BUILDING AND USING AN ERGONOMICS AUDIT: DOES YOUR PROGRAM MAKE THE GRADE?

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The "Pains and Strains" Campaign is well underway with the Occupational Health and Safety Council of Ontario's (OHSCO) recent release of the Musculoskeletal Disorder Prevention Series, enhanced ergonomics training of Ministry of Labour (MOL) inspectors, and the collaboration of the MOL and the Workplace Safety and Insurance Board (WSIB) to focus on "high risk" workplaces. Clearly, ergonomics is a high priority in Ontario right now; how well does your ergonomics program "measure up"? Whether launching a new ergonomics program or continually improving a program, an ergonomics audit can be used to help establish "baselines", demonstrate the importance of a written ergo policy, ensure that reactive and proactive projects are considered, stress the importance of ergonomics training, encourage and measure continuous improvement of programs, and more. This paper demonstrates how to build and effectively use a strong ergo audit, an integral step to building a strong ergonomics program.

Key words: audit, program, evaluate

ÉLABORER ET UTILISER UN AUDIT ERGONOMIQUE : VOTRE PROGRAMME EST-IL À LA HAUTEUR?

La campagne « Travailler sans douleur » est bel et bien lancée avec la publication récente par le Conseil de la santé et de la sécurité au travail de l'Ontario de la série de lignes directrices de prévention des troubles musculo-squelettiques pour l'Ontario, la formation améliorée en ergonomie donnée aux inspecteurs du ministère du Travail et la collaboration du ministère du Travail et de la Commission de la sécurité professionnelle et de l'assurance contre les accidents de travail (CSPAAT), dont les efforts seront centrés sur les lieux de travail à haut risque. Manifestement, l'ergonomie est une priorité de premier plan en Ontario à l'heure actuelle; à quel point votre programme d'ergonomie est-il à la hauteur? Que vous lanciez un nouveau programme d'ergonomie ou que vous travailliez à améliorer continuellement un programme existant, un audit ergonomique peut aider à établir un plan de base, démontrer l'importance d'une politique ergonomique écrite, veiller à ce que les projets réactifs et proactifs soient examinés, souligner l'importance de la formation en ergonomie, encourager et mesurer l'amélioration continue des programmes et plus encore. Le présent article montre comment élaborer et utiliser efficacement un audit ergonomique solide, ce qui constitue une étape intégrante à l'élaboration d'un bon programme d'ergonomie.

Mots clés : audit, programme, évaluer

INTRODUCTION

Research shows that ergonomics programs can lead to the reduction of pain associated with musculoskeletal injuries (Cole et al., 2006) and are economically justified (Tompa et al., 2008). Various studies have described participatory approaches to ergonomics, and provided specific recommendations for implementing a successful participatory ergonomics program (Van Eerd et al., 2008). In addition, return to work/disability management programs can reduce claims costs while reducing injuries and illnesses (Brewer et al., 2007). The research certainly suggests that implementing an ergonomics program is a worthwhile endeavour. Where should someone start when launching a new ergonomics program? What should the goals of a mature ergonomics program be? An effective ergonomics audit can be used to establish "baselines", track improvements from year to year, and provide a standard for the ideal, mature ergonomics program. This paper demonstrates how to build and effectively use a strong ergonomics audit, an integral step to building a strong ergonomics program.

BUILDING AN ERGONOMICS AUDIT

A review of various research papers, ergonomics resources, and published ergonomics guidelines indicated that there are many key elements to a successful ergonomics program (Cohen et al., 1997; Occupational Health and Safety Council of Ontario, 2008). An audit of an ergonomics program must therefore review and score each of these elements. While some existing ergonomics audits do not use categories to organize audit criteria, a sectioned layout allows the reviewer to easily identify the strengths and weaknesses of the ergonomics program. Therefore, start by selecting categories for the audit, such as the following, ensuring that they allow the evaluation of every aspect of the program:

