THE AGING WORKFORCE

Protecting the Safety & Health of Older Workers

By Omolara Oluseun Juba

SKYNESHER/E+/GETTY IMAGES

KEY TAKEAWAYS

- The segment of the workforce aged 55 years and older is predicted to reach four out of every 10 workers by 2030, driven by the large size of the baby boomer generation, increased longevity and a trend toward later retirement. While age diversity among workers has clear benefits for employers, this unprecedented demographic shift presents new challenges for EHS professionals.
- Age-related physiological changes such as decreasing visual acuity and musculoskeletal capability can increase the risk of incidents for older workers. Research has shown that comprehensive programs implementing age-friendly workplace modifications decrease incidents and improve productivity and organizational metrics, but most employers have not instituted programs to address the aging workforce.
- This article outlines an evidence-based, practical intervention for enhancing workplace safety and health for all types of workers across the age spectrum, including age-inclusive risk assessments, workplace modifications to support age-related physiological changes and inclusive strategies for managing return to work after an illness or injury.

WORKERS AGED 55 YEARS AND OLDER are one of the fastest-growing segments of the global workforce across industrialized nations, and this is an unprecedented demographic transformation for the international working population. According to the U.S. Bureau of Labor Statistics (2023), four out of every 10 workers will be 55 or older by 2030, compared to one out of five in 1990, with Europe, Japan and Canada seeing similar trends (Zakrzewska, 2025). Figure 1 presents a view of the aging population as a percentage of the working population for the projected years. This shift is particularly significant for EHS professionals in healthcare (where workers older than 55 represent about 24% of employment), manufacturing (22%), utilities (23%), education (21%) and public administration (20%; WHO, 2022). Several factors are behind these demographic changes, including declining birth rates, longevity increases, economic pressures delaying retirement and the age of the baby boomer generation (Ingersoll et al., 2021). These shifts mean that organizations must rethink workplace safety practices developed for a predominantly younger workforce to accommodate the different physiological, cognitive and psychological features of older workers.

Regulatory compliance is only part of the business case for implementing age-friendly workplace modifications: compelling economic and operational reasons also exist. Research shows that organizations with age-friendly designs in the workplace record a 30% reduction in musculoskeletal pain among employees in office settings compared to organizations without such conveniences (Hasim et al., 2025). Furthermore, such design modifications enhance organizational performance by improving organizational metrics such as knowledge retention and lowered recruitment costs (Jemai et al., 2021). However, these advantages are not enough to convince some organizations. The Society for Human Resource Management (SHRM) 2023 survey revealed that 34% of employers have developed comprehensive strategies to deal with aging workforce problems.

This article offers evidence-based, practical interventions for enhancing workplace safety and health for all types of workers across the age spectrum.

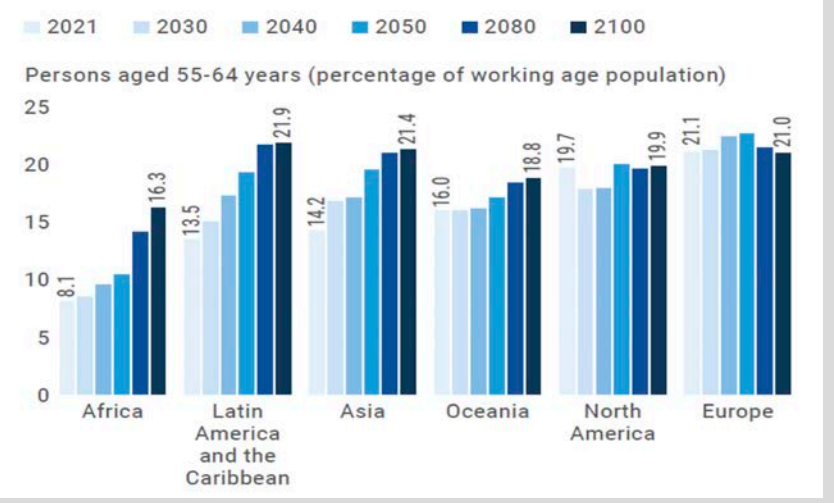
Understanding Age-Related Changes in the Workforce

Physiological change associated with aging is predictable and generally impacts workplace safety and performance, albeit in varying amounts and rates across individuals. Typically, visual acuity deteriorates, with most workers becoming presbyopic by age 45 to 50, in addition to markedly reduced contrast sensitivity, heightened sensitivity to glare and decreased ability to adapt to darkness (Taffet, 2024). According to the CDC (2024), by the time a person is 60 years old, the amount of light necessary to complete the same visual tasks the person could do at age 20 is about three times higher. Workers also experience changes in their musculoskeletal capability. Between the ages of 30 and 65, strength in muscles decreases by 25% to 30%, range of motion decreases, flexibility becomes limited in joints and tendons, and coordination and balance worsen (CDC, 2024). These physical changes make a person more vulnerable to falls, strains, repetitive motion injuries and incidents resulting from visual misperception or failure to hear auditory warning signals in all but the most age-cognizant environments.

