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PROGRAMME and POSTERS

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Keynote Speaker Biographies

Anne L Hart

Anne L Hart, PT, PhD, Associate Professor at Northern Arizona University, Flagstaff Arizona, USA since 1997 began with sports in the Paralympic Movement in 1978. She received a Bachelor of Science (BS) in Physical Therapy from University of Central Arkansas in 1977, Master of Science (MS) in Exercise Physiology from University of Illinois Urbana-Champaign in 1985, and Doctor of Philosophy (PhD) in Health Occupations Education from University of Illinois Urbana-Champaign in 1994. Dr Hart worked with recreational and elite athletes in wheelchair basketball, swimming, athletics, and wheelchair rugby. She has been a National Classifier for United States Quad Rugby Association (USQRA) since 1989 and an International Classifier for International Wheelchair Rugby Federation (IWRF) since 1999. She served as a wheelchair rugby classifier and Chief Classifier at multiple World Championships and Paralympic Games and as IWRF Head of Classification 2004-2010. During her tenure as Head of Classification, she initiated a classification system review and research efforts to improve wheelchair rugby classification. Dr Hart became a member of the International Paralympic Committee (IPC) Classification Committee in 2004, served as Chair of IPC Classification Code Working Group from 2005-2007 and as Chair of the IPC Classification Committee since 2010.

Bruce Kidd

Bruce Kidd is a professor and former dean of the Faculty of Kinesiology and Physical Education at the University of Toronto. Bruce teaches and writes about the history and political economy of Canadian and international sport. He has authored or edited ten books and hundreds of articles, papers, lectures, plays and film and radio scripts. His most recent book, co-edited with Russell Field, is Forty Years of Sport and Social Change, 1968-2008: 'To Remember is To Resist' (Routledge 2010). As a volunteer, he currently chairs the Commonwealth Advisory Body on Sport and the Maple Leaf Sport and Entertainment Team Up Foundation. He was one of the founders and chairs of Commonwealth Games Canada's International Development through Sport Program, which conducted programs of broadly based development in some 22 African and Caribbean Commonwealth countries. He initiated the University of Toronto's partnership with the University of Zambia on strengthening teacher preparation in physical education to enhance preventive education about HIV/AIDS. In 2007, he coordinated a series of literature reviews for International Working Group on Sport for Development and Peace that has shaped the policies of the United Nations. In 2004, he was appointed an Officer of the Order of Canada.

Claude Bouchard

Claude Bouchard is Professor and Director of the Human Genomics Laboratory at Pennington Biomedical Research Center in Baton Rouge, Louisiana. He holds the John W. Barton Sr. Endowed Chair in Genetics and Nutrition. His research deals with the genetics of adaptation to exercise and the genetics of obesity and its comorbidities. He has authored or coauthored more than 1000 scientific papers and has written or edited 35 books. He is a foreign member of the Royal Academy of Medicine of Belgium since 1996. In 1994, he became an Officer of the Order of Leopold II of Belgium, in 2001, a member of the Order of Canada, and in 2005, a Chevalier in the Ordre National du Quebec. Dr. Bouchard received Honoris Causa Doctorates from the Katholieke Universiteit Leuven in 1998, the University of South Carolina in 2009, the University of Guelph and Brock University in 2011, and the University of Ottawa in 2012. Prior to moving to the Pennington Center, he was on the Kinesiology Faculty at Laval University, Quebec City. He is a Fellow of the American College of Sports Medicine, the American Society of Nutrition, the American Heart Association, and the American Association for the Advancement of Science.

Dr Colin Fuller

Dr Fuller worked as a manager in the chemical and electricity generation industries for 25 years in various roles related to risk management. He subsequently pursued an academic career at Loughborough, Leicester and Nottingham Universities focussing on research in risk management in professional sport. Since 1995, he has been a consultant to various national and international sports organisations, including Fédération Internationale de Football Association, Football Association, International Rugby Board, Rugby Football Union, UKSport, International Tennis Federation, and British Horseracing Authority. Dr Fuller's main research interests relate to the management of injury risk in professional sport and, in particular, the epidemiology of sports injuries in football and rugby, with special emphasis on player safety. He has over 100 peer-reviewed publications. Dr. Fuller has been a member of FIFA's Medical Assessment and Research Centre (F-MARC) since 1998 and has collaborated with F-MARC on numerous research projects since then. Since 2007, his main focus has been the development and implementation of the FIFA '11 for Health' programme. This programme is currently being implemented in 10 African, 2 Latin American and 2 Pacific Island countries.

