lecturer, Lucy Hammond, who presented 'No pain, no gain: managing injury in professional sport'. This presentation included an exploration of the decision making and attitudes of professional football players who continue to play when injured, and consideration of the effects that these practices have on injury surveillance findings. Based on original interview data, Lucy considered the importance of the playing calendar, the player's contract and the general culture within sport that

pain and injury are part of the job, amongst all other factors. This was related to the number of injuries that are missed during injury surveillance and the effect that this can have on determining injury prevention strategies. Take home messages from the session included: be aware of the conflicts of interest and ethical issues that can arise between players and staff when determining return-to-play; read between the lines when interpreting injury data; and manage the person as well as the injury.

During lunch, a tour of the Chris Moody Centre was provided by Centre Manager, Sheena Easton. The centre is Moulton College's £10million state of the art rehabilitation facility in which athletes and patients can have whole body cryotherapy, hyperbaric chamber treatment, thermal therapy and various forms of hydrotherapy. The facility also houses a 25m swimming pool with moveable floor, biomechanics and physiology laboratory facilities, and spacious clinical teaching classrooms fully equipped with hydraulic couches and electrotherapy equipment. During the break, attendees were also encouraged to view the academic posters that had been submitted to the conference, and discuss the research with the poster presenters.

Fig. 2.2 Whole body cryotherapy and the hydrotherapy pool in the Chris Moody Centre

Afternoon session

The afternoon session began with an energetic practical session with Moulton College Academies Strength and Conditioning Coach, David Sutton, who engaged the audience with a session on 'Neuromuscular training for injury prevention'. David showed delegates how playing games can be a great way of conducting warm ups or drills, and had groups of volunteers in a circle throwing balls at one another and swinging foam rollers around. David explored athlete technique while performing progressive box jump drills, and demonstrated the importance of the audio cues from the box – getting athletes to land quietly dramatically improved their landing technique. The focus then moved to coaching change of direction, with a different group of people volunteering to have their technique analysed. The volunteers tried to avoid particular examples of poor technique that David called *'The Moonwalk'* and '*Scooby Doo legs'!* The audience were answering the following questions for the two runners: *"Where is the knee pointing? Where is the foot pointing? What does it sound like"* to help train the technique of planting the foot in the appropriate position to drive off during a cutting manoeuvre, to improve power, and to reduce injury risk.

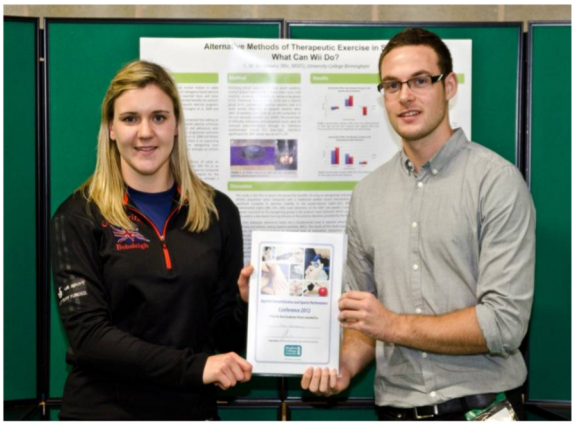
Delegates moved back to the presentation area to hear a talk from England Lacrosse Strength and Conditioning Coach, Joseph Lightfoot, who discussed 'Problems and solutions: a year of insights into performance, rehabilitation and health'. Joseph introduced us to the highly physical sport of lacrosse and explained the conditioning issues that he faced when joining the team. Joseph's task with England Lacrosse was to instil a basic understanding of movement before moving onto more complex tasks; drawing parallels with education, he described this as a *physical literacy*, and emphasised his focus on teaching the foundations of movement. Having just returned from a period of time in the sports medicine units at Stamford and Harvard Universities, Joseph was able to share his reflections on the differences between here and there: in US Lacrosse, players start training earlier and in a much more physical way, so the challenge for UK athletes and their trainers is making the athletes durable enough to withstand competition from other countries that have been training for much longer! Joseph strongly advocated collaboration in overcoming the problems that he has faced, and suggested that *'sometimes it is the little things that make the biggest difference'.* When not training abroad or working with lacrosse players, somehow Joseph finds time to be a medical student, his experience of which led him to develop the inspirational 'Move. Eat. Treat.' campaign. In 5 years of medical training, Joseph received just 3 hours of lifestyle training, and described his education as learning about disease, but not about health. Joseph is now campaigning to increase this knowledge in doctors so as to help them to give more appropriate and effective advice on lifestyle and exercise choices. For more information, see www.moveeattreat.org.

The Keynote Speech was given by GB bobsleigh brakeswoman, Serita Shone, who gave an emotive and moving talk of triumph over adversity following her near-fatal bobsleigh crash in training in Winterberg, Germany, in October 2011. Serita joined GB bobsleigh through the UK Sport talent transfer scheme from heptathlon, and within a month was training for the British Championships when she crashed at 90 mph. Serita, wearing only a training suit which offers little protection, suffered a traumatic fracture and dislocation of L1/L2 vertebrae, an injury which caused her spinal cord to be displaced by 15mm to the right. It was considered that because of the degree of conditioning of her spinal muscles

which helped prevent any further displacement, that she survived and can now walk again. Serita explained the gruelling rehabilitation that she has undertaken in the last 8 months that included land-based training, occupational therapy and hydrotherapy. She is now waiting on confirmation that surgical fusion of her vertebrae has occurred before she can take the next step with her training. Serita stressed the importance of the multidisciplinary team in her recovery, particularly the role of the psychologist, nutritionist and support network and feels that these are very undervalued areas. We wish this inspirational lady every success with her recovery and return to sport!

Academic poster competition
Prior to the event, attendees were invited to submit abstracts of original research for poster presentation at the conference, with 3 being accepted for presentation. Delegates enjoyed reading the mixture of therapeutic and performance studies and the conference provided a fantastic opportunity for graduating students to present their dissertation projects and defend their work to a varied audience. A prize was awarded for Best Poster, which was won by Chris Stankeiwicz of University College Birmingham, for his study on the use of 'exergaming' for ankle proprioceptive training ' *Alternative methods of therapeutic exercise in sport: What can Wii do?'*.

Fig. 2.3 Chris Stankeiwicz receives the prize for Best Poster from GB bobsleigh athlete, Serita Shone



Original Research Abstracts

Post-activation potentiation in adolescent female rugby players
R. Andrews, D. Sutton, L. Hammond and R. Moss
Moulton College, Northamptonshire, UK

Background

Post-activation potentiation is the phenomenon of acute enhancement in muscle performance that occurs after a maximal voluntary contraction. Heavy resistance interventions may induce post-activation potentiation and increase explosive power in activities such as vertical jump in males, however, little research has been conducted into these effects in females, particularly adolescent female athletes.
Purpose

To determine whether heavy resistance intervention induces potentiation and increases vertical jump height in adolescent female rugby players.

Method

Following ethical approval from the University of Northampton, 11 female college academy rugby players (aged 16-18 years) who were trained on the front squat exercise, consented to participate in the study. The participants' 5RM was established and they underwent familiarisation of the testing protocol. One week later, participants completed the experimental protocol that comprised: 3 vertical jumps on a jump mat followed by 8 minutes of seated rest, 5RM barbell front squat, 8 minutes seated rest, and a further 3 vertical jumps. The highest jump of the 3 in each testing bout was recorded for analysis.

Results

Vertical jump height increased after the application of the 5RM intervention (14.11±1.68 inches and 15.12±1.86 inches respectively). Analysis with a paired T-test showed this to be a statistically significant increase in jump height ($p<0.009$).

Discussion

To the authors' knowledge this is the first study of its type in adolescent female athletes. The findings of this study agree with previous studies that have observed increases in power output following a heavy resistance intervention in females.

Conclusion

A heavy loaded resistance intervention using a 5RM barbell front squat increases power output (measured by vertical jump) in adolescent female athletes. Further research should investigate the effects of post-activation potentiation on alternative sports specific power output activities that incorporate multifaceted movements, such as tackling and scrummaging.

The effect of ice application on blood vessels, measured using ultrasonography.

S. Cook, R. Moss, B. Skinner and L. Hammond

Moulton College, Northamptonshire, UK

The application of cryotherapy agents is a commonly used treatment method for acute musculoskeletal injury and to aid recovery. Despite this, limited and conflicting research exists on the recommended length of application, when vasoconstriction is the desired outcome. It remains unclear at what phase the body's natural response to shiver actually results in reverse effects and vasodilation. This study aimed to establish whether, through the use of ultrasound imaging, the dynamic process of the vasoconstriction-vasodilation effect can be measured whilst undergoing ice intervention. Following ethical approval from the University of Northampton, 13 participants (8 male, 5 female; age: 22±2.6 years) were selected by convenience sample for experimental design with repeated measures. After 20 minutes of equilibrating to room temperature, a baseline reading of the femoral artery luminal diameter (mm) was taken using B-mode ultrasound in a longitudinal view. Ice chips were applied to the limb, in an ice bag, and subsequent ultrasound readings were taken every 5 minutes up to 20 minutes ice exposure. Mean luminal diameter decreased from 0 to 15 minutes (7.02±1.2, 6.26±1.0, 6.13±1.5, 5.98±1.2 mm respectively), then increased to 6.71±1.1 mm between 15 and 20 minutes. A repeated measures ANOVA with Bonferroni correction revealed a significant difference between the 5 time points ($F(2,22) = 4.314$, $p=.029$), with pairwise comparisons highlighting a significant decrease in vessel diameter at 0-5 minutes ($p=.043$) and significant increase in vessel diameter at 15-20 minutes ($p=.005$). These findings suggest that when vasoconstriction is the desired outcome, continuous application of ice for less than 20 minutes should be recommended as 20 minutes of continuous ice application results in reactive vasodilation of blood vessels, which results in increased blood flow. The study also demonstrates that ultrasonography is a useful method for visualising the reactive nature of blood vessels during experimental intervention.

