

Use of Ergonomic Data in Effective and Defensible Pre-Employment Programs

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Introduction

What is a reasonable amount of work to ask an individual to perform? This question is an ancient one. The *“Egyptian Book of the Dead,”* circa 150 BC, poses this in a prayer to be admitted into the underworld, stating “I did not ask anyone to work past their abilities.” In the modern-day era, we are faced with conflicting priorities and restrictions that impact the answer to this question. From a traditional industrial engineering approach, we design job requirements and machines around a certain population set. Often they are designed for either 90–95-percent of the working population. As engineers know, as the design parameters become more inclusive of a greater percent of the population, the cost of both design and set up of that workstation exponentially increases. By definition, the design parameters exclude or discriminate against a certain percent of the population.

An example of this contradiction is the “NIOSH Work Practices Guide (“WPG”).¹ This ergonomic model continues to be the gold standard of ergonomic models regarding material

¹ Department of Health and Human Services, Center for Disease Control and Prevention, National Institute for Occupational Safety and Health, NIOSH Musculoskeletal Documents on CD-ROM, 2001

handling. However, the model's "Recommended Weight Limit" calculates a safe lifting limit for 99-percent of 40-year-old men and 75-percent of 40-year-old women. Even when a company complies with the WPG, 25-percent of 40-year-old females, one-percent of males, and workers over 40 years of age are at potentially unacceptable risk for ergonomic injury.

While companies are challenged to minimize work-related injuries, they also must comply with state and federal disability laws when placing workers with disabilities. In addition, in a labor market where skilled and qualified workers are in increasingly high demand, from an operational sense it is important to place qualified workers whenever possible.

Ergonomic data is important in not only engineering jobs to be as safe as possible, but also in addressing the human side of the human-machine interface question. Ergonomic data allows an employer to determine the answers to important questions, such as: What are the minimal acceptable abilities that are reasonable to require of a worker prior to placing an individual into the job? What is the cost and ergonomic impact of accommodating an individual with restrictions?

EEOC Guidance and Laws Governing Post-Offer Testing Issues

An employer who chooses to implement a post-offer testing procedure must be mindful of the numerous federal and state laws that apply to such tests. Certain types of post-offer tests, including physical ability strength tests and the performance of simulated job tasks, may have the unintended consequence of screening out members of certain legally protected classes. Such results raise some of the very concerns that anti-discrimination laws, such as Title VII of the Civil Rights Act of 1964 ("Title VII"),² were enacted to address.

In addition to Title VII, the Americans with Disabilities Act of 1990 ("ADA"),³ the Age Discrimination in Employment Act of 1967 ("ADEA"),⁴ and the Uniform Guidelines on Employee Selection Procedures under Title VII ("UGESP")⁵ all address employment testing and selection procedures in some fashion.⁶

Title VII

Title VII prohibits discrimination on the basis of an individual's race, color, religion, national origin or sex.⁷ There are two types of discrimination under Title VII: disparate treatment and disparate impact. Disparate treatment requires an intent to discriminate against an individual because that person is a member of a legally protected class. Disparate impact, on the other hand, does not require intent; rather, disparate impact occurs when a facially neutral employment practice, such as certain post-offer tests, disproportionately affects members of a protected class.⁸

² 42 USC § 2000e-2000e-17 (1994).

³ 49 USC §§ 12101-12213 (2000).

⁴ 29 USC §§ 621-634 (2000).

⁵ *The Uniform Guidelines on Employee Selection Procedures*, 29 CFR Pt. 1607 (2004).

⁶ Readers are advised to seek legal counsel on state-specific laws which may impose additional obligations in the context of post-employment testing. An individualized state-specific discussion is outside the scope of this article.

⁷ 42 USC § 2000e-20003-2.

⁸ 42 USC § 2000e-2(k).

While Title VII allows the use of post-offer, post-offer testing, it prohibits tests that have the intentional—or unintentional—effect of discriminating on the basis of an individual’s race, color, religion, national origin or sex.

When utilizing post-offer employment testing, employers should be most aware of the possibility of disparate impact. For example, physical strength tests, while facially neutral, may have a disparate impact on female applicants or employees, disproportionately excluding from employment selection a much greater percentage of women than men. The United States Equal Employment Opportunity Commission (“EEOC”) and other federal enforcement agencies may use the “4/5 rule” to determine whether an employment test has an adverse impact on a protected class. A selection rate for members of a particular protected class, such as sex, which is less than 80-percent (or 4/5) of the selection rate for the group with the highest selection rate is generally regarded as evidence of adverse impact.⁹

If a post-offer employment test results in an adverse impact upon members of a protected class, it may be deemed discriminatory unless the employer can show the process has been validated.¹⁰ The U.S. Supreme Court also has held that an employer may defend such a test by showing that it is related to job performance and consistent with business necessity.¹¹ To demonstrate “job-relatedness,” the employer must prove that it is necessary to the safe and efficient performance of the job. The challenged policy or practice should therefore be associated with the skills needed to perform the job successfully.¹² Even if the employer can demonstrate that the policy or practice is job related and consistent with business necessity, it may not be lawful if there is a less discriminatory alternative available.¹³ Accordingly, it is critically important that an employer fully understand the duties of the position and the skills needed to perform those duties as there must be a close correlation between the two.

The Americans with Disabilities Act

The ADA prohibits employers from discriminating against qualified individuals with disabilities in job application procedures, hiring, firing, promotion, and other terms and conditions of employment. A “qualified individual with a disability” is someone who, with or without a reasonable accommodation, can perform the essential functions of the job in question. Reasonable accommodations are adjustments or modifications provided by an employer to enable people with disabilities to enjoy equal employment opportunities. The accommodation obligation under the ADA does not arise only during periods of active employment, but extends to post-offer test administration and to those situations in which a functional limitation is discovered or disclosed during the post-offer process. Once a functional limitation has been discovered, the employer is statutorily obligated to identify and provide a reasonable accommodation to the otherwise qualified disabled individual, unless doing so presents an undue hardship.

The ADA also governs the types of medical inquiries an employer may make during the course of the employment relationship. The inquiries are divided into three categories: pre-offer,

⁹ 29 CFR Pt. 1607 (2004).

¹⁰ The UGESP recognizes three types of validity standards: (1) criterion-related; (2) content validity; and (3) construct validity.

¹¹ *Griggs v. Duke Power Co.*, 401 U.S. 424 (1971).

¹² *EEOC Fact Sheet on Employment Tests and Selection Procedures*, (December 2007).

¹³ 42 USC 2000e-2(k); *Griggs v. Duke Power Co.*, 401 U.S. 424 (1971).

post-offer, and employment. Before an employer makes an offer of employment, it is prohibited from making a “disability-related” inquiry. The reason for this prohibition is obvious: the ADA seeks to prevent employers from making employment decisions based on medical information, rather than on an objective assessment of the applicant’s knowledge, skills and abilities to perform the duties of the position. Once a real offer has been made, however, an employer may make medical inquiries or require medical examinations provided that it does so for all employees in the particular job category.¹⁴ Finally, during the employment relationship, an employer may ask questions about disabilities or require medical examinations only if doing so is job-related and consistent with business necessity.

Because of the numerous obligations these laws impose on employers, it is crucial to have post-offer employment tests that can withstand legal scrutiny. The EEOC has articulated a number of best practices to ensure that an employer’s testing and selection procedures comply with applicable law:

- Employers should administer employment tests without regard to race, color, religion, national origin, sex, age or disability.
- Employment tests and other selection procedures should be validated for the particular position. The test or selection procedure must be job related. Even if an employer uses a third-party test vendor, it ultimately is the employer’s responsibility to ensure the validity of the tests.
- If the test has a disparate impact on a protected group (e.g., a lifting test disproportionately screens out women), the employer should determine whether there is a less discriminatory alternative for achieving the same results; that is, a different test or selection procedure which will accurately predict performance, but will not screen women out.
- Employers must be aware of current job requirements. Because the purpose of employment tests and selection procedures is to assist in determining whether an individual is capable of performing a specific job or job duty, it is critical that the test accurately reflects the duties of the position.¹⁵

Strategies of Supporting Job Analysis for a Post-Offer Program

It is clearly not adequate just to have the essential functions of a job documented. The secondary or support functions of the job could create an acceptable risk to some workers. To design a prevention program, and assist in addressing possible future accommodation issues, it is necessary to break down the components of all functions of the job.

¹⁴ *EEOC ADA Enforcement Guidance: Preemployment Disability-Related Questions and Medical Examinations* (10/10/95); *O’Neal v. City of New Albany*, 293 F.3d 998 (7th Cir. 2002).

¹⁵ *EEOC Fact Sheet on Employment Tests and Selection Procedures* (December 2007).

Human Performance Area	Example
Musculoskeletal	Gross motor, whole body movements including lifting and strength components.
Sensori-Motor	Typically considered fine motor but any task that requires use of light touch, good proprioceptive skills or rapid hand motions with minimal force. Examples include pinching, threading and writing.
Perceptual-Motor	Tasks involve perceiving a changing environment and making the correct motor response. Typically items like this would include driving, tracking on a computer screen, or any task where balance is critical. Perceptual-Motor skills are critical with most sports participation.
Perceptual-Cognitive	Tasks involve perceiving and correctly interpreting different levels of stimuli. This could include quality inspection, ensuring both by sight and sound that a machine is running correctly or any type of job that requires taste or smell interpretation.
Cognitive	Aspects of the job requiring more of an upper-level thought process or creative work.

