ACCOMMODATING THE OLDER WORK

Implications for Safety Pro

By Angela Mattis Bernardo, Rona Smeak and Adelle M. Williams

THE GRAYING OF THE BABY BOOM GENERATION and declines in birth rates mean that fewer young people will be entering the workforce. As the demand for workers grows, companies may find that the average age of their employees is climbing. The transition will likely create many cultural shifts, but how many employers recognize the impact that these changes will have on workplace safety? Older workers may have a strong desire to work safely and do a good job, but human physiology may get in their way. The human body's functioning declines gradually over time, reducing mobility and flexibility. Older workers' bodies are different from those of their younger counterparts, and the daily stresses of the job affect them in appropriately disparate ways. Most job tasks are not designed with the older worker in mind, and therefore can introduce overexertion and poor mechanics that commonly lead to injury. Musculoskeletal disorders (MSDs), conditions that are prevalent among every age group, present an even greater risk for long-tenured workers, who experience MSDs at a higher rate than any other age group (Lombardo, 2018). The combination of all of these factors suggests that older workers are more likely to become injured or suffer illnesses in the workplace (Safety Management Group, 2012).

As the workforce continues to age, employers can expect an increase in the numbers of workers with chronic conditions. This includes arthritis, high blood pressure, low back pain, joint problems, obesity and diabetes. All of these factors have a negative impact on worker safety and health and will make OSH more challenging (Rice, 2014).

According to Bureau of Labor Statistics (BLS, 2018b) data, in 2018, the median age of all workers was 42.2 years, with 23% of the workforce being age 55 or older (Figure 1). BLS predicts that by 2024 at least 25% of the workforce will be over age 55 (Toossi, 2015). Many reasons exist for the increase of this population in the workforce, including financial, desire to stay mentally active, job satisfaction and social aspects of work (Lombardo, 2018; Rice, 2014). Challenges faced by older workers include negative myths and stereotypes, ageism and misinformation.

KEY TAKEAWAYS

- **The workforce will continue to age into the future. Safety professionals must assess the needs of the workforce to ensure that proper accommodations are made to the safety program to protect not only aging workers but all workers.**
- **Understanding the physiological aspects of aging and how aging affects safety performance can help OSH professionals assess the work environment and adjust safety programs to mitigate some of the impacts of aging.**
- **Many social, economic, safety and medical myths about older workers are based on the perception that older workers are frail, unreliable, and incapable of working effectively and safely. Separating facts from myths is vital to enhance safety performance.**

Perceptions & Myths

Evidence shows that ageism, stereotypes and misinformation about mature persons continue to be issues across all segments of society, including in the workplace. According to Dennis and Thomas (2007), managers hold positive and negative perceptions about employees age 50 and older. They say that managers value older workers for their experience, knowledge, work habits, attitudes, commitment to quality, loyalty, punctuality, even-temperedness and respect for authority. Negative perceptions held by managers about mature workers include inflexibility, unwillingness or inability to adapt to new technology, lack of aggressive spirit, resistance to change, complacency, and the presence of physical limitations that increase the cost of health insurance. However, the researchers found that the traits most admired about older workers (experience, judgment, commitment to quality, low turnover, good attendance and punctuality) were not highly valued by employers. While these findings may appear contradictory, they demonstrate a precise and delicate balance between positive and negative perceptions that, depending on industry or work environment, may affect a manager's decision to hire, retain or advance an older worker.

Some social, economic, safety and medical myths about older workers are based on the perception that older workers are frail, unreliable, and incapable of working effectively and safely. One myth is that older workers are more likely to experience work-related injuries. In fact, older workers suffer fewer job-related injuries than many other age groups (Rice, 2014). Another myth is that older workers are more likely to suffer from illness and are more often absent or late for work than younger workers. However, older workers have lower absenteeism and tend to be more punctual than younger workers (Rice, 2014). Despite numerous negative perceptions, data indicate that

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workers age 65 and older have a lower incidence rate than workers in most other age groups (BLS, 2018a).

