Emerging Technologies in Ergonomic Assessments

Have you ever wondered how advanced technology impacts workplace environments and if the outcome is positive? As the study of safety processes and ergonomic applications on humans in workplace settings and off-the-job locations evolves, the inclusion of technology improves. Artificial intelligence, robotics, and user-friendly software are tools used in the US and globally in construction, general industries, and health services. The application of each continues to transform the human condition.

What about AI – is it taking over – everything? Before we answer that question, we must have a basic understanding of AI. What is it? Where did it come from? And, what is its relationship with ergonomic assessments?

What is AI?

Britannica defines Artificial intelligence (AI) as “the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. In a limited sense, AI is found in applications as diverse as medical diagnosis, computer search engines, voice or handwriting recognition, and chatbots.”

Ivan Williams Jimenez (IOSH Magazine, Policy Development Manager) said, “AI is a general-purpose technology capable of mimicking human intelligence processes…AI can not only perform tasks previously undertaken by humans but also observe information and undertake analysis in different ways.”

Where did it come from?

To take a deeper dive into AI development, look at the following timeline depicted in a 2022 article on AI Timelines by Max Roser:

From a safety perspective, just how much can the human brain retain? Safety professionals can’t be everywhere, observing processes and ensuring employees' postures are correct and that ergonomic conditions are favorable.

Such is the argument for AI advocates: AI steps in when the human body and brain pause.

However, AI is being utilized from the onset – not just as a “last-minute replacement when human capacity is stressed.” It does not replace human presence in every situation; it enhances the effectiveness of Safety Management Systems so safety professionals and workers can gain an understanding, perspective, and adaptation to their environment. The information AI gathers concerning ergonomic conditions on a work site is valuable.

Businesses use AI by integrating it into Occupational Health and Safety (OHS) worker management systems for the following:

• Identifying, categorizing, and processing data quickly to determine risks and hazards

• Recommending best practices and actions to mitigate risk

• Drafting incident reporting and analysis

Using AI to address ergonomic considerations is quite promising. For example, AI can identify the location and description of a tool or activity that triggers worker stressors and then recommend remediation. With ergonomic adjustment, workers complete tasks more efficiently and safely.

Exercise –

Imagine this scenario and try to cite the safety risks and ergonomic hazards:

Janet works for a small chip company with a limited production budget. She is stooped over at her workstation, separating small blue-colored chips from red-colored chips, placing them in buckets on the floor. She does this activity over and over throughout her shift. Janet is wearing company-issued coveralls, loose-fitting gloves, and worn-out shoes. The workstation is poorly illuminated, so she squints quite a bit. The buckets for the chips are behind her on the concrete floor she stands on. She has to turn around to drop the chips into their respective bucket. By the end of her shift, she is fatigued and ready for a much-needed break.

How many ergonomic risks did you identify?

Now, imagine that AI assessed Janet’s tasks and work environment. Within moments, AI cites the following recommendations: