

THE JOB-RELATED  
PHYSICAL ABILITIES EXAMINATION  
FOR THE ENTRY LEVEL POLICE RECRUIT

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## Chapter 1

### INTRODUCTION

Jonathan Seagull spent the rest of his days alone, but he flew way out beyond the far cliffs. His one sorrow was not solitude, it was that other gulls refused to believe the glory of flight that awaited them; they refused to open their eyes and see. (1)

In recent years court decisions have forced personnel agencies "to open their eyes and see" the problems involved with discriminatory hiring practices. Affected, are jobs dependent on physical abilities; particularly a police officer's duties.

A physical abilities examination, to be used as a screening agent for police academy hopefuls, must incorporate job related skills. This exam should not discriminate against sex or race, yet screen those physically unable to perform critical skills necessary to protect and to serve. Courts have decided that if a test discriminates, it must be shown to be job related, and additionally be shown that there are no alternative methods which could accomplish the same purposes. (24)

Since there are very few valid physical abilities examinations throughout the United States (27), the task at hand was to develop a defensible physical abilities examination for use by the Phoenix Police Department.

### PROBLEM

The task was to develop and provide a defensible physical abilities examination that discriminated between those who can perform necessary physical skills and those who cannot. Any racial or sexual

biases must be incidental only, and it was imperative to solve several sub-problems in a logical, defensible manner.

#### SUB-PROBLEMS

A job analysis was performed on physical skill requirements specific to Phoenix Patrol Officers. The job analysis identified skills which were adopted for the development of an experimental physical abilities test battery. Relating the on-the-job physical success of a sample of Phoenix Police Officers to their results on the experimental test battery demanded an accurate performance rating on each officer in the sample. Since current ratings were too general for a true physical performance rating, a more specific physical abilities rating was developed for the relationship of success as officers to the experimental physical abilities test battery was developed and minimum entrance level standard established through analysis of the data acquired on the experimental test battery.

#### HYPOTHESIS

The author hypothesizes that a valid physical abilities test battery can be developed and that racial or sexual bias will occur only incidentally.

#### ASSUMPTIONS

Assumptions were made that there would be complete cooperation from all personnel involved with observations, interviews, questionnaires, ratings and physical testing.

### DELIMITATIONS

The physical abilities examination was based on the job related skills specifically identified by the City of Phoenix Police. The minimum standards used are requirements for entrance into the Phoenix Police Academy and were established by current Phoenix Police Officers.

### LIMITATIONS

This study was subject to the various limitations associated with data collected through the use of a questionnaire, such as:

1. failure of items to be answered truthfully,
2. failure of a respondent to comprehend all items, and
3. failure of a respondent to answer all items.

This study was also subject to the various limitations involved with physical testing, such as:

1. time, effort, and availability of both the administrators of the test and the personnel being tested, and
2. facilities available to the subjects.

## Chapter 2

### REVIEW OF LITERATURE

As far back as 1909 Fuld (7) wrote, "the most important asset of the ideal policeman is unquestionably his physical constitution and condition." Even then Fuld suggested the use of physical examination for all police departments in selecting their patrolmen. Part of that examination involved physical strength tests that were "aimed to test the development of those muscles which are used most frequently by the policeman in the discharge of his duty."

Fuld also surveyed 75 American cities on their methods of choosing policemen. He discovered that 19 cities chose patrolmen on the basis of physical tests only, and 33 cities combined physical and mental tests. (He did not indicate the types of physical tests used, except that test used by New York City, which he described as having strength and agility tests; along with the medical examination.) (7)

Germann (8) wrote in 1958 that different tests were being used to measure physical agility, many times in or along with an obstacle course, but "as yet there has been no successful validation of these tests." He also believed an agility test was necessary for screening:

It would seem that a qualifying agility test would be satisfactory for police entrance level screening, in order to weed out the completely uncoordinated few who later might face hazards where some degree of agility might mean the difference between life and death. (8)

In 1960 through a commission, the State of California developed minimum standards for police selection. The medical examination was to



be performed by a physician and a surgeon, and involved ineligibility only if the applicant was found to have a condition that adversely affected his duty. (19)

According to Blum in 1961, society admired physical prowess and the public consciously or unconsciously wanted this type of person protecting them. In agreeing with Fuld's assets for the ideal policeman, Blum suggested that present police selection standards also agree. Blum cited a major (unidentified) police force that in 1961 accepted only 304 out of 7,092 applicants on the basis of physical standards only; further emphasizing the importance of physical attributes. (3)

Blum also wrote that there were eight important personnel differences that any selection agency for police officers should consider about each applicant, physical condition was one. (APPENDIX B) To determine the basic capabilities and skills every police officer needed Blum said every agency should perform a job analysis involving the eight personnel differences. Blum also stated that the 1960 California standards were set by experienced law enforcement personnel, and that 90 percent of California's police agencies used them. (3)

In 1949 Thorndike wrote on the development of ways to select personnel for a job. He said a job analysis should be performed on each job, and divided into eight categories. (APPENDIX C) The physical requirements consisted of strength, endurance, speed, coordination, and adaptability for each particular job to be performed. (22)

A number of people had surveyed police selection practices throughout the United States. It appeared in the literature that most researchers had studied the non-physical aspects of police selection procedure. In 1972 Kent and Eisenberg reviewed the recent literature

on police selection and promotion. The research was either psychological or psychiatric, and they concluded that the research on police selection and promotion was "poor" or had "limited value." (10)

Although not all the reviewed literature was poor or had limited value, little had been done in researching physical abilities examinations in police selection. One of the earliest surveys of police selection practices was performed by Fuld in 1909; described earlier in this chapter.

O'Connor compared the use of physical agility tests by regional groups across the United States in 1956 and 1961. He found that all regions, except West North Central, increased the usage of physical agility tests "raising the national figure from 40.5% in 1956 to 51.5% in 1961." That meant that half the agencies surveyed used some form of physical agility test. Although he didn't identify any particular test, he did find that the tests varied in "complexity and scope," and those agencies using the physical agility tests were concerned with physical prowess. (15)

O'Connor contended that modern police work was more and more being carried on mostly in the patrol car, therefore, the officer walks less and gets out of the car less than their supervisors liked, in the cases of closer investigations eg. investigations inside a building. O'Connor was best summarized through his own words:

The physical agility test assures the examining agency that the individual is capable of handling his own bulk...

and on modern police work:

...modern law enforcement makes the matter of physical screening far more important than in the past. The man who is hired lacking the ability to completely negotiate his own frame is not likely to develop that ability while in police service. It is

essential that this ability be measured during the screening process and that men lacking it be disqualified. (15)

The Police Foundation, in 1974, came out with the following about the administration of police personnel, in particular the pre-selection of officers:

The physical agility requirement, particularly, appears to reflect a bona-fide occupational qualification, and should be included in the pre-selection phase. However, it is suggested that the elements of the physical agility test take the form of a job related 'obstacle course' rather than the more traditional test composed of a pre-determined minimum number of push-ups, sit-ups, knee-bends, and other exercises. (17)

In a survey by Eisenberg, Kent, and Wall in 1973, physical agility tests were designated by one out of every two agencies in the United States having more than 50 sworn police personnel. That included 47 state, 140 county, and 481 municipal agencies. They found that the percentage of agencies surveyed that used physical agility tests ranged between 45 and 56 percent, and that the middle sized agencies used physical agility tests more often than the small or very large agencies. (5)

Verducci in 1973-1975 surveyed the State of California's city, state, and county agencies on the use of police physical performance examinations. He found that "sixty-two percent of all California agencies surveyed use a physical performance examination." He also surveyed selected United States cities and found that 83 percent of those cities used some form of physical performance examination. Yet, according to Verducci, "information to support the validity of these various examinations was almost nonexistent." (27)

In Verducci's survey he also determined the items in the agencies' physical performance examinations, and later performed a job analysis on the San Francisco Police Department's patrol officers. From

that he developed a test battery designed to test the police applicant's physical abilities and at the same time be job related. (27) Verducci's test, however, was questioned in court and determined discriminatory toward women, and consequently not used as an entrance requirement.

Leonard in 1970 stated:

Both physical strength and agility should be required of the police applicant to a superior degree. Appropriate tests designed to measure these qualities may be obtained from the department of physical education at any nearby college or university. (11)

In 1973 Eldefonso said:

... There is the general awareness that physical condition is an important factor in police performance... Devices to test these qualities are readily available everywhere. (6)

In 1970 Saunders described the qualities needed for a police officer's job. He listed the seventh element as "complex motor skills" including agility, endurance, strength, and the use of minimum force in action. On selection standards he said, "selection standards clearly fail to screen out many poor prospects for police work." (20)

From the above statements by Leonard, Eldefonso, Saunders, and similar others in the literature, it appeared that the lack of research by police personnel selection agencies on physical abilities examinations, was because the agencies believed that physical education sources provided them with tests, although their relationship to the job had not been established.

Some of the earlier works on policewomen, such as those by Hamilton (9) and Owings (16), agreed that women had a role in police work and that physical strength was required to fulfill the strenuous duties performed by them. However, at that time in the 20's, it appeared as if their duties were generally not of patrol type, but of

working with juveniles, females, and office type work.

In 1972 Milton studied the role of women officers in the United States. She found that most women held traditional jobs, but the few examples of women on patrol showed that they could work effectively in patrol capacities. (12)

Sherman wrote in 1973 that most women performed office work or worked with juveniles and females. (21)

Perhaps the most significant findings were made by Peter Bloch and Deborah Anderson in their final report on policewomen on patrol in Washington D.C., in 1974. (2) After studying an experiment by the Washington D.C. Metropolitan Police Department in 1972-1973, they reported that it would be appropriate to hire women on the same basis as men. The experiment had assigned an equal number of men and women to the same jobs with the same assignments for one year on patrol. The results showed that there were no reported incidents to cast doubt on female ability, and that their performance ratings equaled the men's.

Washington reported on the deployment of female officers in the United States. She determined that generally, job descriptions didn't differ between men and women, and that several agencies were assigning women to patrol. When they were on patrol their jobs also did not differ from the men on patrol. (25)

Morgan also wrote on the policewomen employed on patrol in the Washington D.C. police force. He reported that, according to police chief Jerry V. Wilson, on street patrol women turned out to be as competent as men. Morgan quoted Wilson as having said:

"Women have demonstrated they can do the job. Some women are going to be better than others just like some men are better than others. You cannot classify people on the basis of sex..." (13)

Morgan also reported that the women were subjected to the same physical training as the men.

In a 1974 Police Foundation manual for women (18), it was suggested that police departments insure that tests are job related. However, the problem of developing a valid physical test is complicated. The foundation suggests that if the test is job related and it screens out many persons otherwise qualified, then the departments might consider requiring the test after the training period. (Washington D.C. does that and has shown women to be competent police officers.)

Throughout the literature it appeared that women would make good police officers on patrol, and indeed have performed well. Therefore a physical abilities examination, to be job related, should not have an adverse impact on women, but test those skills necessary for the successful completion of a police officer's duties.

The United States Civil Service Commission in 1973 summarized the elements to attain job related selection for police and fire applicants. (23) The commission reported that a job analysis was essential, with a practical method for collecting job information. Whatever method that was used to gather information, the validity, reliability, objectivity, and job relatedness were the important factors in the selection process. Validity needed to be established with a direct tie-in with the job:

...if a certain kind of physical agility has been shown by the job analysis to be a critical requirement, the testing of agility must be of that kind, not some other kind of agility.

But, if the skill tested was not similar to the activity on the job, then a substantial correlation must have been obtained to produce validity.

The commission also stressed that authorities, supervisors, or experts be consulted referring to information gathered, and that the total process covered all essential areas of job relatedness with "separate" minimum standards set for each aspect tested.

Bopp, in 1974, wrote that police must be of sound "wind and limb." (4) But he stated that no method had been agreed on to judge minimum standards of the physical aspects needed to accomplish police activities. Plus, he felt that it was difficult to see the need of physical testing when police were permitted to let themselves get out of shape after being hired. Along that same line he wrote that those tests should depict the level of condition the officers were "expected to maintain throughout their careers."

Finally Bopp wrote that parts of the physical examination should be related to particular skills unique to each police department.

Also in 1974, Wilkie wrote on job related physical tests for police:

Physical performance tests for patrol officer applicants have not been designed with an empirical showing that they are related to the patrol officer's job. (26)

Wilkie went on to say that either a relationship between exercises and activities must be made, or actual activities performed on the job should be included on the physical abilities test. He agreed with Bopp that once hired, applicants were not obliged to stay physically fit. Also that it was difficult to define a number of activities performed by police that needed to be tested.

Wilkie cited a King County Department of Public Safety (Seattle, Washington) attempt at building a job related physical abilities test

that tried to imitate actual field tasks. He wrote that by performing field activities in a test situation, the test became job related and valid, yet he said the King County test must be improved to become more acceptable. Wilkie concluded that the King County attempt was made because after looking for a job-related test elsewhere, none were found.

An appropriate conclusion for this review came from Wilkie's article on job related physical tests. He hoped that other efforts would be made to:

...produce physical tests that are unimpeachably job related, will be relatively easy to administer, and will provide suitably fit recruits for police departments. (26)



## Chapter 3

### PROCEDURE

The general procedure relied on following logical and defensible steps which led to the final test battery: The Police Officer Physical Abilities Examination For The Entry Level Recruit.

### JOB ANALYSIS

A job analysis was performed which identified job related physical skills specific to the City of Phoenix' Patrol Officers. The job analysis consisted of observing male and female police officers while on patrol for 80 plus hours. The analysis also consisted of interviewing male, female, and supervisory police officers in each district. The activities discovered through the observations and the interviews were incorporated onto the Police Officer Physical Abilities Job Analysis Questionnaire (APPENDIX A).

The questionnaire was then randomly distributed to 16.5 percent of the male patrol officers and to 100 percent of the female patrol officers. The data resulting from the returned questionnaires was fed through the SPSS computer package Crosstabulations (14) in four ways:

1. sex by activity,
2. performance rating by activity,
3. district by activity, and
4. shift by activity.

Statistical analysis of the data involved the percentages of officers who answered each activity by its frequency of occurrence per month,

and Kendall's Tau C which indicated significance levels between the four previously mentioned variables (sex, performance rating, district and shift).

#### EXPERIMENTAL PHYSICAL ABILITIES TEST BATTERY

An activity was adopted for use in the experimental physical abilities test battery if it was answered by 50 or more percent of the patrol officers sampled in the categories equal to or greater than once per month. However, only those activities which could be objectively tested for were adopted for the experimental test battery. Those activities were then designed to resemble on-the-job situations which produced a valid experimental test battery. (APPENDIX D)

The experimental physical abilities test battery was administered to a volunteer sample of 66 current Phoenix Police Officers, varying in age and experience from each district and shift. The means, standard deviations, Z scores and mean Z scores were then computed from the 66 officers' results on the experimental test battery. A Pearson correlation matrix was plotted on the variables (age, height, weight, years experience, and the seven test items) that determined any relationship they had with each other.

The on-the-job physical success as police officers of each individual in the sample was found through the use of the Police Officer Physical Ability Rating distributed to each of the 66 officers' supervisors. (APPENDIX E) The data from the ratings were then ranked in thirds. Each officer was ranked in the top, middle, or bottom third according to his/her results on the six rating total and the overall police rating.

The results on the test battery and the physical ratings were then quantified in several ways:

1. A Pearson correlation was conducted between the overall police rating and the test items.
2. A Spearman correlation was conducted between:
  - a. the six physical ability ratings and the test items,
  - b. the totals of the six physical ability ratings and the test items,
  - c. the totals of the six physical ability ratings and the overall police ratings,
  - d. the total of the six physical ability ratings and the mean Z scores, and,
  - e. the overall police ratings and the mean Z scores.
3. A canonical correlation was conducted between the test items and the six physical ability ratings,
4. Multiple regressions were performed on the test items with the dependent variables:
  - a. the overall police ratings, and
  - b. the totals of the six physical ability ratings, and
5. A discriminant analysis was performed on the top and bottom ranked officers' performances on the experimental test items.

#### FINAL PHYSICAL ABILITIES TEST BATTERY

The relationship of police officer success to the experimental test battery was accomplished by analyzing the statistical data produced above. That relationship was used to develop the final physical abilities test battery from the items on the experimental test battery. Those items which discriminate between persons who can perform physical skills necessary to be a Phoenix Police Officer and persons who cannot were incorporated for use on the final test battery. The final items on the test are:

1. 5 foot ditch jump,
2. 106 yard run, and
3. 30 yard rough terrain run.

#### MINIMUM STANDARDS

The Phoenix Police Academy instructors were consulted on the improvement of physical skills a candidate can make while at the academy. The minimum standards were then established by utilizing the information supplied by the instructors and the results from the 66 officers who performed on the experimental test items. The standards were set on each item at a point slightly lower than the worst score recorded on that event by a current Phoenix Police Officer. That point was set according to the improvement a candidate can make while at the academy. Therefore, the candidate must score at or above the entrance level standard in order to achieve an acceptable physical skill level while at the academy. (The acceptable level is that point at which a current Phoenix Police Officer performs.) Finally, the entrance level standard was a mean Z score from the final test battery. Consequently, mean Z scores will be used to determine a candidate's performance level on the physical abilities examination.

## Chapter 4

### RESULTS

Thirty separate activities were included on the Police Officer Job Analysis Questionnaire from the observations and interviews with Phoenix Police Officers. The questionnaire was randomly distributed to 16.5 percent of the male patrol officers and to 100 percent of the female patrol officers. Ninety-five percent of the male and 85 percent of the female officers sampled returned completed questionnaires

The statistics from crosstabulations on the questionnaire returns, included percentages on the frequency of occurrence per month on each activity. That included the percentage of all the officers who answered each activity by its frequency of occurrence per month. By combining the totals on all the patrol officers sampled, 13 activities were answered by 50 or more percent of the officers in the categories equal to or greater than once per month. That indicated that the 13 activities were performed by 50 or more percent of the officers sampled at least once per month. (APPENDIX F, Figures 1-13) The 13 activities were:

1. Climb- fences,
2. Climb- walls,
3. Jump- ditches under 5 ft. wide,
4. Run- under 1 block (100 yds.),
5. Go through windows,
6. Go through tight/small openings,
7. Go through gates in fences/walls,

8. Negotiate rough or rocky terrain,
9. Drag- victims, suspects or objects,
10. Lift victim or suspect,
11. Lift- objects under 100 pounds,
12. Immobilize and/or restrain struggling victim or suspect, and
13. Force struggling suspect into the rear seat of the police vehicle.

The remaining 17 activities were answered in the categories less than once per month by 50 or more percent of the officers sampled. Thus indicating that the 17 activities were performed semi-annually, annually, or never by 50 or more percent of the patrol officers sampled. Therefore, the job analysis identified 13 activities that were performed at least once per month and were physical tasks common to a Phoenix Police Officer. The 13 activities were then taken into consideration for the job related physical abilities examination. Also, crosstabulations computed Kendall's Tau C to find significant differences on each activity on the questionnaire. There were no significant numbers of activities peculiarly affected by either performance rating, district or shift at the .05 level of confidence. However, there was a significant difference at the .05 level between the male and the female officer's performances on 23 activities. Figure 14 (APPENDIX F) shows that female officers performed that activity more often than the male officers. Conversely, Figures 15-36 (APPENDIX F) show activities performed significantly more often by male officers than by female officers. The seven remaining activities on the questionnaire showed no significant difference between the male and female officers. The seven activities were:

1. Run- under 1 block (100 yds.),

2. Go through windows,
3. Go through gates in fences/walls,
4. Negotiate narrow ledges,
5. Negotiate rough or rocky terrain,
6. Lift victim or suspect, and
7. Lift- objects under 100 pounds.

The experimental test battery was developed from the 13 activities that 50 or more percent of the officers sampled had said they performed at least once per month. However, six of the 13 activities were similar and two test items were developed from them. One, the 40 Yard Small Openings Run, was developed from the combination of three activities:

1. Go through windows,
2. Go through tight/small openings, and
3. Go through gates in fences/walls.

The other test item, the 140 Pound Dummy Drag, was also developed from the combination of three activities:

1. Drag- victims, suspects or objects,
2. Lift victim or suspect, and
3. Lift- objects under 100 pounds.

Two of the remaining activities were difficult to test for objectively and were eliminated from the experimental test battery. They were:

1. Immobilize and/or restrain struggling victim or suspect, and
2. Force struggling suspect into the rear seat of the police vehicle.

