

Development and Validation of Physical Employment Tests and Medical Employment Guidelines

IPMAAC

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Presentation Outline

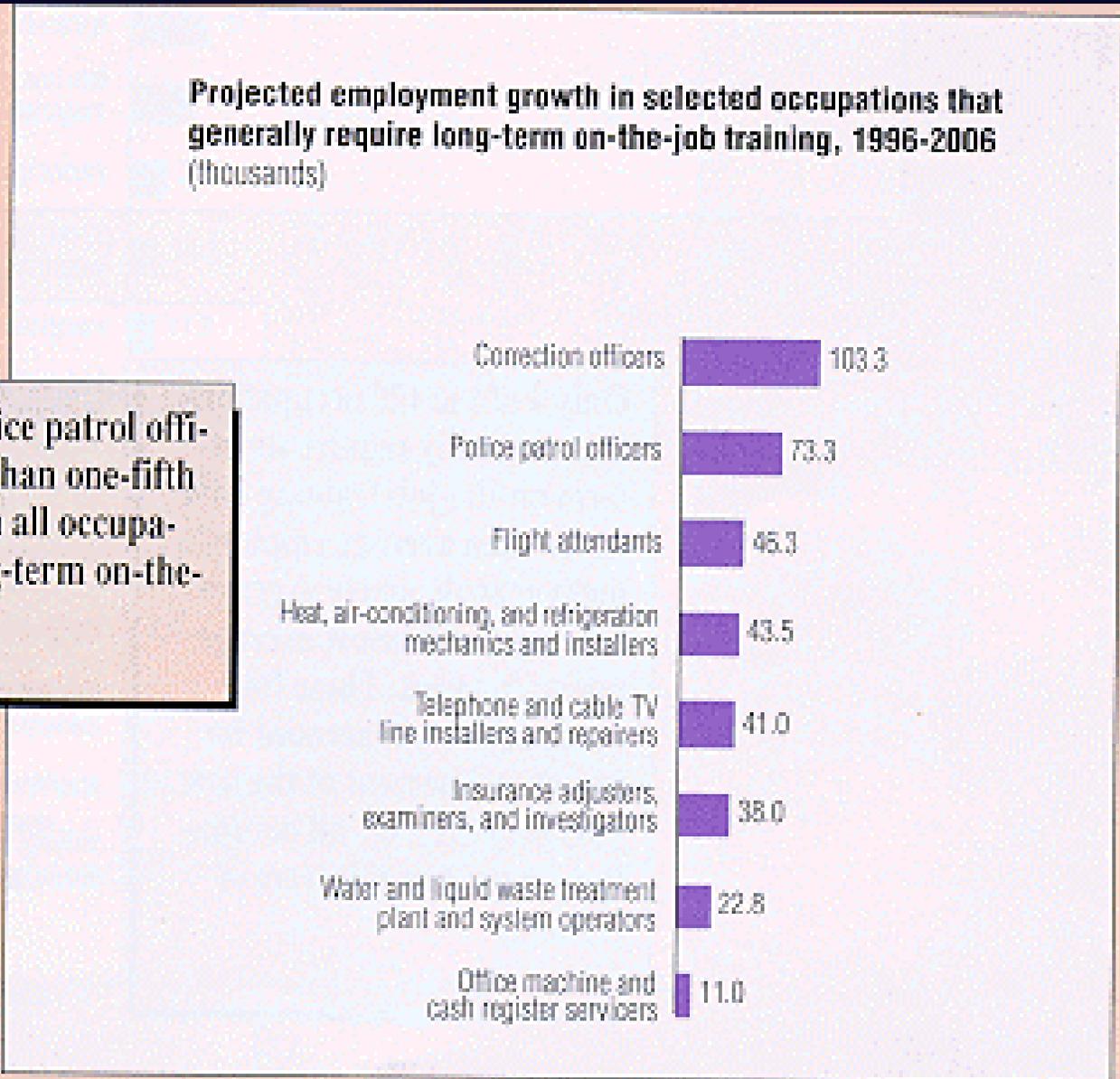
- **Project Purpose, Participants, and Overview**
- **Information on PA Dept. of Corrections (DOC) and Corrections Officer Trainee (COT)**
- **Preparatory Steps**
- **Job Analysis**
- **Physical Ability Test Selection and Validation**
- **Medical Guidelines Development**
- **Implementation and Next Steps**
- **Questions and Discussion**

Physical/Medical Standards Project Overview

- Purpose: Development of new entrance level standards for Corrections Officers including:
 - ◆ Medical Guidelines for Employment
 - ◆ Physical Tests and Standards
- Participants:
 - ◆ PA Dept. of Corrections
 - ◆ PA State Civil Service Commission
 - ◆ Human Performance Systems, Inc. (consultant)
- Long Range Objective: Development of a Methodology for other Occupations

Corrections Officer - A High Growth Occupation

Correction officers and police patrol officers will account for more than one-fifth of the projected new jobs in all occupations usually requiring long-term on-the-job training.