Both declines and enhancements occur in cognitive functioning with age, leading to a profile of capabilities that safety professionals must understand and take into consideration in workplace design. Fluid intelligence (the ability to process novel information quickly and solve novel problems) generally decreases with age, while crystallized intelligence (accumulated knowledge, judgment and wisdom) increase with the working lifespan (Aisa et al., 2023). Older workers generally show slower reactions (about 20% slower at age 60 than 20) and slower processing speed for complex tasks, which may inform performance in time-critical scenarios and situations that require multiple demands simultaneously. However, older workers make up for these issues through better strategic thinking, stronger risk assessment, more predictable performance and a better ability to maintain emotional stability during stressful situations (Singh, 2021). Older workers also tend to demonstrate higher organizational commitment, fewer safety violations, and more dependable adherence to measures that improve the work environment's safety culture (Aisa et al., 2023). Professional tasks of particular safety concern include those that require divided attention, rapid decision-making under pressure or rapid physical responses to emergencies, which may need to be modified to the extent that individuals suffer from age-related cognitive changes.

FIGURE 1

AGING WORKFORCE AS A PERCENTAGE OF THE WORKING-AGE POPULATION, 2021-2100



From World Population Prospects 2022, by United Nations Department of Economic and Social Affairs, Copyright 2022 United Nations. Used with the permission of the United Nations.

Risk Assessment for an Aging Workforce

An age-inclusive risk assessment is a systematic method to determine an individual's risk of injury in certain job activities so an organization can focus on interventions that are most likely to produce a protective impact. This procedure identifies the tasks that present high risk to older workers, determines the causes behind these risks and forms a foundation for evidence-based workplace changes.

A safety professional must systematically compare the job tasks to the physical abilities that usually dwindle with age, such as muscular power, stability, visual clarity, auditory sensitivity and recuperation capacity. Structured frameworks for this assessment include the age-related risk assessment matrix created by the Center of Work, Health and Well-Being (Jensen et al., 2022). Conventional ergonomic evaluation tools, such as rapid upper limb assessment and the NIOSH lifting equation can be modified with the usage of age-related multipliers and changed acceptable limits.

Assessed tasks should include sustained postures, repetitive motions, heavy lifting activities, extended standing and fine motor control activities, as physiological changes in older participants substantially increase the risk of injuries during these activities (Taheri et al., 2023). The result is a prioritized list of job tasks with physical demands that surpass the normal abilities of aging employees. This list provides direct input on decisions to be made on job redesign or assistive equipment.

Tasks that require prolonged attention, information processing or making decisions under time constraints should be evaluated. The National Center for Research on Evaluation, Standards and Student Testing at the University of California offers a systematic method of assessing the working memory, processing speed and task switching cognitive domains, which vary with typical aging (Klein et al., 1998). This exposes roles that need changes in decision-support systems or information presentation format, which directs the practical interventions of cognitively challenging work.

Workplace Design Modifications

Physical workplace design is one of the most potent interventions for accommodating age-related changes and for the safety of all workers. Age-inclusive ergonomic design starts with a workstation that accommodates age-related changes in posture, vision and movement patterns in an office environment. Replacing these aged sedentary workstations with height-adjusted workstations that easily transition between seated and standing positions can reduce static loading on aging spines by 32%, which translates into reduced musculoskeletal complaints for more than half the workers (Rinsky-Halivni et al., 2022).

Enhanced lumbar support should be present in seating, along with adjustable armrests and seat pan depth adjustment for changes in anthropometry and spinal flexibility commonly seen in older workers. Particular attention should be paid to monitor positioning, display characteristics (higher contrast ratio, larger text, less glare), and input device (peripherals requiring less force to operate and neutral positioning across the wrist). Comprehensive age-friendly office modifications have been shown to reduce eye strain and neck discomfort by 40% and 27%, respectively (Peron et al., 2022).

