# CREATING AND FOSTERING INCLUSIVE WORK ENVIRONMENTS TO MITIGATE REPETITIVE STRAIN INJURIES AMONG OLDER WORKERS

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# Faculty/Presenter Disclosure

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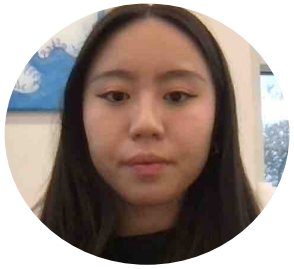













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# Learning Objectives

1. Understanding who is an older worker
2. Identifying the risks and hazards for repetitive strain injuries
3. Developing solutions and strategies for preventing repetitive stress injuries in older workers

# Who is an older worker?

- ☑ **Individuals who are 55 years or older**
- ☑ **Someone who wants to remain engaged in the labor force**

*However, this age range varies internationally...*


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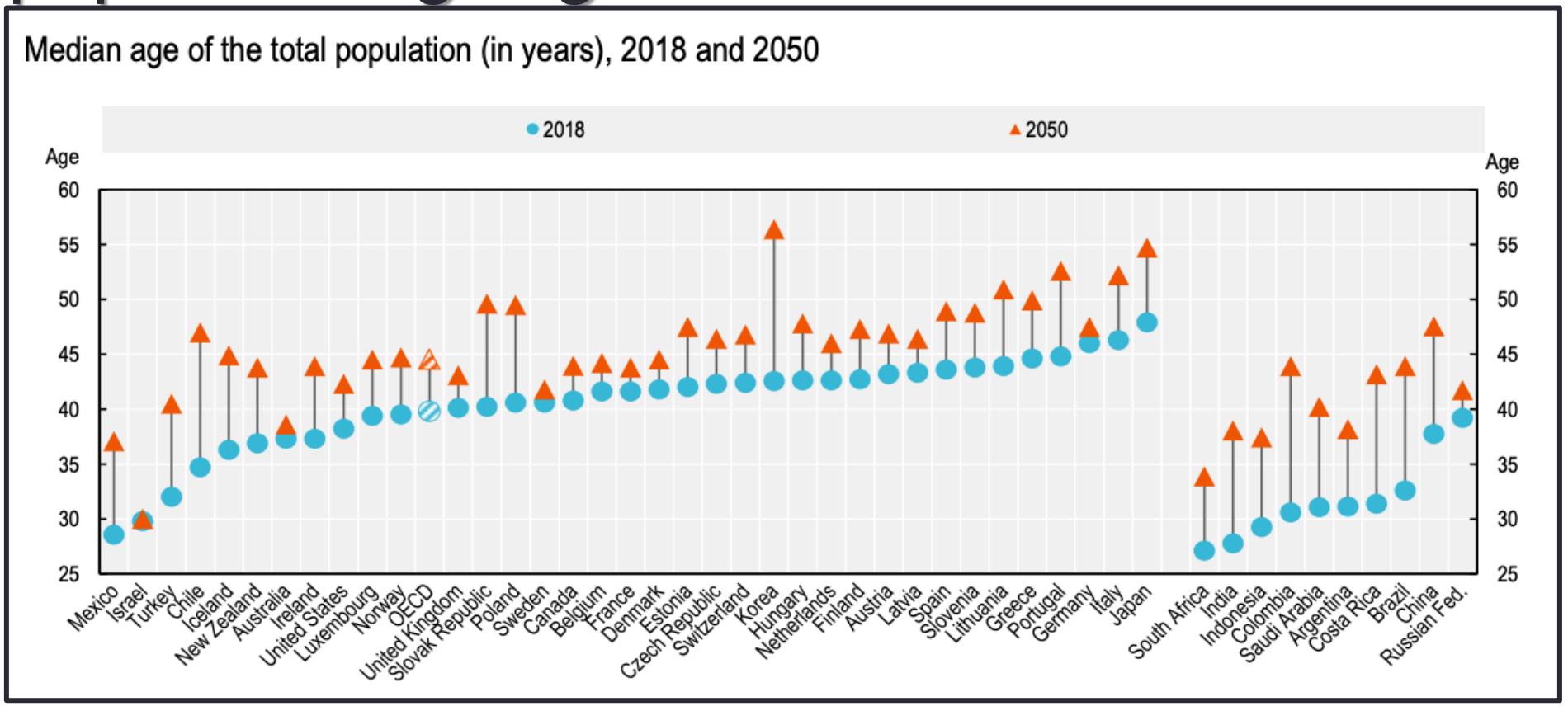
# Rapid population ageing

