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Musculoskeletal disorders "sick" workplace syndrome

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Musculoskeletal disorders (MSD)[1] are conditions that involve tendons, sheaths, cartilage, vessels and nerves. But that does not mean that research into how they develop and how to prevent them should focus mainly on upper limb biomechanical stress.

Some of the mechanisms cited p. 33 are frequently involved, either through biomechanical stress, or through work-related mental stress (Derriennic, Pezé, and Davezies, 1997; Daniellou, 1999[2]).

One symptom of a wider syndrome

But it is significant that, generally-speaking, while manual and office workers develop MSD, other groups of workers may be affected in other ways.

Shop-floor supervisors in the same departments are often found to have problems. Production supervisors and shop foremen are under implicit company orders of what I call the "no excuses, just do it" type, i.e., they are made vehicles for the "top-down" flow of management instructions, with no scope for giving "bottom-up" feedback on routine problems with a view to identifying medium-term solutions. Fraught relations with workers can certainly be seen as a cause of MSD, but can also be interpreted also as attendant symptom and indicator of organizational failings.

MSD also frequently appears in a context where **senior and top company management** feel they lack control: they may be dependent on a main or single customer, part of a multinational - with an organization where even location decisions are taken elsewhere, not to say on a different continent -, or in an industry exposed to fierce world competition.

Employee representatives, if they exist, may also be caught up in this general process of rigidification. There may even be intense trade union activity, but focussed on some other specific work-related grievance, such as welding fumes, light bulb replacement, or "fair pay" of dirty work bonuses. MSD are also "a running sore" for employee reps who are untrained and unsupported in their work: MSD may be perceived as the most symbolic symptom of the exploitation of labour, to which no reply can be found within the economic system which created them.

Official prevention practitioners (occupational health doctors, safety, labour and social security inspectors) may well appreciate the grave consequences of a "surge" in MSD for the employees and for the survival of the firm alike. But this is not an area where systematic pathways for action are clearly open to them. There is no consensus on the "protocol" which could guide "treatment" as a "compelling benchmark".

Situations that give rise to MSD can be associated with **a general syndrome of a feeling of disempowerment**.

A blocked triangle

In many circumstances, the situation which accompanies (or induces) the onset of MSD can be depicted as a blockage in the triangle shown in the figure below.

- "Capacity to think" refers to the expert understanding of work; more specifically, understanding the relations between determinants of the work situation, the human activity carried out there, and the effects of it, both on production efficiency and the workers' health.

- "Capacity to act" on the work situation to bring about change is, of course, tied to the ability to devise the desired changes. But, reciprocally, the scope for thought is also connected to what it is believed can be done in practice. There is little incentive to think about something which you do not believe you have the power to change.

- "Capacity to debate", means accommodating the fact that the survival of the firm depends on more than just the interests of its shareholders. A wide range of stakeholders (shareholders, customers, suppliers, public authorities, the workforce, the general public) pass judgments on the company's efficiency, all of which may jeopardize it. The company's future depends on its members' abilities

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[1] This study considers only musculoskeletal disorders affecting the upper limbs (hand, wrist, elbow, shoulder).

[2] This article draws extensively on *Daniellou, 1999*, with thanks to the publisher, ANACT.

Organization / Activity / Biomechanical Stress / Injuries

- Inflexible job assignments prevent switching between jobs, so the same upper limb tissues are continually strained in the same way by the same movements repeated at high frequency.

- Inflexible work organization stops workers taking self-determined breaks when feelings of discomfort appear; this not only impedes immediate healing of micro-lesions, but actually worsens the damage.

- Operators are under strong pressure from their employers to keep up fast paces, especially through the oppressively watchful eye of shop-floor supervisors (Lima *et al.*, 1997).

- Inflexible organization and job layout do not encourage forms of mutual self-help which would enable some difficult tasks to be done in pairs, or by those workers best fitted to handle them.

- Older workers are not allowed to induct new recruits to pass on their safety know-how.

- Workers can rarely get unsuitable tools changed, even if the change would be beneficial.

- Workers on sick leave are not replaced, which increases the workload on those not yet affected.

- Work organization shortcomings create a domino effect of failings: by failing to address these, productivity calculations step up the pace of work.

- It is increasingly common for work organization not to set quantitative targets in terms of output, but "qualitative" goals like "total customer satisfaction": this can put limitless demands on the worker's personal contribution (Bartoli, 1998).

Organization / work-related mental stress / somatic complaints

- Work-related mental stress, especially fear, adds to general muscle tension, which is a key factor in the development of MSD. This pathway seems particularly key when the style of shop-floor supervision creates a constant climate of fear among employees (Lima *et al.*, 1997).

- MSD-generating situations are often found to include self-acceleration mechanisms, for which various explanations have been advanced (see Daniellou, 1999).

- Stress and its accompanying endocrine mechanisms probably play a key role, as may do immune system changes.

