

WINFORMA

KEEPING YOU INFORMED



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Special points of interest:

- Use the Ergonomics Risk Factor Matrix for task modification
- CHSWC releases it's 10th annual report on workers' compensation in California
- Chief Monitor arms increase productivity and space.
- Macroergonomics is good economics
- California 2002 injury stats

About WINFORMA: Our newsletter is aptly named WINForma, which means Worksite International Network (WIN) Information. The WIN consists of our trained and mentored consultants, employer and insurance clients, physicians and ergonomic product vendors all working together for the same purpose to prevent and manage work injuries more effectively. You will find a variety of articles to interest all of our members.

ERGONOMICS RISK FACTOR MATRIX™

Problem solving is a fundamental part of ergonomic analysis. There are many tools available to the Ergonomist to assist the employer with identifying ergonomic risk factors and targeting them for change. In a recent consultation project, my client requested that I develop a tool to help their supervisors better understand the relationship between force and repetition as it pertains to time on task and its implication in task modification for injured employees.

In my research, I came upon the theory of 2x2 thinking documented in Lowy and Hood's

book, "The Power of the 2x2 Matrix"¹. The 2x2 matrix is about as simple as a chart can be. The matrix includes two factors that have some relationship to one another, assign one the horizontal axis and the other the vertical axis. The use of intersecting x and y axis are present in all 2x2 modeling and is the basis for statistical methods from t-test to multivariate factor analyses. Statistics are used to classify, qualify and measure relationships. The simple matrix grid allows the comparison of different states of related items to reveal patterns, convert quantitative into qualitative value or num-

		Repetition/Sustained Exertion			
		Low	High		
Force	High	If the task occurs: One time every 5 minutes or greater Then: Occasional to frequent exposure through the day.	If the task occurs: One time every 15 seconds to every 2 minutes Then: Interrupt every 15 minutes for 1-2 minutes	High	
	Low	If the task occurs: One time every 5 minutes or greater Then: Continuous Exposure	If the task occurs: One time every 15 seconds to every 2 minutes Then: Interrupt every 30 to 60 minutes for 5 to 10 minutes.		Low
		Low	High	Repetition/Sustained Exertions	

Table 1. Ergonomic Risk Factor Matrix™

CA. WORKERS' COMPENSATION UPDATE

The tenth annual report on the state of California's workers' compensation system was released by the Commission on Health and Safety and Workers' Compensation (CHSWC). The report contains an update on several study projects commissioned by the group that served as the basis for recommendations made for legislative and administrative changes. With last years' SB899 reform, the report contains an analysis of the impact of the new reform legislation on the workers' compensation system and the new mandates. Call 510-622-3959 for copies of this report.

RETURN TO WORK: The CHSWC study by RAND found that California has the lowest return to work rates and the highest attorney involvement when compared to other states. A number of provisions in SB899 and AB227 recommended ways to address this problem to include a 15% bump up/bump down in PD benefits if employers return injured employees to work.

CALENDAR OF EVENTS

July 12, 2005: California Coalition on Workers' Compensation. "Legislation and Regulations and how to make sense of it all". Sacramento Convention Center. 8:30am-5:00pm. Call 916-441-4111 or www.cccworkcomp.org.

July 28-29, 2005: Ergonomic Analysis for Job and Tool Design. COEHCE. San Francisco, CA. Contact http://Socrates.berkeley.edu for more information.

November 16-18, 2005: "Ergonomic Worksite Analysis: Theory and Practice for Growth and Profitability". Worksite International Workshop. Boardwalk Hotel and Casino, Las Vegas, NV. Call 888-288-4463 or www.worksiteinternational.com to register.

"Life is to be lived. If you have to support yourself, you had bloody well better find some way that is going to be interesting. And you don't do that by sitting around."
Katherine Hepburn, b. 1909, Actress

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ERGONOMIC RISK FACTOR MATRIX™ (CONTINUED)

bers to meaning. The simplicity of the 2x2 matrix allows it to be intuitive to apply and communicated easily to others. At the same time, the matrix is limited to a single issue which is dynamically defined by two prime opposing forces. This makes 2x2 thinking highly adaptable to many situations.

The **Ergonomic Risk Factor Matrix™** (ERFM) shown in Table 1, is an example of 2x2 thinking in that it takes a fundamental issue of "how much is too much exposure" and identifies two primary culprits that often are found together in task performance; repetition or sustained exertion and force. The matrix is presented as a guide to modify tasks with high force and/or repetition. Repetition is on the x-axis and force is on the y-axis. Duration (how long the task occurs) and frequency (how often the task occurs) are strong predictors of the likelihood of an RMI. The longer the task occurs, the more frequently it should be modified to reduce exposure.

