



The association of psychosocial risk factors at work and musculoskeletal disorders: a multi-survey examination.

Do psychological risks at work contribute to musculoskeletal disorders? Research evidence and prevention strategies.

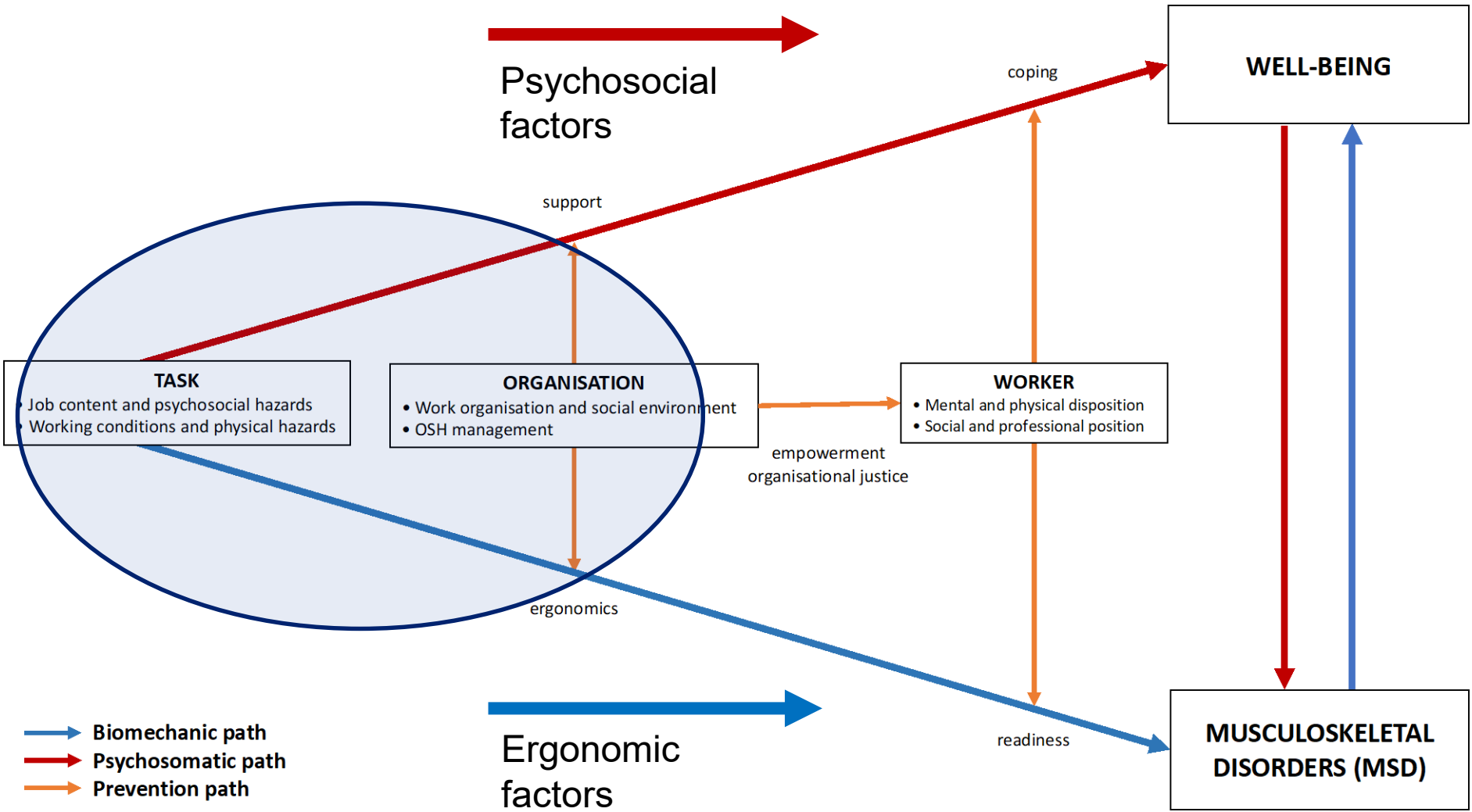
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11 March 2021, EU-OSHA

“Y penser sans cesse ne labourera pas le champ.”

