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The ROYAL SOCIETY of MEDICINE

From injury to performance: Lessons to share in dance and sports

Monday 4 April 2011

Abstracts & Biographies

A dancer's perspective on injuries Ms Angela Towler

Angela Towler will talk from her perspective as an experienced dancer with world renowned contemporary dance company, Rambert Dance Company. Giving an insight into the physical and mental demands on a professional dancer she will discuss her experience of potentially career-threatening injury and how she has been able to manage this to continue performing. She will outline what was most important to her in terms of management and recovery from injury in order to return to peak performance and offer thoughts and considerations from the benefit of hindsight, which may prove valuable to both fellow dancers and medical practitioners as well as those who have responsibility for organising healthcare for elite performers.

The role of risk management and injury epidemiology in dance Dr Colin Fuller

FIFA Medical Assessment and Research Centre (F-MARC)

The role of injury risk management in sport is well established and international and national governing bodies are now using it on a routine basis to underpin the strategies they use for managing the risk of injury in their individual sports. This lecture will present a proven framework for managing the risk of injury in sport and illustrate the ways in which sports governing bodies have used the approach. A key aspect of the risk management framework is the role of epidemiology in estimating and evaluating levels of risk; the ways in which sports governing bodies have adopted and utilised epidemiological studies to investigate risk factors will be illustrated. The lecture will also indicate how the risk management approach is compatible with and could be adopted within dance activities.

Biography

For 25 years, Dr Fuller was a manager in high-risk industries; this was followed by 16 years as an academic focusing on research into the role of risk management in sport: currently, he is a research consultant working full-time with FIFA, IRB, RFU and UKSport. Colin is the author of over 100 research publications related to risk management in industry and sport. His current research work is centred on using sport as a means of delivering health education to children in Africa (FIFA) and epidemiological studies of injuries in elite rugby (IRB, RFU).

Dance injury epidemiology and how injury surveillance examples from rugby union can help dance in the future

Dr John Brooks

Understanding the epidemiological evidence about injuries in a sport can play an important role in helping clinicians manage the risk of injury via prevention, treatment and rehabilitation interventions. This presentation will summarise the overall rate, risk and profile of injury reported in dance epidemiology studies. It will also explain the benefits and show examples of the usefulness of conducting a large scale on-going injury surveillance project in professional rugby union and how this might be applicable to dance.

Biography

A former professional rugby player with Harlequins and England Saxons, John retired from professional rugby due to injury two years ago and is currently studying graduate medicine at King's College in London. John completed his PhD on the Epidemiology of Injuries in Professional Rugby Union under the supervision of Dr Colin Fuller in 2004. This involved designing, implementing and managing a comprehensive injury surveillance system that is still a major part of the elite rugby injury risk management program in England. He has been involved in several injury surveillance projects in rugby and other sports, including advising Nick Allen at the Birmingham Royal Ballet.

Prevention and rehabilitation

Mr Nick Allen MSc (Sports Med) BSc (Hons) MCSP SRP

The nature of injury is considered multi-factorial. Similarly an approach to injury prevention and rehabilitation needs to be multi-factorial. This session will explore a multi-layered hybrid approach to exercise program design and how it may fit within an overall injury prevention model. The identification of the limiting factor is considered key to determining the focus of the program. The program has a three stage design including neuromuscular facilitation, isolated segmental conditioning and functional integration. The ratios of these factors alongside the cause, objective and nature of injury are constantly evaluated through the different stages of the injury process.

Selected background references

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Biography

Nick Allen is the Clinical Director of the Birmingham Royal Ballet Company and The Jerwood Centre, a £1/4 million Sports and Dance Medicine Centre in Birmingham. Alongside this he has worked as an external Consultant to Great Britain Gymnastics, England and Great Britain Hockey, and previously the Lawn Tennis Association's High Performance Centre in Warwickshire. He was part of Team GB at the Olympic Youth Festival in Sydney in 2007. Prior to moving to The Jerwood Centre he was Head of Medical Services for a top Premiership rugby club. He has been invited to present at a number of conferences by various organisations, including the British Association of Sports Medicine, the Royal Society of Medicine, British Rheumatology Society, UK Sport, England Rugby and the UK Strength and Conditioning Association. He is guest lecturer for the MSc in Sports Medicine at Nottingham University. He just completed the writing up an epidemiological based PhD. His other research interests lie in optimising performance through screening, the relationship of vitamin D and bone turnover markers to bone stress related injuries and the management of tendinopathies.

