GENDER DIFFERENCES IN POLICE PHYSICAL ABILITY TEST PERFORMANCE

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INTRODUCTION

For many reasons, physical ability selection testing of police applicants has become the topic of debate and scrutiny. During the past several years police practitioners, academicians and the courts have speculated that a hidden agenda for the physical ability selection test is really to invoke an acceptable form of the old height and weight standards, rather than to measure the physical strength and/or ability of police applicants. Regardless of its purpose, the use of physical agility tests has been widespread. Townsey (1992) reviewed data gathered in 1979 by the Police Foundation regarding the use of the physical ability selection test. Townsey reported that 78 percent of the municipal and 91 percent of the state police agencies surveyed utilized physical ability selection testing for both male and female police applicants. Similarly, a study conducted by the International City Managers Association (1990) indicated that out of the 1,128 cities that participated in this study, 75 percent reported the use of a physical ability selection test for applicants.

Up until the later 1970s, many police agencies utilized height and weight standards for selection criteria. However, these standards were legally challenged due to the adverse impact they had on females and members of certain minority groups. For the most part the courts have condemned the use of height and weight standards. This was in large part due to the failure of police management to prove that it was a necessity for police officers to be a certain height and/or weight to effectively perform their duties (*Dothard* v. *Rawlinson*, 1977). Arvey *et al.* (1992) observed that the use of height and weight standards in fire and police

agencies had an adverse impact on hiring rates, especially for females and Hispanics. They further observed that although these agencies were asked to produce evidence for the job relatedness of these standards, they uniformly failed to do so.

The problem facing police management has been twofold: police management could be held liable for employing an officer that possesses below average strength and ability, preventing the officer from acting in a life and death situation; and to ensure normal strength and ability, police management has developed physical ability testing, which has been challenged because of an adverse impact on females.

Large numbers of police agencies are experiencing legal challenges to their physical ability test. Many of these challenges are on the grounds that the test has an adverse impact on female applicants and violates Title VII of the 1964 Civil Rights Act. The other issue is the job relatedness of the physical tests.

Studies of physical ability tests have come to the conclusion that such tests favor male applicants. Hernandez (1981) found that female applicants are four times more likely to fail compared to males. Hogan (1991a) and Bell (1987) both noted that physical ability testing introduces potential equal employment liabilities and such tests are likely to adversely affect female police officer applicants. Arvey *et al.* (1992) related that physical ability selection tests have encountered numerous legal problems. They also found that the most salient issue is that many physical ability testing methodologies tend to have an adverse impact on females and members of certain nationalities (e.g. Hispanics, Asians). Similar results were reported by Hoover (1992) and Maher (1984).

Departments can expect to be required to defend the validity of these testing procedures. Hogan and Quigley (1986) noted a number of important lawsuits which focused on the adverse impact and job relatedness of the physical ability test. Some departments looked for a quick solution by pursuing commercially available physical ability tests. Booth and Hornick (1984) theorized that the greatest problem with such a solution is that, unless these tests are based on a comprehensive job analysis of the jurisdiction in which they are used, they are as irrelevant as the old height and weight standards.

The key emphasis shadowing the use of physical ability selection testing appears to be content validation and job relatedness. Steel and Lovrich (1987) offered the view that tests of physical strength and stamina are lawful as long as they are job related and constitute valid predictors of an employee's performance on the job, even if they have a

disproportionate impact on women. Jordan and Schwartz (1986) reached a similar conclusion. Job relatedness as established through proper validation (e.g. content validation, construct validation, criterion validation) are the procedures utilized to safeguard an agency in litigation in the area of physical ability selection testing.

Some police agencies have begun to conduct content analysis on their physical ability tests.

