

Understanding and Properly Implementing Pre and Post Offer Employment Testing

The Most Valuable Resource for Any Business is its Employees

R.GAGNE, EET, CFE, NADEP

ABSTRACT

*Addressing safety and health issues in the workplace saves the employer money and adds value to the business. Recent estimates place the business costs associated with occupational injuries at close to **\$170 billion** - expenditures that come straight out of company profits. With an ever increasing aging workforce that is less conditioned than ever before combined with a constant threat to the employer of "pre-existing" conditions, hiring and retaining qualified and physically "able" workers is one of the greatest challenges employers face today.*

A properly implemented physical screening process provides security in the placement of workers who will be able to meet the physical demands of the job and continue to be injury free in the workplace.

OVERVIEW

When an employee is injured on the job the direct and indirect costs are substantial and may include;

- Productive time lost by an injured employee
- Productive time lost by employees and supervisors attending the accident victim
- Clean up and start up of operations interrupted by the accident
- Time to hire or to retrain other individuals to replace the injured worker until his/her return
- Time and cost for repair or replacement of any damaged equipment or materials
- Cost of continuing all or part of the employee's wages, in addition to compensation
- Reduced morale among your employees, and perhaps lower efficiency; Increased workers' compensation insurance rates
- Cost of completing paperwork generated by the incident

We all understand that for any sport activity we must physically prepare ourselves to perform at our peak level, however, what we need to remember is that every job also includes a series of essential tasks and physical demands that need to be met. We are all essentially "Industrial Athletes" and need be prepared to perform at a safe and sustained level. One way to ensure that we are being hired into the right work environment considering our abilities is to use physical testing. Physical ability tests can be used to evaluate the physical ability of an individual in respect to the physical ability required to perform a particular job. The information can lead to better placement decisions which, in turn, can lead to fewer injuries, higher productivity and lower turnover.

Average Industry wide costs per type of injury are as follows:

Upper Extremity Injuries

The average days lost for an upper extremity injury is 61
 The average cost of these injuries \$7,240
 Sprains and Strains (\$ 5,566) days lost 47
 Tendonitis (\$ 7,287) days lost 60
 Carpal Tunnel (\$ 9,415) days lost 81
 Epicondylitis (\$ 7,977) days lost 69

Back Injuries

The average days lost to a back injury is 32
 The average cost for one of these injuries \$ 3,704
 Sprains and Strains (\$ 3,552) days lost 31
 Contusions, Crushing and Bruises (\$2,967) days lost 25
 Hernia and Ruptures (\$16, 367) days lost 111

Musculoskeletal disorders (MSDs) cost the U.S. economy between \$13 and \$15 billion annually ending in a total cost of employee disability which adds up to 6.3% of total United States payroll (Watson Wyatt Worldwide and the Washington Business Group on Health, 2001). As a result, many executives who promote MSD prevention are carefully considering better testing for predicting who is at risk during hiring and before putting people in new potentially high risk jobs. Employment testing strategies include employers using pre and post-hiring testing to place the right employees in the right positions.



Some standard statistics to understand regarding the cost to Employers are:

- An employee who files a Workers' Compensation(WC) claim for lost time is twice as likely to file another WC within 3 years
- 26% of employees with a prior WC claim who remained employed with the same employer are more likely to file another claim with employer
- The second claim filed for this employee has more than a 50% likelihood of being a back injury
- Over the past three years, workers' compensation costs have increased an average of 50 percent and currently account for \$.67 of every dollar spent on casualty insurance.

Employer indicators for use*Employees quitting because work is too physically demanding*

One of the key indications that physical ability testing would be useful is if new-hires, individuals returning to work after injury, or even incumbent employees are quitting at a high rate with the expressed reason being that the work is too hard for them.

Other indicators of high physical demand

More subtle indications of high physical requirements are that workers lose a significant amount of body weight in their first weeks on the job, employees move to other jobs as quickly as possible, or workers sweat profusely even when the ambient temperature is cool. Employees may also informally adopt strategies to deal with high demands, such as giving the most strenuous parts of the job to the new employees, who may be younger, stronger and more fit. These strategies may concentrate the exposure to high demands on a few individuals, thereby increasing their risk of injury.

High rate of sprain/strain injuries

Physical ability testing can also be indicated when workers are experiencing high rates of sprain/strain injuries or other types of musculoskeletal problems such as back pain or shoulder soreness. Often, the root cause of these sorts of injuries is a mismatch between worker ability and job demand.

There are essentially two commonly practiced types of Employment Testing: Pre-Employment/Hiring Testing and Post Offer Pre Employment Testing.

A unique feature of the ADA is the further definition of when physical ability testing can be performed in the employee selection process. According to the ADA, some forms of physical ability testing can be given prior to an offer of hire, but the employer cannot ask questions at that point that may identify a disability, questions that may be very important in determining whether there is a risk factor for the job candidate in taking the test. For instance, it is useful for the test administrator to know whether an individual is currently experiencing back pain or is under a lifting restriction from their physician before giving them a strength test involving lifting from floor level. The pre-offer alternative is to have all candidates receive medical clearance from their personal physician to take the test. This alternative can induce additional time delay, may be cost-prohibitive for job applicants and may also be infeasible for candidates who do not have a personal physician. Another alternative is to perform the test after a conditional job offer has been made, which is referred to as post-offer testing. The ADA allows employers to ask medical questions under this condition.

