

THE CITY OF TORONTO'S JOB DEMANDS ANALYSIS AND JOB MATCH SYSTEM

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Abstract

In 1998, seven municipalities amalgamated in the City of Toronto, each having their own physical demands analysis (PDA) tool. A review of the PDAs identified limitations impacting their effectiveness for disability management and injury prevention. The City's ergonomists redesigned the tool and included Psychological/Cognitive demands. Changes in this Job Demands Analysis (JDA) result in more detailed information and a rating system that identifies potential injury risk factors. These changes increase the effectiveness of the JDA in disability management and injury prevention. JDAs are maintained in a database that allows Human Resources staff to access current JDAs at any time via a client server environment. Comparing workers' functional abilities to any or all JDAs is automated with the Integrated Disability and Safety Management system. It identifies mismatches and produces an ordered list of JDAs according to fit, meeting the user's selection criteria. Reduced errors in rehabilitation and accommodation decisions are anticipated.

Keywords: Job Demands Analysis, disability management, injury prevention

L'ANALYSE DES EXIGENCES DU TRAVAIL ET LE SYSTÈME DE CONCORDANCE DES CAPACITÉS FONCTIONNELLES AU TRAVAIL, À LA VILLE DE TORONTO

Résumé

En 1998, sept municipalités ont fusionné pour créer la ville de Toronto, chacune ayant son propre outil d'analyse des exigences physiques (PDA). Un examen des PDA a permis d'identifier leurs limites et leur impact sur l'efficacité des PDA en matière de gestion des limitations fonctionnelles et de prévention des accidents. Les ergonomistes de la ville ont remanié l'outil et ont inclus des exigences psychologiques et cognitives. Les changements de cette « analyse des exigences du travail » (JDA) se sont traduits par une collecte de renseignements plus détaillés et par un système d'évaluation pouvant identifier les facteurs de risque d'accidents potentiels. Ces changements augmentent l'efficacité de la JDA dans la gestion des limitations fonctionnelles et dans la prévention des accidents. Les JDA sont maintenues dans une base de données qui permet au personnel des Ressources humaines d'avoir à tout moment accès aux JDA les plus récentes par le biais d'un serveur client. La comparaison entre les capacités fonctionnelles des employés et n'importe quelle JDA ou toutes les JDA à la fois se fait automatiquement grâce au système intégré de gestion des limitations fonctionnelles et de la sécurité, qui identifie les non-concordances et produit une liste ordonnée des JDA en fonction des concordances qui satisfait aux critères de sélection de l'utilisateur. On prévoit une réduction du nombre d'erreurs commises en matière de décisions touchant la réadaptation et les locaux.

Mots clés : Analyse des exigences de travail, gestion des limitations fonctionnelles, prévention des accidents

INTRODUCTION

A Physical Demands Analysis (PDA) outlines the physical requirements of a specific job or its tasks. PDAs are best known for their value in disability management. Health care professionals, disability management professionals, and ergonomists use this information to identify treatment goals, plan treatment programs, and identify return to work readiness and job accommodation requirements. In Ontario, the Workplace Safety and Insurance Board uses PDAs to aid in determining benefit entitlement.

In 1998, seven municipalities amalgamated to create the present City of Toronto. The ergonomists who came together reviewed the various formats of the PDAs used by the former municipalities with the goal to establish one tool. During this process, several limitations were identified with each of the PDA formats that impacted their effectiveness with respect to the rehabilitation and accommodation of municipal employees. The ergonomists took this opportunity to redesign the tool, improving its usefulness. In addition, the ergonomists wanted a tool that could better identify ergonomic injury risk factors for the purpose of injury prevention initiatives.

JOB DEMANDS ANALYSIS

Limitations with previous PDA formats

Many formats used by the former municipalities are similar in design to the Ontario Ministry of Labour's PDA. Demands are grouped in categories of Strength, Mobility, Sensory/Perceptual, Work Environment, and Conditions of Work. Within the Strength category, demands such as lifting, carrying, pushing, pulling, fine finger movements, handling, etc. are included. The maximum and usual weights and forces are recorded. The frequency of the demand is rated on scales similar to the following: 0=Never; 1=Seldom Performed, Not Daily; 2=Minor Daily Activity, Less than 1 hour; 3=Required, Frequent Repetition, for 1-3 hours; 4=Major Job Demand, Maximum ability required, Frequent repetition for more than 3 hours daily. (6) In addition, there is generally a section that describes the purpose of the job and the tasks performed.

