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# Development of a Physical Ability Test for Screening Mental Health Technician Trainee Candidates

Brett Andrew Dolezal

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**DEVELOPMENT OF A PHYSICAL ABILITY TEST FOR SCREENING**

**MENTAL HEALTH TECHNICIAN TRAINEE CANDIDATES**

(TITLE)

BY

**BRETT ANDREW DOLEZAL**

**THESIS**

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF

**Master of Science in Physical Education**

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**1993**

YEAR

I HEREBY RECOMMEND THIS THESIS BE ACCEPTED AS FULFILLING  
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## ABSTRACT

### **Development of a Physical Ability Test for Screening Mental Health Technician Trainee Candidates**

by *Brett A. Dolezal*

This study was designed to establish a valid physical ability test for use by the Illinois Department of Mental Health and Developmental Disabilities to screen job applicants for the position of Mental Health Technician Trainee. Physical ability tests to determine physical qualifications for jobs requiring substantial physical effort are permitted under current Equal Employment Opportunity Commission (EEOC) and Americans with Disabilities Act (ADA) guidelines if the required physical standards are job related and consistent with business necessity. In order to determine the physical demands encountered by Mental Health Technicians, a job analysis was conducted. The job analysis phase included: (i) a literature review, (ii) facility site visits, (iii) interviews with technicians, supervisors, and other administrators, (iv) an analysis of job descriptions and training session videotapes, and (v) a written survey of Mental Health Technicians and supervisors at twenty-one Mental Health and Developmental facilities. A total of 1123 questionnaires were distributed and 655 were returned with a return-rate of 58%. Ten job tasks requiring physical effort were identified that are frequently performed by Mental Health Technicians: (1) walk or stand for long periods of time, (2) perform general house cleaning duties, (3) participate in recreational activities with recipients, (4) bathe and dress recipients, (5) assist recipients with laundry, changing bed linens, and cleaning rooms, (6) push recipients in wheelchairs, (7) change *Attends* on recipients, (8) lift, turn, or reposition recipients, (9) run to the scene of a disturbance or emergency, and (10) lift and carry heavy objects other than recipients. Tasks 1, 4, and 9 were also rated as extremely important for a technician to be able to perform. Other tasks which were performed infrequently, but were also rated as critical,

were: (11) physically separate fighting recipients, (12) defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.), (13) physically restrain an aggressive recipient with the help of other Mental Health Technicians, and (14) apply restraints to resisting recipients. Overall, these job tasks meet the definition of “essential functions” based on the written job descriptions, the amount of time spent performing the function, and/or the consequence if a Technician is not able to perform the function.

In the second phase of the investigation, the physical test battery and the correspondence between the essential job tasks of Mental Health Technicians and the content of the physical ability test were defined. The recommended test battery included both items that simulate essential job tasks, and items that measure the physical capacities underlying critical job tasks that require special training or are not easily simulated. These tests are: (1) Rockport 1.0 Mile Walk Test, (2) YMCA Bench Press Test, (3) Lift and Carry Test, (4) Hand Grip Strength Test, (5) Recipient Transfer Test, and (6) 100 yard Shuttle Run.

## ACKNOWLEDGMENTS

I would first like to thank the patients living at the Mental Health and Developmental Centers, especially an older lady, who's name I don't even know, who threw her innocent and loving arms around me and reminded me of the sanctity of all human life (Genesis 1:27). Oh how I wish I could go back and embrace her, but this time with the same care and love she expressed to me.

To the members of my thesis committee, my sincerest gratitude is offered for their guidance, their assistance, and, above all, their patience (Proverbs 19:20). In particular, I would like to express a warm heartfelt thanks to Dr. Phyllis Croisant, my advisor, for her friendship, open-mindedness, and total support. I especially appreciated her emphasis upon her family over her job, rare in this world of "publish or perish" professionals.

"A friend loves at all times..." states Proverbs 17:17. I have been blessed with many incredible friends that have been with me through life's victories and defeats. Special thanks and love to Dan ("Perhaps you have seen me on cable...") and his family, John (the man who flooded a hotel room in Arizona by...) and his family, the entire Askey clan (PEE WEE GOLF!!!!), Laura (the famous "wet noodle"), Rob (the man with the Aces in Rummy), and all those card-playing-humbled-iron-sharpening-prayer-providing-brothers who lost to me in hearts this past year (Ken "charity-man", Brian "Ken-wanna-be", Mark "Ken-gonna-be", Phil "Ken-formerly", and of course, Erik "Ken-never-will-be"). Erik, you and your family have undoubtedly been the biggest influence in my life this past year. I still believe that you are nocturnally blessed — a man who awakes at dusk with a 'Dew' for breakfast then works fervently under the evening stars, only to return to his cold, yet soft bed by morning! I know one thing for sure, Erik: you love the Lord "with all your heart and with all your soul and with all your mind" (Matthew 22:37). Thank you friend for showing

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My immediate and extended family deserve more thanks and recognition than I could ever express in words. “Love is patient, love is kind. It does not envy, it does not boast, it is not proud. It is not rude, it is not self-seeking, it is not easily angered, it keeps no records of wrongs ... It always protects, always trusts, always hopes, always perseveres” (1 Corinthians 13:4-7). You have always stood by me with this unconditional love. I hope that I have reciprocated this to all of you, too!! I love you Stacey, Brenda, Todd, Leigh, Evan (“kissie”), Jordan, Mark (“pretzel”), Uncle Dick (“Herbie..Jimmy..Zeus”), Aunt Sharon, Grandpa Jerry (“Suckem cow”), Grandma June, Aunt Melissa, Uncle Dick G., Aunt Eve, Paul, Brandy, Chandler, and finally Mom (“Patty-prune”) and Dad.

Finally, and most importantly, I praise the Lord Jesus Christ for His sacrifice for me on a Roman cross on Calvary (Galatians 2:20). I love you Father!

*For physical training is of some value, but godliness has value for all things, holding promise for both the present life and the life to come.*

1 Timothy 4:8

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# CHAPTER 1

## INTRODUCTION

Despite progress in automation and mechanization in the workplace, physically demanding tasks are still necessary in many occupations. In many instances, workers cannot meet the physical demands placed upon them. This may pose an unfortunate threat both to employee and employer. A physically demanding job may jeopardize a worker's health by increasing his or her risk of incurring musculoskeletal related injuries. Comparably, employers risk increased workman's compensation claims and other deterrents to employee productivity (*e.g.*, higher attrition, increased health care services and costs, extended sick leave, lower morale, and diminished work performance (Hughes, 1989)). Compounding these problems are the possible litigation and legal scrutiny employers may face if they seek discriminatory employee selection processes to avoid employee-job mismatch. As a result of these potential dilemmas, physical ability testing has become one of the "new frontiers" in the screening of job applicants for physically demanding positions (Arvey, 1992).

Physical ability tests measure abilities and capacities that contribute to successful job performance. The physical test battery usually includes items that simulate essential job tasks as well as items that measure the physical capacities underlying critical job tasks as determined by a job analysis.

Over the past two decades, physical ability tests have been examined under many labels. Physical performance tests, pre-employment physical examinations, job-related physical tests, and physical agility tests are just a few terms which have been employed to describe similar screening methods. The concept of physical ability testing dates as far back as the first Olympics in ancient Greece. Basic

soldierly skills were simulated in combat-related tasks such as the javelin throw, running, and wrestling (Davis and Dotson, 1987). Today physical ability testing is utilized in a vast array of occupational settings, from public safety workers (*e.g.*, firefighters and police officers) to oil-refining and chemical processing jobs to supermarket and food service industries.

One other occupation which may benefit from the use of physical ability testing is the Mental Health Technician Trainee (MHTT) employed by the Illinois Department of Mental Health and Developmental Disabilities (IDMHDD). A perusal of available literature related to this occupation, however, yields a scarcity of information.

The job duties of a Mental Health Technician Trainee frequently include tasks that are physically demanding and critical to the overall mission of the Illinois Department of Mental Health and Developmental Disabilities, which is stated as, “to foster, support and guide statewide care systems for children, adolescent and adult citizens of Illinois who are mentally ill and/or have developmental disabilities” (IDMHDD, 1991). At a grassroots level, MHTT responsibilities entail dual demands as a primary-care giver (*e.g.*, bathe and dress recipients) and as a unit caretaker (*e.g.*, preside over emergencies or disturbances in the facility).

### **Statement of the Purpose**

This study was designed to develop a valid physical ability test for use by the Illinois Department of Mental Health and Developmental Disabilities to screen job applicants for the position of Mental Health Technician Trainee. Furthermore, this test should adhere to both the Equal Employment Opportunity Commission (EEOC) *Uniform Guidelines on Employee Selection Procedures* and the requirements of the Americans with Disabilities Act (ADA).

To accomplish this task, two phases of investigation were pursued with emphasis in providing strong evidence of content validity.

1. *Job Analysis Phase*

- (a) A job analysis was undertaken to provide an objective and systematic evaluation of tasks involving physical effort that are frequently performed or are critical for MHTTs.
- (b) Physical performance elements that are important to effective performance of these tasks were identified.

2. *Physical Test Battery Phase*

- (a) Correspondence between the job tasks of Mental Health Technician Trainees and the content of the physical ability test was defined.
- (b) The criteria considered when selecting items for inclusion in the physical ability test were established.

### **Limitations**

This study may have been limited by the following:

- 1. The job analysis questionnaire developed herein may not represent all of the tasks involving physical effort.
- 2. Survey instructions may not have been followed.
- 3. MHTs may have not accurately completed the questionnaire.
- 4. Supervisors may not have evaluated MHT positions when completing the questionnaire.

## Definitions of Terms

- Developmental Center:** a facility where residential care is provided for children, adolescent and adult citizens of Illinois who are developmentally disabled.
- Job Analysis:** an objective and systematic evaluation of the work environment that documents physical job demands and task requirements.
- Mental Health Center:** a facility where residential care is provided for children, adolescent and adult citizens of Illinois who are mentally ill.
- Mental Health Technician Trainee (MHTT):** a probationary employee of the IDMHDD under immediate supervision for a period of six to twelve months. During this time period, the MHTT receives instruction and training in caring for the mentally ill and/or developmentally disabled. (The MHTT becomes a Mental Health Technician (MHT) upon successful completion of this probationary period).
- Physical Ability Test:** a measure of physical abilities and capacities that contribute to successful job performance.
- Physical Abilities:** the learned performance of physical tasks and/or skills.
- Physical Capacities:** underlying physical components of tasks and/or skills including fitness components (*e.g.*, aerobic capacity, upper and lower body strength and endurance, flexibility, and anaerobic power) and motor components (*e.g.*, agility and quickness of reaction).
- Physical Fitness:** a set of attributes that people have or achieve that relates to the ability to perform physical activity. These attributes may include the following: (*i*) cardiorespiratory endurance, (*ii*) flexibility, (*iii*) muscular endurance, (*iv*) muscular strength, and (*v*) body composition (Heyward, 1991)
- Recipient:** a mentally ill and/or developmentally disabled individual residing at either a Mental Health or Developmental Center.

## CHAPTER 2

### LITERATURE REVIEW

A review of the literature pertaining to physical ability tests is divided into three separate areas: (i) a brief history of physical ability tests, (ii) legal considerations in physical ability test development, and (iii) validation methodologies.

#### A Brief History of Physical Ability Tests

An exhaustive literature search of the origins of physical ability testing points to early Olympic contests where combat-related tasks (*e.g.*, javelin throw, running, and wrestling) were associated with crucial military skills (Davis and Dotson, 1987). Interestingly, the men who performed exceptionally well in these combat-related tasks became honored soldiers. There is no question that physical performance abilities have been rooted within the military ever since. Fleishman's (1979) research which, many have claimed, laid the foundation for physical ability testing, was significant because it sought to determine the components of physical fitness (*e.g.*, muscular strength and endurance) and occupational performance (*e.g.*, perceptual motor function) among aircrew specialists within the Army Air Force Aviation Psychology program during World War II. In fact, Fleishman's 1964 benchmark book, *Structure and Measurement of Physical Fitness*, propelled the development of many wartime fitness batteries (Fleishman, 1979). More recently, investigators funded by the Naval Medical Research and Development Command designed a profile of fitness requirements for U.S. Marines operating in various environments. The relationship between upper body strength, lower extremity



muscular power, resistance to fatigue, and near-maximal effort for the combat scenario reflected shooting scores (Hogan, 1991). The results of this study supported Fleishman's notion that the detection and subsequent increase of fitness levels correspond to improved performance on combat tasks. Presently, the British military and the Canadian armed forces, define physical fitness standards for all military personnel so that only the most qualified secure the defense of their country (Stevenson, Bryant, Andrew, Smith, French, Thomson, and Deakin, 1992).

Research over the past three decades has polished and augmented Fleishman's original work. The emphasis has moved from evaluating physical fitness to predicting job performance. This new research on the physical requirements of occupational tasks has been applied to physical ability testing as a strategy for employee selection in a family of occupations. Following are some representative occupations which have adopted physical ability tests.

### *Law Enforcement Occupations*

In the early 1970's, there was a major concensus among most researchers that public safety personnel, as an occupational group, have high health risk profiles, and that developing physical fitness standards ensure qualified police officers to protect the private sector. The Institute for Aerobics Research, founded by Kenneth H. Cooper, M.D., has assumed the leadership role in this area for law enforcement agencies across the United States since 1978. Fitness screening protocols have been designed and implemented by the Institute for "federal agencies such as the Drug Enforcement Agency, U.S. Secret Service, U.S. Marshals Service, and the Federal Bureau of Investigation, state agencies such as the Idaho State Police, Illinois State Police and Kentucky State Police, and diverse municipal agencies such as the police departments of Dallas, Denver, New York, and Alexandria, V.A." (Collingwood,

1988) In essence, these protocols constituted a measure of norm-referenced physical fitness standards which public safety personnel must meet in order to gain employment. The trend in recent years, however, has been to develop task specific or job-related tests to screen job applicants for these positions. One of particular interest was the development of a "Police Officers Physical Abilities Test" by Rhodes and Farenholtz in 1985. The test based on the results of a task analysis survey of job-related physical activities encountered by 217 police officers from ten municipal police departments consisted of an obstacle run, agility station, and push/pull apparatus. Numerous other studies have also contributed significantly to the establishment of physical ability testing in law enforcement agencies (*e.g.*, Mostardi, Porterfield, King, and Urycki, 1990; Arvey, Nutting, and Landon, 1992; Maher, 1984; Davis and Dotson, 1987; Superko, Bernauer, and Voss, 1988).

### *Firefighting Occupations*

Researchers have acknowledged firefighting as one of the most physically demanding and hazardous occupations. Cady, Thomas, and Kawasky (1985), Gledhill and Jamnik (1992a), and Mostardi *et al.* (1990) have documented the highly strenuous nature of firefighting and the high incidence of injuries accompanying it. This has prompted an increased use of physical ability tests to ensure that all firefighter recruits have the physical capabilities to meet the demands of the job. Moreover, research has shown that when firefighters meet established physical ability standards, the incidence of accidents and injuries has decreased while job performance has improved (Cady *et al.*, 1985). One of the early studies in the development of physical performance tests for screening firefighter applicants was done by Considine, Misner, Boileau, Pounian, Cole, and Abbatiello (1976). In collaboration with the Chicago Civil Services Commission, a validated battery of five

physical performance test items (modified man-lift-and-carry, stair climb, modified obstacle run, flexed-arm hang, and hose couple) were administered to over 10,000 firefighter applicants in the City of Chicago. More recently, Gledhill and Jamnik (1992a) completed a similar study in which firefighters, after finishing a job-related performance test, indicated on a Likert scale validation questionnaire whether they thought the test was related to actual firefighting tasks and comparable to the physical demands these tasks effected. Furthermore, a scoring procedure was developed which provided the ranking of successful applicants based on their performance in all aspects of the screening process.

### *Correctional Officer Occupations*

In 1974, the Indiana Department of Corrections became concerned about the need for prison reform including the need for better qualified (*i.e.*, physically) prison guards. What followed was the germination of a detailed job analysis describing, among other things, the extensive amount of standing, walking, and step-climbing the correctional officer frequently encountered. Although probably not their intention, the Indiana Department of Corrections paved the way for correctional facilities nationwide to refine correctional officer qualifications. Over a decade passed before a study actually examined the physical ability requirements for entry-level correctional officers. This study, undertaken at the request of the California State Board of Corrections (1987), determined, through a job analysis, that performance standards should be developed for eleven physically demanding job tasks. A correctional officer physical conditioning module was developed, addressing the basic physical fitness capacities (*e.g.*, agility, flexibility, and strength) required in performing the physically demanding tasks. Other state correctional agencies, such as Arizona, Oklahoma, and Illinois, have also undertaken the necessary steps

to establish physical ability standards for the qualification of correctional officers (Western Occupational Health Centers, 1991; Hughes *et al.*, 1989). For example, correctional officers and youth supervisors at Illinois correctional centers must successfully pass all of the following physical test items in order to gain employment: (1) Queens College step test, (2) Hand Grip strength test, (3) Lift and carry test, (4) LSU Ability test, and (5) Pushup test (Croisant, Emmett, and Dolezal, 1993).

### *Industrial Occupations*

Apart from the safety-forces (police, firefighter, and correctional) occupations there has been considerable physical ability testing within industrial settings. A number of these jobs are naturally physically demanding and require adequate strength and endurance to execute. For example, seven companies in the supermarket and food service industries hired consultants who conducted strength and endurance tests on prospective warehouse applicants (Fleishman, 1979). It was hoped that this form of employee selection practice would help alleviate worker exposure to injury and financial costs incurred on the employer. In late 1978, Stouffer Foods, in cooperation with exercise physiologists at Michigan State University, tested assembly-line workers for muscular strength on a Cybex II machine. With over 1000 participants in this study, data was generated which established baseline strength requirements for various jobs in the plant (Fleishman, 1979). Arnold, Rauschenberger, Soubel, and Guion (1982) tested 168 men and 81 women who were in their sixth month of employment as steelworkers at Armco, Inc. The physical test battery contained seven strength measures and single measures of flexibility, balance, and endurance. Hogan (1991) studied the physical performance requirements of 166 surface coal-mining maintenance tasks that had been judged critical for job performance by incumbents who completed a job analysis

questionnaire. The results yielded a profile of seven performance ratings for each of the 166 tasks. In one of the most comprehensive studies ever completed in private sector industries, Denning (cited in Hogan 1991) evaluated the physical requirements of 112 production jobs at ten sites and 17 maintenance jobs at three sites of a chemical processing company. Results from this study suggested that the structure of physical performance should be described in terms of three-dimensions: muscular strength, endurance, and movement quality. Consequently, these dimensions are evident in many of today's physical ability tests.

