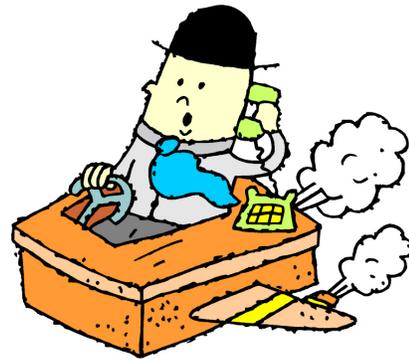


# Workstyle and Personality Factors in Repetitive Strain Injury



By Tamara Mitchell

How can people working in the same environment with similar equipment on similar tasks differ in their propensity to develop Repetitive Strain Injuries (RSIs)? Metabolic differences, non-work activities, pre-existing anatomical differences, or prior injuries or medical conditions can all be potentially attributable to one employee developing symptoms while another doesn't.<sup>1</sup>

The question posed by some research has been, can the manner or intensity in which an individual meets the demands of a work task give rise to increased levels of biomechanical stressors, increased sympathetic nervous system arousal and muscle tension?<sup>1</sup> Individuals may have natural work styles that affect the way they approach and perform work and these work styles may be affected by the psychosocial stress associated with the task.<sup>2</sup> In addition, can a person's own personality affect the chances they will develop RSI and what can be done to reduce these odds?

## Work habits

The way a person goes about a job appears to affect their susceptibility to upper body pain.<sup>3</sup> One Dutch study using highly educated office workers as subjects found that individuals who have undesirable work habits experience an increasing amount of upper extremity pain as time goes on.<sup>3</sup> Undesirable work habits were measured using the standardized Workstyle Short Form (WSF) developed by Feuerstein and Nicholas which consists of 32 items within 8 subscales. Six of the subscales consist of: working through pain, social reactivity, limited workplace support, deadlines/pressure, self-imposed workplace/workload, and breaks. Unfortunately, this study relied on self-reporting and there was a very large dropout rate over the 12 months the study was conducted, however it found that office workers with an adverse workstyle (based on a high overall score on the WSF) have a three time higher risk of pain after 12 months than office workers with good workstyle (low WSF score). Specific workstyles that may be attributable to this increase in pain were not reported in the results of the study, however "working through pain" was the factor that was reported to be most highly correlated to the overall workstyle score.<sup>3</sup>

Feuerstein and his colleagues have looked extensively at the issue of workstyle. His point is extremely well taken that problems with upper extremity disorders has largely been studied from the standpoint of external factors in the workplace such as awkward postures, inadequate equipment, physical loads, etc.<sup>4</sup> The National Research Council defined a conceptual model to better understand how different factors might influence physiological responses to the same situations.<sup>4</sup> They defined 3 factors: (1) people might perform work differently resulting in different loads on the body, (2) individuals may have different inherent tolerances to mechanical strain, and (3) different behavioral and mental responses to physical sensations may produce a variation in the experience of pain, impairment, and disability.<sup>Feuerstein2</sup> Feuerstein suggests that

individual factors may actually have an independent mediating effect on both the person's own biomechanical loading, internal tolerances, and outcomes, but also may have mediating effects on the external factors of external physical loads, factors in the organization, and social support/context.<sup>4</sup> The model proposed suggests that individuals respond differently to work demands and workplace psychosocial pressures through (a) different behavioral responses, (b) different thoughts that influence behavior, and (c) different physiological responses such as increased muscular activity and inflammatory responses. Add to these factors ergonomic stressors such as inadequate equipment, and the result is a variety of symptoms, disorders, and disability.<sup>4</sup>