Prevention and management of injury: The psychologist's perspective Ms Britt Tajet-Foxell

Britt Tajet-Foxell is a Consultant Psychologist to The Royal Ballet, Birmingham Royal Ballet, The Norwegian Olympic Association and Scottish Institute of Sport.

Her role as a psychologist within an injury rehabilitation team is to address any psychological issues which effect full recovery and return to optimal performance. The effects may be described in terms of loss of confidence, negative cognition, anxiety, abnormal pain perception, ineffective information processing, poor decision making, dysfunctional neuro functional programming and increased risk of re-injury.

The challenge is to simplify hugely complex psychological responses and to enable the dancer/athlete to harness these in a positive and functional way.

The aim is to use the traumatic experience of an injury as a possibility to build psychological resilience and optimize their very optimal performance potential.

How important is nutrition? Lessons to shareon injury and performance Mr Nathan Lewis

Professional dance requires an athletic, lean phenotype. Maintenance of a lean phenotype throughout the year, year in year out, in females particularly, contributes to the high prevalence of disordered eating/eating disorders¹, and injuries². With the most common injury presentation being stress fractures of the lower limb². The nutritional consequences of a long term need to maintain a lean phenotype are a high prevalence of low energy availability¹ and disordered eating¹, and nutritional deficiencies, such as iron¹ and calcium¹. In Olympic sports, the training cycle is periodised throughout the year, with the nutrition program delivered in a periodised targeted manner alongside. Such an approach aims to maximise training responses and minimise injury risk, over-training, illness, burnout, as well as manage the periods of cognitive and dietary restraint, with optimisation of body composition and performance. Could a periodised approach to nutrition be successful in a dance environment?

Low energy availability is a feature of athletic amenorrhoea and the female athlete triad³, and poses significant risks for an athlete's bone health³. Poor nutritional practices and dietary restraint, leading to insufficient dietary protein intake, lack of key amino acids, poor intake of essential fatty acids and vitamin D insufficiency⁴ are all additional nutritional factors contributing to the high prevalence of injuries in dancers, although vitamin D insufficiency is more a feature of lifestyle and environmental factors than dietary intake ^{5,6}. All of the aforementioned nutritional factors are manageable. Finally, discussion will be given to the application of nutritional strategies during and post training. These strategies can be easily monitored in the training environment, would serve to maximise protein synthesis, recovery and adaptation, and support health, injury prevention and performance outcomes.

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- American College of Sports Medicine (2007) The Female Athlete Triad. Medicine and Science in Sports and Exercise. 26: 1867-1882.
- 4. High prevalence of vitamin D insufficiency in athletes and dancers. Clinical Journal of Sports Medicine. 20(5): 368-371.
- 5. Cannell, J.J., Hollis, B.W., Sorenson, M.B., Taft, T.N. and Anderson, J.J.B. (2009) Athletic Performance and vitamin D. Medicine in Science in Sports and Exercise. 41(5):1102-1110.
- Halliday, T.M., Peterson, N.J., Thomas, J.J, Kleppinger, K., Hollis, B.W. and Larson-Meyer, E. (2011) Vitamin D status relative to diet, lifestyle, injury, and illness in college athletes. Medicine and Science in Sports and Exercise. 43(2): 335-343.

Biography

Nathan Lewis is currently a senior performance nutritionist for the English Institute of Sport (EIS), and joint EIS technical lead for the south west & central region. He has been with the EIS for both the Beijing and now the London Olympic cycle; leading the nutrition service for British Modern Pentathlon and Olympic Sailing. For Olympic Sailing he attended the China based holding camps and the Olympic games itself, overseeing all aspects of the weight management program; in which he presented data on at the American college of Sports Medicine Conference in 2009 and 2010. Nathan also works as a consultant for Hodgson-Moore Pathology Services delivering haematological, biochemical and hormonal analysis through a global network of accredited laboratories. Prior to moving to the EIS, Nathan spent six years working clinically, specialising in eating disorders, parenteral nutrition and critical care; culminating in managing the Kingston Hospitals clinical nutritional support team.