“You'll never plough a field by turning it over in your mind.”

Meaning: don't expect physical results from mental action.

> With respect to the relation between psychosocial factors and musculoskeletal disorders, this is exactly what we will be investigating.



Two questions

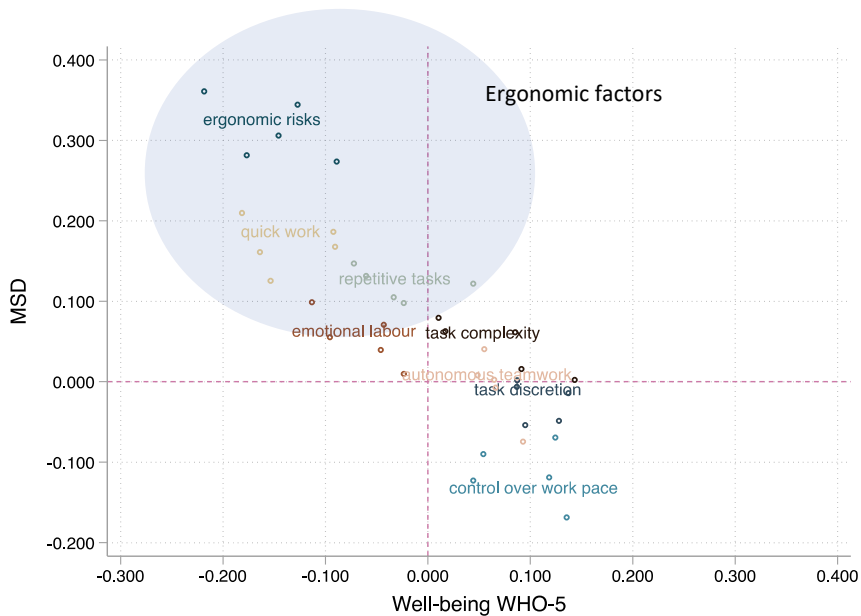
1. Are psychosocial factors related to musculoskeletal disorders?
2. What role do preventative strategies play?

Are psychosocial factors related to musculoskeletal disorders?

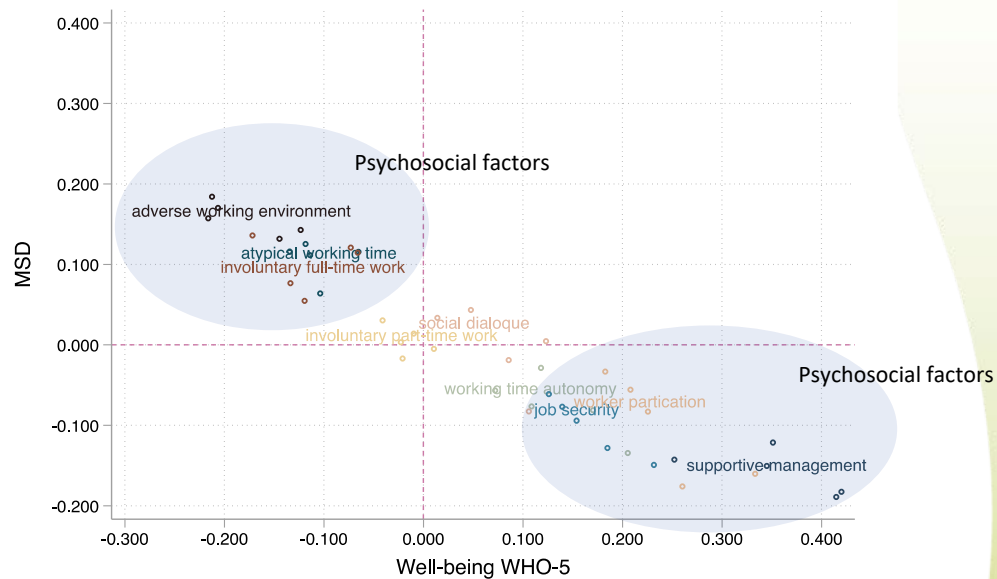
Consistent correlations across the EU

Stronger PSF effects within the domains of employment conditions and social relations