In 1988, as a result of a legal challenge to their pre employment physical ability test (fitness model) which was designed to measure a candidate's physical fitness level, the Sparks Police Department (SPD), located in Nevada, conducted an analysis on their physical ability testing procedures. The SPD at this time became very interested in the Canadian "Police officers physical abilities test" (POPAT). In 1987, the Canadian Association of Chiefs of Police passed a resolution making the POPAT the recommended minimum standard for all Canadian Police Officers. The idea behind the POPAT is that many of the traditional physical ability selection methods (push ups, sit ups, pull ups, etc.) cannot withstand legal challenges pertaining to job relatedness.

The SPD study developed a job related standardized minimum physical ability selection test. The SPD study involved four objectives:

(1) a definition of the physical work performed by police officers of Sparks, Nevada;

(2) a comparison of the physical work performed by police officers of Sparks, Nevada, and municipal police officers in British Columbia, Canada;

(3) a measurement of the physical abilities of the Washoe County Prisoners. This study was completed to standardize the Sparks, Nevada minimum standard POPAT;

(4) recommended POPAT standard and protocol for SPD (Sparks Nevada Police Department, 1990:2).

These types of measurement objectives appear to be common in the recent literature. At this time, the United States courts have not ruled on the content validity or job relatedness of the POPAT.

There have been some police agencies that have abandoned the use of the physical ability selection test, due to various judicial actions

during the past several years. This may appear to be the immediate solution, but it may be an unsound and unwise decision.

The most recent development that has placed emphasis on designing a valid physical ability selection test is the Americans with Disabilities Act. The Americans with Disabilities Act (ADA) Title I took effect July 26, 1992. This act prohibits private employers, state and local governments, employment agencies and labor unions from discriminating against qualified persons with disabilities: "Under the ADA, police departments are not required to lower qualification standards for job applicants. What is required is a thorough analysis of the job and a review of the job description to determine the essential job functions. Once essential job functions are determined, hiring decisions can be based on the applicant's ability to perform these functions" (Zappile and Jankowski, 1993:51).

There have been a number of studies which demonstrated that police applicant physical ability tests often adversely affect females. These studies offered the notion that job relevance is the final legal measure of such tests. What remained to be done was a study which dealt with both issues at the same time. That was the thrust of this study. First, the results of the police physical ability test for eight years were reviewed for possible gender differences in success, then, a job relevance study was done to see how accurately the test depicted the work tasks. Specific hypotheses tested were:

H1: Female applicants to this police agency fail the physical ability test more often than male applicants.

H2: The failure rates of female applicants to this police agency are in violation of the flow statistic utilized by Equal Employment Opportunity Commission referred to as the four fifths rule.

H3: The current physical ability selection test administered by the agency does not measure critical tasks.

METHODOLOGY

This study was conducted with the cooperation of a midwestern police agency. This agency was selected for three primary reasons:

(1) It is one of the larger police agencies in this geographical area.

(2) The historical data required to complete the study were readily available.

(3) Access to participants was available to conduct the job task study.

The first phase of this research was to obtain and summarize the data on the pass/fail rates,of male and female applicants. All pass/fail data were gathered from January 1, 1985, through December 31, 1993. A total of 841 applicants took the physical ability test during this time frame: 98 females, 743 males.

The second phase of this study involved obtaining job demand data to identify the actual job characteristics encountered by field patrol personnel. An instrument was developed which was based on the work of Farenholtz (1990) and used by the SPD. The form was modified for use with the police agency which was selected for this study.

The questionnaire consisted of two pages, one of which requested demographic data pertaining to the participants. These demographic data included years of service, watch assignment, physical characteristics and self perceived fitness/health level.

The second page of the document provided a list of most of the physical activities that patrol personnel may perform during their tour of duty. The category of "other" was also included in the event a physical activity was not listed. If an activity was not performed during a watch, a not performed category was included for the participant to mark. The questionnaire was designed to gather the following information: the physical skills in which police officers of this agency participate; the frequency of each recorded physical skill; the degree of effort involved when physical skills are utilized; the degree of necessity of the activity; and the characteristics of each of these recorded skills (e.g. weight of object, distance object dragged, pulled, pushed).

