

WINWORK: CO-CREATING HEALTHY WORK ENVIRONMENTS THROUGH PARTICIPATORY OCCUPATIONAL INTERVENTIONS

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ABSTRACT

Background: Healthy work environments are increasingly recognised as essential for workers' well-being, organizational performance, and long-term sustainability. However, many occupational health interventions remain fragmented and top-down, often neglecting workers lived experiences and the integration of physical, psychological and social dimensions of work. **Objectives:** This chapter aims to describe the co-creation methodology underpinning the WinWORK project and to present initial results from participatory workshops conducted with workers and organizational leaders. **Methodology:** WinWORK adopted a participatory, multidisciplinary intervention approach implemented in a cross-border region between Portugal and Spain. Co-creation workshops were conducted with workers and leaders from multiple organizations, structured in three sequential sessions focused on identifying strengths and weaknesses, assessing risk factors, and co-designing and prioritising solutions. Three main pillars served as the foundation for the intervention: physical activity, mental health, and ergonomics. **Results:** Positive organizational factors, including teamwork, effective communication, and institutional support were identified by the participants. Thus, they also identified challenges such as manual load handling, extended static postures, excessive noise, stress, resistance to change, and inadequate workstation design. Co-created solutions prioritised task rotation, ergonomic equipment, postural support devices, workplace exercise routines, and strategies for psychological support and physical activity promotion. **Conclusions:** The WinWORK project demonstrates that co-creation workshops are a valuable tool to align scientific knowledge with workplace realities, fostering stakeholder engagement and developing feasible and sustainable occupational safety and health interventions that contribute to healthier and more resilient work environments.

Keywords: Occupational Safety and Health, Co-Creation, Healthy Workplaces, Ergonomics, Mental Health.

1. INTRODUCTION

Promoting health and well-being in the workplace has become a central pillar of contemporary occupational health strategies, particularly in response to increasing physical and psychological demands across diverse work sectors (Danna & Griffin, 1999; Randall, 2023). Work is widely recognized as a key social determinant of health due to its effects on psychological health, social relationships, quality of life and exposure to physical and biomechanical risks (Frank *et al.*, 2023). Poor working environments are consistently associated with negative health outcomes, including work-related musculoskeletal disorders (WMSDs), psychological strain, absenteeism, and reduced productivity (Bubonya, 2016; Goh *et al.*, 2015). Such consequences impose considerable costs for organizations, employees, and healthcare systems (Tvedt & Saksvik, 2012).

In Europe, WMSDs continue to be one of the most prevalent occupational health concerns, contributing significantly to disability rates and sickness absence (Bevan, 2015; Vandekerckhove *et al.*, 2021). These disorders have been associated with physical risk factors, such as repetitive movements, prolonged or awkward postures and manual material handling (EU-OSHA, 2025). However, psychological factors such high job demands, limited social support, low job control, and work-related stress have a major impact on the development and persistence of musculoskeletal symptoms (Deeney & O'Sullivan, 2009; van den Heuvel *et al.*, 2005; van der Windt *et al.*, 2000).

Regarding workplace interventions, research indicates that health promotion programs incorporating physical activity can yield positive effects on mental health, musculoskeletal pain, and work performance (Cullen *et al.*, 2018; Malik *et al.*, 2014; Proper & van Oostrom, 2019). Programs that include exercise routines, active breaks, and posture awareness strategies are linked to gains in productivity and perceived well-being, as well as decreases musculoskeletal symptoms (Andrade *et al.*, 2024; Henning *et al.*, 1997). Nevertheless, the successful implementation, adherence, and long-term sustainability of such programs remain challenging. This is frequently due to the lack of involvement of employees and organizational leaders in the design process (Nielsen, 2013; Vitrano *et al.*, 2023).

Within this framework, the WinWORK project proposes a multidisciplinary intervention aimed at promoting health and well-being in the workplace, grounded in three core pillars: ergonomics, mental health, and physical activity. Developed in the cross-border region between Portugal and Spain, the project adopts a co-creation methodology involving workers and organisational leaders from the outset. This book chapter presents and discusses the results of the co-creation workshops conducted in Portugal, focusing on stakeholders' perceptions of working conditions, key challenges, and shared priorities for intervention, and reflecting on the contribution of co-creation to the development of healthier, more inclusive, and resilient work environments.