- Management commitment/foundation for success/program infrastructure
- Ergonomics training/awareness
- Identifying problematic jobs/understanding MSD hazards/ergonomics analyses
- Selecting ergonomics solutions/implementing solutions/communicating success
- Health care management/return to work/physical demands descriptions
- Proactive ergonomics/design ergonomics

Select criteria for each section, using existing ergonomics program guidelines, such as the Musculoskeletal Disorders Prevention Series (2008) or tailor the criteria to meet the goals of a specific facility's ergonomics program. For example, if health care and return to work are managed corporately, an ergonomics audit for a local facility should not include these items. To ensure an objective review of the program, include very specific, measurable criteria or questions for each section. In addition, ensure that the number of points or criteria within each category reflect appropriate "weighting". For example, do not include more questions/criteria/points for physical demands descriptions than for ergonomics assessments. Some sample criteria for each category follow, although a complete audit would include numerous criteria under each category.

Management Commitment/Foundation for Success/Program Infrastructure

Criteria	Rating System
Communication with key stakeholders is effective	Reports are copied to all key stakeholders Ergonomics committee meeting minutes are maintained Project status logs exist and are maintained Ergonomics information bulletin boards (visible to all plant employees) demonstrate awareness initiatives Employees are informed of the status of all ongoing projects Reports (including analysis results), PDDs, memos, etc. are centrally stored for easy access

Ergonomics Training/Awareness

Criteria	Rating System
Appropriate ergonomics training has been conducted for all key stakeholders within the past three years.	Score one point for each group that has been provided with appropriate ergonomics training and for which training records exist: Supervisors/managers Ergonomics coordinator, or ergonomics committee, or JHSC Engineering and safety and maintenance Purchasing department, vendors

Identifying Problematic Jobs/Understanding MSD Hazards/Ergonomics Analyses

Criteria	Rating System
Risk assessment is quantitative.	The ergo team, ergonomics coordinator, or ergonomist is qualified in the use of biomechanical, psychophysical and physiological assessment tools as well as the use of design guidelines Analyses are consistently conducted using biomechanical, psychophysical and physiological assessment tools and results are compared to accepted ergonomics guidelines in an attempt to quantify risk Analyses are well-documented in project files

Selecting Ergonomics Solutions/Implementing Ergonomics Solutions/Communicating Success

Criteria	Rating System
Solutions to ergonomics concerns are developed using all available resources	Solutions are brainstormed with key stakeholders (engineers, supervisors, and workers) Reports are reviewed with key stakeholders Recommendations are specific and well-documented in project reports Responsibilities are assigned and tracked

Health Care Management/Return to Work

Criteria	Rating System
Return to Work (RTW) processes are in place	Formalised and documented RTW policy, defining RTW process and rights and responsibilities of injured employees, is accessible to all employees Person or persons are assigned to manage the RTW program on an ongoing basis RTW plans for individual employees are developed in consultation with the employee, health care providers, supervisors, and WSIB Clarification is sought where necessary from health professionals to ensure a clear and precise understanding of worker restrictions (eg. “repetitive” or “heavy” is defined) PDDs are used to match employee capabilities with job demands

Proactive Ergonomics/Design Ergonomics

Criteria	Rating System
A proactive ergonomics system is in place and is effective in preventing ergo problems.	Engineering staff work with an ergonomist and/or use design guidelines in the development of new designs/ workstations Ergonomics design guidelines are used in the selection of new tools/equipment A formal method exists for employee input into new/modified equipment Preventative maintenance plans are in place to minimise forces (e.g. wheel maintenance on carts, sharpening knives) Maintenance/facility workers have some understanding of ergonomics and/or consult an ergonomist when installing new equipment or making changes to existing equipment New jobs, modified jobs, and jobs with new equipment/tools are formally assessed within 6 months of change to identify potential risk factors

Select a simple scoring format and establish criteria for scoring. For example, indicate in the auditor instructions that points can be allotted based on documentation, employee interviews, or observation. All reviewed audits were checklist or table format but scoring systems varied. The following examples show different scoring options:

Option A provides easy scoring tabulations and allows the reader to easily determine exactly where points were lost within each section and is therefore preferred by the author. This format also provides ample space for comments, allowing the auditor to record measurables (e.g. interviews with 20 different employees indicated that 75% of employees understand the term “ergonomics”) and document goals for the future (e.g. Ergo Awareness training is planned for all supervisors for January, 2009). If building this style of scoring into an audit, the number of checkboxes dictates the weighting for each criterion and therefore, requires careful consideration.