There were a total of 12 physical activities listed on the questionnaire form. These included: walking/standing, running/jogging, sitting, climbing, lifting/carrying, dragging/pulling, crawling/kneeling, balancing, stooping/squatting, jumping, pushing and the "other" category. Subjects were personnel assigned to the patrol section because the entry level rookie at this agency is normally assigned to this section after successfully completing recruit school. At the time of this study, there were 52 personnel assigned to line level field patrol duties. This

included all watches: first watch (n = 16), second watch (n = 17) and third watch (n = 19). Participants were asked to complete one questionnaire form per watch for ten consecutive watches. A total of 43 participants (430 forms) returned completed questionnaire forms. This resulted in an 83 percent response rate.

Prior to the job demand questionnaire forms being administered, the researcher held four tutorial sessions with the participants. These sessions demonstrated to the participants the correct manner in which to complete the questionnaire forms. Participants were also able to consult with the researchers if questions arose.

RESULTS

The data obtained in this study were organized according to their bearing on one of the three hypotheses. First consideration was given to gender differences in pass/fail rates, then whether the physical agility test met the so called "four fifths" test which is utilized by the EEOC as a rule of thumb to determine if the testing procedure requires investigation as to job relatedness. The results of the job demand study were compared with the demands of the physical agility test.

Table 1 contains data related to the first two questions. The table shows that 93 percent of the males who took the physical agility test passed, while 28 percent of the females who took the test passed. A χ^2 analysis of these data, based on an expectation that females would pass at a rate equal to 80 percent of that for males, yielded a χ^2 value of 287.90, which indicated a significant difference from an 80 percent rate at a probability of less than 0.01. This was a strong indication that gender differences in test performance were in fact demonstrated in these data. The least successful group (females) did not achieve 80 percent of the pass rate of the most successful group (males). In order to do so, females

Table 1
PASS/FAILURE RATES ON THE PHYSICAL ABILITY TEST 1985-1993

	Tested	Passed (%)	Failed (%)
Males	743	689 (93)	54 (7)
Females	98	27 (28)	71 (72)
Total	841	716 (85)	125 (15)

χ^2value = 287.9, df = 1, $p < 0.01$

would have required a pass rate of 74 percent, but instead achieved a pass rate of 28 percent.

The final question related to how well the physical ability test matched the job demand data. Recall that 43 patrol officers completed the job demand questionnaire for ten consecutive watches. They created a separate entry for each physical event during the course of a watch, which included a necessity rating. The 43 officers' data consisted of a total of 7,032 records of physical activities. A summary of those activities, along with how they relate to the current test standards, is displayed in Table 2.

Table 2 showed that officers rated walking/standing, lifting/carrying, crawling, and balancing as at least very necessary, when they occurred. Walking/standing was recorded on 6,109 out of 7,032 records, as well as being rated absolutely necessary. The average length of time during a watch when the officer found it necessary to be walking/standing was 2.5 hours. Most of this time was broken up into various segments throughout an officer's tour of duty. Each watch is 8.5 hours in length and there are no foot patrol areas within this police agency. Based on this, there were a total of 1,075 hours of walking/standing recorded during the ten-day job demand study out of a possible 3,655 staff hours.

A comparison of the items which received the highest necessity ratings and the current test standards showed that there is some correspondence (climbing, dragging/pulling, and jumping). Areas which appear on the current list but were not found in the job demand records included climbing through a window and making a 200-yard run.

DISCUSSION

The purpose of this study was to analyze the physical ability selection testing methodologies of this midwestern law enforcement agency. Jordan and Schwartz (1986) related that there are four major concerns regarding physical ability testing and the EEOC: the adverse impact of the test, job relatedness, validity and the passing score. This study focused on the adverse impact and job relatedness of the test.

Potts (1983) offered the view that many police departments implement physical standards without verifying their relevance to police work. The results of this study certainly provided documentation of such an approach, while at the same time demonstrating the adverse impact of this irrelevant test on females.