The resultant experimental physical abilities test battery had seven job related items designed to resemble on-the-job situations. The seven test items were:

1. Fence Climb,
2. Wall Climb,
3. 5 Foot Ditch Jump,
4. 106 Yard Run,
5. 40 Yard Small Openings Run,
6. 30 Yard Rough Terrain Run, and
7. 140 Pound Dummy Drag. (APPENDIX D)

The test battery was then administered to 66 current Phoenix Police Officers. Table 1 shows the means and standard deviations of age, years experience, height, weight, and the seven test item's scores from the 66 officer sample. A Pearson correlation between age, years experience, height, weight, and the seven test items produced several significant relationships at the .05 confidence level. However, the coefficients indicated a low amount of variance accounted for. As might be expected though, age and years experience correlated higher than the others. The others were:

1. Fence Climb with the Wall Climb,
2. 106 Yard Run with the Fence Climb,
3. 40 Yard Small Openings Run with the Fence Climb, and
4. 106 Yard Run with the 30 Yard Rough Terrain Run.

Five of the 66 officers who took the experimental test battery were either supervisors or on special assignment. Consequently, their Physical Ability Ratings were not applicable for further use on this project. Table 2 shows the means, standard errors and the standard deviations from the Police Officer Physical Ability Ratings. The results indicated that there was little variance within the ratings. A Pearson correlation conducted between the overall police ratings and the experimental test items showed a significance at the .05 level of confidence



with three of the test items:

1. 5 Foot Ditch Jump,
2. 106 Yard Run, and
3. 30 Yard Rough Terrain Run.

That meant that those three items were performed better by the police officer with a higher overall rating than by the officer with a lower overall rating.

Table 1  
Experimental Physical Abilities Test Battery  
Administered To Phoenix Police Officers  
Means and Standard Deviations  
N = 66

	Mean	S.D.
Age	27.30	4.42
Height (inches)	70.83	3.06
Weight (pounds)	178.66	23.83
Years Experience	3.53	3.33
Fence Climb*	4.72	1.59
Wall Climb*	4.03	.97
5 Foot Ditch Jump*	3.98	.75
106 Yard Run*	17.36	1.54
40 Yard Small Openings Run*	17.34	3.03
30 Yard Rough Terrain Run*	6.27	.86
140 Pound Dummy Drag*	6.15	2.08

\*event timed in seconds.

Table 3 shows the Spearman correlation coefficients between:

1. the Six Physical Ability Ratings and the test items, and
2. the totals of the Six Physical Ability Ratings and the test items.

As indicated by the table, those items which were significant at the .05 level of confidence were performed better by the officers with higher ratings than by the officers with lower physical ability ratings. A Spearman correlation coefficient between the totals of the Six Physical Ability Ratings and the overall police ratings was significant at the .001 level of confidence. Similarly, a Spearman correlation coefficient

Table 2

Police Officer Physical Ability Ratings  
Means, Standard Errors and  
Standard Deviations  
N = 61

	Mean	Standard Error	Standard Deviation
Foot pursuit of suspect(s)	3.9	.122	.956
Apprehension of suspect(s)	4.2	.082	.641
Retention of suspect(s)	4.2	.087	.681
Self defense in physical altercation	4.1	.109	.853
Aid to other officers	4.3	.102	.797
Aid to public (public safety)	4.2	.090	.705
Totals of the Six Physical Ability Ratings	25.2	.478	3.737
Overall Police Rating	69.2	1.924	15.027

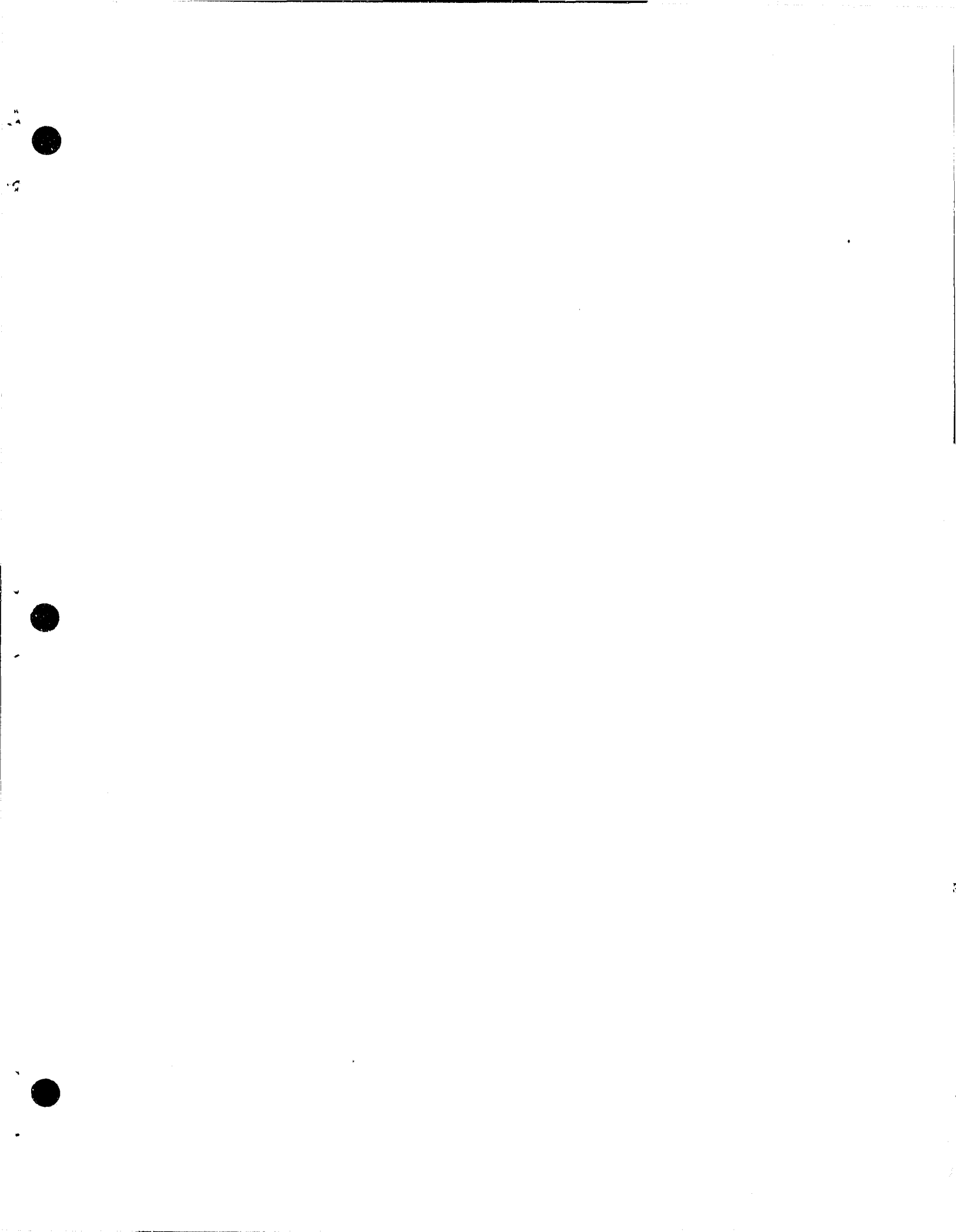


Table 3  
Spearman Correlation Coefficients  
N = 61

	Experimental Test Items						
	Fence Climb	Wall Climb	5 Foot Ditch Jump	106 Yard Run	Small Openings Run	Rough Terrain Run	140 Pound Dummy Drag
Six Physical Ability Ratings:							
1. Foot pursuit of suspect(s)	-.27*	-.22*	-.23*	-.35*	-.13	-.31*	-.11
2. Apprehension of suspect(s)	-.13	-.24*	-.20	-.23*	-.07	-.22*	-.23*
3. Retention of suspect(s)	-.20	-.20	-.09	-.26*	-.09	-.24*	-.28*
4. Self defense in physical altercation	-.38*	-.39*	-.19	-.46*	-.26*	-.37*	-.19
5. Aid to other officers	-.02	-.21*	-.27*	-.22*	-.01	-.29*	-.22*
6. Aid to public (public safety)	-.17	-.21*	-.29*	-.23*	-.04	-.33*	-.16
Totals of the Six Physical Ability Ratings	-.31*	-.35*	-.25*	-.43*	-.17	-.38*	-.21*

\*significant at the .05 level of confidence.

between the totals of the Six Physical Ability Ratings and the mean Z scores was significant at the .001 level. The latter indicating that the higher rated officer performed better overall on the experimental physical abilities test than a lower rated officer. A final Spearman correlation coefficient between the overall police ratings and the mean Z scores, was significant at the .01 level of confidence. Thus indicating again that the higher rated officer performed better overall on the experimental test battery than the lower rated officer.

A canonical correlation coefficient between the test items and the six physical ability ratings was significant at the .001 level of confidence. That indicated that an officer who performed well on the experimental test battery was rated higher on the six physical ability ratings, and an officer who performed poorly on the test battery was rated lower.

Multiple regressions were used to find the best combination of test items that predict police officer success with some degree of accuracy. A multiple regression on the test items with overall police rating as the dependent variable produced a five item test battery. The five items were:

1. 30 Yard Rough Terrain Run,
2. 5 Foot Ditch Jump,
3. 140 Pound Dummy Drag,
4. 106 Yard Run, and
5. Fence Climb.

Although the five items were significant at the .05 level of confidence, their combination accounted for only 23 percent of the variance and had a standard error of 13.75 points. That indicated that the five items can

predict a candidate's overall police rating with a slight degree of accuracy. However, the range of the prediction of the overall police rating covered 27 points out of 100 possible. A multiple regression on the test items with the totals of the six physical ability ratings as the dependent variable, produced a three item test battery. Those items were also produced in the first multiple regression's combination:

1. 106 Yard Run,
2. 30 Yard Rough Terrain Run, and
3. Fence Climb.

The three items were significant at the .05 level of confidence, but their combination accounted for only 20 percent of the variance and had a standard error of 3.43 points. That indicated that the combination of the three test items predicted a candidate's total of the six physical ability ratings within a seven point range out of a possible 30 points. But again, the degree of accuracy of the prediction was slim, indicated by the small amount of variance accounted for. Tables 4 and 5 show the summaries of the multiple regressions performed on the experimental test items.

A discriminant analysis on the experimental test items, between the top and bottom ranked officers, produced three items that discriminated. The three items were:

1. 5 Foot Ditch Jump,
2. 106 Yard Run, and
3. 30 Yard Rough Terrain Run.

Table 6 shows the results from a univariate F-ratio on the experimental test items which produced the three discriminating items. A discriminant function though, indicated that the Chi-Square test for significance on

on the three test items was significant only at the .07 level of confidence. The relationship of police officer success to the experimental test battery produced the final physical abilities test battery which consisted of the three discriminating items. But, the items discriminate only at the .07 level of confidence. The final test battery then has three test items in it:

1. 5 Foot Ditch Jump,
2. 106 Yard Run, and
3. 30 Yard Rough Terrain Run.

The Phoenix Police Academy instructors indicated that a candidate can improve his/her physical skill level approximately 50 percent while at the academy (a four month training period). The minimum entrance level

Table 4

Multiple Regression on Experimental Test Battery  
Dependent Variable - Overall Police Rating

	Multiple R	R Square	R Sq Change
30 Yard Rough Terrain Run	.298	.089	.089
5 Foot Ditch Jump	.378	.142	.053
140 Pound Dummy Drag	.408	.167	.024
106 Yard Run	.433	.187	.020
Fence Climb	.481	.231	.044
Wall Climb	.485	.236	.004
40 Yard Small Openings Run	.487	.237	.001

standard was then set at 50 percent below the worst score recorded on each of the three final test items. That score was then converted into a Z score. The mean Z score was computed for the three test items and the standard was set at 50 percent below the mean. Table 7 shows the three test items, the worst scores recorded on them by current Phoenix Police Officers, Z scores and the mean Z score for the final test battery. APPENDIX G includes the final test battery and the minimum Mean Z Score needed on those items in order to pass the physical abilities examination. That minimum Mean Z Score is -5.85 .

Table 5

Multiple Regression on Experimental Test Battery  
 Dependent Variable - Totals of the  
 Six Physical Ability Ratings

	Multiple R	R Square	R Sq Change
106 Yard Run	.386	.149	.149
30 Yard Rough Terrain Run	.431	.185	.036
Fence Climb	.447	.199	.013
140 Pound Dummy Drag	.460	.211	.012
5 Foot Ditch Jump	.473	.224	.012
Wall Climb	.479	.229	.005
40 Yard Small Openings Run	.483	.233	.004



Table 6  
 Experimental Physical Abilities Test Battery  
 Discriminant Analysis  
 Univariate F-Ratio

Test Items	F
Fence Climb	.5064
Wall Climb	1.2541
5 Foot Ditch Jump	3.7275*
106 Yard Run	3.2977*
40 Yard Small Openings Run	.0156
30 Yard Rough Terrain Run	3.1925*
140 Pound Dummy Drag	2.1079

\*significant at the .05 level of confidence.

Table 7  
 Physical Abilities Examination  
 Final Test Battery

	Worst Score In Seconds	Z Score
5 Foot Ditch Jump	9.0	-6.69
106 Yard Run	22.0	-3.01
30 Yard Rough Terrain Run	8.0	-2.01
Mean Z Score		-3.90

## Chapter 5

### CONCLUSIONS

Several conclusions were drawn from the statistical results on

1. the Police Officer Job Analysis Questionnaire, (APPENDIX A)
2. the Experimental Physical Abilities Test Battery, (APPENDIX D)
3. the performance of the 66 current officers on the experimental test battery,
4. the Police Officer Physical Ability Ratings, (APPENDIX E) and
5. the final Physical Abilities Examination. (APPENDIX G)

The Police Officer Job Analysis Questionnaire was distributed to a random selection of the Phoenix Police Department and was returned by 95 percent of the male and 85 percent of the female officers sampled. The questionnaire produced 13 activities which were frequently used by Phoenix Police and those 13 were taken into consideration on the experimental physical abilities test battery.

The seven item experimental test battery was developed from the 13 job related activities and each item was designed to resemble on-the-job situations which created a valid test battery.

Sixty-six current Phoenix Police Officers were administered the experimental physical abilities test battery. There was little variance among the variables age, height, weight, years experience and the seven test items which produced a somewhat homogeneous sample. Correlations between the variables had a significant but low coefficient, which

indicated that neither the variables nor the seven test items were highly related to each other.

Conclusions drawn from the Police Officer Physical Ability Ratings were limited because they also had little variance on them. The means tended to be high with small standard deviations which produced a homogeneous physical ability rating. Although there were several significant relationships between the ratings and the experimental test items, the coefficients were very low and the significance indicated only that the data varied from the mean. In all cases where significance was found, the implications were such that the Police Officer Physical Ability Rating was related to an officer's performance on the Experimental Physical Abilities Test Battery. That is, an officer with a higher rating performed better on the test battery than an officer with lower ratings, and vice versa.

The combinations of test items produced from the multiple regressions were significant related to the results from the Police Officer Physical Ability Ratings. However, neither combination of items accounted for a high degree of variance and consequently they had only a small degree of accuracy in their predictions. The best combination of test items involved five of the seven experimental test items:

1. Fence Climb,
2. 5 Foot ditch Jump,
3. 106 Yard Run,
4. 30 Yard Rough Terrain Run, and
5. 140 Pound Dummy Drag.

Since there was little variance on the Police Officer Physical Ability Ratings, the difference between the top and bottom ranked offi-

cers was minimal. From that a discriminant analysis produced 3 test items that were individually significant discriminators. But their combination produced significance at the .07 level of confidence. That is, the three test items together discriminate between the "outstanding" and "poor" police officer at a level below what researchers commonly accept as significant.

Therefore, the final physical abilities examination was job related, valid and objective, but discriminates significantly between the higher and lower rated officers at a low confidence level. The final test battery consisted of the three test items produced from the discriminant analysis:

1. 5 Foot Ditch Jump,
2. 106 Yard Run, and
3. 30 Yard Rough Terrain Run.

The minimum entrance level standard is a Mean Z Score from the three test items. The candidate must get a Mean Z Score of at least -5.85 to pass the physical abilities examination.

#### RECOMMENDATIONS

On the basis of the conclusions drawn from this project several recommendations as to the use of the physical abilities examination and future study can be made.

1. The author recommends that the City of Phoenix use the final test battery produced on this project along with the minimum entrance level standards as an entry level physical abilities examination for the Police recruit. Although the final battery does not predict success with a high degree of accuracy, it is job related and therefore tests the

physical skills performed frequently by a Phoenix Police Officer.

2. It appears necessary to re-evaluate the performance ratings now employed for the City of Phoenix Police Officers. Reliable, objective and valid performance ratings are essential to accurately discriminate between those officers who are doing their jobs effectively and those who aren't.

3. The most effective way to produce a physical abilities examination that discriminates between those who will be able to perform the physical tasks necessary to be a Phoenix Police Officer and those who will not, would be to administer the experimental test battery to a pilot study of police academy class. Then, observe their performance in the field for one year and analyze their performance ratings with their results on the experimental test battery according to the steps followed on this project. This would create a significant combination of test items that would discriminate and be absolutely defensible in court.

4. In order to produce and maintain an effective police force, the City of Phoenix must continue to re-evaluate police selection procedures.

#### DISCUSSION

A job related physical abilities examination to be used as a screening agent for the City of Phoenix Academy must be valid, defensible, and discriminate between those who can perform necessary physical skills and those who cannot. Therefore, it must meet several criteria to stand up in court. First, the examination must test the physical skills necessary to be a Phoenix Police Officer. The skills must be directly

related to on-the-job situations and be the same skills that current officers use frequently. Objectivity must also be incorporated into the test situation. Second, the test must discriminate against sex or race only incidentally and be the only effective method available to test physical abilities. Finally, the test must discriminate between those who will be able to successfully perform physical job tasks and those who will not be able to.

The objective of this project was to develop a job related physical abilities examination for the entry level police recruit that met the criteria stated in the previous paragraph. A physical abilities examination was developed that met most of those criteria. The examination was job related and tested those physical skills necessary to be a Phoenix Police Officer. The skills were designed to resemble on-the-job situations and were the frequently used skills of a Phoenix Police Officer. Objectivity was incorporated into each of the items tested. Secondly, the examination met the criteria of discriminating against sex or race incidentally only, on the basis of its job relatedness. That is, the test discriminates against sex or race only because the job tasks incidentally cause discrimination. However, the physical abilities examination discriminates between those who will be able to perform physical tasks and those who will not be able to at the .07 level of confidence. Since the .05 level is widely accepted in research as the minimum significance determinant, the final criteria of discrimination was not met to the satisfaction of researchers. Perhaps a project of this type doesn't need as stringent confidence levels as researchers demand. Therefore, the .07 level may be acceptable in meeting the final criteria to the City of Phoenix.

There appears to be several underlying factors pointing to why this final criteria was met at the lower level. The most important factor deals with the effectiveness of the current performance rating used by the City of Phoenix. Through the course of this project the author discovered that between 80 and 90 percent of all police officers received a rating of 2 (on a 4 point scale where 1 exceeds standards). The uselessness of an overall rating like this is obvious. It is difficult to quantify an officer who received a 1 and an officer who receives a 2 and etc. Also, since very few 3's or 4's were given, it becomes near impossible to discriminate between effective officers and ineffective officers. A more specific and objective rating is necessary to discriminate police effectiveness. The author attempted to accomplish that and the returns on the ratings had very little variance, and had generally high ratings as means. Does that mean there were no police officers who were physically unfit for the job? It is difficult to believe that all officers are doing above average work. Possibly, the supervisors are not effectively judging the performance of their officers. It is also possible that performance ratings for police officers are too difficult to fill out, particularly since police are many times on their own and reports are not always as accurate as wanted. However, police need to be constantly judged on their performance in order to maintain an effective police force.

Time limits on this project were factors on the ability to produce reliable instruments. The Test and Re-test method was the logical choice to determine reliability, but police officials did not want the officers "flooded" with extra paperwork and consequently, instruments were used to suit the police.

The purpose of this project was to provide the City of Phoenix with a job related physical abilities examination for the entry level police recruit, and that was accomplished. The basis of this project centered around finding the frequently used on-the-job physical tasks of a Phoenix Police Officer. All the experimental test items and the final test items fit that description. The physical abilities examination therefore, discriminates against sex or race incidentally only. The final test items are physical tasks performed by the Phoenix Police, and to be a police officer those skills must be performed. Therefore, if a candidate cannot perform them he/she cannot be a Phoenix Police Officer.