Ergonomic workplace adjustments are fundamental changes to the work environment that directly tackle the impacts of the physical changes of age on work performance and risk of injury. Such interventions minimize physical efforts, allowing older workers to remain productive and avoid musculoskeletal injuries by matching the workload with their abilities. Research shows that height-adjustable desks, lumbar-supportive chairs, optimized display screens and ergonomic keyboards help reduce musculoskeletal, eye and neck pain in older workers (Choobineh et al., 2021; Peron et al., 2022; Rinsky-Halivni et al., 2022; Taheri et al., 2023). These changes directly address age-related reductions in spinal flexibility and postural stability, as well as provide visual accommodation. An example of a successful implementation can be found in BMW's Today for Tomorrow initiative, which applies lift-assist devices and height-adjustable assembly tables that led to a 7% productivity increase and 40% of the reported physical strain among elderly employees (BMW Group, 2023). Likewise, Verizon (2020) experienced more than 40% fewer lost working days after thorough ergonomic modifications.

In the manufacturing and industrial context, practical changes comprise positioning workstations and flexible fixtures as well as using configurable tools that allow the worker to perform their work according to personal abilities. The use of anti-fatigue matting and shock-absorbing insoles significantly reduces fatigue of the lower extremities after long periods of standing. Parts presentation systems with reduced reaching, bending and carrying reduce biomechanical loads on aging musculoskeletal systems.

Workers in the field need portable ergonomic solutions: vehicle modifications such as adjustable seats and better visibility systems, modular tool kits with longer handles and better grip surfaces, wearable lift-assist systems, and correctly sized gear that is anthropometrically appropriate to older workers (Weiss et al., 2020). These discipline-specific responses recognize that space control is entirely different in comparison with established facilities.

Administrative Controls & Work Organization

Administrative controls and work organization strategies are cost-effective ways to accommodate age-related change without extensive modifications to the physical workplace. When developed for age-diversity project requirements, job rotation and task variety systems are structurally positioned to afford long intervals for age-diverse work populations with operationally solicited work patterns characterized by variable physical and cognitive demands within the same body systems and functional capabilities. Task analysis is extremely important to effectively implement rotation schedules that include activities with a high degree of demand followed by recovery opportunities based on specific worker capabilities (Bravo et al., 2022).

In manufacturing environments, age-aware job rotation systems have led to reductions of up to 40% in musculoskeletal disorder rates for workers older than 55 years (Botti et al., 2020). When designing these systems, safety professionals should consider microrotation (varied tasks on a shift) and macrorotation (different assignments over days or weeks) to reduce cumulative strain. Organizations such as Volkswagen, Michelin and L.L. Bean have documented improvements in both objective measures such as injury

metrics and subjective measures such as job satisfaction and workability for older employees when using rotation systems (Adem & Dağdeviren, 2020). Transparent rotation planning, gradual implementation with worker feedback, customization options for individual limitations, system productivity and sustainability metrics are critical success factors.

Work rest scheduling and recovery time considerations have become more critical as the workforce ages. Older workers need more frequent but shorter rest breaks to maintain performance and prevent fatigue-related injuries. Specifically, a 2-by-2 model where workers break every hour for 1 to 2 minutes with longer rest periods of 10 to 15 minutes every 2 to 3 hours is highly effective for heterogeneous age workforces (Chan et al., 2022). Another powerful administrative intervention is the provision of workarounds in the form of part-time schedules, compressed workweeks, job sharing, telecommuting and phased retirement programs. These approaches help workers tailor their work patterns to their capacities and lives.