Working conditions



Employment conditions and social relations



Types of effects

Correlations and estimated effects in cross-sectional survey data can be biased

To test causal relations, longitudinal data would be needed

▪ Direct effect

- Ergonomic risks → MSDs

▪ Controlled effects

- Quick work → MSDs
- Hypothetical (!)
 - Catering and accommodation → quick work
 - Catering and accommodation → high turnover, poor investment in workers → MSDs
- **Worker characteristics (age, gender, education, ethnic origin) and firms size explain only 6% of MSDs in our model and do not change the direct effects found**

▪ Mediation effect

- Supportive management → well-being
- Well-being → MSDs less likely

▪ Moderation effect or interaction

- Ergonomic risks + worker participation → MSDs less likely
- (we were unable to show that the direct effect of worker participation is in fact a moderation effect)

▪ Reverse causality

- OSH risk assessment → MSDs ?
- MSDs → OSH risk assessments !

Effects of psychosocial risks are mediated by well-being and work-life balance

| MSD | (2) | (5) |
|------------------------|------------------|------------------|
| Ergonomic risks | 0.624*** | 0.496*** |
| Repetitive tasks | 0.006 | 0.009 |
| Quick work | 0.058*** | 0.027 |
| Emotional labour | -0.015 | -0.022 |
| Task complexity | 0.057*** | 0.065*** |
| Task discretion | 0.071*** | 0.062*** |
| Control over work pace | -0.007 | -0.001 |
| Autonomous teamwork | -0.008 | 0.003 |
| Atypical working hours | 0.048** | 0.037* |
| Working time autonomy | -0.007 | -0.010 |
| Inv. part-time work | 0.034** | 0.035** |
| Inv. overtime work | 0.051*** | 0.034*** |
| Adverse work env. | 0.084*** | 0.063*** |
| Supportive management | -0.128*** | 0.022 |
| Job security | -0.119*** | -0.005 |
| Social dialogue | 0.033** | 0.027* |
| Worker participation | -0.083*** | -0.077*** |
| Well-being (WHO) | | -0.289*** |
| Work-life balance | | -0.148*** |
| General health | | -0.416*** |

Ergonomic factors

Job demands

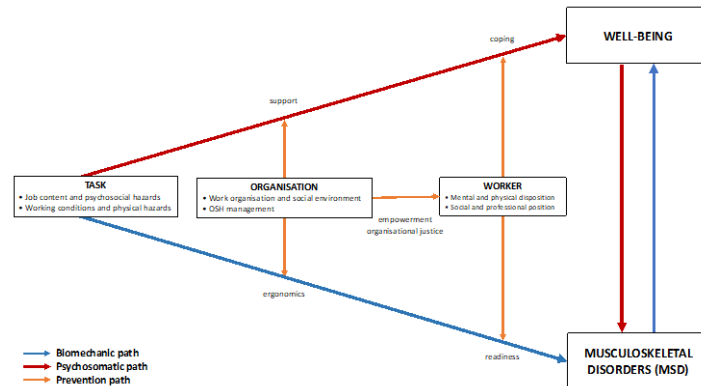
Autonomy
→ ineffective

Working time
→ hazard

Social relations
→ well-being

Mediation & controls

| Well-being | (2) | (5) |
|------------------|------------------|---------------|
| Ergonomic risks | -0.119*** | -0.004 |
| Repetitive tasks | 0.014** | 0.012** |
| Quick work | -0.036*** | 0.002 |