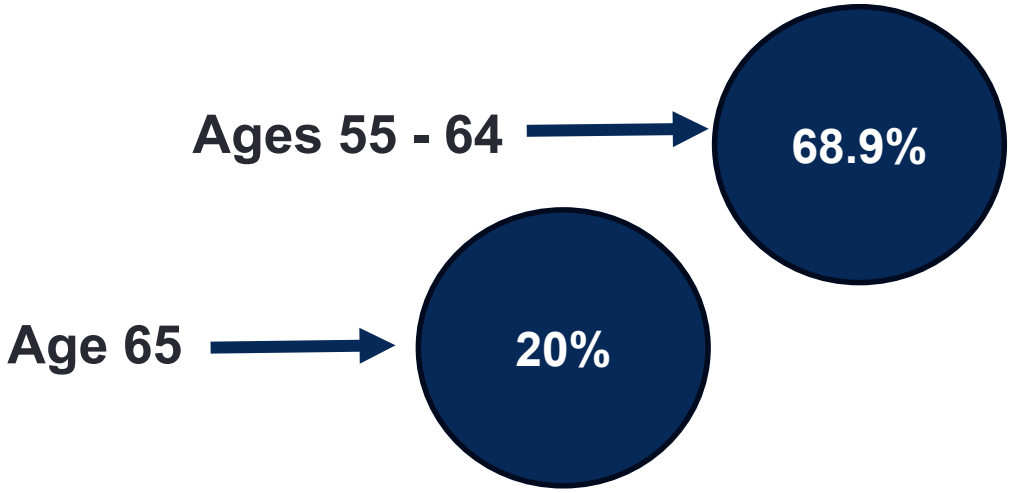



SOURCE: OECD (2019), Working Better with Age, Ageing and Employment Policies, OECD Publishing, Paris, https://doi.org/10.1787/c4d4f66a-en.