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APPENDIXES

APPENDIX A

City Of Phoenix Personnel Department

POLICE OFFICER PHYSICAL ABILITIES

JOB ANALYSIS QUESTIONNAIRE

This questionnaire is part of a job analysis for determining physical abilities directly related to the daily activities of a Phoenix Police Officer. The information that you will provide will be used to develop a job related physical abilities examination for entry level screening of the City of Phoenix' Police Academy.

The activities have been gathered by observing and interviewing Phoenix Police Officers. Please feel free to make any additions or comments that you think might be significant. Circle the occurrence of each activity you typically encounter. (The occurrence "under 1" refers to an activity performed semi-annually or annually.)

<u>Activity</u>	<u>Frequency Of Occurrence Per Month</u>						
	never	under 1	1	2	4	8	over 8
1. Climb- fences	never	under 1	1	2	4	8	over 8
2. Climb- ladders	never	under 1	1	2	4	8	over 8
3. Climb- walls	never	under 1	1	2	4	8	over 8
4. Jump- ditches under 5 ft. wide	never	under 1	1	2	4	8	over 8
5. Jump- ditches over 5 ft. wide	never	under 1	1	2	4	8	over 8
6. Jump- fences	never	under 1	1	2	4	8	over 8
7. Jump- hedges	never	under 1	1	2	4	8	over 8
8. Run- under 1 block (100 yds.)	never	under 1	1	2	4	8	over 8
9. Run- 1 block	never	under 1	1	2	4	8	over 8
10. Run- 2 blocks (200 yds.)	never	under 1	1	2	4	8	over 8
11. Run- 3 blocks (300 yds.)	never	under 1	1	2	4	8	over 8
12. Run- over 3 blocks	never	under 1	1	2	4	8	over 8
13. Run- over 1 mile	never	under 1	1	2	4	8	over 8

<u>Activity</u>	<u>Frequency Of Occurrence Per Month</u>						
	never	under 1	1	2	4	8	over 8
14. Go through windows	never	under 1	1	2	4	8	over 8
15. Go through tight/small openings	never	under 1	1	2	4	8	over 8
16. Go through gates in fences	never	under 1	1	2	4	8	over 8
17. Negotiate narrow ledges	never	under 1	1	2	4	8	over 8
18. Negotiate rough or rocky terrain	never	under 1	1	2	4	8	over 8
19. Tackle suspect	never	under 1	1	2	4	8	over 8
20. Wrestle with suspect without help	never	under 1	1	2	4	8	over 8
21. Drag victims, suspects or objects	never	under 1	1	2	4	8	over 8
22. Lift- victim or suspect	never	under 1	1	2	4	8	over 8
23. Lift- objects under 100 pounds	never	under 1	1	2	4	8	over 8
24. Lift- objects over 100 pounds	never	under 1	1	2	4	8	over 8
25. Put dead weight into vehicle- under 100 pounds	never	under 1	1	2	4	8	over 8
26. Put dead weight into vehicle- over 100 pounds	never	under 1	1	2	4	8	over 8
27. Immobilize and/or restrain struggling victim or suspect	never	under 1	1	2	4	8	over 8
28. Force struggling suspect into the rear seat of the police vehicle	never	under 1	1	2	4	8	over 8
29. Use brute physical strength in any other manner	never	under 1	1	2	4	8	over 8
30. Fire police weapon	never	under 1	1	2	4	8	over 8

Please Mention Other Typical Activities:

31.

32.

Comments:

Thank you for your time and consideration.

## APPENDIX B

### Blum: Eight Personnel Differences

1. Conditions of employment.
2. Education and knowledge required of an employee.
3. Technical skills needed to perform the tasks.
4. Prior work experience.
5. Physical condition.
6. Personal appearance.
7. Job attitude- ability to work with others.
8. Status level of the occupation.

## APPENDIX C

### Thorndike: Outline of Job Analysis Categories

- I. Physical Requirements.
  - A. Strength
  - B. Endurance
  - C. Speed
  - D. Gross coordination
  - E. Fine coordination
  - F. Adaptability
- II. Sensory Requirements- acuity of each of the special senses.
- III. Perceptual Requirements.
  - A. Speed of perception
  - B. Accuracy of discrimination
- IV. Intellectual Requirements.
  - A. Verbal comprehension
  - B. Numerical facility
  - C. Deductive and Inductive reasoning
  - D. Mechanical comprehension
  - E. Spatial visualization
- V. Academic Skill Requirements.
  - A. Accuracy in mechanics of expression
  - B. Fluency in verbal expression
  - C. Mathematical knowledge
- VI. Social Requirements.
  - A. Pleasingness of manner and appearance
  - B. Understanding of behavior of others
  - C. Tact and deftness in dealing with others
- VII. Interest Requirements.
  - A. Interest in people
  - B. Interest in mechanical things
  - C. Interest in abstract ideas
  - D. Interest in adventure, excitement, change
- VIII. Emotional Requirements.
  - A. Ability to function under pressures of speed, complexity, danger, etc.
  - B. Stability and personal adjustment



APPENDIX D

Physical Abilities Examination:

Experimental Test Battery

• Test Item # 1 FENCE CLIMB

Test Material

6 foot chain link fence, stopwatch

Scoring

Time in seconds

Instructions

On the supervisor's command the candidate must run from the starting line (a small bush 13 feet from the base of the fence) to the fence, climb over the fence, and cross the finish line 10 feet from the base of the fence. Any method may be used to climb the fence without the help of another instrument or person.

The stopwatch starts on the supervisor's command and stops when the candidate has crossed the finish line. Failure of a candidate to climb over the fence and cross the finish line receives a maximum time of 60 seconds on this item.

Test Item # 2 WALL CLIMB

Test Material

Wooden wall 6 feet high, stopwatch

Scoring

Time in seconds

Instructions

On the supervisor's command the candidate must run from the starting line (10 feet from the base of the wall) to the wall, scale over the wall, and cross the finish line 10 feet from the base of the wall. Any method may be used to scale the wall without the help of another instrument or person.

The stopwatch starts on the supervisor's command and stops when the candidate has crossed the finish line. Failure of a candidate to scale over the wall and cross the finish line receives a maximum time of 60 seconds on this item.

## Test Item # 3 5 FOOT DITCH JUMP

Test Material

Ditch 5 feet wide, 1 foot deep, 11 feet long, bordered with wooden planks, stopwatch

Scoring

Time in seconds

Instructions

On the supervisor's command the candidate must run from the starting point (the base of the 6 foot wall, 13 feet from the edge of the ditch) to the ditch, jump over the ditch, run over a line 10 feet from the edge of the ditch, turn around and run back to the ditch, jump over the ditch again, and touch the finish point (the 6 foot wall, 13 feet from the edge of the ditch, which is also the starting point) with both hands.

The stopwatch starts on the supervisor's command and stops when the candidate touches the wall with both hands after completing the event. Each failure to completely jump the ditch receives 5 seconds penalty, making a maximum of 10 seconds penalty time added on to the total time on this item. If the candidate fails to completely jump the ditch he/she should not try to rejump the ditch, but continue running through the event until reaching the finish.

## Test Item # 4 106 YARD RUN

Test Material

106 yard course, stopwatch

Scoring

Time in seconds

Instructions

On the supervisor's command the candidate must run from the starting line (the speed bump in the asphalt road) to the southeast corner of the observation tower (13 yards from the starting line), angle to the right towards the middle tree and run the 40 yards to that tree, run around the tree and run the 40 yards back to the southeast corner of the observation tower, turn to the left and run the 13 yards to the finish line (also the starting line). The candidate may run around the tree on either side, but he/she must run around the tree; not just run up to the tree.

The stopwatch starts on the supervisor's command and stops when the candidate crosses the finish line. Failure of a candidate to negotiate the course receives a maximum time of 60 seconds on this item.

Test Item # 5 40 YARD SMALL OPENINGS RUN

Test Material

40 yard course containing 3 railings and 2 sewer pipes:  
 Railing # 1 - 16.5 inches X 32.5 inches,  
 Railing # 2 - 16.5 inches X 33 inches,  
 Railing # 3 - 2 feet X 6 feet,  
 Sewer Pipe # 1 - 6 feet long X 2.5 feet diameter,  
 Sewer Pipe # 2 - 10 feet long X 2.5 feet diameter,  
 stopwatch

Scoring

Time in seconds

Instructions

On the supervisor's command the candidate must run from the starting line (the small railing 12 feet from railing # 1) to railing # 1 and through it, run to and go through railing # 2 (15 feet from railing # 1), run to and go through railing # 3 (12 feet from railing # 2), run to and crawl through sewer pipe # 1 (31 feet from railing # 3), run to and crawl through sewer pipe # 2 (27 feet from sewer pipe # 1), and run across the finish line (7 feet from sewer pipe # 2).

The stopwatch starts on the supervisor's command and stops when the candidate has crossed the finish line. Each failure by a candidate to go through an obstacle receives 5 seconds penalty time, making a maximum of 25 seconds penalty time added on to the total time on this item.

Test Item # 6 30 YARD ROUGH TERRAIN RUN

Test Material

30 yard course located parallel on the west side of the path that crosses the 40 Yard Small Openings Run at sewer pipe # 2, stopwatch

Scoring

Time in seconds

Instructions

On the supervisors command the candidate must run, from a sitting position on top of sewer pipe # 2 (the starting line), to the finish line 30 yards away in as straight a line as possible.

The stopwatch starts on the supervisor's command and stops when the candidate has crossed the finish line. Failure to complete the 30 yard course and cross the finish line receives a maximum score of 60 seconds on this item.

Test Item # 7 140 POUND DUMMY DRAG

Test Material

140 pound dummy, stopwatch

Scoring

Time in seconds

Instructions

On the supervisor's command the candidate must lift or drag, in any reasonable manner, the 140 pound dummy (which is lying on the ground behind the starting line) from the starting line over the speed bump (25 feet from the starting line) then back to the finish line which is also the starting line; making the total distance 50 feet.

The stopwatch starts on the supervisor's command and stops when the candidate has crossed the finish line with the 140 pound dummy. Failure to get the dummy over the speed bump and back to the finish line receives a maximum time of 60 seconds on this item.

APPENDIX E

POLICE OFFICER PHYSICAL ABILITY RATING  
City of Phoenix Personnel Department

Officer \_\_\_\_\_

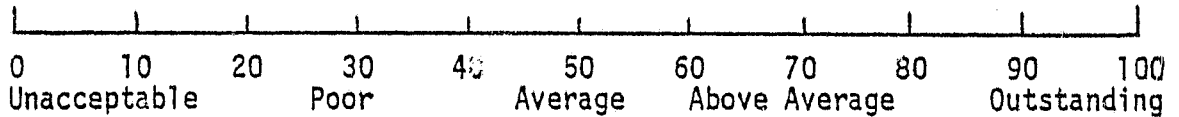
A number of situations requiring physical strength and agility have been identified below. As the supervisor for the officer named above, please react to each item with the response that best depicts the officer's competency based solely on physical abilities. (It is understood that effective police work involves many non-physical skills, this rating should reflect only physical strengths and weaknesses.) This rating will be held strictly confidential and will be coded, keeping the results unknown to everyone including the supervisors and the rated officers. Use the key below for selecting the appropriate responses:

1. Officer has failed to respond to an action where one was expected, apparently due to a lack of physical ability.
  2. Officer has responded to an action but failed, apparently due to a lack of physical ability.
  3. Officer responds to action regularly with occasional success, apparently due to his/her physical ability.
  4. Officer responds to action regularly with frequent success, apparently due to his/her physical ability.
  5. Officer has never failed to respond to an action with a high frequency of success, apparently due to his/her physical ability.
- X. No knowledge upon which to base a rating.

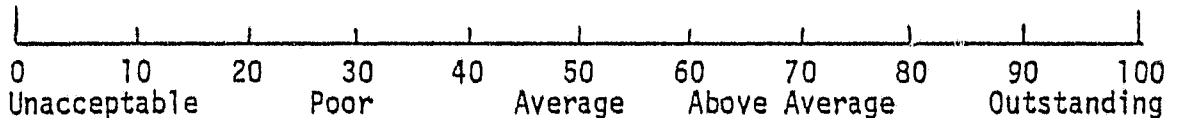
<u>Situation</u>	<u>Circle Rating</u>
1. Foot pursuit of suspect(s)	1 2 3 4 5 X
2. Apprehension of suspect(s)	1 2 3 4 5 X
3. Retention of suspect(s)	1 2 3 4 5 X
4. Self defense in physical altercations	1 2 3 4 5 X
5. Aid to other officers	1 2 3 4 5 X
6. Aid to public (public safety)	1 2 3 4 5 X

The following situations are related to the overall performance of police duties. Rate the officer in question by placing an "X" on the appropriate location along the scale between 0 & 100.

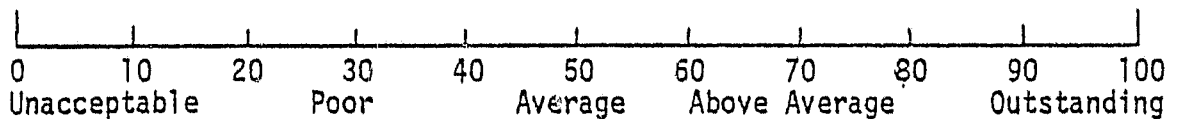
1. Amount and frequency of on-the-job physical activity:



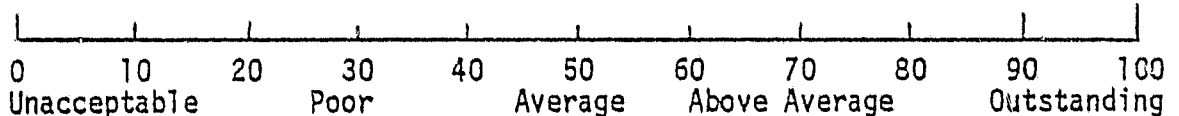
2. Involvement in self-generated police activity (arrests, citations, interrogations, etc.):



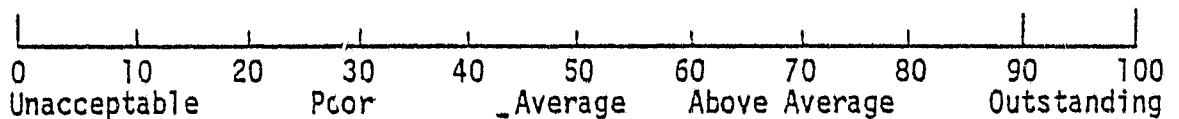
3. Performance of police activities without requiring direct supervision:



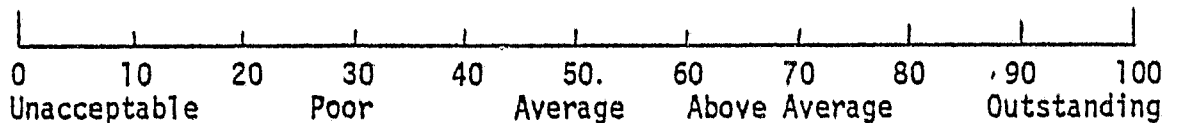
4. Quality of reports:



5. Amount of police work productivity:



Finally, considering all the officers with whom you have worked and all the officers whom you have supervised, rate the officer in question as to his/her overall effectiveness in the performance of police duties (NOT limited to physical performance). Place an "X" on the appropriate location along this line:



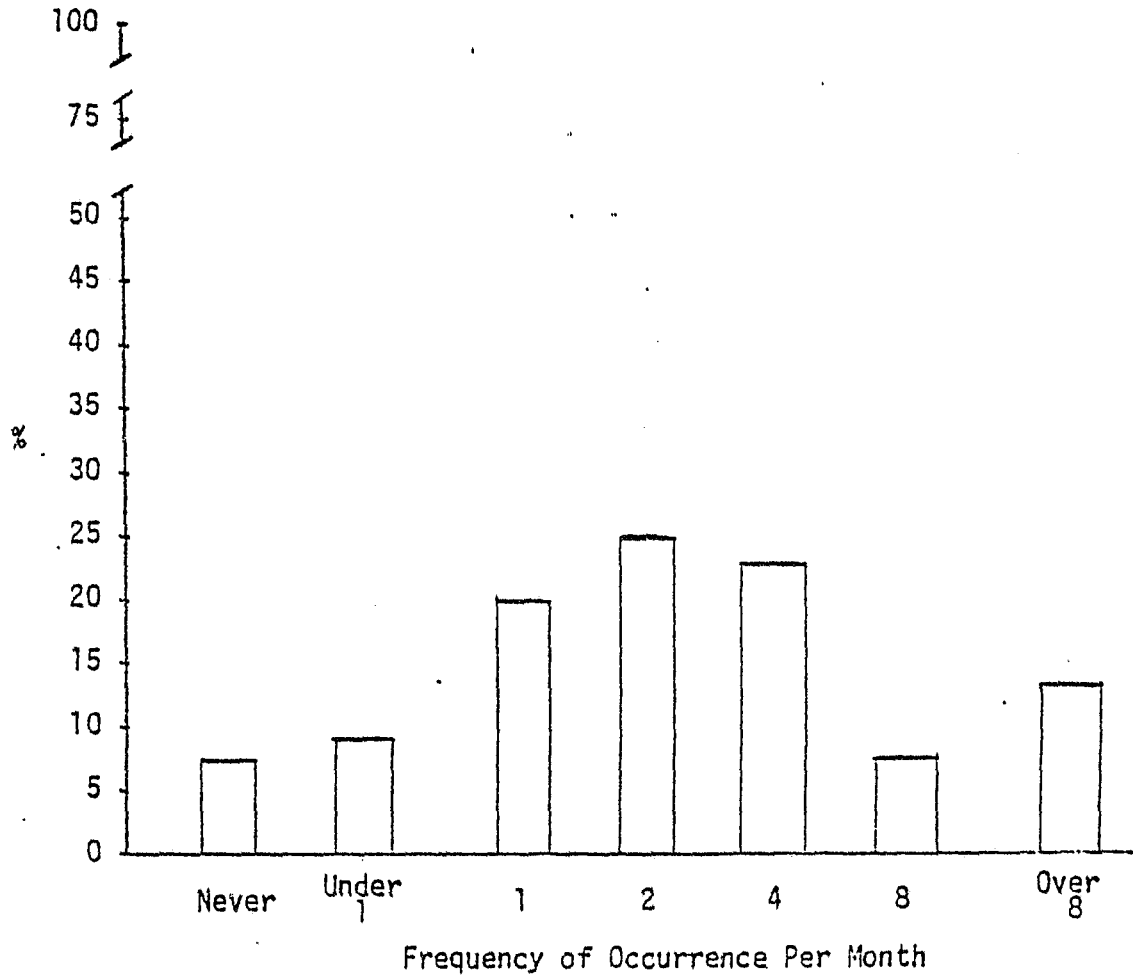
APPENDIX F

Figures 1-36

Figure 1

Activity: Climb- fences

All Officers



Statistical Significance: N/A

Conclusion: 89 percent of the officers answered in the categories equal to or greater than once per month; which indicates climbing fences is an activity common to a Phoenix Patrol Officer.

