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Marie Laberge, Mélanie Lefrançois, Martin Chadoin, Isabelle Probst, Jessica Riel, Christelle Casse & Karen Messing. *Gender and work in ergonomics: recent trends*. Pages: 1451-1455.

Since the establishment of the Gender and Work Technical Committee (TC) of the International Ergonomics Association (IEA) in 2006, many researchers have addressed the role of sex and gender in ergonomics, producing a great deal of new information. This special issue aims to present new ways of viewing women's work and gender differences in work-related injury risks in an era of rapidly changing labour market configurations. It offers innovative methods for integrating sex and gender into ergonomic analysis and for designing work environments. It shares reflections on the intersection of vulnerabilities according to certain identity markers. Finally, it contributes to establishing milestones standards of practice so that the consideration of sex and gender can be more systematically modelled in ergonomics research and interventions, for example, in training ergonomists or in knowledge transfer initiatives. **Practitioner summary:** This editorial article provides an overview of the background and the content of the Special Issue 'Gender and Work in Ergonomics: Recent trends'.

- **Keywords:** Ergonomics, sex and gender integration, sex and gender based analysis, knowledge transfer, training future ergonomists

Liliana Cunha, Daniel Silva, Mariana Macedo & Marianne Lacomblez. ['My whole body is at work': the silence of gendered body techniques in cork industry in an era of automation](#). Pages: 1456-1468.

Discourses about technological transformation tend to focus on technology, as if its introduction was neutral regarding local variabilities, and the men and women that make it effective. This paper focuses on the technical act. The body is where the technical acts are inscribed and it is through the body that they are exteriorised. The purpose of this paper is to analyse the operative modes associated with the technical acts, from a gender perspective, in the context of the technological transformation in cork industry. The analysis of the work activity performed by men (punching operators) and women (choosers) was supported by observations, collective interviews, and group sessions to validate the results. The findings show male- and female-specific body techniques; how

the efficacy of the technical acts contributes to the debate about the limits of technology; and how body techniques and effects on health tend to remain in silence due to automation. **Practitioner summary:** The reconfiguration of the human-machine relationships hardly leaves room for the analysis of how the body techniques evolve. This paper shows how the efficacy of men and women body techniques contributes to the debate about the limits of technology, even if these uses of one's body entail health costs.

- **Keywords:** Automation, gender, technical act, body, occupational risks

Rima R. Habib, Reem S. Katrib, Farah S. Katrib, Elio Abi Younes, Micheline Ziadee & Josleen Al Barathie. *Mistreatment at work and musculoskeletal pain in male and female working Syrian refugee children.* Pages: 1469-1476.

Since the Syrian war in 2011, Syrian refugees in Lebanon have continued to experience socioeconomic deprivation, resorting many families to child labour as a form of survival. Adopting a gender-sensitive analysis, this study explores the relationship between psychosocial adversities and musculoskeletal pain among male and female Syrian refugee children in Lebanon, using data from a cross-sectional survey of working Syrian refugee children between 8 and 18 years in informal tented settlements in the Bekaa Valley of Lebanon. The majority of working children (4090) worked in agriculture (75.8%). Of the children who experienced musculoskeletal pain, 27.4% worked despite severe pain, three-quarters of the children worked under time pressure, over a third (37.4%) were physically abused at work, and the majority (95.8%) had a good relationship with their co-workers. Logistic regression models revealed a significant association between exposure to psychosocial stressors at work and musculoskeletal pain among male and female children. **Practitioner summary:** This study is the first to obtain direct testimony on musculoskeletal pain and psychosocial risk factors, among Syrian refugee children in Lebanon. Using a gender-sensitive analysis, the survey results demonstrated associations between exposure to psychosocial stressors and musculoskeletal pain among male/female Syrian refugee children enduring strenuous working conditions.

- **Keywords:** Child labour, musculoskeletal problems, psychosocial risk factors, gender, refugee

Silvana Salerno & Claudia Giliberti. *Women's wrist and elbow at work: analysis of acute injuries and cumulative trauma disorders to improve ergonomics in female-dominated activities.* Pages: 1477-1485.

The aim of this study is to analyse women's wrist and elbow acute work injuries together with cumulative trauma disorders, such as carpal tunnel syndrome (CTS) and epicondylitis. Five years records (2015–2019) on women's wrist/elbow acute work injuries and CTS/epicondylitis, from Italian National Compensation Authority, were collected and pooled all together as 'dis-ac' (disorders + acute) events. A statistical analysis was performed in comparing the different female-dominated work sectors. Results showed that hairdressing/laundry sector was associated with the highest risk for wrist acute work injuries and cleaning for elbow while manufacturing for CTS and epicondylitis. Hairdressing/laundry and manufacturing were associated with the highest risk for dis-ac events (hairdressing: wrist dis-ac OR: 4.89; CI 95% 4.22–5.67; elbow dis-ac OR: 3.70; CI 95% 2.99–4.58; manufacturing: wrist dis-ac OR: 3.39; CI 95% 3.13–3.66; elbow dis-ac OR: 2.45; CI 95% 2.20–2.73). The relationship between acute injuries and cumulative trauma disorders is discussed to preserve women's safety and health in ergonomics. **Practitioner Summary:** Women's wrist and elbow acute work injuries and cumulative trauma disorders (carpal tunnel syndrome and epicondylitis)

were analysed and studied all together (dis-ac events) in female-dominated activities. Hairdressing and manufacturing work sectors were associated with the highest risk, showing the need to safeguard the health and safety of female workers.