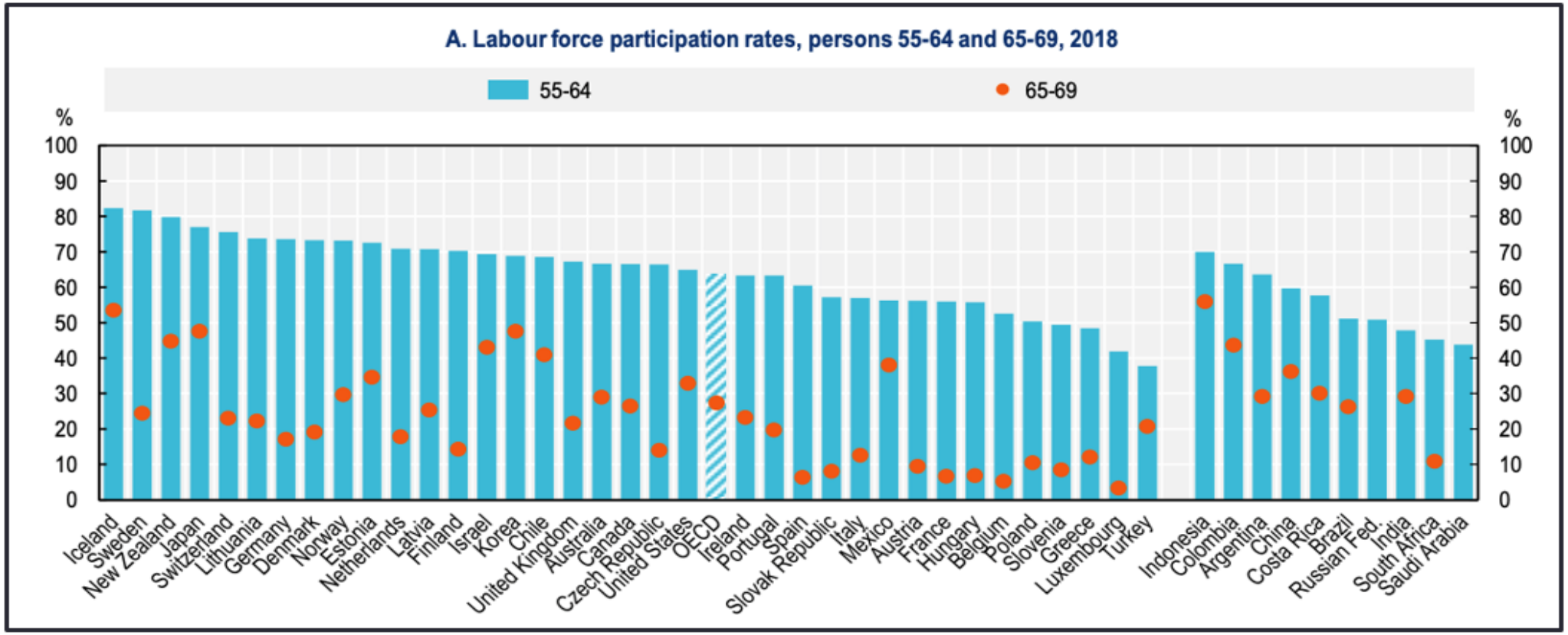
# Older Individuals in the Workforce

**Axelrad (2021):**

- Recent labour force participation rates of older workers



# Older Individuals in the Workforce

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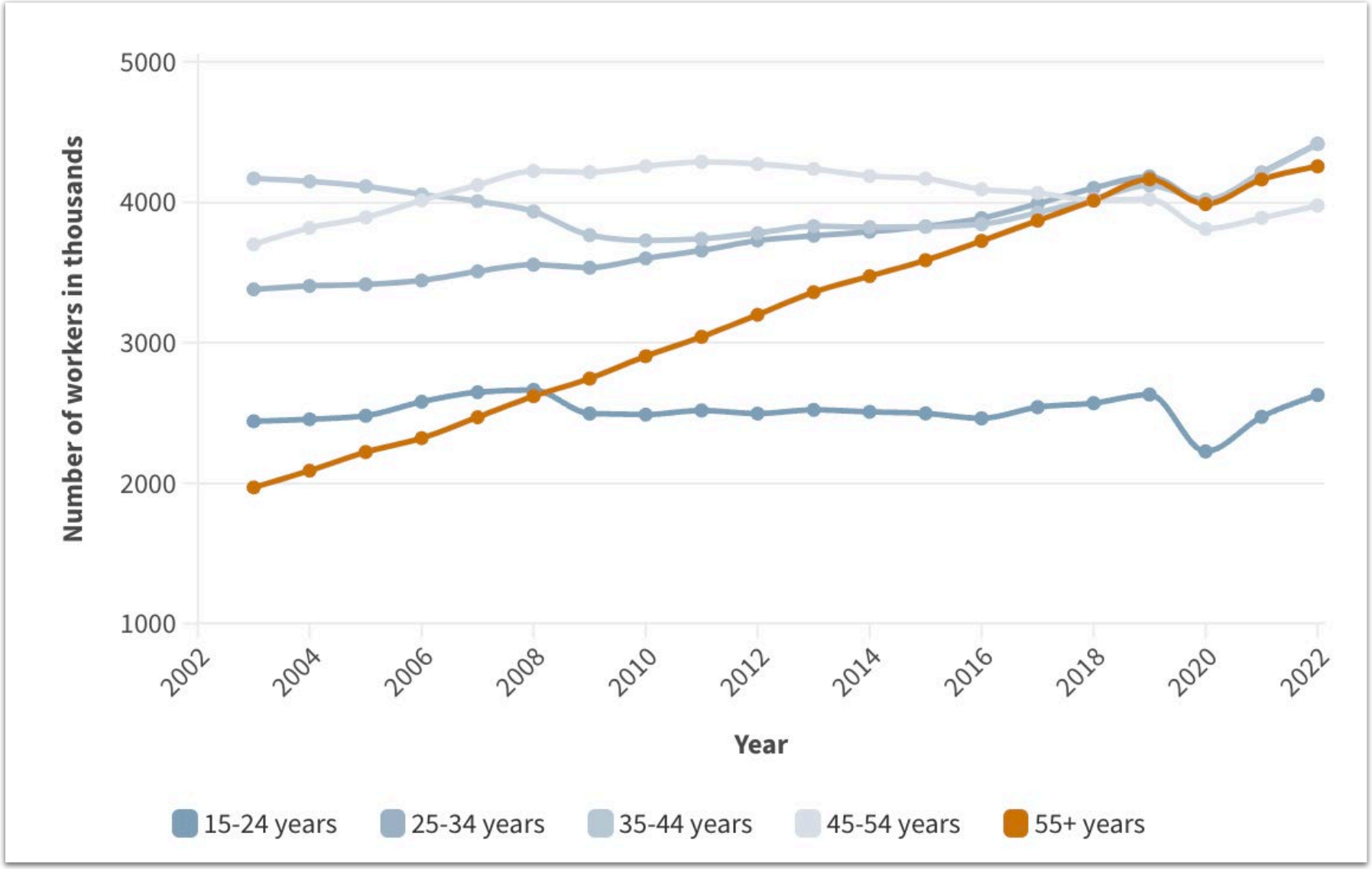
# Canada's Aging Workforce

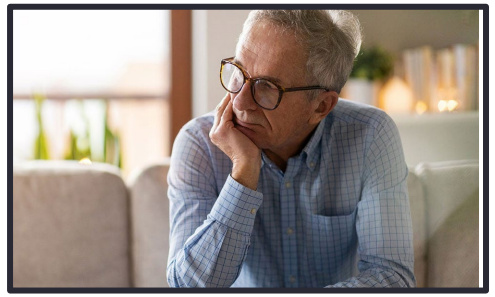


# What challenges do they bring to the workplace?

**Health Issues**

**Longer recovery times**

**Ageism**



# However...

**Older workers have many strengths.**

**Experience & Knowledge**

- Diverse perspectives
- Skills, work ethic and maturity
- Address labour shortages

**Skills**

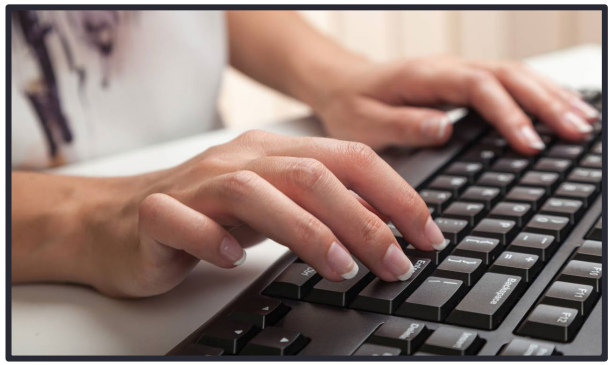
- Leadership
- Problem-solving
- Expertise
- Dependability
- Dedication
- Patience

**Job Tenure**

- Higher job satisfaction
- Higher retention
- Greater stability

# Common repetitive strain injuries

**Carpal tunnel syndrome**



**Rotator cuff tendinitis**

**Guyon's canal syndrome**

**Tennis elbow (Lateral Epicondylitis)**

# Physiological changes

The aging workforce contributes to an overall increase in cumulative trauma disorders