Alternative methods of therapeutic exercise in sport: What can Wii do?

C. W. Stankiewicz
University College Birmingham, Birmingham, UK

Background

The use of videogame based exercise or 'exergaming' is being increasingly reported within healthcare, however to date there is no supporting evidence for the use of an exergaming based therapeutic exercise intervention amongst an athletic population.

Objective

To evaluate the efficacy of using an exergaming based balance program ('Wii Fit') as an alternative modality of therapeutic exercise compared with a traditional wobble board programme.

Methods

Following ethical approval from University College Birmingham, 15 male youth academy football players (aged 15-18) without ankle injury (≥18 months), were randomly assigned to either an exergaming group (n=5), traditional balance group (n=5) or a control group (n=5). Each of the participants completed 7 exercise sessions over a 4 week period. Measures of dynamic stability were taken with the star excursion balance test (SEBT) at baseline and follow-up. Perceived level of difficulty, motivation and enjoyment levels were assessed through an individual questionnaire distributed post-intervention period.

Results

One-way ANOVA analysis demonstrated statistically significant ($p\leq.05$) improvements in SEBT scores in the exergaming group for both right and left limb scores in the posterolateral reach direction, with improvements also being seen in the posteromedial reach direction. Statistical significance was again recorded in posterolateral and posteromedial reach directions for the traditional balance group; however significance was only achieved in right limb scores. No significant changes in all three directions were observed in the control group. Descriptive statistics from the questionnaire revealed that the exergaming group experienced a lower level of perceived difficulty and increased levels of motivation and enjoyment when compared to the traditional balance group.

Conclusion

The findings suggest that a Wii Fit based balance intervention is capable of producing similar improvements in dynamic stability when compared to a traditional wobble board programme amongst a youth football population, with added benefits to motivation and enjoyment levels. The results of this study provide further scientific reasoning for the inclusion of exergaming based programmes in clinical practice, and provide practitioners working within an athletic setting with an alternative therapeutic modality.

Alternative Methods of Therapeutic Exercise in Sport: What Can Wii Do?

C. W. Stankiewicz (BSc, MSST); *University College Birmingham*

Introduction

As the ability to capture human motion in video gaming develops, the use of videogame based exercise or 'exergaming' is being reported more and more within healthcare, with purported benefits for patients required to complete therapeutic exercise programs for a range of conditions (O'Huiginn et al, 2009 and Holden, 2005).

Several researchers have also proposed that adding an exergaming element to therapeutic exercise enhances patient motivation, enjoyment and adherence, with subsequent positive effects on programme outcomes (Fitzgerald et al, 2010; Brumels et al, 2008 and Betker et al, 2006); however to date there is no supporting evidence for the use of an exergaming base therapeutic exercise intervention amongst an athletic population.

Objective: To evaluate the efficacy of using an exergaming based balance program (Wii Fit) as an alternative modality of therapeutic exercise compared with a traditional wobble board program for the prevention of non-contact ankle injuries amongst a group of youth academy football players.

FIGURE 1. (A) Wii Fit exergaming set up, (B) screen shot of single-leg extension exercise and (C) screen shot of table tilt game.

Method

Following ethical approval, 15 male youth academy football players (aged 15-18) without ankle injury (≥18 months), randomly assigned to an exergaming group (n=5), Traditional balance group (n=5) and a control group (n=5), completed 7 exercise sessions over a 4 week period. Measures of dynamic stability were taken at baseline and follow-up via the conduction of the star excursion balance test (SEBT). Perceived level of difficulty, motivation and enjoyment levels were all assessed post-intervention through an individual questionnaire scored 0-5 (low-high). Statistical significance for SEBT scores was set at $P \leq .05$.

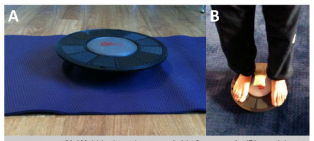
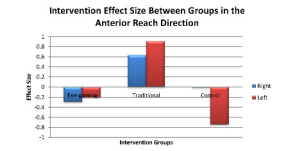
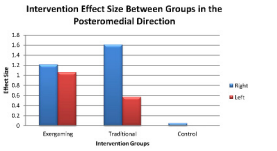


FIGURE 2. (A) Wobble board set up (with foam mat), (B) participant performing anterior-posterior tilt exercise.

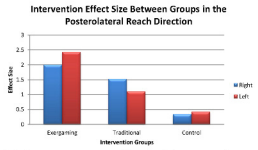
Results



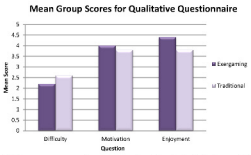
Graph 1 demonstrates a greater effect size in the traditional group for both right and left reach distances with negative effect sizes being recorded for both the exergaming and control groups.



Graph 3 demonstrates a greater effect size for right limb reach distances for the traditional group and a greater effect size for left limb reach distances for the exergaming group.



Graph 2 demonstrates a greater effect size in the exergaming group for both right and left reach distances.



Graph 4 demonstrates a lower perceived level of difficulty and higher level of motivation and enjoyment in the exergaming group compared to the traditional intervention group.

Discussion

This study is the first to assess the purported benefits of using an exergaming intervention (Wii Fit) amongst an athletic population when compared with a traditional wobble board intervention; demonstrating statistical significant increases in dynamic stability in the posterolateral (right=.013, left=.005) and increases in posteromedial (right=.090, left=.168) reach directions of the SEBT (see graphs 2 and 3). Negative results were however recorded by the exergaming group in the anterior reach direction which could be attributed to fatigue, injury and/or a decreased training stimulus in the anterior direction provided by the Wii Fit.

Less than adequate adherence levels are a fundamental issue in exercise prescription within both a general healthcare and athletic setting (Spetch and Kolt, 2001). The results of this study support the theory put forward by previous studies, demonstrating an increased level of motivation, enjoyment and lower level of perceived difficulty amongst the exergaming group (see graph 4). These results may be attributed to the focus of the participants in the exergaming group being shifted from performing the required movements to 'playing' the game task as suggested by Fitzgerald et al (2010). For this reason exergaming may offer a possible solution to poor adherence to therapeutic exercise and may prove to be a more efficient alternative modality for athletes required to complete a therapeutic exercise program over a period of time; particularly for those required to undertake a preventative program where there is no added rehabilitation incentive or visible end result.

Conclusion

The findings of this study suggest that a Wii Fit based balance intervention is capable of producing similar improvements in dynamic stability when compared to a traditional wobble board programme and may be used as an effectual method of preventative therapeutic exercise amongst a young athletic population, with added benefits to motivation and enjoyment levels.

The results of this study do not aim to disprove the results of previous studies, but instead aim to provide further scientific reasoning for the inclusion of exergaming based programs in clinical practice and provide practitioners working within an athletic setting with an alternative therapeutic modality.

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Fig. 2.4 Poster presentation: Alternative methods of therapeutic exercise in sport: What can Wii do?

Further Information

For information about future conferences and seminars at Moulton College, or to be added to a mailing list email studentssportsconference@moulton.ac.uk. For information about Higher Education courses at Moulton College (Foundation and Top Up degrees in Sports Therapy and Sports Performance and Coaching, MSc Sports Therapy), email enquiries@moulton.ac.uk or telephone 01604 491131. For information about the Chris Moody Centre, email sheena.easton@moulton.ac.uk or telephone

Conference Review

From Pain to Performance 2012: A One Day International Sport and Exercise Medicine Lower Limb Symposium

Greg Littler
School of Sport and Creative Services, University College Birmingham

This popular annual conference, which this year was attended by around 500 delegates, is hosted by Sports Therapy Education, and held at the London Marriot Hotel (Heathrow) over a full day. As well as a comprehensive trade exhibition, this conference also offered exceptional catering for a hot buffet lunch, with beverages and snacks available throughout the day. The conference is aimed at sports therapists, physiotherapists and all those working within sports medicine and musculoskeletal therapy settings. The conference has a reputation for being host to leading experts in the sports medicine field including physicians, academics and practitioners attempting to highlight the most up to date evidence in order to emphasize developments and best possible practice. Professor Graham N. Smith, rehabilitation and sports injury consultant, Fellow of the Chartered Society of Physiotherapists, and Chairman of the Society of Sports Therapists, was master of ceremonies for the day, and provided insightful welcoming and closing remarks.

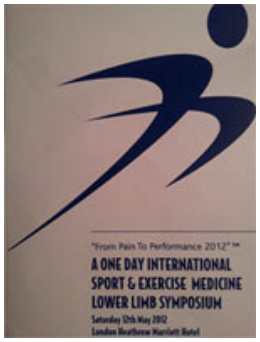


Fig. 3.1 From Pain to Performance 2012

Dr Bryan English: The Treatment and Management of Lower Limb Injuries in Sport – A Realistic Approach

Dr English is a Sports Medicine physician and Chairman of the Premier League Doctors Group. This presentation was in relation to football and, more specifically, musculoskeletal management and assessment, incorporating: anterior cruciate ligament (ACL) injuries, post-reconstruction; tibialis posterior dysfunction; and assessment of the adductor muscle group. Currently, patients receiving an ACL graft do not return to 100% pre-surgery strength levels after 24 months (Thomee et al., 2011; 2012), which contradicts many post-surgical protocols for return to play and medical discharge (Waters, 2012; Beynnon, 2005). Furthermore, there are no specific measurement techniques to assess whether patients are fully able to return to sport safely without the risk of re-injury. Dr English highlighted the Vail Sports Test for the measurement of an athlete's ability to return to play post ACL reconstruction; this has shown statistically significant intra and inter reliability levels ($p=\leq 0.05$). However, Dr English mentioned that more evidence would be required before this should be adopted, and this should include studies which are in relation to sports, and with larger sample sizes (the evidence presented had patient numbers of n=30). This particular study, completed on a variety of athlete participation levels, cannot be assumed to be equally successful for elite level athletes.