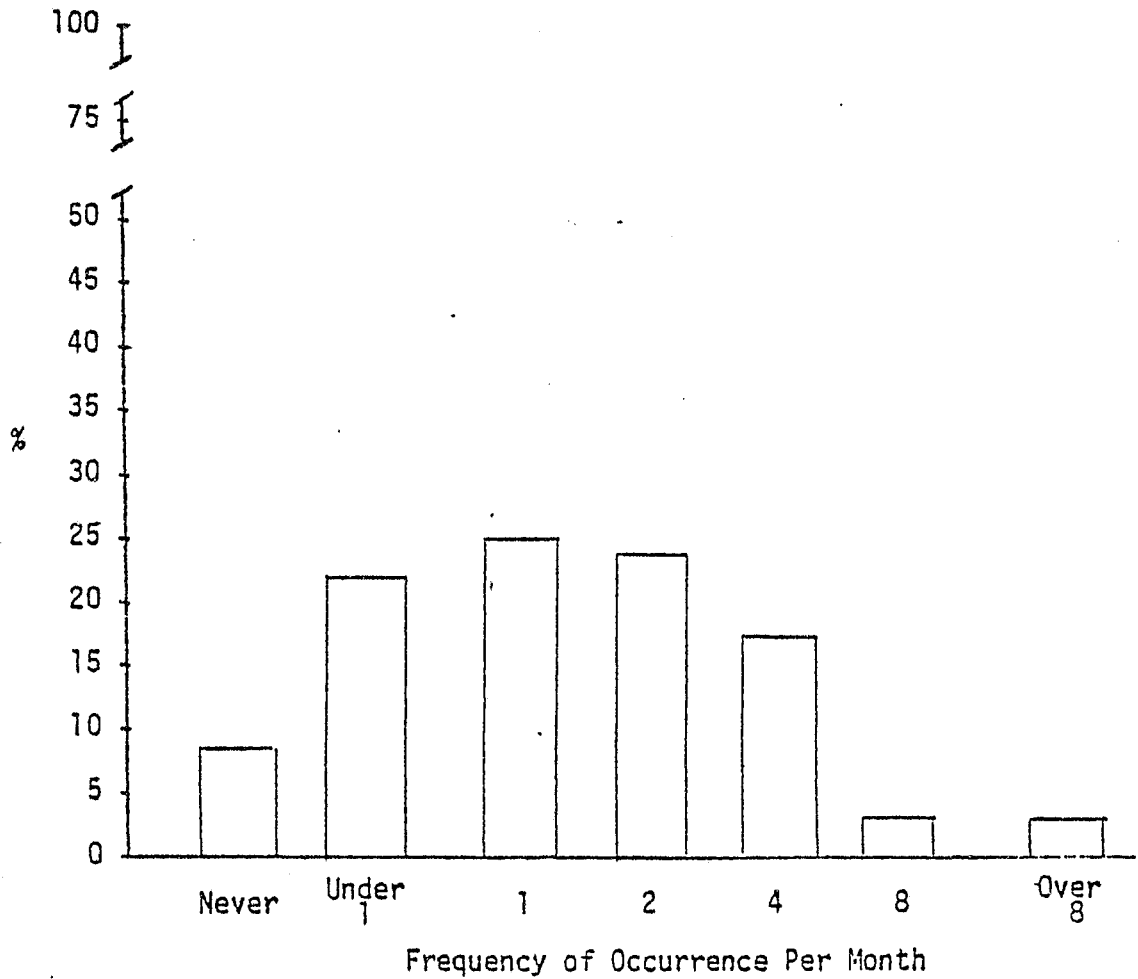
Source: Friedlander, ASU 1976



Figure 2

Activity: Cimb- walls

All Officers



Statistical Significance: N/A

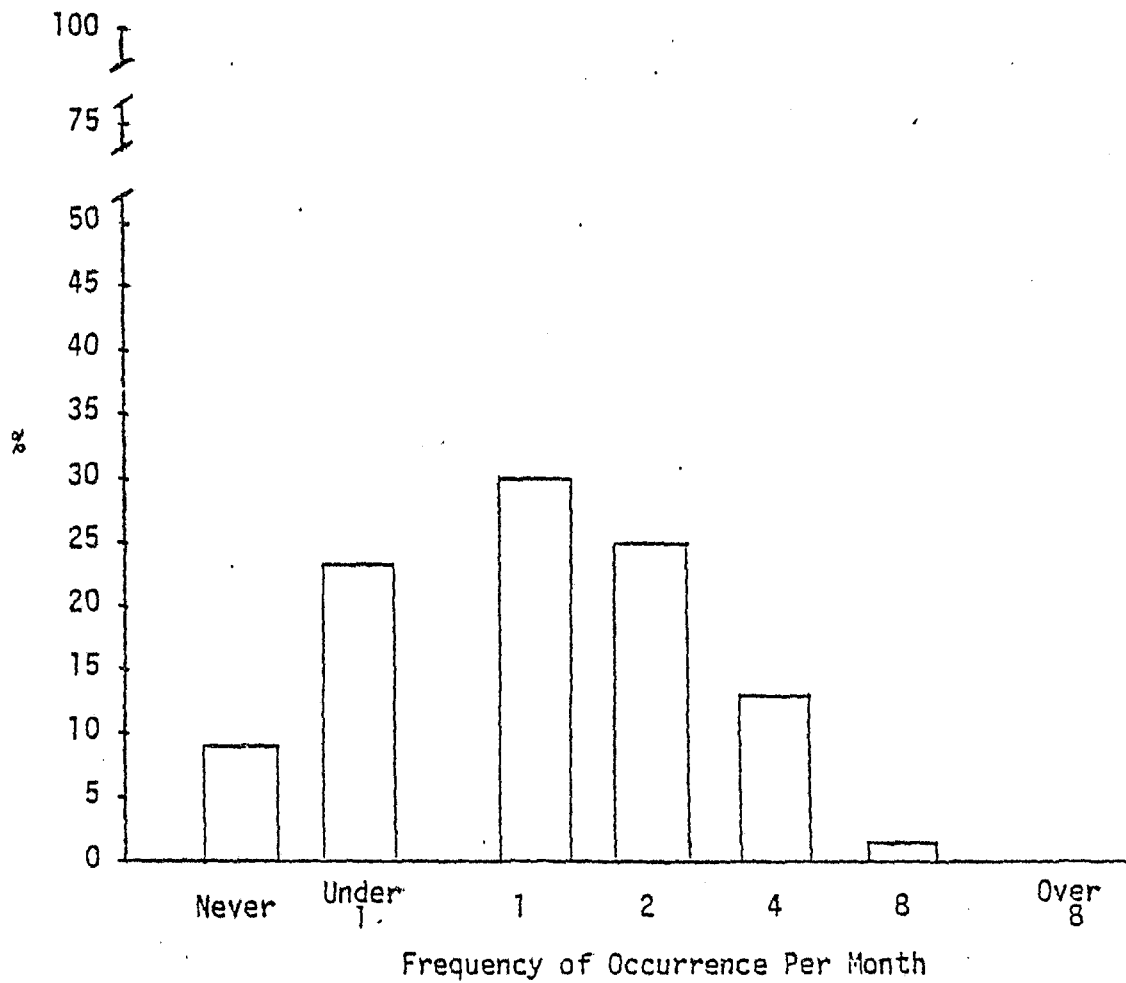
Conclusion: 71 percent of the officers performed this at least once per month; which indicates climbing walls to be an activity common to a Phoenix Patrol Officer.

Source: Friedlander, ASU 1976

Figure 3

Activity: Jump- ditches under 5 ft. wide

All Officers



Statistical Significance: N/A

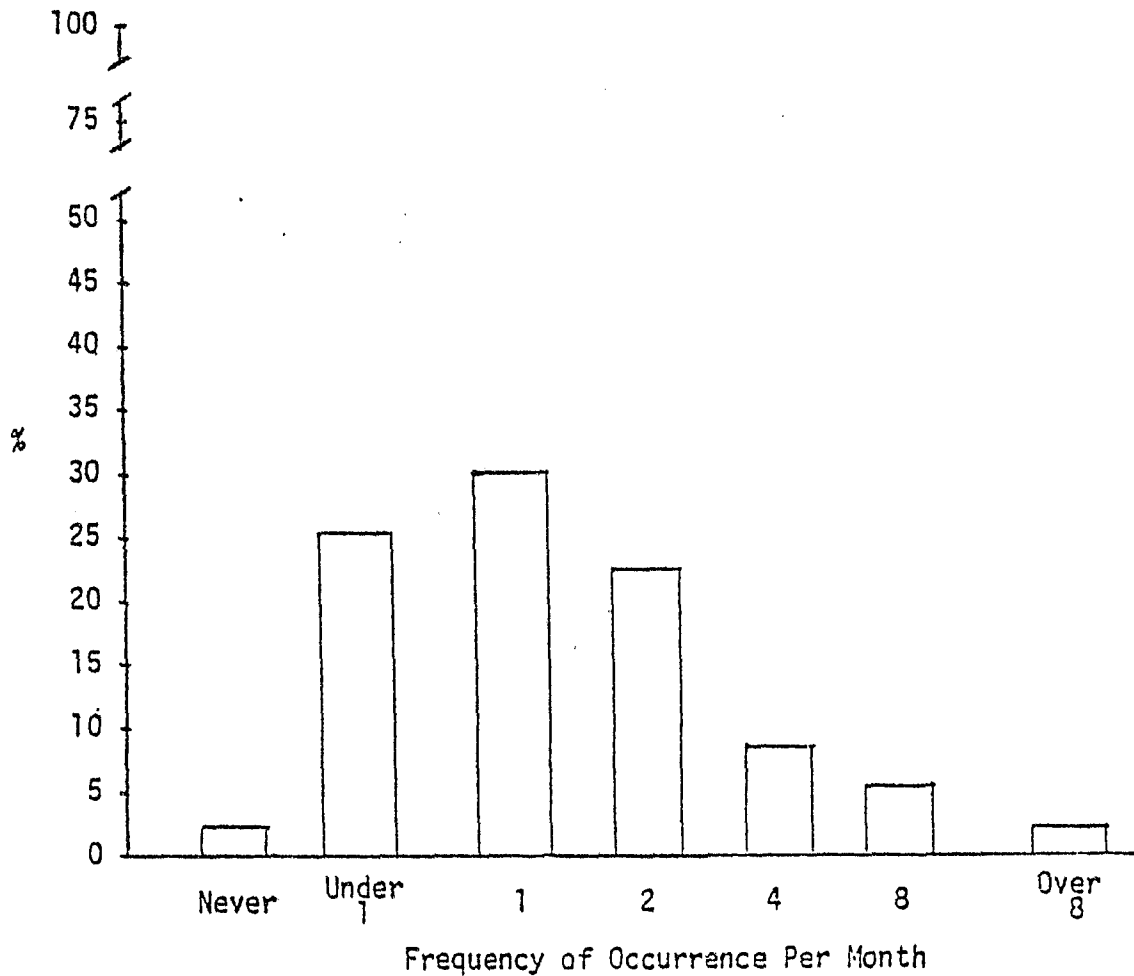
Conclusion: 68 percent of the officers performed this activity at least once per month; which indicates that jumping small ditches is a common activity for a Phoenix Patrol Officer.

Source: Friedlander, ASU 1976

Figure 5

Activity: Go through windows

All Officers



Statistical Significance: N/A

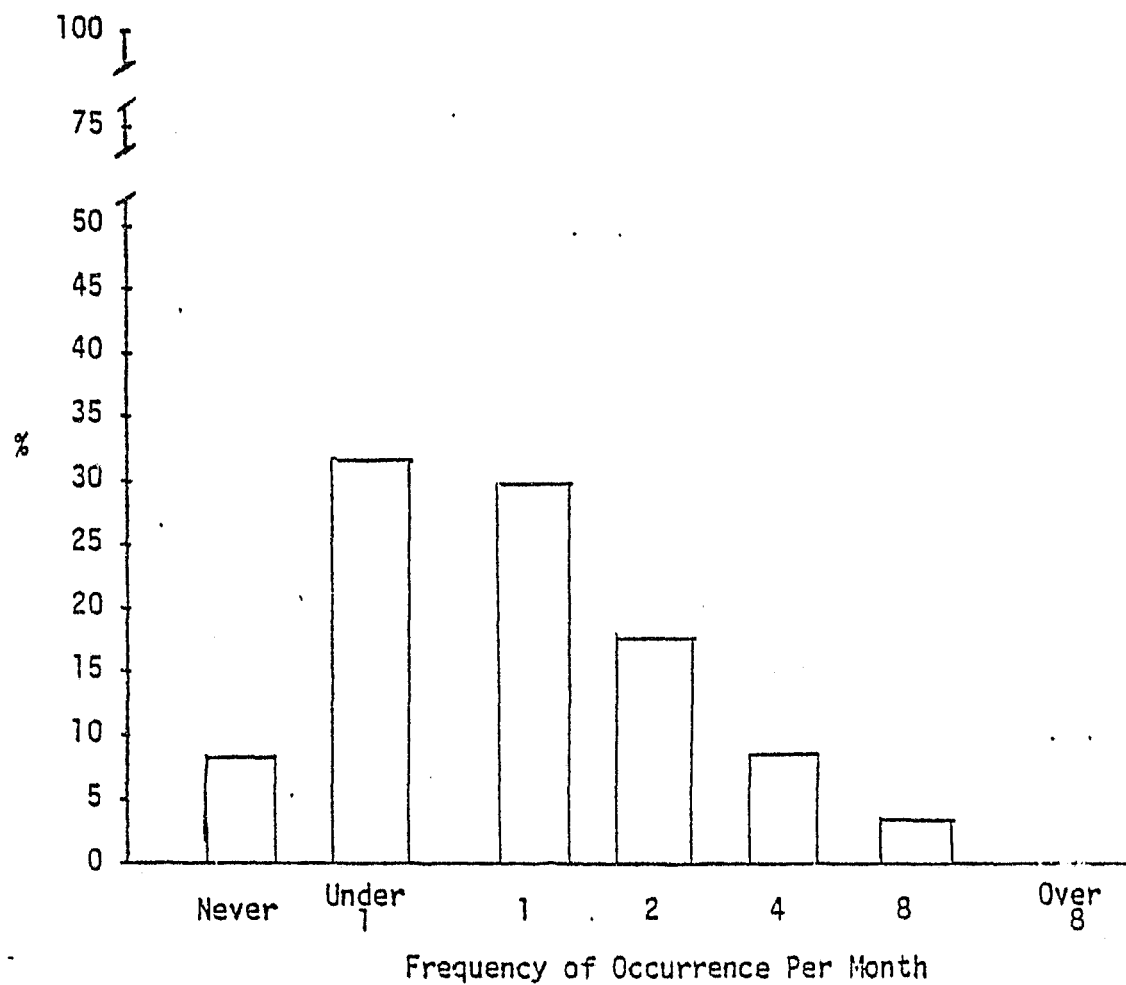
Conclusion: 71 percent of the officers performed this at least once per month; indicating going through windows as common to a Phoenix Patrol Officer.

Source: Friedlander, ASU 1976

Figure 6

Activity: Go through tight/small openings . . .

All Officers



Statistical Significance: N/A

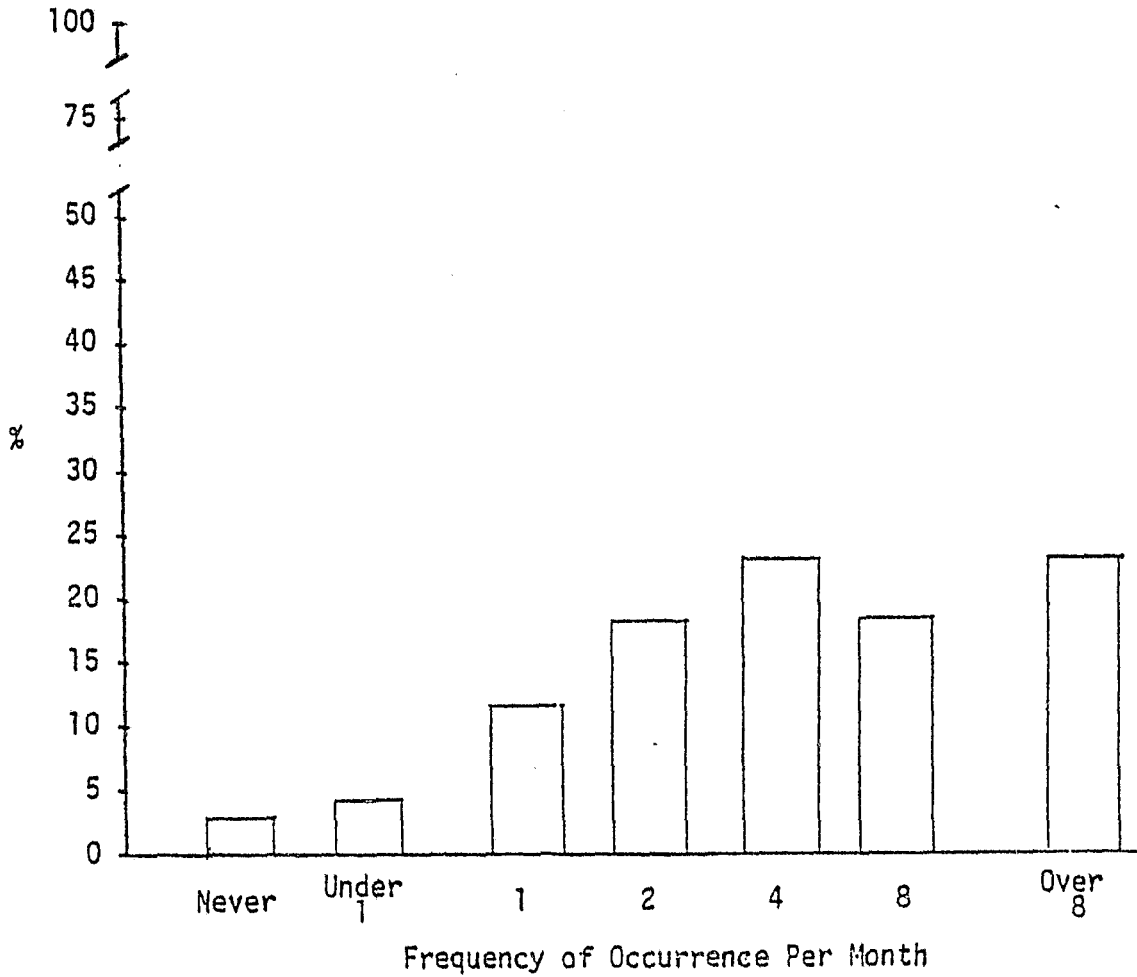
Conclusion: 60 percent of the officers performed this at least once per month; indicating that going through small openings was a common occurrence for a Phoenix Patrol Officer.

Source: Friedlander, ASU 1976

Figure 7

Activity: Go through gates in fences/walls

All Officers



Statistical Significance: N/A

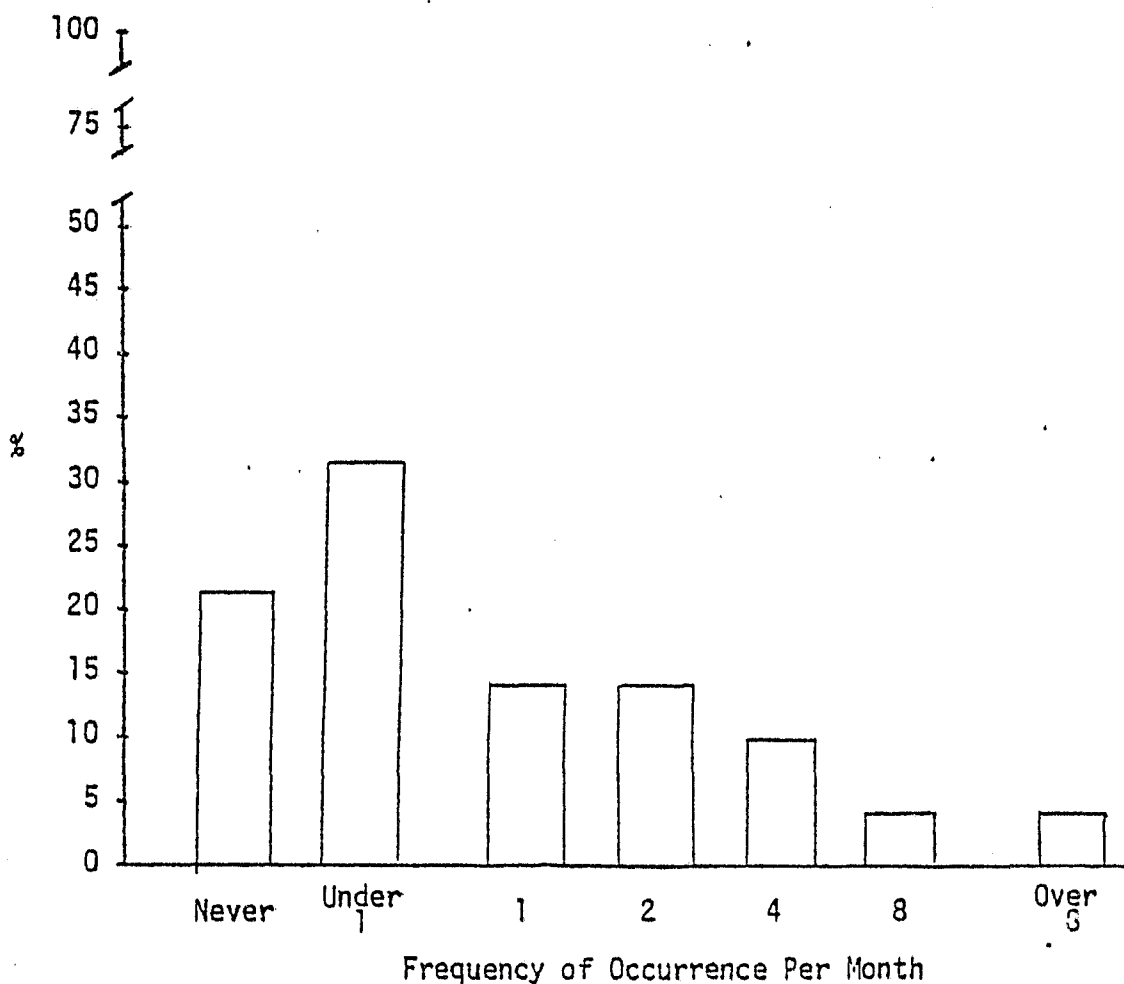
Conclusion: 94 percent of the officers performed this activity at least once per month; indicating this activity as being common to a Phoenix Patrol Officer.