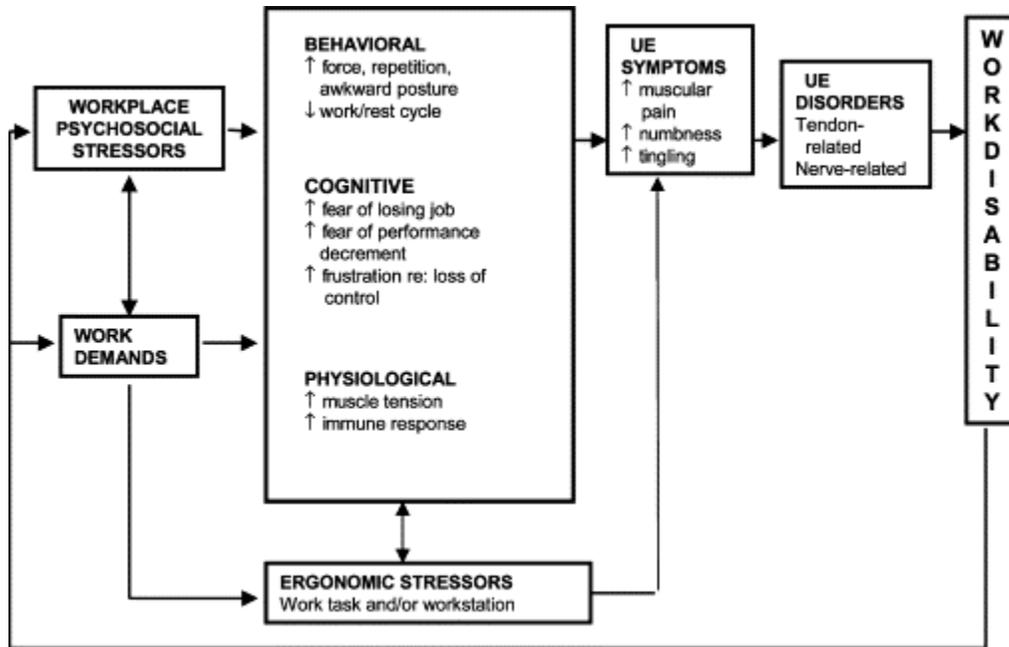


Illustration courtesy of Reference 4.

This is a nice model, however other research has found other factors that add complexity to the picture. Researchers have tried to find out exactly what individual behavioral, psychological and physiological factors might be mediating the effect of external forces and stressors, such as whether the person is male or female, what is the personality type of the person, etc. It turns out that the response varies depending on what the specific task at hand is. The final results are anything but clear, but we will look at some issues which appear most relevant with suggestions about what management in a company can do to reduce the possibility that more susceptible individuals may get injured.

### The Driven Personality

Certain personality types are more prone to injury than others. Feuerstein has found that a certain pattern emerged when studying patients with chronic or recurrent upper extremity disorders.<sup>5</sup>

Patients continued to work with pain for months for one or more of several reasons:

- Interest in keeping their job.
- Need to achieve at work.
- Perception of their important contribution of their work to the organization.
- Strong work ethic.

In addition several work styles appeared to be related to these chronic or recurrent disorders:<sup>5</sup>

- Difficulty in pacing work.
- Need to perform perfectly or optimally day in and day out.
- Heightened level of reactivity.
- Increased level of effort.
- Increased need to improve their health now when disabled so they could return to work immediately.

Feuerstein hypothesized that these factors may place these individuals at high risk for developing an injury, especially when combined with other ergonomic risk factors.<sup>5</sup> Workstyle can also increase exposure to biomechanical stressors by its association with increase in force, repetition, awkward postures and inadequate breaks. This pattern of behavior may be triggered by excessive work demands (perceived or real), continual deadlines, heightened competitiveness and a burning desire to succeed.<sup>5</sup>

This high-achieving personality type can be predisposed to injury and are especially prone to chronic injury, so it is important to recognize these people and treat them appropriately. Characteristics of such personalities:

- Hard workers and often high achievers.
- Reliable and conscientious, rarely taking time off work.
- Will skip breaks, lunch times, do overtime if necessary, and take work home.
- Will step in whenever needed to get a job done.
- Sense of identity and self-esteem are very closely tied to their working life.
- Competitive and take great pride in their ability to perform consistently under pressure.
- Frequently diminish or ignore early symptoms of injury.
- When they do succumb to injury or fatigue, it is abrupt and drastic.
- The prospect of not working is difficult to imagine.

Delayed diagnosis is often the most important feature of this type of case.<sup>5</sup> By the time the injury is reported, it is already chronic, so such individuals must be managed appropriately or they continue to decline at a very rapid rate.