Nathan undertook his bachelor of sciences degree in Human Nutrition, his state registration in Dietetics at the University of Wales Institute of Cardiff, his clinical training at Norfolk and Norwich NHS Trust, and his master's degree in Sports Nutrition at Aberdeen University, where he was awarded the Universities Biomedical Sciences award for outstanding academic performance.

An athlete's perspective on injuries Denise Lewis OBE

Biography

Denise Lewis was inspired to become an Olympian at just 8 years old, when she watched the Moscow Olympics in 1980 when the seeds of ambition were planted. She was so enthralled by the performances of Daley Thompson and Sebastian Coe that she vowed to make it to the Olympics one day and be the best in the world.

A superb all-round talent, Denise has progressed to the highest world-class at the heptathlon, her highest accolade to date the Olympic gold medal she won in Sydney. In the 1994 Commonwealth Games in Canada, Denise Lewis took her first major International title winning the women's heptathlon competition ahead of the Australian favourite Jane Flemming.

Two years later, Denise won a bronze medal in the Atlanta Olympics, the only female to win a medal in these Games and in this same year broke the British record that had stood for ten years. 1997 saw her improve further by breaking her own British record and the Commonwealth record in her event before adding a silver medal to her collection at the World Championships in Athens.

In 1998 Denise came runner up in BBC Sports Personality of the Year after winning both the European Championships and the Commonwealth Games in the same year. Denise was awarded an MBE at the beginning of 1999 and later that won the silver medal at the World Championships in Seville.

She broke her own British record again in 2000 but the highlight of Lewis' career came at the Olympic Games in Sydney when despite an injured Achilles tendon Denise went on to win the heptathlon making her the 6th British woman to win an Olympic gold medal in the history of Track and Field.

Denise came second to Sir Steve Redgrave in the Sports Personality of the Year Awards and early in 2001 she was given an OBE from the Queen.

In 2004 Denise took part in the BBC Dancing competition 'Strictly Come Dancing. Partnered alongside professional dancer Ian Waite, she got to the final and achieved second place. Denise is a pundit for BBC Athletics and is currently working closely with a number of the Olympic Sponsors including being a judge for BA's Great Britons Bursary Scheme and an ambassador for IHG. She is a school sports ambassador for the Youth Sports Trust and an International Inspiration Ambassador for Unicef.

Sports and dance injuries of the foot and the ankle: An overview

Mr James Calder

Biography

James Calder is a consultant orthopaedic surgeon at The Chelsea and Westminster Hospital, London. He specialises in foot and ankle surgery and has a particular interest in sporting injuries.

He completed his higher surgical training in London and his MD at Imperial College through a research fellowship from the Royal College of Surgeons in England. He completed fellowship training in Foot and Ankle Surgery with Terry Saxby in Brisbane, Australia and was awarded a scholarship from the American Society as a sports travelling fellow.

He is on the Editorial board of the British Journal of Bone and Joint Surgery and is Associate Editor of the Journal of Knee, Sports Surgery, Traumatology and Arthroscopy. He is current President of the International Achilles Tendon Study Group.

He continues to be actively involved in research projects at Imperial College, UCLH and QMW, London. Current research programmes are investigating the pathophysiology of and endoscopic treatments for Achilles tendon disorders, genetic polymorphism in tendonopathy, cartilage regeneration in the ankle and biomechanical considerations following fracture fixation in the elite athlete.

Ankle sprains: The physio's perspective

Ms Rachele Quested

This session aims to provide an overview of the current literature dealing with ankle sprains in an athletic population and compare the issues associated with ankle sprains in dance with other sports. A brief review of some of the more important aspects (especially in my experience) of assessment, treatment and rehabilitation will also be presented.

Biography

Rachele Quested is an APA Sports Titled Physiotherapist who has spent almost 5 years working with dancers in addition to having previously worked with National Netball, Swimming and Triathlon teams and with Premiership Rugby. Her interests have been screening and injury prevention as well as a focus on rehabilitation

Ankle sprains: The Pilates practitioner's perspective

Ms Jane Paris

In both sport and dance, practitioners see a high proportion of acute ankle injuries – especially sprains. From the Pilates practitioner's perspective, early and accurate diagnosis by medical experts is essential, not least in managing the individual dancer's expectation regarding recovery time. Very often, performers and players do not take this kind of injury seriously enough, or do not realise the implications it can have - especially if they can return to functional movement reasonably quickly. Taking enough time over the rehabilitation is of the utmost importance as a too early return to activity nearly always results in setbacks.