Based on the ergonomists' experience and the feedback provided by those who use the information, the following limitations affecting the usefulness of these formats for disability management and injury risk identification were defined:

- Infrequent or rarely performed tasks with much greater demand than typical tasks often inflate the force rating. In some cases, decisions made can result in over-accommodation of an employee because the job appears entirely unsuitable.
- Using a frequency rating for some demands is difficult to interpret and appears inappropriate (e.g., how much lifting, jumping, or climbing is done in 1 – 3 hours when it can take less than a second to complete only one action?)
- Accommodation decisions based on the PDA can cause the employee to be at risk of injury **or** be over-accommodated because the degree of effort is unknown. Performing a demand with a low frequency that appears to meet the worker's abilities could result in injury because of the unknown high effort required. Conversely, a worker might be unnecessarily restricted from a high frequency demand because its low effort (ideal conditions and high degree of worker control of the duration) is unknown. Both types of errors have a negative impact on labour relations.
- No information on psychological/cognitive demands is available to assist in cases when the worker's function is affected by mental illness

- Comparing the PDA against functional abilities information is time consuming because they are typically in different formats. Greater probability for errors can exist in identifying discrepancies between the job demands and worker's abilities. Given increasing workload because of downsizing, this process is at greater risk of error.
- The process of determining suitable alternate work by comparing the worker's abilities against hard copies of PDAs for available positions is extremely time consuming and typically not feasible. This can result in saturating a work area with employees on modified work (because it takes less effort to place someone here) or result in grievances and increased workers' compensation costs because the employer fails to search broadly enough and determines they cannot accommodate the worker. Both situations are damaging to labour and management relations.
- Maintaining up-to-date paper copies of PDAs is time consuming and often neglected in a large organization where this information is shared with many staff. There is a risk that accommodation decisions are not made using the most up-to-date information.

Highlights of changes to the tool that address the limitations

The most significant changes to the tool are its rating scales and the division of some demands to provide more detail. In addition, a Psychological/Cognitive demand category was added, necessitating the name to be changed to Job Demands Analysis (JDA). These changes improve the detail of the information to facilitate better rehabilitation and accommodation decisions.

JDA categories include Strength, Mobility, Sensory, Work Environment, Conditions/Job Specific, and Psychological/Cognitive. The Summary of Demands section provides information on the purpose of the job and its tasks. Other information is captured in Tools and Equipment Used, Personal Protective Equipment Required, and Required Training, Certification, and Licensing sections.

The ergonomists developed rating scales from a review of the literature, consideration of optimum work:rest ratios (1,2,3,4,5,7,8,9), and their knowledge of City jobs. Strength and Mobility demands are rated by their occurrence (cumulative time, 1 < 1 hr/day, 2 = 1-3 hrs/day, 3 > 3 hrs/day) and level of effort (low, medium, or high). In some circumstances (e.g., lifting, jumping, climbing, and reaching), an alternate rating system was developed using total number of repetitions or total distance. The presence and combination of ergonomic risk factors (e.g., for lifting - load size, weight, shape, & stability, degree of worker control, awkward body posture, etc.) is analyzed to determine the level of effort. JDA effort levels are based on the capabilities of the typical working population, not on the specific capabilities of the worker observed or an injured worker. Weighted average and maximum forces are determined for the Strength demands.

Sensory demands (e.g., hearing, vision, feeling, and speech) are rated using the effort scale, whereas Work Environment and Conditions/Job Specific demands are rated using the occurrence scale. Each Psychological/Cognitive demand has definitions for its 1 - 3 rating scale, with 3 having the greatest demand.