PA Department of Corrections

- Care, custody and control of 35,000 inmates
- Staff complement of 12,133 which includes 7,018 Corrections Officers
- 5,322 entrance level Corrections Officers
- Twenty-four (24) institutions, a regional facility, a motivational boot camp
- One new institution being built. Continued growth projected (+10,000 cells).
- Annual budget of over one billion dollars

Corrections Officer Trainee Employment Activity

- The most active job title in the PA merit system. From over 600 to nearly 1,000 hired per year.
- 4,000 to 7,000 applicants per year.
- Over 7,000 persons on employment lists.

The Corrections Officer Trainee Hiring Process

- Applications submitted
- Candidates tested
 - ◆ Written Test with video-based components
- When job openings occur, candidates are interviewed
- Conditional employment offer made
- Medical Exam, Drug Screening, Physical Test
- Psychological Evaluation
- Background Investigation

Personnel Policies

- Training Required
- Post Assignments
- Overtime
- Emergency Situations

Preparatory Project Steps

- Survey of Other Jurisdictions
- Survey of Consultants
- Literature Review
- Development of Project Plan and RFP
- Formation of Advisory Committee
- Coordination with Employee Union

Job Analysis Study Methodology

- Previous Studies reviewed.
- Task list drafted. List refined in a group meeting.
- Site visits to 10 institutions:
over 300 officers observed and ergonomic data collected, sixty-one (61) officers interviewed.
- Accident, injury and time-off data collected.
- Questionnaire designed and administered to 10% of experienced officers (N = 459).
- Physical ability analysis conducted.
- Data analyzed and reported.

Review of Job Analysis Results

- ◆ Response Information
- ◆ Facility Information
- ◆ Job Function Task Categories
- ◆ Physical, Sensory & Perceptual Task Categories
- ◆ Essential Physically Demanding Tasks
- ◆ Ergonomic Data
- ◆ Accident and Injury Data
- ◆ Required Physical Abilities

Job Analysis Questionnaire Response Information

■ Information Collected:

- ◆ Demographic Data, Ergonomic Data
- ◆ Task Data: frequency, importance, physical effort, entry vs full performance
- ◆ Accident and Injury Data

■ N = 459 (10% sample); 95% response rate

■ .99 inter-rater reliability (task ratings)

■ Typical officer: 40 year old, white, male, in Corrections 6 years, 3 years at current post

Response Information (continued)

- Tasks performed were similar overall, and by race and gender
- Most tasks done on a weekly, monthly or yearly basis
- Most tasks learned on the job
- Most tasks rated moderate to high in importance
- 31 of the 128 tasks were rated as requiring a moderate to high level of physical effort

Correctional Institution Site Visits

- **Camp Hill - central office, used for job analysis team training**
- **Dallas - large area**
- **Graterford - largest population**
- **Greensburg - converted from regional**
- **Huntingdon - old design**
- **Mahanoy - new “prototypical”**
- **Muncy - females**
- **Pittsburgh - oldest**
- **Quehanna - boot camp**
- **Waymart - forensic center**

Common Duty Posts

- Housing Unit Officer
- Rover/Utility Officer
- Restricted Housing Units / Exercise
- Main Gates or Control Center
- Interior Gates
- Main Line / Yard
- Infirmary / Medicine Line
- Search Team
- Outside Escort
- Activities or Gym
- Sallyport
- Towers
- Visiting Room

Corrections Officer

Job Functions (Task Categories)

- Observing & Supervising Inmates
- Controlling Movement
- Searching & Securing
- Emergency Response
- Use of Equipment & Firearms
- Read, Write, Calculate
- Oral & Non-Verbal Communications
- Decision Making
- Use of Force / Subdue & Restrain

Physical Ability, Sensory & Perceptual Task Categories

- Bend/Stoop/Kneel
- Climb
- Crawl
- Hearing
- Hold/Lift/Carry
- Jump
- Operate & Manipulate Controls
- Push/Pull
- Quick Movements
- Run
- Touch
- Sit
- Smell
- Stand
- Vision
 - ◆ near, far, peripheral, depth, glare
 - ◆ color
- Walk

Identification of Essential Tasks

- 109 of the 128 tasks were identified as “essential” based on percent performing, importance ratings, and judgment of the job analysts
- 27 of the 128 tasks were identified as “essential physically demanding tasks” based on percent performing, importance, physical effort ratings, and job analyst and subject matter expert judgment

Ergonomic Data

- Weight of Equipment/Objects Carried
- Force Required to Open/Close Gates/Doors
- Climbing Stairs & Ladders
- Distances Walked/Run
- Standing/Sitting
- Noise Levels
- Sight Distances
- Illumination
- Color Differentiation

Examples of Ergonomic Job Analysis Tools



Light Meter



Sound Meter



Pedometer



Measuring Tape



Timer

The “Typical” Corrections Officer:

- Routinely carries about 4 lbs. of equipment
- Walks about 4 miles a day
- Tolerates an average noise level of 80 dB or more
- Climbs and descends two flights of stairs every hour (Housing Unit Officers)