While participatory ergonomics has traditionally focused on worker involvement in designing tasks and workstations to mitigate biomechanical risks (Elkefi *et al.*, 2025; Hansen *et al.*, 2024), WinWORK advances an integrated model that combines ergonomics, mental health, and physical activity. This holistic approach responds to recent evidence demonstrating the interdependence of physical and psychosocial risk factors in the development of WMSDs and mental distress (Riska *et al.*, 2025; Samson *et al.*, 2026). Unlike conventional top-down interventions that often fail due to low engagement (Amdan *et al.*, 2025), WinWORK's co-creation approach embed stakeholder engagement and organizational readiness as core change mechanisms. The project contributes to emerging frameworks on implementation science in OSH contexts (Houkes *et al.*, 2025) by operationalizing a transferable co-creation model addressing both individual behaviours

and organizational conditions, offering an adaptable framework for sustainable healthy work environments (Amdan *et al.*, 2025).

The objectives of this chapter are: first, to describe in detail the co-creation workshop methodology that guided the WinWORK intervention; and second, to present and discuss initial results arising from the co-creation process, identifying strengths, challenges, and prioritising solutions for improving occupational safety and health.

2. MATERIALS AND METHODS

2.1. STUDY DESIGN

This study adopted a qualitative, participatory research design based on co-creation principles. The methodology was embedded within the WinWORK project, a multidisciplinary workplace health promotion initiative developed in the cross-border region between Portugal and Spain. The co-creation approach was selected to actively involve workers and leaders in the identification of workplace strengths, challenges, and designing a workplace intervention. This ensures that the resulting solutions are not only scientifically informed but also contextually relevant, culturally acceptable, and practically feasible.

2.2. CONTEXT AND PARTICIPANTS

In Portugal, co-creation workshops were conducted across four organizations from different occupational sectors, industry, healthcare, and services. Organizations were selected to provide diversity in work processes, physical demands, and psychosocial contexts. Participants were recruited through collaborating organizations involved in the WinWORK project.

Inclusion criteria for workers were: 1) current employment in the organization, and 2) voluntary consent to engage in group-based participatory workshops. Leaders were identified based on their supervisory or managerial roles within their departments or teams. This dual-participant structure was designed to capture both the operational realities experienced by workers and the perspectives of leaders, facilitating a holistic view of organizational safety and health. A total of 64 participants engaged in the study, comprising 33 workers and 31 organizational leaders (with supervisory or managerial responsibilities), ensuring the representation of diverse perspectives (see Table 1).

Table 1: Characteristics of participating organizations and workshop participants in Portugal

Organization	Sector	Number of participants			
		Workers	Age (mean)	Leaders	Age (mean)
A	Industry	8 (87.5% male; 12.5% female)	35.8	8 (87.5% male; 12.5% female)	35.3
B	Industry	7 (14.3% male; 85.7% female)	39.3	6 (66.7% male; 33.3% female)	41.5
C	Health	8 (25.0% male; 75.0% female)	32.0	11 (100.0% female)	46.9
D	Services	10 workers (20.0% male; 80.0% female)	46.8	6 (33.3% male; 66.6% female)	54.2

2.3. CO-CREATION WORKSHOPS

The co-creation process was organized into focus groups, comprising seven to nine participants per group. This process was conducted in two small heterogeneous groups to encourage

interaction between the participants: one group for workers and one for leaders. This separation was a deliberate methodological strategy to capture distinct, hierarchical-level-specific perspectives without the potential for cross-level dynamics to influence the authenticity of responses. Conducting parallel groups allowed for the emergence of unmediated narratives from each subgroup, ensuring that the experiential knowledge of workers and the strategic viewpoints of leaders were articulated within their respective reference frameworks, thereby enriching the depth and validity of the diagnostic phase. The co-creation workshops were structured into three sequential sessions, each lasting between 60 to 90 minutes (see Table 2). Facilitators with expertise in ergonomics, occupational health, mental health, and physical activity guided the sessions using structured prompts, visual supports, and group discussion techniques. All sessions were designed to promote open dialogue, shared reflection, and collective problem-solving. The distinct inputs from workers and leaders were systematically analysed by the research team to design an intervention model. Their perspectives of workers informed the development of person-level interventions tailored to their operational realities and health needs, while leaders' insights guided organizational-level actions focused on strategic and cultural dimensions. Thus, while the groups did not interact during the co-creation workshops to preserve the integrity of their respective contributions, their inputs were methodologically integrated at the intervention design stage.