Physical ability tests that involve the monitoring of heart rate or other physiologic parameters are considered to be medical tests, which must be given post-offer. The step test is commonly used to assess cardio-

vascular endurance involves the monitoring of heart rate, so batteries including this test must be given post-offer. Most testing companies recommend to their clients that any physical ability tests be given post-offer, regardless of whether it is required due to inclusion of the step test, simply so that the precaution can be utilized of having the participant complete a health questionnaire prior to the initiation of the testing.

1. Pre-Offer Pre-Employment Screen

The Pre-offer/Pre-employment Evaluation is an assessment used by employers to identify whether or not an individual is able to perform the essential physical functions of a particular job. The Pre-offer/Pre-Employment Evaluation also provides a baseline of the individual's ability to perform the physical demands of the job in question. A pre-testing drug screen may be included in this evaluation. Employers can use the results of a Pre-offer/Pre-employment Evaluation to determine suitability for a particular job.

Benefits

- 1) Individuals who "pass" the evaluation are able to safely perform all physical demands of the job in question at the time of hiring.
- 2) By identifying whether or not an individual is able to perform the physical demands of a particular job, the employer can prevent injuries at the workplace.
- 3) By preventing injuries employers are taking the most critical step towards cost containment.
- 4) Hiring individuals who are suitable for the physical demands of a particular job means increased production.

2. Post-Offer Pre-Employment Screen

This is an evaluation that is conducted following an offer of employment. Post-offer/Pre-employment Evaluations usually involve medical examinations. Physical agility testing and drug screening are not considered medical evaluations; however, they may be components of the Post-offer/Pre-employment Evaluation. The utility of this type of evaluation depends on the jurisdiction in which it is implemented. Post offer screening is a valid and reliable tool for identifying applicants' physical capabilities. The physical capabilities of the applicant are then compared to the essential physical demands of the job. The outcome of post offer screening is to determine if there is a match between the individual's functional capabilities and the physical requirements of the job. Legally, these tests must be applied consistently to all applicants and applicants must be offered the job, prior to testing, on the condition that they meet the physical requirements of the job (ADA, 1990). A comprehensive post offer screen includes the following components:

- Accurate physical demands analysis (PDA).
- Clear acceptable criteria.
- Physical screen.
- Standardized objective test.
- Occupational and job specific test.

Benefits

- 1) The Pre-placement/Post-offer of Employment Evaluation identifies individuals that are a direct threat to their own health or safety, or to the health or safety of others at the work site.
- 2) Identifies individuals who are a direct threat to their own or other employees' health or safety, employers can provide a safe working environment for all employees.
- 3) Identifies potential health or safety risks lowers the rate of medical and injury claims.
- 4) Decreased medical and injury claims mean decreased costs.

Functional screening is in most cases performed after a conditional offer has been made. According to the EEOC's guidelines, medical ex-

aminations (such as monitoring blood pressure and heart rate) can be performed only after a conditional offer has been made. Performing strenuous physical testing, which is often the case in pre-employment screening, without monitoring these physiological parameters, puts everyone at risk. In addition, post-offer screening is more cost-effective for the employer because they do not have to screen every applicant, only the ones to whom they make a conditional offer.

Effectiveness of Post Offer Screening

Selectively employing workers who meet objective job standards results in reduced incidence and severity of work related musculoskeletal illnesses and injuries (Chaffin, 1978). This study clearly indicated back injuries are more severe and return to work is delayed when the physical requirements of the job are more demanding than the workers' abilities. The researchers predicted "as job strength requirements approaches or exceeds the demonstrated isometric strengths of workers on the job, the mean incidence and severity rates increase on a ratio of about 3:1" (Chaffin, 1978). The effectiveness of ensuring employees have the physical capacity to perform the job has been examined from a number of different angles. Although much of the work is theoretical in nature the objectives are clear. According to Hogan (1991): the employee must be physically capable of performing the work.

"Although accidents can result in injuries even to the most able of employees, frequently injuries occur because the employee is simply unable to perform the work. Therefore, one of the best ways to reduce costs due to injuries is to select individuals who are physically qualified to perform the work."

The overall objective of post offer screening is to protect the worker from needless harm and the employer from needless costs associated with that harm. Although not many studies exist on the topic, one back strain study indicated "the severity of back sprains or strains, related medical costs, and lost workdays were significantly lower with the use of pre work functional screens on all new employees hired into physically laborious jobs" (Nassau, 1999).

Post offer screens must be designed with five key considerations: accurate physical demands analysis, clear acceptable criteria, physical screen, standardized objective testing and occupational - job specific testing.

History

Employment screening has graduated from reviewing an employee's basic health status and history prior to a job offer to the current practice of offering employment and then ensuring the employee has the physical capabilities to perform the job. The initial collecting of health history information often consisted of questions related to an individual's overall health, including blood pressure, weight, health history, and past surgeries-components having little to do with the actual execution of the task at hand. Although this information is, perhaps, helpful to have on record if the individual has an emergency at work, the process of collecting such information did not focus on the worker's capability to perform the job.

Daly-Gawenda (1986) examined reasons why employment related screening was conducted, finding results were utilized to provide health counseling, health promotion, and health referrals (24%); to ensure the health and safety of the employee, coworkers, and clients (12%); and to decrease potential liabilities under workers' compensation (12%). This demonstrated the lack of definition for pre screening in the past and the affect of the Americans with Disabilities Act (ADA) on employment related screening. Early employment related screening programs also lacked measurable indices of success. The collection of pre employment or pre placement health histories changed with the introduction of ADA legislation.