Table 2
JOB DEMAND ACTIVITY SUMMARY

Activity Number of Records	Mean	Modal Necessity Ratings (%)	Current Test Standards
Hours of Walk/Stand	2.5	Absolutely Necessary	0
Distance (Miles)	0.42	70	0
(No. of Records 6,109)			
Run/Jog Time (Sec)	36.4	Absolutely Necessary	47
Distance (Yards)	73.5	48	200
(No. of Records 35)			
Sitting (Hours Daily)	5.07	Not Measured	0
Climbing (Minutes)	1.8	Absolutely necessary	Climb through
Number of Stairs	20	60	Four-foot Window
(No. of Records 100)			
Lift/carry (yards)	32.6	Very Necessary	0
Weight of Object (lbs)	32.8	48	0
(No. of Records 46)			
Drag/Pull (yards)	11.3	Absolutely Necessary	10
Weight of Object (lbs)	133.3	45	158
(No of Records 13)			
Kneeling (Minutes)	3.7	Absolutely Necessary	0
(No of Records 67)		30	
Crawling (Feet)	13.5	Very Necessary	0
(No of Records 1)		100	
Balancing (Feet)	14.4	Absolutely Necessary	0
Minutes	1.8	78	0
(No. of Records 24)			
Stooping/Squatting		Absolutely Necessary	0
(No. of Records 600)		30	
Jumping (Feet)	4	Absolutely Necessary	Scale Five-foot
(No. of Records 8)		38	Fence Hurdle Three Foot Obstacle

(Continued…)

Table 2
CONTINUED

Activity Number of Records	Mean	Modal Necessity Ratings (%)	Current Test Standards
Pushing (Feet)	50.7	Very Necessary	0
Weight of Object (lbs) (No. of Records 26)	1,645	35	0
Other (No. of Records 3)			N/A

Total number of records 7,032
Note: Necessity scale used for recording critical tasks, 5 = absolutely necessary, 4 = very necessary, 3 = moderately necessary, 2 = somewhat necessary, and 1 = unnecessary

The results of this study are not remarkable in demonstrating an adverse impact on females. This is not a new problem. Hernandez (1981) found that out of 1,181 applicants for deputy sheriff, 93.2 percent of males passed compared with only 16.2 percent of the female applicants. Further, Hernandez found that female deputy sheriff applicants were four times as likely not to pass the physical ability test as compared to males. The data/findings presented in this research are strikingly similar to the Hernandez findings.

This study further concluded that the current physical ability selection test does not depict the actual physical tasks that personnel perform on the job. The legal scrutiny of physical ability testing will gradually be minimized as police agencies engage in content, construct and criterion validation of their testing methodologies. What seems most important here is that the tests be done in a manner which accurately reflects the demands of the job, without prejudice to any group.

Phase two of this study demonstrated a method to obtain information on relevant activities that are performed by personnel. The frequency of these activities depicts patterns that administrators and personnel specialists should analyze and evaluate when designing a physical ability test. A summary of the job demand survey helped to gain a clearer understanding of what elements might be reasonably included in a physical ability test. The data indicated that a significant amount of low demand activities were performed during this sample period. Two and one-half hours of walking or standing were performed daily by

participants and this activity was rated at relatively low levels of effort. A mean total of 5.07 hours of sitting was performed by participants each day. The criticality of a task was measured and recorded by the officer when he/she performed a specific activity. This was measured based on the officer's perception of how critical he/she perceived the task to be. Officers utilized the necessity scale depicted in Table 2. When officers performed an activity such as running/jogging, it was generally rated high in the category of absolutely necessary. This would indicate that when patrol personnel are called on to run, they have to possess the ability to do so to effectively defuse a situation. This study indicated that the mean distance ran/jogged by participants was 73.5 yards. The ranges recorded by participants were from a minimum of seven yards to a maximum of 600 yards run/jogged. There were only seven records of distances ran/jogged over 100 yards. There were 28 records of running/jogging under 100 yards. These data indicated that when personnel engaged in running/jogging they were usually short distances. The majority of the participants stated through their ratings that they expended moderate to maximum effort when performing this activity. Normally, participants recorded that they ran after a suspect for a short distance and then had to deal with the situation (e.g. place a suspect into custody). In many cases this required the use of other physical skills (e.g. pulling, pushing, bending, squatting and kneeling). The significance of this would indicate that applicants should be tested for the ability to run a short distance, and then deal with a problem.