The presentation went on to include a selection of assessments for hamstring injuries and recommendations for when the therapist may suggest that patients should or should not train or play. Furthermore, the use of sand pits was discussed specifically for the activation of adductors and hamstrings during the rehabilitation process with positive results.

Grant Downie: The Therapist's Role in Rehabilitating Lower Limb Muscle Injuries in Professional Sport – Lessons Learned Over 25 Years

Grant is Head of Sports Medicine at Manchester City Football Club (Academy), and for this presentation, he reviewed the role of a therapist within an elite level football club, and in his introduction he highlighted the importance of developing therapists who can problem-solve and create programmes for athletes – managing them as a whole, including all their physiological and psychological issues – and discouraged the development of "sat-nav" therapists. The holistic approach to patient care was supported by Professor Smith.

Downie (2012) reviewed case studies of elite junior level football scholars highlighting the importance of SACRIFICE model (S-Sacrifice; A-Attitude; C-Commitment; R-Rest/Recovery; I-Inches; F-Feeling discomfort [normal!]; I-Inches; C-Commitment; E-Energy). An insight was then given into a specific programme for an elite level junior footballer. This well-rounded matrix provides the patient with clear hour by hour plans regarding their management, and this particular example, employing a 14 day return to play strategy, included: CV work (running and bike); strength and core work; dynamic stability work; football skills work; yoga sessions; and daily

education sessions. The point was raised by an audience member that, when working within the NHS, it is not often possible to give patients such a detailed level of planning and management – this is not only due to the patient's time constraints, but also the therapist's. Mr Downie countered this by stating that everyone would benefit from such a structure, and that it would allow the appropriate time and organisation for effective work and progression.

Professor Hakan Alfredson: Achilles and Patellar Tendinopathy – New Treatment Methods with Early Return to Sport

Professor Alfredson, a respected Professor of Sports Medicine and Orthopaedic Surgeon, presented his work on tendon injuries and surgical interventions (Alfredson et al., 2011; Alfredson et al., 2012). Professor Alfredson highlighted the vascular supply for tendons and, within tendinopathies specifically, using a Doppler scan in order to confirm diagnosis. For therapists, the message was highlighted regarding correct diagnosis regarding types of tendon injury – whether simple mid-portion, insertional or musculotendinous junction tendinopathy. If diagnosis can be confirmed, then the condition can be treated correctly whether conservatively or surgically.

Professor Alfredson reflected on previously common surgical interventions, including use of open incisions and excisional removal of abnormal tissue. A more recent, evidence-based procedure was described as a 'tendon scraping' or form of micro-surgery (Alfredson et al., 2011; Alfredson et al., 2012). One aetiological theory with tendon degeneration is that nerves and vessels infiltrate the tendon and, if successfully separated from the tendon, will reduce pain and offer opportunity for tendon healing. Professor Alfredson highlighted this surgical procedure in the management of mid-portion Achilles tendinopathies, but limited evidence is available in relation to other tendons.

Otto Chan: An Update on the Treatment of Chronic Recalcitrant Achilles Tendinopathy

Dr Chan is a Consultant Radiologist and lecturer in Radiology. Dr Chan concurred with Professor Alfredson and his thoughts regarding the mechanism of tendinopathies, specifically with the infiltration of the degenerative tendon by extra-tendinous structures. Dr Chan highlighted the importance of musculoskeletal radiologists in the diagnosis and treatment of these pathologies and how multidisciplinary teams should offer a variety of treatment options for their patients. Dr Chan presented a selection of research in relation to high-volume injections surrounding the tendon so as to separate extra-tendinous structures (Crisp et al., 2008; Padhiar et al., 2008; Chan et al., 2008). The evidence regarding this treatment is limited in scale, but shows positive short term results in both decreasing pain and increasing function. Dr Chan highlighted the importance of Doppler scans in order to confirm diagnosis, and supported the view that if there is a tear in the Achilles tendon it is at a higher risk of rupture.

Dr Marie Elaine Grant: Evidence-Based Approach to the Rehabilitation of Lower Limb Tendinopathy and Problems That Can Arise

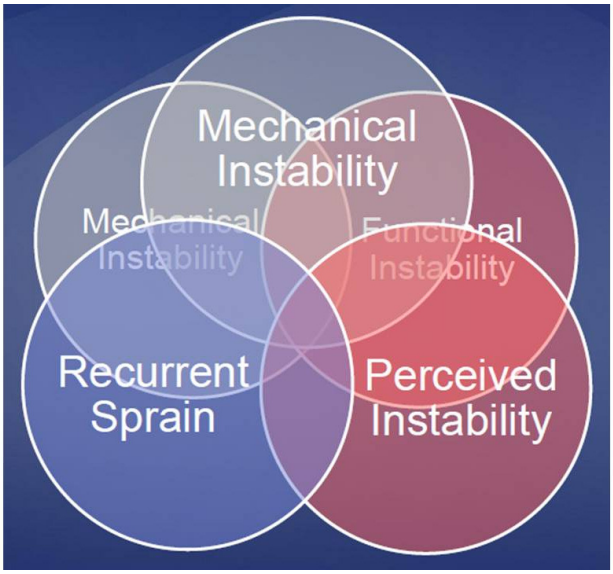
Dr Grant is a Specialist Chartered Physiotherapist, and Member of the IOC Medical Commission. Dr Grant presented evidence-based practice in relation to exercise therapy. With vast experience in both research and practice, Dr Grant highlighted the importance of variance within exercise therapy with athletes. The 'Alfredson heel drop' (Alfredson and Lorentzon, 2000) was highlighted, not only for use within Achilles tendinopathy management, but for therapists to not simply proscribe heel drops or steady loading for the tendon but assess possible biomechanical considerations, including maladaptive movement patterns that may be required to address prior to any proscribing of heel drops. Various methods were presented, including the use of an external stimuli, such as theraband or a ball between the feet. Dr Grant presented evidence in relation to management of patella tendinopathies and possible adjuncts to steady loading with one or two-legged squats, with a decline step being advantageous to flat (Cannell et al., 2001). Dr Grant concluded with a landing kinematics discussion presenting evidence that horizontal landing produces highest load on the patella tendon compared to vertical ($p=\leq 0.05$). So specifically, when developing rehabilitation plans, it should be noted that the greatest stress will be applied when working horizontally (Edwards et al., 2010).

Steve McCaig: Chronic Ankle Instability – Preventing Long Term Problems

Mr McCaig is a Chartered Physiotherapist based at the National Cricket Performance Centre with the England and Wales Cricket Board (ECB). Mr McCaig presented in relation to chronic ankle dysfunction within the cricket population. Mr McCaig explained that 70% of athletes with a lateral ankle sprain (LAS) suffer recurrence; and 30% go on to develop chronic ankle instability (CAI) (Wikstrom and Hubberd, 2010). CAI was defined as where the athlete experiences ongoing pain with activity, repeated giving way of the joint, and recurrent swelling. The multifaceted nature of CAI was highlighted (Hiller et al., 2011). As the high prevalence of LAS and CAI translates to all sports involving directional change, Mr McCaig highlighted both functional and mechanical possibilities of instability, highlighting specific special tests that are

widely used (anterior draw and talar tilt). Further, more specific, functional tests focussing around control – both dynamic and static – in order to test the ankle complex were presented (Renstrom and Konradsen, 1997). The testing of postural control was emphasised via use of such tests as the star excursion balance test (SEBT) and 'Y-balance' test, as well as more dynamic functional movements employing jumping and landing (such as 'hop and stick' patterns).

Fig 3.2 Model of Chronic Ankle Instability (CAI) (adapted from Hiller et al., 2011)



Mr McCaig's take home message was orientated towards the use of improved functional movements (including: squats; lunges; side-lunges; step-ups; and jumping and landing routines) specifically for the correction of such important patterns during rehabilitation, and prior to any return to play. Mr McCaig reminded us that although there is strong evidence to show that training can reduce injury risk and recurrence, the outcomes are dictated by the method (type; quantity; frequency; and duration).

Lt. Col. Andy Neaves: Improving Adherence in Military Rehabilitation – Lessons We Can Learn

Lt. Col. Neaves is Assistant Director of the Defence Rehabilitation Unit at Headley Court. He presented from a different point of view of physical therapy in relation to the injured solider and their treatment and rehabilitation post injury. Lt. Col. Neaves highlighted the similarities between soldiers and athletes in their competitive nature and possibly their psychology. It was highlighted that the importance of exercise adherence and possible reasons why an injured soldier may be difficult to rehabilitate. Any evidence in relation to different options to assist the therapist in allowing the patient optimum opportunities to adhere needs to be specific to the individual, however specific evidence was presented with regards to supervision (Brewer et al., 2003) and goal setting (Coppack et al., 2011). Social aspects cannot be overlooked in relation to injury and adherence to exercise and physical therapy, and, as was highlighted within this presentation, the additional challenge of managing athletes (or soldiers) who place their identity within their occupation (or sport).

Summary

From Pain to Performance is developing a reputation for being one of the most eagerly anticipated and well-attended conferences in the sports medicine calendar. This year particularly highlighted different assessment and multidisciplinary management strategies for a selection of lower limb injuries. This conference offered a selection of expert opinions from those working at the highest levels within the field, and all information presented related directly back to clinical practice, and highlighted what changes and developments therapists could be making in accordance with the newest available evidence. We now look forward to next year's gathering!