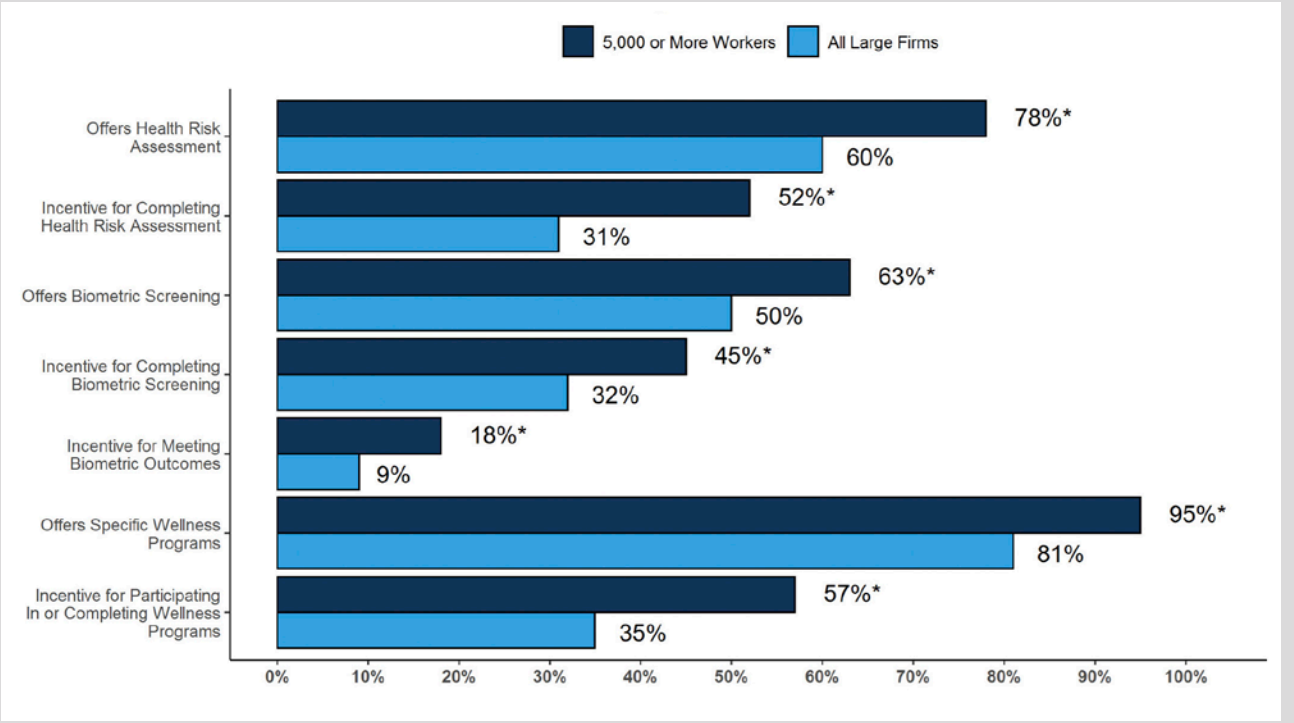
Universal design should be used in the implementation of training technologies, including adjustable text and size, adjustable pace, and multimodal presentation of information. Team composition strategies that deliberately mix workers of different ages and experience levels helps introduce knowledge transfer mechanisms in a way that distributing physical tasks by capability does not. Critical safety information and tacit knowledge are retained within the organization to compensate for retirement transitions, through mentoring programs, technical communities of practice and structured knowledge capture initiatives (Low & Pok, 2025). Organizations that use formal knowledge transfer systems such as Procter and Gamble's Technical Masters program and Duke Energy's Experience in Action program see improved safety performance by a host of indexes, especially in incidents related to newer employees performing complex work procedures (Day & Shea, 2021; University of North Carolina at Charlotte, 2023).

Health Promotion & Wellness Initiatives

Niche health promotion interventions deal with the prevention of new conditions and the management of existing conditions in the aging workforce. These interventions should be implemented with close attention to organizational limitations, possible obstacles and collateral effects. Physical fitness programs should be based not on general fitness parameters but on functional

FIGURE 2

PERCENTAGE OF LARGE FIRMS OFFERING HEALTH BENEFITS, WELLNESS ACTIVITIES & INCENTIVES



***Estimates are statistically different between firm size estimates within category ($p < 0.05$).**
Note. "Specific Wellness Programs" include "Programs to Help Workers Stop Smoking," "Programs to Help Workers Lose Weight" or "Other Lifestyle or Behavior Coaching." Large firms have 200 or more workers.
From "2020 Employer Health Benefits Survey" by Kaiser Family Foundation (www.kff.org/health-costs/2020-employer-health-benefits-survey). Copyright 2020.

capacity, strength, flexibility, balance and cardiorespiratory endurance (De Santis et al., 2023). The WorkAbility model developed in Finland is holistic, encompassing resistance training with a focus on core and lower body strength using lighter loads and more repetitions, flexibility exercises with a focus on joint mobility, balance exercises with elements of both static and dynamic exercises, and moderate-intensity aerobic exercises that take into account age-related conditions (Smyth et al., 2018). Unilever's Fit for Life program, an employee assistance program with a mission to "add healthy years to the lives of our people, unlocking untapped human potential for our business and our world," led to a 22% reduction in absenteeism, a 35% increase in work ability and an 18% decrease in musculoskeletal complaints (Unilever, 2024). Figure 2 (p. 25) shows the findings from a wellness initiatives survey carried out in 2020, clustered by firm size.