Accident & Injury Summary

Job Analysis Questionnaire Data

- 19% of officers were injured on the job in the previous two years
- The most frequent cause of an injury was a resistive patient or inmate
- When injured, 21% of officers were restraining, subduing, and or separating inmates.
- 80% of injured officers saw a physician
- 51% of injured officers missed work

Accident & Injury Summary (continued)

- The average number of days-off from an injury was 26
- The most frequent treatment required was medication and physical therapy
- 20% of injuries were muscle strains or pulls
- The most frequent body parts affected were back, knee, hand, wrist, shoulder, head or face

Accident & Injury Data from PA DOC

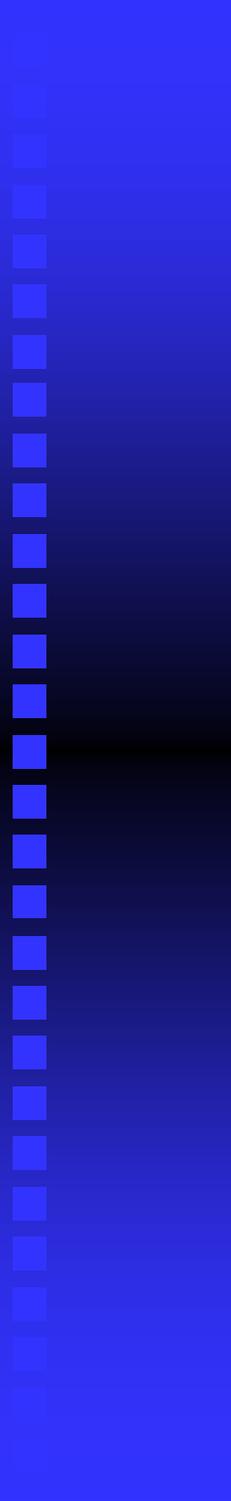
- The annual cost for workers compensation insurance and the cost of wages for time-off due to injuries and disabilities is approximately eleven million dollars for the Pennsylvania Department of Corrections (DOC).
- There are typically hundreds of Corrections Officers off work for short and long-term injury and disability leave

Physical Abilities Analysis

- SME's rated each essential physically demanding task, and rated the essential physically demanding job functions
- Ratings made on eight defined physical abilities, using behaviorally anchored rating scales
- Reliabilities of .92 to .98 by physical ability

Most Important Required Physical Abilities

- Static Strength
- Dynamic Strength
- Trunk Strength
- Flexibility
- Anaerobic Power



Selection and Validation of Physical Ability Tests

Transportability Investigated

- Comparisons made with study results from:
 - ◆ Three states (Arizona, California, Maryland)
 - ◆ Federal Bureau of Prisons
 - ◆ Ramsey County Minnesota
 - ◆ Fairfax County Virginia
 - ◆ Tri-Cities (Chesapeake, Portsmouth, VA Beach)
- Essential Tasks and Essential Physically Demanding Tasks compared (% overlap)
- Best match: California & Pennsylvania
96% of PA EPDT's also essential in CA

Validation Study Purposes

- Select final test battery
- Determine test weights
- Investigate test fairness and adverse impact
- Establish passing scores based on job performance data

Validation Study Design

- Concurrent criterion-related research
- Sample desired: 240 representative, experienced Corrections Officers, including 50 females and 50 minorities
- Criteria
 - ◆ Primary - performance ratings collected for research
 - ◆ Secondary- firearms qualifications scores; and accident, injury, time-off and associated cost data
- Predictors - eight physical ability tests
- Data analysis methods pre-defined
(e.g., use of regression, effect size comparisons, fairness and adverse impact analysis by gender, age and race, etc.)

Considerations in Selection of Physical Ability Tests

- Transportability results
- Job analysis results
- Physical abilities testing literature, especially validity and reliability data
- Gender differences
- Candidate safety
- Ease of administration and scoring
- Cost of testing equipment

Physical Ability Test Plan

- Test Plan completed and reviewed by project consultant and DOC
- Test try-out conducted in Fall of 1997
- Test validation completed in July 1998
- Test to be used operationally in three DOC regions beginning in 1999

Physical Abilities and Tests Used in Validation Study

- Static Strength
- Dynamic Strength
- Trunk Strength
- Flexibility
- Anaerobic Power
- Hand Grip, and Arm Lift
- Arm Endurance
- Sit-ups, and Trunk Pull
- Twist and Touch, and Sit and Reach
- Leg Endurance

Pre-Test Medical Screening



Pre-Test Warm -Up Exercises



Arm Ergometer Test



Sit and Reach Test



Hand Grip Test



Sit-up Test



Trunk Pull Test



Leg Ergometer Test



Twist and Touch Test



Arm Lift Test



Test Validation Sample

- 234 Officers reported
- Represented all institutions, shifts, and posts
- 189 male, 45 female
- 176 white, 58 minority
- 97 under age 40, and 137 age 40 and over
- Each officer rated for research purposes by two superior officers on their performance of physically demanding tasks
- Demographic and other data also collected on each officer

