

FORGING A COMMON PATH FOR STANDARD ERGONOMICS PRACTICES

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ABSTRACT

The profession of ergonomics promotes itself as a scientific body, with a creative component involved in optimizing human performance and well being (International Ergonomics Association). Certification provides minimum standards for education, experience and ethics, but does not set out standard practices for ergonomists. In Ontario, no standards exist to regulate who can practice ergonomics, although recent changes have begun to limit who can practice kinesiology. The end result of the lack of legislative guidelines is that the practice is unregulated, and no quality standards exist. Ergonomics needs to advance from the "wild west", where standards are lacking, to a more civilized, consistently-applied, objective science. This paper proposes a practice that would advance this cause.

ÉLABORER UNE STRATÉGIE COMMUNE POUR DES NORMES DE PRATIQUE EN ERGONOMIE

MOTS CLÉS : ergonomie, normes de pratique

RÉSUMÉ

La profession d'ergonome se positionne en qualité d'organe scientifique doté d'une composante créative qui s'intéresse à l'optimisation du bien-être des personnes et de la performance des systèmes (Association internationale d'ergonomie). Même si la certification prévoit des normes minimales en matière de formation, d'expérience et d'éthique, elle n'établit pas de normes de pratique pour les ergonomes. En Ontario, il n'existe aucune norme pour réglementer la pratique de l'ergonomie, bien que des changements récents aient été mis en œuvre pour commencer à limiter les personnes pouvant exercer la kinésiologie. En raison de ce manque de dispositions législatives, la pratique est non réglementée et il n'existe aucune norme de qualité. L'ergonomie doit passer de l'époque Far West, où les normes font défaut, à une science plus civilisée, appliquée systématiquement et objective. Cet article propose une pratique qui aidera à faire avancer cette cause.

1. CHALLENGES

Many ergonomists work independently, as the sole subject matter expert for their employers, and therefore opportunities for feedback and mentorship can be limited. In fact, the majority (64%) of members listed in the Association of Canadian Ergonomists' directory represent the only ergonomist at a given employer location (ACE Member's Directory. Membership in ACE does not necessarily imply that the member is a practicing ergonomist; some members may have only an "interest" in ergonomics. Further, some of the 83 employers identified as employing more than one ACE member listed may employ more these members in different locations, in which case mentorship opportunities would be limited.) By contrast, ergonomists working in a team environment have the learning advantage of a formal or informal peer review process. A formal peer review, where the ergonomist submits his/her reports and analyses for a critical review by another ergonomist, is extremely valuable in the learning process, as well as in "quality control". This peer review process can also result in updates to a standard procedure, continually advancing the team's experience of ergonomics. At the very least, an ergonomist working in a team has the ability to seek feedback from another ergonomist who is familiar with the work environment, and can offer suggestions on analysis approach, possible interventions, etc.

While the certification process does encourage and reward mentorship, ergonomists can attain certification without ever working with another ergonomist. Although guidelines have been published (Occupational Health and Safety Council of Ontario [OHSCO], Musculoskeletal Disorder Prevention Guideline for Ontario, 2008), none of the legislative bodies has offered, endorsed, or developed standards for our practice. Some ergonomists work in large companies with access to high-tech measuring and analysis equipment and access to multi-disciplinary resources such as engineers, statisticians, and designers. On the other end of the spectrum some ergonomists work with only a few checklists, a tape measure, and a personal computer. The process of analysing hazards within jobs ideally should be standardized so that all ergonomists are held to the same standard.

Widespread variation in analyses methods, reporting formats, and project outcomes is seen. Reports may be very detailed, or extremely vague. Recommendations may be fully researched, or very informal. Consequently, different companies have vastly dissimilar experiences with ergonomists, and therefore also dissimilar perceptions of what ergonomics is, and what it can accomplish. In Ontario, when the Ministry of Labour (MOL) orders a company to have an ergonomics assessment completed "by a person possessing knowledge and experience in MSD prevention", they may also specify the analysis tools that should be used (e.g. "utilize a biomechanical and psychophysical approach"). In Ontario, we have an ergonomics "guideline" (OHSCO, 2008), but the guideline provides so much latitude that it is extremely difficult for an employer to understand whether an assessment is done well. Province- or country-wide standards could only be achieved through some type of legislative or system-driven requirement. Currently, when the MOL issues an order, the actual order is published only to the company; unlike lawyers citing case-law, ergonomists are not able to access all of the orders that are issued. An ergonomist can only cite orders where s/he (or his/her company) has been hired to assist a company in fulfilling an order. In cases like these, our company has completed many assessments over the years, and has accumulated a series of references that MOL ergonomists have cited. We believe that a public list of these orders (without the company names) would be extremely useful in advancing the practice of ergonomics in Canada.

2. METHODS USED BY A GROUP OF ERGONOMISTS

This paper reviews and proposes a method of standardisation that has allowed a team of ergonomists at Taylor'd Ergonomics to produce consistent project outcomes.