Traditional physical examinations are no longer as useful for several

reasons. First, they are now essentially illegal prior to a conditional job offer. Second, the traditional physical examination, which was developed as a symptom checklist primarily to determine presence or absence of disease, was often performed by an examiner unfamiliar with job requirements. Non-specific restrictions that were part of the examination report are also illegal; restrictions must now be specific involving a direct threat to the individual's health and safety or interfering with the function of the job (Pruitt, 1995). The ADA of 1990 is very specific. Disability related inquiries and medical screens of employees must be "job related and consistent with business necessity" (ADA, 1990). Given the evolution from health history collection to the current, job appropriate, validated post offer screens, it is important to review current literature on the topic and ensure post offer screens are established to meet the appropriate rigor of legislative requirements.

Protocols and Objective Testing

To design an effective post offer screening program, the employee's capabilities must be matched to the essential job requirements. A physical job demands analysis involves examining a particular job and breaking it down into individual tasks. A thorough PDA/JDA should include as much detail as possible. Occupational health professionals should evaluate weights, forces, frequency, and duration of all tasks performed. It is also important to include information about the environment and organizational and cognitive demands of the job. This information enables the professional to understand all aspects of the job and to see how the various components interact. The PDA is the foundation of an accurate post offer screening program as it is used to match the applicant's abilities to a specific set of job demands.

When establishing the protocol for objective testing, it is advisable to document the process through policies and procedures. Policies and procedures can be established to reflect the specific requirements, the methods of determining the requirements, and the testing parameters. Fleishman (1979) encouraged the use of fair screening procedures. In addition, to ensure fairness in job selection, it is necessary to use proper job analysis techniques to determine the demands of the job and the relevant worker abilities. "There is no such thing as general physical proficiency," according to Fleishman (1979). Actual performance criteria are developed based on scientific research and repeated testing. The business case for the implementation of post offer screens is compelling. The key is to ensure post offer screening is appropriate to the workplace and conducted within the confines of the law.

Critical Cadence

When performing the physical job demands analysis, a common mistake of the assessor is not properly evaluating the frequency or repetition of tasks in relation to the physical demand characteristics table i.e. placement into light, sedentary, medium, heavy or very heavy categories. An example would be designing a protocol for a courier driver where the assessor only looks at the daily deliveries instead of the first critical hour where the driver is required to load the entire truck. This first hour determines the testing protocol and is the primary high risk essential duty of his/her job. If this is not taken into account, you could very easily mismatch the employee. This is considered to be the critical cadence of the workday.

Clear acceptance criteria

When performing post offer screening, it is important to ensure the employer and the testing facility are clear about the testing parameters. All potential employees must be screened, all applicants must be informed of the testing procedures, and job placement is conditional on meeting the physical requirements of the job. The testing facility must have a clear outline of the minimally acceptable criteria related to the essential physical demands of the job. This ensures all candidates are measured against the same standardized criteria.

Some key questions and answers

May an employer require applicants to take physical agility tests?

Yes. A physical agility test, in which an applicant demonstrates the ability to perform actual or simulated job tasks, is not a medical examination under the ADA.

May an employer require applicants to take physical fitness tests?

Yes. A physical fitness test, in which an applicant's performance of physical tasks - such as running or lifting - is measured, is not a medical examination. However, if an employer measures an applicant's physiological or biological responses to performance, the test would be medical.

May an employer ask an applicant to provide medical certification that s/he can safely perform a physical agility or physical fitness test?

Yes. Although an employer cannot ask disability-related questions, it may give the applicant a description of the agility or fitness test and ask the applicant to have a private physician simply state whether she/he can safely perform the test.

May an employer ask an applicant to assume liability for injuries incurred in performing a physical agility or physical fitness test?

Yes. An employer may ask an applicant to assume responsibility and release the employer of liability for injuries incurred in performing a physical agility or fitness test.

Occupational and Job Specific Test

Occupational testing measures functional parameters such as; Carrying, Lifting, Reaching, Walking, Sitting, Standing, Bending, Twisting, Kneeling, Crouching, Climbing and other simulated essential activities integral to the applicant's work related functions. It is important to measure all tasks that are essential job demands. These functions are tested in accordance with standardized protocols and, when appropriate, are cross checked with the standardized testing. It is important to perform occupational testing or computerized objective testing in a controlled setting. It is also necessary to take the testing one step further and attempt to replicate specific job demands. For example, when testing for lifting capacity, if the worker must lift in confined spaces or walk around with the object, it is important to test for these jobs specific demands. Simulating these components provides the evaluator with insight into how the applicant would perform these tasks on the job site. According to Randolph (2000): Functional capacity evaluation now stands in some jurisdiction as a mainstay of safe job placement and risk diminution by providing objective data pertaining to an individual's ability to safely perform job tasks. For example, this could be implemented using a mock assembly line with an actual product available during the post offer screen.

Job generic guidelines and DOT/ONET/NOC

If existing job demands are either outdated or simply not available then using alternate resources such as the job generic databases like DOT (Dictionary of Occupational Tasks), ONET (Occupational Network – Online Resource) or the NOC (National Occupational Classification Directory) are important resources, however, if using the above as a starting point, employer and employee interviews and subsequent sign off of the demands is required prior to physical abilities testing protocol development.