A study of sign-language interpreters found that those who continued to work in a painful way to insure high quality were actually more likely to miss time from work. It was found that there were high levels of fear of developing a pain-related problem, an increased tendency to continue to work in a painful way to insure high quality, and less ability to use one's own initiative. These factors support the concept that there are two factors at work: both an individual work style where an individual drives on with work despite pain, coupled with a work environment where there is minimal perceived control or initiative over work. Both contribute to absence from work.<sup>1</sup> Behavioral components of workstyle (work/rest breaks, moving hands as fast as possible, jerky forceful movements) were not associated with time off work, but this may have been because measurement was via self-report rather than observation.<sup>1</sup>

Hockey players who tested high in the preference for stimulating environments and boredom with non-stimulating environments were significantly correlated with injury rates.<sup>6</sup> In addition, hockey players who ranked high on a temperament factor that indicates sensitivity to subtle changes in the environment (neutral perceptual sensitivity), had significantly more injuries.<sup>6</sup> This may indicate that the athletes were more likely to perceive pain or injury and report it as severe. At any rate, it was clear that both a preference for stimulating environments and perception of changes in the environment were highly correlated with resulting injuries.

The tendency to drive or push oneself, particularly in response to increased work demands, may not allow time to attend to the range of signs indicating potential overuse problems.<sup>1</sup> The tendency to drive oneself and become preoccupied with the demands of work may possibly divert attention away from symptoms and it may also be associated with an attenuated sensitivity to symptoms, but this has not been verified by research.<sup>1</sup> One study of 52 women working as keyboard operators in a telecommunications firm or in a poultry processing plant found that 65% of the interviewees with RSI described themselves as hard-working with a tendency to do work themselves rather than asking for help and taking on the work of others to get the job done.<sup>Reid et al., in 1</sup>

### ***Handling driven personalities***

A 10-week intervention program initiated by one employer of sign-language interpreters proved to be very effective in reducing the number of accident reports and Workers Compensation costs both short-term and over a 2 to 3 year period.<sup>1</sup> The course was comprehensive and covered:

- The role of predisposing medical factors
- Ergonomic and psychological stressors
- Fitness and its potential role in reducing fatigue
- Overexertion
- The need to identify and modify workstyle factors
- Upper extremity and whole body exercises to improve flexibility, endurance, strength, and body awareness including signs of fatigue and overuse
- Warm-up and stretches before work
- Stress management strategies including balancing the need to interpret every word or the need to respond to every need of the consumer
- Progressive muscular relaxation techniques
- Training in increasing awareness and modification of potential high-risk workstyles using videotape illustration in alternate approaches for reducing biomechanical strain.

This course was given with great support from management, in group format, with reinforcement by supervisors who periodically did behavioral observation and gave feedback regarding workstyle.<sup>1</sup> There wasn't a non-treatment group for comparison and since so many components of intervention were used, it's not possible to identify exactly which part was the most effective. The study does suggest strongly that a multicomponent intervention which identifies risky workstyle factors and then proceeds to modify these factors, along with a number of other treatment components may have a very positive short and long-term outcome.<sup>1</sup> It does indicate that group intervention with employees and management working together to bring about change is promising in reducing problems. Further research under more controlled conditions is needed to understand which components work best and for what type of workstyle.

### ***Management's role in handling employees with a driven personality:***

- Identify them as high risk for chronic injury and explain to them why.
- Highlight the need for proper ergonomics and workplace design.
- Highlight the need for regular breaks, work variety, and sensible work schedules.
- Educate the employer, who may be reliant on this employee to produce under deadlines or crises.
- Limit the time the employee is exposed to high risk jobs.
- Encourage the employee to stay at work, but reduce exposure to high risk jobs, reduce work hours, and modify their tasks.

- Be alert for obsessive behavior at work and at home such as obsessive participation in sports or fitness regimens, cleaning at home, etc.
- Recognize the person's personality type without trying to change them, but explaining the need to be vigilant about following safe work practices. These people can become champions for converting co-workers to follow safe work practices!

