Biannual Review of Research Outputs and Activities
Department of Medical and Sport Sciences
FOREWORD

As Head of Department, I am delighted to lead such an aspiring and research-active team of academics. Across the academic years 2012-14, research and broader scholarly activity within the Department has gathered further noteworthy momentum. Six members of the Department were entered for the Research Excellence Framework out of a total of 21 for the whole University. Active research work has encompassed the areas of Medical Imaging, Active Ageing, Mental Health & Exercise, applied, sport-specific areas such as coaching practice, coach education and physical activity and health. This research has been underpinned by the disciplines of Medical Imaging, Physiology, Biomechanics, Sociology, Sociolinguistics, Cognitive and Social Psychology and Philosophy. There has, in this period, been a particular upsurge in intra-departmental research projects, with a large number of collaborations between colleagues being initiated, conducted and completed. This internal research culture – particularly in terms of collaborations between more experienced research staff and colleagues newer to the process has, notably, increased our peer-reviewed publications.

Staff members have, similarly, sustained and increased the output of high calibre individual peer-reviewed work, and also collaborative research endeavour with partners outside the Department itself, both within UoC and at other institutions. Concurrently, colleagues have presented at a range of national and international conferences, published in mainstream media and taken part in external examining, PhD vivas and book-reviewing activities. This research activity is definitely inspiring students, exemplified by the upsurge in the conversion of student dissertation work into materials for submission to peer-reviewed journals and presentations at conferences. Five final year sports students presented their work at the BASES national student conference in spring 2014. In sum, the research culture within the Department has developed significantly in the last two years and is well placed with respect to both RDAP and REF. Congratulations to all those staff whose work is contained in this report.

Timothy Barry, Head of the Department of Medical & Sport Sciences
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1. INTRODUCTION

Between September 2012 and September 2014, the Department of Medical and Sport Sciences (henceforth DMSS) made great steps forward in terms of formal research outputs. A perusal of this document will reveal disseminated work of local, national and international relevance across a range of domains and approaches.

During this period, members of departmental staff have published research findings in high-quality peer-reviewed journals, edited books and a number of other forums. This has been accompanied by professionally-oriented publications, geared towards formal practice-development, commissioned evaluation reports, and a plethora of conference presentations. This work has also inhabited a broad cross-section of academic disciplines: anatomy, biomechanics, community development studies, communication and linguistics, medical physics, physiology, psychology, radiation protection, radiography, social policy and sociology to name but a few. Moreover, and as illustrated in more detail in section 3, the last two years have also been distinctive in the increased involvement of undergraduate and postgraduate students in departmental research culture, with students’ own findings being presented at national and international conferences, and published in a variety of journals.

In more specialist domains of activity, Section 4 summarises the recent activities of the Vice Chancellor’s Award-winning Active Ageing Research Group (AARG), led by Dr. Susan Dewhurst and Theodoros M. Bampouras. The prolific success of the AARG in publication, public engagement, grant-winning and scholarship production is a model for practical, contemporary research hubs within the University and one of the DMSS’s major success stories of the last two years. Section 5, meanwhile, provides a brief overview of the progress of HASCE, the unit for Health and Social Care Evaluations, of which Dr. Paul Miller is the academic lead and has involved a number of departmental staff. Occupying a different sector of the academic sphere to AARG, HASCE utilises social scientific research models to provide client-oriented evaluations of the impacts of professional interventions and initiatives in the broad healthcare sector, and has to date worked with a range of clients in the North West, winning numerous contracts.
In Section 6, the ongoing success of the Visual Expertise Medical Image Perception research group is summarised, wherein Dr. Tim Donovan and Dr. Peter Phillips, in conjunction with researchers at Lancaster University, have continued to publish high-impact work on the understanding of human expertise, and in particular visual expertise, in radiology. Finally, in Section 7, a brief report is given on the fledgling cross-departmental Mental Health Research Group (MHRG), led by Dr. Adam Benkwitz.

It the manifest aim of the DMSS that the level of involvements in research at all levels in 2012-2014, and demonstrable success and productivity, will be maintained and, ideally, advanced over the next two years.

Dr. Paul K. Miller, DMSS Research Coordinator
2. OUTPUT STATISTICS

The raw statistics outlined below relate to all outputs from current departmental staff emergent between the beginning of 09/2012 and the end of 09/2014. This includes outputs from current staff while at previous institutions (see section 3 for a breakdown in which such outputs are explicitly marked), but also only counts outputs co-authored by members of departmental staff once.

<table>
<thead>
<tr>
<th>Output Format</th>
<th>Number of Outputs</th>
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<tbody>
<tr>
<td>A. Peer-Reviewed Research Papers</td>
<td>49</td>
</tr>
<tr>
<td>B. Chapters in Books</td>
<td>9</td>
</tr>
<tr>
<td>C. Other Peer Reviewed and Professional Publications</td>
<td>14</td>
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<td>D. Commissioned Research Reports</td>
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<td>31</td>
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<td>F. Poster Presentations at National and International Conferences</td>
<td>13</td>
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<tr>
<td>G. Research Papers Under Review as of 10/2014</td>
<td>19</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>143</strong></td>
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3. FULL SUMMARY OF RESEARCH OUTPUTS

Below is a full summary of research outputs produced by departmental staff during the two previous academic years (2012-2013 and 2013-2014). All papers (a) published, (b) in press, (c) in iFirst (or equivalent) release, or (d) formally accepted for publication during this period are included herein, to facilitate longitudinal tracking. For ease of reading, all papers not yet in final published form are labelled “forthcoming.”