In addition, **Typical** and **Exceptional** demands are identified for all categories. Typical demands reflect the occurrence, effort, average and maximum forces (if applicable) of demands that occur on at least a weekly basis. Exceptional demands refer to demands that occur less than once per week where any of the occurrence, effort, weighted average, or maximum force exceeds the typical demand. By using this methodology, the ratings and

forces of a demand are not skewed as greatly by occasionally performed tasks that have significantly greater demand.

JDAs are maintained in a database within the City's Integrated Disability and Safety Management System (IDSM). Human Resources disability management and health & safety staff currently use this system. Because the system is on a client server, maintaining the currency of the JDAs among users is no longer an issue.

Accuracy and consistency of the JDAs are critical factors in a process where decisions are based on the match between employee function and job demands. For this reason, a series of guidelines, standardized training and a mentoring program have been developed to promote reliability among raters.

Using JDAs for injury prevention

The potential for injury risk that may not be readily apparent during the observation period can be identified using the combination of ratings. A combination of a medium or high occurrence with a medium or high effort identifies the potential for increased injury risk. The additional factor of average or maximum force for Strength demands may amplify the injury risk associated with a moderate or high occurrence and effort rating. Through the process of rating the demands, job and equipment design problems and their corrective interventions become evident, allowing injury risk factors to be remedied in a proactive fashion.

JOB MATCHING

Functional abilities evaluation (FAE)

To facilitate ease of job matching (i.e., comparison of FAEs and JDAs), the FAE summary was designed in the same format as the JDA. Based on an objective assessment of the worker's function, FAE service providers complete the summary, rating the employee's abilities for most demands with the following scale:

- 0 = No ability or significantly limited. Function is limited to the extent that the worker cannot or should not perform the demand.
- 1 = Low ability. Able to tolerate the demand for less than 1 hr/day provided the effort of the job demand is low.
- 2 = Moderate ability. Able to tolerate the demand for up to 3 hrs/day when the job demand effort level is either low or medium. Able to tolerate the demand for >3hrs/day provided the job demand effort is low.
- 3 = Full ability (no limitations). Average abilities compared to the normal population. No medical reason to limit their performance of the demand; can tolerate the demand >3hrs/day including job demands rated with a high effort.

The worker's ability to perform the Psychological/Cognitive demands is rated using separate definitions for the 0 – 3 rating scale for each demand. The worker's treating psychiatrist or counsellor, or a third party psychiatric assessor typically provides this information.

Job match system

One of the modules of the City's Integrated Disability and Safety Management (IDSM) software system is **Job Match**, which contains the JDA database. When the FAE summary is entered, the system has the capability to quickly compare this information against any or all jobs in the JDA database.

The value of the Job Match system is the automated comparison between FAE and JDA information, thereby increasing work efficiency and reducing user errors that occur when visually scanning information on the FAE and JDA reports. The logic comparing the worker's abilities and the combination of JDA ratings (occurrence and effort) is programmed to identify areas of mismatch between the worker's ability and the job demands. Mismatches are indicated on the Job Match Overlay (the JDA and FAE information is combined on one table) so the user can more readily study the mismatch and make an informed decision about any accommodation measures that may be required. This method reduces the potential to make inappropriate accommodation decisions when reliable information of the employee's function is used.

When the worker's own job is not suitable, a list of JDAs in order of best to worst fit can be generated using desired search criteria (e.g., department, union affiliation, work location, etc). This process is optimal when the majority of JDAs are completed for the organization and used in combination with other criteria such as availability of alternate positions and suitability based on the fit between the worker and job skills and competencies. This method allows the employer to consider the majority of positions when an obligation exists to accommodate the employee in alternate work.

SUMMARY

The new JDA and IDSM systems have been in use at the City of Toronto for almost 2 years. The redesigned JDA is proving itself more effective for disability management among treatment providers and the City's disability management staff. Specific recommendations for accommodation are provided rather than broad medical restrictions (e.g., no heavy lifting). The tool is also proving useful in identifying potential injury risk factors, thereby focusing efforts of injury prevention. Copies of the JDA, FAE, and their guidelines can be obtained from the authors.

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