Workplace Injuries

In 2018, the median days away from work for nonfatal occupational injuries for workers age 65 and older was 14 (BLS, 2019a). In comparison, the median for those age 25 to 34 was 6 days away from work (Table 1, p. 28). Although the over 65 working population has had a lower incident rate than many of the other groups, the severity of their injuries was higher (BLS, 2019a). This shows that when an older worker is injured, the injury is more severe than injuries to their younger coworkers, possibly due to changes associated with aging. Workers 65 and over accounted for 15% of fatal injuries in 2017 and 14.5% of fatal injuries in 2018 (Table 2, p. 28), with 2017 having the highest level since BLS began collecting this data in 1992, when the figure was 8% (BLS, 2018c; 2019a). OSH professionals must understand the aging process and its potential impact on safety, and how to mitigate injuries and illnesses.

Physiological Aspects of Aging

Physical Strength & Endurance

Physical strength and endurance abilities are specific to the individual. Although muscle strength can be improved with physical activity and training, it remains constant until approximately age 40, then reduces slightly between age 40 and 65 (Shephard, 1999). A study by de Zwart et al. (1996) suggests that an average decline of 10% to 25% in muscular capacity occurs at age 65 compared to the highest lifetime value; again, this is impacted by leisure activities and interindividual variation. In addition, a study conducted over a 16-year period identified that a range of measures including spinal flexibility, isometric trunk strength and hand grip strength reduced significantly over the timeframe (Savinainen et al., 2004a; b). Another study identified that there is a significant increase in the need for recovery associated with increasing age, high physical and high psychological demands, monotonous work and working for greater than 42 hours per week (Devereux & Rydstedt, 2009; Kiss et al., 2008).

Aerobic Capacity

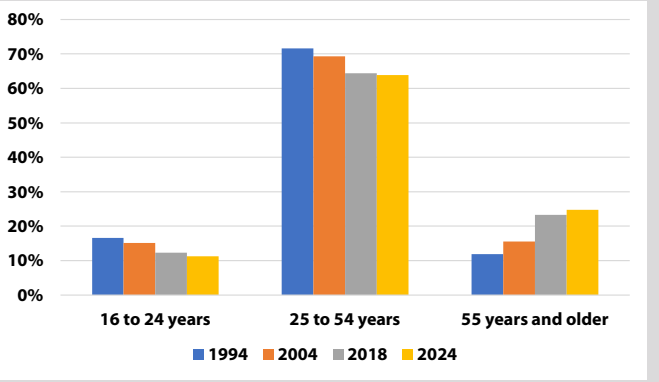
Aerobic capacity in adults has been found to decline in both men and women over their working life by 10% for each decade of life (Gall & Parkhouse, 2004; Savinainen et al., 2004a; b; Shephard, 1999; 2000). It is apparent that the reduction in aerobic capacity will have an impact on physical work and where machine-paced work, based on machine cycle times or assembly productivity, set for younger workers may outstrip the capacity of older workers. Although aerobic capacity reduces with age, some maintenance of capacity can occur where an active lifestyle is preserved.

Balance Problems

Balance problems are among the most common reasons that older adults seek assistance from a physician. Good balance helps a person walk without staggering, get up from a chair without falling, climb stairs without tripping and bend over without falling, and it is important to help individuals get around, stay independent and carry out daily activities (NIA, 2017). Balance disorders are one reason older people fall, however, infections, some diseases of the circulatory system (e.g., stroke), low blood pressure, head injuries and medicines may also lead to balance problems (NIA, 2017).

FIGURE 1
PERCENTAGE OF WORKFORCE BY AGE

Percentage of the workforce by age groups, 1994 to 2024, as projected by BLS.



Note. Adapted from "Labor Force Projections to 2024: The Labor Force Is Growing, but Slowly," by M. Toossi, *Monthly Labor Review*, U.S. Bureau of Labor Statistics, 2015.