### **Legal Considerations in Physical Ability Test Development**

*It is not an overstatement to say that no other aspect of the personnel selection process is fraught with more difficulty or clouded with more ambiguity than physical ability testing (Hoover, 1992).*

The use of pre-employment screening tests has come under close scrutiny by the courts, as well as federal and state agencies that enforce equal employment opportunity for women, the aged, and (more recently) the disabled. At one time, laws were designed to protect women (and children) from engaging in physically demanding work. Occupations such as firefighting and law enforcement set general height and weight requirements — the theory being that these two attributes were indication of physical strength — to make sure women performing heavy labor were qualified. Employers during this time had governing power over who they hired and fired. However, with the advent of the 1964 Civil Rights Act Title VII, which “precluded employment discrimination against individuals on the basis of race, color, religion, national origin, and sex”, the reigns on employee selection were tightened (Maher, 1984). Many individuals began to challenge height and weight standards following this legislation, although their words were merely ignored until 1972 when the Equal Employment Opportunity Commission (EEOC) was given power of

enforcement. With the assistance of the EEOC, law enforcement height and weight standards were shown to have disparate impact and to be discriminatory. As a result of failing to show job relatedness of these standards, law enforcement agencies and others hiring personnel for physically demanding occupations turned to physical ability testing procedures. Even though the courts, along with the Equal Employment Opportunity Commission, encouraged the development of physical ability tests, there continued to be adverse impact upon the same protected group most severely disadvantaged by the height and weight standards — women. In addition, employers were, in essence, restricting older individuals from working in “potentially hazardous” jobs (Woolsey, 1990).

It wasn't until 1978 that the EEOC published the *Uniform Guidelines on Employee Selection*, which spelled out the requirements for the development of job-related testing. A brief summary of these *Guidelines* as it relates to physical ability testing follows. A physical ability test must show job relatedness, be of business necessity, and meet other *bona fide* occupational qualifications if adverse impact is present. Adverse impact is defined as any type of testing process of which greater than 30% of a protected class fails (*e.g.*, women and older people). Thus, a characteristic or trait that is merely peripherally related to successful job performance cannot be used if it has significant adverse impact. In addition, if a selection procedure has adverse impact, there must be a search for and use of methods that are equally valid but with less adverse impact (USEEOC, 1978).

Physically ability tests have, nevertheless, encountered copious problems in local and federal courts even with the EEOC *Uniform Guidelines on Employee Selection*. With the most salient issue still being adverse impact against females in physically demanding occupations, the Age Discrimination in Employment Act (1982), enforced by the EEOC, has complicated matters even more. Because age affects individuals in very different ways, and because physiologists have

distinguished between functional and chronological age, defendants in age discrimination cases have stood on thin ice when adopting age as the only valid criterion in successful job performance (Hoover, 1992).

Over the past few decades, discrimination in employer selection procedures has been attacked on the basis of race, color, sex, and age. Other areas of discrimination, however, such as the disabled, did not occupy as prominent a position until more recently. In mid-1992, the Americans with Disabilities Act (ADA) was signed into law, to be enforced by the Equal Employment Opportunity Commission, prohibiting discrimination in employment against the disabled. The general intent of the "Act's employment-related provisions (Title I) is to extend to private employers the nondiscrimination provisions previously applicable only to the Federal government and Federal government contractors and funding under the Rehabilitation Act of 1973" (USEEOC, 1992). The purpose of the ADA (Title I) is to allow qualified individuals with disabilities to enjoy the same employment opportunities that are available to persons without disabilities. The following points summarize an employer's legal obligations under the Americans with Disabilities Act (USEEOC, 1992):

1. *An employer must not deny a job to a disabled individual because of a disability if the individual is qualified and able to perform the essential functions of the job, with or without reasonable accommodation.*
2. *If an individual who has a disability is otherwise qualified but unable to perform an essential function without an accommodation, the employer must make reasonable accommodation unless the accommodation would result in undue hardship.*
3. *An employer is not required to lower existing performance standards for a job when considering the qualifications of an individual who has a disability if the standards are job-related and uniformly applied to all employee and candidates for that job.*
4. *Qualification standards and selection criteria that screen out or tend to screen out an individual on the basis of a disability must be job-related and consistent with business necessity.*

5. *Any test or other procedure used to evaluate qualifications must reflect the skills and abilities of an individual rather than impaired sensory, manual or speaking skills, unless these are the job-related skills that the test is designed to measure.*

Point #4 has become the cornerstone guideline which employers must satisfy when administering physical ability tests. If a physical ability test screens out or tends to screen out an individual with a disability or a class of such individuals because of a disability, the employer must be prepared to show that the test is job-related and consistent with business necessity. Even though many of the pre-ADA physical ability tests did comply to the guidelines, there have been few recent studies which have explicit inclusion of the ADA regulations.

It should be pointed out that physical ability tests that discriminate are not illegal *per se*. Only discriminating tests that are neither job-related nor scientifically valid are prohibited. From a selection point of view, the ideal test is one that discriminates between the most highly qualified and job-prepared and the least qualified. Thus, choosing the most highly qualified and capable candidates for a physically demanding occupation may depend on the validation method of the physical ability test.

### **Validation Methods in Physical Ability Tests**

Employee selection procedures that include physical ability tests will, in most cases, have an adverse impact on women, older individuals, and the disabled. Therefore, it is imperative that these tests be scientifically valid. According to the EEOC, "scientifically valid" means (USEEOC, 1978):

*A test's validity should consist of empirical 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 (1607.3).*



The American Psychological Association (APA) provides a more in-depth view of the definition of validity with the following:

*Questions of validity are questions of what may properly be inferred from a test score; validity refers to the appropriateness of inferences from test scores or other forms of assessment. The many types of validity questions can, for convenience, be reduced to two: (a) what can be inferred about what is being measured by the test? (b) what can be inferred about other behavior?*

*The first question inquires into the intrinsic nature of the measurement itself. The measuring instrument is an operational definition of a specified domain of skill or knowledge, or of a trait, of interest to the test developer or user. The essential problem in this context is to reach some conclusion as to how faithfully the scores represent that domain, and it is appropriate to speak of the validity of the measurement.*

*The second question inquires into the usefulness of the measurement as an indicator of some other variable as predictor of behavior. In this context, the essential problem is to reach some conclusion about how well the scores on the test are related to some other performance, and it is appropriate to speak of the closeness of the relationship (APA, 1984).*

To answer these two types of questions, four independent forms of validity measures have been developed to describe the properties of measurement results. The four forms are predictive, concurrent, construct, and content validity. The majority of physical ability tests conducted in physically demanding occupations have made use of one or more of these validation strategies. While these will be discussed as independent entities, “they are interrelated operationally and logically; only rarely is one of them alone in a particular study” (APA, 1984).

Predictive and concurrent validities fall under the heading of criterion-related validity, which is the inference made from a person’s test score in relation to some other variable called a criterion. Predictive validity indicates the extent to which a future level on the criterion can be predicted by past test performance. Concurrent validity is concerned with the person’s simultaneous standing on the criterion and the test. Both types of criterion-related validity are important when the researcher wishes to predict behavior on a second measure. For example, Gledhill and Jamnik (1992b) designed a battery of tests that simulated the physically demanding

operations encountered in firefighting. Incumbent firefighters pilot tested the tasks and further revisions were made based on their feedback. Finally, a randomly selected group of experienced firefighters performed the revised job-related tasks which provided a criterion validity for each test. Furthermore, the recorded performance times on each test were used to establish a “standard of acceptability” for the tests. Some have argued that this type of physical ability test validation has the highest degree of defensibility should an agency have to go to court, because actual testing is provided to validate those physical abilities that are predictive of successful job performance.

Construct validity is the third form of validation strategy. It is used when the researcher wishes to use a test to draw inferences regarding a trait or attribute that cannot be observed directly. Construct validation, then, is the strategy employed in attempting to validate a test purporting to measure a construct (attributes or traits). Once the constructs are identified, operational definitions allow the measurement of those behaviors. Physiological terms such as “strength”, “endurance” and the like are constructs in that they can be defined by certain behavioral traits which covary (APA, 1984). The construct validation process has recently become a viable research trend in physical ability testing. Arvey *et al.* (1992) have argued that it may be appropriate for many police and fire settings to pursue this process in establishing the validity of physical ability tests. Earlier research by Considine *et al.* (1976) concerning the development of a physical performance test battery for firefighters yielded the following constructs (identified through a task analysis and orientation process): dynamic strength, static strength, agility, total body coordination, cardiorespiratory endurance, muscular endurance, eye-hand coordination, and total body speed. Essentially, then, this process defines physical fitness as an underlying (construct) factor for job performance.

Content validity is the fourth form of validation strategy utilized in physical ability testing. Due to the nature of this particular study, special attention is to be given to content validation. Content validity is the degree to which the researcher “is able to show that the questions and problems on the test are representative of a specified content domain that the test items sample” (APA, 1984). There are three major issues that surround the process of content validation. First, the domain or universe of the content under study must be adequately defined and given parameters. Second, a representative sample of this domain must be deduced from the universe. This is done because it is assumed that the universe is too vast to measure in its entirety, and that random sampling will not directly and accurately reflect the universe. Third, expert judgements are an approved form of validating the representativeness of the sample (Society of Industrial and Organizational Psychology, 1987).

Typical content validation evidence prevalent among physical ability tests today consists of conducting a job analysis to demonstrate that walking, lifting, running, and so forth are “essential” elements of the job. Physical test batteries are then constructed which represent as many of these important features as possible. Experts (*i.e.*, exercise physiologists) are then used to provide evidence through inspection that the physical test batteries are adequate representations of the job performance domain. Thus the linkage between the job and the physical test batteries is entirely through a rational process. Next, the norms and cut-off scores are developed based on present incumbents or other population norms. Subsequently, the physical test batteries are used for screening purposes (Arvey *et al.*, 1992; Maher, 1984; Hughes, Ratliff, and Pursewall, 1989; Croisant *et al.*, 1993).

The unique aspect found in this form of content validity is the use of job analysis procedures to determine the domain from which to test. The momentum behind job analysis utilization in physical ability tests has been spurred by the

EEOC (1978) where they state that the “most common short-comings in validation studies have been the failure to conduct a job analysis.” Through a job analysis, the essential job functions which require physical effort can be identified. Under the ADA (USEEOC, 1992), the job analysis should focus on the purpose of the job and the importance of actual job functions in achieving this purpose. This can be achieved by administering a task inventory questionnaire to incumbents who indicate, for each task, whether they perform it, and if so, for what proportion of the work time or with what degree of frequency. Based upon their assessments, job-related physical test batteries are constructed.

Overall, it should be noted that all four types of validation procedures are closely related and are usually interdependent. When developing physical ability tests for physically demanding occupations, it is the researcher’s responsibility to define what is to be inferred from the measurement results and to provide data or methodologies which show that there is an acceptable basis for such inferences.

## **CHAPTER 3**

### **METHODOLOGY**

This study was designed to develop a valid physical ability test which measures physical components that contribute significantly to the successful job performance of Mental Health Technician Trainees. The study consisted of two phases of investigation which involved the use of content validity strategies (as was discussed in the review of the literature in the previous chapter). The job analysis phase defined the content domain by use of a survey instrument. The questionnaire was administered to a systematic sample of incumbent MHTs and supervisors in Mental Health and Developmental Centers throughout Illinois. The collected data enabled the researcher to identify underlying physical abilities, such as walking, running short distances, and lifting/carrying heavy objects, which are needed to perform various MHTT tasks, along with physical capacities such as muscular strength and aerobic capacity, which contribute significantly to successful job performance.

In the subsequent physical test battery phase, it was imperative to demonstrate high content validity which was evidenced by the correspondence between the job content domain and the content of the physical ability test. Furthermore, this phase provided the criteria considered when selecting items for inclusion in the physical ability test.

## **Job Analysis Phase**

### *Job Analysis Questionnaire*

The job analysis questionnaire provided a basis for identifying tasks involving significant physical demands essential for successful performance of the job. The first part of this section will describe how the questionnaire was developed. The following section will describe the components of the test instrument.

The development of the job analysis questionnaire was composed of four stages. The first stage entailed a comprehensive review of published and unpublished literature. Unfortunately, the search for published literature revealed no relevant studies of the Mental Health profession; however, job analysis questionnaires from police, firefighters, and correctional facilities were found to be applicable. Unpublished literature included documents obtained from the IDMHDD which detailed MHT job descriptions, job duties, and a previous job analysis report identifying their performance domain in 1984 (Stout, 1984).

The second stage of the development of the questionnaire consisted of site visits to IDMHDD Centers felt to be representative of facilities statewide. Four facilities were visited: Elgin Mental Health Center, Andrew McFarland Mental Health Center, William A. Howe Developmental Center, and Lincoln Developmental Center. Elgin Mental Health Center, the oldest and largest facility in operation, was selected because its physical structure, size, and type of recipient (mentally ill and forensic) would likely result in high physical demands of the Mental Health Technician. Andrew McFarland Mental Health Center was selected because of its diverse treatment units: two adult admission units, two units for long term treatment of adults with mental illness, one unit for adult forensic recipients, and one unit for children and adolescents. Visits at William A. Howe and Lincoln Developmental

Centers, which provide services to developmentally and physically disabled adults and adolescents, revealed the responsibilities of MHTs as primary-care givers (*e.g.*, to bathe, dress, toilet, and feed recipients). At all of these facilities, MHTs were observed working and were frequently interviewed regarding their perception of their job duties and the physical demands they may incur. Additional interviews were conducted with supervisors, risk management personnel, the director of nursing, and other administrators. Since many of the physical demanding tasks are performed infrequently by technicians, usually during emergency situations, it was not feasible to observe these tasks on site. Therefore, techniques used for defense and control of recipients were observed on Aggression Management Training videotapes.

The third stage of questionnaire development was the creation of a tentative list of physically demanding tasks derived from the job description and job duties for MHTTs, on-site observations and interviews, videotapes describing defense and control techniques, and other unpublished IDMHDD literature.

The last stage of the development of the job analysis questionnaire was the final approval from the Project Advisory Committee. This committee was composed of seven supervisory staff from a broad range of positions and facilities, and was directed by the chief of the Bureau of Personnel. This expert panel provided ideas, feedback, and critique to the project research team during all stages of questionnaire development.

The job analysis questionnaire (Appendix A), was divided into four sections comprising a total of twenty-four items (some have multiple parts). The first section was demographic in nature, seeking the following information: employment facility (21 facilities in all), job title (six levels of MHT or supervisor), years employed at the IDMHDD and at current facility, age and sex, full-time/part-time status, and usual work shift (day, evening, night, and rotating).

The next section of the questionnaire was further divided into four general inquiries of frequency, duration, physical effort level, and criticality of 16 physical tasks that MHTT may be required to perform. Each inquiry included a table with the 16 job tasks identified in the left column and a Likert scale to the right. The response choices on the Likert scale depended on the particular question: (1) "How often you perform each task" had an eight-point scale (0="never" and 7="many times per day"), (2) "How long you're involved in each task" had a seven-point scale (0="do not perform" and 6="over 60 minutes"), (3) "Level of physical effort to perform each task" had a six-point scale (0="do not perform" and 5="very hard"), and (4) "How critical it is that you be able to perform each task" had a five-point scale (0="not part of the job" and 4="extremely important").

The third section of the questionnaire was designed to obtain more detailed information concerning the elements of the physically demanding tasks. The questions sought information about the lifting and carrying of recipients and other objects, the pushing and pulling of recipients and/or objects, the duration of standing and sitting, the duration and distance of walking and running, the number of flights of stairs climbed, and the amount of time stooping, kneeling, crouching, and squatting.

The final section, similar in format to the first, consisted of a list of nine general physical abilities and queried the importance of each. In table format, the abilities were listed in the left column and a 4-point Likert scale in the right. The four response choices (not important, somewhat important, very important, and extremely important) were given for each of the following abilities: upper body strength, leg strength, physical endurance, physical agility, quickness of reaction, flexibility, hand manipulation, vision, and hearing.



### Subjects

The job analysis questionnaire was completed by a total of 655 respondents (510 Mental Health Technician incumbents and 131 supervisors) from all twenty-one of the Illinois Department of Mental Health and Developmental Disabilities facilities statewide. Respondents were chosen by a systematic sampling procedure thus insuring adequate representation of all groups (gender, shifts, full-time/part-time workers, and ages).

All of the respondents had at least one year of experience in the job, with an average of 13.6 years (range of 1–44 years) with the IDMHDD, and an average of 11.9 years (range of 1–44 years) at their present facility.

Incumbents were told that they were participating in a project to develop a new employment test and were assured that their responses were confidential and would not be used for any other purpose.

### Testing Procedure

The following steps took place after the final development of the job analysis questionnaire:

1. Job analysis questionnaires were duplicated and distributed to Personnel officers at each of the twenty-one facilities by the chief of the IDMHDD Bureau of Personnel.
2. Personnel officers were instructed by the chief of the IDMHDD Bureau of Personnel to distribute the questionnaires to a systematic sampling of Mental Health Technicians (15–20%, which included every fifth or sixth name on a seniority roster) as well as to approximately ten supervisory/managerial staff. (Appendix B).
3. Each Personnel officer attached a cover letter to the questionnaires which described the importance of the respondents cooperation, assured confidentiality, and requested that the surveys be completed and returned to the Personnel officer by September 27, 1993.

4. After the completed questionnaires were returned to the Personnel officers at a given facility, they were mailed to the chief of the IDMHDD Bureau of Personnel, who, after receiving them from all facilities, returned them to the investigator for analysis.
5. Follow-up questionnaires were randomly distributed by unit administrators at the following facilities which had return rates under 50%: Elgin Mental Health Center (19), Howe Developmental Center (18), Illinois State Psychiatric Institute (8), Kiley Developmental Center (8), and Ludeman Developmental Center (26). (The numbers in parentheses denote the number of additional questionnaires that were returned.)

### Data Analysis

Data entry was performed by employees in Testing Services at Eastern Illinois University. The data from these questionnaires were analyzed using the Statistical Package for the Social Sciences (SPSS, 1990). First, descriptive statistics, which included the mean, standard deviation, range, frequency counts, and percentages were computed for all test items.

The next step in the analysis involved comparing job frequency, duration, effort, and criticality between Mental Health Technicians working in Mental Health Centers and those working in Developmental Centers. Further sorts based upon age, gender, and work-shifts were also included.