Table 2: Characteristics of co-creation workshops

Session	Designation	Characteristics
1	Identification of Strengths and Weaknesses.	The first session focused on mapping participants' perceptions of their current work environments. Through guided discussion and collaborative exercises, participants identified positive aspects (strengths) and areas of concern (weaknesses) related to work organisation, physical conditions, and psychosocial climate.
2	Identification of Risk Factors	Building on the initial mapping, the second session explored specific occupational risk factors across the three intervention pillars. Participants discussed ergonomic risks, psychosocial risks, and factors related to physical inactivity or insufficient movement during the workday. The session encouraged participants to reflect on how these risks affected their health, well-being, and work performance.
3	Co-Creation and Prioritisation of Solutions	The third session was dedicated to the co-design of solutions. Participants collaboratively generated potential interventions, drawing on both scientific inputs provided by the facilitators and their own experiential knowledge. Solutions were then discussed, refined, and prioritised based on feasibility, expected impact, and organizational context. This session also included initial planning considerations for implementation.

2.4 THEMATIC FRAMEWORK: THE THREE INTERVENTION PILLARS

The content of all workshops was structured around three interconnected evidence-based pillars that formed the conceptual core of the WinWORK project:

- **Ergonomics and physical well-being:** focusing on the prevention of WMSDs through the improvement of workstation design, tool use, work processes, and the reduction of biomechanical strain.

- **Mental health and psychosocial well-being:** addressing the identification, mitigation, and management of psychosocial risks (e.g., stress, burnout, poor social support) and the promotion of a supportive, inclusive organizational climate.
- **Physical activity:** promoting the incorporation of movement and exercise into and around the workday to counteract sedentary behavior, enhance physical fitness, and support mental well-being.

The integration of these pillars aimed to provide a holistic approach to occupational health, acknowledging the interdependence of physical, psychological, and social factors in worker health and well-being. Figure 1 presents a conceptual model of the WinWORK intervention. The model integrates the three evidence-based pillars—ergonomics, mental health, and physical activity—which address the interdependence of physical and psychosocial risk factors in occupational health (Cullen *et al.*, 2018; Proper & van Oostrom, 2019). Organizational readiness, comprising organizational culture, stakeholder engagement, and leadership commitment, serves as the foundation for the co-creation process (Nielsen & Randall, 2013; Weiner, 2009).