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Sensory Changes

As humans age, our sensory functions decline, requiring perceptual aids (e.g., glasses, hearing aids) and contributing to an increased isolation from the outside world. This has been demonstrated especially for hearing and vision (Fozard, 1990). Older people usually experience a decline in visual acuity because of changes in lens elasticity, which consequently leads to a decrease in the ability to focus on near objects (i.e., presbyopia) and to adapt to light (Owsley, 2011). Also, hearing is well known to decline with age (Gates & Mills, 2005) and is characterized by a decreased hearing sensitivity, capability to understand speech in a noisy environment, slowed central processing of acoustic stimuli and impaired sound localization. With the decline in vision and hearing, people tend to self-isolate and not participate for fear of showing their frailties. In addition, older people are more susceptible to heat-related problems (Pandolf, 1991; 1997). It appears that heat tolerance decreases due to age-related change of the cardiovascular system (Shephard, 1999). Other influences likely to be encountered with an aging population include the reduced thermoregulatory ability of those with type 2 diabetes (Wick et al., 2006). Where such factors are controlled, an aging workforce appears to be no more susceptible to adverse effects from working in the heat than younger workers.

TABLE 1

INJURY & ILLNESS DATA BY AGE OF WORKER, 2018

Median days away from work due to injuries and illnesses and incidence rate by age of worker, all ownerships, 2018.

Age group	Median days away from work	Incidence rate per 10,000 full-time workers
16 to 19	5	111.4
20 to 24	5	100.9
25 to 34	6	86.5
35 to 44	8	91.7
45 to 54	12	104.5
55 to 64	14	113.4
65 and over	14	98.3

Note. Data from "2018 Survey of Occupational Injuries and Illnesses Charts Package," by BLS, 2019b.

TABLE 2

FATAL OCCUPATIONAL INJURIES BY AGE GROUP, 2017-2018

	No. of fatal occupational injuries		Percentage of fatal occupational injuries	
Age group	**2017**	**2018**	**2017**	**2018**
Under 16	15	13	0.29	0.25
16 to 19	69	65	1.3	1.2
20 to 24	293	282	5.7	5.4
25 to 34	872	946	16.9	18.0
35 to 44	907	966	17.6	18.4
45 to 54	1,059	1,114	20.6	21.2
55 to 64	1,155	1,104	22.4	21.0
65 and over	775	759	15.1	14.5
Total	**5,147**	**5,250**		

Note. Percentage is determined by the number of fatal occupational injuries in each age group divided by the total number of fatal occupational injuries for all age groups. Data from "National Census of Fatal Occupational Injuries in 2018 (News release No. USDL-19-2194," by BLS, 2019a.

Cognitive Changes

Some cognitive abilities, such as vocabulary, are resilient to brain aging and may even improve with age. Other abilities such as conceptual reasoning, memory and processing speed decline gradually over time. Significant heterogeneity exists among older adults in the rate of decline in some abilities such as measures of perceptual reasoning and processing speed (Wisdom et al., 2012). Concepts of crystallized and fluid intelligence are used to describe patterns of cognitive change over the life span. Crystallized intelligence refers to skills, abilities and knowledge that are overlearned, well-practiced and familiar (Lezak et al., 2012). Vocabulary and general knowledge are examples of crystallized abilities, which remain stable or gradually improve through the sixth and seventh decades of life (Salthouse, 2012). Older adults tend to perform better at tasks requiring this type of intelligence when compared to younger adults. In contrast, fluid intelligence refers to abilities involving problem-solving and reasoning about things that are less familiar and are independent of what one has learned (Elias & Saucier, 2006).

Solutions

To understand where organizations stand pertaining to older workers, they must first conduct a workforce assessment. This assessment can identify the number of older workers in their organization and create a work environment that will enhance the safety and productivity of these workers (Hursh et al., 2006; Tishman et al., 2012). Assessments and subsequent management strategies allow companies to retain effective, experienced employees, prevent age discrimination and identify management and engineering practices to keep these valued employees safe (Blomé et al., 2020).