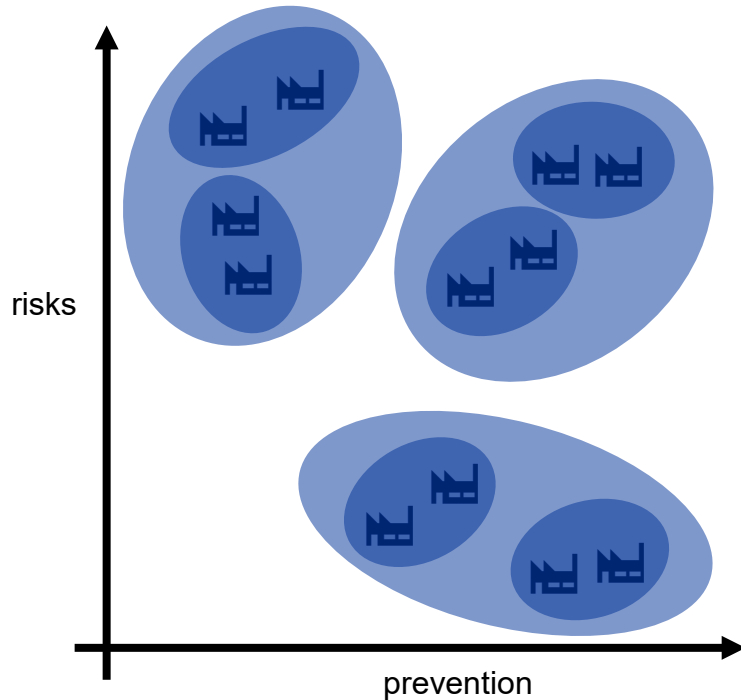


→ Biomechanic path
→ Psychosomatic path
→ Prevention path

| | | |
|-----------------------|----------|------------------|
| Adverse work env. | 0.040*** | 0.020*** |
| Supportive management | 0.200*** | 0.138*** |
| Job security | 0.085*** | 0.039*** |
| Social dialogue | 0.020*** | 0.028*** |
| Worker participation | 0.074*** | 0.073*** |
| MSD | | -0.069*** |
| Work-life balance | | 0.221*** |
| General health | | 0.281*** |

What role do preventative strategies play?

We have grouped establishments with similar patterns of risks and prevention strategies.



Variables from ESENER

▪ Risks

- Ergonomic risks
- Psychosocial risks
- Digitalisation

▪ Participatory prevention

- Formal emp. representation
- Workers' participation

▪ Procedural prevention

- OSH assessments
- General OSH risk prevention
- Psychosocial risk prevention
- Health awareness programmes
- OSH training

What role do preventative strategies play?