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Conference Review

Strength and Conditioning and Sports Therapy Research Symposium

Introduced by Philip Smith
Coventry University

In June 2012, Coventry University hosted its first joint Strength and Conditioning and Sports Therapy Research Symposium, in conjunction with the Journal of Sports Therapy. Around 50 delegates from both disciplines attended the event, and keynote speakers included Professor Erika Zemkova of Comenius University, Slovakia; Dr Mark Willems from the University of Chichester; Dr Jeremy Moody from Cardiff Metropolitan University, and Dr Andy Drake from Leeds Metropolitan University. Presentations ranged from eccentric exercise in the elderly, to functional movement screening in children, via the training of UK elite race walkers, as well as a number of poster presentations. Abstracts of all presentations are published in the Winter Issue of the JST, and hopefully readers will find them both stimulating and informative. Delegates were enthusiastic about the event, and it is hoped that it can be repeated annually as it presents an opportunity for the professions to collaborate and learn from each other as well as developing their profile in a wider context.

Please see separate pdf for Symposium Brochure.

Conference Review

The ECOSEP Sports and Exercise Medicine Student Congress

Keith Ward
University College Birmingham, School of Sports and Creative Services

The ECOSEP (European College of Sports and Exercise Physicians) Sports and Exercise Medicine Student Congress was held at the Centre for Sport and Exercise Medicine, Queen Mary University of London on 18th and 19th August, 2012 (in the weekend between the Olympic Games and Paralympic Games). Hence, this was a 2-day conference, open to both medical students and sports and exercise practitioners from across Europe. A full programme of presentations and workshops were provided by clinicians with a wealth of sports medicine experience.

ECOSEP is a medical speciality society, comprised of physician members within the European community. The mission of the College is to advance the competency of sports physicians, and support the process for best possible care for their athletes and the citizens of Europe, by providing continuing education and publishing research. ECOSEP understands that each country within the European Community very rightly sets its own standards, but is aware that, as an example in Britain, the Faculties of Sports and Exercise Medicine (FSEM) have been established, and that the National Health Service (NHS) has accepted sports and exercise medicine as a recognised specialty, and instituted a training programme which leads to consultant status.

Fig. 5.1 ECOSEP

The inaugural ECOSEP Sports and Exercise Medicine Student Congress 2012, was an exciting event, gathering a body of medical student delegates, alongside a small number of physiotherapists and sports therapists who attended to learn from established leaders in the field of sports and exercise medicine. The eminent Professor Nicola Maffulli, who is Chair of the ECOSEP Research Committee, was our main host for the weekend.

Professor Maffulli provided the welcome and introduction to the congress, introduced the speakers, fielded questions from the delegates, and concluded the majority of discussions, in addition to delivering his own specific presentations on acute knee injuries, advances in sports medicine, and providing a knee assessment practical workshop. There now follows an overview of each of the main speakers' presentations.

Dr Aideen Henry: How to take a history in sports and exercise medicine

Dr Henry is a Consultant Orthopaedic Physician, and she provided a concise overview of the process for undertaking and achieving an effective subjective history. As such, this provides the starting point on the road to achieving an accurate diagnosis where the practitioner must fully explore the patient's background and history, and include icebreakers and general questions regarding their sports and health. The practitioner should clarify what investigations have been undertaken, and identify clues to likely diagnosis of sports injury. It is essential that clues to other pathology masquerading as a sports injury are identified. It can be that something in the history does not fit an expected pattern, hence the practitioner must consider the possibility of less common, or more sinister, conditions. Red flags can include night pain, pain unrelated to movement, unexplained weight loss, fever, loss of appetite and general malaise. Dr Henry provided some pertinent examples of "great pretenders" such as: bone and soft tissue tumours; osteosarcoma, especially at the knee in adolescents; osteoid osteoma can be mistaken for stress fracture; night pain relieved by aspirin; and systemic conditions such as rheumatoid arthritis, typically characterised by prolonged morning stiffness and generally with progressive symptoms.

It was suggested that an effective subjective history can often "clinch the diagnosis", give prognosis, and optimise treatment and rehabilitation. It is important to explore the training history, level of competition, short and longer term goals, time of season, off-season, and next major competition. What is the athlete's typical week? How many sessions? What is covered in each session? Weights, reps, circuits, running, stretching and recovery activities (including sleep patterns

and quality) should all be ascertained. Any changes to the programme, or changes in surfaces or footwear should also be ascertained. If the practitioner is unfamiliar with the sport or exercises, the athlete should be asked to explain and demonstrate. The practitioner must also know about their handedness – and feet!

Regarding the main complaint, an open questioning approach is to be recommended. To open the discussion of the patient's perception of their condition, the following question may be posed: "So, what seems to be the problem?" Further closed, extending or probing, linking and clarifying questions should also be used once the athlete has had the opportunity to explain their experience and condition. The use of leading questions, complex multipart questions, and several questions at once should be avoided. The mechanisms of injury (acute and chronic) and symptom picture must be clarified. Pain is the most common symptom, and it is essential to ascertain the site (local; diffuse; segmental), onset (specific or insidious), severity, irritability, nature, aggravating and relieving factors, and any other symptoms (such as swelling, instability, paraesthesia, anaesthesia or weakness). Clarifying the aetiology of a condition can be challenging, and there are innumerable factors to consider. These can include: training errors; malalignment, poor or recent changes in technique; inappropriate equipment; footwear; bike settings; racquet fit; recent growth spurts; and any previous similar or related injury. With any condition, additional factors relate to the psychology of the athlete, and the practitioner should aim to identify any stress in personal, professional or sporting life as this can exacerbate the injury. Any suspicion of overtraining must be explored. Signs of this can include excessive fatigue, recurrent infections, poor motivation, and a persistently sore and stiff athlete. Any nutritional issues should also be discussed, especially if there appears to be excessive tiredness, and where hydration and refuelling may not be optimal.

Dr Neil Heron: Physiological and clinical aspects of medical problems encountered at football events

Dr Heron is Club Doctor at Crusaders Football Club and to the Northern Ireland U-21 and U-19 squads. He provided an experiential, evidence-based, and fact-packed guide to being prepared for the management of injuries and problems encountered on the field of play. Dr Heron began his talk with a quote from the American Football coach Joe Paterno *"the will to win is important, but the will to prepare is vital",* which encapsulates the fundamental notion of preparing oneself, preparing one's equipment and preparing one's players. In terms of preparing players, Dr Heron discussed pre-participation medicals. Marjon, et al. (2007) were cited as stating that screening is "justifiable, necessary and compelling on the basis of ethical, legal and medical grounds".

It is essential to recognise that intense athletic training and competition act as triggers to increase the risk of sudden cardiac death (SCD) or disease progression in susceptible athletes with underlying heart disease. Hypertrophic cardiomyopathy (HCM) was highlighted as the single most common cause of athlete deaths (1/3) in those under 35 years of age. The second most commonest cause of athletic deaths relate to congenital coronary artery anomalies. In populations over the age of 35, the most common cause is unsuspected atherosclerotic coronary artery disease. SCD in young athletes is a significant issue, with an incidence of approximately 1 in 100,000 occurring each year, mainly in football, basketball and running sports.

Dr Heron drew our attention to the 2007 American Heart Association (AHA) recommendations for screening and referral of heart conditions. He pointed out that his players, at Crusaders FC, are screened for heart conditions with a specific annual history and examination, and a one-off ECG and echocardiogram, as per UEFA medical guidelines. Once full assessment has been undertaken, the decision regarding recommendations for either continued participation or disqualification from sport must be made, and the 36th Bethesda Conference (eligibility recommendations for competitive athletes with cardiovascular abnormalities) provides clear guidance for this (Maron and Zipes, 2005).

Dr Heron highlighted the importance of understanding the basic nutritional requirements of athletes. As such, he provided a large selection of extremely useful recommendations:

- Minimum fluid requirements per day are approximately 3,700ml/day
- Female athletes at particular risk of iron deficiency due to a combination of poor dietary intake as well as menstrual losses
- Footballers often have insufficient calorie intake
- Typical total energy cost for a typical football player weighing 75kg is approximately 1,800kcal
- 60-70% of total calorific intake from carbohydrates is recommended (approximately 7-10g/kg/day)
- Football players need an increased protein intake compared to sedentary people (hence should aim for 1.6g/kg/day)
- Less than 30% of total calorie intake should be from fats
- Baseline recommendation for water/day is 2,500 ml

- Athletes should aim to ingest an additional 600-1,200ml of fluid to be consumed per hour of sport
- Iron deficiency is common in athletes – particularly females, which indicates a possible need for annual full blood count (FBC) analysis, including iron profile
- Individual fluid intakes will vary, and players are recommended to drink 500ml 60-90 minutes before the game
- Sodium (Na) should be included in fluids when the sport lasts longer than 1-2 hours
  sports drinks will ideally have a carbohydrate (CHO) content of 4-8%
- Intake of CHO, generally associated with performance benefits, is around 20-60g per hour of sport participation
- CHO loading for the 2-3 days prior to a game
- Athletes are recommended to consume 1-4g/kg of body weight of CHO 1-6 hours prior to the game
- Eating a large amount of CHO (8-10g/kg/day) at the same time that training intensity and duration are reduced will lead to very high levels of muscle glycogen stores within 2-3 days
- Players are advised to experiment with different meals pre-match to discover what works best for them
- CHO (solids or liquids) intake should start as soon as possible after the exercise session so as to improve glycogen store replacement
- 20-25g of protein should be taken in the recovery period so as to enhance protein synthesis
- Caffeine can contribute to enhanced endurance (2-3mg/kg = 1-2 cups of coffee)

Dr Heron explained that many players will take supplements, often based on advice they have received from a fellow athlete – but not necessarily based on any scientific evidence. He recommended that practitioners should not be completely dismissive, but should aim to provide the team with clarification of the facts. Creatine supplementation, it was stated, can lead to gains in muscle mass which can be helpful for some, but harmful for others, and may cause gastrointestinal (GI) problems such as flatulence and diarrhoea. Bicarbonate use as a supplement is also limited by the risk of GI problems, and players should experiment in training. Creatine could be taken in doses of 10-20g/day for 4-5 days to load, then 2-3g/day for maintenance, as such it has been shown to improve performance in single or multiple sprints. Caffeine, in doses of 2-3mg/kg can help endurance performance, and bicarbonate (0.3g/kg of body weight) prior to an event may help counter the negative effects of lactic acid. No other supplements have a clearly proven efficacy.