Upon completion of the workforce assessment, each organization must conduct a thorough evaluation of the integration of work processes and the mature worker to anticipate, eliminate or control the types of occupational challenges present (Moyers & Coleman, 2004). At a minimum, this will include a job hazard analysis, ergonomic evaluation and occupational health survey. The organization must look for any barriers to safety through the lens of a mature worker. For example, is a noise issue present that would interfere with the use of hearing protection devices and the use of hearing aids?

Once hazards are identified, these can be mitigated through the hierarchy of controls. This includes 1. elimination of the hazards; 2. substitution of the hazard with safer alternatives; 3. engineering controls that isolate people from the hazard; 4. administrative controls that involve policies and programs; and 5. PPE that workers wear to protect themselves from the hazards (e.g., safety glasses, respirators, hearing protection devices). Elimination and substitution of hazards is the goal; however, if unsuccessful, the remaining three controls must be employed. For example, if a noise issue is present at the plant that makes it difficult to hear speech, have all available engineering controls been implemented to eliminate or minimize the hazard and allow the older worker with diminished hearing to be able to hear speech? If using job rotation, do older employees have enough time to recover from strenuous activity, and have available engineering controls been utilized such as lifting assists and mechanical aids?

Engineering Controls

Eliminate the potential work hazards through engineering controls to physically separate employees from the hazards. This will not only enhance the job process, but also improve productivity and overall worker morale. This can be done several ways to protect the special needs of the older worker.

Limitations of older workers requires consideration of job process redesigns to provide ergonomically friendly workstations. This includes adjustable seating or sit-stand workstations to allow workers whose jobs are more sedentary an opportunity to adjust when necessary. Mechanical lift assist devices and stress-reducing tools such as pallet jacks and robotic arms that can help position work, and eliminate awkward postures and repetitive motions can reduce cumulative trauma disorders. Adjustable or improved illumination to reduce glare and reduce or eliminate noise distractions can mitigate the sensory limitations faced by older workers (Maurer, 2014; Rice, 2014).

As balance issues of older workers are a concern, ensuring that the organization meets or exceeds the applicable standards for walkways, stairways, handrails and egress for facilities will help protect older workers from fall injuries. Installing slip-resistant surfaces to eliminate slips, trips and falls minimizes fall-related injuries (Maurer, 2014).

Health problems may cause older workers to be more susceptible to occupational contaminants. Implementing adequate control methods would reduce or eliminate exposures. Removal of these hazardous substances or by-products of processes through substitution and adequate ventilation can prevent exposures from occurring.

Management

Management must focus on implementing programs that consider older workers. Older workers often do not feel supported or engaged, and may be hesitant to identify proficiency changes affecting their ability to perform work tasks that they feel may jeopardize their employment (Drake et al., 2017). A coordinated multidisciplinary approach between human resources, operational management, and safety and health specialists is required.

Employers must err on the side of caution when developing policies, program planning, scheduling work and training to optimize the workplace environment. Griffiths (2000) argues that employers have an "increased" duty of care and, therefore, advises avoiding working arrangements that set up older employees to underperform or that put them under increased strain. Older workers tend to be grouped together regardless of skills or characteristics (Roper, 2016), which may create an unconscious bias; therefore, organizations need a clear and transparent age management policy.

Line managers need training to handle informal and unpredictable situations and discussions pertaining to older employees, and to identify age bias (Beck & Williams, 2016). Training for all workers is needed to eliminate age bias and preconceived negative attitudes toward older workers. Training employees will provide insight into how to work with older employees, help dispel some of the myths and highlight the attributes of older employees.