Looking at the function of the whole leg is vital as compensatory movement patterns appear quickly and need to be eliminated. Both the knee and hip joints can be affected by the mechanics and function of the ankle. Any rehabilitation that I carry out will always consider the movement patterns of the whole leg. Proprioceptive exercises will continue long after the athlete or dancer is back performing.

The talk will be illustrated showing both dancers and athletes in rehabilitation.

Biography

Jane Paris studied ballet from an early age and later trained with Ruth French in Chelsea and at the Bush Davies School in Sussex. After a ten year performing career, Jane studied the Pilates Method in London with the late Avi Shoshana. She opened Scotland's first Pilates studio in Edinburgh working with the public as well as professional dancers and sportspeople. On returning to London, Jane was appointed Pilates Instructor to the Royal Ballet Company and is now in her 17th season there.

Jane has been consultant to the Olympic Medical Institute for the British Olympics and has taught widely in dance companies around the world, most recently as a guest of the Cuban National Ballet. She is currently a consultant to the Norwegian Olympic Association. She has an MA in Ballet Studies and she is a founder member of the Pilates Foundation and The Network, an international group of dance conditioning specialists working within elite dance companies.

Sports and dance injuries of the knee: An overview

Mr Chinmay Gupte

Biography

Chinmay is a Consultant Orthopaedic Surgeon and Senior Lecturer in knee and trauma surgery at Imperial College, London, which encompasses St Mary's and Charing Cross Hospitals.

His main interests are in the diagnosis and treatment of sports knee injuries and knee arthritis surgery, together with trauma and fracture surgery. Prior to his appointment at Imperial he worked at consultant level at Guy's and St Thomas's Hospital and was a senior fellow celebrated knee and sports surgeons Mr John Bartlett and Mr Hayden Morris in Melbourne.

Chinmay was awarded a PhD from Imperial College in 2004 for his work on the meniscofemoral knee ligaments and their role in knee arthritis and ligament injury. He won the prestigious British Orthopaedic Association Robert Jones Gold Medal Proxime Accessit in 2005. He has published over 20 papers in this and other topics which include shoulder and ankle surgery, tuberculosis and training the surgeons of the future.

He continues his research as a Senior Lecturer in the Faculty of Medicine at Imperial College, with particular emphasis in meniscal surgery and knee ligament reconstruction, and also in arthroscopic simulator training, with the aspiration of improving outcomes in patients with knee problems. He also lectures students at Imperial, and helps chair a research link between Imperial College and the Marylebone Cricket Club (MCC). He is a cofounder for the patient access website <u>www.orthoconsent.com</u> which provides information on common procedures.

He is also President Elect Designate of the Royal Society of Medicine Orthopaedics Section and is due to serve as President in 2012, and is a member of the British Association for Surgery of the Knee.

His time as captain of Oxford University and professional cricketer in 1995/6 has given Chinmay added insight into the unique needs of sportsmen in returning to sport after injury; experience that he brings to bear in his clinical practice.

Mr Gupte specialises in

- Knee ligament and meniscal injuries
- Knee arthritis surgery
- Trauma surgery

Chondral defects: The physio's perspective

Miss Anna Brodrick

Biography

Anna Brodrick is Head Physiotherapist at English National Ballet School and Central School of Ballet.

Anna graduated as a physiotherapist from Brunel University in 1999. She then went on to spend the formative years of her career working within the NHS at St Mary's Hospital, Paddington, specialising in outpatients. Subsequently she went on to work within the private sector with an increased exposure to treating athletes and sports men and women. With five years' post-graduate experience Anna embarked on a sports/ musculoskeletal MSc at University College London, graduating in 2005. After conducting research and writing a thesis based upon professional ballet dancers Anna decided to pursue a career in dance with the focus on ballet. She continues to have an active interest in bone health and dance related injuries and frequently lectures various aspects of dance medicine.

