

AMPLIFYING MOVEMENT CONSCIOUSNESS

Benefits of Tri-Modal Feedback for Enhancing Workers' Knowledge & Practices in Manual Handling Techniques

By Toni-Louise Gianatti

Before transitioning into occupational safety, the author spent about 2 decades immersed in the study and teaching of human movement, collaborating with a diverse array of individuals to optimize their biomechanical efficiency.

That experience underscored the importance of balancing practical implementation with theoretical understanding, yielding several crucial insights.

One critical discovery from the author's practice was that self-observation is the cornerstone for initiating change in an individual's movement, as it enables a deeper comprehension of movement mechanics and facilitates necessary adjustments (Dowrick, 2012). This introspective examination empowers individuals to identify areas for improvement and heightens their awareness, ultimately fostering an environment conducive to informed decision-making and effective adjustments that result in sustainable and impactful changes in movement patterns.

Currently, one of the challenges in ergonomic safety is finding ways to engage employees in training programs (Bayram, 2019). Recognizing that higher levels of engagement are linked to greater effectiveness of the training, many organizations are searching for techniques to boost their existing programs.

Self-Observation

Self-observation is a training approach that highlights employees' active participation and is a valuable technique to encourage changes in behavior (Dowrick, 2012; Garcia et al., 2017).

It involves paying attention to one's own bodily sensations and movements. By observing ourselves, we can become more aware of our postural habits, movement patterns and how our bodies respond to different activities or situations (Sene-Mir et al., 2020). It helps us to recognize the signals our bodies are sending us and make adjustments as needed.

While self-observation can be a valuable tool for enhancing self-awareness and promoting behavioral change, it is typically most effective when used in combination with other interventions and support mechanisms. Self-observation can provide two types of external feedback: knowledge of results and

knowledge of performance. These two types of feedback are called hetero-observational feedback and feedforward.

Hetero-Observational Feedback

Hetero-observational feedback refers to the feedback we receive from others, such as a coach or trainer, who observe our movements and provide guidance on how to improve our technique after a task or activity has been completed (Portell et al., 2019). This type of feedback can be helpful in identifying areas where we may be moving inefficiently or putting unnecessary strain on our bodies and providing insights and recommendations for improvement based on past successes and failures. It is reactive and retrospective.

Feedforward

Feedforward feedback, also known as "feedforward," is a type of feedback that focuses on providing suggestions and recommendations for improvement before a task is performed (Portell et al., 2019). For example, before attempting a difficult manual lift, a worker might visualize themselves performing the movement and anticipate the sensations and adjustments they will need to make to achieve the desired outcome. This type of feedback can be especially useful in supporting efficient movement and reducing the risk of injury. It is proactive and forward-looking.

Intrinsic Feedback

The other type of feedback that can be generated from self-observation tools is intrinsic feedback (Sene-Mir et al., 2020). Intrinsic feedback refers to the information we receive from our bodies during and after a movement or activity. This feedback can include sensations of effort, fatigue, pain or discomfort, and can help us to identify when we need to rest or modify our movements to prevent injury.

The goal of enhancing internal feedback is to increase an individual's

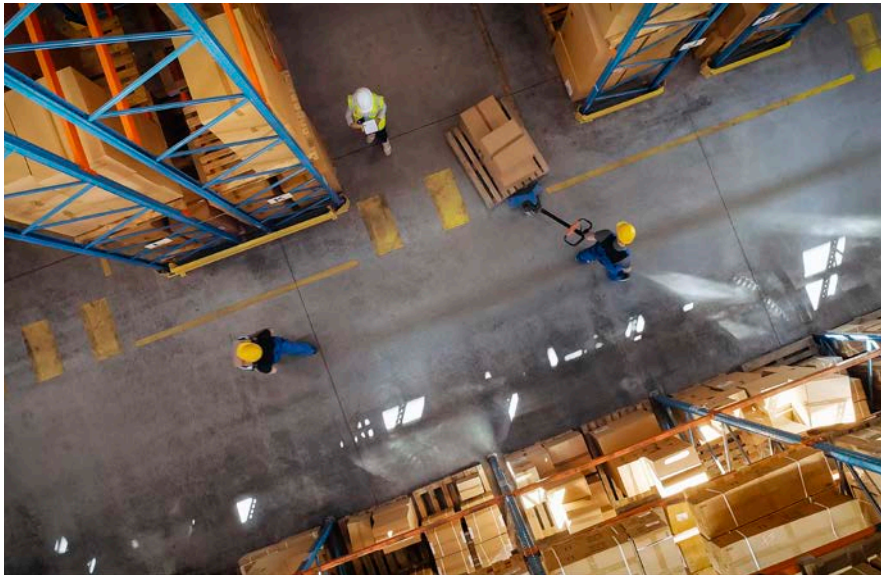
awareness of their own body, enabling employees to focus on their movements and make self-adjustments (Otte et al., 2020). After training, they depend on this internal feedback, so it is crucial to ensure its accurate interpretation. This indicates that after evaluating internal feedback, technical feedback from a coach or trainer should be given, which demands cognitive effort from the individual.