Source: Friedlander, ASU 1975

Figure 8

Activity: Negotiate rough or rocky terrain

All Officers



Statistical Significance: N/A

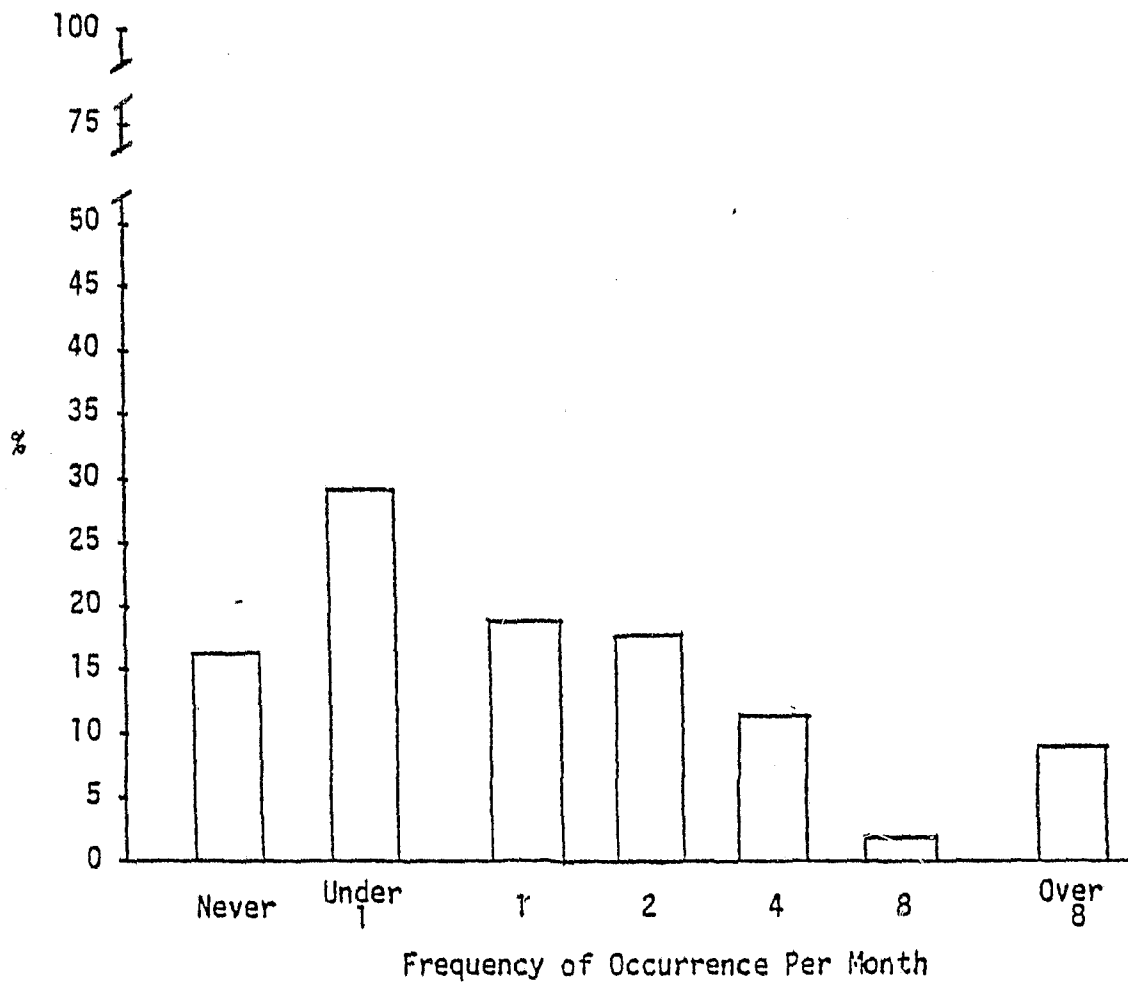
Conclusion: 46 percent of the officers performed this activity at least once per month, but 35 percent performed this at least twice per month; which becomes significant and indicated negotiating rough terrain as a necessary activity to be performed by a Phoenix Patrol Officer.

Source: Friedlander, ASU 1976

Figure 9

Activity: Drag- victim, suspect or object

All Officers



Statistical Significance: N/A

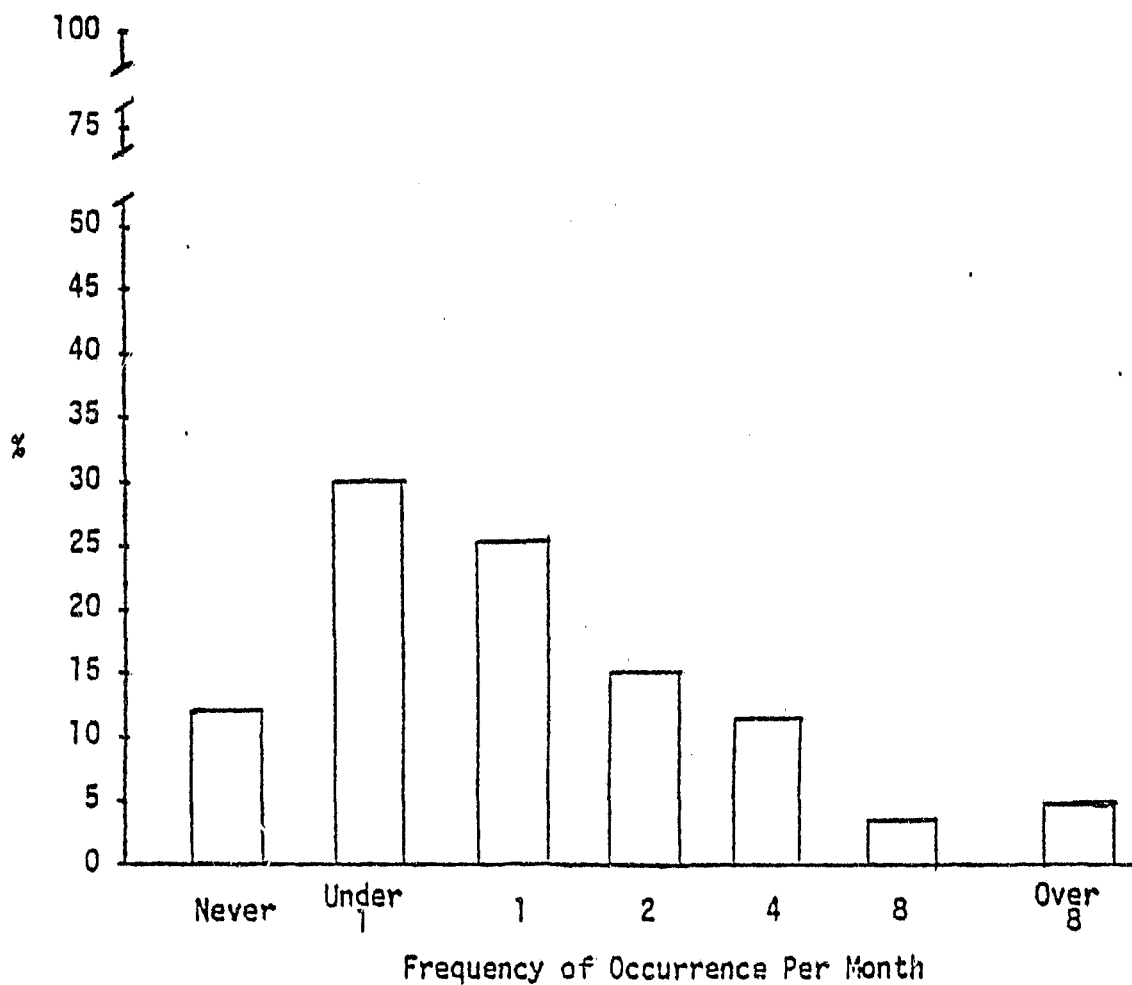
Conclusion: 55 percent of the officers performed this at least once per month; indicating dragging something as common to a Phoenix Patrol Officer.

Source: Friedlander, ASU 1976

Figure 10

Activity: Lift- victim or suspect

All Officers



Statistical Significance: N/A

Conclusion: 58 percent of the officers performed this activity at least once per month; indicating lifting victims or suspects as a common task for a Phoenix Patrol Officer.

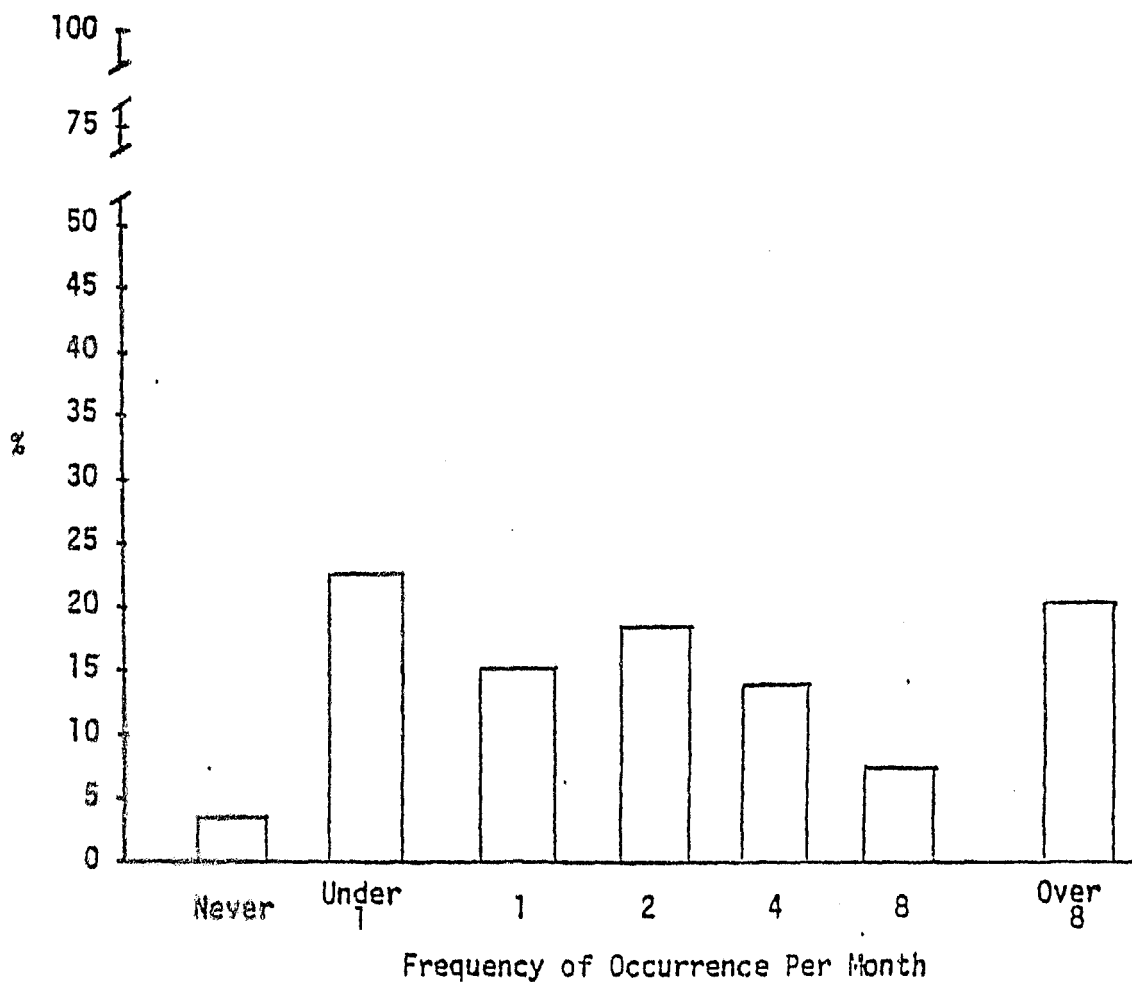
Source: Friedlander, ASU 1976



Figure 11

Activity: Lift- objects under 100 pounds

All Officers



Statistical Significance: N/A -

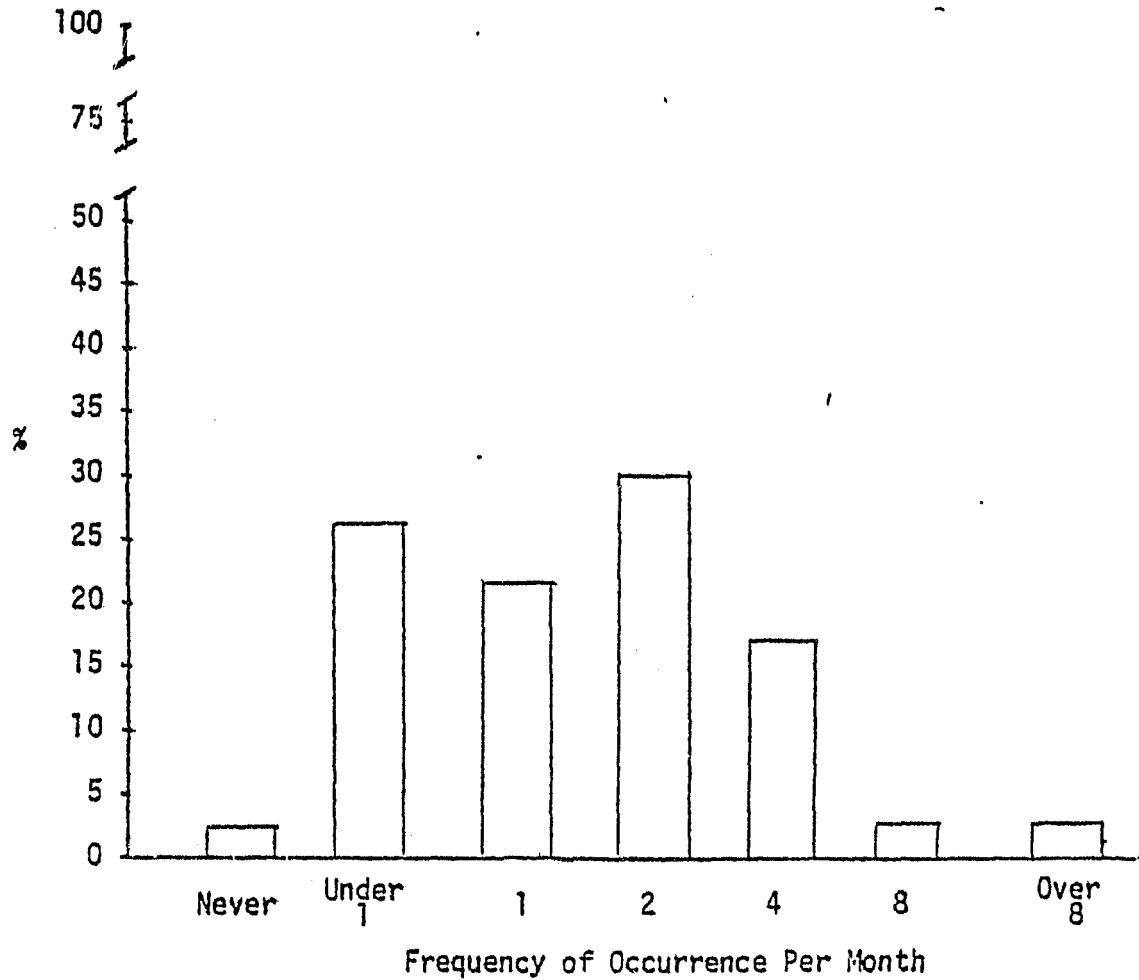
Conclusion: 74 percent of the officers performed this at least once per month; indicating lifting objects as common to a Phoenix Patrol Officer.

Source: Friedlander, ASU 1976

Figure 12

Activity: Immobilize and/or restrain struggling victim or suspect

All Officers



Statistical Significance: N/A

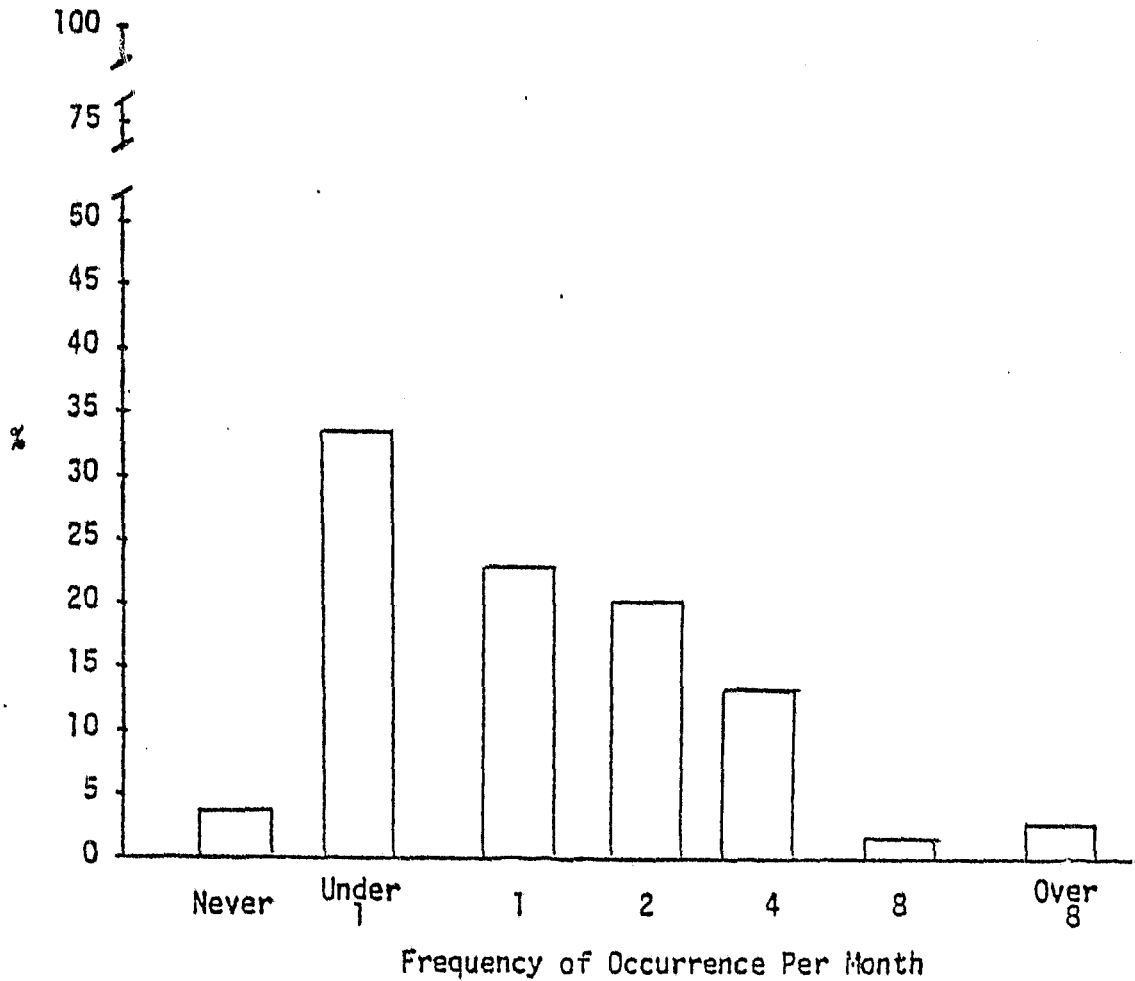
Conclusion: 72 percent of the officers performed this task at least once per month; indicating this as common to a Phoenix Patrol Officer.