After the survey data was compiled and reviewed, the investigator identified the job tasks which occurred frequently (several times per week) or which were critical (extremely important) to the job duties of Mental Health Technicians.

### **Physical Test Battery Phase**

Physical test items were constructed based upon the correspondence between the job performance domain (*i.e.*, "essential" job duties), and the content of the physical ability tests. Thus the linkage between the job and the physical test

battery was based entirely through a rational process. An acceptable level of reliability and objectivity was also considered when selecting items for inclusion in the physical ability test.

A realistic rationale for the establishment of qualification standards was for the MHTT to have adequate capability to meet most of the physical demands experienced, as well as to have a substantial reserve capacity when meeting routine physical requirements of the job. Thus the norms and cut-off scores for individual test items were established using appropriate gender- and age-adjusted norms.

## CHAPTER 4

### RESULTS AND DISCUSSION

In order to determine the physical demands encountered by Mental Health Technicians employed by the Illinois Department of Mental Health and Developmental Disabilities, a job analysis was conducted. The analysis included: (i) a literature review, (ii) site visits to Elgin Mental Health Center, Andrew McFarland Mental Health Center, William A. Howe Developmental Center, and Lincoln Developmental Center, (iii) interviews with technicians, supervisors, and other administrators, (iv) analysis of job descriptions and training session videotapes, and (v) a written survey of Mental Health Technicians and supervisors at twenty-one Mental Health and Developmental facilities.

#### Job Analysis Phase

##### Response Rate

The job analysis questionnaire provided a basis for identifying tasks involving significant physical demands necessary for successful performance of a Mental Health Technician's job. The questionnaire was completed by a systematic sample of Mental Health Technicians (15–20% of the total population which included every fifth or sixth name on a seniority roster) as well as ten supervisory staff at each one of the twenty-one facilities statewide. Thus, a total of 1123 surveys were distributed and 655 surveys were returned including follow-up. This indicated an overall return-rate of 58%. The return-rate for MHTs was 56%. Table 1 compares the actual makeup of the MHT population with the sampled makeup for various MHT

job levels and gender. The close correspondence between actual and sampled percentages for the job levels and gender helps verify that the systematic sample was representative of the entire population. A more detailed analysis of the return-rate by facility is included in Appendix C.

**Table 1**  
**Makeup of MHT Population: Actual and Sampled**

	<i>Technician Job Level</i>						<i>Gender</i>	
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>Female</i>	<i>Male</i>
<i>% of Actual Entire Population</i>	9	68	15	4	2	.1	72	28
<i>% of sampled Mental Health Techs.</i>	8	58	22	9	3	.2	73	27
<i>% of sampled M.H. Center Techs.</i>	14	52	20	10	4	0	68	32
<i>% of sampled Dev. Center Techs.</i>	5	61	23	8	3	.3	75	25

Of the 655 surveys returned, 510 reported that they were Mental Health Technicians and 131 reported that they were Supervisors. Unfortunately, due to a misunderstanding in instructions, a number of the questionnaires completed by the supervisors were poor representations of Mental Health Technician job duties, and instead represented the supervisors own job duties. This presented a problem in that many responses were underestimated, thus skewing the overall results. Because of this, the data analysis from this study is based solely on Mental Health Technician surveys. For statistical analysis, the surveys were further sorted according to whether the respondent worked in a Mental Health or Developmental Center.

Demographics

Demographic information concerning Mental Health Technician and Supervisor respondents is included in Table 2. Further demographics of Mental Health Technicians working at either Mental Health Centers or Developmental Centers and supervisors working at both facilities are also included in this table. Overall, respondents in this study had worked an average of 12.2 years for the Illinois Department of Mental Health and Developmental Disabilities, and an average of 10.6 years at their present facility. Furthermore, 96% were full-time employees and 92% were working as Level II–Technicians or higher. This vast work experience in Mental Health and Developmental Centers helps substantiate the respondents background and knowledge of the physically demanding tasks encountered while working.

**Table 2**  
**Demographic Information of Questionnaire Respondents**

	<i># of Resp.</i>	<i>Years. Employed at IDMHDD</i>	<i>Years Employed at Facility</i>	<i>Age</i>	<i>Full-time / Part-time</i>	<i>Work-shift</i>
<i>All M.H. Techs.</i>	510	12.2 yrs. (range of 1–44 yrs.)	10.6 yrs. (range of 1–44 yrs.)	20–29 yrs.(11%) 30–39 yrs.(32%) 40–49 yrs.(33%) 50–59 yrs (19%)	Full-time (96%)	Day (42%) Even. (38%) Night (15%)
<i>Mental Health Center Techs.</i>	187	12.1 yrs. (range of 1–30 yrs.)	9.5 yrs. (range of 1–29 yrs.)	20–29 yrs.(13%) 30–39 yrs.(23%) 40–49 yrs.(36%) 50–59 yrs (21%)	Full-time (98%)	Day (35%) Even. (35%) Night (18%)
<i>Developmental Center Techs.</i>	323	12.3 yrs. (range of 1–44 yrs.)	11.2 yrs. (range of 1–44 yrs.)	20–29 yrs.(11%) 30–39 yrs.(38%) 40–49 yrs.(31%) 50–59 yrs (18%)	Full-time (94%)	Day (45%) Even. (40%) Night (14%)
<i>Supervisors</i>	131	19.0 yrs. (range of 2–30 yrs.)	17.0 yrs. (range of 2–30 yrs.)	20–29 yrs.(01%) 30–39 yrs.(18%) 40–49 yrs.(49%) 50–59 yrs (28%)	Full-time (100%)	Day (83%) Even. (6%) Night (4%)

Survey Results of Physically Demanding Tasks

The mean and standard deviation of the ratings of frequency, criticality, duration, and level of physical effort for each job task are given in Table 8. Included in Table 9 are comparisons of survey results among Mental Health and Developmental Centers. Appendix D contains further sorts by gender, workshift, and age at the two types of Centers. The analysis of surveys completed by supervisory staff is found in Appendix E.

More detailed information was obtained about physical elements of work tasks. This is presented in Tables 3–7.

**Table 3**  
**Task: Lifting Recipients**

<i>M.H. Techs.</i>	<i>Percent Who Perform the Task</i>	<i>Percent Who have Assistance</i>	<i>Mean Maximum Weight</i>	<i>Mean Frequent Weight</i>	<i>Type of Lifting</i>	<i>Occurrence per Shift</i>
All	62 %	63 %	191.3 lbs.	135.2 lbs.	Floor to knee Floor to waist Knee to waist Waist to waist	2.4 3.2 5.6 10.9
M.H. Cen.	55 %	63 %	248.3 lbs.	156.9 lbs.	Floor to knee Floor to waist Knee to waist Waist to waist	2.2 3.0 3.3 4.5
Dev. Cen.	66 %	63 %	164.7 lbs.	124.9 lbs.	Floor to knee Floor to waist Knee to waist Waist to waist	2.5 3.3 6.7 13.4

**Table 4**  
**Task: Lifting and Carrying Objects**

<i>M.H. Techs.</i>	<i>Percent Who Perform the Task</i>	<i>Most Frequent Lifting</i>	<i>Mean Maximum Weight</i>	<i>Mean Distance Carried</i>	<i>Most Frequent Heavy Objects</i>	<i>Mean Frequent Weight</i>	<i>Mean Distance Carried</i>	<i>Most Frequent Objects</i>
All	91%	Floor to waist	36.0 lbs. 59.0 lbs.	40.5 ft. 29.0 ft.	laundry (39%) furniture (25%)	30.0 lbs. 15.0 lbs.	41.0 ft. 21.0 ft.	laundry (36%) food trays (33%)
M.H. Cen.	91%	Floor to waist	36.1 lbs. 55.9 lbs.	53.5 ft. 28.8 ft.	laundry (39%) furniture (32%)	13.5 lbs. 29.3 lbs.	12.1 ft. 58.5 ft.	food trays (35%) laundry (33%)
Dev. Cen.	91%	Floor to waist	36.5 lbs. 62.6 lbs.	33.1 ft. 28.8 ft.	laundry (39%) furniture (20%)	30.0 lbs. 15.8 lbs.	31.9 ft. 27.4 ft.	laundry (38%) food trays (31%)

**Table 5**  
**Task: Pushing and Pulling**

<i>M.H. Techs.</i>	<i>Percent Who Perform the Task</i>	<i>Mean Maximum Weight</i>	<i>Mean Distance</i>	<i>Object</i>
<i>All</i>	89 %	108.7 lbs.	298.4 ft.	wheelchairs (39%)
		151.9 lbs.	199.7 ft.	aggressive rec. (18%)
<i>M.H. Cen.</i>	87 %	104.5 lbs.	126.5 ft.	carts (21%)
		173.3 lbs.	38.4 ft.	aggressive rec. (21%)
<i>Dev. Cen.</i>	91 %	109.7 lbs.	285.7 ft.	wheelchairs (51%)
		135.8 lbs.	321.5 ft.	aggressive rec. (16%)

**Table 6**  
**Analysis of Locomotion Actions**

<i>M.H. Techs.</i>	<i>Task</i>	<i>Average Time per Shift</i>	<i>Mean Distance</i>	<i>Flights</i>
<i>All</i>	<i>Walking</i>	4.8 hrs.	-	-
	<i>Running</i>	-	106.4 yds.	-
	<i>Climbing (stairs)</i>	-	-	1.1 flights
<i>M.H. Cen.</i>	<i>Walking</i>	4.7 hrs.	-	-
	<i>Running</i>	-	152.2 yds.	-
	<i>Climbing (stairs)</i>	-	-	1.5 flights
<i>Dev. Cen.</i>	<i>Walking</i>	4.9 hrs.	-	-
	<i>Running</i>	-	80.8 yds.	-
	<i>Climbing (stairs)</i>	-	-	.9 flights

**Table 7**  
**Analysis of Lower Body Actions**

<i>M.H. Techs.</i>	<i>Task</i>	<i>Occurrence per Shift</i>	<i>Activity</i>
<i>All</i>	<i>Standing</i>	5.0 hrs.	<i>supervising</i>
	<i>Sitting</i>	2.3 hrs.	<i>supervising</i>
	<i>Squatting</i>	13.6 times	<i>lifting, bathing recipient, aggression management</i>
	<i>Stooping</i>	32.1 times	<i>dresssing, turning recipient, aggression management</i>
	<i>Kneeling</i>	10.0 times	<i>general housekeeping, aggression management</i>
<i>M.H. Cen.</i>	<i>Standing</i>	4.4 hrs.	<i>supervising</i>
	<i>Sitting</i>	2.5 hrs.	<i>supervising</i>
	<i>Squatting</i>	8.1 times	<i>aggression management</i>
	<i>Stooping</i>	21.8 times	<i>aggression management</i>
	<i>Kneeling</i>	7.0 times	<i>cleaning, applying restraints</i>
<i>Dev. Cen.</i>	<i>Standing</i>	5.3 hrs.	<i>supervising</i>
	<i>Sitting</i>	2.1 hrs.	<i>supervising</i>
	<i>Squatting</i>	16.5 times	<i>lifting, bathing</i>
	<i>Stooping</i>	37.7 times	<i>dresssing, turning recipient</i>
	<i>Kneeling</i>	11.7 times	<i>general housekeeping</i>



**Table 8**

**Mental Health Technicians: Frequency, Criticality, Duration,  
and Physical Effort Ratings for Job Tasks Requiring Physical Effort**  
(Mean and Standard Deviation of All Facilities (N=510))

<i>Task</i>	<i>Frequency</i>	<i>Criticality</i>	<i>Duration</i>	<i>Phys. Effort</i>
	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
Walk or stand for long periods of time	6.4 (1.4)	3.5 (0.8)	5.2 (1.0)	2.7 (1.1)
Walk or run up flights of stairs	2.8 (2.5)	1.9 (1.5)	1.6 (1.7)	1.6 (1.3)
Run to the scene of a disturbance or emergency	3.6 (1.9)	3.7 (0.7)	2.5 (1.3)	2.6 (1.1)
Physically separate fighting recipients	3.0 (2.0)	3.8 (0.8)	2.3 (1.4)	3.2 (1.4)
Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	3.2 (2.0)	3.8 (0.7)	2.5 (1.5)	3.3 (1.4)
Physically restrain an aggressive recipient with the help of other Mental Health Technicians	2.7 (1.7)	3.7 (0.8)	2.8 (1.5)	3.3 (1.4)
Apply restraints to resisting recipients	2.1 (1.7)	3.5 (1.2)	2.5 (1.6)	2.9 (1.6)
Lift, turn, or reposition recipients	4.0 (2.6)	3.2 (1.2)	2.9 (1.9)	2.8 (1.5)
Bathe and dress recipients	4.6 (2.3)	3.4 (1.1)	4.3 (1.7)	2.6 (1.3)
Change <i>Attends</i> on recipients	4.1 (2.8)	3.1 (1.4)	3.0 (2.0)	2.1 (1.3)
Push recipients in wheelchairs	4.2 (2.7)	3.2 (1.2)	3.4 (1.8)	2.2 (1.3)
Perform therapeutic exercises with recipients	3.0 (2.6)	2.6 (1.5)	2.8 (2.1)	1.7 (1.3)
Assist recipients with laundry, changing bed linens, and cleaning up room	4.5 (2.3)	3.0 (1.3)	3.9 (1.9)	2.0 (1.2)
Participate in recreational activities with recipients	4.7 (2.3)	3.2 (1.1)	4.8 (1.7)	2.1 (1.1)
Perform general house cleaning duties	5.1 (2.0)	2.9 (1.2)	4.4 (1.6)	2.2 (1.1)
Lift and carry heavy objects other than recipients	3.9 (2.2)	2.6 (1.2)	3.0 (1.6)	2.8 (1.3)

0 = never  
1 = a few times Per Year  
2 = about once Per month  
3 = several times Per month  
4 = about times Per week  
5 = a few times Per week  
6 = many times Per day  
7 = many times Per day

0 = not part of the job  
1 = not important  
2 = somewhat important  
3 = moderately important  
4 = extremely important

0 = do not perform  
1 = under 30 seconds  
2 = 30 seconds to 1 minute  
3 = 1 to 5 minutes  
4 = 5 to 15 minutes  
5 = 15 to 30 minutes  
6 = over 30 minutes  
7 = over 60 minutes

0 = do not perform  
1 = very light  
2 = light  
3 = somewhat hard  
4 = hard  
5 = very hard

**Table 9**

**Mental Health Technicians: Frequency, Criticality, Duration,  
and Physical Effort Ratings for Job Tasks Requiring Physical Effort**  
(Mean of Mental Health Centers (N=187) and Mean of Developmental Centers (N=323))

<i>Task</i>	<i>Frequency</i>		<i>Criticality</i>		<i>Duration</i>		<i>Phys. Effort</i>	
	<i>Mean</i>	<i>Mean</i>	<i>Mean</i>	<i>Mean</i>	<i>Mean</i>	<i>Mean</i>	<i>Mean</i>	<i>Mean</i>
	<i>M.H.Cen.</i>	<i>Dev. Cen.</i>	<i>M.H.Cen.</i>	<i>Dev. Cen.</i>	<i>M.H.Cen.</i>	<i>Dev. Cen.</i>	<i>M.H.Cen.</i>	<i>Dev. Cen.</i>
Walk or stand for long periods of time	6.3	6.5	3.4	3.5	5.0	5.4	2.5	2.8
Walk or run up flights of stairs	3.7	2.3	2.5	1.6	2.1	1.3	2.0	1.4
Run to the scene of a disturbance or emergency	4.1	3.4	3.8	3.7	2.8	2.4	2.8	2.5
Physically separate fighting recipients	3.5	2.6	3.9	3.7	2.7	2.1	3.6	2.9
Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	3.1	3.3	3.9	3.7	2.6	2.4	3.7	3.1
Physically restrain an aggressive recipient with the help of other Mental Health Technicians	3.3	2.3	3.8	3.7	3.2	2.5	3.7	3.0
Apply restraints to resisting recipients	3.1	1.6	3.8	3.2	3.2	2.2	3.5	2.6
Lift, turn, or reposition recipients	2.9	4.6	3.0	3.4	2.5	3.1	2.7	2.9
Bathe and dress recipients	3.5	5.2	3.1	3.6	3.7	4.6	2.4	2.8
Change Attends on recipients	3.0	4.8	2.8	3.3	2.5	3.2	1.8	2.2
Push recipients in wheelchairs	2.7	5.0	2.7	3.4	2.9	3.7	1.8	2.4
Perform therapeutic exercises with recipients	2.7	3.2	2.6	2.7	3.0	2.7	1.8	1.7
Assist recipients with laundry, changing bed linens, and cleaning up room	4.6	4.4	3.1	2.9	4.4	3.7	2.1	1.9
Participate in recreational activities with recipients	4.5	4.8	3.1	3.3	4.7	4.8	2.1	2.1
Perform general house cleaning duties	5.1	5.1	3.0	2.9	4.6	4.3	2.3	2.2
Lift and carry heavy objects other than recipients	3.8	4.1	2.6	2.7	3.1	3.0	2.8	2.8

0 = never  
 1 = a few times per year  
 2 = about once per month  
 3 = several times per month  
 4 = about once per week  
 5 = a few times per week  
 6 = many times per day  
 7 = many times per day

0 = not part of the job  
 1 = not important  
 2 = somewhat important  
 3 = moderately important  
 4 = extremely important

0 = do not perform  
 1 = under 30 seconds  
 2 = 30 seconds to 1 minute  
 3 = 1 to 5 minutes  
 4 = 6 to 15 minutes  
 5 = 16 to 60 minutes  
 6 = over 60 minutes

0 = do not perform  
 1 = very light  
 2 = light  
 3 = somewhat hard  
 4 = hard  
 5 = very hard

### Tasks Frequently Performed

The Mental Health Technicians were asked to indicate how often they performed each task using a rating scale from 0 (never perform) to 7 (many times per day). In order to provide a more efficient delineation of tasks performed most frequently, a cutoff of 4.0 was established. A mean of 4.0 on this seven-point scale indicates tasks which are performed at least several times per week. All but six of the sixteen tasks received mean scores of 4.0 or above. They are, in rank order according to frequency:

1. Walk or stand for long periods of time. **(6.4)**

Seventy-three percent of the Mental Health Technicians reported a frequency rating of many times per day. A majority from both Mental Health and Developmental Centers indicated a duration of over 60 minutes (mean time of 5.0 hours/day for standing and a mean time of 4.8 hours/day for walking) with a level of physical effort rated as light to somewhat hard.

2. Perform general house cleaning duties. **(5.1)**

Thirty percent of the Mental Health Technicians reported performing general house cleaning duties many times per day, and seventy percent reported a frequency from about once per day to many times per day. On an average, cleaning lasted from 16 to 60 minutes although twenty-four percent of MHTs indicated a duration of over 60 minutes. Respondents from both types of Centers rated the physical effort as light to somewhat hard.

3. Participate in recreational activities with recipients. **(4.7)**

Forty-eight percent of Mental Health Technicians reported participating in recreational activities a few times per day or more often. A difference was noted among types of facilities due to the nature of the recipient population. Twenty-three percent of Mental Health Technicians working at Mental Health Centers indicated many times per day for an average

duration of 16 to 60 minutes. Thirty–seven percent of Mental Health Technicians working at Developmental Centers indicated many times per day for an average duration of over 60 minutes. As expected, night-shift workers from both Centers rated this task as very infrequent. Respondents from all facilities rated the physical effort as light.

4. Bathe and dress recipients. **(4.6)**

The mean frequency reported for this task was several times per week to about once per day, but with differences noted among the various facilities. Mental Health Technicians at Mental Health Centers reported bathing and dressing recipients several times per month to several times per week (3.5), while Mental Health Technicians at Developmental Centers indicated a frequency of more than once per day (5.2). The average duration for all facilities was 6 to 60 minutes with an average level of physical effort rated as light to somewhat hard.

5. Assist recipients with laundry, changing bed linens, and cleaning room. **(4.5)**

The average frequency reported for this task was from several times per week to about once per day, but with a large variability in response ranging from twelve percent reporting never assisting recipients with laundry, changing bed linens, and cleaning room to twenty–three percent assisting many times per day. Mental Health Technicians from both types of Centers reported the average duration of this task varied from 3–5 minutes (eleven percent) to over 60 minutes (twenty percent) with an average level of physical effort rated as light.

6. Push recipients in wheelchairs. **(4.2)**

Over ninety percent of respondents indicated that they push recipients in wheelchairs. However, a large difference in frequency was noted between Technicians in the different facilities. Sixty percent of MHTs employed in Developmental Centers reported pushing wheelchairs from a few to many times a day. Fifty–one percent indicated that this was the pushing task most often encountered, and reported an average weight of 110 lbs. pushed an average distance of 286 feet. Technicians working in Mental Health Centers encounter this

task less often: thirteen percent indicated they never push wheelchairs and another thirty-two percent reported performing this task only a few times per year. Two other pushing/pulling tasks are more frequently encountered in the Mental Health Centers: pushing/pulling carts or pushing/pulling aggressive recipients. The carts were reported to average 105 lbs. and pushed for an average distance of 127 feet. Aggressive recipients averaged 173 lbs. in weight and were pushed or pulled an average distance of 38 feet.

7. Change *Attends* on recipients. (4.1)

The mean frequency reported for this task was several times per week to about once per day, but with differences noted among the types of facilities due to the nature of the recipient population. Mental Health Technicians working at Mental Health Centers reported changing *Attends* on recipients about once per month (twenty-three percent), never (twenty percent), or a few times per day (sixteen percent), while Mental Health Technicians working at Developmental Centers indicated an average frequency rating of many times per day (forty-four percent). Respondents indicated a duration of 3–5 minutes and an average level of effort rated as light.

8. Lift, turn, or reposition recipients. (4.0)

While a large majority of all Mental Health Technicians indicate that they lift, turn, or reposition recipients, there were marked differences between facility types in how often this task is performed. Forty-one percent of Technicians employed in Developmental Centers reported a frequency of many times per day, with another fifteen percent reporting a frequency of a few times per day. The average recipient weight at Developmental Centers was 125 lbs., with a mean maximum weight of 165 lbs. The most common type of lift at Developmental Centers was a lateral transfer from waist-height to waist-height (*e.g.*, bed to wheelchair) occurring an average 13 times per shift. Second in frequency was a lift from knee to waist-height occurring an average 7 times per shift. Mental Health Technicians at Mental Health Centers indicated an average frequency rating for lifting recipients of several times per month (2.9), but with large variability in frequency reported (12% never, 21% few times per year, 17% once per month, 15% several times per month, 11% several times per

week, and 11% many times per day). The average weight of recipients being lifted at Mental Health Centers was 157 lbs. with a mean maximum weight of 248 lbs. The most common type of lift at Mental Health Centers was waist–height to waist–height occurring an average 4.5 times per shift. The level of effort was rated somewhat hard.

9. Run to the scene of a disturbance or emergency. (4.1) *M.H. Center*

Sixty–two percent of Mental Health Technicians working in Mental Health Centers reported running several times per week or more with an average continuously run distance of 152 yards. Only forty–one percent of Technicians at Developmental Centers reported running several times per week or more. The average continuously run distance for all facilities was 106.4 yards, but only 80.8 yards in Developmental Centers. The overall level of effort was rated as somewhat hard by Mental Health Center Technicians, and as light to somewhat hard by Developmental Center employees.

10. Lift and carry heavy objects other than recipients. (4.1) *Dev. Center*

Ninety–one percent of all the respondents indicated that they lift and carry heavy objects other than recipients. There was a large variability in frequency reported for lifting and carrying heavy objects ranging from ten percent reporting never to ten percent lifting and carrying many times per day. The heaviest object most often identified as being lifted and carried was laundry (thirty–nine percent) followed by furniture (twenty–five percent). The most frequently lifted and carried object was laundry (thirty–six percent); second most frequently identified was food trays (thirty–three percent), however in Mental Health Centers food trays were the most frequently lifted and carried objects (thirty–five percent). The maximum weight of laundry lifted by Mental Health Technicians averaged 36 lbs. while the most frequent weight of laundry lifted averaged 30 lbs. and was carried for a mean distance of 41 feet. The most frequent lifting situation encountered was from floor to waist height. The weight of furniture averaged 59 lbs. and was carried a mean distance of 29 feet. Food trays weighed an average of 15 lbs. and were carried a mean distance of 21 feet. The level of physical effort for lifting and carrying heavy objects was rated as somewhat hard.

### Tasks Critical to the Job

The Mental Health Technicians were asked to indicate how critical it is that a Mental Health Technician be able to perform each of the job tasks. A scale was used that ranged from 0 (not part of the job) to 4 (extremely important). In order to provide a more efficient delineation of tasks critical to the job, a mean cutoff of 3.5 was established. A mean of 3.5 on this four-point scale indicates tasks which are moderately to extremely important. Seven job tasks received an average rating of 3.5 or higher. Three of the seven tasks also are performed frequently: walking or standing for long periods of time, bathing and dressing recipients, and running to the scene of a disturbance or emergency. The other four tasks are performed infrequently, usually during disturbances or emergencies, however it is critical that Mental Health Technicians be able to perform them. The survey respondents rated the following tasks as most critical:

1. Physically separate fighting recipients. **(3.8)**

Eighty-six percent of the Mental Health Technicians rated this task as extremely important. It is performed several times per month in Mental Health Centers, but less often in Developmental Centers. It takes 30 sec. to 2 min., and requires a level of effort rated as somewhat hard to hard.

2. Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.). **(3.8)**

Eighty-seven percent of the Mental Health Technicians rated this task as extremely important. It is performed several times per month, takes 30 sec. to 5 min., and requires a level of effort rated as somewhat hard to hard.

3. Run to the scene of a disturbance or emergency. **(3.7)**

Eighty-four percent of the Mental Health Technicians rated this task as extremely important. Respondents indicated a

duration of 30 sec. to 5 minutes. Employees at Mental Health Centers run an average of several times per week for an average of 152 yards, while those at Developmental Centers run less often and for shorter distances.

4. Physically restrain an aggressive recipient with the help of other Mental Health Technicians. **(3.7)**

Eighty-six percent of the Mental Health Technicians rated this task as extremely important. It is performed several times per month (3.3) in Mental Health Centers and about once per month (2.3) in Developmental Centers. Respondents indicated a duration of 3 to 5 min. and 30 sec. to 2 minutes, respectively. The level of physical effort was rated as somewhat hard to hard.

5. Apply restraints to resisting recipients. **(3.5)**

Seventy-five percent of the Mental Health Technicians rated this task as extremely important. It is performed several times per month (3.1) in Mental Health Centers and a few times per year (1.6) in Developmental Centers. Respondents indicated a duration of 3 to 5 min. and 30 sec. to 2 minutes, respectively. The level of physical effort was rated as somewhat hard to hard.

6. Walk or stand for long periods of time. **(3.5)**

Eighty-seven percent of the Mental Health Technicians rated this task as moderately to extremely important. A mean time of 5.0 hours per day for standing and 4.8 hours per day for walking was reported.

7. Bathe and dress recipients. **(3.6)** *Dev. Center*

While the overall rating on this task was 3.4, when Mental Health Technicians working in Mental Health Centers were excluded the rating became 3.6. Seventy-nine percent of the Mental Health Technicians at Developmental Centers rated this task as extremely important, while forty-nine percent of Technicians in Mental Health Centers rated it extremely important.



Importance of General Physical Abilities

In the final section of the job analysis questionnaire, Mental Health Technicians were asked to rate the importance of general physical abilities in candidates for these positions. A scale was used that ranged from 0 (not important) to 3 (extremely important). All nine physical abilities received an average rating of 2.5 or higher. This indicated that it was very to extremely important for Mental Health Technicians to have these abilities. These ratings are presented in Table 10.

**Table 10**

**MHTs: Importance Ratings of General Physical Abilities**  
(Mean and Standard Deviation of All Facilities (N=510), Mean of Mental Health Centers (N=187) and Mean of Developmental Centers (N=323))

<i>Abilities</i>	<i>Importance</i> <b>Mean (S.D.)</b> <i>M.H.Cen. Dev. Cen.</i>
<b>Upper body strength</b> (hands, arms, shoulders, back): to be able to restrain an aggressive recipient; to apply restraints; to lift, turn, or reposition recipient.	<b>2.8 (0.5)</b> 2.8 2.8
<b>Leg strength:</b> to be able to lift and carry; to push recipients in wheelchairs	<b>2.6 (0.7)</b> 2.4 2.6
<b>Physical endurance or stamina:</b> to be able to be on one's feet, walking for eight hours, or running or subduing recipients for over 10 minutes	<b>2.6 (0.7)</b> 2.5 2.6
<b>Physical agility:</b> to be able to rapidly change direction while maintaining balance when responding to a disturbance or emergency	<b>2.6 (0.7)</b> 2.6 2.5
<b>Quickness of reaction:</b> to be able to defend yourself against an aggressive recipient	<b>2.8 (0.5)</b> 2.8 2.8
<b>Flexibility:</b> to be able to stoop, kneel, crouch, and squat; dress recipients	<b>2.5 (0.7)</b> 2.3 2.6
<b>Hand manipulation:</b> to be able to grasp, twist, and hold objects or otherwise work with your hand or hands	<b>2.5 (0.7)</b> 2.5 2.5
<b>Vision:</b> to be able to observe recipient behavior and appearance; read charts and memos	<b>2.7 (0.5)</b> 2.7 2.7
<b>Hearing:</b> to be able to hear sounds from all areas of the unit, hear paging system, use communications system	<b>2.6 (0.6)</b> 2.7 2.6

0 = not important  
1 = somewhat important  
2 = very important  
3 = extremely important

Summary of Tasks Frequently Performed and Critical to the Job

Ten job tasks requiring physical effort were identified that are frequently performed by Mental Health Technicians. They are:

1. Walk or stand for long periods of time.
2. Perform general house cleaning duties.
3. Participate in recreational activities with recipients.
4. Bathe and dress recipients.
5. Assist recipients with laundry, changing bed linens, and cleaning room.
6. Push recipients in wheelchairs.
7. Change *Attends* on recipients.
8. Lift, turn, or reposition recipients.
9. Run to the scene of a disturbance or emergency.
10. Lift and carry heavy objects other than recipients.

Tasks 1, 4, and 9 were also rated as extremely important for a Technician to be able to perform. Other tasks which are performed infrequently, but which were also rated as critical, are:

11. Physically separate fighting recipients.
12. Defend against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.).
13. Physically restrain an aggressive recipient with the help of other Mental Health Technicians.
14. Apply restraints to resisting recipients.

## Physical Test Battery Phase

Physical ability tests to determine physical qualifications for jobs requiring substantial physical effort are permitted under current Equal Employment Opportunity Commission (EEOC) and Americans with Disabilities Act (ADA) guidelines if the required physical standards are job-related and consistent with business necessity. Through a job analysis, several essential job functions which require physical effort have been identified for the position of Mental Health Technician Trainee. These job tasks meet the definition of “essential functions” based on the written job descriptions, the amount of time spent performing the function, and/or the consequences if a Technician is unable to perform the function.

Additionally, the physical ability tests should not require special skills or techniques that might be part of the job training. Rather they should measure underlying physical capacities that are needed for a candidate to successfully complete training. Several of the job tasks which have been identified as critical for the position of Mental Health Technician are tasks that require special training, however effective performance of these techniques is essential to ensure the safety of Technicians and recipients.

### *Analysis of Essential Tasks Requiring Special Training*

An analysis of the underlying physical capacities necessary to learn and perform each of these critical job tasks is presented below.

1. Physically separate fighting recipients.

This task requires a hard level of exertion, and may be preceded by running to the scene. This task demands upper body strength in both pushing and pulling actions, grip strength, coupled with good balance, agility, and quickness of reaction and movement.

2. Defend against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.).

This task entails quickness of reaction and movement, good balance and agility, and significant upper body strength and flexibility.

3. Physically restrain an aggressive recipient with the help of other Mental Health Technicians.

This task may also be preceded by running to the scene. It requires substantial upper body strength, grip strength, adequate leg strength accompanied with good balance, agility, and quickness of movement. Moreover, takedown techniques may include stooping and crouching.

4. Apply restraints to resisting recipients.

This task may require use of control techniques as in numbers 1, 2, and 3, as well as application of restraints. Good balance and agility, upper body strength, grip strength and gross hand manipulation are required. Application of total body restraints (*e.g.*, wrist to ankle straps) may also require the ability to squat or kneel.

#### *Analysis of Essential Tasks Not Requiring Special Training*

The job tasks that are performed most frequently by Mental Health Technicians involve physical actions that can be performed without special training. These tasks and their underlying physical components are:

1. Walk or stand for long periods of time.

The ability to walk for an average of 4.8 hours per shift and stand on one's feet for 5 hours per shift requires at least an average level of cardiovascular and muscular endurance.

2. Perform general house cleaning duties.

Mental Health Technicians must be able to assume different positions (stoop, kneel, crouch, and squat) while performing general housekeeping or maintenance duties such as spot mopping, picking up discarded/misplaced materials, cleaning

up spills, and emptying trash containers. These tasks require upper body and leg strength, flexibility, and balance.

3. Participate in recreational activities with recipients.

Mental Health Technicians may accompany and participate with recipients in recreational activities such as going on picnics and field trips, and playing ping-pong, basketball, and volleyball. These tasks, though not demanding much physical effort, require an average amount of upper body and leg strength, physical endurance, and flexibility.

4. Bathe and dress recipients.

This task, depending on the type of bathing unit a facility utilizes, requires a good deal of upper body and leg strength in lifting and transferring recipients to a bath chair or tub, adequate flexibility in reaching and assuming different positions (stoop, crouch and squat) while cleaning the recipient, and the ability to grasp and twist the appropriate knobs in working with the bath chair and bathing unit. Dressing the recipient may also involve good upper and lower body flexibility and if the recipient has contractures it may demand upper body strength.

5. Assist recipients with laundry, changing bed linens, and cleaning room.

Similar to task number 2, the Mental Health Technician must be able to assume different positions (stoop, kneel, crouch, and squat) while changing bed linens and cleaning the room. Laundry was the object lifted most often with a maximum weight averaging 36 lbs. and carried a mean distance of 43 ft., and a frequent weight averaging 30 lbs. and carried a mean distance of 45 ft. The most frequent lifting situation was from floor to waist. These tasks require adequate strength and endurance in upper body, grip, lower back, and legs, as well as flexibility.

6. Push recipients in wheelchairs.

Mental Health Technicians reported pushing a mean weight of 109 lbs. for a mean distance of 298 feet. This task would require upper body strength in pushing and pulling motions, and leg strength and endurance.

7. Change *Attends* on recipients.

Mental Health Technicians must be able to stoop and crouch while attending the recipient, have adequate upper body strength and flexibility while changing the *Attends*, and be able to lift, turn, or reposition the recipient (task number 8) which also requires good leg endurance.

8. Lift, turn, or reposition recipients.

The mean maximum recipient weight lifted was 165 lbs. in Developmental Centers and 248 lbs. in Mental Health Centers. The average recipient weight lifted was 125 lbs. at Developmental Centers and 157 lbs. at Mental Health Centers. The most frequent lifting situation was from waist–height to waist–height (11 times per shift). This probably entailed a two person transfer lift from wheelchair to bed or vice–versa (63% of the respondents indicated that they receive assistance). This task requires adequate strength and endurance in upper body, grip, lower back, and legs.

9. Run to the scene of a disturbance or emergency.

Mental Health Technicians reported running an average distance of 106 yards. This sprint would demand anaerobic power.

10. Lift and carry heavy objects other than recipients.

Laundry was the object lifted most often with a maximum weight averaging 36 lbs. carried a mean distance of 41 ft., and with a frequent weight averaging 30 lbs. carried a mean distance of 41 ft. The most frequent lifting situation was from floor to waist. These tasks require adequate strength and endurance in upper body, grip, lower back, and legs, as well as flexibility.

*Summary of Physical Abilities and Capacities*

Based of the analysis of essential job tasks, Mental Health Technicians must demonstrate the following physical abilities:

1. Walk for long periods of time (total of 4.8 hrs. per shift).
2. Run short distances (100–150 yards).
3. Lift and carry heavy objects (including recipients).
4. Stoop, kneel, crouch, and squat (bathe, dress, change *Attends* on recipients, cleaning and housekeeping duties, and aggression management).

Mental Health Technicians must also exhibit the following physical capacities:

1. Aerobic capacity or cardiorespiratory endurance

Cardiorespiratory endurance is the ability to perform large-muscle, dynamic, moderate-to-high intensity exercise for prolonged periods of time. The ability to produce the needed energy through aerobic processes is directly related to work performance. That is, improved levels of cardiorespiratory endurance yield more efficient delivery and use of oxygen at the muscular level which in turn improves the ability to perform work. An average or above-average level is needed to perform the walking, pushing, lifting and carrying, and other prolonged, moderate intensity activities that are part of the technicians daily duties, and still have sufficient reserves to respond in the event of an emergency.