Job Performance Rating Criterion

- Participants rated on eight job functions
(EPDT's listed for each function)
 - ◆ Running
 - ◆ Quick Movements
 - ◆ Pushing/Pulling/Lifting/Carrying
 - ◆ Cell Extractions
 - ◆ Subduing & Restraining Inmates
 - ◆ Using Defensive Tactics
 - ◆ Walking/Climbing/Reaching
 - ◆ Crawling/Bending/Stooping
- Also rated on overall performance of EPDT's

Physical Ability Test Reliabilities

<i>Physical Ability Test</i>	<i>Test Trials</i>	<i>Literature</i>
Arm Endurance	—	—
Sit & Reach	.97 to .98	.70 to .94
Sit-up	—	.57 to .95
Handgrip	.80 to .95	.91 to .94
Trunk Pull	.90 to .95	—
Leg Endurance	—	—
Twist & Touch	.72 to .93	.74 to .90
Arm Lift	.95 to .97	.82 to .90

Physical Ability Test Information

■ Test Intercorrelations:

- ◆ .75 Arm Endurance and Leg Endurance
- ◆ .70 Handgrip and Arm Lift
- ◆ .35 Sit-ups and Trunkpull
- ◆ .32 Twist & Touch and Sit & Reach

■ Test Safety - no injuries, one incident

■ Gender, Race and Age Differences:

- ◆ Medium to large differences by gender
- ◆ Trivial to small differences by race
- ◆ Moderate differences by age

Supervisory Rating Criterion

■ Inter-rater reliability

- ◆ By rating factor, most r 's in the .50's
- ◆ Overall performance of EPDT's $r = .64$
- ◆ Mean r in meta-analytic literature review = .52

■ High rating factor intercorrelations

- ◆ e.g., .86 to .96 relationship between factors and overall rating on EPDT's

■ Differences by gender, race and age

- ◆ Most differences medium in size by gender
- ◆ No, trivial or small differences by race
- ◆ Medium to large differences by age

Zero-order Correlations: Physical Ability Tests and Job Success Measures

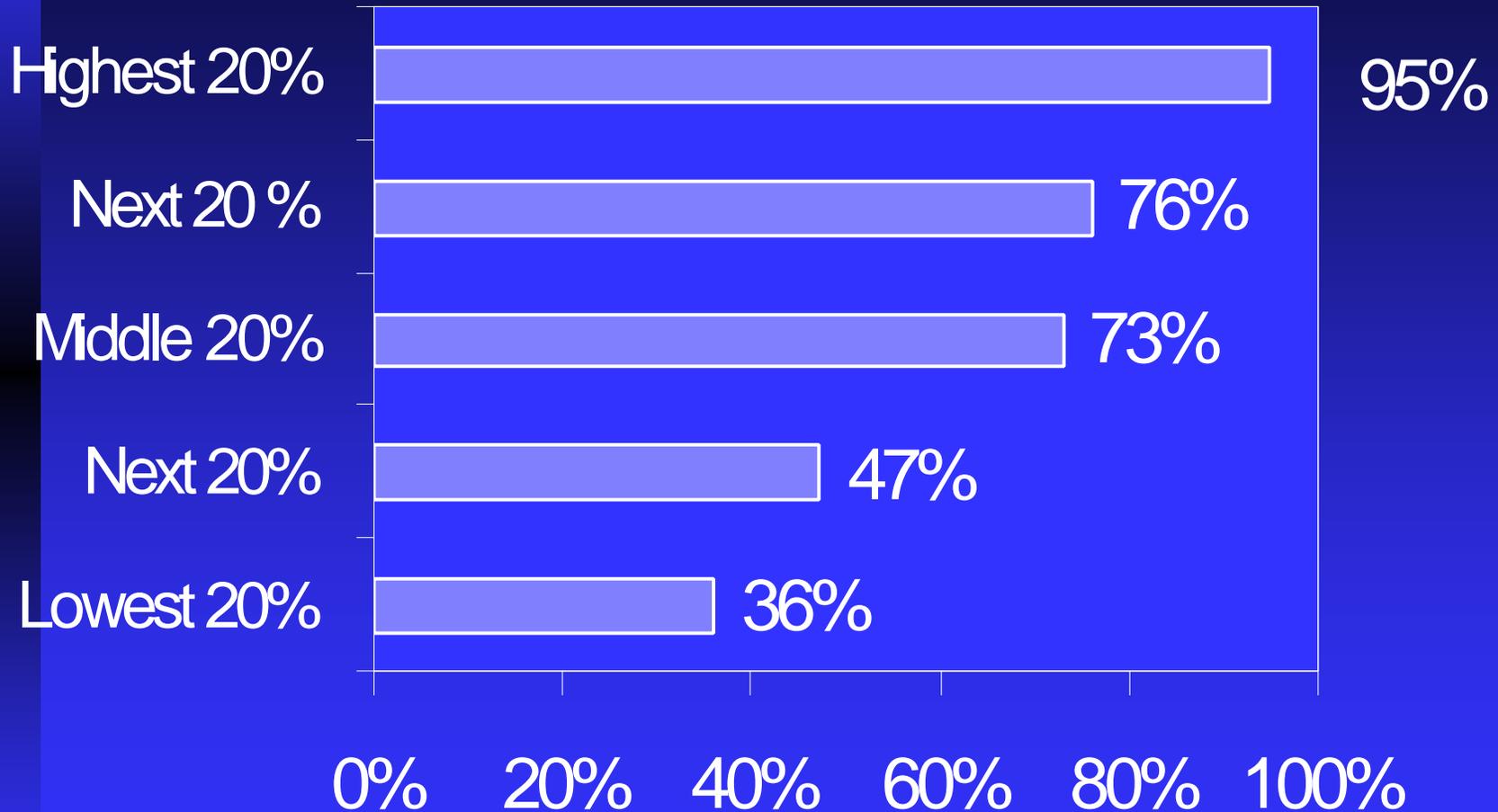
Physical Ability Test	Supervisory Ratings (Overall Performance of Physically Demanding Tasks)	Firearms Proficiency (Sidearm plus Shotgun)
Arm Endurance	.42*	.45*
Sit & Reach	.08	-.10
Sit-ups	.45*	.25*
Handgrip	.36*	.44*
Trunk Pull	.36*	.33*
Leg Endurance	.37*	.41*
Twist & Touch	.02	.13
Arm Lift	.51*	.40*
Sample size and significance level	N's 199 - 210 * significant .01	N's 111 - 121 * significant .01