Reflecting the developing role of undergraduate and postgraduate students in the research portfolio, a superscript “S” adjacent to an author’s name (e.g. Merritt, L.H.) designates past or present departmental student status. Also, as a record of individual staff research excellence, the report also contains work completed by newer staff under the auspices of previous employers; these cases are noted throughout as follows: 1 Work conducted under the auspices of the University of Groningen, The Netherlands; 2 Work conducted under the auspices of Lancaster University, UK.

A. PEER-REVIEWED RESEARCH PAPERS


• Benkwitz, A., & Molnar, G. (Forthcoming). **The emergence and development of football in Birmingham, 1850-1914.** *Soccer and Society.*


• Booth L., & Kada, S. (Forthcoming). **Student radiographers’ attitudes toward the older patient: An intervention study.** *Radiography.* doi: 10.1016/j.radi.2014.09.010


  *International Journal of Sport Policy and Politics.* 5(2), 257-279. doi: 

• Dewhurst, S., Peacock, L., & Bampouras, T. (Forthcoming). Postural stability of 
  older female Scottish country dancers in comparison to physically active 
  controls. *Journal of Aging and Physical Activity*.

• Dewhurst, S., & Bampouras, T.M. (2014). Intra-day reliability and sensitivity of four 
  functional ability tests in older females. *American Journal of Physical Medicine 
  and Rehabilitation*, 93(8), 703-707. doi: 10.1097/PHM.0000000000000078.

• Dewhurst, S., Bargh, M., Davidson, C., & Bampouras, T.M. (2014). Loaded and 
  unloaded marching: implications for fluid replacement. *The Open Sports 

  dance: benefits to functional ability in older women. *Journal of Aging and 

• Donovan, T., Crawford, T.J., & Litchfield, D. (2012). Negative priming for target 
  selection with saccadic eye movements. *Experimental Brain Research*, 222(4), 

  differences in searching and decision making. *Applied Cognitive Psychology*, 

• Elliott, D., & Hoyle, K. (2014). An examination of barriers to physical education for 
  Christian and Muslim girls attending comprehensive secondary schools in the UK. 
  *European Physical Education Review*, 20(3), 349-366. doi: 
  10.1177/1356336X14534358.

• Elliott, D., & Sander, L. (Forthcoming). The effects of relaxing music for anxiety 
  control on the intensity and directional aspects of competitive state anxiety. 
  *International Journal of Sport Psychology*.


A(I). ENTRIES IN BOOKS OF ABSTRACTS


B. CHAPTERS IN BOOKS


C. OTHER PEER REVIEWED AND PROFESSIONAL PUBLICATIONS


D. COMMISSIONED RESEARCH REPORTS


E. VERBAL PRESENTATIONS AT NATIONAL AND INTERNATIONAL CONFERENCES

E(I). KEYNOTE AND GUEST TALKS


**E(II). CONVENOR-CHAIR-PRESENTER AT INVITED ORAL SYMPOSIA**


8. **Sanchez, X. (2014).** Fully-funded Pre-conference Workshop in Publishing. @ European College of Sport Sciences Congress. Amsterdam, The Netherlands.

9. **Sanchez, X. (2014).** Knowing what we want tomorrow in order to prepare for it today: Career development and transitions of talented, elite and retired athletes. @ 19th Annual Congress of European College of Sport Sciences (ECSS). Amsterdam, The Netherlands.


12. **Sanchez, X. (2014).** Addressing the gap between what we know and what we do to get our athletes to perform well when it really matters. @ The Dutch Society of Sport Psychology (VSPN) yearly meeting. Hilversum, The Netherlands. Invited seminar.

**E(III). INVITED ORAL SYMPOSIA**

13. **Bampouras, T.M.** Exercise in renal patients. @ Renal Continuing Medical Education Programme, Royal Preston Hospital, Preston, UK, September 15th 2014. Invited Speaker.


E(IV). ORAL COMMUNICATIONS

16. Benkwitz, A. Reflecting on the benefits and ‘perils’ of ethnography. @4th Annual Qualitative Research in Sport and Exercise Science Conference, Loughborough University, 1st-3rd September 2014.

17. Benkwitz, A. Conflict and rivalry between football fans in the city of Birmingham: using ethnography to explore territorality. @Etnografia e Ricerca Qualitativa, University of Bergamo, Italy, 5th-7th June 2014.


19. Cronin, C., Baker, G., & Miller, P.K. Talent identification in English youth soccer: exploring the lived experiences of professional gatekeeper coaches. @4th Annual Qualitative Research in Sport and Exercise Science Conference, Loughborough University, September 2014.


21. Devine, C. Virtuoso coaching and the common good. @International Association for the Philosophy of Sport Annual Conference, Porto, Portugal, September 2012.


24. Lyons, P., & Bampouras, T.M. Effect of rowing intensity and muscle imbalances on spinal flexion in well-trained rowers. @British Association of Sports and Exercise Sciences Student Conference, Portsmouth University, UK, April 8th 2014.


29. Rowe, L. The client-practitioner relationship in health-related physical activity settings: An exploratory investigation. @British Association of Sport and Exercise Sciences Annual Conference, University of Central Lancashire, 3rd – 5th September 2013.


F. POSTER PRESENTATIONS AT NATIONAL AND INTERNATIONAL CONFERENCES

1. Bampouras, T.M., & Dewhurst, S. (Accepted). Carrying shopping bags poses no additional fall risk to healthy older females as assessed by gait. @British Association of Sports and Exercise Sciences Conference, St George’s Park, UK, November 26th 2014.