Dr Heron reminded delegates of the World Anti-Doping Agency (WADA) guidelines, which are updated annually. He pointed out that players do fall under a strict liability principle – indeed, they are responsible for everything they eat and drink. Other useful information relating to nutrition included the fact that alcohol can displace CHO from the diet – particularly post-match, when in reality restoration of glycogen stores should be a priority. Ideally, players should consume their meal post-match before any drinking of alcohol. Alcohol is recognised as a significant sub-cultural issue within football, with perhaps the main problem being binge drinking – particularly when it is considered that some players will go out after a match and drink 10 pints of beer or more – which equates to 20-30 units of alcohol. Such levels of drinking have implications for the players' post-match recovery, their health and well-being, in addition to their professional reputation.

In terms of match day preparation and equipment, Dr Heron stated that the only items of equipment he carried onto the pitch were gloves, swabs and sterile water, with a few easily accessible bandages in his pockets. Pitch-side, beyond all standard first-aid equipment, additional essential items must include defibrillator, cardiac drugs, oxygen, neck splints and spinal board. Other authorities in this field would recommend additional equipment such as airway adjuncts, steri-strips, plasters, antiseptic wipes or spray, sterile eyewash, eye pads, nasal tampons, blister pads, tweezers, medical waste bag, shearing scissors, crushed ice, plastic bags, chemical cold packs, a cling film roller wrap, and more, as well as all taping and strapping equipment.

It was emphasised that to work pitch-side, requires that the practitioner has undertaken appropriate, recognised and sports-specific training in pitch-side resuscitation and trauma management. Preparation for work at any event, requires the medical team to be completely familiar with the environment, phone signals or locations, access routes, ambulance stations and local accident and emergency services. It was noted that some teams will have orthopaedic and anaesthetic support in the stadium for pitch-side care, possibly along with other team doctors. At larger events, one of the medical team may also be able to observe a monitor in the stands and be in communication with the pitch-side doctor.

Dr Heron went on to discuss key aspects of such topics as concussion and cold water immersion (CWI) therapy (which he felt was useful) and has a recent meta-analysis to support

its efficacy in the reduction of delayed on-set muscle soreness (DOMS) (Leeder et al., 2012). Post-match/training CWI temperatures between 8-10C were recommended. One final and pertinent question from the audience was regarding dealing with situations where there may be conflicts of duty, particularly where difficult decisions need to be made regarding whether an injured player is fit and able to continue on the field of play. The message, quite clearly, is that it is the practitioner's autonomous responsibility to ensure the welfare of the player, not the team, and that practitioners must be encouraged to show confidence in their decision-making.

Professor Nicola Maffulli: Acute knee injuries / Practical knee assessment

In the first of a two-part session focusing on the knee, Professor Maffulli presented a review of evaluation techniques, differential diagnoses and treatment modalities. During subjective assessment, practitioners must explore pain characteristics and mechanical symptoms (such as locking; popping; giving way). Practitioners must clarify any mechanism of injury affecting the knee, such as a direct blow or decelerating, landing, twisting and hyperextending movements. Effusions may be rapid (< 2 hours), indicating probable haemarthrosis, or slow (24-48 hours), indicating ligamentous strain or meniscal injury. Any previous knee injury or surgery must be explored.

The 'Ottawa Knee Rules' (OKR) were explained, which are essential guidelines for referral for imaging (on suspicion of fracture) when the patient or athlete presents with the following: aged 55 or over; isolated tenderness of the patella (no bone tenderness of the knee other than the patella); tenderness at the head of the fibula; inability to flex to 90°; inability to weight-bear (immediately and in the examination room – i.e. an inability to perform 4 steps). The OKR have a sensitivity of 97% and specificity of 27%.

When X-rays are required, it was explained that it is usual to perform AP (anteroposterior), lateral and 'merchant's' (axial, with 45° flexion) views. A 'tunnel' view may be required – in standing PA (posteroanterior), with knee flexion – when an adolescent presents with chronic knee pain and recurrent effusion. Such a radiograph enables assessment for osteochondritis dissecans on the femoral condyles, which is a common condition in such athletes.

Professor Maffulli highlighted a set of important differential diagnoses by age and by location. In the knee of the child and adolescent athlete, the practitioner must be vigilant for the possibility of such conditions as: patellar subluxation; Osgood-Schlatter's syndrome (tibial apophysitis); 'jumper's' knee (patellar tendinopathy); osteochondritis dissecans; and referred pain from a SCFE (slipped capital femoral epiphysis). In the older patient, osteoarthritis, crystal arthropathy and Baker's (Popliteal) cyst are not infrequent presentations. Other common knee conditions include: PFPS (patellofemoral pain syndrome); medial plica syndrome; pes anserine bursitis; ligamentous sprains; meniscal injuries; inflammatory arthropathy; septic arthritis; patellar bursitis; and iliotibial band syndrome.

In the presence of warmth, exquisite tenderness and effusion of the knee, practitioners should be suspicious of septic arthritis or acute inflammatory arthropathy, and the patient should be referred for laboratory tests, including: C/FBC (complete/full blood count); ESR (erythrocyte sedimentation rate); RF (rheumatoid factor); and arthrocentesis (aspiration of joint fluid) for cell count, glucose, protein, C and S (culture and sensitivity), and polarized light microscopic evaluation. It was suggested that if diagnosis was unclear with any effusion, then arthrocentesis should be considered.

Rather more straightforward, if not simplistic, was the presentation of a set of common differential diagnoses by way of location, including: anterior knee (patellar subluxation; Osgood-Schlatter's syndrome; 'Jumper's' knee; PFPS; prepatellar bursitis); medial knee (medial collateral ligament sprain; medial meniscal tear; pes anserine bursitis; medial plica syndrome; lateral knee (lateral collateral ligament sprain; lateral meniscal tear; iliotibial band syndrome); and posterior knee (Baker's cyst; posterior cruciate ligament sprain).

The remainder of this presentation explored more specifically the features of confirmative diagnosis, management strategies (conservative and no-conservative) and likely outcomes (including complications) of a selection of the common knee conditions previously mentioned.

During the accompanying practical workshop a number of special tests were demonstrated: patella tap test ('milking' of the suprapatellar pouch for assessment of effusion at the knee); valgus and varus ligament stress tests (for assessment of the medial and lateral collateral ligaments respectively); Lachman's test (for anterior cruciate ligament); pivot-shift test (for ACL); apprehension test (for patellofemoral instability); McMurray's test (for meniscus); and Apley's ('grinder') test (for meniscus).

Simon Lack: Ankle Injury and Assessment

Simon Lack is an experienced musculoskeletal physiotherapist, and he provided delegates with an informative presentation on foot and ankle anatomy and injury assessment approaches. Within this presentation, Simon highlighted just how essential a strong working knowledge of specific foot and ankle anatomy and pathology is for sport

and exercise practitioners, citing Cloke et al. (2009) who, in their epidemiological study of English Football Association (FA) academies between 1998-2006, identified a total of 13,662 injuries, of which 19% involved ankles, with a mean time loss per ankle injury of 20.4 days.

Simon also elected to present the common pathologies of the region by way of location: anterior ankle (anterior impingement - bony exostosis and chronic Synovitis; tibialis anterior tendinopathy; anterior inferior tibiofibular joint injury; and osteochondritis dissicans; posterior ankle (posterior impingement – os trigonum; Achilles tendon injury; calcaneal fracture; and posterior inferior tibiofibular joint injury; medial ankle (deltoid ligament injury; medial malleolar fracture; tibialis posterior tendinopathy; tarsal tunnel syndrome; flexor hallucis longus tendinopathy; navicular stress fracture; and talar stress fracture); lateral ankle (peroneal tendinopathy; sinus tarsi syndrome; anterior talofibular ligament injury; calcaneofibular ligament injury; lateral malleolar fracture; peroneal tendon injury.

The Ottawa Ankle Rules (OAR) were highlighted, which provide indicators for referral for X-ray (these include: bony tenderness on either lateral or medial malleoli and 6cm above; bony tenderness on the base of the 5th metatarsal or navicular; and inability to bear weight at the time of injury or in the examination room).

Simon completed his presentation with suggestions for tailoring the assessment for either the acute, sub-acute or chronic ankle injuries.

Dr Dylan Morrissey: Assessing the shoulder / Practical shoulder assessment

Dr Morrissey is a Senior Clinical Lecturer in Sport and Exercise Medicine, and a Consultant Physiotherapist. He provided a short presentation over-viewing the shoulder articulations and anatomical relations, common pathologies, the 'complaint-based' assessment and 'masqueraders' (i.e. differential diagnoses and conditions which do not originate at the shoulder).

Dr Morrissey was extremely keen to emphasise the importance of high-level practical anatomical knowledge, and then proceeded to clarify important anatomical features and relations of the sternoclavicular (SC), acromioclavicular (AC), scapulo-thoracic (ST) and gleno-humeral (GH) articulations. In addition to clarifying the classic shoulder pathologies of primary and secondary sub-acromial impingement, instability (including the Stanmore or Bayley 'Triangle' polar conceptual model, 2009) and restrictive processes (such as adhesive capsulitis), Dr Morrissey provided an additional pathological checklist, which included: AC joint osteoarthritis; AC joint injury; SC joint injury; cervical referral; supraspinatus tendinopathy; other rotator cuff tendinopathy; rotator cuff tear; dislocations (anterior and posterior); Hill-Sachs lesion; Bankart labral tear; SLAP (superior labrum anterior-posterior) lesion; biceps tendon dislocation; biceps rupture; and brachial plexus lesions.