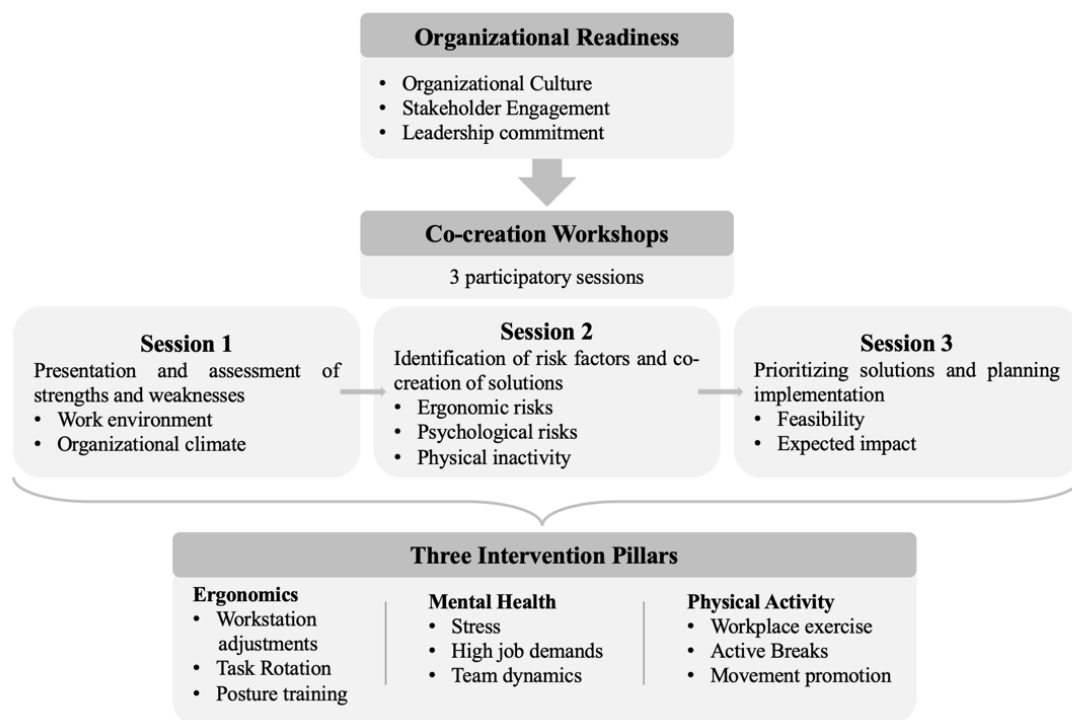


Figure 1: WinWORK Conceptual Model

2.5 DATA COLLECTION AND ANALYSIS

Data were collected through notes and structured records produced during the workshops. Qualitative data from group discussions were subjected to thematic analysis, identifying recurring themes related to strengths, challenges, risk factors, and proposed solutions. To ensure methodological rigor, the qualitative data were analysed using a deductive thematic approach, guided by the three predefined pillars of the WinWORK project: ergonomics, mental health, and physical activity. Two researchers independently coded the workshop transcripts and field notes, categorizing participants' statements according to these pillars.

Quantitative summaries were used to describe the frequency and prioritisation of identified issues and interventions. The analysis was conducted collaboratively by the research team to ensure consistency and reflexivity. For the purposes of this book chapter, only data from the Portuguese workshops were analysed and reported.

2.6. ETHICAL CONSIDERATIONS

The study was conducted in accordance with ethical principles for research involving human participants. All participants received and signed an informed consent about the objectives of the project, the voluntary nature of participation, and the confidentiality of their contributions. Informed consent was obtained prior to participation, and data were anonymised to protect participants' identities.

3. RESULTS

3.1 WORKERS' PERCEPTIONS OF THE WORK ENVIRONMENT

During the co-creation workshops, workers provided comprehensive insights into their daily experiences at work, identifying actions for improvement (see Table 3). Positive aspects consistently highlighted included strong teamwork, effective internal communication, and reliable access to personal protective equipment (PPE), which were seen as fundamental to a sense of safety and collective efficacy. On the other side, workers reported challenges that directly impact their health and well-being – ergonomic and mental issues were the most cited. Manual load handling, prolonged static postures, and repetitive tasks were directly associated with musculoskeletal discomfort and pain across all organizations. Environmental factors such as inadequate lighting and excessive noise levels were reported as aggravating conditions for workers' postures and productivity. From a psychosocial perspective, workers reported high job demands, work-related stress, and time pressure as major sources of strain that led to mental fatigue and perceived reduced well-being in their workplace.

Table 3: Suggested actions co-created by workers across the four organizations

Pillar	Suggested Actions			
	Organization A	Organization B	Organization C	Organization D
Ergonomics	- Lumbar support belts - Task rotation - Risk assessments - Training	- Lifting equipment - Task rotation - Appropriate protective footwear	- Replacement of furniture - Workplace layout - Replacement of equipment	- Replacement of furniture - Lighting - Body awareness
Mental Health	- Psychological support - Work dynamics - Shift rotation	- Improving teamwork - Workload distribution - Work organization	- Team building - Conflict resolution methods - Psychological support - Relaxation activities	- Increased mutual support - Teleworking - Stress management strategies
Physical activity	- Workplace gymnastics	- Workplace gymnastics	- Workplace gymnastics - Active breaks	- Workplace gymnastics - Scheduled breaks

3.2 LEADERS' PERCEPTIONS OF ORGANIZATIONAL CONDITIONS

Organizational leaders acknowledged the existing framework of institutional support and formal occupational safety and health (OSH) policies (see Table 4). Their analysis focused more on strategic and cultural dimensions influencing workplace health. The primary barriers identified were organizational rather than purely physical. Resistance to change among staff was emphasized as a major impediment to implementing new practices or preventive measures. Physical workspace constraints, including suboptimal workstation layouts and thermal discomfort in specific areas, were also recognized as legitimate concerns requiring attention. Leaders acknowledged a particular awareness of the obstacles involved with programs requiring large behavioural or cultural adjustments within their teams, emphasising the importance of effective change management in addition to technical solutions.

Table 4: Suggested actions co-created by organizational leaders across the four organizations

Pillar	Suggested Actions			
	Organization A	Organization B	Organization C	Organization D
Ergonomics	- Workstation layout - Task rotation - Lumbar support belts - Height-adjustable desks - Larger screens - Improve transport and handling of loads - Improve thermal environment - Improve lighting	- Air conditioning - Task rotation - Risk assessment	- Replacement of furniture - Replacement of equipment - Posture training	- Workplace organization - Replacement of furniture - Training
Mental Health	- Team activities - Psychology consultations - Interdepartmental dynamics - Training	- Activity promotion - Work dynamics - Psychological support	- Team Building - Psychological support - Mindfulness - Yoga/tai chi - Group dynamics - Task management training	- Psychological support - Psychology consultations
Physical activity	- Gym - Team sports - Workplace gymnastics - Team building	- Gym - Workplace gymnastics	- Active breaks - Workplace gymnastics	- Collaboration with gyms - Workplace gymnastics - Flexible schedules

3.3 SHARED PRIORITIES FOR INTERVENTION

The quantitative assessment of stakeholder acceptance for the ten co-created interventions provides critical insight into implementation readiness and highlights points of consensus and divergence. Participants rated each proposed action as "Yes," "No," or "Don't Know."

Organization A (Industry, n = 16)

The acceptance profile for Organization A (Figure 1) indicates very high readiness for implementation. Ergonomic and training-focused interventions received near-unanimous support. Action 7 (ergonomic analysis with sensors) and Action 8 (practical posture training) were accepted by all 16 participants (100%). Training on psychosocial risks and healthy lifestyles

(Actions 3 and 4) also achieved perfect acceptance scores (15 Yes, 0 No/Don't Know). There was strong approval for the mobile wellness app (Action 6: 12 Yes) and active breaks (Action 10: 13 Yes). The main points of hesitation were observed for Action 5 (VR training), where 6 participants responded, "Don't Know," and Action 9 (Mindfulness), which received 6 "No" responses.

Organization B (Industry, n = 13)

Organization B exhibited a remarkably high acceptance profile, particularly for practical interventions (Figure 2). Ergonomic actions achieved perfect consensus, with Action 7 and Action 8 receiving unanimous "Yes" responses from all 13 participants. Training programs (Actions 1-4) and the mobile application (Action 6) also garnered very strong support, with 11-12 "Yes" responses each. Similar to Organization A, Action 5 (VR training) showed the greatest variability, with approximately 8 "Yes," 2 "No," and 3 "Don't Know" responses. Action 9 (Mindfulness) received generally positive feedback (~10 Yes) but with some reservations (2 "Don't Know", 1 "No").

Organization C (Healthcare, n = 19)

The data for Organization C (Figure 3) reveals high acceptance but with more nuanced variation, particularly for leadership-focused actions. Practical and psychosocial interventions were highly endorsed. Action 8 (Posture training) received unanimous "Yes" responses (12/12). Actions 3, 4, 6, 7, and 10 all achieved acceptance rates of 83% or higher (10-12 "Yes" out of 12 participants). However, Action 2 (Leadership training) received only 7 "Yes" versus 4 "No" and 1 "Don't Know," indicating ambivalence among this group regarding targeted leadership sessions. Action 5 (VR) again showed the lowest acceptance, with only 2 "Yes" and 8 "Don't Know" responses, highlighting significant technological hesitancy in this sector.

Organization D (Services, n = 16)

The results for Organization D, presented as percentages (Figure 4), confirm the cross-cutting trends. There is overwhelming support for ergonomic and behavioural actions. Actions 7 and 8 (Ergonomic analysis and Posture training) achieved ~100% acceptance (16.0% and 15.2% "Yes," with negligible "No/Don't Know"). The mobile app (A6: 16.0% Yes) and active breaks (A10: 15.2% Yes) were also strongly supported. The primary outlier was again Action 5 (VR training), which had the highest "No" response rate (3.4%) and notable "Don't Know" (0.1%), reinforcing the pattern of technological hesitancy across all sectors.