Return-to-Work & Accommodation Strategies

Since older workers take longer to recover from illness or injury, return-to-work and accommodation strategies have increased importance for this population. Early intervention approaches that begin in the first 24 to 48 hours after the injury or illness report are highly effective and include programs combining early medical management, functional job analysis and graduated return-to-work planning programs (Ray & Cryan, 2021). Safeway, Boeing and American Express view aging employees as an asset and have adopted a model suited for their aging workforce populations based on the U.S. Department of Labor's Office of Disability Employment Policy Stay at Work/Return to Work model, with a return to work rate as high as 35%, higher than the industry average (Ben-Shalom et al., 2017; DOL, 2024).

Proactive accommodation programs demonstrate compelling return on investment. Organizations such as Walgreens and Lockheed Martin have shown that each dollar invested in structured accommodation systems yields between $4.50 and $6.80 in combined direct savings (e.g., workers' compensation, short-term disability, turnover costs) and indirect benefits (e.g., productivity maintenance, knowledge retention, improved morale; Pappas & Frisch, 2024). In light of these benefits, age-inclusive accommodation strategies are not merely a compliance requirement but a sound business investment that enhances both the financial and operational dimensions of organizational performance.

Technology Solutions

Technological interventions offer solutions to age-related challenges in the workplace, from simple mechanical devices to very sophisticated digital systems. Given that all essential assistive technologies have significant potential to reduce physical demands without substantial initial investment, when barriers are eliminated the ability of these technologies to prevent or defer progressive disability may decline considerably (Segkouli et al., 2021). Organizations such as Honda and John Deere have instituted tool modification programs that permit workers to request ergonomic changes to tools with apparent upper extremity injury reduction greater than 40% for workers older than 55 (Bharti et al., 2022). The age-inclusive design takes on critical importance as workplace technologies evolve rapidly. Digital interface design is vital. The interface should be legible (e.g., more extensive text, good contrast), navigable (e.g., same layout but different look) and tolerant of errors (e.g., confirmation steps, easy to recover), and it should include personalization features (e.g., user can change the look and feel, a business gives the employees the right to customize workflow) (Choobineh et al., 2021). As such, training approaches for the aging workforce should be based on adult learning principles—hands-on practice sessions, the use of peer coaching models, context-specific application, and progressive skill development—which have proven to be most effective for older learners when implementing new technologies (Foley & Luz, 2021). For instance, Merck has a technology champions program that connects experienced workers with technology mentors to provide personal skill development. The program has achieved technology adoption rates 28% higher than the traditional training rate and created an intergenerational knowledge exchange for better organizational capability across multiple domains (Carpenter, 2024).

Creating an Age-Inclusive Safety Culture & Measuring Success

Sustainable inclusivity and safety programs must involve apparent administrative support, systematic risk reduction and strict assessment systems. Nevertheless, companies must overcome the constraints of practical implementation and prove value in practice to maintain continuous support. Top-level management should clearly include the concept of age in the organizational values text, frequently communicate the business case for age diversity, invest in workplace adjustments and attend age-conscious courses (Owen et al., 2022). Such apparent investment overcomes the biased attitude that older workers are less adaptable and more vulnerable to injuries, despite evidence to the contrary (von Humboldt et al., 2022).

Common bias-reduction methods include age-based safety performance indicators in data-driven evaluation, structured decision-making systems that reduce subjective decisions, age-heterogeneous teams to evaluate capability, and age-neutral safety communication language (Takao & Ishiyama, 2021). Some hindrances in implementation include middle management resistance due to fear of lost productivity and concern that age-specific programs may accentuate rather than reduce age differences. To deal with these issues, communication should be transparent and emphasize that accommodations are beneficial to all workers, with statistical data proving their business importance.

The assessment systems should include leading and lagging indicators: rates of age-stratified injuries, trends of near-miss reporting, program participation, effectiveness of accommodations, retention of experienced workers in their jobs and age diversity in safety leadership (Nagarajan & Sixsmith, 2021). Companies such as Lockheed Martin, Shell and Kaiser Permanente monitor balanced scorecards that include safety outcomes, business impact and sustainability dimensions (Mio et al., 2021).

The direct benefits included in the cost-benefit analysis must include fewer workers' compensation costs, lower

insurance premiums, fewer cases of absenteeism and indirect benefits such as knowledge retention, quality improvement, improved reputation and lower recruitment costs. Companies that closely monitor these indicators normally record a return on investment ranging from 3:1 to 5:1 in extensive programs that span 2 to 3 years (Tawse & Tabesh, 2023).