3. 1Crolla, T., Bampouras, T.M., & Dewhurst, S. Altered temperature affects rate of force development but not leg stiffness. @British Association of Sports and Exercise Sciences Student Conference, Portsmouth, UK, April 8th 2014.

4. Cronin, C. Working with “real kids:” How do novice coaches experience early coaching activities? @British Association of Sport and Exercise Sciences Annual Conference, University of Central Lancashire, September 2014.

5. Dewhurst, S., & Bampouras, T.M. Carrying shopping bags poses no additional fall risk to healthy older females as assessed by static and dynamic stability. @British Association of Sports and Exercise Sciences Conference, St George’s Park, UK, November 26th 2014.

6. 1Downham, L.M. & Miller, P.K. Instilling player confidence: an interpretative phenomenological analysis of football coaches’ confidence-raising methods. @British Association of Sports and Exercise Sciences Student Conference, Cardiff Metropolitan University, March 26th-27th 2013.

7. 1Maslivec, A.S., Bampouras, T.M., & Dewhurst, S. Passive movement training improves one legged stance but no other measure of functional ability in older females. @British Association of Sports and Exercise Sciences Conference, St George’s Park, UK, November 26th 2014.

8. 1Maslivec, A.S., Bampouras, T.M., & Dewhurst, S. Motorcise gym improves balance but no other component of functional fitness in older women (60 + years). @British
Association of Sports and Exercise Sciences Student Conference, Cardiff Metropolitan University, March 26\textsuperscript{th}-27\textsuperscript{th} 2013.

9. Merritt, L.H. & Miller, P.K. (2013). Stress, anxiety and experience among amateur gymnasts: An interpretative phenomenological analysis. @British Association of Sports and Exercise Sciences Student Conference, Cardiff Metropolitan University, March 26\textsuperscript{th}-27\textsuperscript{th} 2013.

10. Parker, A.J., Boxall, C., & Joyce, A. Na\textsubscript{I}(Tl) scintillator for in situ environmental studies and laboratory detection measurements of aqueous potassium chloride. @M.J. IEEE Nuclear Science Symposium and Medical Imaging Conference, Anaheim, California, 29\textsuperscript{th} October-3\textsuperscript{rd} November 2012

11. Parker, A.J., Boxall, C., & Joyce, M.J. The transport of cations through a concrete disk using an electrokinetic method for nuclear decommissioning research. @Nuclear Decommissioning Authority PhD Workshop, University of Manchester, 20\textsuperscript{th} January 2013.

12. Skett, A., & Bampouras, T.M. Effect of inter-set stretching on explosive bench press performance. @British Association of Sports and Exercise Sciences Student Conference, Portsmouth, UK, April 8\textsuperscript{th} 2014.

13. Thomas, N., Dewhurst, S., & Bampouras, T.M. Fatigue induces region-specific alterations of human gastrocnemius medialis fascicle characteristics. @British Association of Sports and Exercise Sciences Student Conference, Portsmouth, UK, April 8\textsuperscript{th} 2014.

G. RESEARCH PAPERS UNDER REVIEW AS OF 10/2014


7. Elliott, D., & Charlton, L. (Submitted). Can the exercise experience be enhanced via the emotional contagion effect?


4. ACTIVE AGEING RESEARCH GROUP

Group Leads
- Dr. Susan Dewhurst
- Theodoros M. Bampouras

Contributing DMSS Staff and Students
- Dr. Tim Donovan
- Amy Maslivec
- Neil Thomas

The Active Ageing Research Group (AARG) in the University of Cumbria was developed with the vision of investigating the effect of various interventions on functional ability, independent living and mental wellbeing, identifying the more effective ones and promoting them into future health schemes. Its aims are to work in collaboration with the older individuals to develop research which can be readily used and translated into practical applications on healthy ageing; in other words, focusing on impact, without compromising scientific rigour. AARG has already developed links with local agencies and has delivered lectures and discussion forums on fall prevention to local community groups (including the Lancaster Continuing Learning Group, the Lancaster and Morecambe University of the 3rd Age, with a Lancaster Women’s Institute talk to be scheduled later in the year). These received extremely positive feedback, raised interest in the Group’s research as well as generated ideas of the issues faced in later life.

Progress so far:
- Creation and establishment of AARG (web presence, e-mail address, community links etc);
• Successful recruitment of two PhD students, one internally and one externally funded;
• Collaboration within and outwith the University (e.g. external research grant applications with Dr Tim Donovan, University of Cumbria and Prof Macaluso, Dr Laudani, University of Rome ‘Foro Italico’; research collaboration with the Lancashire and Cumbria Clinical Research Hub);
• Promotion of the Group in the Media (Press and TV interviews);
• Increase student awareness of AARG, its aims and research (through integration of relevant research topics in modules, updates on AARG’s news and achievements etc);
• Inclusion of other members of staff with relevant expertise and research interests on various projects (e.g. Dr David Elliott).

In the news:
• ITV News Border, 03/02/2014 – interview;
• BBC Radio Cumbria, 31/01/2014 – Interview on Mike Zeller programme;
• The Scotsman, 12/01/2014 – Scottish dancing can help keep age at bay;
• Scottish Mail on Sunday, 12/01/2014 – Is the reel cure for old age?

International Publications:
• **Dewhurst, S., Peacock, L., & Bampouras, T.M.** (Forthcoming). *Postural stability of older female Scottish country dancers in comparison to physically active controls*. Journal of Aging and Physical Activity.


Presentations:

- **Dewhurst, S., Bampouras, T.M., Kerns, J.G., & McLauchlan, G.** Fall risk in osteoporotic and osteopenic total hip and knee replacement patients. @Lancashire Teaching Hospitals NHS Foundation Trust Research and Innovation Showcase, Royal Preston Hospital, UK, November 21st 2014.