- **Keywords:** Women, wrist and elbow, carpal tunnel, epicondylitis, work acute injuries and occupational disorders

Ozeas Ferreira da Silva, Jonhatan Magno Norte da Silva, Lara Karine Dias Silva, Tânia Daniela Felgueiras Miranda Lima, Antonio Cezar Bornia, Larissa Ane Hora de Souza, Wilza Karla dos Santos Leite & Elamara Marama de Araujo Vieira. *Do men and women have different musculoskeletal symptoms at the same musculoskeletal discomfort level?* Pages: 1486-1508.

Owing to biological and social factors, illness-related musculoskeletal symptoms tend to vary between men and women. However, in the past, conceptualised discomfort metrics were applied uniformly to both genders. This study aimed to develop a scale to measure musculoskeletal discomfort that compares the symptoms between men and women. The scale aimed to determine the gender-based response patterns related to symptoms. A total of 707 men and 1302 women reported their symptoms on a body map. Factor analysis and item response theory were used to differentiate the identified symptoms in the construction of a musculoskeletal discomfort scale. Differences in work exposure appeared to explain the symptom patterns between men and women. The scale had eight levels, and it was found that at the same level of discomfort, men and women reported symptoms in different body regions. **Practitioner summary:** On this discomfort scale, the response patterns of men and women were categorised into eight levels. Symptoms differed by gender at the same musculoskeletal discomfort level. This is in contrast to previous studies in which scales were devised without considering differences between the genders.

- **Keywords:** Gender musculoskeletal disorders discomfort scale equalization footwear industry

Marie Laberge, Margaux Vignet & Céline Chatigny. *Development of a reflective learning method to support health and safety of adolescents with learning difficulties enrolled in a pre-work practicum.* Pages: 1509-1524.

The challenges of youth employment include providing appropriate job training and safe working conditions for women and men. Adolescents enrolled in the Work-oriented Training Path (WOTP) complete a practicum as part of their vocational preparation, notwithstanding learning difficulties or disabilities. This research-action study among this subpopulation used a method called the self-reflection interview (SRI). Developed in the field of ergonomics, it combines interviews and worksite observations to establish discussion prompts. This method is based on the principles of situated learning. The objective is to analyse the process of conducting SRIs with WOTP's students in order to suggest adaptations for this specific population considering their challenges. SRIs were used to address gender stereotypes and occupational health and safety (OHS) risks, two learning targets. The study found that these dimensions are accurately addressed with this method. The findings confirm that the prompts and the method must be adapted to the population. **Practitioner summary:** The challenges of youth employment require appropriate job training and safe working conditions for women and men. The study used a reflective method called the self-reflection interview as a learning resource, based on situated learning. The study found that OHS and gender differentiation are accurately addressed with this method.

- **Keywords:** Reflexive learning methods differentiated instruction gender occupational health and safety activity-centered ergonomics semiskilled trades

Mélanie Lefrançois & Mélanie Trottier. *Work-family balance in the construction industry: why gender analysis matters to develop sustainable interventions.* Pages: 1525-1536.

Work-family balance (WFB) in the construction sector has rarely been studied. Hardship, atypical schedules and seasonal work create challenging conditions for parents in this male-dominated industry. Semi-structured interviews with workers (14 men, 6 women) and a survey of 789 on-site workers (85% men, 15% women) were conducted as part of a wider participatory action-research project involving governmental actors. Triangulation of the interview and survey data clarified the influence of quantitative and qualitative workload and of managerial support on work-family conflict. Results also show that male and female workers have differentiated experiences of WF issues and, consequently, develop different WF strategies while pursuing increased flexibility. The stereotyped conception of WF encourages social norms that have various impacts on mothers and fathers working in the industry. Recommendations for a cultural shift are proposed for employers in this industry, marked by a labour shortage and low retention of female workers. **Practitioner summary:** This paper provides a gendered analysis of work-family issues among on-site workers in the construction industry. It aims to inform ergonomists and occupational health researchers about the potential of inflexible work designs to convey stereotypes that can impact the sustainability and equity of workplace interventions.

- **Keywords:** Male-dominated occupation, work-family conflict, supervisor support, organisational culture, gendered norms

Katie J. Parnell, Kiome A. Pope, Sophie Hart, Erinn Sturgess, Rachel Hayward, Pauline Leonard & Kirsten Madeira-Revell. ['It's a man's world': a gender-equitable scoping review of gender, transportation, and work.](#) Pages: 1537-1553.