**Motor skills (limited mobility/ reduced joint mobility)**

**Slower reaction times**

**Weakened muscular strength**

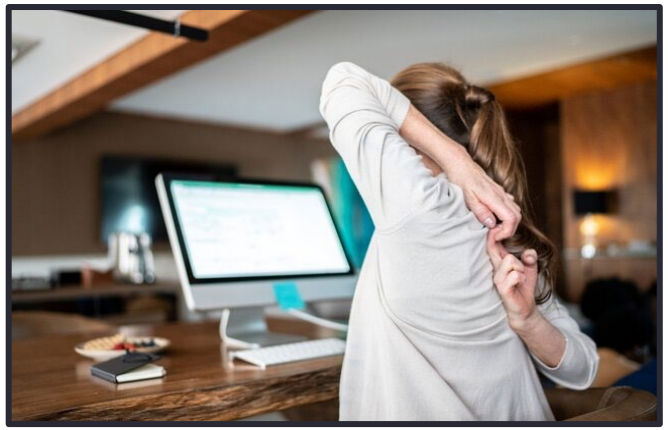
**Decreased interactions with the brain, sensory and circulatory organs**

# Workplace Tasks

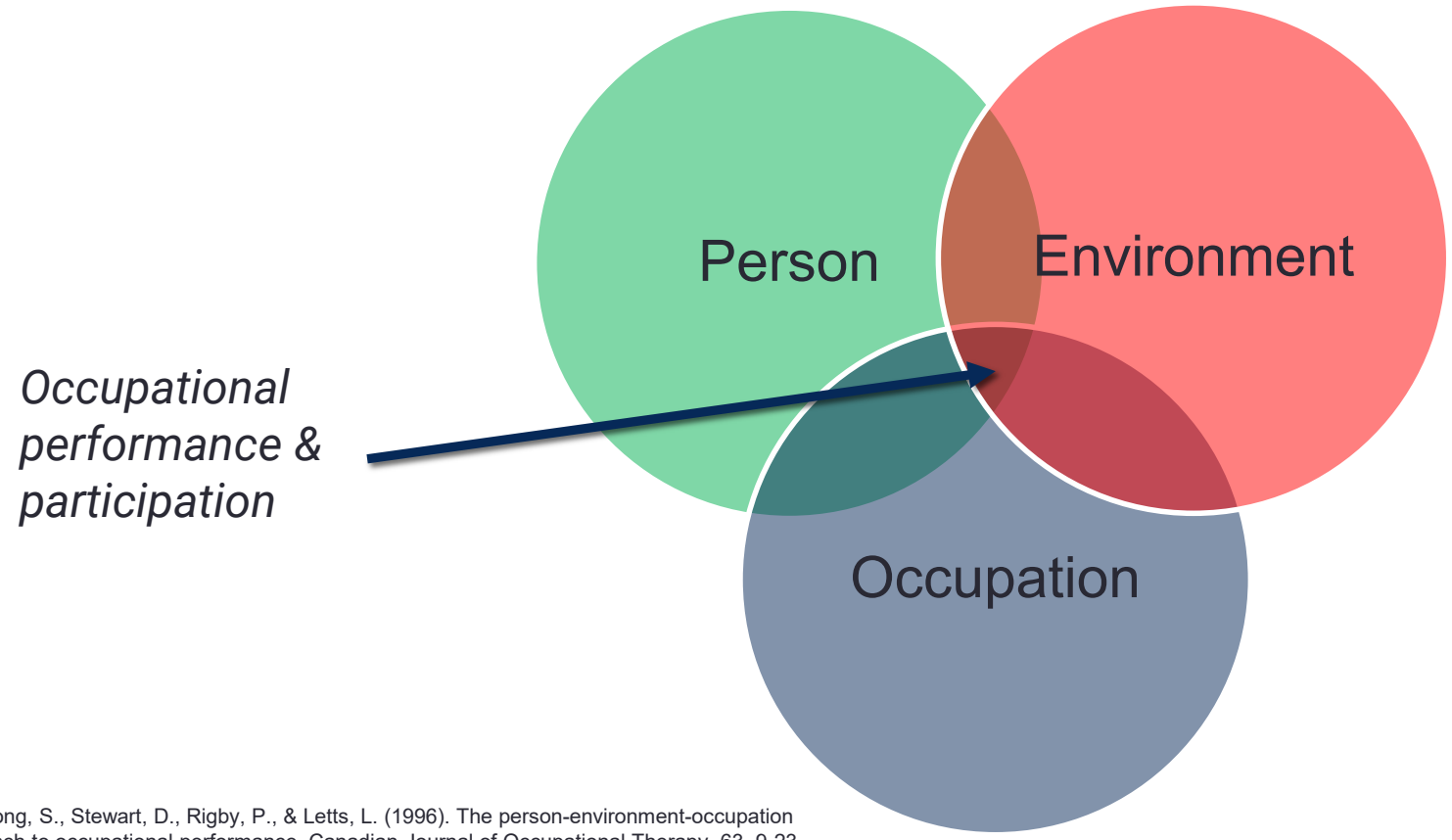
**Forceful limb movements**

**Fixed postures for long periods of time**

**Lifting, lowering or carrying heavy loads**



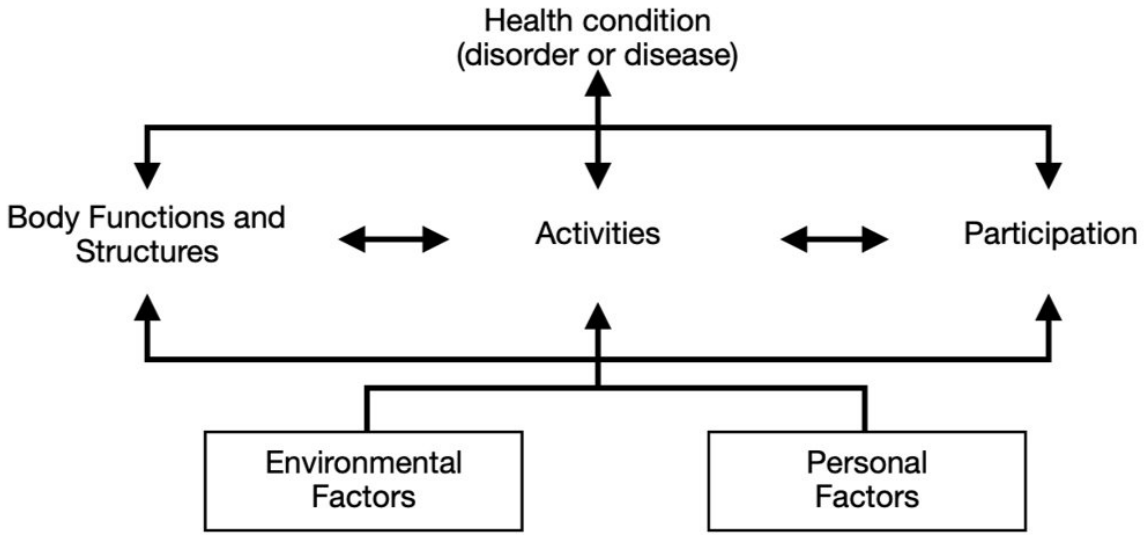
# Person-Environment-Occupation




Law, M., Cooper, B. A., Strong, S., Stewart, D., Rigby, P., & Letts, L. (1996). The person-environment-occupation model: A transactive approach to occupational performance. Canadian Journal of Occupational Therapy, 63, 9-23.