Table 1. Evaluations of Human Performance

Many jobs or individual job tasks have multiple components of the human performance areas listed above. For example, driving a fork truck requires:

- Musculoskeletal requirements to turn the wheel and rotate the neck;
- Sensori-motor requirements to operate the foot controls correctly;
- Perceptual motor requirements of navigating the fork truck and the load;
- Perceptual cognitive skills regarding safety awareness;
- Cognitive requirements relating to understanding the load ratio and other safety constraints.

Despite the fact that there may be significant overlap between human factor components, it is still very useful to look at the critical aspects of the job in this regard. By evaluating the areas of human performance first, it is easier to identify key components of the job that will predict worker success in other areas. For example, lifting 40 pounds with required awkward mechanics may be more sensitive than 50 pounds with the weight close to the body.

The job can then be broken down further into physical, sensory and mental aspects. From there, it is possible to separate the essential functions from secondary functions with a clear supporting rationale. Lastly, the ergonomic stressors specific to each body part can be quantified. Irrespective to the question of what the essential functions of the job are, if an employee is placed into a position where s/he is asked to complete a task that s/he does not have the physical, sensory or mental ability to complete, a negative outcome is likely to occur.

A job analysis that clearly defines the physical, mental and sensory demands of the job along with body part specific ergonomic data can be useful well beyond post-offer testing.

Comprehensive job analyses can be used for work-related and non-work related injury management, accommodation assessments, job rotation and work-specific exercise programs. Use of the job analyses system provides data for better management of short-term disability, long-term disability, FMLA and workers' compensation claims. Job analysis with good ergonomic data should also be sent to a physician for fitness-for-duty evaluations along with a letter that asks the professional to directly reference the information contained within the job analysis.

A job analysis is useful in determining whether an injury did or did not occur at work. A report which quantifies ergonomic data assists employers with managing the case, supporting the Independent Medical Exam and ultimately the denial/decrease in settlement of the overall claim.

Strategies to Identify Pre-Existing Conditions That May Be Inconsistent with Safe Placement

History of Post-Offer Testing

To understand what should be involved in a post-offer testing program, it is useful to understand how post-offer testing has evolved over the years. Post-offer testing has evolved because of advances in medicine, an increased knowledge of what is effective in testing, and in response to laws that have been passed to protect workers, such as state and federal disability laws.

Occupational injuries have been recorded for thousands of years, dating back to 2700 BC, when Egyptian physicians treated construction workers at pyramids.¹⁶ While occupational injuries have been documented for thousands of years, literature on the use of post-offer testing dates back nearly 100 years. In the 1920s, X-rays were used to detect back abnormalities. Conclusions were made that applicants with abnormal X-rays could not be placed into work positions.¹⁷ By the 1960s, the use of the X-ray began to be questioned.¹⁸

Traditionally, post-offer testing did not focus on functional testing of applicants. Houghton (1989) used verbal questionnaires without functional testing and found that the questionnaires alone had no significance on the outcome of post-hire illness behavior.¹⁹ Many companies turned to standard medical exams by physicians that did not offer consistent outcomes.

With the passage of the ADA in 1990, and in the wake of more stringent state laws, significant concerns arose over hiring an applicant that may have a medical condition. For some post-offer testing providers, a lack of understanding of the laws protecting applicants led to ineffective programs that were not defensible. Other post-offer testing providers responded favorably by developing specific procedures and protocols to follow in the event an applicant presents with a medical condition. Presently, there continues to be a need to identify applicants

¹⁶ Brandt-Rauf, P.W., Brandt-Rauf, S.I. "History of occupational medicine: relevance of Imhotep and Edwin Smith papyrus." *BRJ Indust Med.* 1987. 44:68-70.

¹⁷ Bohart, W.H. "Significant and anatomical variations of the symptomless spine from surgical and industrial standpoint." *Illinois Medical Journal.* 1929. 55:356-359.

¹⁸ Rowe, M.L. "Low back pain in industry." *J Occup. Med.* 1969. 11:161-169.

¹⁹ Houghton, A.M. Edmonson- Jones J.P., and Harris, L.A. "Pre-employment screening. Use or ornament?" *Journal of the Society of Occupational Medicine.* 1989. 39(2):51-55.

with medical conditions and thoroughly evaluate the applicant's abilities in order to assist with consideration of work placement.

Key Components in a Post-Offer Testing Program

While there are many varieties of post-offer tests, there are a number of key components that should be considered in all post-offer testing programs:

- A medical history with specific rationale regarding why the question is asked relating to job duties.
- Clinical testing to identify pre-existing conditions and compare findings to job risk factors.
- A functional test that is related to the job demands through specific rationales for each test and validation from current workers.

These key components are explained in detail below.

Medical History Tied to Job Duties

There are a number of ways to gather an applicant's medical history. It is recommended that all applicants complete a medical questionnaire. Each question relating to the applicant's medical history should be specifically tied to the job duties with a thorough rationale. Special care should be taken in developing a medical questionnaire to ensure the applicant's rights under the Genetic Information Nondiscrimination Act (GINA) are protected. The medical history completed during a post-offer test can assist the administering clinician in identifying medical conditions to further evaluate in the clinical evaluation portion of the test. The questionnaire also can help identify conditions that may put the applicant at risk during the functional portion of the post-offer test or in the work environment.

It is important that the medical questionnaire includes informed consent in which the applicant acknowledges understanding that omitting or misrepresenting oneself on the medical questionnaire can be grounds for dismissal from employment. The administering clinician should review the medical questionnaire with the applicant and document specific information that may be useful in identifying conditions that may put the applicant at risk.

Clinical Testing

While there are numerous ways to identify pre-existing conditions, not all methods are predictive and valid. Historically, diagnostic testing, including X-rays and MRIs, were used to detect pre-existing conditions. While these types of diagnostic studies can identify an abnormal pathology, literature does not support that use of diagnostic studies as they do not have true predictive value of one's physical limitations. For example, Torgerson and Dotter found that 47 percent of people diagnosed with spondylosis by X-ray were asymptomatic.²⁰ In addition to diagnostic studies, the medical community has used standard medical exams without specific clinical testing for years. These standard medical exams include an assessment of an applicant's overall wellness, along with a very basic musculoskeletal assessment. The job risk factors are not considered in the assessment, as the main focus is the applicant's overall wellness. Because only basic musculoskeletal information is evaluated and findings are not compared to job risk factors, these

²⁰ Torgerson, W.R., Dotter, W.E. "Comparative roentgenographic study of the asymptomatic and symptomatic lumbar spine." *Journal of Bone Joint Surg AM*. 1976. 58(6): 850-853.

standard medical exams historically have offered little help in identifying pre-existing conditions that may limit an applicant's ability to perform work.

While standard medical exams and diagnostic testing may not offer good predictive outcomes, a well-designed comprehensive clinical test can be highly effective in identifying pre-existing conditions. Comprehensive clinical tests should include specific testing for each body part. Occupational and physical therapists can perform a multitude of clinical tests with high predictive value for each body part. For example, the therapist can complete specific clinical testing to evaluate the strength of an applicant's rotator cuff. If rotator cuff strength is compromised, the findings from clinical tests would be positive.

The identification of pre-existing conditions and limitations can be effective only if findings are compared back to the job risk factors. If an applicant is found to have difficulty with kneeling only and the job does not require kneeling, the applicant may not need to have restrictions for this specific job. On the other hand, if a candidate is found to have significant rotator cuff weakness and the job has high risk factors for the shoulder, the applicant may need specific restrictions to ensure his/her safety in completing the job.

It is essential that the administering clinician have a good understanding of the appropriate behavioral response of the applicant to each specific clinical test. This is important, as an applicant may not always be forthcoming about pain s/he experiences during clinical testing. For this reason, the post-offer test provider must pay close attention to the applicant's response to each test. Ramney (2010) identified a number of signs of pain that may have 'organic' causes.²¹ These signs include: superficial tenderness; non-anatomical tenderness; pain on axial loading; pain on simulated rotation; distracted straight leg rise; regional sensory change; regional weakness; and overreaction. The clinician's ability to assess for these signs of pain can be helpful in establishing the applicant's limitations.

While the behavioral response can assist with identification of positive clinical findings, some clinical tests findings are purely objective. For example, monofilaments can be used to assess light touch sensation while the applicant is blinded for testing. Arterial refill to the hands can be tested by visual evaluation by the provider. In addition, grip strength can be identified with a dynamometer and pinch strengths can be tested with a pinch gauge. Both grip and pinch strengths have specific normative data specific to gender and age.

The Functional Test

While the medical questionnaire and musculoskeletal screen are important tools in a post-offer test to assess for the presence and severity of conditions, the functional test is the ultimate tool in assessing an applicant's ability to complete specific job duties. Chaffin (1976) found that the likelihood of a back injury or musculoskeletal injury increased when a job's lifting requirements approached or exceeded the strength capability demonstrated on an isometric job simulation.²²

²¹ Ramney D. "A proposed neuroanatomical basis of Waddell's nonorganic signs." *Am J Phy Med Rehabil* 2010. 89:1036-1042.

²² Chaffin, D. B., Herrin, G.D., and Keyserling, W.M. "Preemployment strength testing in selecting workers for materials handling jobs." *U.S. Department of Health, Education and Welfare (NIOSH) Publication CDC*. 1976. 99-74-62.

For this reason, it is imperative that post-offer testing evaluate an applicant’s ability to meet the functional demands of the position.

Functional Testing Techniques

Functional testing techniques vary considerably between post-offer testing providers. There are a number of ways to test for strength that vary with the type of movements being tested, functionality of testing, and cost of the equipment involved for testing.