Six OSH-classes capture risks and strategies

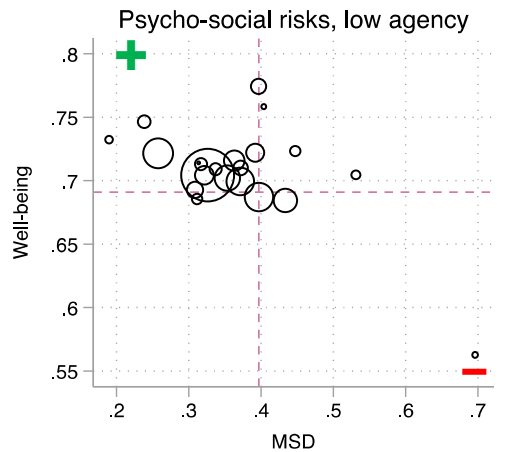
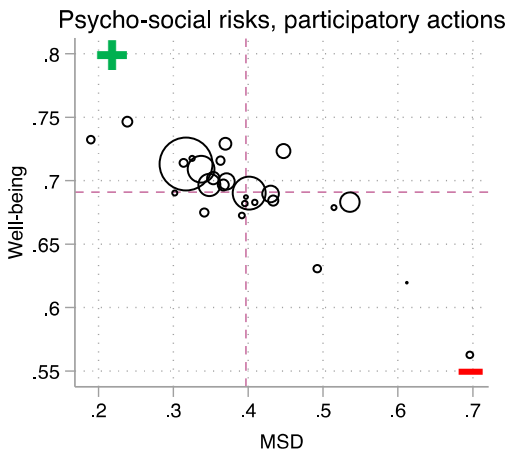
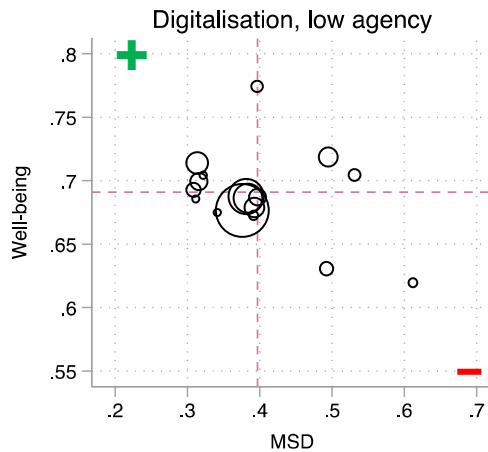
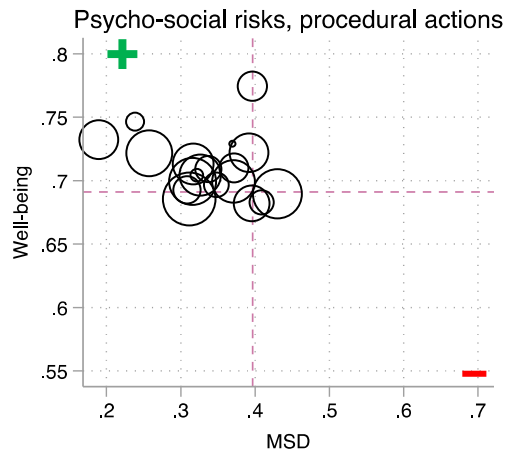
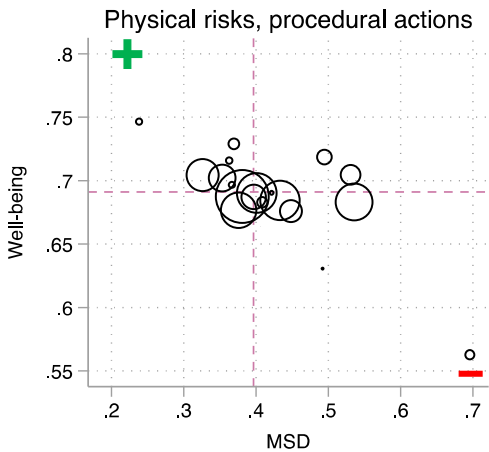
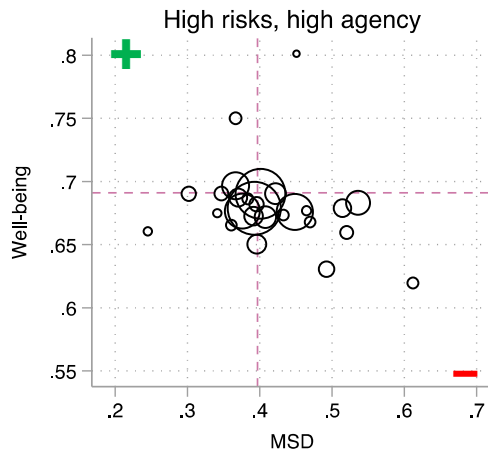
- OSH classes with more risks (1-2-4)**
 - HR-HA (1):** high risk, high agency
 - PH-PR (2):** dominantly physical risks, procedural actions
 - DI-LA (4):** dominantly psychosocial risks in the context of digitalisation at the workplace, low agency
- Typical activities: industry, agriculture, construction, transport
- OSH classes with less risks (3-5-6)**
 - PS-PR (3):** psychosocial risks, procedural actions
 - PS-PA (5):** psychosocial risks, participatory actions
 - PS-LA (6):** psychosocial risks, low agency
- Typically smaller scale establishments in service industries