# The International Classification of Functioning Disability and Health (ICF)

- Framework for describing and organizing information on functioning and disability by WHO (2001)
- Looks at functioning at the level of the body, at the level of the individual, of a person as a member of society and environmental factors



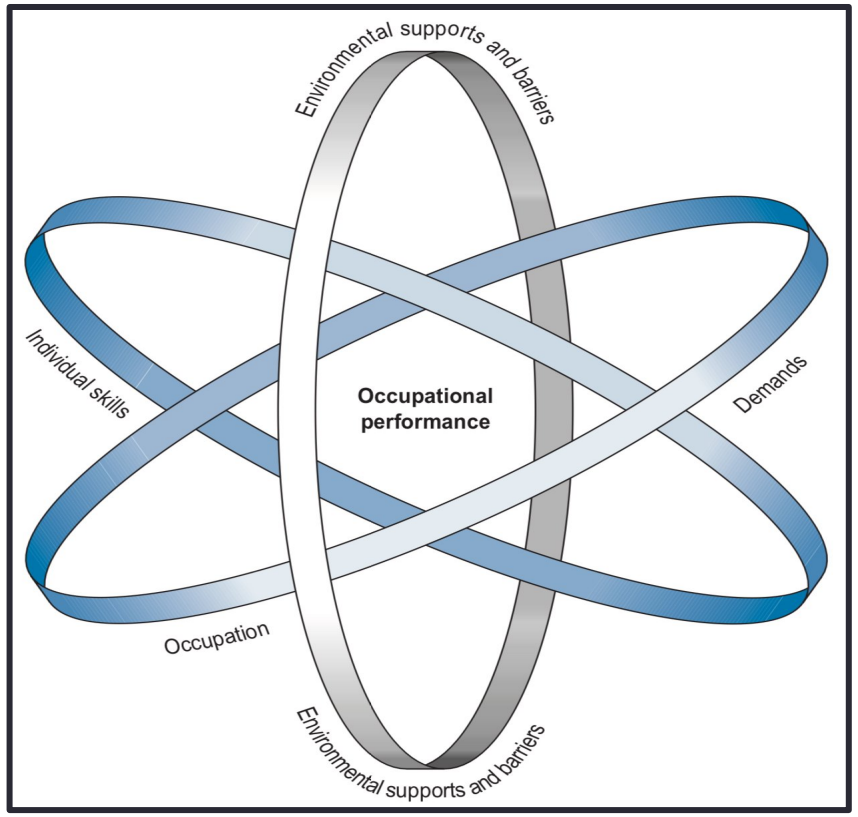

World Health Organization. (2002). *Towards a common language for functioning, disability and health: ICF*. Retrieved from https://www.who.int/standards/classifications/international-classification-of-functioning-disability-and-health

# Workplace Environments

**Organizational work environment**

**Social environment**

Studies have shown...
- Strong associations between specific psychosocial workplace conditions and musculoskeletal problems