Summary - Validity Data

- Tests compared to overall performance of EPDT's:
 - ◆ Validities of individual tests: .02 and .08 for Sit & Reach and Twist & Touch Tests, .36 to .51 for the other six tests
 - ◆ Regression results: .57 for Arm Lift plus Sit-ups (.76 corrected for criterion unreliability)
- Tests compared to firearms scores
 - ◆ r's ranged from -.10 to .45
 - ◆ Regression results: .52 (three tests), .42 AL+S
- Test Relationship to combined criteria
 - ◆ .67 Arm Lift plus Sit-ups (multiple r)

Arm Lift + Sit-ups scores compared to “Overall Performance of Physically Demanding Tasks”

Arm Lift + Sit-up Score



Percent receiving ratings above "average"

Summary - Validity Data (continued)

- Test relationships to accident, injury, time-off and medical cost data
 - ◆ Some low positive relationships (r's in the teens)
 - ◆ Data limited
 - ◆ Additional research needed

Test Fairness Analysis Results

- Regression lines were compared and tested for slope and intercept differences by gender, race and age.
- No slope differences in regression lines.
- No intercept difference by gender or race. Intercept difference by age.
 - ◆ Tests overpredict for those 40 and over.
- Conclusion: test is not unfair by gender or race, and would not be unfair to older candidates.

Adverse Impact Analysis Results

- Most physical ability and physical performance tests can be expected to have adverse impact by gender
- Recommended tests do not have adverse impact by race or age, but do by gender
- Compensatory scoring was found to reduce adverse impact by gender in the current study and in other studies
- Adverse impact by gender more severe at higher passing scores

Examples of Research Recommendations

- Physical ability test battery
- Compensatory scoring
- Criterion referenced test battery
passing score
- Test administration procedures
- Candidate information (handbook)
- Pre-test medical screening
- Future research on accidents and injuries
- Class specification revisions

Final Test Battery

<i>Physical Ability</i>	<i>Test</i>	<i>Use of Test Scores</i>
Trunk Strength	Sit-ups	Combined score used for candidate screening
Static Strength	Arm Lift	
Anaerobic Power	Leg Ergometer	Test scores used operationally with low cut score and used for research
Flexibility	Sit & Reach	
Dynamic Strength	Arm Endur.	

Procedures for Development of Medical Employment Guidelines

- Identification of needed medical specialists
- Training and briefing of medical specialists
- Meetings by specialty to develop standards by body system
- Review of draft medical guidelines
- Development of Physicians Manual

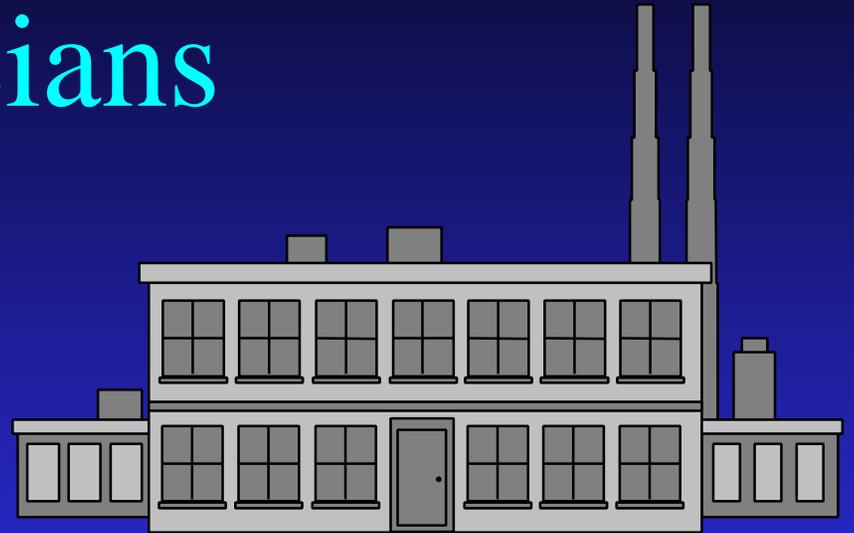
Legal Requirements for Establishing Medical Employment Guidelines, and Procedures for Use of Job Analysis Data and Development and Documentation of Medical Guidelines