Isometric	Same movement. Individual will typically pull against a strain gauge.
Isokinetic	Same speed. Individual produces force against a machine that is set to move at a certain speed and subsequently the force curve is computed.
Isotonic	Same force. The machine produces the same level of force at all times and the speed of motion the worker is able to generate against that same force is tracked.
Iso-inertial	As with free weights, the inertial stays the same; however, typically both the force and the force vector of a lift or other motion may change with an acceleration and deceleration phase of a motion.

Table 2. Typical Approaches for Strength Testing

The iso-inertial approach towards strength testing presents with clear advantages. This approach clearly has the most surface validity because actual objects used on the job can be utilized in the testing protocol. It is important to note that the initial acceleration phase of an actual lift can require up to 20-percent greater force than the actual weight of the object, secondary to acceleration. Relatedly, the speed of a forceful motion is rarely uniform with an acceleration and deceleration phase. Eccentric or lengthening contractions also have important body mechanics, physiological and functional considerations. The only cost-effective technology which allows for acceleration, changes in force vectors, and eccentric contractions is iso-inertial. Fortunately, iso-inertial testing is the least expensive program and requires little or no maintenance since free weights or actual work objects can be used.

With the iso-inertial testing program, it is important to use a thoughtful testing protocol to measure maximum volitional effort (MVE) with control that may be quite different compared to a one-time maximum effort with potential over recruitment. Stoover Snook²³ used the MVE approach in developing his maximum perceived exertion data and this type of approach is common in functional capacities evaluations (FCE).

In addition to strength testing with the support of ergonomic data, there are many other aspects of human performance that may be tested:

1. Cardiovascular testing protocols such as a step test, treadmill test and other methods of measuring maximum acceptable cardiac output can be compared to the actual energy requirements of the job. The job energy requirements can be calculated through modeling or direct heart rate data of the worker.

²³ Snook, S.H. and Ciriello, V.M. “The design of manual handling tasks; revised tables of maximum acceptable weights and forces.” *Ergonomics*. 1991: 34(9).

2. Sensory-motor tests may be compared with traditional industrial engineering time studies to determine if the worker has the fine motor dexterity to complete the job.
3. Other tests include color discrimination, figure/ground, attention to detail, ability to complete multiple steps and instructions, all of which may be extremely useful depending on the job in question.

Logistic Strategies for Implementing a Post-Offer Testing Program

While the medical questionnaire, the clinical test, and the functional test are key components for all post-offer testing programs, the interpretation of the findings from these components are critical to the success of any post-offer testing program.

A study completed by Harbin, Shenoy and Olson (2011) specifically reviewed the effect of post-offer testing and shoulder injury rates.²⁴ A six-year study found a 37-percent decrease in medical costs for shoulder and other work-related injuries. For every dollar spent on post-offer testing, there was a \$14 savings in medical cost. According to Harbin, *et al*, “It is evident that a *properly conceived and implemented* post-offer testing program may help in reduction of work related injuries.”

The challenge for employers is to find a post-offer testing provider that can implement an effective, legally defensible program. The key to an effective post-offer testing program is a central decision maker that assists the clinicians completing the post-offer test. The central decision maker’s role is to interpret the findings from the post-offer test and serve as a liaison in developing an appropriate set of restrictions for an applicant with a medical condition. In the end, the employer will be able to use the set of restrictions in the accommodations process.

At times, employers may need a post-offer testing provider that can service locations throughout a state or throughout multiple locations in the United States. With multiple locations, employers face the difficulty of communicating with numerous post-offer testing providers that interpret results regarding medical conditions and communicate findings in different ways. As a result, employers may become frustrated with the complexity and inconsistency of results. To obtain consistent, legally defensible results, it is strongly recommended that a multi-site employer look for a post-offer testing provider that interprets and communicates post-offer test findings from one central location. This central interpretation of results is crucial in identifying the physical limitations an applicant may have given a specific condition.

Strategies on Interpreting Restrictions Based on Ergonomic Data

A key aspect of a post-offer testing program is not only identifying pre-existing conditions which may affect the worker’s ability to do the job, but also to assign medically necessary restrictions that can be interpreted and applied to the specific job the applicant will be doing. While seldom

²⁴ Harbin, G.L., Shenoy, C, Garcia, A, Olson, J.C. “Shoulder injury reduction with post offer testing.” *Work*. 2011. 39(2): 113-23.

used for this purpose, ergonomic data and models offer a very valuable set of tools to the medical community for this purpose.

Example 1: A medical questionnaire or a clinical test during the post-offer process demonstrates that an applicant has distal nerve symptoms consistent with significant carpal tunnel syndrome. Unless the condition has developed to the point of atrophy of the muscles or loss of protective sensation of the fingertips, it is likely that the applicant would be able to perform the essential functions of the job for a short period of time. The question is, “Does this person need medical restrictions to prevent the case from being significantly aggravated?” To this end, it is essential that medical restrictions are established regarding the individual’s ability to perform hand-intensive work.