| | | Full sample | 1 | 2 | 3 | 4 | 5 | 6 |
|--------------------------|------------------------------|-------------|-------|-------|-------|-------|-------|-------|
| | | | HR-HA | PH-PR | PS-PR | DI-LA | PS-PA | PS-LA |
| risks | Ergonomic risks | | 69% | 77% | 4% | 45% | 23% | 29% |
| | Psychosocial risks | | 66% | 50% | 47% | 60% | 44% | 44% |
| | Digitalisation | | 41% | 18% | 23% | 100% | 2% | 1% |
| participation | Formal emp. representation | | 97% | 9% | 0% | 33% | 72% | 0% |
| | Workers' participation | | 73% | 16% | 14% | 38% | 75% | 0% |
| procedures | OSH assessments | | 83% | 56% | 45% | 36% | 18% | 20% |
| | General OSH risk prevention | | 71% | 68% | 4% | 10% | 7% | 0% |
| | Psychosocial risk prevention | | 72% | 55% | 98% | 25% | 29% | 0% |
| | Health awareness programmes | | 74% | 54% | 54% | 10% | 44% | 23% |
| | OSH training | | 38% | 45% | 1% | 2% | 2% | 0% |
| Number of est. in survey | | | 9826 | 6459 | 3508 | 2724 | 6565 | 8378 |

Risks
economic activity

| | | Physical Risks | Psy-Soc Risks | High Risk | Low Risks |
|----------------------------------|---------------|--|--|--|-----------|
| Strategies establishment size | Procedural | PH-PR (2) 17% of est. 14% of emp. | PS-PR (3) 11% of est. 6% of emp. | | |
| | Participatory | | PS-PA (5) 19% of est. 16% of emp. | | |
| | High Agency | | | HR-HA (1) 18% of est. 46% of emp. | |
| | Low Agency | | PS-LA (6) 27% of est. 12% of emp. | DI-LA (4) 7% of est. 6% of emp. | |

Mapping OSH classes



What role do preventative strategies play?

At the establishment level, formal representation and OSH training are associated with lower incidence of MSD.

Beware for reverse causality: MSD → worker participation, OSH assessments, risk prevention, ...

| | MSD | Well-being |
|-----------------------------|------------------|-----------------|
| Ergonomic risks | 0.425*** | -0.003 |
| Psychosocial risks | -0.060 | -0.016 |
| Digitalisation | -0.488*** | 0.078 |
| Formal emp. rep. | -0.137*** | -0.011 |
| Workers' particip. | 0.446*** | -0.236*** |
| OSH assessments | 0.148*** | 0.010 |
| Gen. OSH risk prev. | 0.126 | -0.059 |
| Psy-Soc risk prev. | 0.087 | 0.117*** |
| Health awareness programmes | 0.005 | 0.036 |
| OSH training | -0.275*** | 0.013 |
| Constant | 0.023 | 0.809*** |
| r2 | 0.024 | 0.014 |
| N | 21 111 | 21 090 |

Conclusions

▪ Psychosocial factors are associated with musculoskeletal disorders

- Correlations are consistent across the EU
- Direct adverse impact of working time + mediation by work-life balance
- Direct favourable impact of worker participation
- Favourable impact of supportive management and job security, mediated by well-being
- Weak effects of autonomy-related factors
- Socio-demographic characteristics, firm size, sector and occupation are much less important than job demands and resources

▪ Establishments can be ordered into six OSH classes, combining risks and strategies

- Risks are mainly derived from the economic activity (sector)
- Strategies (procedures or participation) are linked to the firm/establishment size
- Combining **ESERNER** data on OSH practices in establishment and **EWCS** data on MSDs and well-being:
 - The pathway from PSF to MSD cannot be established at the establishment level
 - Formal employee representation and OSH-training are associated with lower MSD risks
 - Psychosocial risk prevention is associated with better well-being
 - Paradoxical effects point to reverse causality: problems lead to coping efforts

Thanks !

Questions ?

We welcome your feedback and ideas!

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