Hilary Ross

Hilary Ross is the 2012 Programme Director for NHS London (London's Strategic Health Authority) where she works as part of the senior public health team. She is responsible for the NHS preparations for the 2012 Olympic and Paralympic Games which includes health services planning, emergency preparedness, and public health. She also provides leadership for an ambitious health legacy programme which is using the Games as a catalyst to drive improvements in NHS systems and support the delivery of a range of health improvement goals across London. Previously Hilary has worked for the Department of Health leading the health elements of the GLA Bill through parliament, and in Brighton & Hove Hilary led regeneration and health improvement programmes including a healthy living centre as part of a flagship neighbourhood renewal initiative. She has recently completed a research project reviewing the approaches taken to manage alcohol misuse at previous Olympic Games.

Dr. Peter Terry

Dr. Peter Terry is Professor of Psychology at the University of Southern Queensland, a registered psychologist, and formerly Psychology Coordinator at the Queensland Academy of Sport. Over the past 28 years he has provided psychological support to more than 1,000 international and professional performers. Including London 2012, he has worked as a sport psychologist at nine Olympic Games, 18 World Championships, 30 World Cup competitions and many other major international events. Peter is author of almost 200 publications, including four books, 20 book chapters, and 60 peer-reviewed articles. He is a Fellow of the Australian Psychological Society (APS), the Australian Sport Medicine Federation and the British Association of Sport and Exercise Sciences. He served as President of the APS College of Sport Psychologists from 2002-2006, and was the 2011 recipient of the APS Colleges Award of Distinction. He is currently President of the Asian-South Pacific Association of Sport Psychology. In the distant past he played sport at representative level in rugby, football and track and field, sky-dived with the Red Devils, competed in the British bobsled championships and ran a three-hour marathon. He has now migrated to golf and tennis, both of which he confesses to playing badly.

Prof. Dr. Gudrun Doll-Tepper

Prof. Dr. Gudrun Doll-Tepper is professor of sport science at the Freie Universität Berlin, Germany. She has authored and co-authored over 350 publications in sport science, sport pedagogy, and adapted physical activity and sport for persons with a disability. Dr. Doll-Tepper is former President of the International Council of Sport Science and Physical Education (ICSSPE), a world organisation of currently more than 300 national and international organisations and institutions of sport, sport science and physical education. She is the former President of the International Federation of Adapted Physical Activity (IFAPA), and the former Chairperson of the International Paralympic Committee Sport Science Committee (IPCSSC). Dr. Doll-Tepper is an Invited Fellow of the European College of Sport Science (ECSS). Since 2006 she is Vice-President of the German Olympic Sport Confederation and since 2007 she is Chairperson of the German Olympic Academy Willi Daume. In 2005 she received a doctor of laws honoris causa from the Memorial University of Newfoundland and in 2008 from the Katholieke Universiteit Leuven (Belgium). She was awarded with several prestigious international and national awards, including the FIEP Gold Cross of Honor of Physical Education, the Jürgen Palm Award and the Paralympic Order of the International Paralympic Committee (IPC).

Professor Richard H. McLaren

Professor Richard H. McLaren is a Professor at Western University Canada. His research interests include alternative dispute resolution. Professor McLaren has extensive practical experience as a commercial lawyer and a labour and commercial arbitrator and mediator. He is actively involved in the adjudication of sports related disputes at both the amateur and professional level. As a member and Arbitrator of the Court of Arbitration of Sport (CAS), he has arbitrated key sport cases throughout the world. As an Ad Hoc Panel Member of CAS, Professor McLaren has participated in five Olympic Games during which he resolved disputes pertaining to anti-doping, athlete eligibility, and intellectual property rights. Professor McLaren is a member of the Anti-Doping Panel for the International Cricket Council and is currently the President of the Basketball Arbitral Tribunal.