Briefing of Physicians on Job Analysis Results

- Overview of Job Information
- Review of Ergonomic Data
- Review of Accident and Injury Data
- Essential Tasks by physical, sensory, and perceptual categories
- Task rating and supplemental task data

Institutional Tours for Physicians

- Camp Hill State
Correctional
Institution
- A State
Correctional
Institution near
them



Meetings by Medical Specialty

- Development of Medical Guidelines by body system
- Documentation of Supporting Evidence (e.g., linkage to essential tasks)
- Development of Physician's Manual



DOC Implementation Plan

- Centralize testing from 25 institutions to a few locations. Full time test coordinator.
- Consolidate scheduling of medical examination (including blood and urine samples, and testing for drugs, vision and hearing).
- Candidate handbook describing tests and how to prepare provided to candidates at time of conditional job offer

Questions and Discussion



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DEVELOPMENT OF MEDICAL GUIDELINES/STANDARDS

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INTRODUCTION

Since the early 1980's employers have shown increased interest in the development and implementation of valid employee selection procedures, which identify individuals who are capable of performing physically demanding jobs. Additionally, more of these employers are implementing medical qualification criteria as part of their selection procedures.

The operational use of valid medical screening procedures results in several benefits to the organization: 1) identification of employees who are effective at performing the essential job tasks; 2) reduction in work related injuries and disabilities, and in turn worker compensation costs; 3) assurance of consistency in employment decisions and fairness to all applicants and incumbents; and, 4) decreased turnover. In addition, medical guidelines/standards provide physicians with information about the interaction of job tasks, environmental conditions, and medical conditions/diseases that limit performance as well as providing specialist information to the examining physician.

As with other employment selection and evaluation procedures in order for these medical guidelines/standards to be legally defensible and valid, the individual must be evaluated in relation to his or her ability to perform job tasks proficiently and safely (i.e., Rehabilitation Act of 1973, Americans with Disabilities act of 1990, Age Discrimination in Employment Act of 1967, 1987, Uniform Guidelines (1978)). Furthermore, the screening procedures must take into account the essential tasks and the working environment associated with the position in order to ensure the individual's status is adequately evaluated. The Pennsylvania Department of Corrections (PDOC) medical guidelines/standards were developed with these requirements and conditions in mind.

Medical Guidelines/Standards

Human Performance Systems (HPS), uses the term medical guidelines in conjunction with standards because we view the medical examination as an individual assessment, and we believe the examining physician must take into account many factors (e.g., medication, function) when issuing a diagnosis or decision.

Thus, there may be some medical issues that lend themselves to the term "standard" such as visual acuity (e.g., 20/30) since the decision is predicated on one factor and other conditions (e.g., knee surgery) that may not be predicated on a single factor. For example, knee surgery can be minor (e.g., cartilage repair) or major (anterior cruciate ligament re-construction). For a condition like knee surgery, the medical guidelines must address the severity of the condition and the individual level of rehabilitation and present function level.

In addition, the case law surrounding violations of the Rehabilitation Act of 1973 and Americans with Disabilities Act of 1990 (ADA) supports the position that medical evaluations need to consider each person as an individual. Therefore, the examining physician must use medical judgement, medical qualifiers, and examination results as guidelines for decision. Thus, HPS uses the term *medical guidelines/standards*.

JOB ANALYSIS

As with any selection instrument, job analysis is necessary to develop medical guidelines/standards that are job-related and legally defensible. The job analysis must provide the empirical and scientific link between the medical guidelines/standards and job requirements, to show the job relatedness under the Rehabilitation Act of 1973, ADA and the Uniform Guidelines. In order to provide this link, the job analysis must identify the essential job tasks and functions, as well as the ergonomic parameters (e.g., forces, heights, distances) which provide clarity and define the demands of the tasks. Environmental working conditions play a major role in the determination of medical guidelines/standards. The impact of the environment upon successful job performance has been demonstrated in a variety of work surroundings, therefore environmental working conditions, play a major role in determining medical guidelines/standards. For example, some cardiac conditions are adversely affected by high temperatures (e.g., ventricular arrhythmia). HPS research has shown that different shifts involve varied working conditions and task performance (Gebhardt, Baker, Sheppard, & deMiranda, 1992), while specific sequences of activities places varying demands on the musculoskeletal, neuromuscular, and cardiovascular system. Therefore all of these parameters must be examined when performing the job analysis for use in the development of medical guidelines/standards.