Example 2: A medical questionnaire or clinical test during the post-offer testing process demonstrates a significant low back spondylosis. In this case, the applicant may be strong enough to perform the essential functions of the job; however, s/he may need medical restrictions, particularly regarding lifting or hyperextension of the back.

In both of the above cases, while it is certainly unacceptable to uniformly discriminate against an applicant and not hire simply because they have a medical condition, it is also unreasonable to place that individual into a position where the best available medical authority believes the work will cause harm.

There is a great need for additional research in the area of establishing medical restrictions. In the post-orthopedic surgery world, there are some well-established protocols for restrictions, but for most other chronic conditions establishing medical restrictions relies heavily on the expertise of the medical practitioner. Ergonomic data can be of great assistance in helping the medical practitioner with identifying restrictions. For example, the Strain Index is a very helpful tool in establishing risk specific to carpal tunnel syndrome.²⁵ For a worker with an active carpal tunnel syndrome, the physician can make a quantifiable restriction such as “Strain Index should be under 4.0.” We contend that the validity, reliability and ability to interpret the restriction specifically to the manufacturing environment would greatly increase with this level of restriction. In the spondylosis example, it may be possible to indicate that the individual needs a restriction of the *NIOSH Work Practices Guide* which would be under 1.0 or under 0.5 in the case of a very severe condition.²⁶

It should be emphasized that these models were not designed with the idea of managing individuals with pre-existing conditions; however, they are some of the best available tools for quantifying the ergonomic risk factors per the job. For this reason, it makes perfect sense to use them in establishing medical restrictions. Other ergonomic tools which could prove useful with regard to restrictions include the University of Ann Arbor “3D Static Strength” software which could be effective across multiple body parts; “Snooks Psychometric Data Tables” or other tools

²⁵ Moore, Steven J., Garg, Arun. “The Strain Index: A proposed method to analyze jobs for risk of distal upper extremity disorders.” *American Industrial Hygiene Association*. 1995. 56: 443-458.

²⁶ Department of Health and Human Services, Center for Disease Control and Prevention. 2001. *National Institute for Occupational Safety and Health, NIOSH Musculoskeletal Documents on CD-ROM*.

where it is possible to quantify the risk factors per body part or assess strength abilities.^{27,28} Typically, it is not helpful to use tools such as the hand/arm assessment tools like RULA that look at the total stress across multiple body parts since usually a medical restriction will be specific to one body part. Also, care must be taken regarding the skill of the individuals who use the tools. Assessments that are done by associates at the factory floor level or the ergoteam levels may have not the reliability necessary regarding medical placement issues.

The Accommodation Process for Individuals with Restrictions

Inevitably, the post-offer testing process will identify a functional limitation, which impacts an individual's ability to perform the essential functions of the position. When that occurs, the employer may withdraw a conditional offer of employment. Should the rejected individual subsequently file a charge with the EEOC alleging discrimination, however, the employer will be required to show that: (1) its decision was job-related and consistent with business necessity; and (2) the restriction could not be reduced or eliminated by a reasonable accommodation. As noted earlier, if an accommodation is available which effectively removes the barrier to successful performance and provides the individual with an equal employment opportunity, the employer must provide it, unless doing so creates an undue hardship.

Post-offer testing also occasionally reveals that an individual may be unable to perform the essential duties of the position because of safety concerns. In that case, the employer must be prepared to show that the employee is a direct threat to himself or others.²⁹ "Direct threat" means the person poses a "significant risk" of "substantial harm" to himself or others.³⁰ A direct threat defense cannot be speculative and should be supported by objective medical evidence. Again, the employer must demonstrate that the threat cannot be sufficiently reduced or eliminated through a reasonable accommodation.

In its *Technical Assistance Manual: Title I of the ADA*, the EEOC offers examples of post-offer decisions that may be job-related and consistent with business necessity and where no reasonable accommodation was possible:

- A medical history shows an individual has injured his back numerous times doing the same type of work for which he is currently being considered. Each subsequent injury has worsened the back condition. Hiring the person would entail significant risk that he would re-injure himself;
- A medical examination reveals an impairment that would require the individual's frequent absence from work for medical treatment. The job at issue requires daily availability for the next three months. As a result, this individual is not qualified to perform the essential functions of the job and no accommodation is available.

²⁷ The University of Michigan Center for Ergonomics, Office of Technology Transfer, Wolverine Tower, Suite 2071, 3003 South State Street, Ann Arbor, MI 48 109-1280. *3D Static Strength Prediction Program, Version 5.0.8.*

²⁸ (Snook, 1991)

²⁹ 29 CFR § 1630.2 (1995).