Evaluation

After a candidate has completed the post offer screen, the determination of pass or fail is made. The organization needs to have specific policies and procedures concerning the next steps. If candidates fail, they may be capable of other jobs within the organization and should be given the opportunity to perform a post offer screen for those positions when they become available. Post offer screening is to ensure the candidate has the physical capabilities to perform the job they have applied for, not to exclude individuals from employment.

Concerns to be aware of

General Strength Testing. The concept of a one-size-fits-all generic strength test (such as a set of push-ups, sit-ups, aerobic step tests, or isokinetic strength testing) is appealing because of its simplicity and ease of administration. However, such tests are not compliant with the Americans with Disabilities Act (ADA) because they cannot be directly correlated to the demands of the job. All of the lawsuits lost by employers that have been related to pre-employment screening have involved generic strength testing.

Comparison to Normative Data. In pre-employment screening, the ADA is violated when hiring decisions are made based on a comparison of the applicant to normative data. It does not matter whether the applicant is in the fifth percentile or the 95th percentile as compared to a group of "norms." What matters is whether their abilities match the job demands. If the applicant's abilities match the job demands, the employer can hire and place the applicant. If the applicant's abilities do not match job demands, the employer can rescind the offer.

Predicting Future Injury. Some providers market their services by claiming to be able to predict future injury. Unless you have data to back you up, it is best to avoid this potentially litigious claim. Our service involves testing the workers' abilities to determine if they match the job demands. By focusing on the match between the worker's abilities and the demands of work, we help the employers minimize the chances of injury and the associated costs. Maintaining our focus on the matching process is a defensible strategy. Predicting future injury is seldom defensible.

Medical Legal Considerations

When employment is conditional on the results of a medical examination, an offer of employment is usually required prior to the examination. However, this may vary between jurisdictions. If a medical examination is required, it must be required of all applicants or all applicants for a certain position.

Physical agility tests and drug tests are not considered medical examinations, and therefore may be allowed prior to making an offer of employment. The medical examination should be designed to specifically identify medical threats that pose a significant health or safety risk of substantial harm to the applicant or others at the work site. To establish whether or not a condition poses a direct threat, several features of the condition must be considered, including the duration of the risk, the nature and severity of the potential harm, the likelihood potential harm will occur and the imminence of the potential harm. If employability is contingent upon test results, then these considerations should be stipulated in the written policy in addition to a list of medical conditions that are considered threats.

If testing indicates that the applicant is able to perform the job safely pending reasonable accommodations, then those accommodations must be met by the employer, provided that they do not impose undue hardship on the employer. Employers should ensure that medical examinations are standardized for all applicants. Written policies should be made available to all applicants outlining the testing protocol and expected results. ADA protects qualified individuals who have a disability, who have a record of disability or who are regarded as having a disability (whether they do or not) from discrimination in employment on the basis of dis-

ability. This includes the requirement that employers provide reasonable accommodation to qualified employees or applicants for employment except when the accommodation would cause an undue hardship. The ADA also prohibits discrimination against qualified individuals who have a relationship or association with a person with a known disability. The ADA applies to all aspects of the employment relationship, including the recruitment and selection process.

The ADA only prohibits employment tests that screen out individuals on the basis of disability, when it cannot be shown that the test is job-related for the position in question and consistent with business necessity. The ADA's goal is to make sure that individuals with disabilities are not excluded from jobs that they can do. The ADA thus requires a close fit between selection criteria, including job tests, and the applicant's (or employee's) ability to do the job. Tests which measure aptitude, skills, physical fitness, the ability to do actual or simulated job tasks, and any other non Pre - Employment Screening Considerations and ADA medical factors can be given to applicants at any time during the pre-employment process since such tests are not considered to be "medical examinations" under the ADA. You should make sure that any tests you use are designed to test the essential functions of the job and that they are accurate predictors of successful performance on the job. In addition, a job test relating to an essential function cannot be used to exclude an individual with disability if s/he can pass the test with a reasonable accommodation.

The ADA does not compel an employer to hire a person who would be a direct threat to the health and safety of others at the work site. Before you decide not to hire someone because you think s/he poses a direct threat, you must first determine that the individual poses a significant risk (i.e., a high probability) of substantial harm to the health and safety of others that cannot be reduced or eliminated by reasonable accommodation. This determination must be based on an individualized assessment of the individual's present ability to safely perform the essential functions of the job. The specific risk posed by the individual should be identified. The determination of whether an individual poses a direct threat should be based on the following factors:

1. The duration of the risk;
2. The nature and severity of the potential harm;
3. The likelihood that the potential harm will occur;
4. The imminence of the potential harm.

Your assessment of a direct threat to health or safety must be based upon a reasonable judgment that relies on the most current medical knowledge and/or on the best objective evidence.

The Uniform Guidelines outline the information that is required to demonstrate that a test battery is a valid selection instrument. Basically, there are three points that need to be demonstrated:

1. There has been a thorough job analysis;
2. The tests in the battery are highly related to the job requirements; and
3. There is clear evidence that the tests are predictive of job performance.