Employee Wellness Programs

Wellness and lifestyle intervention programs such as smoking cessation, proper diet, physical activity and health screening programs help aging workers remain safe and allow employers to manage chronic conditions (Crawford et al., 2010; Maurer, 2014). Establishing a stretch-and-flex program where workers engage in stretching the body prior to work can be useful to reduce ergonomic-related injuries and build worker morale (Choi et al., 2013; Rajendran, 2013). Another overlooked aspect of worker wellness is the psychological state of the worker such as job satisfaction, empowerment or job insecurity. Establishing an employee assistance program can support older workers' concerns and reduce incident-causing distractions due to these stressors (Beck & Williams, 2016).

Workplace Flexibility

To retain mature talent potentially lost due to job dissatisfaction or work limitations, organizations can implement job flexibility or job redesign programs (Perera et al., 2015). For older workers, workplace flexibility allows for employee engagement and better overall physical and mental health. Such programs must be the right fit. Various options are available to consider such as flextime, compressed workweeks, telecommuting, sabbatical, phased retirement and job sharing (i.e., a full-time position shared by two individuals; Sloan Center on Aging and Work, 2012).

Employers and employees alike win when workplace flexibility is maximized, and personal health and wellness are considered using consistent workplace policies (Rice, 2014). In addition, providing accommodations for employees including flexible job locations and tasks, accessibility and modifications for functional limitations such as technical processes that are printed with a larger font, and larger display monitors or screens can create a safer, more beneficial work environment.

Workplace Training

Training programs can cope with the needs and concerns of older workers and enhance their safety attitudes to allow for overall improvement of the safety culture (Tishman et al., 2012). Organizations must invest in training and building worker skills to adapt to new technologies and facilitate career change for workers who are in physically demanding roles (Rice, 2014). As noted, the

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older person's crystallized knowledge is strong, so it is important to provide software that is consistent with what the worker already knows, thereby taking advantage of this strength (Charness et al., 2015). Small group format is the preferred training modality for this demographic, along with providing extra time and at a slower pace in a distraction-free environment (Tishman et al., 2012).

PPE

The last line of defense for older worker safety is PPE. Because it depends on a worker using the equipment, using it properly and the ease of simply taking it off, PPE is often considered as the last or additional line of defense. With new technologies involving exoskeletons and wearable technologies, we must consider these burgeoning options. According to Lu (as cited in Ferguson, 2019), the use of wearable technology "presents a great potential for researchers to address the limitations of current risk assessment tools for musculoskeletal disorders associated with manual work." Such tools can aid and educate all workers, especially older workers; they include fitness trackers, posture trackers (worn on the body), shoe insoles that track postures, a smart bra that measures posture and stress levels, and blue light glasses that prevent or reduce eyestrain. Manufacturers have developed a range of wearable sensors that monitor data such as breathing, toxic gas exposure, heart rate, posture and motion to assess workers exposure in real-time (Draper, 2018).

Another modern technology that can be used to protect older workers is the use of an exoskeleton, an artificial external supporting structure. Exoskeletons have been developed for many applications, from quadriplegics standing for the first time to assisting workers in performing repetitive tasks or tasks that require strength and agility. Many types of exoskeletons, which are often referred to as wearable technology, have been developed to aid workers such as chairless chairs, back support, power gloves and full body suits. These technologies can allow workers to work as hard and as long as needed (Farrell, 2016), thus reducing ergonomic hazards.

Conclusion

Safety professionals must understand that older workers will be a major component of the workforce in the foreseeable future. They will need to address the issues that negatively impact older workers and their safety performance. Although incident rates are lower for employees over age 65 compared to most groups, the severity of the injuries as measured by median days away from work is higher. Providing appropriate accommodations for older workers will help prevent injuries for all employees and thus lower the overall injury incident rate for an organization. Safety professionals must understand the natural process of aging, which may pose challenges to workplace safety. Providing and utilizing the hierarchy of controls to mitigate age-related hazards and enhance overall workplace safety and health for mature workers is crucial. **PSJ**

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