³⁰ *Id.*

Alternatively, a discriminatory use of a post-offer medical examination would occur when an employer rejects an applicant with a medical condition who cannot lift 50 pounds even though the job requires lifting 50 pounds only occasionally and the employer does not consider possible accommodations, such as sharing the lifting duties with another employee or providing a lifting device.³¹

While an employer has a statutory duty to attempt to accommodate the known disabilities of a qualified disabled individual, it is important to note that an employer is required only to provide an accommodation that is “reasonable.” Many courts that have addressed the general definition of “reasonable accommodation” have found that whether an accommodation is reasonable may depend on whether the cost of providing the accommodation outweighs the benefits.³² The EEOC does not appear to agree with this analysis, however.³³

The ADA provides examples of common types of reasonable accommodations which an employer may need to provide upon discovery of an individual’s functional or safety limitations, although an employer’s obligation is not limited to these particular accommodations:

- making facilities accessible to and usable by the person with a disability;
- restructuring the job by reallocating marginal job functions;
- allowing changes in the ways in which an essential function of the job is performed; and
- obtaining or modifying equipment or devices.³⁴

While an employer may need to reallocate a job’s marginal duties by way of reasonable accommodation, the ADA does not require the employer to eliminate or reallocate the *essential* functions of a job.³⁵ But again, the employer may need to allow changes in *how* an essential function is performed.³⁶ In addition, the law does not require an employer to lower its quality or production standards in an effort to reasonably accommodate a disabled individual.³⁷ Indeed, the disabled employee may be held to the same performance standards as non-disabled employees.

The reasonable accommodation process should focus on the individual’s abilities and functional limitations and the specific functional requirements of the job. The goal of the process is to assist the individual to successfully perform the functional requirements in any reasonable way possible. This is a very individualized assessment and the individual’s participation may be invaluable. Many times, s/he will have insight into his or her own abilities and challenges presented by the limitation that the employer may not have. Similarly, the employer may possess knowledge and information relating to the duties of the position and alternative performance methods that the employee may not have.

³¹ *Technical Assistance Manual: Title I of the ADA* (10/29/02).

³² *Skerski v. Time Warner Cable Co.*, 257 F.3d 273 (3rd Cir. 2001); *Vande Zande v. Wis. Dep’t. of Administration*, 44 F.3d 538 (7th Cir. 1995).

³³ *EEOC Enforcement Guidance: Reasonable Accommodation and Undue Hardship*, fn 9, (10/17/02).

³⁴ 29 CFR § 1630.2; *Technical Assistance Manual: Title I of the ADA* (10/29/02).

³⁵ *Richardson v. Friendly Ice Cream*, 594 F.3d 69 (1st Cir. 2010).

³⁶ *EEOC v. Wal-Mart Stores, Inc.*, 477 F.3d 561 (8th Cir. 2007).

³⁷ *Hoffman v. Caterpillar, Inc.*, 256 F.3d 568 (7th Cir. 2001).

The EEOC suggests the following process for identifying reasonable accommodations for individuals with restrictions:

1. Determine the purpose and essential functions of the particular job involved;
2. Discuss with the disabled individual his or her specific physical or mental disabilities and limitations and how they relate to the essential job functions;
3. With the individual's input, identify potential accommodations and evaluate whether the accommodation would enable the individual to perform the essential functions of the job;
4. If a reasonable accommodation cannot be identified through this process, the employer should contact technical assistance resources, such as the ADA Regional Business and Disability Technical Assistance Center, to obtain information regarding possible accommodation or local technical assistance sources. Employers should also consider contacting the Job Accommodation Network, a free consulting service on accommodations. Employers should determine whether funding for any identified accommodation from an outside source is available, perhaps through a state rehabilitation agency. Federal tax credits and tax deductions also may be available to employers who are providing certain accommodations.
5. If more than one accommodation is identified which would remove the barrier to employment, the employer is free to choose which accommodation it wishes to provide. The employer does not necessarily have to choose the accommodation the individual prefers, but the accommodation it does choose must be effective. If an accommodation is deemed cost-prohibitive after an undue hardship analysis, the applicant or employee should be offered an opportunity to contribute to the cost of the accommodation.³⁸

Undue Hardship

An undue hardship is defined as an action that is “[e]xcessively costly, extensive, or disruptive, or that would fundamentally alter the nature or operation of the business.”³⁹ Similar to a direct threat analysis, undue hardship cannot be based on speculation, but “must be based on an individualized assessment of current circumstances that show that a specific reasonable accommodation would cause significant difficulty or expense.”⁴⁰ A determination of undue hardship should be based on:

- the nature and net cost of the accommodation;
- the financial resources of the facility, the number of employees at the facility, the effect on expenses and resources, or other impact on the operation of the facility;
- the overall financial resources of the company, the size of the business, the number, type and location of its facilities;
- the type of operation including the composition, structure, and functions of the work force.⁴¹

If an accommodation unduly disrupts other employees' ability to work, it may be found to be an undue hardship. Courts have found that accommodations that result in other employees

³⁸ *Technical Assistance Manual: Title I of the ADA*, Section 3.8, (10/29/02).