Option A: One point per criteria

Criteria	Rating System	Score	Comments
Ergonomics policy/program	Score **one point** for each of the following: ☑ Written policy exists and clearly identifies purpose and goals ☑ Policy is signed by management and JHSC Policy is posted and available to all employees ☑ Ergonomics committee/team exists	3	- Policy was written in 2007 - We will post it in the cafeteria - Ergo committee has existed since 2004 (we added 2 new members this year)

Option B allows the auditor to credit "partial" and "in progress" efforts but complicates the scoring process (i.e. how are points assigned to "in progress" versus "yes"?). This format also requires more space for checkmarks, interfering with space for comments.

Option B: Categorical scoring (credit for partial completion)

Criteria	No	In progress	Partially/ Sometimes	Yes
Written policy exists and clearly identifies purpose and goals				✓
Policy is signed by management and JHSC				✓
Policy is posted and available to all employees	✓			
Ergonomics committee/team exists				✓

Option C allows the builder of the audit to easily set the total number of points allotted for each criterion, regardless of the number of bullet points considered and therefore, allows easy "weighting" of each criterion. However, this system creates an "all or none" scoring system (i.e. if the policy is not posted, the program scores "0" for this criteria) and therefore may not reward success appropriately. In addition, this format does not easily indicate specifically where points were earned or lost nor does it allow space for comments.

Option C: "All or none" scoring

Criteria	Guidelines for scoring	Yes	No
Ergonomics policy/program	• Written policy exists and clearly identifies purpose and goals • Policy is signed by management and JHSC • Policy is posted and available to all employees • Ergonomics committee/team exists	5	0

Include a scoring summary at the end of the audit to highlight strengths and areas for improvement. In addition, provide some conclusions and guidance for interpreting the overall score as well as recommendations for improvement. Consider using software, such as Excel, to allow automatic tabulation and percent calculations.

Section	My Score	Maximum Attainable Score	% Achieved	Areas for Improvement
A. Ergonomics Program Infrastructure				
B. Ergonomics Training/Awareness				
C. Ergonomics Analyses				
D. Implementing and Communicating Ergonomics Solutions				
E. Return to Work				
F. Proactive/Design Ergonomics				
Overall total audit score				

Conclusions	Scoring System
Your overall scoring is # out of a possible 90 points, representing **#%**. Your areas of **strength** (scoring higher than 60%) were….. Your areas of **weakness** (scoring less than 40%) were…. We recommend that key stakeholders meet to review these audit results, and consider priorities for the next year of your program. Once your goals and objectives have been clearly identified, and management support has been granted to pursue them, we can work toward improving the audit outcome.	A score of <40% indicates that you are in need of a formalised ergonomics program. A score of 40-60% indicates a good start to an ergonomics program; however several weaknesses exist. A score of 60-80% indicates that you have an ergonomics program in good standing. If you have a score of 80%+, congratulations, you have an excellent program; few changes required.

USING AN ERGONOMICS AUDIT

At the launch of a new program, use the audit to direct your efforts and set an action plan for the first year of the program, using the comments column to set timelines for each applicable criterion.

Criteria	Rating System	Score	Comments
Ergonomics awareness program or training for plant employees includes all critical topics.	Score one point for each of the following topics covered: ☑ Causes of Musculoskeletal Disorders (MSDs) ☐ Types, symptoms and consequences of MSDs and the importance of early reporting ☑ How to identify MSD hazards ☑ Methods to reduce hazards	3	Bulletin board topics cover causes, identification, and reduction of MSD hazards. We will incorporate the importance of MSD reporting into safety talk topics and new hire orientation package by March of this year.

