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PREMUS 2019

10th International
Scientific Conference
on the Prevention of
Work-Related
Musculoskeletal
Disorders

**From research to evidence
based sustainable
interventions and practices**

Keynotes



Keynote Speakers

BONFIGLIOLI ROBERTA, ITALY

Department of Medical and Surgical Sciences, University of Bologna

Roberta Bonfiglioli MD is Associate Professor of Occupational Medicine at the University of Bologna and Staff physician at the Unit of Occupational Medicine, Sant'Orsola Malpighi University Hospital in Bologna. Her research interests include diagnosis and prevention of work-related musculoskeletal disorders and peripheral neuropathy, occupational risk factors in the health care setting. Prof. Bonfiglioli is Chair of the "Scientific Committee on Musculoskeletal Disorders" of the International Commission on Occupational Health (ICOH) for the triennium 2018-2021, Chair of the Emiliano-Romagnola branch of the Italian Society of Occupational Medicine for the triennium 2019-2022 and currently degree program Director - Second Cycle Degree Program in Health Professions of Prevention Sciences at the University of Bologna.

CARISA HARRIS ADAMSON, USA

Assistant Professor, University of California, Director, UCSF/UCB Ergonomics Graduate Training Program, Richmond CA, USA

Carisa Harris Adamson, PhD, CPE is an Assistant Professor in the Department of Medicine at the University of California at San Francisco, and in the School of Public Health at the University of California at Berkeley. She is also the Director of the UCSF/UCB Ergonomics Research & Graduate Training Program and the Deputy Director of the Northern California Center of Occupational & Environmental Health. Dr. Harris and her team performs research in a variety of areas focused on understanding and preventing work related injuries and improving human performance, productivity and health. Her epidemiological research assesses and adjusts for healthy worker survivor bias in the assessment of physical, personal and work psychosocial factors associated with Carpal Tunnel Syndrome and subsequent work disability. Additionally, her team is developing and testing a variety of exposure assessment devices (wearables) for primary and secondary prevention purposes and performs various intervention studies on occupational tasks with high risk of musculoskeletal injuries, such as the implementation of passive exoskeletons in construction work.

JUDITH GOLD, SWEDEN

Centre for Musculoskeletal Research, Department of Occupational and Public Health Sciences, University of Gävle, Gävle, Sweden. Gold Standard Research Consulting

Judith E. Gold, ScD is an occupational epidemiologist, ergonomist, and electrical engineer. She is the founder of Gold Standard Research Consulting, providing epidemiology and data science/data analysis expertise to academic, non-profit (NGOs), and business clients. Most recently at the Centre for Musculoskeletal Research (CBF) in Gävle, Sweden, and prior to that at Temple University in Philadelphia, Pennsylvania, USA, her research has focused on the epidemiology of work-related musculoskeletal disorders (MSDs), with particular attention to biomarkers and physiological mechanisms. Dr. Gold is especially interested in the information that can be gleaned from concurrent assessments of biochemical and quantitative imaging biomarkers. She has been the recipient of government and industry-funded research grants, and has served as a consultant for WHO and OSHA.

KAREN MESSING, CANADA

Professeure émérite, Département des sciences biologiques et chercheure, centre de recherche CINBIOSE, UQAM Université du Québec, Montréal - Canada

Karen Messing is professor emerita of ergonomics in the Department of Biological Sciences at the University of Quebec at Montreal. Her research deals with applications of gender-sensitive analysis in occupational health and with constraints and demands of work in the service sector, especially the effects of prolonged static standing. In addition to 145 peer-reviewed scientific articles, she has published several books, including *One-eyed Science: Occupational Health and Working Women* (1998) and *Pain and Prejudice: What Science Can Learn about Work from the People Who Do It* (2014). She co-founded the Gender and Work Technical Committee of the International Ergonomics. She has received several awards including the Governor General of Canada's "Persons" Award for advancing the status of women (2009) and the William P. Yant Award from the American Industrial Hygiene Association (2014) for "outstanding work in industrial hygiene". In 2018 she was named one of 21 Montréal "inspiring citizens".