High monotonous work

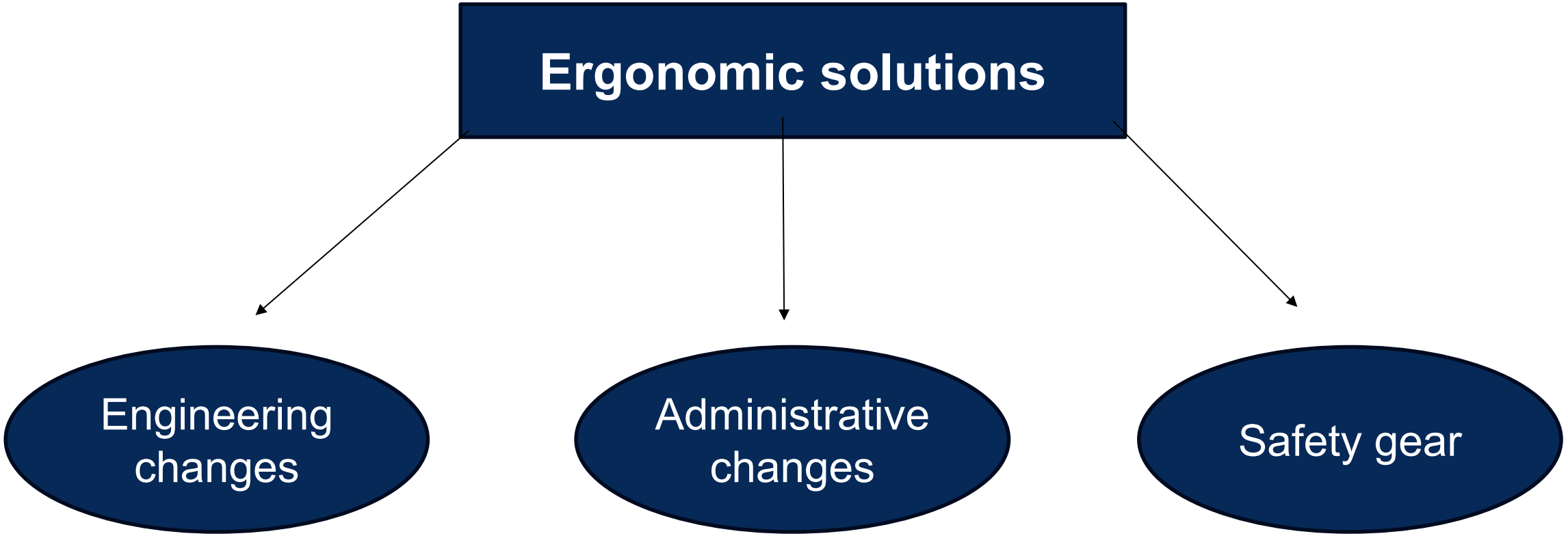
High job demands

Low job control

Low supervisor support

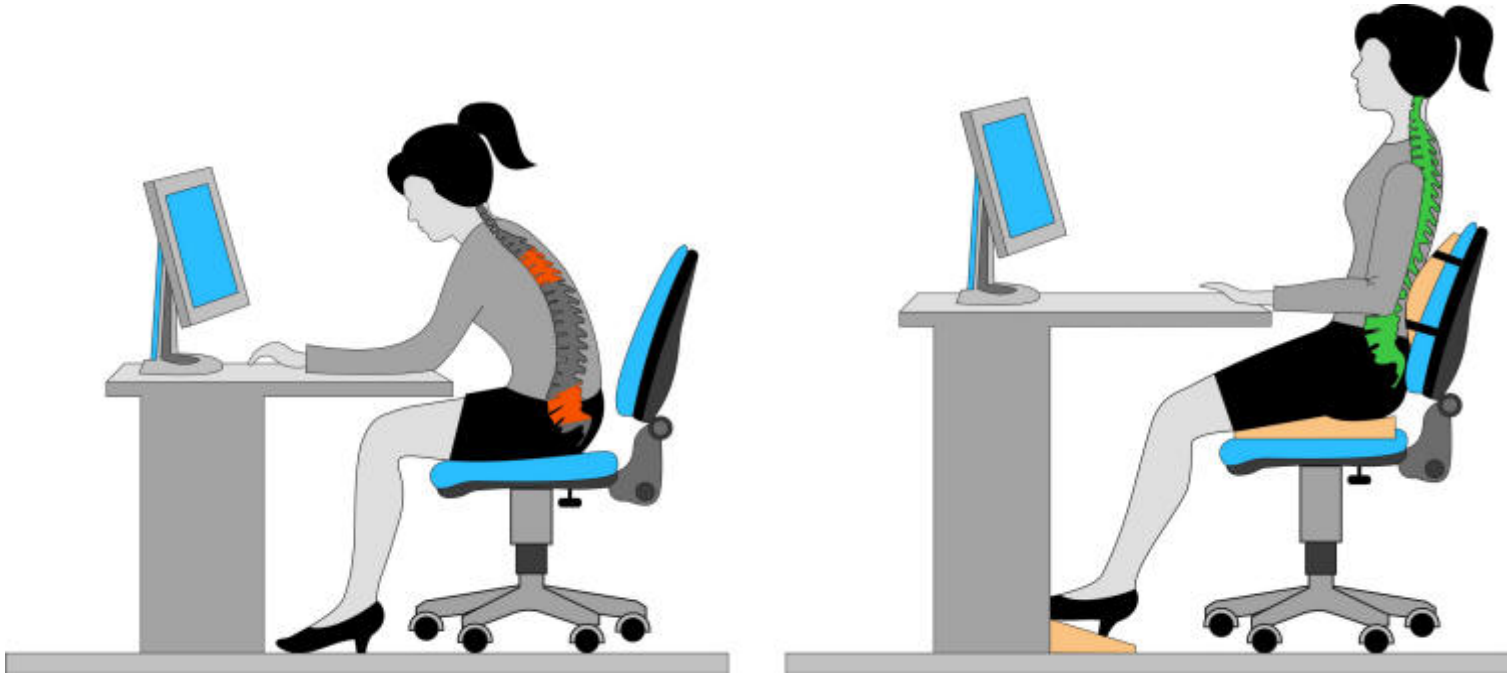
# Prevent RSI in Older Workers: Solutions & Strategies