The matrix does not take into account the employee's working posture. If posture is awkward, correct it so that the employee is working as close to neutral as possible. If posture is sustained for more than 45 minutes, consider it a sustained exertion or high repetition. In using the matrix, high force may be identified as a perceived exertion by the employee.

Work activities associated with high force include, but are not limited to:

- Pipette use: manual or pipette aide.
- Pinch or grip: to cap/uncap, open test tubes, flasks or bottles.
- Items manually handled that weigh greater than 5 pounds.
- Items lifted weighing greater than 17.6 pounds.
- Manual pointing device use.

Furthermore, time allocation definitions are used to identify the duration or how much repetition is occurring and if it should be modified relative to force. Table 2 below is helpful to define time on task and exposure.

Definition	Percentage of Shift	Of 8 hour Work Day
Never (rarely)		
Limited	Less than 12% of time on shift	Up to 60 minutes
Occasionally	Up to 33% of time on shift	Up to 2 ½ hours or 1x/hr
Frequently	Up to 66% of time on shift	Up to 5 1/2 hours or 1x@2 min
Constant	67%-100% of time on shift	Up to 8 hours or 1x@15s or less.

Table 2. Time Allocation Definitions

Feedback by employees as to the perceived levels of exertion is essential in using the matrix to assist with defining work rest cycles and work modification. In particular, recognizing the impact that a pre-existing or chronic musculoskeletal disorder might have on an employee or one with a recent RMI verses a healthy employee with no prior history of aggravation or injury. (Continued pg 3)


ERGONOMICS PRODUCT SHOWROOM:

Chief Manufacturing offers a new line of **Movo Office System** mounts with *Centris Technology*. The mounts are ergonomically designed to move with the individual user, maximize desktop space and can be used in almost any office environment. The use of a flat panel monitor arm

can effectively help to maximize the work area by as much as 30% by offering reduced horizontal depth and regaining space that was previously taken up by a traditional CRT. The Chief mount offers one of the lowest profile solutions on the market with less than



2" of clearance when pushed to the wall. Using flat monitors and articulating mounts provides your business with flexibility, better space utilization, improved ergonomics, reduced eye strain and increased productivity. For more information, visit www.chiefmfg.com or call 800-582-6480 for more information.



**Ergonomic Worksite Analysis:
Theory and Practice for
Growth and Profitability
NOVEMBER 16-18, 2005
Boardwalk Hotel and Casino
Las Vegas, Nevada
www.worksiteinternational.com**

Increase your Earning Potential Through Professional Development
Advance your skill level in Office Ergonomics and build a stronger more diverse practice or organization. Stepping stone to national certification through the Oxford Research Institute. Become part of the Worksite International Network of Ergonomic Service Providers. Includes the complete system of ergonomic analysis and training on CDROM, license and mentorship. Designed for PT, OT, Voc Rehab and Safety Professionals. CEUs awarded. Call now, seats are limited. 888-288-4463.

The Ergonomics Risk Factor Matrix™ demonstrates the power and simplicity of 2x2 thinking. It identifies the issue of exposure and two dynamically opposed components, force and repetition, that result in a means to solve a fundamental problem and make better decisions to modify work rest cycles.

The ERFM is what it is, it does not address any more than these two factors, yet it results in opportunities beyond either/or. It is a simple model that explores the relationship of force

and repetition, giving employers options to modify work tasks for a safer work environment for all employees.

References:

1. Lowy, Alex and Hood, Phil, *The Power of the 2x2 Matrix: Using 2x2 Thinking to Solve Business Problems and Make Better Decisions*, John Wiley and Sons, Inc. 2004.

For a full reprint of this article, visit www.worksiteinternational.com/publications.