Conclusion

EHS professionals face challenges and opportunities related to the demographic transformation of the workforce. Organizations can take advantage of these opportunities by implementing the evidence-based strategies presented in this article: comprehensive risk assessment, targeted workplace modification, administrative controls, wellness initiatives, accommodation processes and technology solutions. These interventions have shown a return on investment that goes beyond the regulatory compliance terms; they have resulted in measurable improvement in injury rates, productivity, quality and knowledge retention. Proactive age management can differentiate leading organizations. This transition requires a chorus of EHS professionals to advocate for it and to become strategic partners in creating sustainable work systems that use age-diverse workforce strengths while overcoming the associated risks. Organizations must act now, before the demographic reality leaves no choice but to react to this inevitable transformation. **PSJ**

This transition requires a chorus of EHS professionals to advocate for it and to become strategic partners in creating sustainable work systems that use age-diverse workforce strengths while overcoming the associated risks.

SKYNESHER/E+/GETTY IMAGES

References

Adem, A. & Dağdeviren, M. (2020). A job rotation-scheduling model for blue-collar employees' hand-arm vibration levels in manufacturing firms. *Human Factors and Ergonomics in Manufacturing and Service Industries, 31*(2), 174-190. https://doi.org/10.1002/hfm.20878

Aisa, R., Cabeza, J. & Martin, J. (2023). Automation and aging: The impact on older workers in the workforce. *The Journal of the Economics of Ageing, 26*, 100476. https://doi.org/10.1016/j.jeoa.2023.100476

Ayoubi-Mahani, S., Eghbali-Babadi, M., Farajzadegan, Z., Keshvari, M. & Farokhzadian, J. (2023). Active aging needs from the perspectives of older adults and geriatric experts: A qualitative study. *Frontiers in Public Health, 11*. https://doi.org/10.3389/fpubh.2023.1121761

Ben-Shalom, Y., Bruns, S., Contreary, K. & Stapleton, D. (2017). Stay-at-work/return-to-work: Key facts, critical information gaps, and current practices and proposals. Mathematica. https://bit.ly/4rtuWbG

Bharti, S., Patel, C. & Chamalwar, S. (2022). Proactive ergonomic assessment for a new product development program in virtual environment. *Evergreen, 9*(3), 809-813. https://catalog.lib.kyushu-u.ac.jp/opac_download_md/4843112/809-813.pdf

Botti, L., Calzavara, M. & Mora, C. (2020). Modelling job rotation in manufacturing systems with aged workers. *International Journal of Production Research, 59*(8), 2522-2536. https://doi.org/10.1080/00207543.2020.1735659

BMW Group. (2023, Dec. 19). BMW Group Health and Safety Policy. www.bmwgroup.com/content/dam/grpw/websites/bmwgroup_com/general/BMW-Group-Health-and-Safety-Policy-EN.pdf

Bravo, G., Viviani, C., Lavallière, M., Arezes, P., Martínez, M., Dianat, I., Bragança, S. & Castellucci, H. (2022). Do older workers suffer more workplace injuries? A systematic review. *International Journal of Occupational Safety and Ergonomics, 28*, 398-427. https://doi.org/10.1080/10803548.2020.1763609

Carpenter, S. (2024). Merck, Sharp & Dohme: Digital transformation in shared services and beyond. In L. Reinkemeyer (Ed.) *Process intelligence in action: Taking process mining to the next level* (pp. 131-139). Springer. https://doi.org/10.1007/978-3-031-61343-2_15

Chan, P.H.H., Howard, J., Eva, N. & Tse, H.H.M. (2022). A systematic review of at-work recovery and a framework for future research. *Journal of Vocational Behavior, 137*, 103747. https://doi.org/10.1016/j.jvb.2022.103747

Choobineh, A., Shakerian, M., Faraji, M., Modaresifar, H., Kiani, J., Hatami, M., Akasheh, S., Rezagholian, A. & Kamali, G. (2021). A multilayered ergonomic intervention program on reducing musculoskeletal disorders in an industrial complex: A dynamic participatory approach. *International Journal of Industrial Ergonomics, 86*, 103221. https://doi.org/10.1016/j.ergon.2021.103221

Day, G.S. & Shea, G.P. (2021). Innovating how innovation works at Procter & Gamble. *Strategy and Leadership, 49*(6), 2-8. https://doi.org/10.1108/sl-10-2021-0101

De Santis, K.K., Mergenthal, L., Christianson, L., Busskamp, A., Vonstein, C. & Zeeb, H. (2023). Digital technologies for health promotion and disease prevention in older people: Scoping review. *Journal of Medical Internet Research, 25*, e43542. https://doi.org/10.2196/43542