Dr. Robert Sallis

Dr. Sallis is a Past-President of the American College of Sports Medicine (ACSM) and currently chairs Exercise is Medicine™, a joint initiative of ACSM and the American Medical Association. He is a family physician practicing at Kaiser Permanente in Fontana, California, USA and serves as co-director of their sports medicine fellowship program. He also chairs the Science Advisory Committee for the California Governor's Council on Physical Fitness and Sports. Dr. Sallis received his Bachelor of Science degree from the U.S. Air Force Academy and his Medical Degree from Texas A&M University. He completed his residency in Family Medicine at Kaiser Permanente Medical Center in Fontana, CA, where he served as chief resident. He is the head team physician at Pomona College and is Board Certified in Family Medicine. He also holds a Certificate of Added Qualifications in Sports Medicine. Among his professional awards, he received the 2008 Community Leadership Award from the President's Council on Physical Fitness and Sports, the 2009 Leonardo da Vinci award for international leadership in sports medicine from the Italian Federation of Sports Medicine (FMSI) and the 2011 Citation Award from the American College of Sports Medicine.

Rosa López de D'Amico

Professor at Universidad Pedagógica Experimental Libertador (UPEL) – Maracay Venezuela. Bachelor Teacher in Foreign Languages and a Bachelor in Physical Education – Major: Sport Specialist. Master in Education. Major: Teaching Literature in English. PhD Doctor of Philosophy and the Ewing Postdoctoral Fellowship (University of Sydney). Prior to the academic career, experiences as competitor, coach, judge and administrator in artistic gymnastics. Chair of the International Committee for Sport Pedagogy and Editorial Board Advisor for the International Council for Sport Science and Physical Education (ICSSPE); Vice President of the International Society for Comparative Studies in Physical Education and Sport (ISCPES); Vice President of the International Association of Physical Education and Sport for Girls and Women (IAPESGW); President of the Latin America Sport Management Association (ALGEDE); Secretary for the Latin American Association for Socio Cultural Studies (ALESDE). Coordinator of the research center: Studies in Physical Education, Health, Recreation Sport, and Dance (EDUFISADRED). Recipient of the national academic award for academic research given by the Venezuelan universities (CDCHT) in 2007 and the State Academic Award (Fundacite 2008). Adjunct professor at West Virginia University. Publications in Spanish, English and French. Editor of the journal '*Actividad Física y Ciencias*' and editorial board member of several journals.

Stuart Willick

Stuart Willick, M.D. is a Professor of Physical Medicine and Rehabilitation at the University of Utah Orthopaedic Center in Salt Lake City, Utah. He is a member of the International Paralympic Committee's Medical Committee. He is also a team physician for the United States Ski and Snowboard Association, US Speedskating, and the US Bobsled and Skeleton Federation. In 2002 he served as Medical Officer of the Salt Lake City Olympic/Paralympic Village Polyclinic. His research focus is on sports injury epidemiology and injury prevention.

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Keynote Abstracts

Athlete Welfare

KN12

Classification Conceptual Models

Hart, AL*

Northern Arizona University, United States

The Paralympic Movement evolved from early beginnings in 1948 as an informal competition in archery for wounded veterans at Stoke Mandeville Hospital in Great Britain to the modern day major international sporting event where elite athletes compete in a wide variety of sports in the same venues as the Olympic Games. Classification is an essential part of Paralympic Sport and vital to the future of the Paralympic Movement. However, classification is neither a new idea nor a concept unique to Paralympic Sport. Classification is commonly defined as the action or process of identifying, organizing or grouping something according to shared qualities or common properties (Merriam-Webster, n.d.). The science of classification is known as taxonomy and is applied in the practice of classification including principles, procedures and rules on how to classify (Tweedy, 2011; Tweedy & Vanlandewijck, 2009). Generally in sport, a form of classification organizes participants according to age, gender, or weight with the purpose to minimize the impact of these single qualities on the outcome of competition (Tweedy, 2011).

