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Scientific evidence suggests a changed approach in ergonomic intervention research

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Ergonomic interventions have generally been unsuccessful in improving workers' health, with concurrent rationalization efforts negating potentially successful intervention initiatives. We propose the two aims are considered simultaneously, aiming at the joint consideration of competitive performance and work environment in a long-term perspective ("organizational sustainability"). A prerequisite is a high level of dialogue between the different groups of stakeholders, and we argue that the Nordic countries, through high levels of trust and justice (social capital), have unique opportunity to carry out such research. The present authors bring forth the vision of "a Nordic Model for development of more sustainable production systems".

Keywords: Organizational sustainability, social capital, organisational redesign, implementation

1. Background and purpose

The ergonomic pitfall: The systematic review by Westgaard and Winkel (2011) concludes that ergonomic interventions have limited musculoskeletal and mental health effects in a long-range perspective while rationalization has predominant negative health effects. The negative impact of rationalization on ergonomics seems to be due to reduction of non-Value Added Work (non-VAW), which generally offers less risky exposures compared to VAW (e.g. Kazmierczak et al., 2005; Jonker et al., 2011; Jonker et al., 2013; Östensvik et al., 2008; Palmerud et al., 2012). The reduction or elimination of potential risk-reducing effects of ergonomics due to simultaneous rationalization initiatives has

been called “the ergonomic pitfall” (Winkel 1989; Winkel and Westgaard 1996). Ergonomic interventions are introduced by one group of stakeholders, the ergonomists, while another group of stakeholders focuses on rationalization. Both groups seem to have a “tunnel vision” focusing on immediate benefits excluding potential side effects and their implications in the long run.

The innovation pitfall: Rationalization processes may also become counteracting. Thus, the participatory (“horizontal”) rationalization processes Value Stream Mapping (VSM, a Lean tool) aim at time savings and may therefore increase exposure porosity for the employees (improved work environment). This may offer extra allowance for the employees. But in fact, the saved time is often used to perform extra tasks as a result of “vertical” processes for cost reductions demanding more work to be performed by fewer people, i.e. causing a work intensification (Winkel et al., 2015). Such interactions between the horizontal and vertical processes create an “innovation pitfall” (cf. Neumann et al., conditionally accepted).

Organizational sustainability: We therefore need more research on tools and methodologies that allow concurrent tuning of performance and wellbeing in a rationalization process. The aim should be to increase organizational sustainability; i.e. the joint consideration of competitive performance and working conditions in a long term perspective (Westgaard and Winkel 2011).

2. New tools integrating health ergonomics and performance

On this background, participatory approaches and tools have been developed for simultaneous consideration of ergonomics and health promotive conditions in rationalization processes. Examples are the process tools Ergonomic Value Stream Mapping (ErgoVSM) (Jarebrant et al., 2016a; Jarebrant et al., 2016b), integration of workplace health protection, health promotion, and continuous improvement (i.e., Kaizen) (Ikuma et al 2011; von Thiele Schwartz, et al. 2015), and increased participation, autonomy, and ability to influence the work for cleaners (Öhrling 2014). The need for new forms of collaboration and coordination between workers, management, designers, and ergonomists with different work practices and organizational positions has been discussed by Broberg et al. (2011).

3. Need for dialogues between key stakeholders

A key issue in the improvement of organizational sustainability seems to be the extent to which dialogue between key stakeholders takes a more holistic systems perspective. According to Abrahamsson (2002, 2014) this may be facilitated by increasing gender equality. Dialogue is needed to support engagement and keep balance between resources and demands; i.e. horizontal dialogs at floor level and vertical dialogues between top management and floor level. This kind of governance through dialogue, based on trust, has been named “practice-servant governance” and is associated with increased engagement among professionals and teams (Dellve et al., 2016).

4. Conflicts and opportunities at society level

Unfortunately, the benefits of a long-term focus on organizational sustainability seem difficult to understand and realize for many key stakeholders. In 2012 this was clearly expressed by the British Prime Minister David Cameron: "So one of the Coalition's New Year resolutions is this: kill off the health and safety culture for good," saying that it "has become an albatross around the neck of British businesses" (cited from "the London Evening Standard", January 5, 2012). But a raising awareness of the significance of organizational sustainability seems to occur within the business world: A paper by Spreitzer and Porath (2012) in Harvard Business Review, concluded that "... Across industries and job types, we found that people who fit our description of thriving demonstrated 16% better overall performance". Further, a leader in periodical The Economist (2nd February, 2013) states: "Politicians from both right and left could learn from the Nordic countries" aiming at "the Nordic model".