- **Bampouras, T.M.** Exercise in renal patients. @Renal Continuing Medical Education Programme, Royal Preston Hospital, Preston, UK, September 15th 2014. Invited Speaker.

- **Bampouras, T.M., & Dewhurst, S.** (Accepted). Carrying shopping bags poses no additional fall risk to healthy older females as assessed by gait. @British Association of Sports and Exercise Sciences Conference, St George’s Park, UK, November 26th 2014.

- **Dewhurst, S., & Bampouras, T.M.** Carrying shopping bags poses no additional fall risk to healthy older females as assessed by static and dynamic stability. @British Association of Sports and Exercise Sciences Conference, St George’s Park, UK, November 26th 2014.

- **Maslivec, A.S., Bampouras, T.M., & Dewhurst, S.** Passive movement training improves one legged stance but no other measure of functional ability in older females. @British Association of Sports and Exercise Sciences Conference, St George’s Park, UK, November 26th 2014.

- **Maslivec, A.S., Bampouras, T.M., & Dewhurst, S.** Motorcise gym improves balance but no other component of functional fitness in older women (60 + years). @British Association of Sports and Exercise Sciences Student Conference, Cardiff Metropolitan University, March 26th-27th 2013.
Reports:


For the latest news on AARG, see: http://www.cumbria.ac.uk/activeageing
5. HEALTH & SOCIAL CARE EVALUATIONS

Academic Lead
Dr. Paul K. Miller

Contributing DMSS Staff
Melissa J. Bargh
Adam Benkwitz
Sarah Benkwitz
Nicola S. Relph

Health and Social Care Evaluations (HASCE) at the University of Cumbria is now an established facility providing evaluations for a range of organisations and agencies delivering health and social care. Its defined areas of evaluative expertise include:

- Health promotion programmes and campaigns;
- Community health initiatives;
- Leadership training in the caring professions;
- Cross-profession interaction in health and social care;
- Mental health improvement programmes in schools.

HASCE has, in the last two years, produced commissioned evaluation work for – or is presently engaged with - a number of bodies, including:

- Cool4Life.
- Cumbria Children’s Services.
- Cumbria County Council.
- Cumbria Learning and Improvement Collaborative (CLIC).
HASCE is also developing a range of bespoke accredited training modules for students, staff and partner bodies. These focus on the conceptual and practical skills necessary for those wishing to undertake robust, ethical and meaningful evaluations of their own.

Selected Reports:


Professional Publications:


For the latest news on HASCE, see: [www.cumbria.ac.uk/HASCE](http://www.cumbria.ac.uk/HASCE)
6. VISUAL EXPERTISE MEDICAL IMAGE PERCEPTION

Contributing DMSS Staff

- Dr. Tim Donovan
- Dr. Peter Philips

Despite the advances in display and imaging technology over the last 50 years error rates do not seem to be reducing. Error may be inevitable but because of the implications of error, incorrect diagnoses and subsequent patient management, efforts to reduce error are very important to society. There have been advances in evaluating human observer performance but there is no robust methodology for the assessment of how well cognitive tasks in medicine such radiographic interpretation are performed. A great deal of research and funding has been directed towards the opportunities offered by the introduction of digital imaging into the NHS, such as computer aided detection and diagnosis (CAD), yet relatively little research has focussed attention on the radiologist and the way they interact with and use this information. This means that often imaging processing software is not matched to human abilities and limitations.

The aim of the group’s research is to understand human expertise and in particular visual expertise in radiology. This will develop and use eye movement paradigms as a means of determining the various aspects of visual expertise and how they can affect performance. An example of this is the way that experts quickly obtain a global impression of an image and identify abnormalities before the image is searched. This phenomenon is also found in other domains of visual expertise such as pathology and dermatology. This process, which is unconscious, is not well understood particularly with respect to expertise level, as novices are unable to do
this. It is also apparent that it is relatively easy to perturb this process by altering the appearance of an image by for example including CAD prompts, which can result in a decline in performance.

The group currently has an EyeLink CL eye tracker, which has a sampling rate of 1000Hz, which will facilitate the design of experiments to reveal information about the ongoing cognitive processing of experts that is not accessible by any other method. This research will be theoretically significant, and could also have more practical applications such as more effective training programs, and the development of appropriate CAD tools.

The group is also involved in an NIHR-funded programme of research, led by UCL, investigating different aspects of CT Colonography. Bowel cancer is a NHS priority. A patient with a positive faecal occult blood test in the NHS Bowel Cancer Screening Programme will require further investigation. Thanks to improved CT scanner technology and computer hardware, increasingly the method used is CTC, also known as Virtual Colonoscopy. A CT scan of the patient’s inflated bowel can be explored in 3D on the computer screen, together with standard CT data.

Research presently uses skills in medical image perception to investigate how radiologists view and explore this new 3D modality. By tracking a radiologist’s eyes as they look at the 3D data it is possible to show how they visually searched the image, and in some cases show how they missed a cancer. The results from such studies, using novices through to Europe’s best experts, can feed back into training methods and assessment, as well as improve the design of the software used to display the data.