Foley, K.T., & Luz, C.C. (2021). Retooling the health care workforce for an aging America: A current perspective. *The Gerontologist, 61*(4), 487-496. https://doi.org/10.1093/geront/gnaa163

Fulmer, T., Reuben, D.B., Auerbach, J., Fick, D.M., Galambos, C. & Johnson, K.S. (2021). Actualizing better health and health care for older adults. *Health Affairs, 40*(2). https://doi.org/10.1377/hlthaff.2020.01470

Gbigbi-Jackson, G.A., Aguguo, J.C., Okobi, O.E., Iyun, O.B., Mbah, L.A. & Oluwadamilola, D.O. (2024). Understanding the chronic disease management programs: A comprehensive literature review. *Medical Research Archives*. https://doi.org/10.18103/mra.v12i7.5647

Ingersoll, R., Merrill, E., Stuckey, D., Collins, G. & Harrison, B. (2021). The demographic transformation of the teaching force in the United States. *Education Sciences, 11*(5), 234. https://doi.org/10.3390/educsci11050234

Jemai, H., Badri, A. & Ben Fredj, N. (2021). State of the art and challenges for occupational health and safety performance evaluation tools. *Safety, 7*(3), 64. https://doi.org/10.3390/safety7030064

Jensen, R.C., Bird, R.L. & Nichols, B.W. (2022). Risk assessment matrices for workplace hazards: Design for usability. *International Journal of Environmental Research and Public Health, 19*(5), 2763. https://doi.org/10.3390/ijerph19052763

Klein, D.C.D., O'Neil, H.F. & Baker, E.L. (1998). A cognitive demands analysis of innovative technologies: CSE technical report 454. https://cresst.org/wp-content/uploads/TECH454.pdf

Low, M.P. & Pok, W.F. (2025). Global aging workforce: A micro-meso-macro approach. *Activities, Adaptation and Aging*, 1-30. https://doi.org/10.1080/01924788.2025.2458980

Mayo Clinic. (2024). Rejuvenate Spa. https://rejuvenatespa.mayoclinic.com

Mio, C., Costantini, A. & Panfilo, S. (2021). Performance measurement tools for sustainable business: A systematic literature review on the sustainability balanced scorecard use. *Corporate Social Responsibility and Environmental Management, 29*(2), 367-384. https://doi.org/10.1002/csr.2206

Nagarajan, N.R. & Sixsmith, A. (2021). Policy initiatives to address the challenges of an older population in the workforce. *Ageing International, 48*, 41-77. https://doi.org/10.1007/s12126-021-09442-w

Owen, M.S., Berthelsen, H., Jamieson, S.D. & Westerlund, H. (2022). A quick "environment check" for all ages: Validating the new age inclusive work environments instrument. *Innovation in Aging, 6*(7). https://doi.org/10.1093/geroni/igac066

Pappas, H. & Frisch, P. (2024). The rise of the intelligent health system. Productivity Press. https://doi.org/10.4324/9781032690315

Peron, M., Arena, S., Micheli, G.J.L. & Sgarbossa, F. (2022). A decision support system for designing win-win interventions impacting occupational safety and operational performance in ageing workforce contexts. *Safety Science, 147*, 105598. https://doi.org/10.1016/j.ssci.2021.105598

Ray, T.K. & Cryan, R.P. (2021). Work flexibility and work-related wellbeing. *International Journal of Environmental Research and Public Health, 18*(6), 3254. https://doi.org/10.3390/ijerph18063254

Rinsky-Halivni, L., Hovav, B., Christiani, D.C. & Brammli-Greenberg, S. (2022). Aging workforce with reduced work capacity: From organizational challenges to successful accommodations sustaining productivity and wellbeing. *Social Science and Medicine, 312*, 115369. https://doi.org/10.1016/j.socscimed.2022.115369

Segkouli, S., Giakoumis, D., Votis, K., Triantafyllidis, A., Paliokas, I. & Tzovaras, D. (2021). Smart workplaces for older adults: coping "ethically" with technology pervasiveness. *Universal Access in the Information Society, 22*, 37-49. https://doi.org/10.1007/s10209-021-00829-9

Singh, V. (2021). Technology, future of work and ageing workforce readiness. *International Journal of Systematic Innovation, 6*(4), 55-63. https://doi.org/10.6977.IJoSI.202106_6(4).0005

Smyth, J., Pit, S.W. & Hansen, V. (2018). Can the work ability model provide a useful explanatory framework to understand sustainable employability amongst general practitioners: A qualitative study. *Human Resources for Health, 16*, 32. https://doi.org/10.1186/s12960-018-0292-x