2. Upper body strength and endurance

Muscular strength is the maximal force that can be generated by a specific muscle or muscle group. Muscular endurance is the ability of a muscle or muscle group to perform repeated contractions while resisting fatigue. Muscular strength and endurance allow the individual to perform strenuous tasks with greater ease, control, and safety to themselves and others. Upper body strength and endurance (hands, arms, shoulders, back, and chest) are needed for control and defense techniques, separating fighting recipients, applying restraints, lifting and carrying heavy objects (and recipients), and other moderate intensity activities that are part of the Mental Health Technician's job. Abdominal and lower back muscular strength and endurance are also necessary for safe stooping, crouching and squatting, and the lifting and carrying of objects.

### 3. Leg strength and endurance

These muscle groups are required for physically demanding repetitive movements such as separating and moving aggressive recipients, running to the scene of a disturbance, pushing recipients in wheelchairs, and lifting and carrying of objects (and recipients).

### 4. Flexibility

Flexibility is the maximum ability of a joint to move through a range of motion. Flexible muscles and joints allow one to move freely without pain or restriction and are less likely to be injured. Decreased flexibility in the hamstrings and lower back lead to an increased risk of lower back weakness and injury. Critical job tasks such as lifting and carrying and attending to the recipients' needs require a great deal of suppleness, such as reaching, stooping, kneeling, crouching, and squatting.

### 5. Anaerobic power

Anaerobic power is the ability to generate large amounts of energy for brief bouts of activity. This is needed when running to the scene of a disturbance, or performing any strenuous activity of under three minutes in duration.

### 6. Agility

Agility is the ability to quickly change direction while maintaining balance. This is crucial in defense and control techniques, restraining an aggressive recipient, and when responding to a disturbance or emergency.

### 7. Quickness of reaction

Quickness of reaction refers to the speed with which one responds to a stimulus. Mental Health Technicians need to react quickly when defending themselves against aggressive recipients.

### *Recommended Test Battery*

The recommended test battery includes items that simulate essential job tasks and items that measure the physical abilities and capacities underlying critical job



tasks that require special training or are not easily simulated. The recommended minimum passing standard for many of the test items is the 50th percentile of the population, based on gender- and age-adjusted norms. The selection of this level is premised simply upon a test of reasonableness, *i.e.*, it is reasonable to assert that Mental Health Technicians ought to be as physically fit as the average of the population. Appendix F includes gender- and age-adjusted norms for the Rockport 1.0 Mile Walk Test, YMCA Bench Press Test, and Hand Grip Strength Test.

#### 1. Rockport 1.0 Mile Walk Test

**Rationale:** This test provides an assessment of the applicants cardiovascular endurance.

**Procedure:** The applicant walks 1.0 mile as quickly as possible and the examinee records the time to the nearest second.

**Equipment:** Measured mile that is flat and uninterrupted (preferably a quarter-mile track).

**Scoring:** The recommended minimum standard is the 50th percentile based on gender- and age-adjusted norms. This represents the average level of cardiorespiratory endurance in the normal population. An average or higher level of cardiorespiratory endurance is needed for Mental Health Technicians to efficiently perform their duties while having sufficient reserve to respond in emergency situations (Heyward, 1991).

#### 2. YMCA Bench Press Test

**Rationale:** This test measures upper body muscular strength and endurance in a pushing motion. This ability is used in the critical tasks of control and defense techniques, separating fighting recipients, applying restraints, lifting and carrying heavy objects (and recipients) as well as more frequently performed tasks such as pushing wheelchairs and carts.

**Procedure:** The applicant assumes a supine position on the bench and the tester then places the barbell in the examinee's hands which are shoulder width apart. The applicant tries to do as many repetitions as possible, executing each up-movement and each down-movement in rhythm with the metronome, which is set at 60 beats per minute (30 rep/min). The test is terminated when the applicant is unable to fully extend the elbows during the up movement of a given repetition or is unable to keep the proper cadence.

**Equipment:** A 35 lb. barbell for females, an 80 lb. barbell for males, a metronome, and a weight training bench.

**Scoring:** The score is the number of properly completed repetitions. The required minimum standard is the 50th percentile of age and gender-adjusted norms (Kirby, 1991).

### 3. Lift and Carry Test

**Rationale:** This is an assessment of an applicant's ability to lift and carry heavy objects. The test represents the most frequent lifting and carrying situations encountered by Mental Health Technicians: boxes of property (laundry) weighing 30 pounds, lifted from the floor to waist high, and carried a distance of 41 feet. It also gives an indication of upper body, grip, lower back and leg strength and endurance, and flexibility (squatting and stooping).

**Procedure:** The applicant squats to the floor and lifts the box and carries it a distance of 41 feet.

**Equipment:** A wooden or metal box with handles on the sides, extra weight added to the box to total 30 pounds, and a measured distance of 41 feet.

**Scoring:** Scoring of the test is pass-fail: Applicants covering the 41 feet with no stops are passed.

#### 4. Hand Grip Strength Test

**Rationale:** To measure gripping strength of the hand which is needed for control and defense techniques, applying restraints and lifting and carrying heavy objects. Grip strength also has a moderately high correlation ( $r=0.69$ ) with the total strength of twenty-two other muscles of the body. Thus, measurement of hand grip strength gives an indication of the overall strength level of the individual.

**Procedure:** The applicant stands erect with the dynamometer in the preferred (dominant) hand. The dynamometer is positioned in the applicant's hand so that its base is solid in the palm. The applicant's arm is held at the side of his body with the thumb forward. Upon the tester's command, the applicant squeezes the dynamometer with as much force as possible for 2 to 5 seconds. The tester notes where the pointer is positioned and records the force exerted. A total of three trials are given, with a rest of 20 to 30 seconds between trials.

**Equipment:** A hand dynamometer.

**Scoring:** The score is the greatest force the applicant exerted during the best of three trials. The required minimum standard is the 50th percentile of age and gender-adjusted norms (Kirby, 1991).

#### 5. Recipient Transfer Test

**Rationale:** This is an assessment of an applicant's ability to lift and laterally-transfer a 135 lb. recipient from waist-height to waist-height (e.g., bed to wheelchair). Since the majority of Technicians indicated that they receive assistance when lifting recipients (63%), the applicants will actually lift a 70 lb. mannequin (about half of the 135 lbs.). This test gives an indication of upper body, grip, lower back and leg strength and endurance, and flexibility (squatting and stooping).

**Procedure:** The applicant lifts a 70 lb. mannequin from a table waist-level and laterally-transfers it to the other side of his body onto another table waist-level.

**Equipment:** A 70 lb. mannequin and two tables (or boxes) waist-height.

**Scoring:** Scoring of the test is pass–fail: Applicants capable of lifting and transferring the 70 lb. mannequin from one table to another are passed.

#### 6. 100 yard Shuttle Run

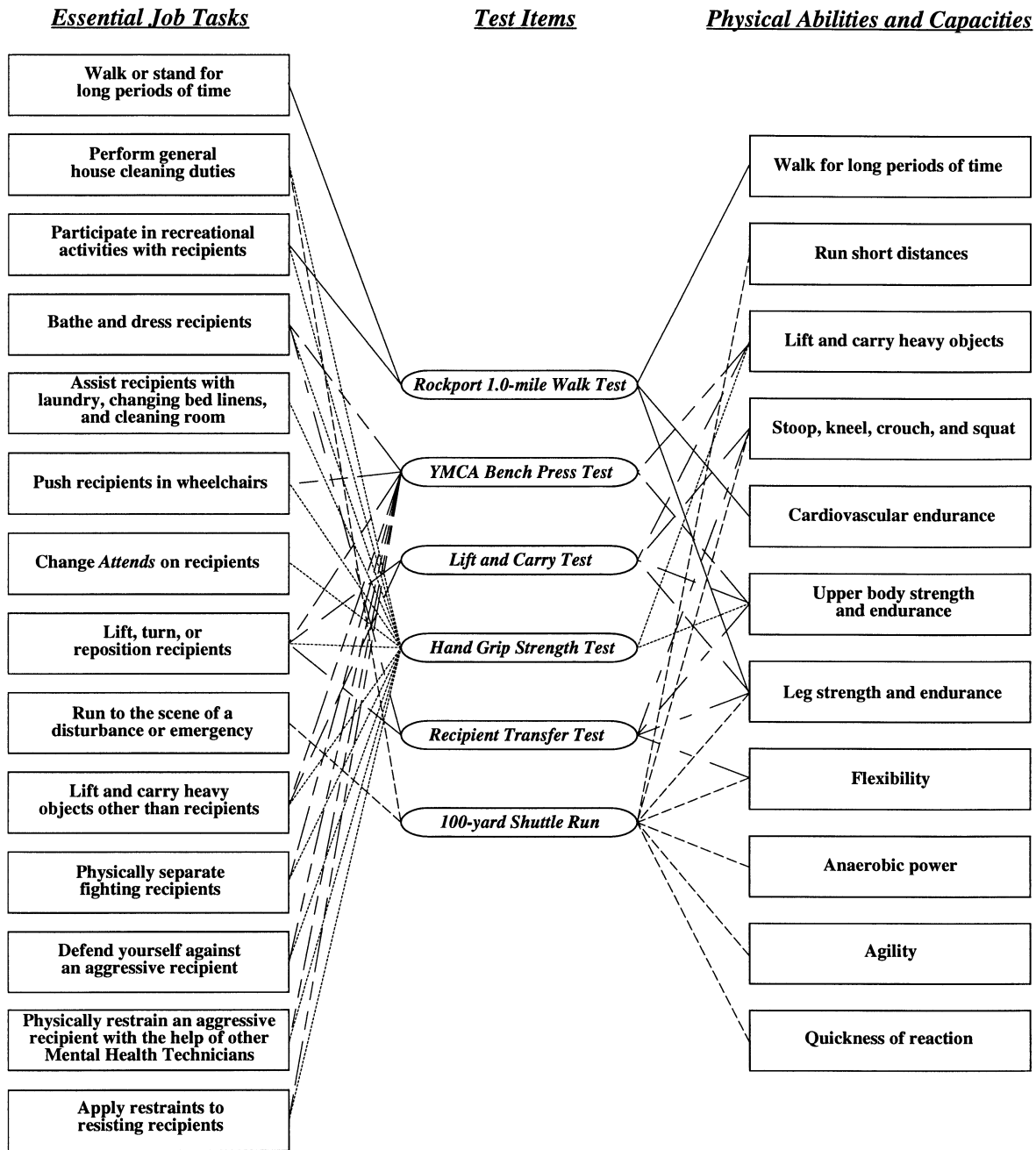
**Rationale:** This test assesses the ability to run, to quickly change body position and direction while maintaining balance (agility), and measures anaerobic power, leg strength and endurance, lower body flexibility, and quickness of reaction. These are abilities needed to perform essential tasks of running to the scene of a disturbance or emergency and subduing, controlling, and restraining aggressive recipients.

**Procedure:** The applicant takes a standing position behind the starting line and upon the signal, “Ready, Go”, runs to the first cone (20 yards away), touches the floor, turns back to the other direction, runs to the second cone (20 yards away and diagonal to the first cone), and touches the floor. The applicant continues this pattern for three more times until crossing the finish line.

**Equipment:** A measuring tape, five cones, and some marking tape.

**Scoring:** Scoring of the test is pass–fail: Applicants running the total 100 yards with complete floor touches at the designated cones are passed.

A summary of the correspondence of the required physical abilities and capacities with the items of the recommended physical ability test is shown in Figure 1.



**Figure 1**  
**Correspondence of Essential Job Tasks, Test Items,**  
**and Physical Abilities & Capacities**

## **Criteria Used in Selecting Test Items**

The following criteria were considered when selecting items for inclusion in the physical ability test:

1. The test items selected must demonstrate a high content validity as evidenced by the correspondence between job content and the content of the test.
2. Test items must have an acceptable level of reliability (consistency of results when an applicant is retested).
3. Test items must have an acceptable level of objectivity.
4. Test items must have appropriate gender- and age-adjusted norms (with the exception of pass-fail tests).
5. For sake of feasibility in administering the Physical Ability Test, the following constraints were considered: equipment and space, finances, number of test administrators, and effective time utilization.

## **CHAPTER 5**

### **SUMMARY AND CONCLUSIONS**

This study was designed to establish a valid physical ability test for use by the Illinois Department of Mental Health and Developmental Disabilities to screen job applicants for the position of Mental Health Technician Trainee. Two phases of investigation were pursued. The job analysis phase consisted of literature review, site visits, interviews and a questionnaire given to a systematic sample of incumbents and supervisors working at the twenty-one facilities statewide. These results provided an objective and systematic evaluation of tasks involving physical effort that are critical to successfully execute the position of a Mental Health Technician Trainee. Physical performance elements that are important to effectual performance of these tasks were then identified. In the second phase of the investigation, the physical test battery and the correspondence between the job tasks of MHTs and the content of the physical ability test was defined. Finally, the criteria considered when selecting items for inclusion in the physical ability test were described.

#### **Summary of Results**

In order to determine the physical demands encountered by Mental Health Technicians employed by the Illinois Department of Mental Health and Developmental Disabilities, a job analysis was conducted. The job analysis questionnaire provided a basis for identifying tasks involving significant physical demands necessary for successful performance of a Mental Health Technician's job.

The questionnaire was completed by a systematic sample of Mental Health Technicians (15–20% of the total population which included every fifth or sixth name on a seniority roster) as well as ten supervisory staff at each one of the twenty-one facilities statewide. Thus, a total of 1123 surveys were distributed and 655 surveys were returned including follow-up. This indicated an overall return–rate of 58% and a return–rate of 56% from Mental Health Technicians. Of the 655 surveys returned, 510 reported that they were Mental Health Technician and 131 reported that they were Supervisors. The data analysis from this study is based solely on Mental Health Technician surveys.

Ten job tasks requiring physical effort were identified that are frequently performed by Mental Health Technicians:

1. Walk or stand for long periods of time.
2. Perform general house cleaning duties.
3. Participate in recreational activities with recipients.
4. Bathe and dress recipients.
5. Assist recipients with laundry, changing bed linens, and cleaning room.
6. Push recipients in wheelchairs.
7. Change *Attends* on recipients.
8. Lift, turn, or reposition recipients.
9. Run to the scene of a disturbance or emergency.
10. Lift and carry heavy objects other than recipients.

Tasks 1, 4, and 9 were also rated as extremely important for a Technician to be able to perform. Other tasks which are performed infrequently, but were also rated as critical, are:



11. Physically separate fighting recipients.
12. Defend against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.).
13. Physically restrain an aggressive recipient with the help of other Mental Health Technicians.
14. Apply restraints to resisting recipients.

Based on the analysis of essential job tasks, Mental Health Technicians must demonstrate the following physical abilities:

1. Walk for long periods of time (total of 4.8 hrs. per shift).
2. Run short distances (100–150 yards).
3. Lift and carry heavy objects (including recipients).
4. Stoop, kneel, crouch, and squat (bathe, dress, change *Attends* on recipients, cleaning and housekeeping duties, and aggression management).

Mental Health Technicians must also exhibit the following physical capacities:

1. Aerobic capacity or cardiorespiratory endurance.
2. Upper body strength and endurance.
3. Leg strength and endurance.
4. Flexibility.
5. Anaerobic power.
6. Agility.
7. Quickness of reaction.

The recommended test battery includes items that simulate essential job tasks and items that measure the physical capacities underlying critical job tasks that require special training or are not easily simulated. They are:

1. Rockport 1.0 Mile Walk Test

This test provides an assessment of the applicant's cardiovascular endurance.

2. YMCA Bench Press Test

This test measures upper body muscular strength and endurance in a pushing motion.

3. Lift and Carry Test

This is an assessment of an applicant's ability to lift and carry heavy objects.

4. Hand Grip Strength Test

This test provides an assessment of the applicant's gripping strength and also gives a good indication of the overall strength level of the applicant.

5. Recipient Transfer Test

This is an assessment of an applicant's ability to lift and laterally-transfer a recipient from waist-height to waist-height (*e.g.*, bed to wheelchair).

6. 100 yard Shuttle Run

This test assesses the ability to run and quickly change body position and direction while maintaining balance (agility), and measures anaerobic power, leg strength and endurance, lower body flexibility, and quickness of reaction.

The following criteria were considered when selecting items for inclusion in the physical ability test:

1. The test items selected must demonstrate a high content validity as evidenced by the correspondence between job content and the content of the test.

2. Test items must have an acceptable level of reliability (consistency of results when an applicant is retested).
3. Test items must have an acceptable level of objectivity.
4. Test items must have appropriate gender- and age-adjusted norms (with the exception of pass-fail tests).
5. For sake of feasibility in administering the Physical Ability Test, the following constraints were considered: equipment and space, finances, number of test administrators, and effective time utilization.

### **Conclusions**

The following conclusions can be made based on the findings of this study:

1. As was determined by the job analysis, many of the job duties of a Mental Health Technician Trainee frequently include tasks that are physically demanding and critical to successful job performance.
2. As with other occupations (*e.g.*, law enforcement and firefighting), the Mental Health profession may benefit through the use of a physical ability test as an employee selection tool in screening for the most qualified applicant.
3. The emphasis in providing strong evidence of content validity supported the soundness of physical ability test construction while adhering to the regulations of the EEOC and ADA.
4. Physical ability testing should be required periodically, and not just as the basis to gain employment. If it is important to demonstrate fitness in order to become trained for a job, it is even more important to *maintain* fitness once on the job.
5. For any job with physical fitness requirements, an employee fitness program should be an integral part of the daily schedule. This could be an on-site program, or through arrangements with local fitness centers, YMCAs, or other similar facilities.

## **Recommendations for Future Research**

1. The following recommendations are made concerning the job analysis questionnaire and testing procedures:
  - a. Establish questionnaire reliability by administering the survey to a sample of thirty incumbents and having them complete it, and then one week later administer the survey again to the same sample (test–retest).
  - b. Include a separate page for the questionnaire cover letter which clearly states that when completing the survey, the physical demands that Mental Health Technicians encounter while working should be considered.
  - c. Avoid using open-ended questions on the survey instrument.
2. The recommended physical test battery could be pilot tested with incumbent MHTs and revised based on their feedback. Subsequently, the revised physical test battery could be performed by a large random sample of experienced Mental Health Technicians who can provide a criterion validity rating for each test. In addition, the scores of the MHTs on the tests could be used to establish standards of acceptability for the tests.