The strongest form of evidence is a statistical validation study that demonstrates a relationship between test scores and job performance measures for the specific jobs at issue. Content validation studies provide a less-strong form of evidence; though their utility can be strengthened by demonstrating that the tests used have effectiveness that has been validated through statistical studies in work settings with comparable physical demands. The Uniform Guidelines also state that the validity of the battery must be reviewed on a periodic basis, and that individuals need

to have an opportunity to be reconsidered if they fail.

EEOC Guidelines on Employment Testing Procedures, issued August 24, 1966, provide: "The Commission accordingly interprets 'professionally developed ability test' to mean a test which fairly measures the knowledge or skills required by the particular job or class of jobs which the applicant seeks, or which fairly affords the employer a chance to measure the applicant's ability to perform a particular job or class of jobs. The fact that a test was prepared by an individual or organization claiming expertise in test preparation does not, without more, justify its use within the meaning of Title VII." The EEOC position has been elaborated in the new Guidelines on Employee Selection Procedures, 29 CFR 1607, 35 Fed. Reg. 12333 (Aug. 1, 1970). These guidelines demand that employers using tests have available "data demonstrating that the test is predictive of or significantly correlated with important elements of work behavior which comprise or are relevant to the job or jobs for which candidates are being evaluated." Id., at 1607.4 (c). In the Court's opinion: "Congress has placed on the employer the burden of showing that any given requirement must have a manifest relationship to the employment in question. [401 U.S. 424, 433]"

Accommodations

As noted previously, employers must make reasonable accommodations to the known limitations of an otherwise qualified worker, unless to do so would cause an undue hardship on the employer.

Common Accommodations include:

- Work-Aids
- Barrier Removal
- Work Place Layout
- Job Restructuring
- Job Rescheduling

VALIDITY

In compliance with guidelines for pre-employment testing set out in "Uniform Guidelines on Employee Selection Procedures (1978)" Document Number 29 US CFR 1607 Section 1607.15 B Criterion-related Validation Studies

Test accommodations should be made as to retain the validity of the test for selecting qualified employees. Validity measures how appropriate a test is for a specific purpose. A test may be considered valid for one use and invalid for another. Validity is the degree to which evidence and theory support specific interpretations and uses of test scores.

Why do pre-employment tests need to be validated? In 1978, the Equal Employment Opportunities Commission (EEOC) created guidelines to ensure that the knowledge gained from testing is applied with impartiality to protect minority applicants from discriminatory employment procedures.

What's the best method of validation? The guidelines do not state that one method is better than another is; the method used must fit the needs of the business or organization.

There are five forms of validity:

Construct validity refers to the extent in which dimensions with similar names on different tests relate to one another. Two things that correlate highly on a personality test are not necessarily identical, but do provide reassurance that they are related and are a "construct" or part of the makeup (like honesty, dependability, sociability, etc.) of an individual as related to actual job performance.

Concurrent validity is that approach whereby people who are success-

ful within a given job within a given company or industry are evaluated and generally grouped Top Third, Middle Third, and Bottom Third. The assessment scores of the people who fit each of these ranges are then compiled and Job Benchmark Standards of the Top Third are used to hire, train or manage.

Predictive validity, sometimes called criterion validity, occurs when the employer hires people for a job based on normal hiring procedures (interviewing, reference checks, education/experience, etc.) and at the same time has them complete the pre-employment test, but does not utilize any data from it in the hiring decision. Within six months, or any appropriate period of time later, the pre-employment assessment is scored, and benchmarks are established of the people who were hired in the new jobs who are still with the employer and whom the employer considers successful. Job Benchmark Standards are thus established through the Predictive approach.

Content validity represents job function testing, i.e., typing, mathematics, design, CPA exams, physical work endurance, etc. Content validity is an appropriate strategy when the job domain is defined through job analysis by identifying the important behaviors, tasks, or knowledge and the assessment or test is a representative sample of behaviors, tasks or knowledge drawn from that domain. The Uniform Guidelines on Employee Selection Procedures state that in order to demonstrate the content validity of a selection procedure, a user should show that the behaviors demonstrated in the selection procedure are a representative sample of the behaviors of the job in question or that the selection procedure provides a representative sample of the work product of the job.

Face validity This is the simplest form of validity which basically tells us that the personality test or other assessment instrument appears (on the face of it) to measure what it is supposed to measure. Simply put, a test that would be composed of accounting problems would have face validity as a measure of the ability to succeed as an accountant. Face validity is not very sophisticated because it is only based on the appearance of the measure.

Validation Studies

Aside from legal considerations, a properly-conducted validation study can help an employer determine to what extent the information obtained from testing job applicants is predictive of future job performance, and accordingly what weight should be given to the results of such tests. There are two well known methodologies;

Prospective Validation Study

To test a sampling of the existing workforce with similar job demands and to crosscheck abilities to perform based on the test results. The percentage of the existing workforce tested should be an equal mix of age and gender, and should reflect the employee base. A prospective study watches for outcomes, such as the development of a disease, during the study period and relates this to other factors such as suspected risk or protection factor(s). The study usually involves taking a cohort of subjects and watching them over a long period. The outcome of interest should be common; otherwise, the number of outcomes observed will be too small to be statistically meaningful (indistinguishable from those that may have arisen by chance). All efforts should be made to avoid sources of bias such as the loss of individuals to follow up during the study. Prospective studies usually have fewer potential sources of bias and confounding than retrospective studies. Prospective investigation is required to make precise estimates of either the incidence of an outcome or the relative risk of an outcome based on exposure.