PROFILE OF CALIFORNIA INJURY/ILLNESS STATS	MACROERGONOMICS MAKES ERGONOMIC AND ECONOMIC SENSE
<p>The results reported below are based on 2002 Injury and Illness statistics from California.</p> <p>INCIDENCE RATES: California's most recent injury and illness statistics from 2002 show a 40% reduction in injury rates since 1990. The rate of 5.6 cases per 100 FT employees is up slightly by 4% compared to 2001. Overall, work injury rates are falling throughout the US. This is contributed to improved job safety, a better economy over the last decade and the shift to service jobs rather than manufacturing. Compared to other western states, California has the second lowest incidence rate, with the lowest being Arizona.</p> <p>DURATION: Days-away-from-work cases which includes lost time and restricted duty days dropped from 2.1 to 1.8 cases per 100 FT employees over the past 6 years. The median days away from work for California is 8 days compared to the national average of 6 days.</p> <ul style="list-style-type: none"> • Truck drivers, laborers (non-construction), janitors and cleaners, carpenters, nursing aides, orderlies and attendants are the top five occupations with the most non-fatal injuries and illnesses in California. • Establishments with 50-249 and 250-999 employees have the highest incidence rate of 6.9 and 7.6 cases per 100 FT employees. Small business with <50 employees have the lowest incidence rate. • The most common type of work injury are sprains and strains and account for 39% of lost time cases. • Back injuries have decreased 12% since 1996 but still remains the most frequently injured body part. 	<p>Macroergonomics is a relatively new field in ergonomics and is credited by Hal Hendrick, Ph.D., CPE. Dr. Hendrick developed the concept over 20 years ago and has since promoted the concept throughout the national and international ergonomics community.</p> <p>The concept of macroergonomics can be defined as a top-down, sociotechnical systems approach to work-system design and the carry-through of that design to the design of jobs and related human-machine and human-software interfaces. The ultimate purpose of macroergonomics is to ensure that work systems are fully harmonized and compatible with their sociotechnical characteristics (Hendrick and Kleiner, 2001, 2002).</p> <p>Early attempts to incorporate ergonomics into the design of computer work stations and software have resulted in improvement but have been disappointing in terms of reducing the work system productivity costs of white collar jobs, improving intrinsic job satisfaction and reducing symptoms of high job stress. This ineffectiveness lead to the development of macroergonomics to benefit the design of the over-all work system.</p> <p>Macroergonomics is soundly grounded and validated in socio-technological systems theory which emphasizes that the human-machine-environment system requires joint optimization of their personnel and technical subsystems to be most effective. Macroergonomics reflects the concept that the whole is greater than the sum of its parts and when addressed, will result in improvements of 50%-90% in organizational effectiveness.</p> <p>While many employers have implemented ergonomics programs over the years since Cal-OSHA's 5110 regulation, it is unlikely that they have achieved the kind of success possible with macroergonomics. Most employers simply address the micro-ergonomics aspect addressing only the employee and the work station, resulting in only modest improvements, leaving the rest</p>

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The WINning Corner: For WI Network Members

to chance. An example of addressing the macroergonomic issues includes:

- Identifying how the equipment in the workstation was selected and what criteria was used to obtain it.
- Identifying improvements in work flow and work procedures that resulted in less repetition and more automation.
- Implementing a total quality improvement process that identified high risk areas where injuries occurred throughout the organization.
- Increasing responsibility to supervisors that resulted in the follow-through of ergonomic changes.

Macroergonomics is effective in that it looks beyond just the individual to improve the system and benefit the entire organization.

This past April, Worksite International held it's 8th workshop in Monterey, CA to support the WI Network. Seven more members were added to the list of official WI Network members with a majority being from California and one participant from Nevada. The network continues to grow and now supports 27 members. However, not all are active participants in mentorship. In order to benefit from WIN, members need to participate by communicating with WI about ergonomic activities, submitting evaluations or training follow-up materials as required by mentorship, calling with business management or promotion questions or just to say hello and touch base with Alison. A few members have successfully launched their own ergonomics consulting businesses with the help of the WI mentorship and network, but this takes time and commitment. Remember, if it were easy, everyone would do it. Mentorship applications for new members are due by **July 31, 2005**. Previous attendees can also submit applications for mentorship as well, if they haven't all ready.

Funnel of Opportunities:

For many members, it is challenging to market and sell ergonomic services to business and industry.



This is especially important if business is slow and you need revenue and cash flow. Generating new business takes an ongoing effort on your part to research the businesses in your area and to network within your own community to get the leads you need. There are many resources out there to help you get the leads you need and the business you want. Keep in mind that you need to market to more than just 1-2 companies at a time. The more potential clients you contact, the better your results. In a recent marketing effort on my part, I contacted over 20 companies by sending my packet and following up with them afterwards.



None of them had heard of me either. These were considered cold calls to me. After sending the packet, I made any where from 1-3 follow up calls to contact the person. My campaign resulted in at least 4 solid leads which resulted in 4 new client visits and subsequently 3 service proposals, which I am now waiting for decisions on. Every week or so I review the local business journal to learn what businesses in my community are doing. I also continually follow-up on my past clients that I have finished projects with to see if they need any further assistance. These efforts on my part keep my cash flowing, my business flourishing and my clients happy and healthy. For further sales and marketing assistance, contact Alison at 888-288-4463. Use your mentorship to succeed. Use your mentorship to WIN!