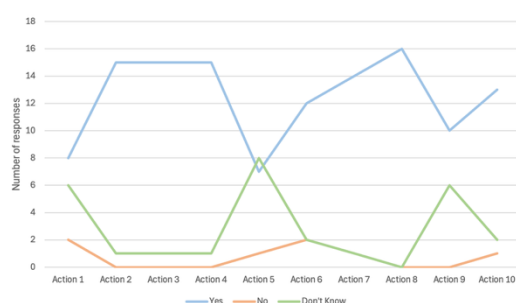


Figure 2: Interventions for Organization A

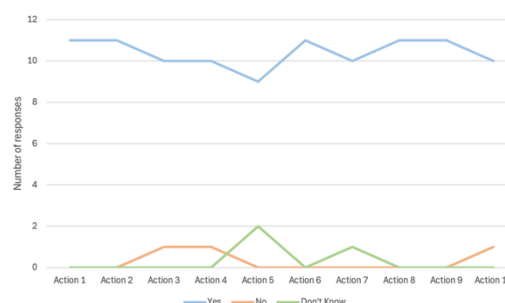


Figure 3: Interventions for Organization B

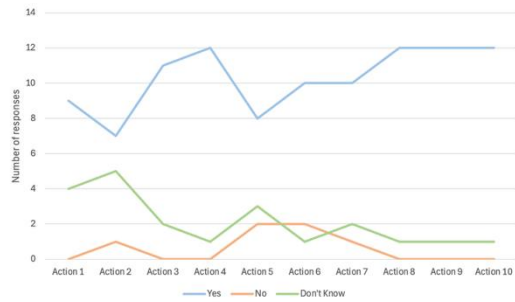


Figure 4: Interventions for Organization C

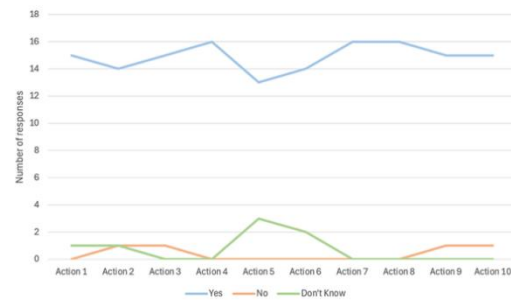


Figure 5: Interventions for Organization D

Action 1. Delivery of training sessions for employees and leaders (managers) on well-being over an 8-month period. **Action 2.** Delivery of training sessions for leaders (managers) on well-being, lasting 45 to 60 minutes, once a month. **Action 3.** Delivery of training sessions for employees on psychosocial risks, lasting 45 to 60 minutes, once a month. **Action 4.** Delivery of training sessions for employees on the promotion of healthy lifestyles, physical activity, and postural awareness, lasting 45 to 60 minutes, once a month. **Action 5.** Delivery of well-being training using virtual reality goggles (immersive environments). **Action 6.** Use of a mobile application with well-being information for everyone. **Action 7.** Conducting ergonomic assessments of workstations, using motion sensors to analyse posture during task performance. **Action 8.** Practical training on body awareness and the adoption of appropriate working postures. **Action 9.** Delivery of guided sessions on mindfulness, conscious breathing, meditation, and other stress-reduction practices. **Action 10.** Implementation of a workplace physical activity program/group active breaks.

3.4. CROSS-SECTORAL COMPARISON OF ACCEPTANCE PATTERNS

While Figures 2-5 present detailed acceptance data for each organization individually, Table 5 offers a synthetic cross-sectoral analysis, aggregating patterns by sector (industry, healthcare, services) to identify overarching trends and divergences. This comparative overview highlights how sector-specific occupational demands and organizational contexts may shape stakeholder receptivity to different types of interventions. The two industry organizations (A and B) are presented separately to reflect their distinct acceptance profiles.

Table 5: Comparison of Intervention Acceptance Trends by Sector

Category	Actions	Organization A	Organization B	Organization C	Organization D
Traditional Employee Training	A1, A3, A4	☐ A1 ☑ A3 e A4	☑	☐ A1 ☑ A3 e A4	☑
Traditional Leadership Training	A1, A2	☑	☑	☐	☑
Technology-mediated interventions	A5, A6	☐ VR ☑ APP	☑ VR ☑ APP	☐ VR ☑ APP	☑ VR ☑ APP
Ergonomic and physical activity interventions	A7, A8, A10	☑	☑	☑	☑
Mental health (mindfulness)	A9	☐	☑	☑	☑

☑ ≥ 70% “Yes” responses and < 20% “No” responses (clear acceptance)

☐ ≥ 20% “Don’t Know” responses (hesitation/uncertainty)

4. DISCUSSION

The co-creation workshops conducted within the WinWORK project provided rich insights into how workers and organizational leaders perceive their work environments, revealing both convergences and divergences that have important implications for occupational health intervention design.