Dance related research includes:

- 2006: The clinical examination of second toe length and the incidence of stress response/fracture in professional ballet dancers. Poster presentation
- 2010: Does physical fitness affect injury occurrence and time loss due to injury in elite vocational ballet students? E.Twitchett and A.Brodrick et al
- 2011: Injury mechanisms and extrinsic risk factors among elite pre-professional ballet students Presentation/Research with C.Eckegren & R.Quelsted. *To be published*

2011: Epidemiology of injuries among elite pre-professional ballet students. Presentation/Research with C.Eckegren & R.Quested. *To be published*

Chondral defects: The strength and conditioning coach's perspective Raphael Brandon

Raphael Brandon MSc Head of Strength and Conditioning, English Institute of Sport.

Raphael has spent over fifteen years working with elite athletes and currently the GB Athletics team. He leads the Strength and Conditioning delivery for the English Institute of Sport, which is the main provider of SS&M for all of the Olympic and English team sport. He is currently completing his PhD in Neuromuscular response to strength training of elite athletes and has extensive experience with practical rehabilitation of elite performers post surgery.

This presentation will cover:

Philosophy of approach to post operative knee in general and OCD specifically. Specific exercise and program examples from an OCD case.

Chondral defects: The surgeon's perspective Professor Fares Haddad

It has long been known that injury to articular cartilage is an irreversible event from which a complete recovery is rarely, if ever, seen. The modern management of articular cartilage problems in the knee has many facets. It is a massive subject to cover in a brief period of time. The key is avoidance and early recognition and management. Joint preservation and hence articular cartilage protection through meniscal repair/meniscal augmentation/transplantation and through ligamentous stability including ligament reconstruction is vital. When osteochondral injuries do occur, measures should be taken to limit secondary damage including fixation/ early repair of full thickness lesions.

Established full thickness defects articular cartilage defects are unfortunately serious injuries that require surgery and extensive rehabilitation. There are a number of surgical options including microfracture, biological replacement with osteochondral plugs or the equivalent, cellular methods including autologous chondrocyte transplantation which we favour, and a numbers of stem cell and growth factor techniques that are in evolution. There are also newer synthetic scaffolds and plugs that can be used. Combinations of these techniques are possible. Future strategies will include new biological scaffolds and stem cell techniques to allow single stage arthroscopic procedures and ultimately a quicker recovery more durable recovery.

The recovery from articular injuries is often protracted and sometimes incomplete. The outcomes of treatment often results in replacement with fibrocartilage. That may allow a return to activity in the short term but the long term prognosis is guarded. Modern techniques that aim to recreate hyaline cartilage need have yet to be tested beyond the medium term.

Chondral injuries are career threatening injuries and need to be taken extremely seriously. The management demands a low threshold for investigation, a variety of non surgical and surgical strategies and an up to date understanding of cartilage biology and repair as well as the demands of the dancer's / athlete's work.

Biography

Professor Fares Haddad is a Hip and Knee Reconstructive Surgeon at University College Hospitals. He is Divisional Clinical Director of Surgical Specialties at UCH, and Director of the Institute of Sport, Exercise and Health at University College London.

He graduated from the University College London Hospitals with a First Class BSc and MB BS. His basic training in hip and knee surgery and reconstruction started in London on the St Bartholomew's, Royal Free and Royal National Orthopaedic Hospital rotations and was subsequently enhanced by fellowship training in the United States and Canada including a year in Vancouver and time in Boston, Los Angeles and Gainsville. He was the gold medallist in the FRCS (Orth) exam and has gained a large number of prizes and prestigious academic awards. He has been an EFORT Travelling Fellow, British Hip Society Travelling Fellow and ABC Travelling Fellow in 2004. He became a Hunterian Professor in 2005.

Professor Haddad's clinical and research endeavours have centred around hip and knee reconstruction. His interests include the expansion of knee and hip arthroscopic techniques to deal with sports injuries, new bearing surfaces and outcomes assessment in hip, knee and revision arthroplasty and use of allografting and other transplant and stem cell techniques in hip and knee reconstruction. His work also encompasses minimally invasive hip and knee surgery and novel strategies to manage patients with knee ligament injuries. He provides medical input at elite level for performing arts including ballet and for a number of sports including football, athletics, rugby, boxing and martial arts.