Within this project, a major question being addressed is the role of Computer Aided Detection (CAD) and the disagreement between its calculations and the radiologist’s interpretation. Research has shown that for some lesions, CAD can call them correctly, but the radiologist makes the opposite decision. The university’s eye tracking research will help to identify the visual features of the lesion and search behaviour of the radiologist, which leads to these conflicting decisions.
International Publications:


For the latest news on the group’s research, see:
http://www.cumbria.ac.uk/Courses/SubjectAreas/HealthWellbeing/Research/VisualExpertiseMedicalImagePerception.aspx

And:
http://www.cumbria.ac.uk/Courses/SubjectAreas/HealthWellbeing/Research/ComputedTomographyColonography.aspx
7. MENTAL HEALTH RESEARCH GROUP

Group Lead
Dr. Adam Benkwitz

Contributing DMSS Staff
Mark Christie
Dr. Paul K. Miller

The Mental Health Research Group (MHRG) has the overall aim to enable people to recover from mental health issues, and develop their social inclusion. The collaborative approach to research adopted seeks to cultivate an inter-disciplinary understanding of mental health. Our vision is that research will have discernible outcomes that facilitate the improvement of mental health, inform policy, advance theory and develop practice. The MHRG is comprised of academics from a range of departments at the University of Cumbria, spanning diverse backgrounds that include, but are not limited to: psychotherapy, social-psychology, occupational therapy, sociology, photography, rehabilitation, sport and physical activity, and mental health nursing. The MHRG also includes PhD students and external private practitioners that are involved in on-going research projects.

For the latest news on the MHRG, see:
http://www.cumbria.ac.uk/Courses/SubjectAreas/HealthWellbeing/Research/MentalHealthResearchGroup.aspx

Twitter: Mental Health at UoC - @MHresearchgroup
Validity and reliability of the Myotest Pro wireless accelerometer in squat jumps

Bampouras, T.M., Relph, N.S., Orme, D., & Esformes, J.I.

Isokinetics & Exercise Science, 21(2).

BACKGROUND: Portable and cost-effective accelerometers can yield instantaneous results of force, power, and velocity, with minimum set-up time to assess muscle power. However, such devices must also produce both valid and reliable data.

OBJECTIVE: The current study assessed the validity and reliability of the Myotest Pro wireless accelerometer (ACC).

METHODS: Thirty physically active males performed two squat jump, on two separate sessions. The jump was recorded simultaneously by a force platform and ACC, which was attached to a barbell resting on the subjects' shoulders. Validity was determined using Pearson correlation coefficient (r) and t-test between the maximum force platform (FFP) and ACC (FACC) force. Between session reliability of FACC, power (PACC) and velocity (VACC) from the ACC were assessed with t-test, intraclass correlation coefficient (ICC), and coefficient of variation (CV).

RESULTS: FACC correlated highly to FFP ($r = 0.815, p < 0.05$), but there was a proportionate ratio bias of 0.81. There was no difference between sessions ($p > 0.05$) for any variable. High ICCs were found for all variables (FACC 0.90; PACC 0.80; VACC 0.84). Low CV was found for FACC (2.1%), PACC (3.3%) and VACC (3.2%).

CONCLUSIONS: ACC is a valid and reliable tool to use for assessing barbell movement, but caution in power data interpretation is needed.
Survey of UK sonographers on the prevention of work related muscular skeletal disorder (WRMSD)

Bolton, G.C. & Cox, D.L.

Journal of Clinical Ultrasound

BACKGROUND: To establish whether the current training of student sonographers in both academic and clinical settings is sufficient for educating about the dangers of work-related musculoskeletal disorders (WRMSDs).

METHODS: A dual method of data collection was undertaken. Initially, a focus group was set up, involving a small group of practicing sonographers from a hospital in the United Kingdom, with the results of that survey being used to design a postal survey questionnaire. The questionnaire focused on ergonomics, scanning technique, training in physical techniques, personal general health, risk, stress, and task management. It was sent to seven participating universities across the United Kingdom. Approvals were obtained from the local ethics committees, the hospital Trust, and the academic institution.

RESULTS: The focus group highlighted several areas in which improvements could be made in educating sonographers on the reduction of WRMSDs. The questionnaire results indicated that students are being taught about certain aspects of WRMSD prevention by both their university and clinical mentors. Respondents received training on the prevention of WRMSDs: 97% in the university setting and 81% from clinical mentors.

CONCLUSIONS: Improvements need to be made in terms of educating students to perform muscle-strengthening exercises during the workday; to have a system of reporting injury; to consider personal health, well-being, and stress management in the workplace; and to evaluate the ergonomics of computer workstations.
Screening for claustrophobia in MRI: A pilot study

Booth L. & Bell L.

European Scientific Journal, 9(18).

PURPOSE - Claustrophobia during MRI examinations still presents a significant burden for patients and the NHS. Despite many strategies being suggested to reduce this burden, many are not routinely practiced due to questions over their cost-effectiveness. One way to ensure that strategies are cost effective is to screen for those patients who are most likely to experience difficulties during the examination.

METHOD – This pilot study utilised the Claustrophobia Questionnaire (CLQ) to determine its predictive qualities in screening for claustrophobia in MRI. A retrospective sample of patients who withdrew from the MRI examination (citing claustrophobia as the cause) were cross matched against a population who were able to tolerate the exam.

RESULTS – The results were analysed using Mann Whitney and demonstrated a significant difference in the scores between those who could tolerate the MRI environment and those who could not.

CONCLUSION – The CLQ may be a valid tool for screening those patients who may be unable to tolerate MRI examinations prior to attendance, enabling strategies to be targeted to this particular group.
Lived experience and community sport coaching: A phenomenological investigation

Cronin, C., & Armour, K.M.

Sport, Education and Society, 19(9).

Coaching in the participation domain is the act of coaching participants that are less intensely engaged in sport than performance orientated athletes. This form of coaching is a popular activity occurring in community settings such as schools or sport clubs, and it is often undertaken with a broad range of social and health outcomes in mind. The experiences and practices of the large army of ‘community coaches’ have been under-explored in comparison to those of elite performance coaches who focus on competitive success and dominate much academic research. This study focuses on the little known world of the community coach.