The perspectives gathered from workers highlighted the multifaceted character of workplace health challenges. Workers from all four organizations reported a combination of physical and psychosocial risks, with manual load handling, prolonged static postures, and repetitive tasks being directly associated with musculoskeletal discomfort (Costa & Vieira, 2010; EU-OSHA, 2025). In parallel, high job demands, time pressure, and work-related stress were identified as key contributors to mental fatigue and well-being. This dual impact – physical and psychological – aligns with the literature, reinforcing the interdependence of biomechanical and psychosocial risk factors in the emergence and development of WMSDs (Deeney & O’Sullivan, 2009; van den Heuvel *et al.*, 2005). The consistency of these findings across the three sectors – industry, healthcare, and services – points to the need for comprehensive intervention strategies capable of addressing both dimensions simultaneously (Cullen *et al.*, 2018).

When examining the viewpoints of organizational leaders, a distinct set of priorities emerged. Although leaders acknowledged certain physical constraints raised by workers – such as poorly designed workstations and issues with thermal comfort – their attention was predominantly directed toward strategic and cultural considerations. From their standpoint, the primary barrier to introducing preventive measures or new workplace practices was employee resistance to change. This discrepancy in perceptions between workers and leaders is a well-documented phenomenon in the literature: leaders often interpret implementation challenges through the lens of employee motivation or culture, while workers attribute difficulties to structural and workload-related factors (Nielsen, 2013).

The quantitative assessment of the ten co-created actions (Figures 2-5) reveals that acceptance patterns are not uniform across organizations. As synthesized in Table 5, grouping actions into thematic categories highlights cross-sectoral trends and divergences that merit further interpretation. The adoption of ergonomic interventions, such as posture training, across all four organizations indicates an awareness of the problem and a need for tangible, directly applicable solutions. Ergonomic interventions (A7, A8, A10) achieved very high acceptance across all organizations, with A8 (practical posture training) receiving unanimous “Yes” responses in Organizations A, B and D, and near-unanimous support in Organization C (12 “Yes” and 1 “Don’t know”). This consensus reflects the tangible nature of biomechanical risks – manual load handling in industry, patient handling in healthcare, prolonged static postures in services (Costa & Vieira, 2010) – which workers and leaders recognize as immediate priorities. Robust evidence supporting the effectiveness of participatory ergonomic interventions in lowering pain and discomfort lends credence to these results (Rasmussen *et al.*, 2015; Sundstrup *et al.*, 2020).

However, the acceptance of innovative approaches—particularly Virtual Reality (VR) training (Action 5) and mindfulness (Action 9)—appears to be significantly shaped not only by sectoral work cultures and professional identities but, more importantly, by organizational-level factors that cut across sectoral boundaries (Damschroder *et al.*, 2009; Nielsen & Randall, 2013). Reluctance regarding VR training was one of the most noteworthy results (action 5). While some hesitation was present across all sectors, it was significantly higher in Organization A (industry), where 50.0% of participants responded “Don’t Know”. This finding is particularly noteworthy because both Organizations A and B operate in the industrial sector, yet their acceptance profiles

diverged. These observations imply that sector alone does not provide a complete explanation for variations in technology acceptance. Instead, organizational-level factors appear to exert a more substantial influence (Taherdoost, 2018; Yang *et al.*, 2024). The high level of uncertainty observed in Organization A may reflect a perceived lack of adequate infrastructure, insufficient technical support, or poor alignment with established work processes (Gagnon *et al.*, 2012). This is corroborated by Sacks *et al.*, (2013), who demonstrated that implementation uncertainty is a significant obstacle to workplace technology adoption in work environments, frequently surpassing negative toward the technology itself. The demographic profile of Organization A – with a predominantly male, younger workforce – might suggest greater technological affinity, yet the data show an opposite pattern. According to Venkatesh *et al.*, (2012) and Parasuraman & Colby, (2015), this paradox reinforces the idea that prior exposure, organizational learning history, and the perceived relevance of technology to tasks may have a greater impact than demographic variables alone.