For existing ergonomics programs, complete the audit annually to highlight strengths and weaknesses, track improvements, and help justify more resources. Figure 1: Annual ergonomics audit results represents audit results for a long-term client over a five-year period, and provides a summary of the strengths and weaknesses of the client's ergonomics program and how they have changed over time. This client had involved an ergonomics consultant for various projects over numerous years prior to "launching" an ergonomics program five years ago, at which time they initiated weekly visits from an ergonomics consultant. (Since program "launch" in 2003, the consultant's visits have increased to two visits per week.)

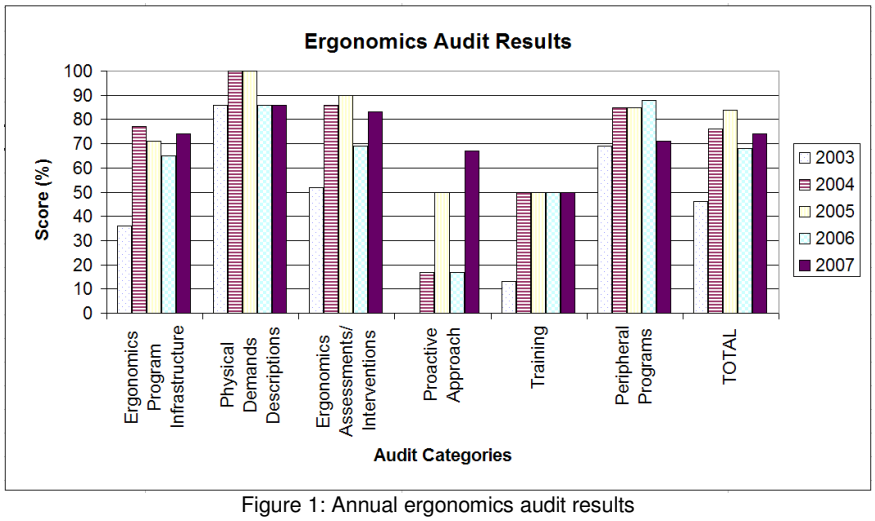

Figure 1: Annual ergonomics audit results

The graphed summary above illustrates an immediate improvement in ergonomics program infrastructure, ergonomics assessments/interventions, and training following the "baseline" audit, which highlighted these weaknesses. Over the first year of the program, an ergonomics team was established and trained, the ergo team policy was written, ergo team monthly meeting minutes were established, goals for the program, and standard follow-ups were implemented for all ergonomics changes.

Some scores decreased in 2006 due to a more rigorous approach to scoring. During a corporate audit performed by someone external to the facility in 2005, the auditor only scored points where documentation was available. Therefore, in 2006, when the internal auditors

performed the annual ergonomics audit, they scored the audit more critically, based on documentation, and then improved record-keeping and documentation processes such that most scores improved again in 2007. Based on this experience, consider recruiting someone from outside the Health & Safety/Ergonomics department to minimise auditor bias and provide a "fresh eyes" critique of the program. Using a joint-approach or two-person approach may also help to minimise bias. Currently, at this long-term client, the Health & Safety Manager and the Ergonomics Consultant perform the audit together.

Training continues to score only 50%, primarily due to challenges with scheduling all key stakeholders, but the client continues to provide a one-day "Ergo Awareness" workshop on a semi-annual basis to attempt to train all production and maintenance supervisors, engineering personnel, and all new ergo team members who were not part of the initial ergo team, in addition to other department-specific training.

CONCLUSIONS

Successfully integrating an ergonomics audit into the "launch" of an ergonomics program, ergonomics program goal setting, and annual review processes requires appropriate development and use of the audit. Many different categories and scoring systems are available for building an audit, some of which have been demonstrated in this paper. Using an objective scoring system allows quantifiable tracking of program improvement over time, and provides guidance for focusing on future efforts.

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