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## **Appendix A: Job Analysis Questionnaire**



**Illinois Department of Mental Health and  
Developmental Disabilities**

*Job Analysis: Physical Demands of  
Mental Health Technicians*

Thank you for your assistance with the job analysis of the position of Mental Health Technician. The results of the questionnaire will be used to develop a Physical Agility Test given to job candidates for Mental Health Technician Trainee positions. When completing this questionnaire, consider the physical demands that you encounter while working.

Thank you for your prompt attention to the questionnaire. The results will be kept confidential so you do not need to sign the questionnaire. Please return this to your facility personnel officer no later than September 27th.

Sincerely,

Phyllis T. Croisant, Ph.D.  
Brett A. Dolezal, B.S.  
*Eastern Illinois University*

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**SECTION A - General Information**

(Where appropriate, circle the correct response)

**A1. Facility where employed:**

- |  |   |                                      |
|--|---|--------------------------------------|
| 1. Alton Mental Health Center            | 8. Illinois State Psychiatric Institute | 15. McFarland Mental Health Center   |
| 2. Metro Children and Adolescents Center | 9. Jacksonville Dev. Center             | 16. Meyer Mental Health Center       |
| 3. Chicago Read Mental Health Center     | 10. Kiley Dev. Center                   | 17. Murray Dev. Center               |
| 4. Choate Mental Health Dev. Center      | 11. Lincoln Dev. Center                 | 18. Shapiro Dev. Center              |
| 5. Elgin Mental Health Center            | 12. Ludeman Dev. Center                 | 19. Singer Mental Health Center      |
| 6. Fox Dev. Center                       | 13. Mabley Dev. Center                  | 20. Tinley Park Mental Health Center |
| 7. Howe Dev. Center                      | 14. Madden Mental Health Center         | 21. Zeller Mental Health Center      |

**A2. Your job title:**

- |                               |                               |                               |
|-------------------------------|-------------------------------|-------------------------------|
| 1. Mental Health Technician 1 | 4. Mental Health Technician 4 | 7. Supervisor (Title: _____ ) |
| 2. Mental Health Technician 2 | 5. Mental Health Technician 5 |                               |
| 3. Mental Health Technician 3 | 6. Mental Health Technician 6 |                               |

**A3. Number of years employed by the DMHDD:\_\_\_\_\_ years**

**A4. Number of years at *this* facility:\_\_\_\_\_ years**

**A5. Your age:**

- |             |          |                |
|-------------|----------|----------------|
| 1. Under 20 | 3. 30-39 | 5. 50-59       |
| 2. 20-29    | 4. 40-49 | 6. 60 and over |

**A6. Your sex:**

- |         |           |
|---------|-----------|
| 1. Male | 2. Female |
|---------|-----------|

**A7. Full-time or part-time:**

- |              |              |
|--------------|--------------|
| 1. Full-time | 2. Part-time |
|--------------|--------------|

**A8. Shift you normally work:**

- |        |            |          |             |
|--------|------------|----------|-------------|
| 1. Day | 2. Evening | 3. Night | 4. Rotating |
|--------|------------|----------|-------------|

## SECTION B - Job Related Physical Demands

B1. Using the scale from 0 to 7, circle the number that indicates *how often* you perform each of the following tasks.

<i>Task</i>	<i>Never</i>	<i>A few times per year</i>	<i>About once per month</i>	<i>Several times per month</i>	<i>Several times per week</i>	<i>About once per day</i>	<i>A few times per day</i>	<i>Many times per day</i>
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	
<i>a.</i> Walk or stand for long periods of time	0	1	2	3	4	5	6	7
<i>b.</i> Walk or run up flights of stairs	0	1	2	3	4	5	6	7
<i>c.</i> Run to the scene of a disturbance or emergency	0	1	2	3	4	5	6	7
<i>d.</i> Physically separate fighting recipients	0	1	2	3	4	5	6	7
<i>e.</i> Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	0	1	2	3	4	5	6	7
<i>f.</i> Physically restrain an aggressive recipient with the help of other Mental Health Technicians	0	1	2	3	4	5	6	7
<i>g.</i> Apply restraints to resisting recipients	0	1	2	3	4	5	6	7
<i>h.</i> Lift, turn, or reposition recipients	0	1	2	3	4	5	6	7
<i>i.</i> Bathe and dress recipients	0	1	2	3	4	5	6	7
<i>j.</i> Change <i>Attends</i> on recipients	0	1	2	3	4	5	6	7
<i>k.</i> Push recipients in wheelchairs	0	1	2	3	4	5	6	7
<i>l.</i> Perform therapeutic exercises with recipients	0	1	2	3	4	5	6	7
<i>m.</i> Assist recipients with laundry, changing bed linens, and cleaning up room	0	1	2	3	4	5	6	7
<i>n.</i> Participate in recreational activities with recipients	0	1	2	3	4	5	6	7
<i>o.</i> Perform general house cleaning duties	0	1	2	3	4	5	6	7
<i>p.</i> Lift and carry heavy objects other than recipients	0	1	2	3	4	5	6	7

B2. Using the scale from 0 to 6, circle the number that indicates *how long* you are involved in the following activities.

<i>Task</i>	<i>Do not perform</i>	<i>Under 30 seconds</i>	<i>30 secs to 2 minutes</i>	<i>3 - 5 minutes</i>	<i>6 - 15 minutes</i>	<i>16 - 60 minutes</i>	<i>Over 60 minutes</i>
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<i>a.</i> Walk or stand for long periods of time	0	1	2	3	4	5	6
<i>b.</i> Walk or run up flights of stairs	0	1	2	3	4	5	6
<i>c.</i> Run to the scene of a disturbance or emergency	0	1	2	3	4	5	6
<i>d.</i> Physically separate fighting recipients	0	1	2	3	4	5	6
<i>e.</i> Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	0	1	2	3	4	5	6
<i>f.</i> Physically restrain an aggressive recipient with the help of other Mental Health Technicians	0	1	2	3	4	5	6
<i>g.</i> Apply restraints to resisting recipients	0	1	2	3	4	5	6
<i>h.</i> Lift, turn, or reposition recipients	0	1	2	3	4	5	6
<i>i.</i> Bathe and dress recipients	0	1	2	3	4	5	6
<i>j.</i> Change <i>Attends</i> on recipients	0	1	2	3	4	5	6
<i>k.</i> Push recipients in wheelchairs	0	1	2	3	4	5	6
<i>l.</i> Perform therapeutic exercises with recipients	0	1	2	3	4	5	6
<i>m.</i> Assist recipients with laundry, changing bed linens, and cleaning up room	0	1	2	3	4	5	6
<i>n.</i> Participate in recreational activities with recipients	0	1	2	3	4	5	6
<i>o.</i> Perform general house cleaning duties	0	1	2	3	4	5	6
<i>p.</i> Lift and carry heavy objects other than recipients	0	1	2	3	4	5	6

B3. Using the scale from 0 to 5, circle the number that indicates the *level of physical effort* to perform each of the following tasks.

<i>Task</i>	<i>Do not perform</i>	<i>Very light</i>	<i>Light</i>	<i>Somewhat hard</i>	<i>Hard</i>	<i>Very hard</i>
	0	1	2	3	4	5
a. Walk or stand for long periods of time	0	1	2	3	4	5
b. Walk or run up flights of stairs	0	1	2	3	4	5
c. Run to the scene of a disturbance or emergency	0	1	2	3	4	5
d. Physically separate fighting recipients	0	1	2	3	4	5
e. Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	0	1	2	3	4	5
f. Physically restrain an aggressive recipient with the help of other Mental Health Technicians	0	1	2	3	4	5
g. Apply restraints to resisting recipients	0	1	2	3	4	5
h. Lift, turn, or reposition recipients	0	1	2	3	4	5
i. Bathe and dress recipients	0	1	2	3	4	5
j. Change <i>Attends</i> on recipients	0	1	2	3	4	5
k. Push recipients in wheelchairs	0	1	2	3	4	5
l. Perform therapeutic exercises with recipients	0	1	2	3	4	5
m. Assist recipients with laundry, changing bed linens, and cleaning up room	0	1	2	3	4	5
n. Participate in recreational activities with recipients	0	1	2	3	4	5
o. Perform general house cleaning duties	0	1	2	3	4	5
p. Lift and carry heavy objects other than recipients	0	1	2	3	4	5

B4. Using the scale from 0 to 4, circle the number that indicates how **critical** it is that you be able to perform each of the following tasks.

<i>Task</i>	<i>Not part of the job</i> <b>0</b>	<i>Not important</i> <b>1</b>	<i>Somewhat important</i> <b>2</b>	<i>Moderately important</i> <b>3</b>	<i>Extremely important</i> <b>4</b>
<i>a.</i> Walk or stand for long periods of time	0	1	2	3	4
<i>b.</i> Walk or run up flights of stairs	0	1	2	3	4
<i>c.</i> Run to the scene of a disturbance or emergency	0	1	2	3	4
<i>d.</i> Physically separate fighting recipients	0	1	2	3	4
<i>e.</i> Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	0	1	2	3	4
<i>f.</i> Physically restrain an aggressive recipient with the help of other Mental Health Technicians	0	1	2	3	4
<i>g.</i> Apply restraints to resisting recipients	0	1	2	3	4
<i>h.</i> Lift, turn, or reposition recipients	0	1	2	3	4
<i>i.</i> Bathe and dress recipients	0	1	2	3	4
<i>j.</i> Change <i>Attends</i> on recipients	0	1	2	3	4
<i>k.</i> Push recipients in wheelchairs	0	1	2	3	4
<i>l.</i> Perform therapeutic exercises with recipients	0	1	2	3	4
<i>m.</i> Assist recipients with laundry, changing bed linens, and cleaning up room	0	1	2	3	4
<i>n.</i> Participate in recreational activities with recipients	0	1	2	3	4
<i>o.</i> Perform general house cleaning duties	0	1	2	3	4
<i>p.</i> Lift and carry heavy objects other than recipients	0	1	2	3	4

**SECTION C - Work Tasks**

Lifting and Carrying

C1. Do you have to **lift** recipients from one position to another?

1. Yes      2. No

(If No, skip to question C2.)

A. Write in the blanks below how many times per shift you lift recipients to each of the given heights.

- |   | <i>Times per shift</i> |
|---|------------------------|
| 1. <i>floor to knee-height</i>                              | _____                  |
| 2. <i>floor to waist-height</i>                             | _____                  |
| 3. <i>knee to waist-height</i>                              | _____                  |
| 4. <i>waist to waist-height</i><br>(eg., wheelchair to bed) | _____                  |

B. What is the **average** weight of your recipients? \_\_\_\_\_ pounds

C. How much does the **heaviest** recipient weigh? \_\_\_\_\_ pounds

D. For what percent of lifts do you have assistance? \_\_\_\_\_ percent

C2. Do you have to **lift** and/or **carry** objects other than recipients?

1. Yes      2. No

(If No, skip to question C3.)

A. Circle the **heaviest** object lifted and/or carried:

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| 1. <i>food trays</i>              | 5. <i>furniture</i>               |
| 2. <i>garbage</i>                 | 6. <i>cleaning supplies</i>       |
| 3. <i>laundry</i>                 | 7. <i>other</i> (specify: _____ ) |
| 4. <i>personal belongings box</i> |                                   |

B. How much does this object weigh? \_\_\_\_\_ pounds

C. Circle the most **frequent** lifting situation for this object.

- |                                   |                                       |
|-----------------------------------|---------------------------------------|
| 1. <i>floor to knee</i>           | 6. <i>knee to shoulder</i>            |
| 2. <i>floor to waist</i>          | 7. <i>knee to above shoulder</i>      |
| 3. <i>floor to shoulder</i>       | 8. <i>waist to shoulder</i>           |
| 4. <i>floor to above shoulder</i> | 9. <i>waist to above shoulder</i>     |
| 5. <i>knee to waist</i>           | 10. <i>shoulder to above shoulder</i> |

D. How far do you **carry** this object? \_\_\_\_\_ feet

E. Circle the object **most often** lifted and/or carried:

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| 1. <i>food trays</i>              | 5. <i>furniture</i>               |
| 2. <i>garbage</i>                 | 6. <i>cleaning supplies</i>       |
| 3. <i>laundry</i>                 | 7. <i>other</i> (specify: _____ ) |
| 4. <i>personal belongings box</i> |                                   |

F. How much does this object weigh? \_\_\_\_\_ pounds

G. Circle the most **frequent** lifting situation for this object.

- |                                   |                                       |
|-----------------------------------|---------------------------------------|
| 1. <i>floor to knee</i>           | 6. <i>knee to shoulder</i>            |
| 2. <i>floor to waist</i>          | 7. <i>knee to above shoulder</i>      |
| 3. <i>floor to shoulder</i>       | 8. <i>waist to shoulder</i>           |
| 4. <i>floor to above shoulder</i> | 9. <i>waist to above shoulder</i>     |
| 5. <i>knee to waist</i>           | 10. <i>shoulder to above shoulder</i> |

H. How far do you **carry** this object? \_\_\_\_\_ feet

### Pushing and Pulling

C3. Do you have to **push** and/or **pull** objects on your shift?

1. **Yes**      2. **No**

(If **No**, skip to question C4.)

A. Circle the **heaviest** object pushed and/or pulled:

- |                                 |                                   |
|---------------------------------|-----------------------------------|
| 1. <i>wheelchairs</i>           | 4. <i>mechanical lifts</i>        |
| 2. <i>carts</i>                 | 5. <i>furniture</i>               |
| 3. <i>aggressive recipients</i> | 6. <i>other</i> (specify: _____ ) |

B. How much does this object weigh? \_\_\_\_\_ pounds

C. How far do you **push** and/or **pull** this object? \_\_\_\_\_ feet

### Standing and Sitting

C4. Approximately how long do you **stand** during your shift? \_\_\_\_\_ hours

C5. Approximately how long do you **sit** during your shift? \_\_\_\_\_ hours

Walking, Running, and Climbing

- C6. Approximately how many hours of your shift are you on your feet and **walking**? \_\_\_\_\_ hours
- C7. Approximately what is the furthest distance you would have to **run** when you respond to an emergency? \_\_\_\_\_ yards
- C8. Approximately how many **flights of stairs** might you have to run up or down when you respond to an emergency? \_\_\_\_\_ flights

Stooping, Kneeling, Crouching, and Squatting

- C9. Approximately how many times during your shift must you **bend** or **stoop**? \_\_\_\_\_
- C10. Approximately how many times during your shift must you **kneel**? \_\_\_\_\_
- C11. Approximately how many times during your shift must you **crouch** and/or **squat**? \_\_\_\_\_



## SECTION D - General Physical Abilities

D1. Using the scale from 0 to 3, circle the number that indicates the *importance* of the following abilities in candidates for Mental Health Technicians.

<i>Abilities</i>	<i>Not important 0</i>	<i>Somewhat important 1</i>	<i>Very important 2</i>	<i>Extremely important 3</i>
<i>Upper body strength</i> (hands, arms, shoulders, back): a. to be able to restrain an aggressive recipient; to apply restraints; to lift, turn, or reposition recipients	0	1	2	3
<i>Leg strength:</i> b. to be able to lift and carry; to push recipients in wheelchairs	0	1	2	3
<i>Physical endurance or stamina:</i> c. to be able to be on one's feet, walking for eight hours, or running or subduing recipients for over 10 minutes	0	1	2	3
<i>Physical agility:</i> d. to be able to rapidly change direction while maintaining balance when responding to a disturbance or emergency	0	1	2	3
<i>Quickness of reaction:</i> e. to be able to defend yourself against an aggressive recipient	0	1	2	3
<i>Hand manipulation:</i> f. to be able to grasp, twist, and hold objects or otherwise work with your hand or hands.	0	1	2	3
<i>Flexibility:</i> g. to be able to stoop, kneel, crouch, and squat; dress recipients	0	1	2	3
<i>Vision:</i> h. to be able to observe recipient behavior and appearance; read charts and memos	0	1	2	3
<i>Hearing:</i> i. to be able to hear sounds from all areas of the unit, hear paging system, use communications system	0	1	2	3

**Appendix B: Cover letter to Personnel Officers**



INTEROFFICE MEMORANDUM

MEMO TO: Personnel Officers  
FROM: David Neff, Chief  
Bureau of Personnel *DN*  
DATE: September 7, 1993  
SUBJECT: Physical Agility Examination (Survey)

This is to request that your office coordinate the distribution of the enclosed form that is designed to assess the physical demands of Mental Health Technician positions.

This Department has entered into a contract with Eastern Illinois University to determine whether a physical agility examination can be developed to screen candidates for Technician Trainee positions. As part of this process, it is necessary that we evaluate the physical demands of Technician positions as reported by current employees.

During the week of September 13, your office should distribute the enclosed form to a random sampling of your Technicians (15% - 20%) as well as to approximately ten supervisory/managerial staff. Your random sample might include every fifth or sixth name on a seniority roster while supervisory/managerial staff should include a combination of immediate supervisors, unit administrators, and Facility Executive staff. When distributing this form, you should emphasize that the information collected will be kept confidential and will be used solely for the purpose of developing new screening programs for persons applying for Mental Health Technician Trainee positions. As indicated in the instructions, the forms are to be returned to your office by Monday, September 27, 1993.

You should include with each form a cover letter from your office or from your Facility Director that addresses the above points and encourages a well thought out, prompt response to the survey's questions.

Thank you for your assistance. Please submit in one package the completed forms to my attention.