Similarly, classification in Paralympic Sport refers to the process of grouping athletes for competition, and equally important is the determination of eligibility for participation in Paralympic Sport (IPC, 2007). The evolution of classification in the Paralympic movement parallels the development of Paralympic Sport from rehabilitation to elite international competition (Tweedy, 2011). Historically, the model for classification was medical, based on diagnosis and medical evaluation. Most recently, classification is focused on the relationship of impairment secondary to a health condition to activities specific to individual sports. This sports specific system uses impairment as the unit of classification, first defining eligible types of impairment and then classifying impairment according to the extent of activity limitation caused. (IPC, 2007; Tweedy & Vanlandewijck, 2009).

There is considerable variability and many fundamental issues in classification across the approximately 25 Paralympic sports, ranging from units of classification to the principles, procedures and rules. Recognizing the importance of a unified and sound position on classification in the future advancement of the Paralympic Movement, the International Paralympic Committee (IPC) developed a Classification Strategy in 2003. The overall objective for this strategy was to support and co-ordinate development of accurate, reliable, consistent and credible sport focused classification systems. The IPC Classification Code (IPC, 2007) was a direct result of this strategy and established a framework for classification policies and procedures as well as providing technical and operational requirements common to all sports. The IPC Position Stand – Background and Scientific Principles of Classification in Paralympic Sport, strengthened the IPC Classification Code by providing explicit direction and information to operationalize sport-specific, evidence-based approaches (Tweedy & Vanlandewijck, 2009). These documents, passed by the IPC Governing Board, solidify the conceptual basis of classification in Paralympic sports. (Tweedy, 2002; Tweedy & Vanlandewijck, 2009).

Having a unified conceptual basis for classification systems and consistent implementation is critical in the future of Paralympic Sports. According to Tweedy (2011), opportunities exist to form connections with scientific communities to confirm principles and validate classification methods. In addition, an accurate and consistent message on classification will advance the recognition of the Movement among consumers such as the media and the public. And lastly, and most important, is education and communication about the importance of these



which can be liable to reporting bias.
Freya MacMillan

Physical activity and Type 2 diabetes

In the UK 4-5% of the population have diabetes mellitus and about 85% of these people have Type 2 diabetes. The aetiology of Type 2 diabetes is multifactorial and there are many different phenotypes. In addition the prevalence varies considerably between different ethnic groups. Treatment comprises lifestyle advice with the addition of glucose lowering drugs including insulin and management of cardiovascular risk. There is good evidence that the development of Type 2 diabetes is related to lifestyle and the greatly increasing rates are linked to the increasing prevalence of obesity. Increased physical activity not only reduces the risk of the developing diabetes but also reduces the risk of the complications of the disease. There is evidence that unlike the general population physical activity levels of people with diabetes have not increased over recent years. The management of Type 2 diabetes is complex and physical activity promotion does not always receive the attention deserved for a number of reasons. Strategies are being developed to attempt to address these problems and will be discussed.

Ann Gold

Promoting physical activity in Type 2 diabetes

The evidence that physical activity is an effective therapeutic tool in the management of Type 2 diabetes is well documented. Limited research has addressed how best to promote and maintain physical activity in these individuals. This presentation explores strategies to enhance compliance to physical activity for people with diabetes. Several evidence based guidelines and reviews recommend that physical activity interventions are based on a valid theoretical framework. However there is no evidence based consensus on the best theory, or combination of theories to use. Motivational tools such as pedometers, wearable sensors measuring energy expenditure and point of choice prompts appear to be effective at stimulating short term substantial increases in physical activity, but further strategies to maintain physical activity behaviour change are required. Physical activity consultation has demonstrated effective physical activity promotion over periods up to two years in people with Type 2 diabetes. Future research should identify the longer term effects of this intervention and the effectiveness of different methods of delivery. Overall there needs to be a lot more focus on this area of research. Without this the abundance of research investigating the effects of physical activity on people with Type 2 diabetes is essentially redundant.