Drawing on the philosophy of phenomenologists such as Husserl, and in particular the methodology of Van Manen, the study explored the lived experiences of a single case study community coach. Derived from semi-structured interviews and in keeping with Van Manen’s methodology, findings are presented in a narrative format. The narrative describes the ‘lifeworld’ of the coach and seeks to identify the ‘essential features’ of community coaching in this case. Specifically, the narrative illustrates a dichotomy in the lifeworld of the coach; between a frenetic practical delivery mode visible in the public arena and a ‘hidden’ largely unknown, private world used predominantly for planning and organising. For this case study coach, the essence of community coaching lay in two complementary activities; planning and then delivering fun based activities that achieved social, health and sporting outcomes. Additionally, interacting with others, such as parents, carers and teachers was identified as an essential feature of this coach’s experience.
Scottish country dance: Benefits to functional ability in older women

Dewhurst, S., Nelson, N., Dougall, P., & Bampouras, T.M.

Journal of Aging and Physical Activity, 22(1).

The effects of long-term participation in Scottish country dance on body composition, functional ability, and balance in healthy older females were examined. Participants were grouped into dancers and physically active nondancers (ages 60-70 and 70-80 for both groups).

Physical activity, body composition (body-mass index, skinfold thickness, waist-to-hip ratio), functional ability (6-min walk distance, 6-m walk time, 8-ft up-and-go time, lower body flexibility, shoulder flexibility), and static balance were measured. Younger dancers and physically active nondancers had similar 6-min walk distance, 6-m walk time, and 8-ft up-and-go time results; however, while older dancers performed similarly to younger dancers, older physically active nondancers performed poorer than their younger counterparts (p < .05).

Body composition and static balance were the same for all groups. Regular physical activity can maintain body composition and postural stability with advancing age; however, Scottish country dance can delay the effects of aging on locomotion-related functional abilities.
London 2012 Olympic legacy: a big sporting society?

Devine, C.

International Journal of Sport Policy and Politics. 5(2).

The Olympic Charter asserts that ‘the practice of sport is a human right’ and outlines role 12 of the IOC as being ‘to encourage and support the development of sport for all’. This signals an aspiration to the right to sport for all. Notwithstanding this, the UK Conservative/Liberal Democrat coalition government has consolidated and extended a shift in UK sport policy from ‘sport for social good’ to ‘competitive sport for sport’s sake’. In December 2010, the government published ‘Plans for the Legacy from the 2012 Olympic and Paralympic Games’. The first of the four areas of focus is to harness ‘the United Kingdom’s passion for sport to increase grass-roots participation, particularly by young people’ and encourage ‘the whole population to be more physically active’. This appears to relate to sport for some, and physical activity for others. Nevertheless, the coalition has signalled a belief in ‘big society’ and democratic not bureaucratic accountability.

This article proposes a theoretical framework of a ‘big sporting society’ comprising three generations of sporting rights. This enables an evaluation of emergent sport policy in relation to the London 2012 Olympic Games legacy and the Olympic Charter. It is argued that the realization of the 2012 legacy relating to the IOC’s aspiration to sport as a human right for all, and consequent democratic sporting accountability, necessitates a ‘sport for all’ rather than ‘competitive sport for sport’s sake’ policy direction, and the development of all three generations of sporting rights, resulting in a ‘big sporting society’.
Negative priming for target selection with saccadic eye movements

Donovan, T., Crawford, T.J., & Litchfield, D.

Experimental Brain Research, 222(4).

We conducted a series of experiments to determine whether negative priming is used in the process of target selection for a saccadic eye movement. The key questions addressed the circumstances in which the negative priming of an object takes place, and the distinction between spatial and object-based effects.

Experiment 1 revealed that after fixating a target (cricket ball) amongst an array of semantically related distracters, saccadic eye movements in a subsequent display were faster to the target than to the distracters or new objects, irrespective of location. The main finding was that of the facilitation of a recent target, not the inhibition of a recent distracter or location. Experiment 2 replicated this finding by using silhouettes of objects for selection that is based on feature shape. Error rates were associated with distracters with high target-shape similarity; therefore, Experiment 3 presented silhouettes of animals using distracters with low target-shape similarity. The pattern of results was similar to that of Experiment 2, with clear evidence of target facilitation rather than the inhibition of distracters. Experiment 4 and 5 introduced a distracter together with the target into the probe display, to generate a level of competitive selection in the probe condition.

In these circumstances, clear evidence of spatial inhibition at the location of the previous distracters emerged. We discuss the implications for our understanding of selective attention and consider why it is essential to supplement response time data with the analysis of eye movement behaviour in spatial negative priming paradigms.
Looking for cancer: Expertise related differences in searching and decision making

Donovan, T., & Litchfield, D.

Applied Cognitive Psychology, 27(1).

We examined how the ability to detect lung nodules in chest x-ray inspection is reflected in experience-related differences in visual search and decision making, and whether the eye-tracking metric time-to-first hit showed systematic decreases across expertise levels are examined. In the study decision making improved with expertise, however, time-to-first fixate a nodule showed only a non-significant trend to decrease with expertise.

Surprisingly, naïve and expert observers allocated less visual attention at nodules compared with first and third year radiography students. This similarity in visual attention at nodules but not in decision making was explained by the fact that naïve observers were more likely to fixate and make errors on distracter regions. Time-to-first hit has been linked to expert performance in mammography, but in this study was not sufficiently sensitive to demonstrate clear linear improvements across expertise groups. This brings into question the use of this metric as an indirect measure of rapid initial holistic processing.
An examination of barriers to physical education for Christian and Muslim girls attending comprehensive secondary schools in the UK

Elliott, D. & Hoyle, K.