2.1 Standard Operating Procedures

Our "Standard Operating Procedure" (SOP) for ergonomics assessment in an industrial environment includes the following key project steps:

- Background information request (The client is asked to gather information that will assist the ergonomist, including production data, prior reports, job descriptions, injury statistics, etc.)
- Optional pre-assessment employee survey (Employees are asked to rate the frequency and severity of their discomfort, and to identify concerns and suggestions for improvements to their jobs.)
- Site interview (The ergonomist meets with key stakeholders in the project to understand the goals of the project, clarify background information, and launch the project.)
- Data collection (The ergonomist observes, measures, interviews, etc. at the job site. Multiple employees are observed under various work conditions.)
- Data analysis (The ergonomist selects the appropriate analysis tool and completes the technical analyses.)
- De-briefing meeting (The ergonomist reviews the analysis outcomes with the key stakeholders, and the group brainstorms potential solutions for further consideration.)
- Research/mock ups (The ergonomist and key stakeholders research the solutions that have been generated. This may involve mock ups at the job site. It also involves re-assessment of risk to ensure that recommendations will address the hazards identified.)
- Report writing (The ergonomist completes a draft report, submits it for peer review, revises as needed, and submits to client for review prior to finalising it.)

The SOPs specify the type of assessment tool that should be used under various conditions. The SOPs were originally developed as training tools for new ergonomists, but over time they became guidelines that all of our ergonomists refer to frequently. The SOPs include a description of the assessment processes (for physical demands descriptions, ergonomics (risk) assessments, driver sit-fits, office assessments, design reviews, and demands-abilities evaluations), from start to finish, and help to promote consistency between team members. They include tips for measuring force, dimensions, photography, and more. The SOPs and report templates are used to gather methods and wording that can be useful in various challenging situations. For example, the issue of job rotation is often challenging for ergonomists. Therefore, our SOP guides our ergonomist through the process of assessing and optimising job rotation frequency, sequence, etc. Most importantly, the SOPs are continuously changing, as new methods and precedents become available.

2.2 Report templates

Reporting templates are also useful in the standardization of ergonomics practice. The template should, at minimum, meet the Ontario report writing "professional practices guidelines" that the Ontario region of ACE produced in 1998 (and updated in 2006). We have found the practice of providing a simple report with a detailed appendix, to be most appealing to our clients. The report typically includes a brief summary, short background, job

description (or reference to a physical demands description) and a description of each significant issue, with recommendations and a photo for each. The appendix provides the survey results, and the analysis results to show how the risk indices were calculated. Photographs are especially useful in conveying information effectively; awkward postures are readily understood by all levels of management, and the addition of force and exposure information allows people to clearly understand why the issue is associated with injuries.

2.3 Risk index

A "risk index" has been developed in an effort to communicate hazards; the risk index is a ratio of the actual job demands, to the recommended guideline. For example, if a load weighs 20 kg, but the Liberty Mutual tables suggest that 15 kg is the maximum acceptable load for that condition, then the risk index would be 1.33 (20/15). A risk index of greater than one indicates a high risk of musculoskeletal injury. The Risk Index (priority system) was originally developed at the request of an engineer who wanted a method to distinguish "nice-to-do" from "need-to-do". He felt that a long list of recommendations was overwhelming, and that he had no way to know "when he was done". Further, clients implementing a few recommendations from a list might consider that they have fulfilled their "due diligence" when in fact, the lowest cost, simplest suggestions might not effectively address the most significant hazards. For example, a palletizing assessment might include recommendations for a lift and turn table, anti-fatigue matting, and a change in height of a roller conveyor. Implementing only the matting would not effectively address the risk of back injury, but the employer may feel that they have done enough.

The Risk Index also allows multiple hazards to be compared to each other. Thus a job with a shoulder concern, a lifting concern, and a gripping concern can be assessed with three different assessment tools (e.g. duty cycle [Potvin, 2012], Liberty Mutual tables [Snook and Ciriello, 1991], and HandPak [Work in Progress, 2007]), and the results can be expressed in such a way that the reader can understand which of the three concerns presents the highest risk.

2.4 Continuous improvement process

The keys to success in ergonomics have, to date, proven to be collaboration and flexibility. Our SOPs, and reporting templates change on a monthly basis. When any one team member learns a new successful approach, finds a relevant paper, or experiences a failure, we update the appropriate procedure or template. Changes are tracked, noted, and communicated.

Rapid change is facilitated by a collaborative approach. Spending time as a team on a bi-weekly basis allows us to step back from the projects and consider whether what we are doing makes sense. We actively seek input, not only from the client, but also from our peers. Every report is reviewed by another ergonomist, so that we have at least two perspectives on every issue.

3 RECOMMENDATIONS

While this focussed, guided approach is not always possible for ergonomists working in isolation, it should at least be used by ergonomists working in large public organisations. If the ergonomists working for the Ministry of Labour, Workplace Safety Insurance Board, and the Safety Associations were to collaborate, even within their own organisations (but ideally for all ergonomists), in the way that we have outlined in this paper, the advancement of ergonomics in this province alone would be staggering. Benefits should include:

- A better understanding amongst companies of what ergonomists can offer in terms of hazard control, design, and return-to-work support (as well as productivity and quality opportunities)
- Standardization of methods for privately practicing ergonomists. This would include improved consistency and accuracy of use of the available assessment tools. For example, more ergonomists using HandPak would improve awareness of this tool in industry, and would increase the expectations of employers. In turn, employees would benefit because their concerns would be more accurately and appropriately addressed.
- Higher standards for assessment and solutions. Employers would be less tolerant of subjective, checklist-style assessments that tend to lead to long lists of concerns, and inefficient solutions such as re-instructing the worker. Ergonomists should be held to standards for analysis and report writing, and should be accountable for developing effective solutions.
- Leadership opportunities for ergonomists who take on responsibility for testing new methods and developing new SOPs.
- Improved communication of successful case studies, and more effective sharing between ergonomists. (We would all be speaking the same language.)

If ergonomics is to be considered a “profession”, then we need to establish and maintain some standards of professionalism.

4 REFERENCES

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