Source: Friedlander, ASU 1976

Figure 13

Activity: Force struggling suspect into the rear seat of the police vehicle

All Officers



Statistical Significance: N/A

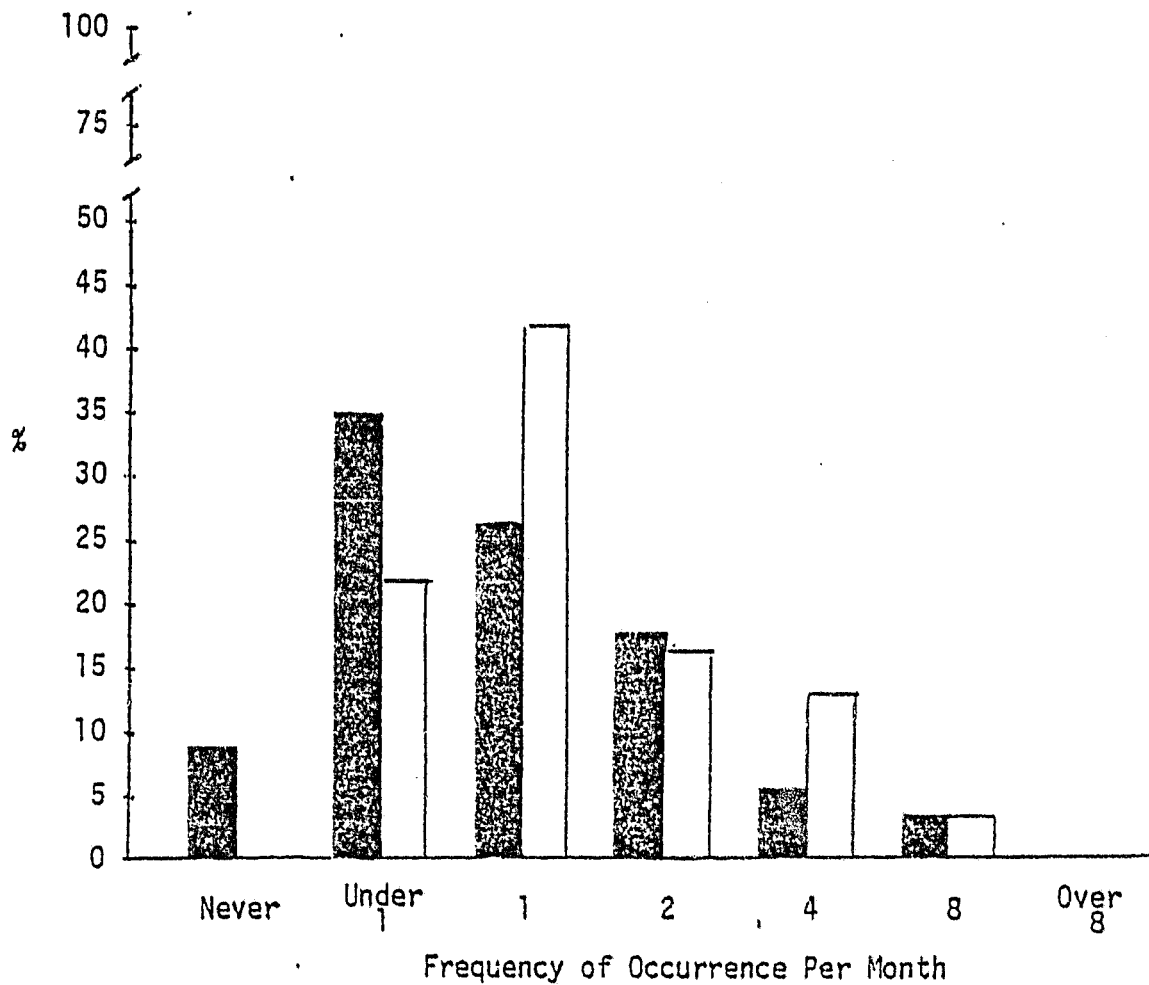
Conclusion: 62 percent of the officers force struggling suspects into their vehicles at least once per month; indicating this task as common to a Phoenix Patrol Officer.

Source: Friedlander, ASU 1976

Figure 14

ACTIVITY: Go through tight/small openings

Males vs. Females: Males-■ Females-□



Statistical Significance: .0105

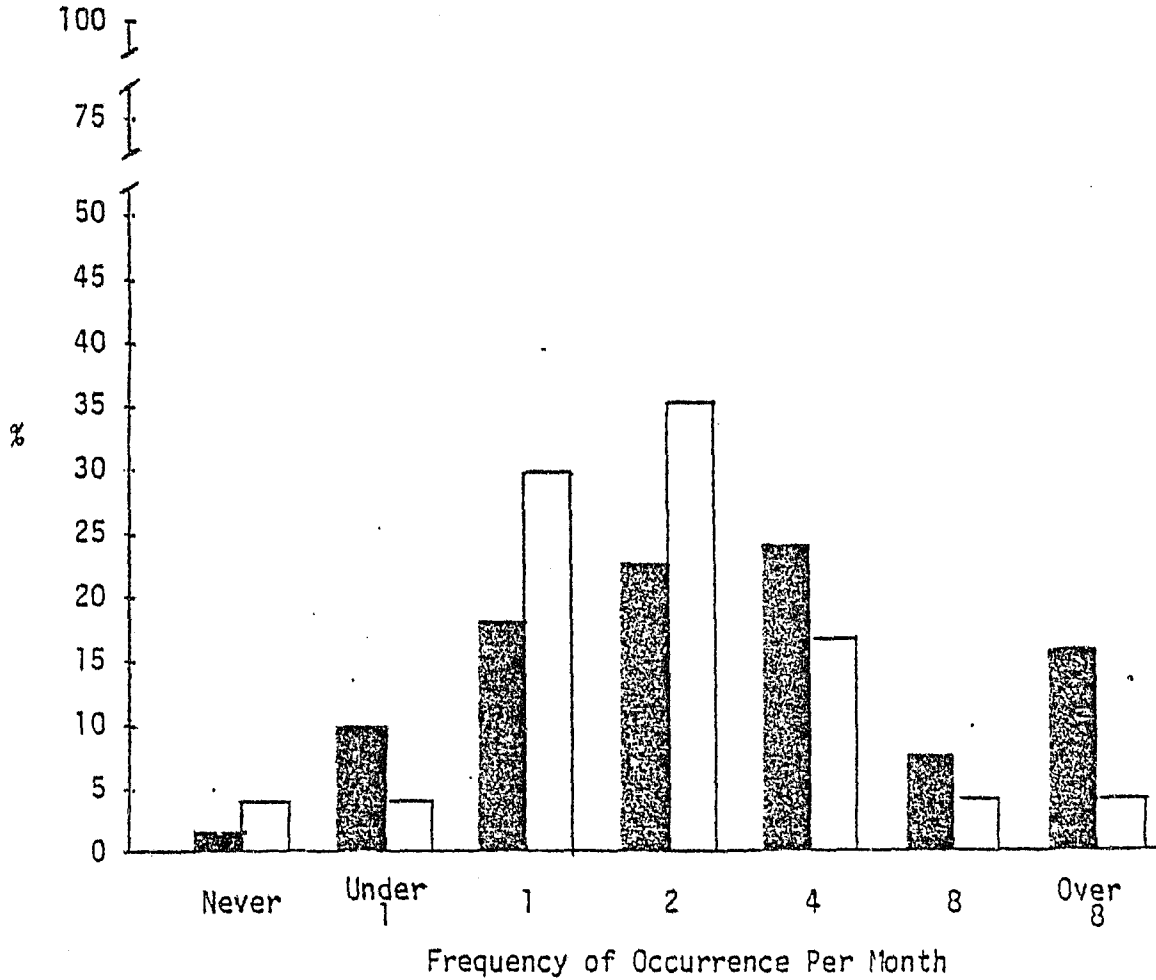
Conclusion: Women performed this task significantly more often than the men.

Source: Friedlander, ASU 1976

Figure 15

ACTIVITY: Climb- fences

Males vs. Females : Males- ■ Females- □



Statistical Significance: .0171

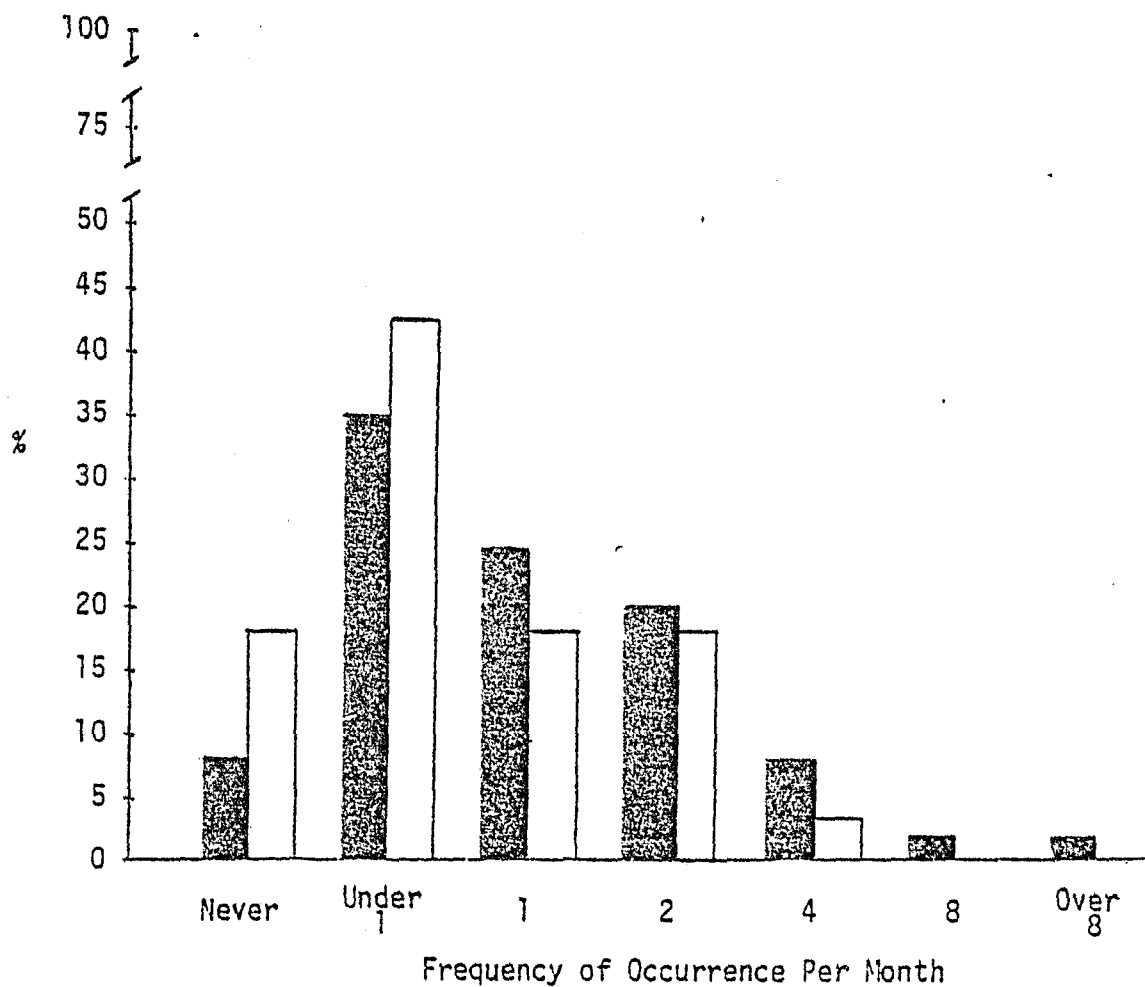
Conclusion: The male officers performed this activity significantly more often than the women.

Source: Friedlander, ASU 1976

Figure 16

ACTIVITY: Climb- Ladders

Males vs. Females : Males-■ Females-□



Statistical Significance: .0112

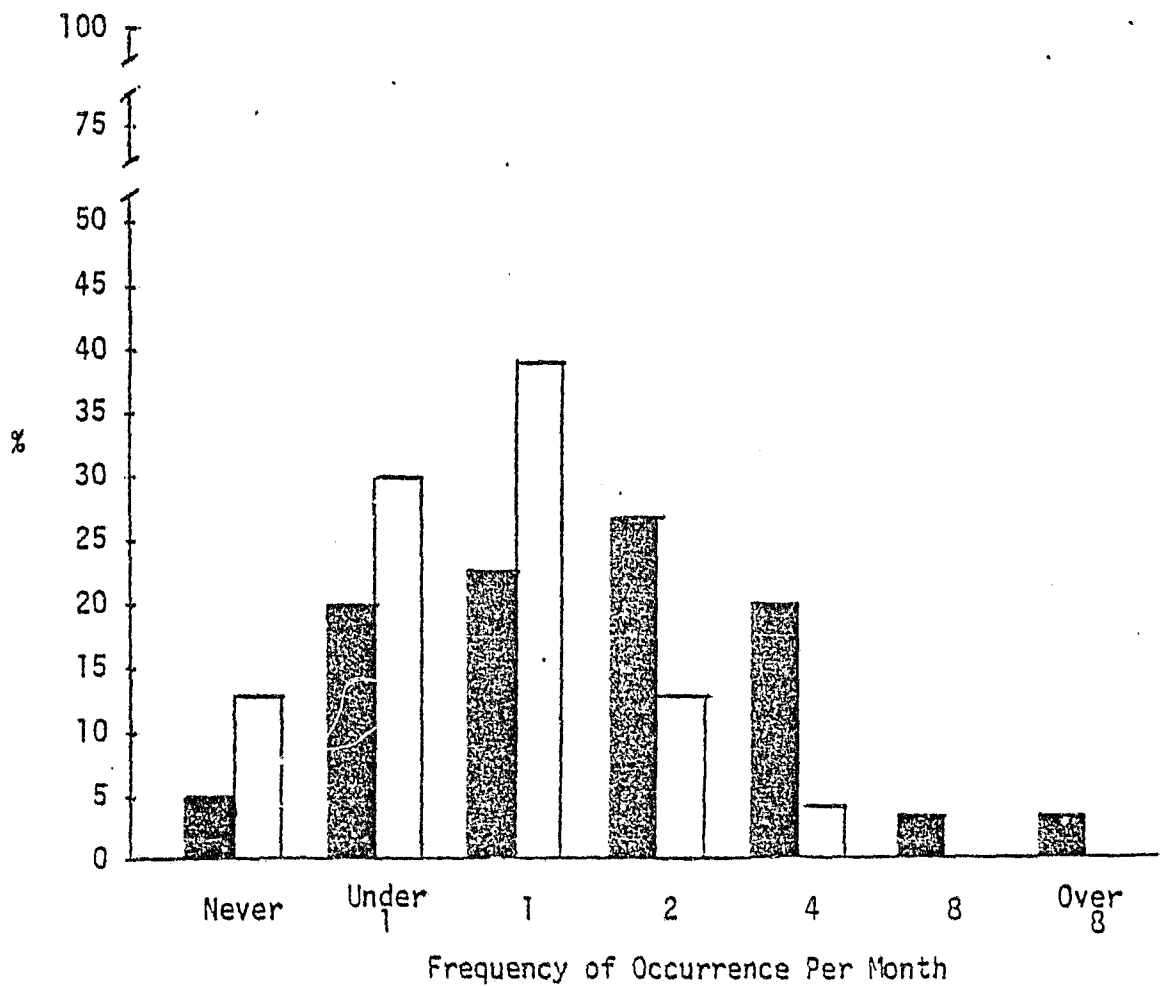
Conclusion: The male officers performed this more often than the female patrol officers.

Source: Friedlander, ASU 1976

Figure 17

ACTIVITY: Climb- walls

Males vs. Females : Males-■ Females-□




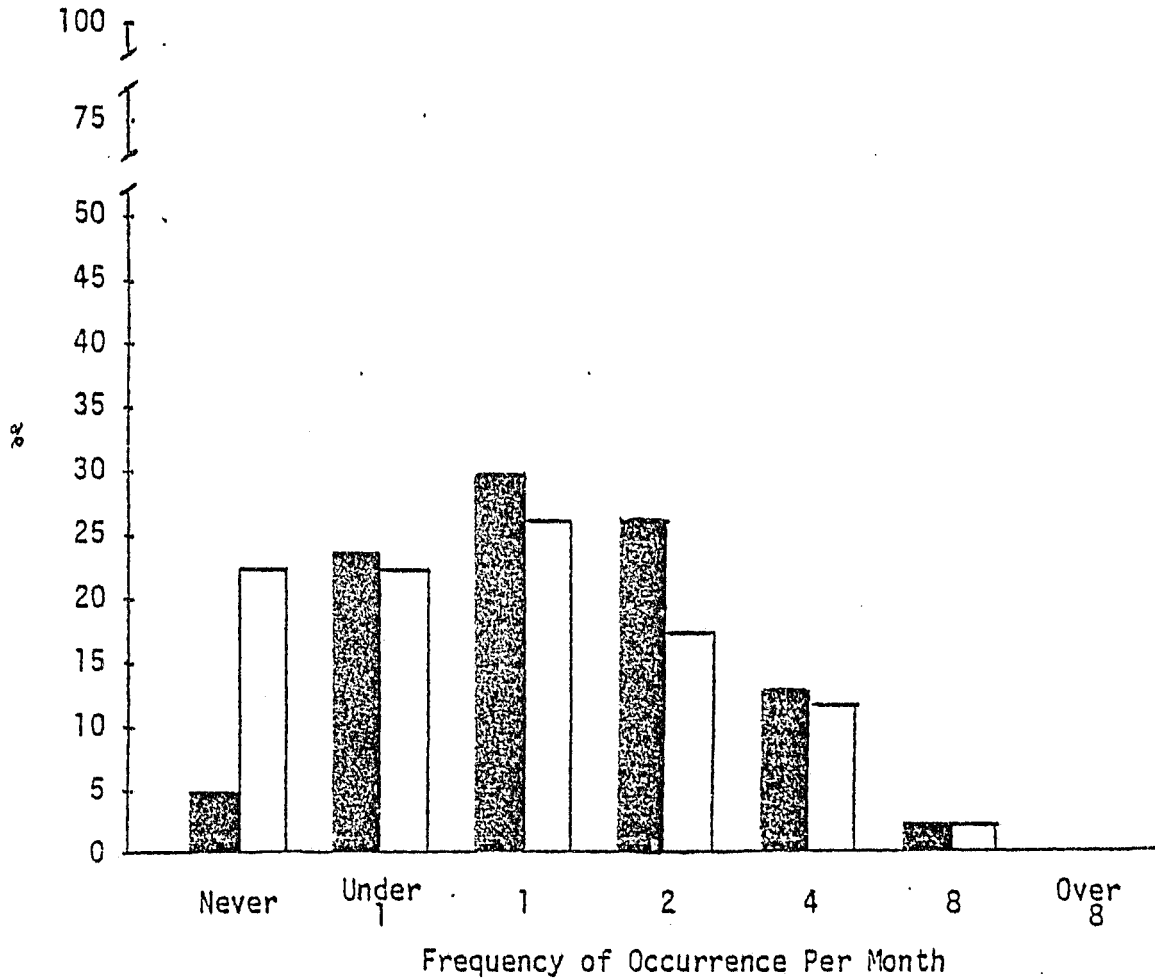

Statistical Significance: .0000

Conclusion: The men performed this task significantly more often than the women.

Source: Friedlander, ASU 1976

Figure 18

ACTIVITY: Jump- ditches under 5 ft. wide

Males vs. Females : Males-  Females- 

Statistical Significance: .0229

Conclusion: The men performed this activity more often than the women.