METHODOLOGY

The methodology used by HPS to develop medical guidelines/standards has been developed over a 15 year period. It involves a systematic approach of identifying the severity of each specific disease/condition that limits or precludes safe and effective performance of essential tasks, thus linking the job requirements obtained from the job analysis to the medical guidelines/standards. HPS has formulated a medical database that contains the guidelines/standards for a variety of jobs ranging from sedentary to heavy. This database contains information for over 600 tasks on 250 diseases/conditions across all body systems (i.e., auditory, cardiovascular, endocrine, gastrointestinal, genitourinary, integumentary, musculoskeletal, neurological, respiratory, and vision).

The database was initially generated by developing a “generic” task list by gathering task statements from previous projects (e.g., Fire, Police, EMS, Trades, Telecommunications, Longshore), divided into physical and cognitive categories (e.g., push/pull, lift/carry, run, climb, comprehend, communicate, vision, hearing). The frequency and time spent data for these tasks were examined and a determination made of the two most realistic frequency and time spent parameters for each task.

Our medical specialists then rated each of these tasks on each of the two frequency and time spent parameters. In most instances the ratings were the same, but in some cases the task received 2 different ratings. All of this information was input into the medical guidelines/standards database. At present the database contains medical ratings by task statement and disease on a variety of jobs including, Public Safety, Inspection, Instrument Maintenance and Repair, Supervisory Personnel, Construction, Ground Maintenance, Health/Medical, and Heavy Equipment Operators and Telecommunications.

The decision model developed by HPS staff and medical specialists that utilizes rating scales is used to determine the impact of varied levels of severity of a medical condition or disease on the performance of essential job tasks. The HPS rating scales are disease/condition specific (e.g., diabetes, inflammatory bowel disease), define medical conditions in terms of function, symptoms, and treatment, and outline levels of severity. Individual medical scales have been developed for all major diseases and conditions in all the body systems and provide a basis for evaluating the severity of diseases and conditions.

Medical specialists and HPS staff use a three-step approach to identify guidelines/standards. This three-step approach is described in the following sections.

Step 1: Use of the HPS Medical Database

The first step involves matching the essential tasks for the job to identical or similar tasks in the HPS medical database. For a task to be matched to the database the movement pattern or process, ergonomic parameters, and environmental conditions need to parallel those for tasks in the database. This is necessary because the task will be evaluated across all the body systems and although the task itself may be similar, the conditions associated with the task have an impact on the medical guidelines/standards. In some instances only one task is matched to the database task statement and in another cases there may be multiple matches to the database task. Multiple matches occur because the database task statements tend to be broader than specific job tasks. Using the information contained in the database, the level of severity that precludes

competent and safe task performance is generated for those tasks matched to the generic task list across the 250+ medical conditions, generating the initial guidelines/standards.

Step 2: HPS Model for Consolidating Job Analysis Results and Other Materials

The second step requires the consolidation of the job analysis results, and ergonomic and environmental data. The essential tasks and functions are clustered into specific categories (e.g., push, read, communicate). The job analysis and ergonomic and environmental data is placed into summary format for use by the medical specialists. For example, the dB levels for essential tasks performed in noisy environments would be presented in a manner that allowed the audiologist and otolaryngologist to review the data by task, dB level, duration of exposure, and frequency of exposure. Additional materials that could be gathered include photographs and videotapes of the job tasks.

Step 3: Development and Validation of the Medical Guidelines/Standards

The information generated in the first 2 steps is submitted to the medical specialist for determination of severity level of each disease or impairment that impact job performance. Utilizing the procedure developed by HPS each panel of physicians will define the severity level of diseases/conditions that impacts job performance.

Separate meetings are held with the panels of physicians for each medical specialty. PDOC utilized physicians in nine specialties including Physical Medicine/Rehabilitation; Neurology; Ophthalmology; Obstetrics/Gynecology; Dermatology; Occupational Medicine; Otolaryngology; Pulmonology; and Cardiology. Each medical specialty panel consists of two or more physicians, thus adding to the legal defensibility of the guidelines. The meetings are organized and facilitated by HPS staff members who are experienced in integrating job-relatedness aspects and fair employment practices with the medical decision making process, and who are knowledgeable about the current laws and statutes related to employee selection.

At each medical specialty panel meeting, the consolidated job information (e.g., essential job tasks, environmental conditions, ergonomic data, injury and illness data) will be reviewed and discussed. Photographs, videotapes, and noise, color, and illumination data will be presented to each appropriate panel. For the PDOC project, job analysis team members briefed the physicians on a variety of topics related to the corrections officer job, in addition to providing them with printed job analysis data. Project team members also accompanied the physicians on a tour of an institution, answered their questions and provided them with information about the corrections officer job. In addition, the physicians were able to observe corrections officers on the job and ask them questions.