SARAH SHARPLES, UK

Horizon Digital Economy Research, Human Factors Research Group, University of Nottingham, Nottingham, United Kingdom

Sarah Sharples is Pro-Vice-Chancellor for Equality, Diversity and Inclusion for the University of Nottingham. Her work as a Professor of Human Factors has been applied to Transport, Healthcare and Manufacturing. She was President of the Chartered Institute of Ergonomics and Human Factors from 2015-16, and is on the Science Advisory Council for the UK Department for Transport. She is on the Council of the Engineering and Physical Sciences Research Council, and leads the national EPSRC Network Plus 'Connected Everything' which brings together communities including engineering, computer science and design to consider the future opportunities presented by Digital Manufacturing. She also leads the research project 'DigiTOP' which is developing tools and solutions to support the implementation of future digital manufacturing technologies. She is passionate about ensuring that we take a systems perspective to considering the role of and impact on people in all work to develop future technologies and solutions.

KAREN WALKER-BONE, UK

Director Arthritis Research UK/MRC Centre for Musculoskeletal Health and Work, MRC Lifecourse Epidemiology Unit, Southampton United Kingdom

Karen trained as an academic rheumatologist with a special interest in occupation and musculoskeletal pain in Southampton, funded by an Arthritis Research UK Clinical Research Fellowship. Karen is based at the MRC Lifecourse Epidemiology Unit in Southampton where she is Professor and Honorary Consultant in Occupational Rheumatology and Director of the Arthritis Research UK/MRC Centre for Musculoskeletal Health and Work. She leads the multidisciplinary Centre and coordinates a programme of work to find cost effective ways to reduce the burden of disability for work caused by musculoskeletal disorders. She was awarded an Honorary Fellowship of the Faculty of Occupational Medicine in 2013. She also chairs the multi-disciplinary BSR/BHPR Special Interest Group in work and health.

Keynotes



New technologies have enhanced the quality and availability of measures of biomechanical risk factors.

How can we keep workers' digital footprint under control?

[Sarah Sharples](#) - Horizon Digital Economy Research, Human Factors Research Group, University of Nottingham, Nottingham, United Kingdom

Technologies have the potential to revolutionise the way that Human Factors and Ergonomics professionals understand the way that we live and work. Through lifelong data capture embedded sensing in work settings, the boundaries between our home and life, and between the field and the laboratory, are increasingly blurred. In my talk I will discuss the types of technologies that are emerging and being explored in the domains of manufacturing, transport and healthcare. I will consider how these technologies can help predict and prevent biomechanical risk factors, consider the interaction between home and life, people and robotics. I will also consider not only 'how' we keep workers' digital footprint under control, but whether in fact we 'should' do this – considering the balance between the responsibilities of the worker, employer and society as a whole.

Insights into workplace and personal factors that predict disability related to CTS: The NIOSH Consortium Study

[Carisa Harris Adamson](#) - Assistant Professor, University of California, Director, UCSF/UCB Ergonomics Graduate Training Program, Richmond CA, USA

Carpal tunnel syndrome (CTS) is an important occupational health problem due to its high incidence in certain occupations and the severity of disability. Between 2001 and 2010 five research groups in the US conducted coordinated prospective studies of personal, psychosocial and biomechanical factors and incident CTS and associated disability among workers from various industries. However, healthy worker survivor effect (HWSE) can yield truncated data and bias the results. Right truncation occurs when workers enroll in the study and become symptomatic but are lost to follow up before becoming a case. If truncation disproportionately affects highly exposed workers then an attenuation of dose-response relationships can occur. The presence and magnitude of selection bias due to the healthy worker survivor effect (HWSE) from right truncation will be presented.

New findings from the Italian OCTOPUS and related studies on CTS

Roberta Bonfiglioli - Associate Professor of Occupational medicine Chair of the ICOH SC Musculoskeletal Disorders - Department of Medical and Surgical Sciences, University of Bologna, Italy

Carpal tunnel syndrome (CTS) is one of the most studied diseases due to its prevalence and incidence in the population and its effects on hand function. Several studies have been carried out in the last decades in an attempt to identify the contribution of manual work in the development of CTS.