*Solutions vary depending on the individual and the type of work they are involved in.*



# Engineering Changes

- Adjusting workstations and/or equipment
  - Ex. Raising/lowering work surfaces
  - Ex. Adjustable equipment to reduce pressure points



# Administrative Changes

- Modifying work practices
  - Ex. Performing various tasks to avoid repetition
- Adjusting their work schedule and work pace




# Personal Protective Equipment

- Mandate safety gear to reduce risk of RSIs
  - Ex. Gloves, knee/elbow pads and footwear

# Workplace adaptation plan

**Ergonomic solutions**

**Targeted training programs**

**Health initiatives**

# Assessing the Effectiveness of RSI Prevention Solutions

**Therapeutic Approaches for the Prevention of Upper Limb Repetitive Strain Injuries in Work-Related Computer Use: A Scoping Review**

Alita de Waal[1] · Amy Killian[1] · Afika Gagela[1] · Jada Baartzes[1] · Susan de Klerk[1]

Influence of Clinical, Psychological, and Psychophysical Variables on Long-term Treatment Outcomes in Carpal Tunnel Syndrome: Evidence From a Randomized Clinical Trial

César Fernández-de-las-Peñas, PT, PhD, DMSc*,†; Ana I. de-la-Llave-Rincón, PT, PhD*,†; Corrado Cescon, PhD‡; Marco Barbero, PT, PhD‡; José L. Arias-Buría, PT, MSc, PhD*,†; Deborah Falla, PT, PhD§

Interventions to reduce injuries among older workers in agriculture: A review of evaluated intervention projects

Kerstin Nilsson[a,b,*]
[a]*Department of Occupational and Environmental Medicine, Lund University, Lund, Sweden*
[b]*Department of Work Science, Business Economics and Environmental Psychology, Swedish University of Agricultural Sciences, Alnarp, Sweden*

**Role of Ergonomic Improvements in Decreasing Repetitive Stress Injuries and Promoting Well-Being in a Radiology Department**

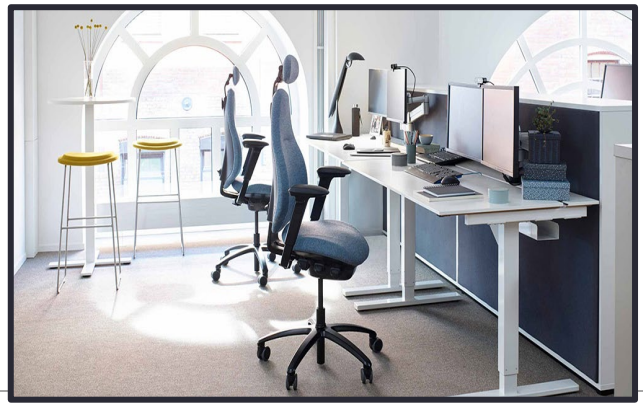
Jeanne M. Horowitz, MD, Michael J. Choe, MD, Linda C. Kelahan, MD, Swati Deshmukh, MD, Gaurava Agarwal, MD, Vahid Yaghmai, MD, James C. Carr, MD

**Reducing musculoskeletal disorders among computer operators: comparison between ergonomics interventions at the workplace**

Yafa Levanon[a,b]*, Amit Gefen[c], Yehuda Lerman[d], Uri Givon[a,b], and Navah Z. Ratzon[a]

# Recommendations for Improvement

1. More personalization
2. Flexible breaks
3. Various wellness programs



# Canadian Standards Association

**CSAZ1003: *Psychological Health and Safety in the Workplace***

About the Standard

- Offers practical guidance to develop and maintain a psychologically healthy and safe workplace

Importance for healthcare professionals

- Health professionals with expertise in trauma and operational stress injury may be involved in treatment options

**CSAZ1011: *Work Disability Management System***

About the Standard

Sets out the requirements for a work disability management (WDM) system

Guidance on how to effectively manage workers' health needs to minimize the impact of work disability and effectively onboard workers with disabilities

Importance for healthcare professionals

Healthcare professionals with expertise in workplace disability may be involved in the case management process