### **High-responders**

In contrast to the people with a driven work style, there are the people who tend to be the first to report overuse.<sup>5</sup> Other research indicates that early-reporters have low coping skills, like to work at a controlled pace, and do not respond well to stress or work surges.<sup>5</sup> Such people often have an exaggerated response to stress, heightened pain sensitivity, and are more likely to report injury.<sup>5</sup> They speak up quickly, seek help, and take time off if they feel it is necessary at early stages of a problem.<sup>5</sup> This personality type can be overrepresented in injury statistics and costs due to their willingness to report injury and seek help. Unfortunately, in poor work environments, they are often treated unfairly because they are seen as making problems for the company, however they respond well to attention, ergonomic intervention and care as long as their issues are dealt with fairly.<sup>5</sup> They can have a heightened response if they are not helped appropriately and this can have a disastrous effect on not only the individual, but the psychosocial environment of the workplace in general.<sup>5</sup> They may develop treatment dependency, but if dealt with fairly, they can be valuable for identifying problems in the workplace and improving the safety of the environment.<sup>5</sup>

### **Low Self-esteem**

People with high self-esteem tend to have a broader perspective on symptoms and problems that may arise, have less tendency to focus on pain, are confident in dealing with conflicts, and keep healthy boundaries without feeling compromised.<sup>5</sup> On the other hand, people with low self-esteem may find it difficult to speak out if they develop symptoms. Their inward focus may tend to magnify their perception of the problem and symptoms.<sup>5</sup> They may find it difficult to cope with issues resulting from their injury and feel victimized by it.<sup>5</sup> In fact, there may be physiological and lifestyle factors that are associated with such personalities such as hormonal or muscular tension, unhealthy habits, breakdown of social networks, and noncompliance with medical treatment.<sup>2</sup> Providing a system for early warning in the case of fatigue or discomfort and encouraging reporting of work practices that need improvement can help these at-risk individuals to seek assistance earlier when it is needed.<sup>5</sup>

### **Stress**

Overall, it appears that regardless of personality, psychosocial stress is a determining factor in most cases of RSI. In all of the high-risk personality types above, it is likely some sort of stress, fear, or perceived threat that results in behavior leading to injury or other health issues. (Please refer to our series of articles on stress for further information on:

- the Physiology of Stress: <http://www.working-well.org/articles/pdf/Stress1.pdf>
- the Psychology of Stress: <http://www.working-well.org/articles/pdf/Stress2.pdf>
- Coping with Stress: <http://www.working-well.org/articles/pdf/Stress3.pdf>

One study that grouped people based on Type A (anxious and high-strung), Type B (relaxed and easy-going) found some interesting effects of psychosocial stress on several different factors.<sup>2</sup> The three-part study was incredibly complex in its design, but some interesting and potentially relevant things were found. Some of the significant findings are listed in the table below.<sup>2</sup>

### Effects of Psychosocially Imposed Time Stress/Frustration<sup>2</sup>

<b><i>Personality Type</i></b>	<b>Assembly Task</b>	<b>Pipetting Task</b>	<b>Computer Entry Task</b>
Overall effect	11-18% faster	23% faster	13% slower when followed by no stress
A	12-14% faster than Type B	Increased speed when followed by no stress	Decreased speed when followed by no stress
B	Increased speed.	Increased speed when followed by no stress	Decreased speed when followed by no stress
<b><i>Wrist Motion</i></b>	<b>Assembly Task</b>	<b>Pipetting Task</b>	<b>Computer Entry Task</b>
Kinematics	No effect	No effect	No effect
Velocities	8-26% increase	8-26% increase	8-26% increase
Acceleration	20% increase	20% increase	20% increase
Muscle Activity  Overall: 9-23% increase in tension		Females: Type A was 57% of Type B Males: Type A was 188% of Type B	
<b><i>Discomfort &amp; Anxiety</i></b>	<b>Assembly Task</b>	<b>Pipetting Task</b>	<b>Computer Entry Task</b>
Discomfort  Overall: no effect	Females: Type A higher than Type B	Males: Type B males higher than Type B	No effect
Anxiety  Overall: 6% increase in anxiety	8% increase		6% increase

This research shows that there are many variables that can affect performance, muscle tension, discomfort and anxiety when an individual is exposed to stress and frustration. The speed of performance was affected more as a function of the task at hand rather than personality type with the computer task resulting in *slower* performance with stress and frustration. Wrist motion and velocity increased across the board with stress, kinematics (actual wrist deviations) were not affected, and the tension in the wrist muscles was highly Type and sex-dependent in the pipetting task only.