Regardless the causal role of highly repetitive and forceful jobs in the onset or in the worsening of CTS and the related legal issues, the need to manage manual workers affected by CTS in the occupational setting has increased in an ageing workforce. This probably explains why CTS is still a research subject for clinicians in the field of neurology, hand surgery and occupational medicine.

CTS is a clinical syndrome by definition. It is characterized by typical symptoms in the area of the median nerve and by median nerve impairment at various extent. Epidemiological studies have shown disagreement between symptoms and median wrist mononeuropathy. However, nerve conduction studies are an objective measure of nerve function (important when legal issues may arise) and clinical guidelines recommend electrodiagnostic studies to confirm a clinical diagnosis of CTS.

When studying CTS one of the main challenging issue remains the case definition. The debate on this issue is still currently relevant since it affects treatment modalities and guides preventive strategies. The findings of longitudinal studies in working populations and their contribution to this debate will be discussed.

Imaging and biochemical biomarkers research in non-traumatic musculoskeletal disorders (MSD). Practical recommendations

Judith Gold - Centre for Musculoskeletal Research, Department of Occupational and Public Health Sciences, University of Gävle, Gävle, Sweden. Gold Standard Research Consulting

Biochemical and quantitative imaging biomarkers of musculoskeletal disorders (MSDs) hold potential for improving diagnosis, evaluating medical treatments, determining ergonomic intervention effectiveness, and for elucidating MSD pathomechanisms. However, biomarkers for MSDs are at a nascent stage. Practical (and perhaps some impractical suggestions) will be offered for researchers interested in advancing the field. An overview on what has been done (with emphasis on limitations), and promising future directions will be discussed. The latter include concurrently assessing biochemical and imaging biomarkers in study participants, and a newer method to non-invasively image tendons.

Frailty and pre-frailty are major determinants of inability to work at older ages: what can we do about it?

Karen Walker-Bone - Director Arthritis Research UK/MRC Centre for Musculoskeletal Health and Work, MRC Lifecourse Epidemiology Unit, Southampton United Kingdom

Throughout Europe, workers are being encouraged to remain economically active, in paid work, to older ages. However, there is currently little information as to whether it is possible for people to remain in all types of paid work until their seventh or even eighth decade of life and what might enable people to do so comfortably, without negative impacts on health after retirement.

We have investigated physical performance measures amongst a population sample of people aged 50-64 years and found that those with worst self-reported physical function are very much less likely to have stopped being in paid work in this age range. Physical performance is related to muscle mass and strength and is strongly related to walking speed and mobility. In this lecture, we will explore what is known about maximising physical function into older ages, including its relationship with physically-demanding work and leisure-time physical activity. We will hypothesise as to what will maximise long-term working in the future.

When and how to think about sex/gender during an ergonomic intervention

Karen Messing - Professeure émérite, Département des sciences biologiques et chercheure, centre de recherche CINBIOSE, UQAM Université du Québec, Montréal Canada

Ergonomists are concerned with improving work for all workers and adapting work to a wide range of workers' characteristics and capacities. But in practice, "all" may just mean those whose needs are most salient for management, the union or the ergonomist, and the needs of historically underserved populations like women or ethnic minorities may remain invisible. Generally, data on women are less often included in occupational health research and practice. In most workplaces, women are found in specific jobs, with different task assignments and work activity within jobs. Despite some overlap in characteristics, women are not just small men, but have different proportions and physiological functioning, reflected in different incidence and type of occupational injuries and illnesses. How can we take account of women's and men's needs during ergonomic interventions?

We are analyzing the processes and outcomes of a group of research interventions (RIs) targeting women workers and carried out in partnership with community groups, workplace managements or unions. The RIs concerned "traditional" women's work, women entering non-traditional jobs, or work-family interactions. We ask how sex and gender ("s/g") were integrated in these RIs and whether they resulted in workplace improvement, gender equality or social evolution.

Preliminary results suggest a number of obstacles need to be overcome, such as ergonomists "forgetting" s/g and intense emotional reactions to mention of s/g issues in the workplace. Locally-focused RIs were often silent about s/g, but when s/g was explicitly included in RIs, they could result in social policy changes in addition to workplace improvements. Although short-term ergonomic interventions cannot produce fundamental social evolution, they can succeed in involving previously underserved groups and making their needs more visible.

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