A distinct pattern also emerged regarding uncertainty toward mindfulness initiatives (Action 9), with Organization A again standing out. While Organizations B, C, and D demonstrated generally positive acceptance (with 11, 12, and 15 "Yes" responses respectively), Organization A registered 10 "Yes" responses but 6 "Don't Know" responses (37.5%), indicating considerable ambiguity. Research indicates that the success of mindfulness programs is heavily mediated by organizational culture and the perceived fit with employee values (Dreison *et al.*, 2015). In contexts where mental health practices are not yet normalized or where employees lack familiarity with mindfulness concepts, uncertainty may manifest as "Don't Know" responses rather than outright rejection (Ihl *et al.*, 2022). This interpretation aligns with critical perspectives arguing that mindfulness, when implemented without proper contextual grounding, can be perceived as individualizing structural workplace stressors and shifting responsibility from employers to employees (Stanley, 2012; Van Gordon *et al.*, 2014). The elevated uncertainty observed in Organization A may therefore indicate a workforce still unfamiliar with—and not yet culturally oriented toward—mindfulness-based approaches.

Regarding leadership training (Action 2), reluctance was observed exclusively within the healthcare sector (Organization C), with 5 out of 13 participants (38.5%) responding "Don't Know" or "No". This tendency may reflect the distinct professional identity of healthcare workers. Recent evidence indicates that despite the widespread availability of leadership training programs, there are still limited consensus regarding their design, content, and evaluation methods (Phillipson *et al.*, 2025). The hesitancy observed may also reflect that healthcare professionals frequently perceive leadership training as not addressing the specific challenges of clinical practice, particularly when programmes lack integration of their daily work realities. This is compounded by the fact that evaluations predominantly focus on lower-level subjective outcomes rather than demonstrating tangible improvements in clinical or organizational performance (Abujaber *et al.*, 2024).

This study highlights a paradox in OSH interventions: although there is a consensus on traditional, well-established solutions, the adoption of innovative approaches (VR, mindfulness) faces acceptance barriers that seem more cultural, and contextual than technical. This emphasises the critical significance of early user involvement in intervention design, clear communication benefits, and specific change management techniques that accompany technical innovation. Therefore, a phased approach should be used for successful implementation: build trust by leveraging the strong consensus surrounding ergonomic and behavioural actions, then introduce

more innovative approaches through pilot projects that clearly show their added value, thereby holistically addressing the identified physical and psychosocial needs.

5. CONCLUSIONS

This study presented the results of co-creation workshops conducted in Portugal within the framework of the WinWORK project, highlighting the value of participatory and multidisciplinary approaches to workplace health promotion. The findings emphasize the multifaceted characters of work-related health and well-being by showing that workers and leaders have significant concerns about their working conditions, namely about physical and psychosocial factors. The co-creation workshops made it possible to identify context-specific strengths, weaknesses, and priorities. The results showed that psychosocial risk factors such as work pressure and resistance to change are closely linked to biomechanical risk factors such as manual load handling and prolonged static postures.

By integrating ergonomics, mental health, and physical activity, the WinWORK projects show how collaborative approaches can close the gap between scientific evidence and workplace practice. The active involvement of stakeholders facilitated the development of feasible, acceptable, and potentially sustainable solutions, such as task rotation, ergonomic adjustments, workplace-based physical activity programs, and strategies to support psychological well-being. In order to effectively implement preventive OSH interventions, this approach emphasises the significance of organizational commitment, leadership engagement, continuous discussion, and stakeholder engagement. The WinWORK project addresses this through structured monitoring of pilot actions and by ensuring that technological tools remain available to organizations beyond the project's duration, supported by business associations for broader dissemination. Resistance to change and organizational constraints continue to be major challenges, suggesting that in future projects, technical solutions should be paired with change management strategies.

Overall, this study underscores that co-creation is an effective mechanism for fostering healthier, more inclusive, and resilient work environments. Participatory interventions like WinWORK can significantly contribute to the prevention of work-related health issues and the development of sustainable occupational health practices across a variety of organisational contexts by recognising local knowledge and integrating it with scientific knowledge.

LIMITATIONS AND FUTURE RESEARCH

Despite the valuable insights generated through the co-creation workshops, this study has some limitations that should be acknowledged. The findings are based on a relatively small sample of organizations and participants from specific sectors in Portugal, which may limit the generalizability of the results to other contexts or countries. Future research should focus on implementing and evaluating the co-created interventions in a larger sample, assessing the long-term effectiveness and sustainability of each work context, and including quantitative outcome measures to strengthen the evidence base.

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