The 'complaint-based' approach to assessment aims to incorporate analysis of the subjective history (including: mechanism of injury; pain type and location; presence and reason for any weakness – cervical, peripheral, cuff tear or inhibition; relation of description of dysfunctional symptoms to possible anatomic involvement – for example, a 'catching' or 'clunking' may indicate a labral lesion or biceps tendon slippage; crepitus may suggest impingement, osteoarthritis or a 'snapping' scapula; and a stiffness pattern may relate to a capsular issue).

Dr Morrissey also provided a practical should assessment workshop, which incorporated static postural examinations, the Neer's and Hawkin's-Kennedy tests (for subacromial impingements), the empty can test (for rotator cuff injury), the apprehension and relocation tests (for assessment of anterior instability), and palpation of the shoulder region.

Professor Nicola Maffulli: Advances in sports medicine – new, but is it better?

Professor Maffulli had prepared a lengthy powerpoint presentation for this session, but due to time constraints, elected to present a summary of some the more recent developments in the field of sports medicine. Among the topics for discussion were platelet-rich plasma (PRP) injections and ACL reconstruction surgery. Professor Maffulli expressed an opinion that many of the apparent advances in medicine must be viewed sensibly and with caution, especially with regard to the influence of bias both in research and marketing.

Percutaneous PRP (autologous blood concentrate) injections have been presented as being almost a panacea – from the Greek Πανάκεια, (Panakeia), the goddess of healing. A panacea is a substance meant to cure all diseases... Professor Maffulli presented to us the consideration that the evidence to support PRP for muscle and tendon conditions is somewhat limited. Preliminary results from one particular randomised controlled trial (RCT) involving PRP augmentation for arthroscopic rotator cuff repair demonstrated no statistically significant difference in total constant score when compared to repair without PRP (Catricini et al., 2011). The potential risks involved with PRP are low, however, benefits remain unproven to date, especially in comparison to other injection therapies. PRP is heterogenous, and platelets contain growth factors, and it may be that certain types of PRP are more effective than others. The timing, quantity and frequency of injections required must also be exposed to

rigorous scientific appraisal before PRP can be widely recommended.

With regard to the topic of ACL reconstructions, there is little in the way of reliable evidence to suggest that a double-bundle reconstruction can provide a better clinical outcome than a single-bundle procedure. Single-bundle reconstruction has traditionally demonstrated positive patient-based outcomes. The proviso of such is that the procedure must be performed in a technically correct fashion, with up-to-date tunnel placement, using appropriate fixation techniques, with pre and post-surgical evidence-based rehabilitation programmes. Professor Maffulli suggested that simple operative procedures are usually the best.

Dr. Nikos G. Malliaropoulos: Sports On-Field Trauma Emergencies – SOFTE

Dr Malliaropoulos is a founding member of the Greek Sports Medicine Association and was Chief Medical Officer of the Hellenic Olympic Team at the XXVIII Olympics Athens 2004, hence he has a wealth of experience at the highest level. Dr Malliaropoulos began by stating that although at sports events there is an obvious risk for serious or critical injuries, fortunately, life-threatening injuries are rare.

It was highlighted that pre-hospital care which may be provided at a sports event differs significantly from the controlled hospital environment. It is essential that sports and exercise personnel should have an in-depth knowledge of the sports for which they are responsible, and this must include knowledge of the rules of the game or competition. The main responsibility of such personnel is to lead or assist in the design and structure of a medical team, with a focus on promoting the health of their athletes. Practitioners must lessen the risk of injury by preventative measures and plan to provide the necessary medical attention during training and competition. The adoption of a systematic response by the medical team, supports the prevention of any situation from becoming worse, improves the outcomes of any situation, and promotes optimal recovery. Sport and exercise practitioners need to be able to quickly and effectively assess the situation, consider a variety of environmental, medical, manpower and equipment factors, and to ensure that the most appropriate actions are taken.

The first step in sideline management for any medical team taking care of athletes on the field of play is to have their Emergency Action Plan (EAP) in place.

Dr Malliaropoulos went on to discuss immediate care of musculoskeletal injuries, concussion and spinal injuries. He also highlighted how one of the most challenging considerations in immediate care in sports, is the return to play (RtP) decision, particularly with regard to the athlete who is suspected as having concussion. With regard to spinal injuries – these must always be suspected until proven otherwise. When spinal injury is suspected, correct medical care is paramount (for example: maintenance of alignment; personnel working together; appropriate equipment; maintenance of oxygenation – 100%, 10-12 lit/ min; maintenance of blood pressure – 80-90mmHg).

Practitioners must be prepared for the situation they are working. All sports are different, and have different environments. Sports participants may be professional, recreational, adult, or child. However, Dr Malliaropoulos, explained that there are a series of elements which will be constant and compulsory both in the side-line first-aid kit, and at the first-aid post of a sports physician, and these will not differ so much as to what we may find in any emergency kit. The literature, though, is quite varied when it comes to recommendations for items to be included in a first-aid kit. Essentially, the sports and exercise physician, and their team, must be trained and prepared to be able to provide a highly-organised and advanced level of trauma care.

Dr Dinesh Sirisena: Under-performance

Dr Sirisena is a Sport and Exercise Medicine Registrar based in London. He is an Honorary Clinical Lecturer at Bart's and the London Medical School, and is team doctor at AFC Wimbledon. Dr Sirisena began his presentation by citing the Olympic motto, the Latin expression '*citius, altius, fortius*' (meaning faster, higher, stronger), which pretty effectively sums up the fundamental objectives of any serious athlete, and also provides a clear foundation for any discussion of the common athletic under-performance syndrome, which may be defined as simply any sport-specific performance which is less successful than could be expected.

The reasons for athletic under-performance can be wide-ranging and multi-factorial. The clinician or physician involved in its assessment must explore: the onset and duration of under-performance – ascertaining whether it is an acute or chronic presentation; training methods (type; appropriateness; changes; intensity; recovery) and the athlete's experiences of such; goals, targets and upcoming competitions; environmental issues; injuries; infections (especially hepatitis B and C) and systemic illnesses; social, work, financial and sponsorship issues; alcohol or drug issues.

Clinical systemic examination may be required (especially including the cardiovascular, respiratory, gastrointestinal,

nervous, genitourinary and endocrine systems). Such examination is likely to require ordering of blood tests, ECG, lung function and urine tests. Dr Sirisena highlighted the importance of exploring any history of weight fluctuations or possibility of eating disorders. It is not uncommon to discover under-performance related to nutritional issues such as inadequate carbohydrate intake, poor hydration, inadequate protein intake, malabsorption (such as with coeliac disease and Crone's disease) and specific deficiencies (especially magnesium, zinc, iron and B vitamins).

Athletic overtraining syndrome has been defined by Budgett (1998) as "a condition of fatigue and underperformance, often associated with frequent infections and depression which occurs following hard training and competition. The symptoms do not resolve despite two weeks of adequate rest, and there is no other identifiable medical cause". By comparison, Meeusen et al. (2006) discussed the concept of overreaching as "an accumulation of training and/or non-training stress resulting in short-term decrement in performance capacity with or without related physiological and psychological signs and symptoms of maladaptation in which restoration of performance capacity may take from several days to several weeks". Hence, an overreached state, with its characteristic feature of fatigue, will normally recover with an appropriate period of decreased training and increased rest, however, if such a strategy is not employed, the condition can progress to that of overtraining.

Amongst a host of potential signs and symptoms indicative of overtraining/under-performance syndrome are: excessive fatigue; heavy muscles; depression; sleep disturbance (including nightmares); loss of appetite; weight-changes; changes in competitive drive; loss of libido; emotional issues (liability; anxiety; irritability); resting tachycardia; excessive sweating; recurrent minor infections; cervical lymphadenopathy; postural hypotension; postural rise in heart rate; reduced maximum oxygen consumption; reduced maximum power output; increased sub-maximum oxygen consumption and pulse rate; slow return of heart rate to normal after exercise. Dr Sirisena explained that just as positive training outcomes result in super-compensation, which leads to progressive improvements in training; negative training outcomes, with inadequate recovery, leads to progressive worsening in training.

The biopsychosocial condition of any athlete must be considered, and it is essential to consider the inputs to the health and performance of the athlete provided by their family and friends, coach, therapist, doctor and psychologist where applicable.

Dr Sirisena made a handful of simple recommendations for management of under-performance, beyond initial assessment and examination, athlete's should keep a daily training log, allocate appropriate rest periods, modify activity wherever possible and gradually re-introduce training and monitoring. The Profile of Mood Scale (POMS) is a commonly used measure of psychological distress which utilises a subjective 5-point Likert scale rating scale, and may be used as part of a monitoring strategy.

Any underlying or associated pathology must be treated. There are always certain challenges to any ideal outcome, these may include denial, poor adherence, conflicts (relating training or goals), and relapse.

Dr Eleanor Tillett: Prescribing Exercise

Dr Tillett is a Consultant in Sport and Exercise Medicine, and she provided us with an easily absorbed overview of keys to inspiring health improvements in patients with exercise. Dr Tillett emphasised the need to assess the individual's health and exercise history and identify from the outset any requirement to undertake specific screening (medical or exercise testing). Agreed goals should be identified (these may include weight reduction; disease modification; pain reduction; improved activities of daily living; or simple sporting challenges). Practitioners should aim to have an appreciation of what 'state of change' the patient is in (pre-contemplation; contemplation; preparation; action; or maintenance) and also be aware of the potential for relapse. The basic FITT principle of exercise prescription for beginners was presented: frequency (5 days per week, most days); intensity (moderate); time (30-60 minutes in minimum of 10 minute bursts; type (aerobic; strength; flexibility; neuro-motor; and including details of specific exercises, sets, repetitions and time); plus warm-up and cool-down activities. The 'Borg rating scale of perceived exertion' (RPE) was highlighted as a means to both patient and practitioner gauging intensity of effort. Dr Tillett went on to discuss evidence-based approaches using exercise as a primary intervention for the management of such a wide variety of conditions, including cancer, depression, coronary heart disease, asthma, diabetes, obesity, osteoarthritis and osteoporosis.