Alison Kirk

S39

The Art and Science of Music Interventions in Sport and Exercise

Terry, PC*¹; Karageorghis, CI*²; Jones, L*²

¹University of Southern Queensland, Australia; ²Brunel University, United Kingdom

Conceptual Approaches to the Application of Music in Sport and Exercise

There have been a number of attempts to develop conceptual frameworks to guide researchers and practitioners interested in music applications in the domain of sport and exercise. The purpose of this paper will be to outline these conceptual approaches, delineate the underlying mechanisms responsible for the effects of music, and present the main trends that have emerged in empirical research. Such trends might serve to guide the construction of evidence-based music-related interventions. Three principal applications of music will be expounded: First, pre-task music that entails the use of music prior to a task iV most often as a type of mild stimulant or sedative; second, in-task music that entails the use of music during exercise and can be applied in two forms iV asynchronously when it is played in the background without any conscious attempt by the performer to synchronise their movements with its rhythmical qualities, and synchronously when conscious synchronisation does take place; third, post-task music wherein music is used after sport or exercise activity to aid recovery from physical fatigue or injury. This paper will provide a general overview of this field of scientific endeavour with the intention of facilitating a full understanding of the four papers that will follow.

Costas Karageorghis

Effects of Synchronous Music among Elite Endurance Athletes

Effects of synchronous music were investigated in two field studies. In Study 1, music effects were assessed among two elite triathletes and six elite runners during three training runs. A custom-designed iPhone application was developed to record in-task RPE, feeling states, mood responses, distance run, cadence and heart rate data. Compared to the no-music condition, participants ran, on average, 7.5% and 7.2% further but reported lower RPE and more positive feelings and mood responses when running to synchronous music ($d = .35$) and a music-led condition ($d = .29$), respectively. In Study 2, nine elite ultra-distance athletes participating in 24-hr and 48-hr races listened to rotating playlists of synchronous motivational music, neutral music, audiobook and silence delivered by iPhone. During the 18-24 hr period, motivational music was associated with a 14 sec, 18 sec and 27 sec per 400-m lap improvement compared to silence ($d = .39$, $p < .01$), neutral music ($d = .54$, $p < .001$) and audio book ($d = .54$, $p < .001$) conditions, respectively. Collectively, findings supported the judicious use of music interventions among endurance athletes.

Peter Terry, Michelle Curran, Alessandra Mecozzi Saha, Ross Bool

Examining the Stability of the Exercise Heart Rate-Music Tempo Preference Relationship

A triad of experimental studies involving the present authors has addressed the relationship between exercise heart rate and preference for music tempo. The purpose of the present study was to examine the stability of the cubic (two points of inflection) exercise heart rate-music tempo relationship found by Karageorghis et al. (2011) in cycle ergometry using a different exercise mode (treadmill exercise) and to examine a number of psychological outcome variables. Participants exercised for 2-min at six exercise intensities (40%-90% maxHRR) and were exposed to musical tracks at four tempi (slow, medium, fast, and very fast) and a no-music control condition at each intensity. Music preference was assessed and participants were administered the Feeling Scale and Felt Arousal Scale during the task. Immediately after each trial, an attentional focus item, the short Flow State Scale-2 and items from the Intrinsic Motivation Inventory were administered. It was hypothesised that the cubic relationship found by Karageorghis et al. (2011) in cycle ergometry would re-emerge using treadmill exercise and that the most positive motivational outcomes would be associated with the highest music preference scores. Results did not support a cubic relationship but rather a quadratic relationship ($p < 0.5$). There was also a significant main effect for attentional focus ($p < .05$; $f\phi p2 = .24$), wherein participants exhibited higher levels of dissociation in all music conditions relative to control.

Leighton Jones, Costas Karageorghis

Psychological, Psychophysical and Ergogenic Effects of Asynchronous Music in Swimming

Research has assessed the psychological, psychophysical and ergogenic effects of music in a range of dry land activities that include 400-metre running, cycle ergometry, indoor rowing and long-distance running. Such work has shown that the judicious use of music can lead to a range of benefits that include enhanced affect, reduced ratings of perceived exertion, greater energy efficiency (i.e., reduced VO_2), and faster time trial performances. The purpose of the present study was to assess the psychological, psychophysical and ergogenic effects of asynchronous (background) music in swimming. A sample of 92 volunteer Brunel undergraduates nominated six musical selections for use in the experimental protocol of Stage 2. Twenty six participants were recruited from Brunel University Swimming Club and they went through a 2-week habituation period with Speedo Aquabeat mp3 players prior to the experimental phase. They were then administered two experimental trials (motivational and outdeterous music at 130 bpm) and a no-music control during which they engaged in a 200-m freestyle swimming time trial. Results showed that participants swam significantly faster when exposed to either music condition relative to control ($p < .05$, $f\phi p2 = .18$) and that the music conditions were also associated with higher state motivation ($p < .05$, $f\phi p2 = .15$).