The deeply embedded inequalities in gender which mark most contemporary societies have led to a world shaped by male perspectives. This world fails to accommodate adequately the needs and experiences of women: no more evident than in the transport sector, where a 'default male' perspective dominates the planning and policies that shape our roads, railways, airlines, and shipping. This paper argues that the ways in which masculinity infuses transport systems mean they are integral to debates on gender and work. They impact both the way women experience travel and their access to places of work. A multi-transport domain scoping study has been conducted to review the literature for key gender factors that influence the use of road, rail, aviation, and maritime transport modes. A multi-disciplinary approach is proposed which incorporates perspectives and methods from the social sciences that can help to foster Gender-Equitable Human Factors (GE-HF). **Practitioner summary:** This paper seeks to identify the gender issues related to transport and work. A scoping review provides key factors that detail how women are disadvantaged by current transport systems. It presents gaps in knowledge that future research needs to fill. Women must be included in key decisions within the transport sector.

- **Keywords:** Gender-equitable, transport, gender-equitable human factors, scoping review

Audrey Dupont, Marie Laberge, Sylvain Letscher, Normand Boucher, Rania Messaoui & Sarah Jutras. *Influence of gender on people with*

disabilities' work relationships: prospects for ergonomics interventions.
Pages: 1554-1566.

Norms and values embedded in what is referred to as 'institutionalised gender,' defined by the distribution of power between genders in the political, educational, religious, medical, cultural or social institutions of a society, exist even today. The above mentioned influential institutions shape societal norms that define, reproduce and justify differing expectations and opportunities for women, men, girls and boys. Using qualitative methods, 41 semi-structured interviews among employed people with deafness/hard of hearing (DHH), blindness/low vision, motor disabilities, or chronic pain from three administrative regions of Québec (Montréal, Outaouais, and Montérégie) were analysed. The results show that while gender is omnipresent in participants' remarks, it is not necessarily associated with exclusion from employment, but most certainly with perpetuating some forms of inequity in work situations. Solutions to raise awareness among ergonomists working with people with disabilities are suggested. **Practitioner summary:** Based on 41 semi-structured interviews among employed people with disabilities, a relationship between the gender of the participants and factors facilitating or inhibiting their integration into employment were established. Solutions to raise awareness among ergonomists working with a doubly marginalised population - women with disabilities - are suggested.

- **Keywords:** Sex and gender, population with disabilities, labour-market participation, inclusive environment, workplace integration

Karen Messing, Martin Chadoin & Vanessa Blanchette-Luong. Should data on gender and ethnicity inform ergonomics interventions? Lessons from four case studies. Pages: 1567-1577.

Ergonomists intervene to improve work for all workers and adapt jobs to a range of worker characteristics. But their mandate rarely includes explicit attention to the distribution of worker demographics, to divisions among workers, or to discrimination on the basis of sex/gender or racialisation. A decades-long collaboration between ergonomists and the women's committees of three union confederations in Québec, Canada led to several instances where ergonomists had to confront situations involving sexism or racism, not foreseen during their training. This article will explore four problematic situations and suggest solutions, including paying more attention to teamwork, considering gender during ergonomics training, and developing a code of practice for ergonomics interventions. **Practitioner summary:** Workplace inequities related to sex/gender, racialisation and other sources of social inequity can affect job performance and workers' health. As such, do ergonomists need to consider them during an intervention? How? We analyse four situations encountered during interventions and suggest more attention to understanding workplace dynamics and promoting team function.

- **Keywords:** Ergonomics interventions, exgender, racism, collective work

Marie Laberge, Martin Chadoin, Marion Inigo, Karen Messing, Mélanie Lefrançois, Hélène Sultan-Taïeb, Céline Chatigny, Jessica Riel, Jena Webb, Myriam Fillion, Cathy Vaillancourt & Marie Bellemare. Integration of sex and gender in interventions by students in ergonomics. Pages: 1578-1591.

This article aims to analyse the integration of sex and gender (s/g) by ergonomics students during their internship at the master's degree level, following training sessions on s/g issues in the workplace. This exploratory research used a descriptive mixed-methods design, encompassing evaluation of students' intention to use the content from

the training (n=13 students), and a multiple case study (n=5 ergonomics interventions). The results show that while students found the training relevant, they only minimally integrated s/g in their interventions and when they did, it was primarily from an anthropometric and physiological perspective. In addition to discussing the training format limitations, the article discusses barriers to this integration: combining learning about s/g issues with learning about activity analysis is challenging; employers' and workers' organisations may be reluctant to approach s/g issues; and it is difficult for an ergonomist to integrate these issues when the employer's request does not specify it.

Practitioner summary: This article aims to analyse the integration of s/g by ergonomics students during their internships. Findings show that they only minimally considered s/g. The discussion examines s/g training, organisational obstacles to inclusion of s/g during interventions, and how ergonomists can consider s/g in their practice.

- **Keywords:** Ergonomics intervention, training, sex and gender integration, obstacles to s/g integration