All in all, this was an intimate congress with true experts in the field providing essential information and practical guidance for a highly motivated audience. The author would like to offer special thanks to Dr Paul Jones from Queen Mary University of London Centre for Sports and Exercise Medicine for organising the event, and to the officers of ECOSEP for additional support and information, in particular Dr Malliaropoulos.

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Conference Review

The Journal of Sports Therapy Website Launch and CPD Afternoon

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The Journal of Sports Therapy (JST) Website Launch and CPD Afternoon was held at the Austin Court Conference Centre, Birmingham on July 9th 2012. The rationale for this event was twofold; simply to gather in order to celebrate the development, and provide the 'live launch', for the new and bespoke JST website; and to provide an afternoon of high calibre presentations in a central UK location for the purpose of continued professional development.

The afternoon began with a short, intentionally welcoming, and slightly humorous introduction from the JST managing editor, Keith Ward:

"Ladies and gentlemen, friends and colleagues, students and professionals, and special guests, sports therapists, and sports rehabilitators, physiotherapists, and osteopaths, chiropractors, and podiatrists, sports scientists and sports managers, strength and conditioning practitioners and biomechanists, and sports nutritionists, sports psychologists, and sports massage and soft tissue therapists, sports coaches, and personal trainers, general practitioners, and sports medicine doctors, and consultant surgeons, and elite and recreational athletes, and exercise novices...welcome!"

The idea behind such a long-winded introductory welcome was to highlight, from the outset, the concept of potential breadth of interest in the field of sports therapy, and to present the notion of inclusivity and inter-professionality.

Fig. 6.1 Presenters at the JST Website Launch and CPD Afternoon

Graham Taylor: The Football Manager's Perspective

The first speaker of the afternoon, Graham Taylor, immediately picked up on the wide field of sports-related practitioners listed in the introductory welcome. Graham is the son of a sports journalist; he played professional football for the likes of Grimsby Town and Lincoln City (retiring through injury in the early 1970's); he has managed Watford FC, Aston Villa FC, and England; and is now a highly respected and articulate football pundit (and we did like that!). Graham expressed slight bemusement to the broad range of specialists who now practice in elite sport, but presented his idea of who he might value the most in the sports medical team – the sports psychologist. This suggestion, to an audience predominated by sports therapists and physiotherapists was slightly challenging, but taken with interest and reflection. The audience did respond with questions and comments later in his session, and Graham himself conceded that, obviously, the sports psychologist was not the practitioner to prevent, assess, treat or rehabilitate the footballer's injuries, but they could be the practitioner who could help to develop the optimal mindset of the player – which, in his experience, is what can make the difference between winning and losing. Graham plied his trade as a successful manager of professional football clubs in the 1970's, 80's and 90's, which essentially must now be seen as a different era. No longer are the top teams operating with a small squad, or with a backroom medical team comprising simply of one 'physio' (who may or may not have been a 'chartered physiotherapist' in those days), and one consulting medical doctor (who may or may not have had specialised training in sports medicine).

Graham was extremely gracious in offering the JST conference his time, and sharing with us his experiences of dealing with injured and underperforming players. Graham was keen to learn more about the new era of sports-related professionals, and was certainly willing to entertain debate.
The next section of the conference comprised of a short series of presentations from those directly involved with the JST and its new website development.

Keith Ward: The JST in Development and Mission

This talk began with a brief overview of the rationale for the development of a journal for the sports therapy profession. The first sports therapy degree courses were establishing in the UK in the mid 1990's. As sports therapy is charged with presenting itself as a definitively different strand of

autonomous healthcare, with a scientific underpinning which is rooted in related disciplines (sports and exercise science, general medicine and orthopaedics, physiotherapy, manual therapy, health promotion and more), it was highlighted that to be reputable, recognised and integrated requires that the foundations of such practice must be laid on an evidence-base. It was suggested that "any emerging profession must take ownership of its responsibility, and as the profession evolves – so must its evidence-base".

Sackett et al (2000) provided useful definitions of evidence-based practice (EBP):

"Evidence-based practice is using the best research evidence available along with clinical expertise and patient values to inform decisions regarding clinical practice".

It was explained how important it is to appreciate the processual development of any professional or academic organisation and to document the main formative and chronological history. The point was made that: to appreciate historical tradition is to appreciate development and progress. The original vision for the JST was established by a small group of colleagues (lecturers, practitioners and researchers), and these included Rob Di Leva, David Jenkins, Ian Lahart and Philip Smith. Volume 1, Issue 1 was published in Spring 2008. In 2010, Adam Hawkey joined as a new board member and guest editor. In 2012, with an established and growing archive of publications, and with a new website in development, the JST editorial board was expanded and a managing editor appointed.

In terms of its mission:

"The JST aims to be an internationally recognised, scholarly, peer-reviewed journal for sports therapists and other healthcare and research communities in order to advance musculoskeletal and sports-related best practice".

The core objectives of the Journal are to:

1. *Expand access to evidence and best practice*
2. *Advance and influence the diverse practice of sports therapists and others in the musculoskeletal healthcare and research communities*
3. *Objectively examine the effectiveness and utility of interventions within exercise and sports-related healthcare*
4. *Expand its subscriber, reader, author, editorial and promotional bases*

The presentation identified the type of literature that the JST is keen to consider for publication, including: original papers; systematic reviews; narrative discussions and commentaries; case studies; media reviews; book and multimedia reviews; CPD course reviews; conference proceedings; letters to the editor. Furthermore, the article submission requirements were specified, and the article review process clarified.

In a nutshell, it was summarised that the JST will strive to support the development of the sports therapy profession as a whole by providing a unique publishing portal, and by providing up to date information on all areas of interest and practise.

Rick O'Neil: The JST Website Overview

The next item on the agenda was provided by Rick O'Neil from the website development consultants 'Looktouchfeel' (www.looktouchfeel.co.uk). His task was simply to overview the main features of the new JST website, and then, with all fingers in the house firmly crossed, press the appropriate buttons to send the site live to the world wide web! This essential objective was achieved, and we could all sit back in relief!

Jeanette Lewis: The JST Discussion Forum

Jeanette Lewis is a sports therapy lecturer and the JST Discussion Forum moderator. Jeanette provided a succinct overview of the rationale for, and the features of, the discussion forum.

As she explained, there are indeed a growing range of sports medicine and other medical online discussion forums, but there are few professionally moderated sports therapy specific forums. The internet and social media have a broad role to play in bringing together professionals across disciplines. The key objectives of the JST Discussion Forum is to provide increased awareness of sports therapy across disciplines and occupational settings; to provide a voice for the professional community; to generate and share knowledge and best practise, creating a debate and discussion environment; to breakdown geographical locations; to provide an interactive and vibrant learning environment; to facilitate knowledge generation; to explore current and contemporary sports therapy issues; to present and discuss news events; to offer access to a diverse, and potentially huge, audience; to provide open discussion; to share experiences; to pose questions and to propose answers.

Jeanette explained that within the Discuss Forum, there are a number of forum topics where 'posters' (registered users) may select the most appropriate title to make their post. These include: hot topics; new members; book and DVD reviews; professional practice; JST articles; research; professional issues; multidisciplinary topics; injuries; and events. Again, it was highlighted that registration is required, but that it is a simple process and free.

David Jenkins: Research Concepts

David Jenkins provided an extremely informative overview of his *'Research Concepts'* series, which has been sequentially published in a number of JST issues. This short session was intended to reinforce the overarching concept of the complementarity of methods approach to research. In doing so, it stressed the importance of thinking heterodoxically about the relationships between quantitative and qualitative data inputs and their various combinatorial outputs.

An overview of the key aspects and permutations of types of research was discussed, together with an overview of the *Context-Theory* matrix, a framework for the researcher to self-analyse and assess a planned project as to its applicability and feasibility in relation to the intended audience. A statistical utility framework was also illustrated in support of the typology of measurement options for the sports therapy researcher conducting a quantitative study.

The main thrust of the presentation was to encourage the sports therapy researcher to consider the data collection and analysis process backwards from the end to the beginning. The internal logic being that the researcher usually has an idea what results will possibly emerge from the project so should then be asking 'What findings am I aiming for, what analysis do I need to conduct to arrive at those findings, what information will allow me to carry out this analysis, and therefore what is the most relevant form of raw data required for this information, and how then do I shape the questions of my research to elicit the answers that will generate the raw data I require'.

Fig. 6.2 The Research Process

The Research Process

Ontological and epistemological positionality	Positivist	Realist	Interpretivist		
Purpose of research	Exploratory	Explanatory	Descriptive	Predictive	
Research strategy	Experiment	Survey	Archival	Historical	Case study
Research approach	Quantitative	Qualitative	Mixed methods		
Primary data collection methods	Documents	Archive records	Interviews	Observation	Physical artefacts
Secondary data collection methods	Documentary analysis				

Fig. 6.3 Context-Theory Matrix

Context-Theory Matrix

Theory Theoretical framework? Developing own theory from a positivist or interpretive, inductive approach? Or, a challenge or critique of existing theory through testing via a deductive approach.	**Context** In what sense are you using the words in your research question, rationale, aim, and objectives? You need to re-examine, repeatedly at the outset. Does your research question need refining?
Access How can you realistically obtain your data. Sample size, locations, ethical issues, copyright, permissions, licence, physical barriers, financial and time constraints?	**Measurement** How will you evaluate, judge, compare, analyse your primary and secondary data? What are your research barometers/measuring tapes? What form of measurement will be needed to allow you to make judgements?
Contribution What does your research offer you and your audience? To whom and why?	**Suitability** Is this the right question for you? What type of researcher are you? Do you really understand the concepts involved?