Enclosures

cc: Facility Directors  
Joseph Bonafeste, Ph.D.  
Leigh Steiner, Ph.D.  
Eranelle McIntosh-Wilson  
Glen Freeburg

## **Appendix C: Return-rate by Facility**

**Table 11**  
**Return-rate by Facility**

<i>Facility</i>	<i>Total MHT</i>	<i>Distributed (15%+10)+ 10 for Supervisors</i>	<i>MHTech Returned</i>	<i>Supervisors Returned</i>	<i>% Return Rate</i>
1. Alton	174	46	26	11	80
2. Metro	39	26	2	1	12
3. Chic. Read	123	38	7	4	29
4. Choate	237	56	24	7	55
5. Elgin	353	73	41	10	70
6. Fox	126	39	14	8	56
7. Howe	517	98	29	4	34
8. ISPI	40	37	5	3	22
9. Jacksonville	244	57	17	8	44
10. Kiley	374	76	30	9	51
11. Lincoln	331	70	36	8	63
12. Ludeman	483	82	40	6	50
13. Mabley	85	33	24	5	88
14. Madden	57	29	5	3	28
15. McFarland	59	29	9	4	45
16. Meyer	47	27	12	2	52
17. Murray	290	64	58	9	90
18. Shapiro	706	126	70	9	63
19. Singer	78	32	11	7	56
20. Tinley	126	39	30	6	92
21. Zeller	108	36	20	7	75
<b>Total</b>	<b>4597</b>	<b>1123</b>	<b>510</b>	<b>131</b>	<b>58%</b>

**Appendix D: Data Analysis of Mental  
Health and Developmental Centers**

**Table 12**

**Mental Health Technicians Working in M.H. Centers:  
Comparisons Among Gender, Workshifts, and Age of Frequency  
Ratings for Job Tasks Requiring Physical Effort**

<i>Never</i>	<i>A few times per year</i>	<i>About once per month</i>	<i>Several times per month</i>	<i>Several times per week</i>	<i>About once per day</i>	<i>A few times per day</i>	<i>Many times per day</i>
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>

<i>Task</i>	All M.H. Tech. N=510 Mean	Facility Mental Health Cen. N=187 Mean	Gender		Work-shift			Age			
			Men N=59 Mean	Wom. N=127 Mean	Day N=66 Mean	Eve. N=66 Mean	Night N=33 Mean	20-29 yrs. N=24 Mean	30-39 yrs. N=43 Mean	40-49 yrs. N=67 Mean	50-59 yrs. N=39 Mean
Walk or stand for long periods of time	6.4	6.3	6.4	6.2	6.4	6.6	5.5	6.5	6.5	6.3	6.1
Walk or run up flights of stairs	2.8	3.7	3.9	3.6	4.2	3.5	2.6	3.5	3.2	3.9	3.9
Run to the scene of a disturbance or emergency	3.6	4.1	4.0	4.1	4.4	4.2	3.5	4.3	4.2	3.9	4.2
Physically separate fighting recipients	3.0	3.5	3.5	3.5	3.9	3.6	2.8	3.7	3.7	3.6	3.3
Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	3.2	3.1	3.2	3.1	3.5	3.0	2.5	3.2	3.3	3.3	2.6
Physically restrain an aggressive recipient with the help of other Mental Health Technicians	2.7	3.3	3.3	3.3	3.6	3.1	3.2	3.5	3.4	3.4	3.3
Apply restraints to resisting recipients	2.1	3.1	3.1	3.0	3.1	3.1	3.2	3.2	3.1	3.0	3.0
Lift, turn, or reposition recipients	4.0	2.9	3.2	2.8	3.0	2.7	2.9	3.0	3.1	3.3	2.4
Bathe and dress recipients	4.6	3.5	3.3	3.6	3.6	3.5	3.3	3.1	3.3	3.8	3.3
Change Attends on recipients	4.1	3.0	2.8	3.2	3.0	2.9	3.3	2.9	2.7	3.4	2.9
Push recipients in wheelchairs	4.2	2.7	2.5	2.8	2.8	2.6	2.6	2.1	2.6	3.1	2.6
Perform therapeutic exercises with recipients	3.0	2.7	2.6	2.8	3.0	3.1	1.7	3.0	2.6	3.0	2.7
Assist recipients with laundry, changing bed linens, cleaning up room	4.5	4.6	4.4	4.8	5.0	4.3	4.6	4.3	5.1	4.5	4.8
Participate in recreational activities with recipients	4.7	4.5	3.9	4.7	5.2	5.1	1.3	5.0	4.7	4.0	4.7
Perform general house cleaning duties	5.1	5.1	5.1	5.1	5.1	5.2	5.2	5.3	5.5	4.9	4.9
Lift and carry heavy objects other than recipients	3.9	3.8	4.1	3.6	3.4	3.9	4.1	4.5	3.9	3.7	3.6

**Table 13**

**Mental Health Technicians Working in Developmental Centers:  
Comparisons Among Gender, Workshifts, and Age of Frequency  
Ratings for Job Tasks Requiring Physical Effort**

<i>Never</i>	<i>A few times per year</i>	<i>About once per month</i>	<i>Several times per month</i>	<i>Several times per week</i>	<i>About once per day</i>	<i>A few times per day</i>	<i>Many times per day</i>
0	1	2	3	4	5	6	7

Task	All M.H. Tech. N=510 Mean	Facility	Gender		Work-shift			Age			
		Dev. Cen. N=323 Mean	Men N=78 Mean	Wom. N=242 Mean	Day N=146 Mean	Eve. N=129 Mean	Night N=44 Mean	20-29 yrs. N=34 Mean	30-39 yrs. N=122 Mean	40-49 yrs. N=99 Mean	50-59 yrs. N=58 Mean
Walk or stand for long periods of time	6.4	6.5	6.4	6.5	6.6	6.6	6.0	6.6	6.5	6.4	6.5
Walk or run up flights of stairs	2.8	2.3	2.4	2.3	2.1	2.0	3.7	2.2	2.5	2.3	2.0
Run to the scene of a disturbance or emergency	3.6	3.4	3.1	3.5	3.5	3.3	3.2	3.3	3.4	3.5	3.4
Physically separate fighting recipients	3.0	2.6	2.4	2.7	3.0	2.6	1.6	2.7	2.7	2.8	2.3
Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	3.2	3.3	2.9	3.4	3.5	3.3	2.3	3.5	3.4	3.1	3.1
Physically restrain an aggressive recipient with the help of other Mental Health Technicians	2.7	2.3	2.0	2.4	2.5	2.2	1.9	2.1	2.5	2.4	2.1
Apply restraints to resisting recipients	2.1	1.6	1.6	1.6	1.6	1.6	1.2	1.1	1.8	1.6	1.3
Lift, turn, or reposition recipients	4.0	4.6	4.3	4.7	4.8	4.6	4.0	4.3	5.0	4.1	4.6
Bathe and dress recipients	4.6	5.2	5.1	5.3	5.3	5.6	4.1	5.7	5.5	4.9	4.8
Change Attends on recipients	4.1	4.8	3.7	5.1	5.1	4.6	4.5	4.3	4.8	4.6	5.1
Push recipients in wheelchairs	4.2	5.0	4.6	5.1	5.5	5.2	3.2	4.9	5.3	4.8	4.9
Perform therapeutic exercises with recipients	3.0	3.2	2.9	3.3	3.4	3.5	1.5	4.1	3.8	2.4	2.4
Assist recipients with laundry, changing bed linens, cleaning up room	4.5	4.4	4.4	4.3	4.7	4.1	4.1	5.0	4.7	4.2	3.5
Participate in recreational activities with recipients	4.7	4.8	4.9	4.8	5.4	5.4	1.1	5.5	5.2	4.7	4.0
Perform general house cleaning duties	5.1	5.1	4.9	5.1	5.2	5.3	3.9	5.2	5.4	5.1	4.3
Lift and carry heavy objects other than recipients	3.9	4.1	3.9	4.1	3.9	4.1	4.4	3.9	4.4	3.7	4.2



**Table 14**

**Mental Health Technicians Working in M.H. Centers:  
Comparisons Among Gender, Workshifts, and Age of Criticality  
Ratings for Job Tasks Requiring Physical Effort**

<i>Not part of the job</i>	<i>Not important</i>	<i>Somewhat important</i>	<i>Moderately important</i>	<i>Extremely important</i>
0	1	2	3	4

<i>Task</i>	All M.H. Tech.  N=510 Mean	Facility	Gender		Work-shift			Age			
		Mental Health Cen.  N=187 Mean	Men  N=59 Mean	Wom.  N=127 Mean	Day  N=66 Mean	Eve.  N=66 Mean	Night  N=33 Mean	20-29 yrs.  N=24 Mean	30-39 yrs.  N=43 Mean	40-49 yrs.  N=67 Mean	50-59 yrs.  N=39 Mean
		Walk or stand for long periods of time	3.5	3.4	3.4	3.4	3.6	3.4	2.9	3.1	3.4
Walk or run up flights of stairs	1.9	2.5	2.3	2.5	2.7	2.4	1.5	2.0	2.3	2.5	2.8
Run to the scene of a disturbance or emergency	3.7	3.8	3.9	3.8	3.8	3.8	3.9	4.0	3.8	3.9	3.8
Physically separate fighting recipients	3.8	3.9	4.0	3.8	3.8	3.9	3.9	3.8	3.9	3.9	3.8
Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	3.8	3.9	4.0	3.8	3.9	3.8	3.9	3.8	4.0	3.9	3.8
Physically restrain an aggressive recipient with the help of other Mental Health Technicians	3.7	3.8	3.9	3.8	3.8	3.9	3.9	3.9	3.9	3.8	3.7
Apply restraints to resisting recipients	3.5	3.8	3.8	3.8	3.8	3.8	3.9	3.7	3.9	3.8	3.7
Lift, turn, or reposition recipients	3.2	3.0	3.0	3.1	3.1	3.0	2.8	2.9	3.1	3.2	2.7
Bathe and dress recipients	3.4	3.1	2.8	3.2	3.1	3.1	3.0	2.8	3.0	3.0	3.3
Change <i>Attends</i> on recipients	3.1	2.8	2.6	2.8	2.6	2.8	3.0	2.7	2.7	2.7	2.9
Push recipients in wheelchairs	3.2	2.7	2.4	2.9	2.9	2.8	2.3	2.0	2.8	2.7	3.0
Perform therapeutic exercises with recipients	2.6	2.6	2.4	2.7	2.7	2.9	1.6	2.8	2.5	2.6	2.6
Assist recipients with laundry, changing bed linens, cleaning up room	3.0	3.1	2.8	3.2	3.4	2.9	2.9	3.0	3.1	2.9	3.3
Participate in recreational activities with recipients	3.2	3.1	2.6	3.3	3.3	3.3	1.9	3.1	3.2	2.9	3.0
Perform general house cleaning duties	2.9	3.0	2.8	3.1	3.0	3.0	3.1	3.0	3.0	2.9	3.1
Lift and carry heavy objects other than recipients	2.6	2.6	2.4	2.6	2.5	2.8	2.4	2.6	2.5	2.6	2.5

**Table 15**

**Mental Health Technicians Working in Developmental Centers:  
Comparisons Among Gender, Workshifts, and Age of Criticality  
Ratings for Job Tasks Requiring Physical Effort**

<i>Not part of the job</i>	<i>Not important</i>	<i>Somewhat important</i>	<i>Moderately important</i>	<i>Extremely important</i>
0	1	2	3	4

<i>Task</i>	All M.H. Tech.  N=510 <i>Mean</i>	Facility	Gender		Work-shift			Age			
		Dev. Cen.  N=323 <i>Mean</i>	Men  N=78 <i>Mean</i>	Wom.  N=242 <i>Mean</i>	Day  N=146 <i>Mean</i>	Eve.  N=129 <i>Mean</i>	Night  N=44 <i>Mean</i>	20-29 yrs.  N=34 <i>Mean</i>	30-39 yrs.  N=122 <i>Mean</i>	40-49 yrs.  N=99 <i>Mean</i>	50-59 yrs.  N=58 <i>Mean</i>
		Walk or stand for long periods of time	3.5	3.5	3.3	3.6	3.6	3.5	3.5	3.2	3.6
Walk or run up flights of stairs	1.9	1.6	1.7	1.6	1.6	1.5	2.2	1.5	1.7	1.5	1.6
Run to the scene of a disturbance or emergency	3.7	3.7	3.6	3.7	3.8	3.6	3.7	3.6	3.7	3.7	3.7
Physically separate fighting recipients	3.8	3.7	3.7	3.7	3.8	3.6	3.7	3.6	3.8	3.7	3.6
Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	3.8	3.7	3.7	3.8	3.8	3.7	3.7	3.7	3.8	3.8	3.6
Physically restrain an aggressive recipient with the help of other Mental Health Technicians	3.7	3.7	3.5	3.7	3.7	3.6	3.7	3.4	3.7	3.7	3.7
Apply restraints to resisting recipients	3.5	3.2	3.3	3.3	3.3	3.3	3.1	2.8	3.4	3.3	3.1
Lift, turn, or reposition recipients	3.2	3.4	3.2	3.4	3.4	3.4	3.4	3.3	3.4	3.3	3.5
Bathe and dress recipients	3.4	3.6	3.4	3.6	3.6	3.6	3.5	3.7	3.7	3.5	3.4
Change <i>Attends</i> on recipients	3.1	3.3	2.9	3.4	3.5	3.1	3.3	2.9	3.3	3.3	3.5
Push recipients in wheelchairs	3.2	3.4	3.1	3.5	3.6	3.3	3.1	3.3	3.5	3.4	3.4
Perform therapeutic exercises with recipients	2.6	2.7	2.6	2.7	2.7	2.8	2.3	2.7	3.0	2.3	2.3
Assist recipients with laundry, changing bed linens, cleaning up room	3.0	2.9	2.9	3.0	3.1	2.8	2.9	3.3	3.1	2.9	2.3
Participate in recreational activities with recipients	3.2	3.3	3.2	3.3	3.5	3.5	2.1	3.4	3.4	3.3	2.8
Perform general house cleaning duties	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3.0	3.0	2.5
Lift and carry heavy objects other than recipients	2.6	2.7	2.6	2.7	2.5	2.7	2.9	2.4	2.7	2.6	2.8

**Table 16**

**Mental Health Technicians Working in M.H. Centers:  
Comparisons Among Gender, Workshifts, and Age of Duration  
Ratings for Job Tasks Requiring Physical Effort**

<i>Do not perform</i>	<i>Under 30 seconds</i>	<i>30 secs to 2 minutes</i>	<i>3 - 5 minutes</i>	<i>6 - 15 minutes</i>	<i>16 - 60 minutes</i>	<i>Over 60 minutes</i>
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>

<i>Task</i>	All M.H. Tech. N=510 Mean	Facility Mental Health Cen. N=187 Mean	Gender		Work-shift			Age			
			Men	Wom.	Day	Eve.	Night	20-29 yrs.	30-39 yrs.	40-49 yrs.	50-59 yrs.
			N=59 Mean	N=127 Mean	N=66 Mean	N=66 Mean	N=33 Mean	N=24 Mean	N=43 Mean	N=67 Mean	N=39 Mean
Walk or stand for long periods of time	5.2	5.0	5.2	4.9	4.9	5.3	4.5	5.1	5.2	4.9	4.8
Walk or run up flights of stairs	1.6	2.1	2.0	2.1	2.5	1.9	1.6	1.6	2.0	2.2	2.2
Run to the scene of a disturbance or emergency	2.5	2.8	2.7	2.8	3.0	2.7	2.4	2.6	2.6	2.7	3.2
Physically separate fighting recipients	2.3	2.7	2.6	2.7	2.9	2.6	2.3	2.6	2.5	2.7	2.9
Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	2.5	2.6	2.6	2.5	2.7	2.6	2.5	2.4	2.4	2.7	2.6
Physically restrain an aggressive recipient with the help of other Mental Health Technicians	2.8	3.2	3.5	3.1	3.5	3.2	3.0	3.3	3.1	3.2	3.5
Apply restraints to resisting recipients	2.5	3.2	3.4	3.1	3.3	3.2	3.2	3.2	3.0	3.3	3.3
Lift, turn, or reposition recipients	2.9	2.5	2.6	2.5	2.6	2.5	2.6	2.4	2.5	2.5	2.6
Bathe and dress recipients	4.3	3.7	3.8	3.6	3.8	3.7	3.6	3.3	3.7	3.8	4.0
Change Attends on recipients	3.0	2.5	2.7	2.3	2.4	2.4	2.8	2.0	2.4	2.7	2.5
Push recipients in wheelchairs	3.4	2.9	2.8	2.9	3.2	2.7	2.5	2.3	2.9	2.9	3.1
Perform therapeutic exercises with recipients	2.8	3.0	3.1	3.0	3.3	3.2	1.8	3.4	2.7	3.3	2.9
Assist recipients with laundry, changing bed linens, cleaning up room	3.9	4.4	4.4	4.4	4.9	3.9	4.3	3.8	4.5	4.5	4.7
Participate in recreational activities with recipients	4.8	4.7	4.6	4.7	5.0	5.1	2.8	5.2	5.0	4.5	4.1
Perform general house cleaning duties	4.4	4.6	4.7	4.6	4.6	4.5	4.8	4.0	4.8	4.6	4.7
Lift and carry heavy objects other than recipients	3.0	3.1	3.0	3.1	2.9	3.2	3.1	3.3	2.9	3.1	3.2

**Table 17**

**Mental Health Technicians Working in Developmental Centers:  
Comparisons Among Gender, Workshifts, and Age of Duration  
Ratings for Job Tasks Requiring Physical Effort**

<i>Do not perform</i>	<i>Under 30 seconds</i>	<i>30 secs to 2 minutes</i>	<i>3 - 5 minutes</i>	<i>6 - 15 minutes</i>	<i>16 - 60 minutes</i>	<i>Over 60 minutes</i>
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>

<i>Task</i>	All M.H. Tech. N=510 <i>Mean</i>	Facility	Gender		Work-shift			Age			
		Dev. Cen. N=323 <i>Mean</i>	Men N=78 <i>Mean</i>	Wom. N=242 <i>Mean</i>	Day N=146 <i>Mean</i>	Eve. N=129 <i>Mean</i>	Night N=44 <i>Mean</i>	20-29 yrs. N=34 <i>Mean</i>	30-39 yrs. N=122 <i>Mean</i>	40-49 yrs. N=99 <i>Mean</i>	50-59 yrs. N=58 <i>Mean</i>
		Walk or stand for long periods of time	5.2	5.4	5.3	5.4	5.5	5.4	4.9	5.6	5.5
Walk or run up flights of stairs	1.6	1.3	1.5	1.3	1.4	1.2	1.7	1.1	1.6	1.3	0.9
Run to the scene of a disturbance or emergency	2.5	2.4	2.3	2.4	2.6	2.3	2.0	1.8	2.6	2.5	2.3
Physically separate fighting recipients	2.3	2.1	2.0	2.1	2.3	2.0	1.8	1.7	2.5	2.1	1.6
Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	2.5	2.4	2.3	2.5	2.5	2.4	2.3	2.0	2.6	2.4	2.3
Physically restrain an aggressive recipient with the help of other Mental Health Technicians	2.8	2.5	2.5	2.6	2.6	2.5	2.5	2.2	2.8	2.6	2.2
Apply restraints to resisting recipients	2.5	2.2	2.3	2.1	2.3	2.1	2.1	1.6	2.5	2.2	1.7
Lift, turn, or reposition recipients	2.9	3.1	2.7	3.2	3.1	3.0	3.1	2.4	3.2	2.8	3.4
Bathe and dress recipients	4.3	4.6	4.4	4.6	4.6	4.8	4.1	4.5	4.8	4.5	4.3
Change Attends on recipients	3.0	3.2	2.6	3.4	3.4	3.0	3.5	2.5	3.2	3.1	3.8
Push recipients in wheelchairs	3.4	3.7	3.5	3.7	4.0	3.7	2.4	3.4	3.8	3.5	3.7
Perform therapeutic exercises with recipients	2.8	2.7	2.7	2.6	2.8	3.0	1.5	2.9	3.1	2.3	2.1
Assist recipients with laundry, changing bed linens, cleaning up room	3.9	3.7	3.9	3.6	3.8	3.4	3.7	4.0	4.0	3.6	2.8
Participate in recreational activities with recipients	4.8	4.8	4.9	4.8	5.3	5.3	2.1	5.2	4.9	4.9	4.1
Perform general house cleaning duties	4.4	4.3	4.1	4.3	4.4	4.2	4.0	4.2	4.4	4.3	4.0
Lift and carry heavy objects other than recipients	3.0	3.0	2.9	3.0	3.0	2.8	3.3	2.4	3.2	2.9	3.0