Retrospective Validation Study

To review the work injury records and performance of individuals previously tested and placed in the work environment. This can occur at various intervals determined by the client in question. Usually a term of three

to six months is sufficient to provide data to justify the testing procedure as valid. A retrospective study looks backwards and examines exposures to suspected risk or protection factors in relation to an outcome that is established at the start of the study. Many valuable case-control studies, such as Lane and Claypon's 1926 investigation of risk factors for breast cancer, were retrospective investigations. Most sources of error due to confounding and bias are more common in retrospective studies than in prospective studies. For this reason, retrospective investigations are often criticized. If the outcome of interest is uncommon, however, the size of prospective investigation required to estimate relative risk is often too large to be feasible. In retrospective studies the odds ratio provides an estimate of relative risk. You should take special care to avoid sources of bias and confounding in retrospective studies.

Hiring employees without testing

An important case is *WATSON v. FORT WORTH BANK & TRUST*, 487 U.S. 977 (1988). This case involved a charge of discrimination when NO testing was involved. The Supreme Court's opinion was that: "...an employer could insulate itself from liability under Griggs and its progeny simply by combining such practices (interviews) with a subjective component, such as a brief interview, in a system that refrained from making the objective tests absolutely determinative, and could thereby remain free to give those tests almost as much weight as it chose without risking a disparate impact challenge." In a further conclusion in this case, the Court went on to say that employers do not need to prove 'validation studies' that are predictive of job success when it said: "The nature of the 'business necessity' or 'job relatedness' defense - under which the defendant has a burden of producing evidence after the plaintiff has made out a prima facie case - also constrains the application of the disparate impact theory. Employers are not required, even when defending standardized or objective tests, to introduce formal "validation studies" showing that particular criteria predict actual on-the-job performance. In the context of subjective or discretionary decisions, the employer will often find it easier than in the case of standardized tests to produce evidence of a 'manifest relationship to the employment in question.'" "Many jobs, for example those involving managerial responsibilities, require personal qualities that are not amenable to standardized testing but are nevertheless job related. In evaluating claims that discretionary practices are insufficiently related to legitimate business purposes, courts are generally less competent than employers to restructure business practices and therefore should not attempt to do so. Pp. 997-999." *Griggs vs. Duke Power*. The Court's opinion stated "...703 (h) authorizes the use of any professionally developed ability test, provided that it is not designed, intended, or used to discriminate." "The Act does not preclude the use of testing or measuring procedures, but it does proscribe giving them controlling force unless [401 U.S. 424, 425] they are demonstrably a reasonable measure of job performance. Pp. 433-436."

CASE STUDY

A study was undertaken at a large, international, industrial automotive employer to determine if post offer screening reduced the number of injuries and the resulting costs post hire. The data for the study were gathered throughout the hiring process and tracked for 4 years. The objective of the study was to determine whether or not the implementation of post offer screens would be a cost effective initiative to implement company wide, and to determine whether post offer screening could reduce the number of injuries and resultant suffering. The study used the process outlined in this article. A group of 220 new hires participated in the study, 110 participated in post offer screening and 110 did not. No other differences were found in the hiring practices or the post hire work to be performed. The group of employees (n = 110) who had been screened post offer were compared to a group of employees (n = 110) who had not been screened, then tracked for post hire injuries and the resultant costs. Age, gender, ethnicity, and pre hire disability status were

also tracked and, using chi square analysis, no differences were found between the two groups on these variables of interest ($p < .05$). Of the screened group, 92 (83%) passed the post offer screen and 18 (16%) did not. Only those passing the screen were placed in the jobs offered. Individuals who did not meet the physical requirements of the job could retest for alternate jobs and potentially become employed in a position consistent with their functional capabilities. The control group was not screened, so all the employees were placed into the jobs that had been offered.

Injuries and Costs in Group 1 and Group 2

	Injured Employee	Non-Injured Employees	Injury Costs
Group 1 (Screened)	1	91	\$6500
Group 2 (Not Screened)	23	87	\$2,073,000

*Group 1: n=110-18 employees who did not pass the screen
Group 2: n=110

Of the 104 Post Offer Screens Performed:

- 29.8 % unfit to perform the demands of work
- Average cost of one back injury \$78,000
- Average cost of one UE injury \$55,000
- of 104 screened = 31 potential injuries or \$2,073,000 in costs avoided

A substantial difference was found between the groups in relation to the number of injuries sustained and the resulting post hire costs. The group that had post offer screens and, therefore, were known to have the physical capabilities to perform the jobs had only a 1% injury rate during the 4 years. The group that did not have post offer screens experienced a 23% injury rate during the 4 years—a substantial difference in injury rates between the two groups. Additionally, the cost of injuries for the screened group was substantially less than those in the non screened group. In this case, post offer screening clearly positively impacted the number of occupational injuries and their resultant costs. The findings of this case study are important to employers, employees, and occupational health professionals alike. First, the findings support the development of post offer screening programs in industries with significant injury occurrence. Second, employers and employees have a vested interest in preventing occupational injuries and resulting disability. Third, matching employees to jobs for which they are suited is a primary function of occupational health professionals, demonstrating their worth to employers. Fourth, employers can save substantial amounts of money in both direct and indirect costs by screening employees post offer and matching employees to work tasks they have the capability to perform. Finally, post offer screening may result in job modification to physically challenging jobs to increase the pool of matched candidates.