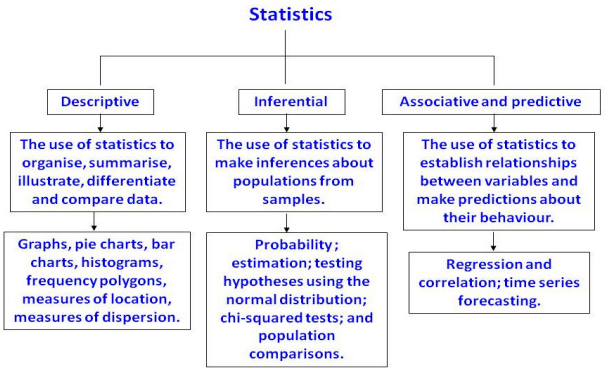
Fig. 6.4 Complimentarity of Methods

Complimentarity of Methods

- Quantitative data inputs into quantitative analytical outputs
- Quantitative data inputs into qualitative analytical outputs
- Qualitative data inputs into quantitative analytical outputs
- Qualitative data inputs into qualitative analytical outputs

Fig. 6.5 A Statistical Utility Framework

A Statistical Utility Framework

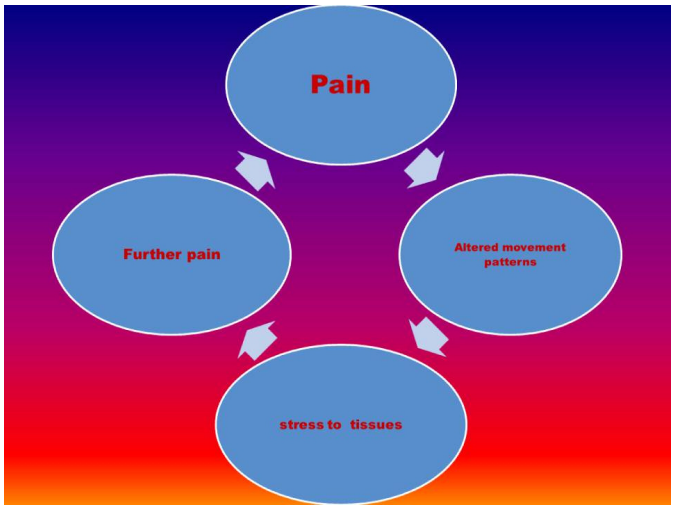


Ian Horsley: Shoulder Assessment and Rehabilitation

Ian Horsley is a respected lecturer, researcher and English Institute of Sport (EIS) lead (North West) physiotherapist. Ian provided an extremely informative presentation on shoulder assessment and rehabilitation, and this review will simply provide a brief summary of the key take-home points. He explained that his work involves a significant number of secondary and tertiary consultations with ath-

letes who have failed to respond favourably to either conservative or operative management, and as such began his talk with a short selection of *'Rehab: need to knows'.* These included, post-operatively, the importance of having clarification dialogue with the orthopaedic consultant; the therapist should understand what specifically has "been fixed" and what the position of fixation was? What was the method of fixation? What is the known current quality of the affected tissue? What associated lesions are, or were, present (recognising the possibility of multiple pathologies)? If cortisone injections have been used (diagnostically or therapeutically), practitioners should recognise the issues associated with the catabolic properties with steroids, and that it may be 2-3 months before the affected tissues gain their optimal quality.

Ian highlighted the fact that although there are a large number of published and recognised orthopaedic special tests, a large proportion of these are lacking in reliability (sensitivity and specificity ratings). In terms of rehabilitation, the importance of achieving a continuum of progressive exercise which aims to restore optimal function was emphasised, alongside



consideration of the necessary protection of the anatomic integrity of the repaired and repairing tissue. Furthermore, it is essential to not neglect the other tissues in the affected locality which were not injured, but which still require loading for maintenance of healthy integrity and function. Ian expressed the need for further research into improving strategies for reducing the immobilisation, and the effects of immobilisation, on non-injured tissues.

A useful vicious pain-cycle was presented with regard to how pain can change movement, and how altered (compensatory and faulty) movement can then change (increase) the pain.

Fig. 6.6 Vicious pain-cycle

Ian then explained that normal movement should be effortless. Normal shoulder anatomy and movements were reviewed. The normal movements associated with the shoulder involve the: glenohumeral joint; acromioclavicular joint; sternoclavicular joint; scapulothoracic articulation; and the thoracic spine. Any shoulder assessment must incorporate: static posture; scapular position (angles; borders; tilts; rotations); head of humerus position; and the cervical, thoracic, lumbar and pelvic position. Assessment must also be dynamic and functional, and it is essential to consider the spinal involvement in arm movements. Ian also expressed a preference for assessing passive shoulder movements in the supine position.

The following list highlights the spinal relationship with shoulder movement:

- Trunk extension occurs with bilateral arm elevation
- Trunk lateral flexion and rotation occur with unilateral arm elevation
- More extension occurs in the lower thoracic spine than the upper with arm elevation
- The upper thoracic spine deviates towards the moving arm
- The lower thoracic spine deviates away from the moving arm
- Lumbar spine movements are less significant with regard to arm movements
- Reduced thoracic movement is associated with reduced arm movement
- Reduced scapulohumeral range of movement evokes compensatory movement in the thoracic spine

One particularly key aspect of shoulder rehabilitation was highlighted. It was emphasised that endurance for the rotator cuff and dynamic stabilisers of the shoulder must be trained in order to achieve the desired effortless movements. Hence, for example, to avoid 'blowout' in such muscles, therapists should aim to develop the athlete's endurance in the early stages of recovery, and as such may use yellow and pink theraband rather than aiming for reduced repetitions and increased intensity with blue or black theraband. It has been

shown that 'blowout' can occur at 80% force of maximal contraction.

The remainder of Ian's talk presented a host of creative, practical rehabilitation techniques to improve functional movements. The presentation was enlivened by a selection of video clips demonstrating real case studies and practical exercise demonstrations.

Fig.6.7 Ian Horsley instructing shoulder rehabilitation

Lennard Funk: The Athlete's Shoulder – The Surgeon's View

The final speaker of the afternoon was Professor Lennard Funk (www.shoulderdoc.co.uk). He was introduced as "*the man with one of the greatest reputations in shoulder surgery, and one of the greatest names!*"

Lennard Funk holds a consultant position at the Wrightington Hospital Specialist Upper Limb Unit, in Wigan, Lancashire. He also lectures at the University of Salford on post-graduate Orthopaedic and Sports Trauma programmes.

Lennard began his presentation with a brief but specific clarification of glenohumeral joint anatomy. He highlighted the rotator cuff, glenohumeral ligaments, and glenoid labrum and their relevance to sports function and their various associations with injury. The 'labral clock' analogy was presented (with 12 o'clock being the central superior position). It was summarised that Bankart lesions occur in the 3-6 o'clock section; reverse Bankart lesions in the 6-9 o'clock section; and SLAP (superior labral anterior to posterior) lesions occurring in the 9-12 o'clock position. The section from 12-3 o'clock was said to have no significant labral attachment.

Lennard reminded delegates of Newton's second law of motion (F=ma), and explained that as athletes, in recent years, have become faster, bigger, stronger and more flexible, that such power, and the associated impacts seen in contact sports, are contributing to an increased prevalence of such traumatic shoulder injuries as SLAP lesions, Bankart lesions, full thickness rotator cuff tears, and even scapular fractures.

The HAGL (humeral avulsion of glenohumeral ligament) lesion was highlighted as it is a condition often overlooked or missed on imaging. As such the HAGL lesion is a common cause of instability and recurrent subluxation. Lennard categorised major shoulder trauma to include: bony Bankart lesions; ALPSA (anterior labral periosteal sleeve avulsion) lesions, where the labrum is torn off and displaced; full thickness rotator cuff tears (which do not heal without surgical intervention); and HAGL lesions. Minor lesions were said to include: undisplaced Labral tears; partial rotator cuff tears; and AC (acromioclavicular) separations – all of which, it was suggested, are likely to heal when managed conservatively, especially in the young athlete. Early surgery is generally indicated when there is major structural lesion; when there injury occurs late in the season; and when the athlete is unresponsive to protracted conservative management. Following any shoulder surgery, the average return to play is 4½ months, but should be goal rather than time-based in all rehabilitation progressions. Lennard explained that larger lesions and athletes over the age of 30 years would usually take longer for return to play. The Creighton et al. (2010) return to play model, with its decision modifiers, was presented and supported.

Fig 6.8 Clockwise from top left: HAGL lesion; Bankart lesions; Labral clock; SLAP lesion.

In addition to contact athletic injuries common to such sports as rugby and football, the presentation also included discussion of common shoulder injuries affecting overhead athletes and strength athletes. Overhead athletes, such as those involved in baseball (pitchers), tennis, javelin or rock climbing, are particularly vulnerable to dynamic stabilisation issues involving the rotator cuff and scapular musculature. Where there are muscular strength and recruitment imbalances, the term micro-instability may be employed. Repetitive overhead athletes do have a tendency to develop tightening of the posterior capsule and resultant posterior displacement and shift of the head of humerus due to stretching of the anterior IGHL (inferior glenohumeral ligament), and contracture posteriorly. This particular situation has a direct effect on the rotator cuff, as repetitive torsional stress in hyperabducted, externally rotated positions can cause internal impingements, partial thickness tears and biceps-labral stress (leading to degenerate rather than singularly traumatic SLAP lesions).

A very comfortable and professional setting, as well as hospitality for all delegates, was provided by the Austin Court Conference Centre and their staff. A small trade exhibition was also in attendance, which provided opportunity for delegates to observe and experience some of the latest functional exercise training systems and discuss current products with the specialist suppliers. Many thanks to Heidi Greenslade from Physique (www.physique.co.uk), Keith Simmonds from Therapy World (www.therapyworld.org.uk), and Jason McCarthy from Wolverson Fitness (www.wolverson-fitness.co.uk)!

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