**Table 18**

**Mental Health Technicians Working in M.H. Centers:  
Comparisons Among Gender, Workshifts, and Age of Effort  
Ratings for Job Tasks Requiring Physical Effort**

<i>Do not perform</i>	<i>Very light</i>	<i>Light</i>	<i>Somewhat hard</i>	<i>Hard</i>	<i>Very hard</i>
0	1	2	3	4	5

Task	All M.H. Tech. N=510 Mean	Facility Mental Health Cen. N=187 Mean	Gender		Work-shift			Age			
			Men N=59 Mean	Wom. N=127 Mean	Day N=66 Mean	Eve. N=66 Mean	Night N=33 Mean	20-29 yrs. N=24 Mean	30-39 yrs. N=43 Mean	40-49 yrs. N=67 Mean	50-59 yrs. N=39 Mean
Walk or stand for long periods of time	2.7	2.5	2.5	2.4	2.6	2.5	2.0	2.2	2.5	2.5	2.4
Walk or run up flights of stairs	1.6	2.0	2.2	1.9	2.3	1.7	1.6	1.4	1.7	2.2	2.1
Run to the scene of a disturbance or emergency	2.6	2.8	3.0	2.7	2.9	2.6	2.6	2.6	2.9	2.8	2.7
Physically separate fighting recipients	3.2	3.6	3.8	3.5	3.7	3.5	3.4	3.3	3.9	3.7	3.4
Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	3.3	3.7	3.9	3.6	3.8	3.6	3.5	3.6	4.1	3.7	3.4
Physically restrain an aggressive recipient with the help of other Mental Health Technicians	3.3	3.7	3.9	3.6	3.7	3.5	3.8	3.6	3.9	3.7	3.6
Apply restraints to resisting recipients	2.9	3.5	3.7	3.4	3.6	3.4	3.6	3.4	3.7	3.6	3.3
Lift, turn, or reposition recipients	2.8	2.7	2.8	2.6	2.8	2.5	2.3	2.4	3.0	2.9	2.3
Bathe and dress recipients	2.6	2.4	2.5	2.4	2.6	2.3	2.3	2.0	2.3	2.5	2.6
Change Attends on recipients	2.1	1.8	1.9	1.8	1.9	1.7	2.0	1.6	1.6	1.9	2.0
Push recipients in wheelchairs	2.2	1.8	1.6	1.9	2.2	1.7	1.3	1.2	1.8	1.8	2.1
Perform therapeutic exercises with recipients	1.7	1.8	1.8	1.7	2.1	1.8	0.9	1.6	1.7	1.8	1.7
Assist recipients with laundry, changing bed linens, cleaning up room	2.0	2.1	2.2	2.1	2.4	1.9	1.9	1.8	2.2	2.0	2.2
Participate in recreational activities with recipients	2.1	2.1	2.1	2.1	2.4	2.2	1.1	1.9	2.1	2.1	2.0
Perform general house cleaning duties	2.2	2.3	2.5	2.3	2.4	2.4	2.0	2.1	2.4	2.3	2.4
Lift and carry heavy objects other than recipients	2.8	2.8	3.0	2.7	2.9	2.8	2.6	2.5	2.8	2.8	2.9

**Table 19**

**Mental Health Technicians Working in Developmental Centers:  
Comparisons Among Gender, Workshifts, and Age of Effort  
Ratings for Job Tasks Requiring Physical Effort**

<i>Do not perform</i>	<i>Very light</i>	<i>Light</i>	<i>Somewhat hard</i>	<i>Hard</i>	<i>Very hard</i>
0	1	2	3	4	5

<i>Task</i>	All M.H. Tech. N=510 Mean	Facility	Gender		Work-shift			Age			
		Dev. Cen. N=323 Mean	Men N=78 Mean	Wom. N=242 Mean	Day N=146 Mean	Eve. N=129 Mean	Night N=44 Mean	20-29 yrs. N=34 Mean	30-39 yrs. N=122 Mean	40-49 yrs. N=99 Mean	50-59 yrs. N=58 Mean
Walk or stand for long periods of time	2.7	2.8	2.6	2.8	3.0	2.6	2.6	2.4	2.9	2.6	2.9
Walk or run up flights of stairs	1.6	1.4	1.5	1.3	1.4	1.2	1.7	1.1	1.6	1.3	1.1
Run to the scene of a disturbance or emergency	2.6	2.5	2.7	2.4	2.6	2.3	2.4	2.2	2.6	2.5	2.4
Physically separate fighting recipients	3.2	2.9	2.9	2.9	3.1	2.8	2.6	2.6	3.2	2.9	2.6
Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	3.3	3.1	3.0	3.1	3.3	2.9	2.8	2.9	3.3	3.1	2.8
Physically restrain an aggressive recipient with the help of other Mental Health Technicians	3.3	3.0	3.0	3.1	3.2	2.9	2.8	2.9	3.3	3.0	2.8
Apply restraints to resisting recipients	2.9	2.6	2.7	2.6	2.8	2.4	2.5	2.1	3.0	2.6	2.3
Lift, turn, or reposition recipients	2.8	2.9	2.7	3.0	3.1	2.8	2.9	2.6	3.1	2.6	3.1
Bathe and dress recipients	2.6	2.8	2.7	2.8	2.9	2.8	2.6	2.5	2.9	2.6	2.8
Change <i>Attends</i> on recipients	2.1	2.2	1.9	2.3	2.4	2.0	2.4	1.8	2.3	2.1	2.5
Push recipients in wheelchairs	2.2	2.4	2.2	2.5	2.7	2.3	1.9	2.0	2.6	2.2	2.4
Perform therapeutic exercises with recipients	1.7	1.7	1.7	1.7	1.8	1.9	1.1	1.7	2.0	1.4	1.5
Assist recipients with laundry, changing bed linens, cleaning up room	2.0	1.9	1.9	1.9	2.1	1.7	1.9	1.7	2.2	1.8	1.5
Participate in recreational activities with recipients	2.1	2.1	2.1	2.1	2.3	2.2	0.8	1.9	2.3	2.0	1.9
Perform general house cleaning duties	2.2	2.2	2.1	2.2	2.2	2.1	2.2	1.9	2.3	2.2	2.1
Lift and carry heavy objects other than recipients	2.8	2.8	2.8	2.8	2.8	2.8	3.0	2.8	3.0	2.6	3.0

**Table 20**

**Mental Health Technicians Working in M.H. Centers:  
Comparisons Among Gender, Workshifts, and Age of  
Importance Ratings of General Physical Abilities**

<i>Not important</i>	<i>Somewhat important</i>	<i>Moderately important</i>	<i>Extremely important</i>
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>

<i>Task</i>	All M.H. Tech. N=510 <i>Mean</i>	Facility	Gender		Work-shift			Age			
		Mental Health Cen. N=187 <i>Mean</i>	Men N=59 <i>Mean</i>	Wom. N=127 <i>Mean</i>	Day N=66 <i>Mean</i>	Eve. N=66 <i>Mean</i>	Night N=33 <i>Mean</i>	20-29 yrs. N=24 <i>Mean</i>	30-39 yrs. N=43 <i>Mean</i>	40-49 yrs. N=67 <i>Mean</i>	50-59 yrs. N=39 <i>Mean</i>
		Upper body strength	2.8	2.8	2.7	2.8	2.9	2.7	2.8	2.5	2.8
Leg strength	2.6	2.4	2.3	2.5	2.6	2.4	2.2	2.2	2.5	2.4	2.6
Physical endurance or stamina	2.6	2.5	2.5	2.5	2.7	2.5	2.4	2.4	2.5	2.6	2.5
Physical agility	2.6	2.6	2.5	2.6	2.7	2.6	2.4	2.5	2.5	2.6	2.7
Quickness of reaction	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8
Flexibility	2.5	2.3	2.3	2.4	2.3	2.3	2.2	2.0	2.3	2.3	2.4
Hand manipulation	2.5	2.5	2.1	2.6	2.5	2.5	2.4	2.1	2.5	2.5	2.6
Vision	2.7	2.7	2.6	2.8	2.7	2.7	2.7	2.5	2.7	2.7	2.7
Hearing	2.6	2.7	2.5	2.8	2.6	2.7	2.8	2.5	2.8	2.6	2.7

**Table 21**

**Mental Health Technicians Working in Developmental Centers:  
Comparisons Among Gender, Workshifts, and Age of  
Importance Ratings of General Physical Abilities**

<i>Not important</i>	<i>Somewhat important</i>	<i>Moderately important</i>	<i>Extremely important</i>
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>

<i>Task</i>	All M.H. Tech. N=510 <i>Mean</i>	Facility	Gender		Work-shift			Age			
		Dev. Cen. N=323 <i>Mean</i>	Men N=78 <i>Mean</i>	Wom. N=242 <i>Mean</i>	Day N=146 <i>Mean</i>	Eve. N=129 <i>Mean</i>	Night N=44 <i>Mean</i>	20-29 yrs. N=34 <i>Mean</i>	30-39 yrs. N=122 <i>Mean</i>	40-49 yrs. N=99 <i>Mean</i>	50-59 yrs. N=58 <i>Mean</i>
<b>Upper body strength</b>	2.8	2.8	2.6	2.8	2.8	2.7	2.8	2.8	2.8	2.7	2.8
<b>Leg strength</b>	2.6	2.6	2.4	2.7	2.7	2.6	2.5	2.6	2.7	2.6	2.7
<b>Physical endurance or stamina</b>	2.6	2.6	2.4	2.6	2.6	2.6	2.4	2.5	2.6	2.5	2.6
<b>Physical agility</b>	2.6	2.5	2.3	2.6	2.5	2.5	2.6	2.5	2.5	2.5	2.6
<b>Quickness of reaction</b>	2.8	2.8	2.7	2.8	2.7	2.7	2.8	2.9	2.7	2.8	2.8
<b>Flexibility</b>	2.5	2.6	2.5	2.7	2.5	2.6	2.5	2.6	2.6	2.5	2.6
<b>Hand manipulation</b>	2.5	2.5	2.2	2.6	2.6	2.4	2.5	2.4	2.5	2.6	2.5
<b>Vision</b>	2.7	2.7	2.6	2.7	2.7	2.7	2.7	2.8	2.7	2.7	2.6
<b>Hearing</b>	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.6	2.6	2.6	2.7



## **Appendix E: Data Analysis of Supervisory Staff**

**Table 22**

**Supervisors: Frequency, Criticality, Duration, and Physical Effort Ratings for Job Tasks Requiring Physical Effort**

(Mean of All Facilities (N=131), Mean of Mental Health Centers (N=62), and Mean of Developmental Centers (N=69))

Task	Frequency		Criticality		Duration		Phys. Effort	
	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	
	M.H.Cen. Dev. Cen.	M.H.Cen. Dev. Cen.	M.H.Cen. Dev. Cen.	M.H.Cen. Dev. Cen.	M.H.Cen. Dev. Cen.	M.H.Cen. Dev. Cen.	M.H.Cen. Dev. Cen.	
Walk or stand for long periods of time	6.0 6.2 5.9	3.3 3.3 3.3	4.8 4.8 4.9	2.2 2.2 2.3				
Walk or run up flights of stairs	3.9 4.6 3.3	2.2 2.6 1.8	2.1 2.4 1.9	1.8 2.2 1.5				
Run to the scene of a disturbance or emergency	3.4 3.6 3.2	3.7 3.7 3.7	2.7 2.6 2.7	2.7 2.8 2.7				
Physically separate fighting recipients	2.6 2.8 2.4	3.5 3.5 3.5	2.6 2.7 2.4	3.3 3.7 2.9				
Defend yourself against an aggressive recipient (hitting, kicking, biting, pulling hair, etc.)	2.7 2.6 2.7	3.6 3.7 3.6	2.6 2.4 2.7	3.4 3.7 3.1				
Physically restrain an aggressive recipient with the help of other Mental Health Technicians	2.6 2.8 2.5	3.6 3.5 3.6	3.1 3.0 3.1	3.6 3.7 3.4				
Apply restraints to resisting recipients	2.2 2.4 1.9	3.5 3.5 3.5	3.0 3.0 3.0	3.3 3.4 3.3				
Lift, turn, or reposition recipients	2.8 2.6 2.9	2.9 2.9 2.9	2.5 2.5 2.5	2.6 2.7 2.5				
Bathe and dress recipients	2.7 2.9 2.6	2.5 2.8 2.3	3.0 3.3 2.8	2.0 2.3 1.7				
Change Attends on recipients	2.3 2.2 2.5	2.2 2.4 2.1	2.2 2.2 2.1	1.6 1.7 1.5				
Push recipients in wheelchairs	3.0 2.4 3.5	2.7 2.6 2.8	3.2 2.9 3.4	2.0 1.9 2.2				
Perform therapeutic exercises with recipients	1.8 2.2 1.5	2.1 2.5 1.7	2.4 3.2 1.8	1.5 2.0 1.1				
Assist recipients with laundry, changing bed linens, and cleaning up room	2.9 3.5 2.4	2.3 2.7 2.1	3.2 3.7 2.7	1.6 1.9 1.3				
Participate in recreational activities with recipients	3.4 3.6 3.3	2.8 2.7 2.9	4.5 4.5 4.6	2.0 2.2 1.8				
Perform general house cleaning duties	3.4 4.0 2.8	2.3 2.6 2.0	3.5 3.9 3.1	1.9 2.1 1.7				
Lift and carry heavy objects other than recipients	2.8 2.9 2.6	2.3 2.3 2.3	2.6 2.5 2.6	2.5 2.6 2.5				

0 = never  
1 = a few times per year  
2 = about once per year  
3 = several times per month  
4 = several times per month  
5 = about once per week  
6 = a few times per week  
7 = many times per day

0 = not part of the job  
1 = not important  
2 = somewhat important  
3 = moderately important  
4 = extremely important

0 = do not perform  
1 = under 30 seconds  
2 = 30 to 60 seconds  
3 = 6 to 15 minutes  
4 = 16 to 60 minutes  
5 = over 60 minutes

0 = do not perform  
1 = very light  
2 = light  
3 = somewhat hard  
4 = hard  
5 = very hard

**Table 23**

**Supervisors: Importance Ratings of General Physical Abilities**  
 (Mean of All Facilities (N=131), Mean of Mental Health Centers (N=62),  
 and Mean of Developmental Centers (N=69))

<i>Abilities</i>	<i>Importance</i>	
	<i>Mean (S.D.)</i>	
	<i>M.H.Cen.</i>	<i>Dev. Cen.</i>
<b><i>Upper body strength</i></b> (hands, arms, shoulders, back): to be able to restrain an aggressive recipient; to apply restraints; to lift, turn, or reposition recipient.	<b>2.8</b> 2.9 2.7	
<b><i>Leg strength:</i></b> to be able to lift and carry; to push recipients in wheelchairs	<b>2.6</b> 2.6 2.6	
<b><i>Physical endurance or stamina:</i></b> to be able to be on one's feet, walking for eight hours, or running or subduing recipients for over 10 minutes	<b>2.5</b> 2.7 2.3	
<b><i>Physical agility:</i></b> to be able to rapidly change direction while maintaining balance when responding to a disturbance or emergency	<b>2.6</b> 2.7 2.4	
<b><i>Quickness of reaction:</i></b> to be able to defend yourself against an aggressive recipient	<b>2.7</b> 2.8 2.5	
<b><i>Flexibility:</i></b> to be able to stoop, kneel, crouch, and squat; dress recipients	<b>2.6</b> 2.6 2.6	
<b><i>Hand manipulation:</i></b> to be able to grasp, twist, and hold objects or otherwise work with your hand or hands	<b>2.5</b> 2.6 2.5	
<b><i>Vision:</i></b> to be able to observe recipient behavior and appearance; read charts and memos	<b>2.8</b> 2.8 2.7	
<b><i>Hearing:</i></b> to be able to hear sounds from all areas of the unit, hear paging system, use communications system	<b>2.7</b> 2.8 2.5	

0 = not important  
 1 = somewhat important  
 2 = very important  
 3 = extremely important

## **Appendix F: Norms for Selected Physical Test Items**

## Hand Grip Strength Test

Norms

Applicants must equal or exceed the minimum value corresponding to their gender and age groups indicated below (Baumgartner and Jackson, 1991).

**Table 24**  
**Hand Grip Force (kilograms)**

	<i>Age (years)</i>					
	< 20	20-29	30-39	40-49	50-59	> 60
<i>Men</i>	48	51	51	48	43	40
<i>Women</i>	23	24	25	24	21	19

## Rockport 1.0 Mile Walk Test

Norms

Applicants must not exceed the maximum value corresponding to their gender and age groups indicated below (Rockport, 1986).

**Table 25**  
**Time (minutes)**

	<i>Age (years)</i>				
	20-29	30-39	40-49	50-59	> 60
<i>Men</i>	19:50	19:20	21:00	20:30	20:20
<i>Women</i>	19:00	19:00	19:30	19:10	20:00

## YMCA Bench Press Test

Norms

Applicants must equal or exceed the minimum value corresponding to their gender and age groups indicated below (Golding, Myers, and Sinning, 1989).

**Table 26**  
**Repetitions**

	<i>Age (years)</i>					
	18-25	26-35	36-45	46-55	56-65	> 65
<i>Men</i>	22	20	17	12	8	6
<i>Women</i>	20	17	13	11	9	6