The medical scales are then reviewed by the medical panel. The scales are continually updated and revised to reflect current medical advances (e.g., treatment, diagnosis).

Next, individual tasks are reviewed and a level of severity determination is made for each job task. Tasks matched to tasks in the database (e.g., initial ratings) are reviewed by the medical specialists to ensure the specific job conditions which have an effect upon a particular disease/disorder have not been overlooked. For tasks not matched to tasks in the database, the medical specialists independently rate each essential task on each disease/condition scale in relation to the level of impairment an individual can have and still safely perform the task. The individual ratings are then reviewed to determine which tasks were not rated the same by all physicians. A panel discussion follows in which each physician indicates the rationale for his or her decision. This discussion continues until a consensus is reached. Past research comparing

physician ratings of tasks across a variety of jobs with physician ratings given two years prior for the same job tasks showed a high level of reliability with r 's of 0.7 - 1.0 (Gebhardt, 1989).

After consensus is reached for a disease, the essential tasks for the position are reviewed to determine which tasks are associated with the various levels of severity in the disease. This forms the basis for identification of the final guideline/standard for a specific disease. The tasks with the least allowable level of severity (most stringent) are identified as baseline tasks and become the guideline/standard for that disease/condition. The tasks that can be performed with higher levels of severity (i.e., have ratings of greater severity) are candidates for limited duty assignment. The resulting guideline/standard describes a level of acceptance, evaluation and disqualification which was based on the individual task ratings.

This process is followed for each disease in each body system and medical specialty. The result is the identification of the severity level of the medical conditions and diseases (e.g., physical, psychological) that impact job performance.

At the completion of the steps for all body systems a specific set of criteria will be established that define the severity of the diseases/conditions that impacts a person's ability to perform the job duties. The medical guidelines/standards will define: 1) the acceptable and disqualifying levels of control through medication or treatment; 2) the symptoms; and, 3) the level of function for each disease/condition. The PDOC guidelines/standards for each specialty were reviewed by all specialists and by the Medical Director of the Department of Corrections. In addition, the guidelines/standards were also reviewed by a committee of general practitioners representing the user of the physician's manual.

PHYSICIAN'S MANUAL

Following the medical specialist meetings and identification of the level of a disease/condition severity that precludes safe job performance, a Physician's Manual is developed that will be used by medical personnel to evaluate applicants and incumbents for the position. The physician's manual includes:

1. A description of the position as determined from the job analysis. This will include task lists generated from the job analysis.
2. Instructions for using the manual
3. An outline of the job-related medical guidelines/standards for each disease/condition in each body system and the acceptable level of the disease/condition for the job. Included will be a written outline of the acceptable levels of severity for each disease/condition, along with disqualifying levels.
4. An indication of areas that necessitate additional evaluation by a medical specialist.

HPS has developed a variety of formats for our Physician's manuals. These formats always include a table of contents, and indices that allow the physician to look up the condition and immediately turn to the proper place. In several instances, HPS has developed medical guidelines/standards for multiple jobs where the guideline/standard for a specific disease may or may not vary by job title.

The Physician's Manual is an important tool in the implementation of a medical screening instrument. It serves as a reference guide that will assist the examining physician in determining whether an individual is medically capable of performing job tasks. Additionally, the manual enables the organization to ensure that the same guidelines/standards are being applied by all examining physicians which results in consistency and equal treatment of all candidates and incumbents.

SUMMARY

HPS' approach to the development and validation of medical guidelines/standards has resulted in a methodology that uses task specific information to provide accurate and comprehensive medical guidelines and standards. This process has been shown to identify effective employees, decrease worker compensation costs, assure consistent employment decisions and fairness to all applicants and incumbents, and provide physicians with detailed information about the job. Furthermore, the validation of the medical guidelines/standards through the linkage of the essential tasks to the diseases/conditions has enabled this process to withstand legal challenge in Federal court and other legal arenas.

REFERENCES

- Age Discrimination in Employment Act of 1967, 29 U.S.C. Sec. 621, *et. seq.* (1967).
- Equal Employment Opportunity Commission (1992). A Technical Assistance Manual on the Employment Provisions of the Americans with Disabilities Act. Washington, D.C.: Equal Employment Opportunity Commission.
- Equal Employment Opportunity Commission, Civil Service Commission, Department of Labor and Department of Justice (1978). Uniform Guidelines on Employee Selection Procedures. Washington, D.C.: Bureau of National Affairs, Inc.
- Gebhardt, D.L., Baker, T. A. Sheppard, V.A., & deMiranda, G. A. (1992). Development and Validation of physical performance tests for Yellow Freight dockworkers, hostler, mechanics, city, combination and line haul drivers. Hyattsville, MD: Human Performance Systems, Inc
- Gebhardt, D.L. (1989). Development of medical standards for jobs with similar and dissimilar demands. Paper presented at the International Personnel and Management Association – Assessment Council, Orlando, FL.
- Rehabilitation Act of 1973, 29 U.S.C. 701 *et. seq.* (1973)