Additional Case Study References

A number of research studies have been published since 1994 that confirm the effectiveness of post-offer screening. Reimer² et al studied the effectiveness of pre-employment screening combined with a worker fitness program for grocery warehouse workers. They found significant decreases in injuries and injury-related expenses over a 3.5-year period. Nassau³ combined pre-work placement screening and case management for the injuries that occurred. This study, performed at a 250-bed hospital, found that the number of injuries did not decrease but the severity of the injuries was significantly less. Gassoway and Flory⁴ performed screening on nursing assistants at a regional health center. They found a slight decrease in injuries requir-

ing medical intervention but a more significant decrease in job turnover rate. This study showed that the company saved \$6 for every \$1 spent on screening.

Another study that presents strong evidence in support of post-offer screening, Littleton⁵ tested physical plant applicants at a major university hospital and found that the number of lost day cases decreased 18%, the total injury costs decreased 78%, and that for every \$1 spent on post-offer screening, the employer saved \$18. The added benefit of these last two studies is that post-offer screening was the only intervention used.

SUMMARY

A well designed post offer screening program including JDA/PDA, clear acceptable criteria, physical screening, standardized objective tests, and occupational and job specific tests can substantially decrease the number of injuries and resulting costs. The results of the above noted studies suggest post offer screening makes a difference on both post hire injury rates and resulting costs. These findings are consistent with the literature reviewed. Occupational health professionals are key to the development, implementation, and evaluation of such a program and can directly affect the company's bottom line when employees are accurately matched to their job requirements. Valuable resources are wasted if employers hire and train new employees only to find out that they do not have the physical ability to perform the job. Post-offer screening provides an opportunity to serve both the employer and the employee through injury prevention.

In Review

THREE STAGE MODEL

Functional evaluations are used for a variety of purposes throughout the employment and healthcare continuum. The evaluation model follows the three stage public health model closely; PRIMARY, SECONDARY AND TERTIARY. There is a need for evaluations in the PRIMARY stage (hiring process, health maintenance and safety) SECONDARY stage (early intervention and rehabilitation) and TERTIARY stage (disability management, compensation and case closure). Employers, insurance companies, case managers, health care professionals and government social service agencies use functional evaluations to carry out their mandate effectively.

To learn more on how to implement a completely integrated risk management model for employee health contact Fit2WRK at www.Fit2WRK.com.