Tri-Modal Feedback Application

According to a recent study, the use of these three feedback types had a positive impact on improving knowledge and behavior related to manual handling techniques, particularly with regard to back posture (Sene-Mir et al., 2020). The integration of all three feedback components presented new opportunities for participatory approaches and highlighted the importance of feedback in multi-component occupational interventions. Research in the field of sports psychology has also shown that self-observation, hetero-observational, and intrinsic feedback can be effective in promoting skill acquisition and performance improvement in sports (Otte et al., 2020).

Without resorting to installing mirrors throughout warehouses or other workspaces, the integration of innovative technologies such as video recording and analysis, wearable devices and virtual reality can greatly enhance the efficiency of self-observation feedback training. These advanced tools offer real-time, personalized feedback, allowing for immediate adjustments and a more streamlined learning process. By utilizing technology, training programs can become more adaptable, catering to diverse learning styles and reducing the time and resources required for traditional training methods and enabling remote training opportunities, facilitating continuous progress monitoring.

Although video self-observation proves valuable, it may be insufficient alone for substantial behavioral change.



By actively involving workers in the process of observing, assessing and refining their movement patterns, this type of training fosters a more immersive and participatory learning experience.

To optimize feedback-driven transformation, according to a recent study, engaging a qualified trainer or coach is advised (Sene-Mir et al., 2020) to ensure comprehensive guidance and facilitation of all three feedback types.

What the Worker Did Well During the Task

Video observation enables both workers and supervisors to pinpoint areas of proper technique, good posture and efficient movement patterns. This positive reinforcement encourages the continued practice of safe work habits.

What Part Could Be Improved

Video analysis provides an objective assessment of a worker's movements, revealing necessary adjustments related to technique, body mechanics or ergonomic hazards. This allows workers and supervisors to strategize for injury reduction and enhanced task performance.

Examples of How It Should Be Done (Feedforward Component)

Video analysis insights guide future actions with specific, actionable improvement suggestions. Supervisors or trainers can exemplify correct techniques in person or through video, illustrating proper form and posture. This feedforward promotes efficient

and safer work practices by addressing issues proactively.

Conclusion

By actively involving workers in the process of observing, assessing and refining their movement patterns, this type of training fosters a more immersive and participatory learning experience. Key factors related to engagement include:

- personalization: resonates more deeply with individuals applying to their unique circumstances
- visual learning: video analysis caters to visual learners
- ownership and accountability: a greater sense of ownership
- self-discovery: uncover movements of which they may have been previously unaware
- interactive feedback: workers can ask questions, seek clarification and discuss their progress with trainers
- progress tracking: easy comparison of a worker's movements over time

The power of technology assists in enhancing tri-modal feedback in fostering workplace safety. By increasing

movement awareness and utilizing tools such as video analysis coupled with expert guidance, employees take ownership of their safety, promoting lasting change and a secure work environment, ultimately cultivating a culture of continuous improvement and safety awareness. **PSJ**

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Cite this article

Gianatti, T.-L. (2023, Nov.). Amplifying movement consciousness: Benefits of tri-modal feedback for enhancing workers' knowledge and practices in manual handling techniques. *Professional Safety*, 68(11), 33-34.

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