Stooping/squatting was another area of data that received a vast amount of recorded incidents (n = 600). Sixty percent of the participants, when engaging in stooping/squatting activities, rated it as either very necessary or absolutely necessary. Obviously, this is a significant area that deserves evaluation in the design phase of the physical ability selection test.

Climbing is a significant activity based on these data. There were a total of (n =100) records of climbing during the sampling period. The majority of these records indicated that the climbing of stairs averaged 20 per watch. The majority (60 percent) of respondents gave this a high rating in terms of its necessity.

Another important consideration identified by these data is that many of these categories involve upper body strength. Fleishman (1988:691) found that, "physical ability selection tests with the most adverse impact upon women are tests of upper body strength". Fleishman (1988) further related that tests of upper body strength are often the most

valid. In light of this, it becomes increasingly important to demonstrate their job relevance and validity across sex groups. In this study, climbing, lifting, carrying, pulling, and pushing all were recorded with relevant frequencies, and all involve the utilization of upper body strength. Data were not collected on the methodologies that female participants utilized when engaging in a pushing/pulling activity. Therefore, it was not indicated whether a female participant engaged (for example) in pushing a vehicle, pushed the vehicle without assistance, utilized other persons to assist, or pushed the vehicle with her vehicle. In essence, females may perform pushing/pulling and activities requiring upper body differently than males.

This study was not without limitations. The most immediate and disappointing limitation was likely the data pertaining to the pass/fail rates on the physical ability selection test. Data were unavailable regarding actual applicants scores on the test. For example, specific and individual times were not available. These data would have been beneficial for use in a test analysis. This analysis could have identified the differences in the means of test scores of males and females. This would more accurately give the researcher an indication of which areas of the test(s) exhibit the most adverse impact (i.e. the portion in which upper body strength is demonstrated).

One other limitation of this study was the small number of females who participated (n = 4). This study utilized all female officers assigned to field patrol duties. Females represent about 7.6 percent of the entire patrol division. This correlates significantly with the national data which indicate a serious deficiency in sworn female police officers. Females account for about 9.1 percent of all sworn municipal police officers in America (United States Department of Justice, 1995).

The results of this study provide a vast amount of practical information for this agency. Phase one of this study provides an objective view of pass/fail rates on the physical ability selection test covering the past eight years. This provides insight into the adverse impact the test may or may not have on female applicants. With these data, inferences can be made regarding the test and how it stands in relation to the EEOC and Title VII of the Civil Rights Act. The χ^2 calculation conducted in phase one provides direction in the statistical significance of the data, particularly when comparing pass/fail rates based on the sex of the applicant.

The data in phase two provide more important direction in identifying areas that the physical ability test should be designed to

measure. Based on the data obtained in this study, a shorter run on the test would appear to be more valid than the present 200-yard run. A test designed to measure ability in the stooping/squatting would appear to be valid. The data indicated that there were 600 records of this activity. A test to demonstrate stair climbing ability would appear to be valid. There were 100 records of climbing, and the majority of these were stairs. Lifting and carrying appeared to have a high level of frequency. The current physical ability selection test administered by this agency requires a body drag. Based on the data in this study, a body drag test is questionable. A test of lifting and carrying an object may be more job related. The data received in this study objectively describe the work engaged in by the patrol personnel of this agency. The practical significance these data will have in designing a valid physical ability test is readily apparent.