Costas Karageorghis, Jasmin Hutchinson, Leighton Jones, Hannah Farmer, Metin Ayhan, Rachel Wilson, Joshua Rance, Stewart Bailey, Christopher Hepworth

Music Applications with Elite Athletes

This applied paper chronicles a variety of music applications used with elite athletes, with particular reference to the Olympic Games. General examples include the synchronization of activities to music in order to capitalise on the well-established ergogenic effect, and using music asynchronously to, for example, induce an appropriate pre-

performance mindset, or intensify responses to relaxation and imagery techniques. Specific examples of music use with elite performers include providing inspiration to bobsleigh and shooting medallists at the 1998 and 2000 Olympic Games, respectively; implementing pre-event arousal control strategies with boxing and rowing medallists at the 2000 Olympic Games; maintaining motivation and training cues during successful rehabilitation from chronic fatigue syndrome of an Olympic canoeist; intensifying visualisation strategies among a lawn bowls team at the South East Asian Games; as an adjunct to audio-visual entrainment, also known as brainwave training, during the trap shooting event at the 2006 and 2010 Asian Games, conditioning responses to specific music to promote ideal brain activity among clay target shooters at the 2008 Olympic Games; and using iPhone technology to deliver music interventions to shooters in preparation for the 2012 Olympic Games.

Peter Terry

S47

Reducing Sedentarism

Brown, WJ*¹; Brown, WJ*¹; Andersen, LB*²; Anderssen, SA*³

¹The University of Queensland, Australia; ²University of Southern Denmark, Denmark; ³Norwegian School of Sports Medicine, Norway

Western lifestyles have changed remarkably over the last century, with decreasing levels of physical activity and increased sitting in most populations. While the health impacts of low physical activity have been extensively researched in the last 50 years, the epidemiology of sitting has only recently emerged as a scientific area of enquiry. Recent estimates suggest that working adults spend between 7 and 10 hours each day sitting, with about half this time spent sitting at work. This paper will examine the hypothesis that too much sitting is a risk factor for poor health, even in those who meet the current physical activity guidelines. First, the biological plausibility of too much sitting being a health risk will be briefly considered. Second, a review of the evidence on the health effects of sitting will be presented. This will include results from observational cohort studies on the relationships between sitting and diabetes, cardiovascular diseases, cancers, depression, obesity and all-cause mortality, as well as from experimental studies on the relationships between sitting and metabolic risk factors. Although some findings indicate clear dose-response relationships between sitting and health outcomes, it is difficult to define a deleterious 'dose' of sitting as few studies have considered sitting in all domains (eg work, leisure, transport). There is however increasing evidence to suggest that sitting for >8 hours a day is associated with increased risk of many health outcomes.

Wendy J Brown

Numerous epidemiological studies have found an association between amount of sitting, TV-viewing or other sedentary behaviours and different health outcomes. A meta-analysis recently showed that TV-viewing was associated with type 2 diabetes, cardiovascular disease and all-cause mortality. However, measures of sedentary behaviour may be surrogate measures for lack of physical activity, and interventions aiming to reduce sedentary activities may fail to increase physical activity and health. There are very few well designed studies where the amount of physical activity is controlled for when the detrimental effect of sedentary behaviour is analyzed, and only one randomized trial has manipulated sedentary behaviour with small breaks to improve health without changing physical activity substantially. Many studies have adjusted the analysis between sedentary behaviour and health for physical activity level, but is the information on physical activity level sufficiently good to avoid too much residual confounding? This presentation will look at problems related to showing that sedentary behaviour is decreasing health independent of physical activity level. The problem is important because future preventive strategies may change substantially if it turns out that reducing sedentary behaviour may be as effective as increasing physical activity. Some countries have already changed physical activity guidelines and included special recommendations related to sedentary time, but it is questionable if these changes are based on solid evidence.