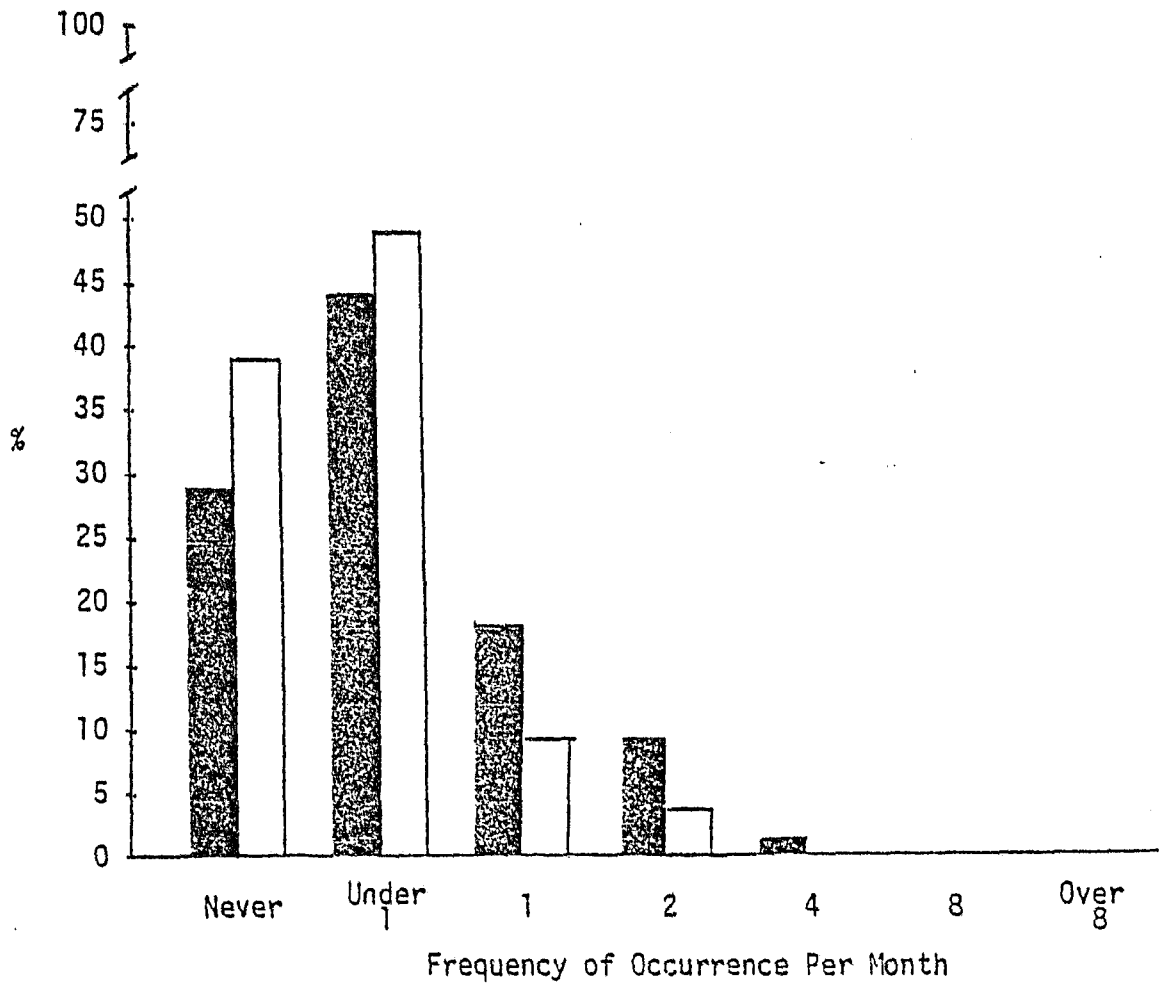
Source: Friedlander, ASU 1976



Figure 19

ACTIVITY: Jump- ditches over 5 ft. wide

Males vs. Females : Males-■ Females-□



Statistical Significance: .0382

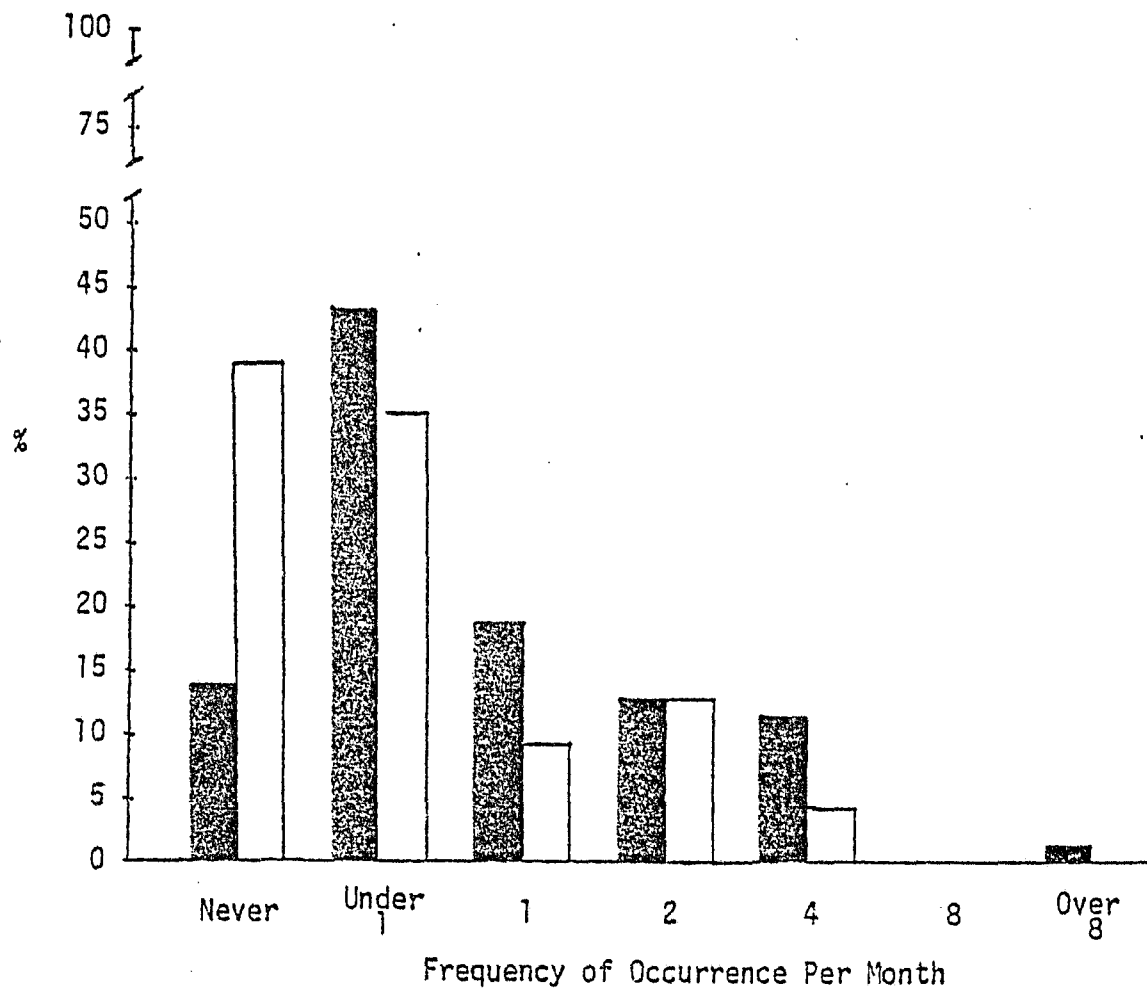
Conclusion: The men performed this activity more often than the women.

Source: Friedlander, AS. 1976

Figure 20

ACTIVITY: Jump- fences

Males vs. Females : Males-■ Females-□



Statistical Significance: .0013

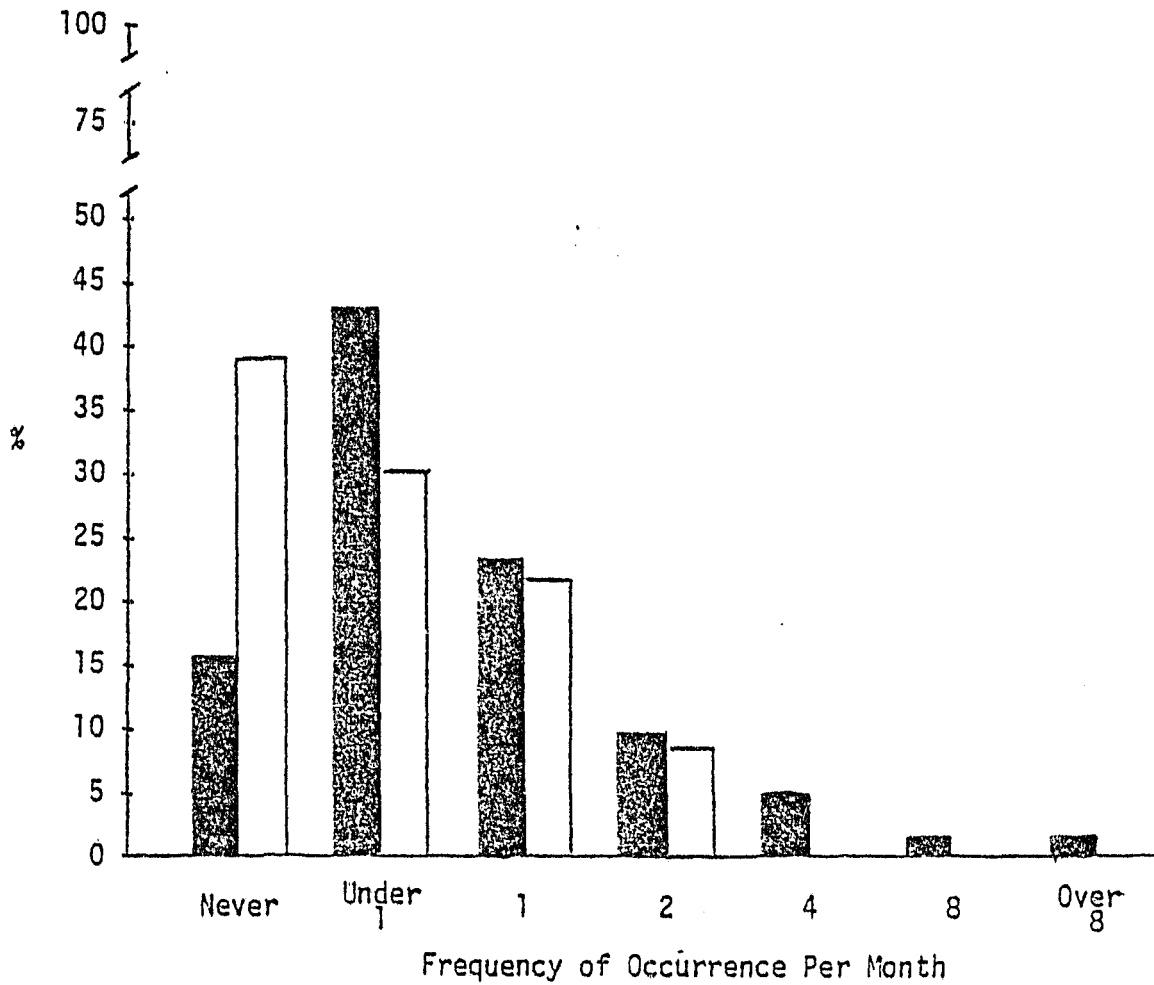
Conclusion: The men performed this task significantly more often than the women.

Source: Friedlander, ASU 1976

Figure 21

ACTIVITY: Jump- hedges

Males vs. Females : Males- ■ Females- □



Statistical Significance: .0052

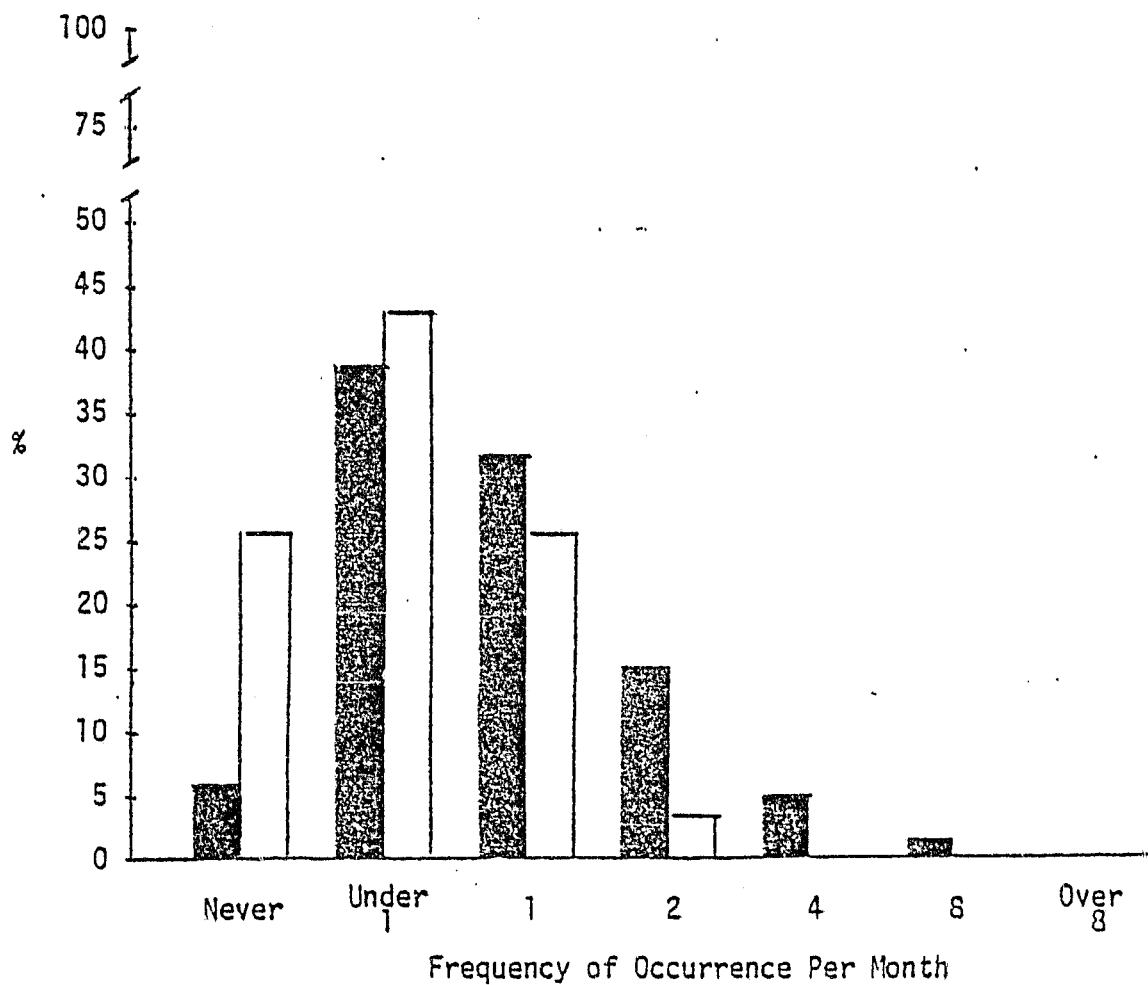
Conclusion: The male officers performed this task significantly more often than the women.

Source: Friedlander, ASU 1976

Figure 22

ACTIVITY: Run- 1 block

Males vs. Females: Males-■ Females-□



Statistical Significance: .0001

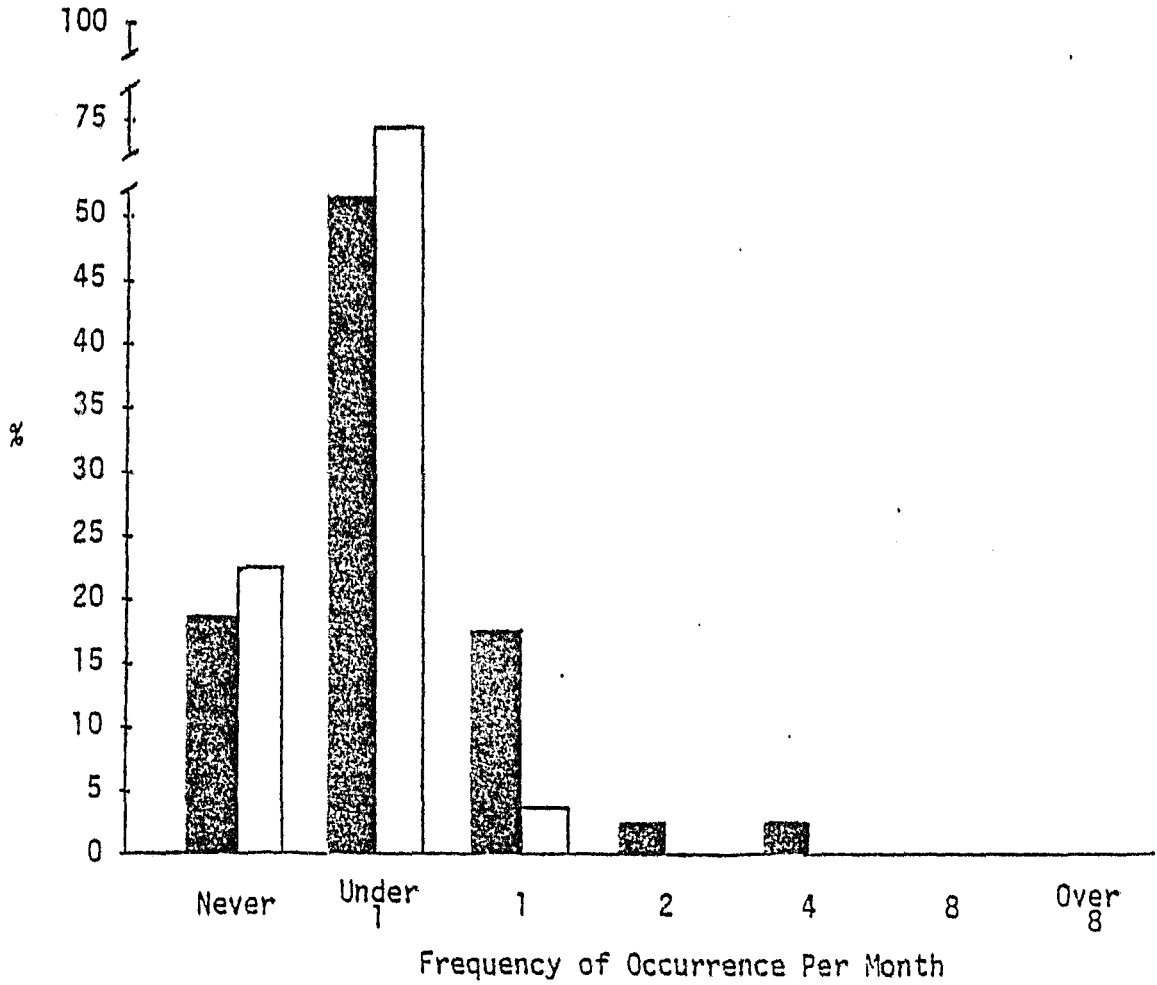
Conclusion: The male officers performed this activity significantly more often than the women.

Source: Friedlander, ASU 1976

Figure 23

ACTIVITY: Run- 2 blocks (200 yds.)

Males vs. Females: Males-■ Females-□




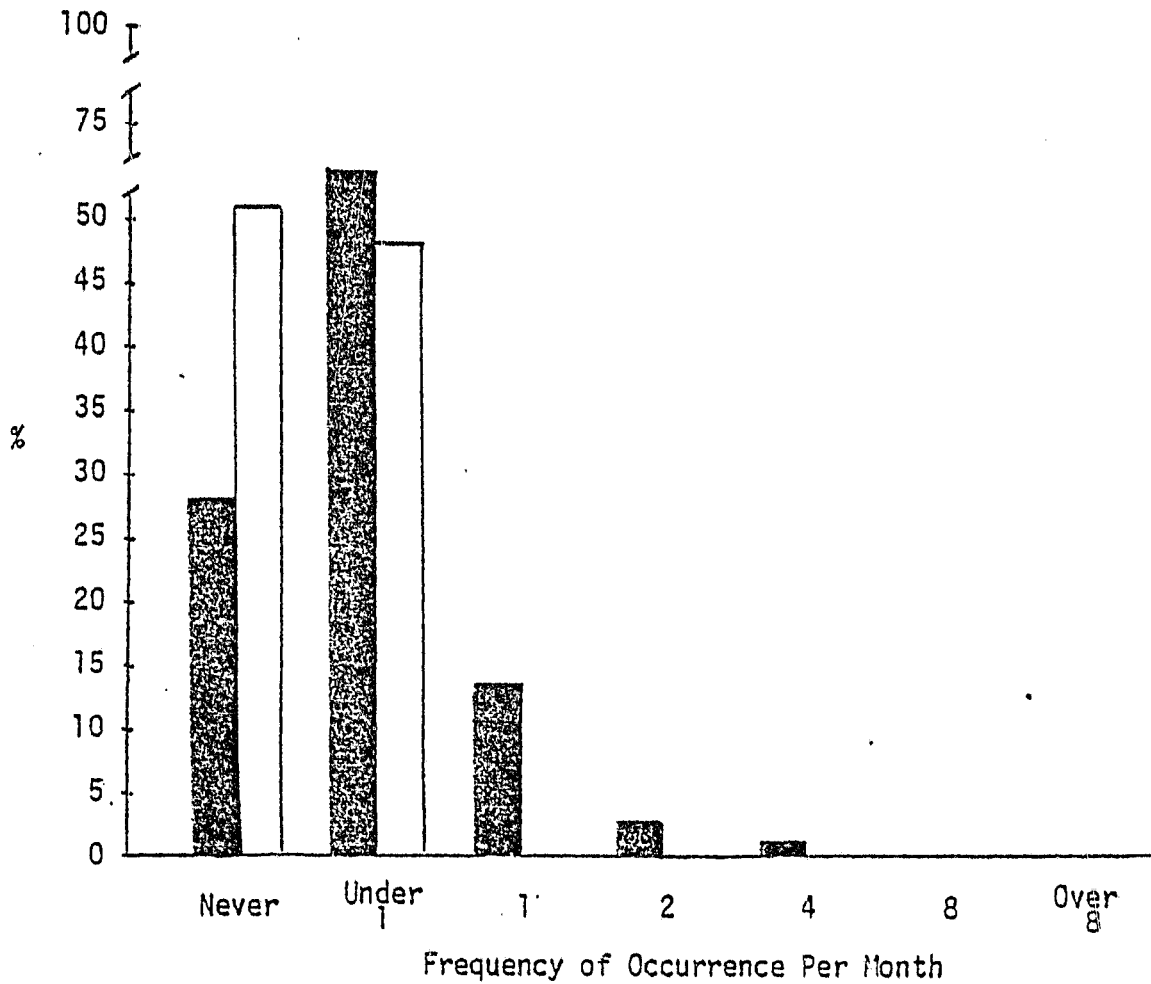

Statistical Significance: .0296

Conclusion: The men perform this activity more often than the women.