He has presented and published widely on key aspects of hip and knee surgery and continues to lead a clinical research group with interests in hip and knee joint preservation after injury, the genetic causation of bone disease and bone quality, prosthetic design and performance and in particular outcomes measurement after hip and knee surgery. He is editorial consultant for Sports Injury Bulletin and is on the editorial board of The Journal of Bone and Joint Surgery, The Journal of Arthroplasty, Annals of the Royal College of Surgeons and Hospital Medicine. He has been elected as a Founding Fellow of the Faculty of Sports and Exercise Medicine.

Dance and sports: The Olympic legacy

Dr Richard Budgett

Biography

Dr Richard Budgett is Chief Medical Officer for the London 2012 Olympic and Paralympic Games. He was Director of Medical Services for the British Olympic Association from 1994 to 2007 and has been Chief Medical Officer with Team GB at six summer and winter Olympic Games and then a member of the IOC Medical Commission in Beijing in 2008.

He was team doctor to the Great Britain men's rowing team from 2005 to 2008 and was Governing Body Medical Officer and team doctor for the Great Britain Bobsleigh Association from 1990 to 2007 attending the Olympic Winter Games in Albertville in 1992 and Lillehammer in 1994.

He has been working as a Medical Officer at the Olympic Medical Institute (previously British Olympic Medical Centre) since 1989, after a completing a Diploma in Sports Medicine at the London Hospital. In 2003 he was appointed lead physician for the South East region of the English Institute of Sport (EIS) based at Bisham Abbey. Since 1987 he has conducted research into the problem of Fatigue and Underperformance and has published widely on the subject of Overtraining, which is now called Unexplained Underperformance Syndrome (UUPS). He was appointed Chairman of BASEM in 2008 and was elected to the council of the Faculty of Sports and Exercise Medicine in 2007. He is also Chairman of the Amateur Rowing Association Medical Committee and won an Olympic gold medal in the Coxed Four in Los Angeles in 1984. In 2005 he was appointed to the World Anti Doping Agency list committee.

He divides his time between 76 Harley Street, the Olympic Medical Institute in Harrow, the London Organising Committee of the Olympic Games (LOCOG) in Canary Wharf and the EIS at Bisham Abbey, organising and providing care for Olympic athletes throughout the Olympic cycle and preparing for the Olympic and Paralympic Games in 2012.

Closing remarks Caroline Miller & Helen Laws

Caroline Miller

During her career Caroline has worked as a box office assistant, theatre marketing manager and as a publicist for major arts venues including the ICA, Royal Festival Hall, Sadler's Wells. Before joining Dance UK she was Head of Publicity for the international publishers, Phaidon Press. In 2006, after being appointed Director of Dance UK she won a fellowship from the European Union identifying outstanding female emerging cultural leaders which enabled her to undertake the first MA in Cultural Leadership at City University, London.

At Dance UK Caroline has worked to transform the organisation into the lead advocacy body for the dance sector. Over the last four years Dance UK has produced the Dance Manifesto which was presented to government outlining the artistic and social successes of the British dance sector, whilst highlighting areas that needed support and development. She's worked with politicians to establish the first All Party Parliamentary Dance Group, and in 2010 she organised the DanceVote2010 campaign, which aimed to raise the profile of dance in the run up to the general election. It resulted in 85 of the elected MPs pledging to support dance.

Caroline is a board member of Wayne McGregor/Random Dance, Akademi and Tilted Productions. She has previously sat on the boards of essexdance and the Live Arts Development Agency.

Helen Laws

Helen has worked at Dance UK for its Healthier Dancer Programme (HDP) since 1998 and has been manager of the programme since 2001. With a remit to promote and advocate to improve dancers' health and performance she has organised conferences, events and talks; produced publications and information sheets; and facilitated and carried out research in the areas of dance health and science. She manages networks for dance medicine practitioners and researchers and dance professionals, encouraging communication across disciplines and providing a point of contact in the UK for those seeking advice, information or expertise in dance medicine and science. Helen studied ballet, tap, modern and contemporary dance from an early age and completed a BA(Hons) Degree in Dance at Roehampton University, London, in 1996. She also has a Diploma in Arts Management. She is the author of *Fit to Dance 2 – The report of the second national inquiry into dancers' health and injury in the UK*. Helen has served on various committees for the International Association for Dance Medicine and Science since 2001 and is currently a member of the IADMS board (2006/2007, 2008/2009, 2010/2011).