Society for Human Resource Management (SHRM). (2023). Preparing for an aging workforce: Manufacturing industry report. www.shrm.org/content/dam/en/shrm/foundation/Manufacturing.pdf

Taffet, G.E. (2024). Physiology of aging. In M.R. Wasserman, D. Bakerjian, S. Linnebur, S. Brangman, M. Cesair & S. Rosen (Eds.). *Geriatric medicine* (pp. 1555-1565). Springer EBooks. https://doi.org/10.1007/978-3-030-74720-6_103

Taheri, F., Rahmani, E., Shirmohammadi Fard, S., Rezaei, M., Ayati, A., Farhoudian, A., Moghadam Fard, A., Ahmadianpour, M.V., Afzalian, A., Varshochi, S., Golalipour, E., Yousefi, M., Mashatan, N., Ghalichehbaf, Y., Eghlidos, Z., Majidnia, M., Shahabifard, H., Farhang, E., Pouraei, A., Zeydi, M., . . . Farrokhi, M. (2023). Aging process and related diseases. Kindle. http://preferpub.org/index.php/kindle/article/view/Book21

Takao, M. & Ishiyama, N. (2021). Effect of career adaptability on subjective wellbeing of middle-aged and older employees. *Sustainability, 13*(5), 2570. https://doi.org/10.3390/su13052570

Tawse, A. & Tabesh, P. (2023). Thirty years with the balanced scorecard: What we have learned. *Business Horizons, 66*(1), 123-132. https://doi.org/10.1016/j.bushor.2022.03.005

Peepasati, A. & Grebremarian, E. (2023). Thursday Seminar: AI in action at Duke Energy [Webinar]. University of North Carolina at Charlotte. https://campusevents.charlotte.edu/event/ai_in_action_at_duke_energy

U.S. Bureau of Labor Statistics (BLS). (2023, Jan. 25). Employed people by detailed industry and age. www.bls.gov/cps/cpsaat18b.htm

U.S. CDC. (2024, May 17). Aging and Work. www.cdc.gov/niosh/aging/about/index.html

U.S. Department of Labor (DOL). Stay at work/return to work. (2024). www.dol.gov/agencies/odep/initiatives/saw-rtw

Unilever. (2024, April 20). Employee health and wellbeing. www.unilever.com/working-at-unilever/employee-wellbeing

Verizon. (2020). Environmental, health and safety policy. www.verizon.com/about/our-company/how-we-lead/policies/environmental-health-and-safety-policy

von Humboldt, S., Miguel, I., Valentim, J.P., Costa, A., Low, G. & Leal, I. (2022). Is age an issue? Psychosocial differences in perceived older workers' work (un)adaptability, effectiveness, and workplace age discrimination. *Educational Gerontology, 49*(8), 687-699. https://doi.org/10.1080/03601277.2022.2156657

Weiss, N., Schreieck, M., Wiesche, M. & Krcmar, H. (2020). From product to platform: How can BMW compete with platform giants? *Journal of Information Technology Teaching Cases, 11*(2). https://doi.org/10.1177/2043886920944185

Wissemann, A.K., Pit, S.W., Serafin, P. & Gebhardt, H. (2022). Strategic guidance and technological solutions for human resources management to sustain an aging workforce: Review of international standards, research, and use cases. *JMIR Human Factors, 9*(3), e27250. https://doi.org/10.2196/27250

World Health Organization (WHO). (2022, Nov. 7). Occupational health: health workers. www.who.int/news-room/fact-sheets/detail/occupational-health--health-workers

Zakrzewska, A. (2025, July 9). OECD Employment Outlook 2025: Staying in the game: Skills and jobs of older workers in a changing labour market. OECD. https://bit.ly/4lwyb0H

Omolara Oluseun Juba, M.Sc., is director and founder of the Adult Prime Safety Health and Well-Being Foundation. She holds a master of science degree in Occupational Safety, Health and Well-Being from Cardiff Metropolitan University, UK, and a bachelor's degree from Ekiti State University, Nigeria. She leads initiatives promoting healthcare worker safety and aged adult well-being. Juba holds professional memberships with CertIOSH, the Institute of Safety Professionals of Nigeria, the Royal College of Nursing Association, the National Association of Care and Support Workers, and the International Federation on Ageing. Her professional focus is on advancing carer resilience and infection control in under-resourced care environments.

Cite this article

Juba, O.O. (2026, April). The aging workforce: Protecting the safety and health of older workers. *Professional Safety, 71*(4), 22-28.