European Physical Education Review, 20(3).

This study examined barriers to Physical Education (PE) in a sample of Christian and Muslim schoolgirls attending UK comprehensive secondary schools. Also assessed was whether religion and school year (age) had any impact upon barrier strength and if school year × religion interactions existed. A questionnaire was developed and exploratory factor analysis was utilised to uncover barrier factors.

Six factors were found; these were: ‘Self-Conscious’, ‘Sensations’, ‘Embarrassment’, ‘Dislike/Unimportant’, ‘PE Uniform’ and ‘Religiosity’. For the total sample, the highest quotient was assigned to the ‘PE Uniform’ barrier factor. The remaining barrier factors received relatively low quotients. When analysed by religious persuasion, it was found that four of the barrier factors were rated significantly higher by the Muslim girls. For both Christian and Muslim samples, barrier strength tended to increase in line with school year (age). School year × religion interactions were also evident. These results provide a contemporary picture of potential barriers to PE for girls attending comprehensive secondary schools in the UK.
Depression, sense and sensitivity: On pre-diagnostic questioning about self-harm and suicidal inclination in the primary care consultation

Miller, P.K.

Communication and Medicine, 10(1).

National Health Service directives in the UK specify that, in any primary care consultation where a patient either demonstrably has - or is suspected to have - depression, a ‘direct question’ should be asked regarding their thoughts or activities relating to self-harm or suicide.

The evidence collected for this study, which takes the form of recorded interactions between doctors and patients in primary care settings, indicates that this is most commonly done post-diagnosis as an exercise in ‘risk assessment’ Suicidal ideation, however, is not only classified as a possible outcome of depression but also a core symptom of the condition and, consequently, such a question is sometimes asked prior to the diagnostic phase of the consultation, as a key step in reaching a depression diagnosis. This specific activity presents a general practitioner with an inferably difficult communicative task: how to raise the matter of suicide/self-harm when the patient does not already have a depression diagnosis as an interactional resource with which to make sense of its local relevance.

Herein, using a conversation analytic method, techniques employed by general practitioners and patients in negotiating three of these potentially sensitive moments are examined. Analytic observations are then used to highlight a range of issues pertinent to the formulation of normative frames of ‘good practice’ in handling difficult clinical topics in situ.
Rethinking the factuality of “contextual” factors in an ethnomethodological mode: Towards a reflexive understanding of action-context dynamism in the theorisation of coaching

Miller, P.K. & Cronin, C.

Sports Coaching Review, 1(2).

In this paper, an argument is made for the revisitation of Harold Garfinkel’s classic body of ethnomethodological research in order to further develop and refine models of the action-context relationship in coaching science. It is observed that, like some contemporary phenomenological and post-structural approaches to coaching, an ethnomethodological perspective stands in opposition to dominant understandings of contexts as semi-static causal ‘variables’ in coaching activity. It is further observed, however, that unlike such approaches – which are often focused upon the capture of authentic individual experience – ethnomethodology operates in the intersubjective domain, granting analytic primacy to the coordinative accomplishment of meaningful action in naturally-occurring situations.

Focusing particularly on Garfinkel’s conceptualization of action and context as transformable and, above all, reflexively-configured, it is centrally argued that greater engagement with the ethnomethodological corpus of research has much to offer coaching scholarship both theoretically and methodologically.
Optimal uniformity index selection and acquisition counts for daily gamma camera quality control

Murray, A.W., Barnfield, M.C., & Thorley, P.J.

Nuclear Medicine Communications, 35.

INTRODUCTION: The purpose of this study was to investigate the optimized use of common uniformity indices [National Electrical Manufacturers' Association (NEMA) indices (differential and integral), Cox-Diffey and the coefficient of variation (CoV)].

METHODS: The indices were calculated for induced [localized two-dimensional (2D) Gaussian and gradient] artefacts added to three image sets (5, 10 and 15 million counts), each containing 25 extrinsic images, using Matlab. The intensity of the induced artefacts was varied between a 1 and 10% drop in pixel counts. The induced artefacts simulated photomultiplier tube [10 cm full width at half maximum (FWHM)], smaller focused artefacts (2.5 cm FWHM) and gradients artefacts.

RESULTS: For five million count acquisitions, the Cox-Diffey, CoV and NEMA integral indices detected the 6% 2D Gaussian artefacts [10 cm full-width at half-maximum (FWHM)], whereas the NEMA differential index performed relatively poorly. NEMA differential and integral indices performed equally well at detecting smaller 2D Gaussian (2.5 cm FWHM) artefacts. The 10% artefact was the minimum artefact detected by both indices for five million count acquisitions. The Cox-Diffey and CoV indices did not detect any artefacts for five million acquired counts. The CoV index performed best at detecting gradient artefacts at five million acquired counts.

CONCLUSION: This work provides evidence that daily quality control can be acquired with as few as five million counts while maintaining the same ability to detect both chronic and acute nonuniformities compared with higher count acquisitions. A combination of the NEMA integral and the CoV indices gives the optimal selection of uniformity indices for detecting a range of artefact forms and intensities.
A phantom for the electrokinetic decontamination of entrained radioactivity within concrete media

Parker, A.J., Boxall, C., & Joyce, M.J.

Journal of Radioanalytical and Nuclear Chemistry, 300(2).