5. "The Nordic Model"

The Nordic model has been the subject of extensive discussions and studies (e.g. Schiller et al., 1993). The broader concept of "The Nordic model" is somewhat more difficult to define, but includes "mutual recognition" and trust between the parties. Dialogue-based change processes may be more common in the Nordic countries compared to other parts of the world. The key point in the present context is the collaborative actions of stakeholders with different primary objectives (work environment, efficient production systems, economic success, customer needs) to ensure sustainable work systems in a long-term perspective. It is argued that the Nordic countries have unique opportunities in this respect, with a proven successful outcome in terms of macroeconomic indicators (The Economist, February 2, 2013). This status is supported by a high level of trust at all levels of the society and is backed by a flexible legal framework that recognize the need for a competitive work life together with the need to ensure workers' health and welfare.

Recent studies show that the Nordic countries occupy worldwide leading positions regarding social capital (Tinggaard Svendsen and Haase Svendsen 2006) and this may have played a key role as a fuel for organizational engagement among workers (reviewed by Olesen et al., 2008). High level of social capital in the Nordic countries may, in turn, have contributed significantly to the impressive economic growth in these countries (discussed by Olesen et al., 2008).

The unique circumstances of the Nordic countries may find its origin hundreds of years ago. These countries developed a weak feudal system compared to the rest of Europe. The power struggles between the Crown and the nobility allowed peasants personal freedom and the right to the land they worked on. When later, an industrial workforce was recruited from the countryside, employers, in the unique spread of collective agreements, more easily confirmed their freedom and rights. During the Great Depression political alliances between farmers and workers laid the foundations of welfare policies in all the Nordic countries. This political truce made the pacification of the turbulent labour markets urgent and the problem was solved through negotiations between the major workers' and employers' organizations (Schiller, forthcoming). This collaboration was extended in the 1960-ties by cooperation

at the factory floor, with studies of technical and organizational renewal of the production line, based on sociotechnical theories. Well-known examples are experiments with self-governed groups in Norway (Thorsrud and Emery, 1969) and the Volvo experiments with new factory layout (e.g. Kadefors et al, 1996). This culture of cooperation between stakeholders at different organizational levels of the work life and within companies and public enterprises in the Nordic countries has generally survived till today, in face of threats such as declining trade union membership and globalization. Although surely, companies without strong collaborative culture will exist in the Nordic countries and vice versa for European and American companies, we posit that company culture aimed at collaboration and negotiated settlement is a dominant trait in Nordic working life, more so than in other industrialized countries. Hence, our labelling of the proposed intervention research model as “the Nordic model”.

6. Implications of a new research agenda

The previous section argues that specific opportunities exist within the Nordic countries for projects actively including more stakeholders and with project aims that in traditional intervention research are not jointly considered. Our hypothesis assumes an ingrained Nordic culture that facilitates collaboration between these stakeholders with different primary aims. This, in contrast to other countries, where the same stakeholders find themselves unable to establish the necessary dialogue to resolve conflict issues. A corollary is that the type of intervention project we argue for is more readily established in Nordic countries and we hope to see a Nordic research tradition developing that is generally recognized within the research community.

We see the need to substantiate or render probable this hypothesis and to understand mechanisms that take place at company level. In particular, we need to understand aspects of the dialogue process: what are critical prerequisites for a positive environment for dialogues, and how can such insight be measured and made available to a wider audience in a meaningful (applicable) way? Furthermore, are the Nordic countries really distinguished from other industrialized countries in this respect? This would be important insight to facilitate similar comprehensive intervention projects worldwide, and help minimize barriers to establish intervention projects in the Nordic countries (as surely there will be mixed experiences also here). In practical terms, this necessitates an expanded research protocol that includes recording of experiences when establishing intervention projects, such as company culture including dialogue between stakeholders with conflicting primary aims. In established intervention projects, it is important to include intermediate variables or actions that offer the prospect of improved work environment, even though the hoped for final outcome is better workers' health. In general, many aspects of project evaluation should take place.

6. Conclusions

- So far ergonomic interventions have had a predominant “tunnel vision” focusing on immediate benefits excluding potential side effects and implications in the long run.
- Scientific evidence suggests a broader approach considering both health and production in order to increase organizational sustainability; e.g. by development of tools and methodologies that allow concurrent tuning of performance and wellbeing considerations in a rationalization process.
- Different stakeholders are responsible for the development of increased health and production system performance respectively. Prerequisites for proper dialogues between these stakeholders need to be investigated.
- The Nordic countries seem to offer unique opportunities carrying out case studies investigating the above research issues (cf. the Nordic Model).
- The present authors bring forth the vision of “a Nordic Model for development of more sustainable systems” in order to highlight our unique opportunities within ergonomic intervention research.

We are at present preparing for a Nordic multicentre study along these lines.

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