On a larger scale, the present study builds on the body of literature pertaining to validation procedures and physical ability selection testing. This study demonstrated that even in the 1990s some police agencies are still utilizing physical ability testing methodologies that have an adverse impact on women and are indefensible in the area of job relatedness. The present study corroborates the contemporary literature by conveying the underlying thesis that it is essential for public safety employers to develop physical ability selection criteria which are designed to measure the critical tasks of the job. The information in this study identified significant comparisons to job tasks that are tested, on the POPAT as demonstrated in the SPD study and other studies (e.g. Farenholtz, 1990;

Table 3
COMPARISON OF ACTIVITIES – MIDWESTERN LAW ENFORCEMENT AGENCY AND SPARKS NV

Activities Rated Highly Necessary in Midwestern Law Enforcement Agency	Activities Tested for in Sparks, Nevada, POPAT
Running	440-Yard Mobility/Agility Run
Climbing Stairs	Stair Climb
Lift/Carry an Object	Torso Sack Carry
Drag/Pull Object	Push and Pull Station Apparatus
Balancing	Not Tested
Stooping/Squatting	Squat Thrust Rail Vault
Jump Object	Jump (Chair) Obstacles
Pushing Object (Vehicle)	Not Tested

Farenholz *et al.*, 1985; Peak *et al.*, 1992). The SPD study identified that the work performed by Sparks police officers was comparable to that of British Columbia municipal police officers. The similarities of physical work performed in the present study are comparable to that of Sparks, Nevada police officers. These similarities are sufficient enough to add to the validity and applicability of the POPAT. Table 3 compares activities in the present study that were rated high in terms of necessity to the POPAT in Sparks, Nevada.

FUTURE RESEARCH

Research into this area must continue. After completing this study, there were several areas that were identified as needing additional research. It would be of benefit to examine arrest reports closely and identify physical ability skills utilized. Additionally, suspect demographic information would be of benefit. With these data, it would be possible to document the levels of resistance of a suspect and then compare these levels with such categories as height and weight of the suspect compared to the arresting officer. Arrest data should include the total amount of time to effect the arrest, how many officers assisted and what types of restraining devices were utilized on the suspect. Further, the demographic information describing each suspect arrest could be compared to the population of the local jail in this jurisdiction. This information could further validate the need for other testing criteria on the physical ability selection test. Farenholtz *et al.* (1985) conducted similar research in the development of a physical ability testing methodology for correctional officers in British Columbia. Farenholtz (1990) measured prison population norms compared to Sparks, Nevada police officers as part of the SPD physical ability test validation.

Job demand data collected at various times throughout the year would be of benefit. This would give the researcher an opportunity to examine the quality and quantity of data based on the time of year. Then the researcher could compare data and make inferences pertaining to physical activities in correlation to seasonal variations.

The purpose of this study was to accomplish several objectives. The first was to examine data on pass/fail rates of the physical ability selection test. These data were compared to other research findings and to EEOC and Title VII guidelines. Second, job analysis was conducted, physical skills identified and the characteristics analyzed. This information was utilized to make inferences as to how the recorded

activities correlated to the current physical ability selection test. Further, the χ^2 test that was calculated provided insight into the statistical significance of pass/fail rates and the variation of physical activities based on sex.

This study determined the following relating to the current physical ability selection test:

- Females fail the physical ability test significantly more often than males, and there is a statistically significant difference based on the sex of applicants regarding the successfulness of completing the physical ability selection test. This study did not support the need to run 200 yards, as is currently required, although a shorter distance may be job related.
- This study did not support the need to climb through a window as the current test requires.
- This study did not support the need to drag and pull a 158-lb mannequin 30 feet in nine seconds as the current test requires.
- This study did indicate other areas such as pushing, balancing, climbing and stooping/squatting in which applicants might be tested for physical competence.
- The next logical stage in this process would be in depth analysis of the construct and/or criterion validity of the test. Proper validation of a police agency's physical ability selection methodologies can minimize Title VII violations.
- Civil liability has been and will continue to be a major concern of police management especially in the area of physical ability selection testing. It cannot be over emphasized that careful planning and research in this area will be advantageous for the police agency. The liability and public expectations are just too great to ignore.

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