A phantom for the evaluation of electrokinetic remediation of radioactive species from water saturated concrete is described. The phantom has been designed to be a general analogue for environments where structural concrete is saturated by radioactive aqueous solutions and where electrokinetic remediation may be deployed. It is also a specific analogue for the walls of storage ponds for legacy spend nuclear fuel pins where the pond water comprises a large volume of hazardous active waste that may penetrate the pond wall.

The fabricated phantom was evaluated using a fixed electrical potential to monitor the rate of cationic transport of K+ through concrete samples of different thickness (20 and 35 mm respectively). Results of the evaluation show K+ diffusion coefficients of $5.20 \times 10^{-13}$ and $7.61 \times 10^{-13}$ m$^2$s$^{-1}$ for the 20 mm and 35 mm samples, consistent with those seen in literature for the transport of caesium through concrete of similar thickness.

The phantom offers a means of experimental validation of computational electrokinetic models as well as providing a basis to test the effects of electrode material on ionic transport rates, to interrogate the effects of pH on all components of the system, and as a basis for instruction, education and training in nuclear decommissioning and waste treatment.
Method for tracking eye gaze during interpretation of endoluminal 3D CT colonography: technical description and proposed metrics for analysis


Radiology, 267(3).

PURPOSE: To develop an eye-tracking method applicable to three-dimensional (3D) images, where the abnormality is both moving and changing in size.

MATERIALS AND METHODS: Research ethics committee approval was granted to record eye-tracking data from six inexperienced readers who inspected eight short (<30 seconds) endoluminal fly-through videos extracted from computed tomographic (CT) colonography examinations. Cases included true-positive and false-positive polyp detections from a previous study (polyp diameters, 5-25 mm). Eye tracking was performed with a desk-mounted tracker, and readers indicated when they saw a polyp with a mouse click. The polyp location on each video frame was quantified subsequently by using a circular mask. Gaze data related to each video frame were calculated relative to the visible polyp boundary and used to identify eye movements that pursue a polyp target as it changes size and position during fly-through. Gaze data were then related to positive polyp detections by readers.

RESULTS: Tracking eye gaze on moving 3D images was technically feasible. Gaze was successfully classified by using pursuit analysis, and pursuit-based gaze metrics were able to help discriminate different reader search behaviors and methods of allocating visual attention during polyp identification. Of a total of 16 perceptual errors, 15 were recognition errors. There was only one visual search error. The largest polyp (25 mm) was seen but not recognized by five of six readers.

CONCLUSION: Tracking a reader’s gaze during endoluminal interpretation of 3D data sets is technically feasible and can be described with pursuit-based metrics. Perceptual errors can be classified into visual search errors and recognition errors. Recognition errors are more frequent in inexperienced readers.
The effect of ACL injury on knee proprioception: A meta-analysis

Relph, N.S., Herrington, L., & Tyson, S.

Physiotherapy, 100(3).

Objective: The objective of the study was to undertake a meta-analysis investigating the effects of ACL injury, treated conservatively or by reconstruction, on proprioception of the knee, measured using joint position sense and/or threshold to detect passive movement techniques.

Data sources: Seven databases were searched from their inception to September 2013 using the subject headings ‘anterior cruciate ligament, proprioception, postural sway, joint position sense, balance, equilibrium or posture’ to identify relevant studies.

Eligibility criteria: PRISMA guidelines were followed as much as possible. Studies that investigated the effect of ACL injury on either knee joint kinaesthesia or position sense were included in this review.

Data extraction and synthesis: Two reviewers independently extracted data using a standardised assessment form. Comparisons were made using a fixed effect model with an inverse variance method using Review Manager Software (V5.1).

Results: Patients with ACL injury have poorer proprioception than people without such injuries (SMD = 0.35°; P = 0.001 and SMD = 0.38°; P = 0.03) when measured using joint position sense and threshold to detect passive motion techniques respectively. Patients had poorer proprioception in the injured than uninjured leg (SMD = 0.52°; P < 0.001) and the proprioception of people whose ACL was repaired was better than those whose ligament was left unrepaired (SMD = −0.62°; P < 0.001).

Conclusion: ACL injuries may cause knee proprioception deficits compared to uninjured knees and control groups. Although differences were statistically significant, the clinical significance of findings can be questioned. Clinical practitioners using joint position sense or threshold to detect passive motion techniques need to consider the reliability and validity of data provided.
On the role of lyrics in the music-exercise performance relationship

Sanchez, X., Moss, S.L., Twist, C., & Karageorghis, C.I.

Psychology of Sport and Exercise, 15.

Objectives: To examine the role of lyrics on a range of psychological, psychophysical, and physiological variables during submaximal cycling ergometry.

Design: Within-subject counterbalanced design.

Method: Twenty-five participants performed three 6-min cycling trials at a power output corresponding to 75% of their maximum heart rate under conditions of music with lyrics, same music without lyrics, and a no-music control. Cycling cadence, heart rate, and perceived exertion were recorded at 2-min intervals during each trial. Positive and negative affect was assessed before and after each trial.

Results: Participants cycled at a higher cadence towards the end of the cycling trials under music with lyrics. Main effects were found for perceived exertion and heart rate, both of which increased from min 2 through to min 6, and for affect: positive affect increased and negative affect decreased from pre- to post-trials.

Conclusions: Participants pedalled faster in both music conditions (with and without lyrics) while perceived exertion and heart rate did not differ. The inclusion of lyrics influenced cycling cadence only at min 6 and had no effect on the remaining dependent variables throughout the duration of the cycling trials. The impact of lyrical content in the music-exercise performance relationship warrants further attention in order for us to better understand its role.
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