REFERENCES

1. Americans with Disabilities Act. (1990). Employees under the American with Disabilities Act (ADA). Retrieved October 23, 2002, from <http://www.eeoc.gov/docs/guidance>
2. Biddle, D., & Nikki, S.S. (1999). Protective service physical ability tests: Establishing pass/fail ranking, and banding procedures. *Public Personnel Management*, 28(2), 217-225.
3. Chaffin, D.B., Herrin, G.D., & Keyserling, W.M. (1978). Preemployment strength testing. *Journal of Occupational Medicine*, 20(6), 403-408.
4. Daly-Gawenda, D., Kempinski, P.D., & Hudson, E.K. (1986). Pre-employment screening: Its use and usefulness. *AAOHN Journal*, 34(6), 269-271.
5. Fleishman, E.A. (1979). Evaluating physical abilities required by jobs. *The Personnel Administrator*, 24(6), 82-91.
6. Hoffman, C. (1999). Generalizing physical ability test validity: A case study. *Personnel Psychology*, 52(4), 1019-46.
7. Hogan, J., & Arneson, S. (1991). Physical and psychological assessments to reduce workers' compensation claims. In J.W. Jones, B.D. Steffy, & D.W. Bray. *Applying psychology in business* (pp 787-801). Toronto: Lexington Books.
8. Houghton, A.M., Edmonson-Jones, J.P., & Harris, L.A. (1989). Preemployment screening: Use or ornament? *Journal of the Society of Occupational Medicine*, 39, 51-55.
9. Nassau, D.W. (1999). The effects of prework functional screening on lowering an employer's injury rate, medical costs, and lost workdays. *Spine*, 24(3), 269-274.
10. Pruitt, R.H. (1995). Preplacement evaluation: Thriving within the ADA guidelines. *AAOHN*, 43(3), 124-130.
11. Randolph, D.C. (2000). Use of functional employment testing to facilitate safe job placement. *Occupational Medicine*, 15(4), 813-821.
12. Watson Wyatt Worldwide and the Washington Business Group on Health (WBGH). (2001). *Staying @ work: Improving workforce productivity through integrated disability management. Fifth Annual Survey Report 2000/2001*. Washington, DC: Watson Wyatt Worldwide.
13. Yelin EH, Henke CJ, Epstein WV. Work disability among persons with musculoskeletal conditions. *Arthritis Rheum*. 1986; Vol. 29:1322-1333.
14. Althouse H. Revealing a true profile of musculoskeletal abilities. *Occupational Health and Safety*. 1980; Vol 1:25-30.
15. Himmelstein J, Andersson GBJ. Low back pain: risk evaluation and pre-placement screening. *Occupational Medicine: State of the Art Reviews*. 1988; Vol. 3: 255-269.
16. Keyserling W, Herrin G, and Chaffin D. Isometric Strength Testing as a Means of Controlling Medical incidents on Strenuous Jobs. *Journal of Occupational Medicine*, May 1980, Volume 22, No.5: 332-336.
17. Chaffin D, Herrin G, Keyserling W, and Foulke M. Pre-employment Strength Testing in Selecting Workers for Material Handling Jobs. Cincinnati, Ohio: NIOSH Physiology and ergonomics Branch, Contract No. CDC-99-74-62, 1977.
18. Harber P, Soo Hoo, K. Static ergonomic strength testing in evaluating occupational back pain. *Journal of Occupational Medicine*, December 1984, Volume 26, No. 12: 877-884.
19. Matheson L, et al. Effects of instruction on isokinetic trunk strength testing variability, reliability, absolute value, and predictive value. *Spine* 1992, Volume 17, No. 8:915-921.
20. Wheeler D, Graves J, Miller G, et al. Functional assessment for prediction of lifting capacity. *Spine* 1994, Volume 9, No. 9:1021-1026.
21. Dueker J, Ritchie S, Know T, Rose S. Isokinetic trunk testing and employment. *Journal Of Medicine*, Jan. 1994, Volume 36, No. 1:42-48.
22. Battie M, et al. Isometric lifting strength as a predictor of industrial back pain reports. *Spine* 1989 Vol, 14, No. 8:651-56.
23. Matheson L, ISENHAGEN S, Hart D. Relationships among lifting ability, grip force and return to work. *Physical Therapy*, 2002, Volume 82, No. 3:249-256.
24. Biering-Sorensen F. Physical measurements as risk indicators of low-back trouble over a one year period. *Spine*, 1984, volume 9, 106-119.
25. Chaffin D, Herrin G, Keyserling W. Pre-employment strength testing: an update. *Journal of Occupational Medicine*, June 1978, Volume 20, No. 6: 403-408.
26. Notroelt J, Celentano, E. Development of predictive selection and placement tests for personnel evaluations. *Applied Ergonomics*, Dec. 1987, Volume 18, No. 4:279-288.
27. Smith S, Cunningham S, Weinberg R. The predictive validity of the functional capacities evaluation. *American Journal of Occupational Therapy*, Aug. 1986, Volume 40:654-563.
28. Lechner D, Jackson, Roth D, Straaton K. Reliability and validity of a newly developed test of physical work performance. *Journal Occupational Medicine*, 1994, Volume 36:997-1004.
29. Gross D, Battie M.: Reliability of safe maximum lifting determinations of a functional capacity evaluation. *Physical Therapy*, April 2002, Volume 82, No. 4:364-371.
30. Menard M, Hoens A. Objective evaluation of functional capacity: medical, occupational and legal settings. *Journal of Occupational and Sports Physical Therapy*, May 1994, Volume 19, No. 5:249-260.
31. Siegel, S: *Nonparametric Statistics for the Behavioral Sciences*. New York: McGraw-Hill Anderson, Charles K. Impact of Physical Ability Testing on Worker Compensation Injuries and Job Performance." *Advanced Ergonomics*, Inc. Dallas, TX 1990.
32. Bigos S, et al. "A Prospective Evaluation of Pre-employment Screening Methods for Acute Industrial Back Pain." *Spine* 1992: 17(8):922-926.
33. Bureau of Labor Statistics, "Lost-Worktime Injuries and Illnesses: Characteristics and Resulting 10 Time Away from Work." April 10, 2002.
34. Dolney, P. "Pre-placement Strength and Endurance Testing." *Risk Management*: 40:5 (May 1993): 65-70.
35. Harbin G, Olson J. "Post-Offer, Pre-Placement Testing in Industry." *American Journal of Industrial Medicine*: 47:296-307.
36. Jackson, S. "Pre-employment Physical Examination." *Exercise Sport Science Review*: 22 (1994): 53-90.
37. McClam, E. "One in Four Americans in Shape." Associated Press. March 8, 2001. Atlanta, Georgia.
38. Philson, C. "Functional Capacity Testing." *Occupational Health & Safety*: 69(1) (Jan 2000): 78-82.
39. Pohnonen, T. Age-Related Physical Fitness and the Predictive Values of Fitness Tests for Work Ability in Home Care Work." *Journal of Occupational and Environmental Medicine*: 43(8) (August 2001): 723-729.
40. United States Department of Labor Occupational Health & Safety Administration. "OSHA Announces Comprehensive Plan to Reduce Ergonomic Injuries." National News Release USDL 02-201: April 5, 2002

RESOURCES

Fit2WRK by USPh
1300 West Sam Houston Parkway South, Suite 300
Houston, TX 77042
(877) Fit-2WRK
www.Fit2WRK.com
Email: Referral@Fit2WRK.com

ADA Regional Disability and Business Technical Assistance Center Hotline
(800) 949-4232 (voice/TTY).

Job Accommodation Network
918 Chestnut Ridge Road, Suite 1,
Morgantown, WV 26506-6080,
(800) ADA-WORK (voice/TTY).

U.S. Equal Employment Opportunity Commission
1801 L Street, NW,
Washington, DC 20507,
(800) 669-4000 (voice),
(800) 800-3302 (TTY)
(800) 666-EEOC (publications).

The Equal Employment Opportunity Commission has issued enforcement guidance which provides additional clarification of various elements of the Title I provisions under the ADA. Copies of the guidance documents are available for viewing and downloading from the EEOC web site at: <http://www.eeoc.gov>.