Type A men showed a large increase in wrist tension while pipetting under stress, while Type B women exhibited significantly more wrist tension while pipetting under stress.<sup>2</sup> And, finally, anxiety overall was significantly increased with stress/frustration.<sup>2</sup> Nobody is suggesting reasons for these findings, but it is interesting to see the differences of measured and reported effects of stress on the different classifications of subjects. Many factors may cause changes in muscle tension such as stress, anxiety, arousal, attention, and movement, though little is known with

regard to the relationship between these influences. The relationship between muscle tension and injury is also ambiguous.<sup>2</sup> It is generally believed that muscle tension is a significant component of musculoskeletal illness and studies show that it does cause an increase in pain.<sup>2</sup> One surprising finding from various research studies is the large difference in muscle activity between individuals, with some people reacting to stressful situations with much more muscle tension than others.<sup>2</sup> This may help to explain why some people develop musculoskeletal symptoms and others in nearly identical situations do not.<sup>2</sup>

### **Sources of Workplace Stress**

The Navy leader's website offers an excellent list of workplace situations that can cause workers stress and resulting fatigue, injury, decreased performance, or morale problems. We've adapted this list from a military setting to a regular workplace below, but it shows the range of psychosocial issues that can lead to individual stress.<sup>7</sup> Note that stress can be caused by opposing factors, such as either work overload or lack of challenge, lack of promotion or job promotion, and how these factors affect each individual is likely quite unique.

- Conflict with supervisors.
- Conflict with co-workers.
- Change in work responsibilities, hours, or conditions.
- New job position.
- New career field.
- Work overload.
- Lack of job challenge.
- Exposure to harassment.
- Fear of job loss.
- Disciplinary action.
- Being bypassed for promotion.
- Being promoted.
- Role ambiguity.
- Role conflict.
- Long work hours.
- Job conflicts with family time.
- Inadequate job training.
- Inadequate resources (staff, equipments, budget).
- Unsafe job environment.
- Poor physical work conditions.
- Excessive noise.
- Excessive heat or cold.
- Overcrowding.
- Isolation.
- Poor ergonomic work design.
- Inadequate lighting.

### ***Management's role in stress reduction***

The factors above can lead to stress with any employee. As stress leads to a wide variety of health problems, high priority should be given to the following measures to reduce it.<sup>7</sup>

- Foster general awareness about stress, its causes, costs, and control
- Improve communications with employees
  - Reduce uncertainty about career development
  - Share information and progress with your employees

- Set up meetings with employees to hear about concerns and to ask pertinent questions
- Ensure that workload is in line with employees' capabilities and resources.
- Clearly define roles and responsibilities
- Give employees the opportunity to participate in decisions and actions affecting their jobs.
- Provide opportunities for social interaction among employees.
- Assess the risk of stress among employees including:
  - Looking at pressures at work which could cause high and long-lasting levels of distress
  - Deciding who might be most affected by these factors
  - Deciding what can be done to reduce the stressors.
- Maximize flexibility to help prevent and reduce stress including:
  - Providing flexible working hours
  - Giving time off for appointments
  - Giving employees a voice in decision-making when appropriate
  - Clarifying expectations from the start.
  - Providing a safe and healthy work environment (including an ergonomic evaluation of the workplace and accommodation as recommended)
  - Recognition for good performance.
  - A work culture that values team cooperation as well as valuing each individual.
  - Management actions are consistent with the organizations values.
  - Set priorities.
  - Foster a relaxed and positive outlook.

**Summary**

It appears that various personality factors and workstyles predispose a person to behaviors that place them at higher risk for RSI. Perceived stress and self-imposed or real job pressures and deadlines, a lack of control over the work environment, and lack of involvement and communication from management can exacerbate the situation. Personalities that tend to push themselves as well as those with low self esteem may either be unaware of their bodies and discomfort or may be reluctant to report issues for various reasons. Other personalities tend to report symptoms, even minor ones, and require response. Rather than seeing these people as problems, it may be wise to deal with them and realize that there are probably others who are working stoically without reporting problems. Intervention using a multicomponent approach appears to be quite successful when employees and management get involved to make the workplace a more pleasant, less stressful, and happier environment where overall health is valued.

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This article and all of our articles are intended for your information and education. We are not experts in the diagnosis and treatment of specific medical or mental problems. When dealing with a severe problem, please consult with a healthcare or mental health professional and research the alternatives available for your particular diagnosis prior to embarking on a treatment plan. You are ultimately responsible for your own health and treatment!

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