Lars B Andersen

Sedentary behaviors include sitting during leisure time, at work, and during commuting. Sedentary behaviors such as TV viewing, using a computer or driving a car typically demands low levels of energy expenditure. Youth and

CONCLUSIONS: Adaptations to IHT were apparent, most notably an improved RE, and decreased HR_{submax}, which may be beneficial for enhancing endurance performance, however, we were unable to demonstrate an improved time to exhaustion or VO_{2peak} in this sham controlled study.

FC20.4

Comparison of the Effect of Arousing and Relaxing Music During Imagery Training for Power and Fine Motor Skill Sport Tasks

Kuan, G^{*1}; Morris, T¹; Terry, P²

¹Victoria University, Australia; ²University of Southern Queensland, Australia

BACKGROUND: Imagery is a psychological training used by professional athletes and music is believed could influence the efficacy of imagery.

AIM: This study examined the effects of arousing and relaxing music during an imagery intervention on performance of power and fine-motor skill tasks.

METHOD: Twenty competitive elite shooters and weightlifters were assigned at random to one of two interventions: Unfamiliar relaxing or arousing music with imagery. This produced four conditions: Fine motor task (pistol shooting) imagery with either relaxing (matched) or arousing (mismatched) music and power task (weightlifting) imagery with either relaxing (mismatched) or arousing (matched) music. A pretest-intervention-posttest design was used with two simulation competitions: 10m air-pistol shooting performance, and a standard weightlifting event - Clean and Jerk. Participants completed 12 sessions of imagery over four weeks before the posttest was conducted.

RESULTS: MANOVA analysis for pistol shooting showed that the differences across type of music used with imagery were significant on the gain-score for competition performance $F(1,16)=8.85$, $p<.05$, $\eta^2=.36$, with a significantly larger increase in performance for relaxing music than arousing music. In addition, the self-confidence gain score was significant $F(1,16)=12.57$, $p<.05$, $\eta^2=.44$. As for the weightlifters, MANOVA analysis results showed that the differences across types of music used with imagery were significant in terms of gain-scores for competition performance $F(1,16)=12.27$, $p<.05$, $\eta^2=.43$, with significantly larger increases in performance with relaxing music than arousing music. The self-confidence gain score was also significant $F(1,16)=10.09$, $p<.05$, $\eta^2=.39$.

DISCUSSION: Contrary to findings when music is played before or during the actual tasks, in this study relaxing music facilitated imagery of both fine-motor and power tasks, suggesting that relaxation plays a role in imagery of sports skills.

FC20.5

The Study of In-service Training Teaching Goal System for Chinese Senior Volleyball Coaches

Ma, X^{*1}; Yang, J²

¹China; ²Han Dan College, China

Sport coaches' teaching level is one of the key factors to determine the athletes' capabilities and levels, and even the sport's development level. It has been proved that coaches have to keep updating the ideas, improving the knowledge structure, and mastering the advanced training theories and practice methods, and improving the teaching level before guiding the athletes to carry out the scientific training and continuously improve their sport levels. At present in-service training goals are of macro goals which result in uptight linkage between parts of the teaching content and the teaching goals, and these issues are affecting the quality of in-service training in varying degrees.

OBJECTS: The in-service training teaching system of Chinese senior volleyball coaches. Main Methods 1. Expert Interview Method By virtue of the opportunity to join the Tenth National Senior Volleyball Coaches In-Service Training Courses, fifteen experts and coaches were interviewed about the content, goals and other relevant issues of in-service training teaching. 2. Delphi Method.

CONCLUSION: 1. Chinese Senior volleyball coaches of training and teaching system and its sub-goal target system structured according to the characteristics of professional competence under the coaches, job training character



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Congrex UK Ltd

26 - 28 Hammersmith Grove, London W6 7HA

Tel: +44(0)20 8748 8868  Fax: +44(0)20 8237 4093

Email: info@icsemis2012.com