Project ECHO Occupational and Environmental Medicine

ABOUT THE PROJECT ECHO OEM PROGRAM RESOURCES REGISTER

# ECHO Occupational and Environmental Medicine (ECHO OEM)

A telementoring program for primary health-care providers in Ontario that aims to increase their capacity to recognize conditions related to occupational and environmental exposures, and to treat and support patients with injuries and illnesses that affect their ability to work

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# References


- Adkins-Hackett, L., Fraikin, A.-L., & Fraikin, L. A.-H. and A.-L. (2023, December 11). *LMIC to examine occupations at risk due to an aging workforce*. LMIC. https://lmic-cimt.ca/lmic-to-examine-occupations-at-risk-due-to-aging-workforce/
- Axelrad, H. (2021). Perception versus Official Data: Employers' Knowledge about the Aging Workforce. *Journal of Aging & Social Policy*, *33*(2), 177–199. https://doi.org/10.1080/08959420.2020.1769535
- Bugajska, J., Zołnierczyk-Zreda, D., Jędryka-Góral, A., Gasik, R., Hildt-Ciupińska, K., Malińska, M., & Bedyńska, S. (2013, December). *Psychological factors at work and musculoskeletal disorders: A one year prospective study*. Rheumatology international. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3832752/
- Canada, E. and S. D. (2024, August 27). *Government of Canada*. Canada.ca. https://www.canada.ca/en/employment-social-development/corporate/seniors-forum-federal-provincial-territorial/reports/older-worker-exploring-addressing-stereotypes.html
- Dorland, S., & Hattie, J. (1992). Coping and repetitive strain injury. *Australian Journal of Psychology*, *44*(1), 45–49. https://doi.org/10.1080/00049539208260161
- Finkelstein, R., Butler, R., & Block, D. (2023, January 31). *10 advantages of older workers: Columbia Public Health* . Columbia University Mailman School of Public Health. https://www.publichealth.columbia.edu/research/others/age-smart-employer/resources/guides/advantages-older-workers

# References


- Fernández-de-las-Peñas, C., de-la-Llave-Rincón, A. I., Cescon, C., Barbero, M., Arias-Buría, J. L., & Falla, D. (2019). Influence of clinical, psychological, and psychophysical variables on long-term treatment outcomes in carpal tunnel syndrome: Evidence from a randomized clinical trial. *Pain Practice*, *19*(6), 644–655. https://doi.org/10.1111/papr.12788
- Government of Canada, S. C. (2022, April 27). *In the midst of high job vacancies and historically low unemployment, Canada faces record retirements from an aging labour force: Number of seniors aged 65 and older grows six times faster than children 0-14*. The Daily - . https://www150.statcan.gc.ca/n1/daily-quotidien/220427/dq220427a-eng.htm
- Industrial Medicine and Acute Musculoskeletal Rehabilitation. 7. Acute Industrial Musculoskeletal Injuries in the Aging Workforce Zuhosky, Joseph P. et al. Archives of Physical Medicine and Rehabilitation, Volume 88, Issue 3, S34 – S39. https://doi.org/10.1016/j.apmr.2006.12.014
- Kim, S. E., Chun, J., & Hong, J. (2013). Ergonomic Interventions as a Treatment and Preventative Tool for Work-Related Musculoskeletal Disorders. *International Journal of Caring Sciences*, *6*(3), 339–339.
- Lang, J., Ochsmann, E., Kraus, T., & Lang, J. W. B. (2012). Psychosocial work stressors as antecedents of musculoskeletal problems: A systematic review and meta-analysis of stability-adjusted longitudinal studies. *Social Science & Medicine*, *75*(7), 1163–1174. https://doi.org/10.1016/j.socscimed.2012.04.015

# References


- Levanon, Y., Gefen, A., Lerman, Y., Givon, U., & Ratzon, N. Z. (2012). Reducing musculoskeletal disorders among computer operators: Comparison between Ergonomics Interventions at the workplace. *Ergonomics*, *55*(12), 1571–1585. https://doi.org/10.1080/00140139.2012.726654
- Nilsson, K. (2016). Interventions to reduce injuries among older workers in agriculture: A review of evaluated intervention projects. *WORK*, *55*(2), 471–480. https://doi.org/10.3233/WOR-162407
- Roper, K., & Yeh, D. (2007). *Ergonomic solutions for an aging workforce - researchgate*. Research Gate. https://www.researchgate.net/publication/235304352_Ergonomic_solutions_for_an_aging_workforce
- Waal, A. de, Killian, A., Gagela, A., Baartzes, J., & Klerk, S. de. (2024, June 6). *Therapeutic approaches for the prevention of upper limb repetitive strain injuries in work-related computer use: A scoping review - journal of occupational rehabilitation*. SpringerLink. https://link.springer.com/article/10.1007/s10926-024-10204-z
- Wijekoon, S., Stergiou-Kita, M., & Nowrouzi-Kia, B. (2021). Working in old age: Health, injury, illness & work in old age. https://en-age.ca/thinking-about-work-and-retirement/new-challenges-as-an-older-worker/
- van Dalen, H., & Henkens , K. (2020). *Do stereotypes about older workers change? A panel study on changing attitudes of managers*. International Journal of Manpower. https://www.emerald.com/insight/content/doi/10.1108/ijm-09-2018-0300/full/html