³⁹ 42 USC § 12111(10)(1994); 29 CFR § 1630.2(p)(1997); 29 CFR pt. 1630 app. § 1630.2(p)(1997).

⁴⁰ *EEOC Enforcement Guidance: Reasonable Accommodation and Undue Hardship Under the Americans with Disabilities Act* (October 2002).

⁴¹ 42 U.S.C. 12111(10); 29 C.F.R. § 1630.2(p).

working “harder or longer” hours or accommodations which “adversely impact other employees’ ability to do their jobs” may constitute undue hardship.⁴²

Notwithstanding the laws that impose the affirmative obligation upon employers to accommodate disabilities, some employers still bristle at the prospect of complying with these laws. For good or for ill, absent undue hardship, employers are legally required to accommodate the known disability of an applicant and/or employee. There simply is no legal way to avoid at least engaging in the interactive process of accommodation once a disability which limits the individual’s ability to perform certain duties has been confirmed by the post-offer testing process. The benefits of doing so far outweigh the risks. Rather than dismiss the accommodation process, employers should recognize that the identification of a restriction, and the accommodation of that restriction, may be a win-win situation for both the employer and the employee and may be far less onerous than the employer fears. The employer and employee may together identify a reasonable accommodation that ultimately provides the employer with a capable, long-term employee and provides the employee with stable employment.

A Cost-Benefit Analysis of a Post-Offer Testing Program

The costs for implementing a post-offer testing program may include the following:

- Consulting cost to develop the program;
- Direct cost of each test;
- Administrative costs associated with scheduling, communicating results, etc.;
- Cost of replacing the applicants who exit the process without employment; and
- Cost of completing an accommodation assessment when a worker is found to have a condition.

The main benefit of a post-offer testing program is to decrease the occurrence and cost of injuries for new employees within the first year of employment. A good post-offer testing program also will help to identify applicants with conditions in need of work restrictions to assist employers with safe placement. There is significant cost saving with avoiding injuries with new workers. The United States Department of Labor indicates that 23-percent of all injuries occur within the first year of employment.⁴³ According to Workers Compensation Insurance Rating Bureau of California (“WCIRB”), an average back claim can cost between \$33,000 and \$53,000 and the New Choice Health the average cost of a knee claim is anywhere between \$12,000 and \$18,000.^{44,45} There also are indirect savings in avoiding injuries with estimates between 1 and 4 times the direct costs. Typically if an employer can prevent one injury out of every 400 hires, a post-offer program will be cost effective.

⁴² See e.g. *Mason v. Avaya Communications, Inc.*, 357 F. 3d 1114 (10th Cir. 2004).

⁴³ Department of Labor. “Bureau of Labor Statistics.” November 8, 2012. (retrieved March 1, 2013) (http://www.bls.gov/news.release/archives/osh2_11082012.pdf)

⁴⁴ Workers Compensation Insurance Rating Bureau of California (WCIRB). “California State Department of Industrial Relations.” December, 2004. (retrieved March 1, 2013) (<http://www.dir.ca.gov/CHSWC/AvCostPerClaimByInjury-Pg123.doc>.)

⁴⁵ New Choice Health. (retrieved March 1, 2013) (<http://www.newchoicehealth.com/Arthroscopic%20Surgery-Cost>.)

The actual cost savings with a post-offer testing program is highly dependent on the nature of the work being done, the demographics of the work force, and the effectiveness of the testing systems. Listed below are three examples of the cost savings associated with an actual post-offer testing program:

Example 1: A multi-site employer with over 100 testing sites throughout the United States began post-offer testing in 2012. Prior to testing in 2011, the company had workers' compensation costs in excess of \$400,000 for new hires within the first year of employment. After implementing a post-offer testing program, workers' compensation was \$900 for new-hire employees (see Table 1).

	2011 Costs (Before post-offer testing)	2012 Costs (After implementing post-offer testing)
Cost of Injuries	\$435,000	\$900
Cost of Program Implementation		\$70,125
Total	\$435,000	\$71,025
Estimated Cost Avoidance		\$363,975

Table 3: Workers' Compensation Costs Pre and Post-Offer Testing

Example 2: A large employer reports that post-offer testing was equivalent to \$2 million dollars in sales.

Example 3: Over 4,000 post-offer tests were completed for one national employer over the course of 6 years. Of the applicants tested in the six years, six developed musculoskeletal injuries in the first year of employment. This company experienced a 0.15% musculoskeletal injury rate occurring in the first year.

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