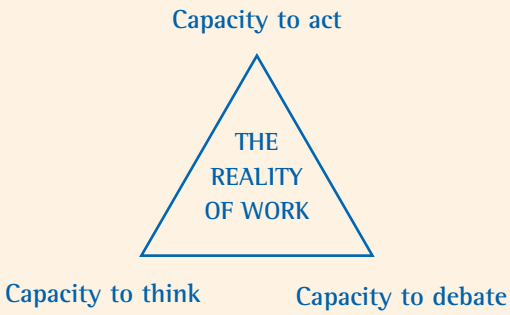
- Any of the mechanisms studied by psychosomatic medicine[3] may be helpful in explaining the emergence of injuries (see Derriennic, Pezé, Davezies, 1997 and Pezé, 1998, for example). This then brings the place of work in personal life as a whole into play. Pezé (1998) notes in particular that "the under-use of personal creative potential is a fundamental source of upset in the psychosomatic system".

- A growing number of authors have called attention to the manifestation of the disease as the end point of a spiral of pain and exclusion. The anxiety created when the first signs of the complaint are noticed compounds the general stress. Repeated absences increase colleagues' work load and change their attitudes. Proficiency declines, the error rate rises, and so the pace must be stepped up. Sznelwar (1997) writes: "The end point is illness". The onset of the disease represents a dead-end from which the only outlet is illness.

[3] Psychosomatic medicine studies how, in some instances, emotional disturbances may precipitate somatic complaints, i.e., bodily disorders. Contrary to the way in which the word "psychosomatic" is frequently used, it does not refer to situations in which people imagine themselves ill when in fact they are not: "psychosomatic illnesses" are not "all in the mind", but physical also.

to recognize and manage a range of challenges and conflicting approaches through internal and external negotiations resulting in adjusted, relevant compromises.

If the overall momentum between these three poles of thought, action and debate is blocked, there is every likelihood that MSD will develop along with the other symptoms described above[4]. In particular, there is often an observable, specific sequential link between uncontrolled productivity losses and increased pressure on the workers, which I call "vicious circles".



The "vicious circles"

In situations that cause MSD, there is often one or more "vicious circles" comprising three components:
1. a source of lost productivity undetected by the firm;
2. an attempt to compensate that lost productivity through direct pressure on work pace or the workforce;
3. an increase in lost productivity as a side-effect of that pressure.

To illustrate:

■ Franchi & Jabès (1996) identified a clear sequence in a motor vehicle equipment manufacturer:
• the know-how needed to achieve quality was not recognized; so
• agency workers lacked that know-how; therefore
• a growing share of the work load fell to experienced workers; consequently
• they left and were replaced by agency workers.

■ In studies of an electronic equipment repair shop, Guengant (1997) and Arnaud (1997) showed that 25% of the appliances were found to be faulty at final inspection and put back into the cycle. The company was unaware of this. But because time measurements did not take rectifications into account, the returns increased the work pace... mistake and reject rate[5]. Similar findings were made in a furniture factory by Baradat (1997) and Martin.

By quickly shedding light on least one of these "vicious circles", work study can bring all players to a realization that "something clearly has to be done". Showing the presence of a "vicious circle" stops people groping around in the dark for answers. It can open up pathways for organized action by a varied range of players to address the problems identified. But the possibility of action makes it intolerable for sufferers to stay as they were without something being done about it.

Giving new momentum

I would argue that preventive action against MSD must aim to gradually give fresh impetus to the dynamics of the above triangle, which in turn means organizing a wide range of players. In my view, that requires the same kind of organization and support as for a major investment project.

MSD are highly "political" problems which go to the very root of business management inasmuch as they involve working out trade-offs between different approaches. This requires active managerial support for treatment and prevention policies. It is risky to try and have them dealt with by technicians (e.g., consultants) alone, however competent.

Any large-scale action on MSD must be preceded by a "support-building" phase in which the key players in the firm (management, supervisors, employee reps, occupational health doctors) are progressively won over to the idea that it is a strategic issue, a major challenge to the company's survival, an opportunity for improvement in many areas - rather than one more of the purely medical problems usually left to the department head or foreman to solve as best they can with the occupational health doctor.

Without going into the technicalities of project management:
• it is important to identify and, where they exist, set up a group pulling together different areas of management responsibility, especially human resources, production, and customer relations, and for the occupational health doctor and ergonomist to attend its meetings[6];
• there must be coherent joint discussions in the different areas concerned (business policy, product properties, flow, work areas, machinery, tools, software, production organization, quality control, work organization, training, induction of young employees,...);
• there must be technical coordination of the activities carried out by one or more groups of designers;
• employee representative bodies (Safety, Health and Working Conditions Committees) must be allowed to play their full role;
• problems and choices must be examined by one or more working groups with relevant expertise as close to the jobs concerned as possible (production

[4] For more details, see Daniellou, 1999.

[5] This type of mechanism often explains why a 15% increase in work pace is necessary to get a 5% productivity gain.

[6] These different functions may not exist in a small firm, but wherever possible, there should always be more than one liaisee. An "employer + shop foreman" or "employer + personnel officer" arrangement is better than cooperation with just one company officer.

and maintenance workers, supervisors, foremen, inspectors, etc...);
• the measures implemented must be followed up and evaluated.

The issue is for the project put in place to be so structured as to give all the players a fresh impetus for thought, action and debate. This makes it essential that they should all be seen as workers with their individual constraints and difficulties, with a necessary and possible input to give into improving the situation, and not as at fault or conniving in the onset of MSD. Prevention of MSD may, therefore, put new issues on the workplace collective bargaining agenda. ■

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