Source: Friedlander, ASU 1976

Figure 24

ACTIVITY: Run- 3 blocks (300 yds.)

Males vs. Females : Males-  Females- 

Statistical Significance: .0006

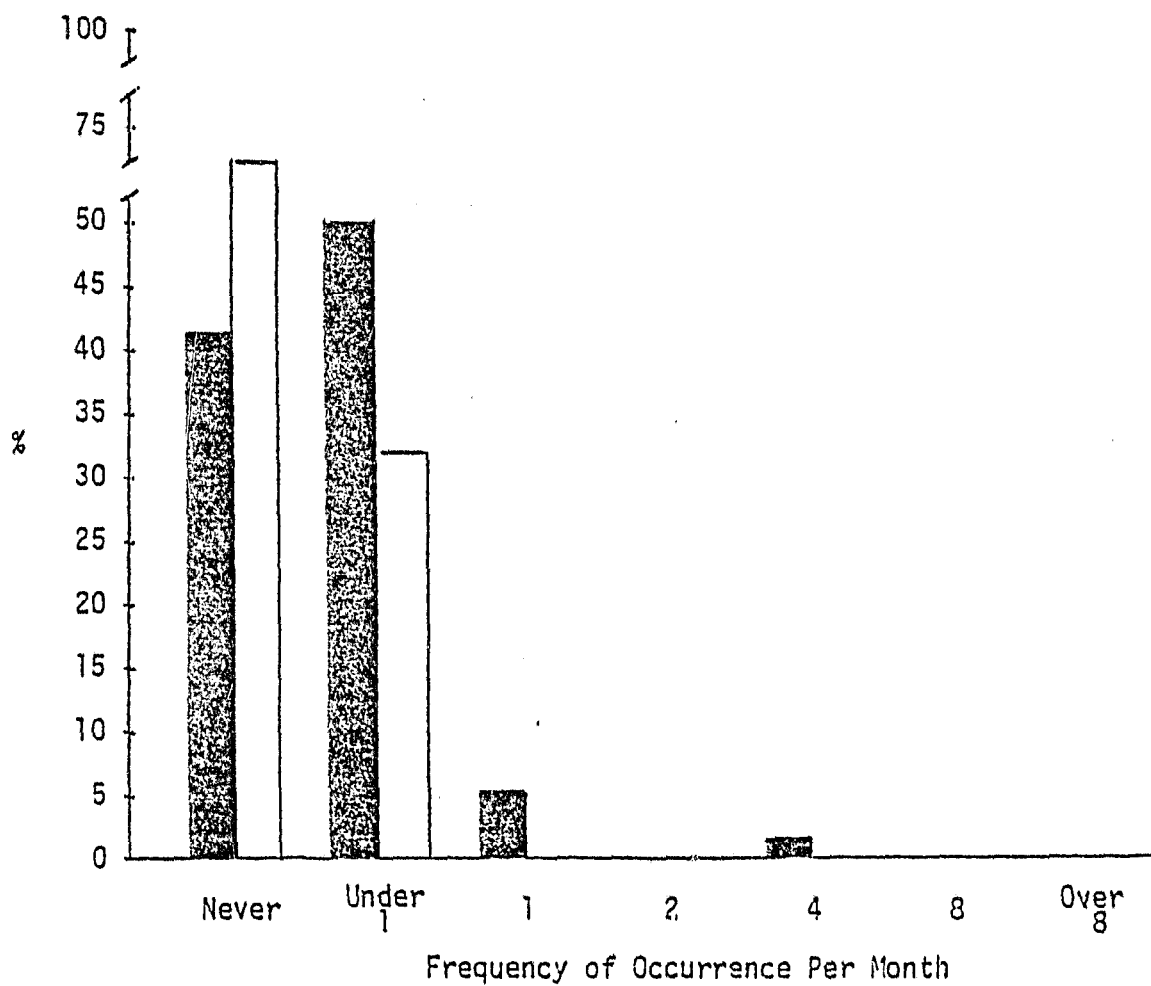
Conclusion: The male officers performed this activity more often than the women.

Source: Friedlander, ASU 1976

Figure 25

ACTIVITY: Run- over 3 blocks

Males vs. Females : Males-■ Females-□



Statistical Significance: .0023

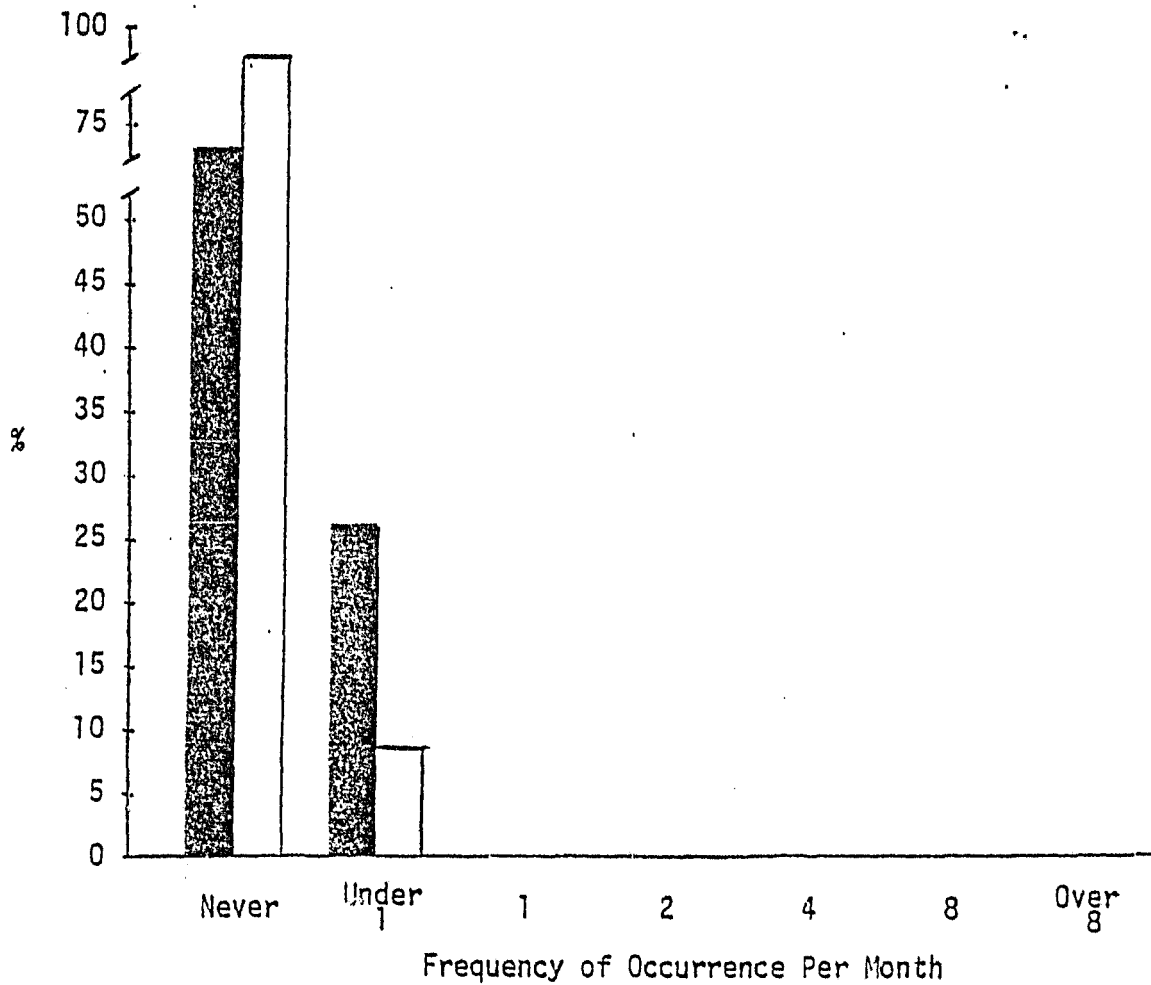
Conclusion: The male officers performed this task significantly more often than the women.

Source: Friedlander, ASU 1976

Figure 26

ACTIVITY: Run- over 1 mile

Males vs. Females : Males- ■ Females- □



Statistical Significance: .0292

Conclusion: The men performed this activity more often than the women.

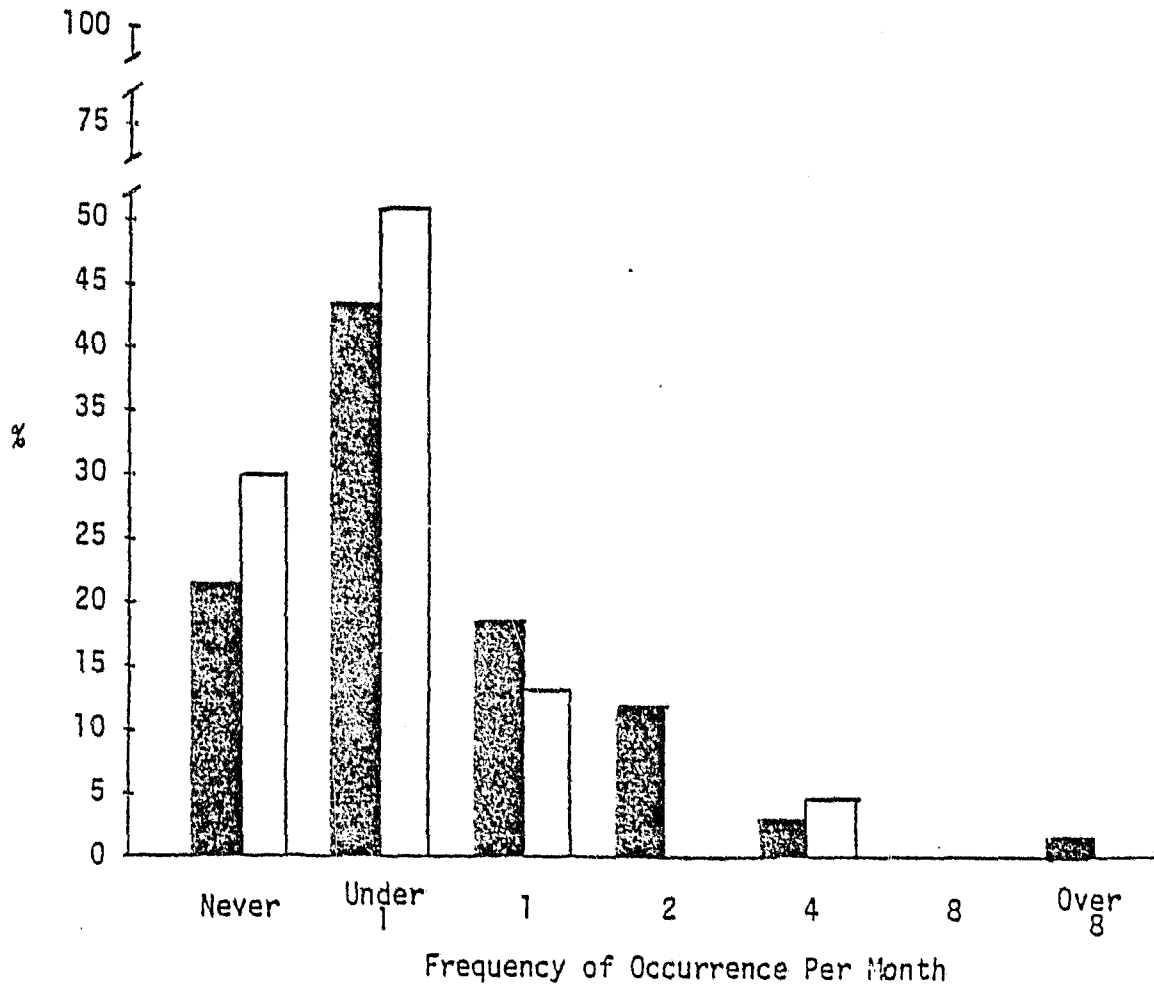
Source: Friedlander, ASU 1976



Figure 27

ACTIVITY: Tackle suspect

Males vs. Females : Males-■ Females-□



Statistical Significance: .0257

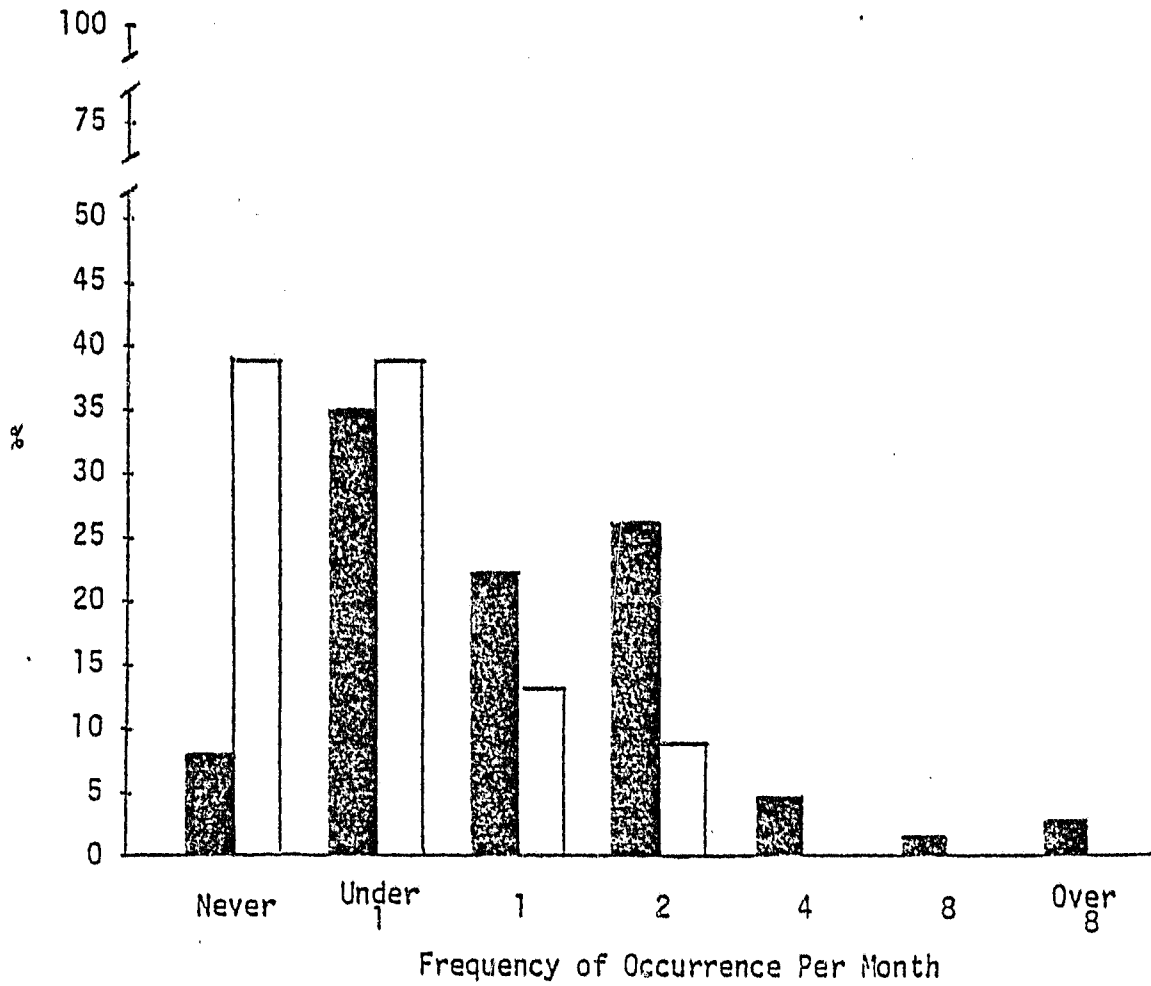
Conclusion: The men performed this task more often than the women.

Source: Friedlander, ASU 1976

Figure 28.

ACTIVITY: Wrestle with suspect without help

Males vs. Females: Males-■ Females-□



Statistical Significance: .0000

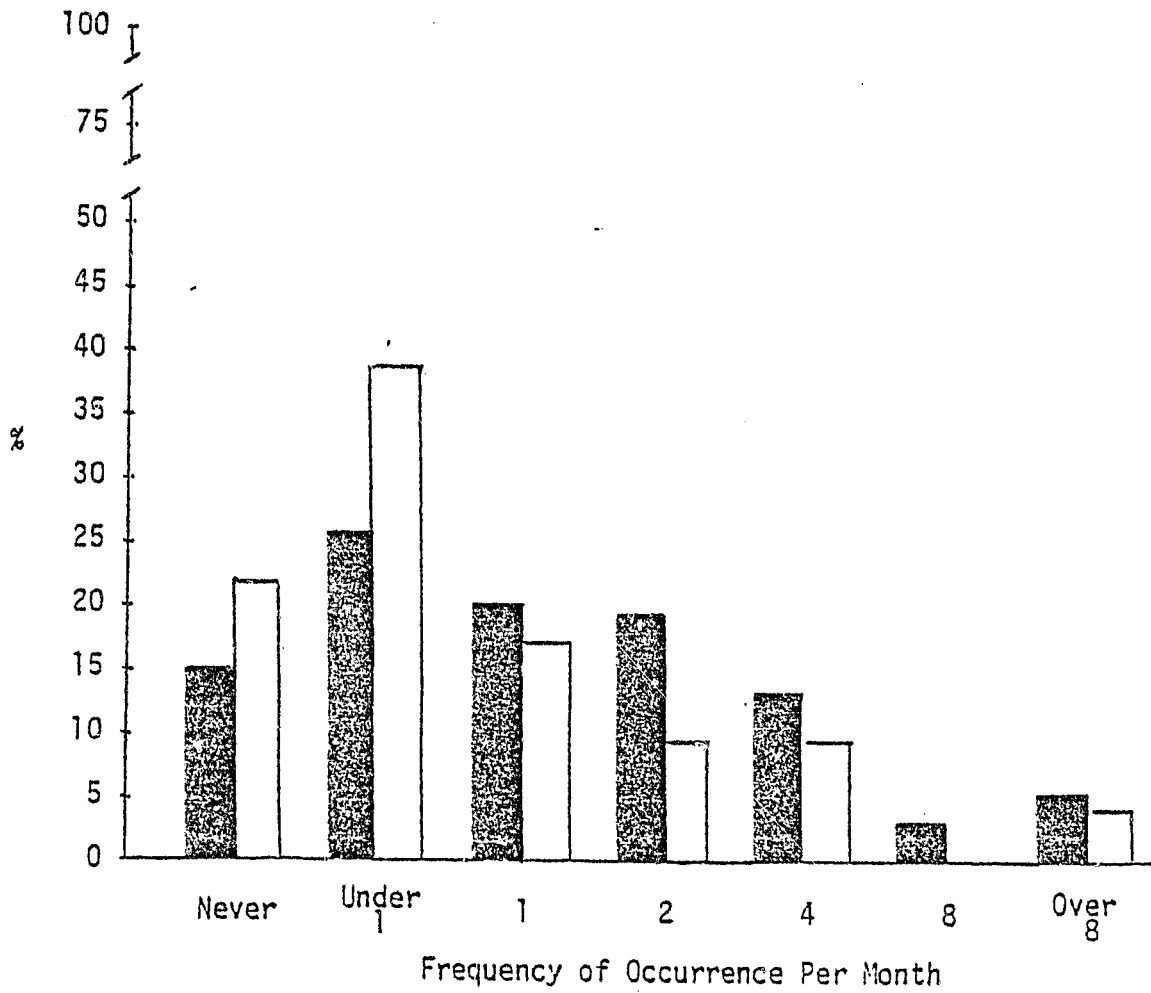
Conclusion: The men performed this task significantly more often than the women.

Source: Friedlander, ASU 1976

Figure 29

ACTIVITY: Drag- victim, suspect or object

Males vs. Females: Males-■ Females-□



Statistical Significance: .0142

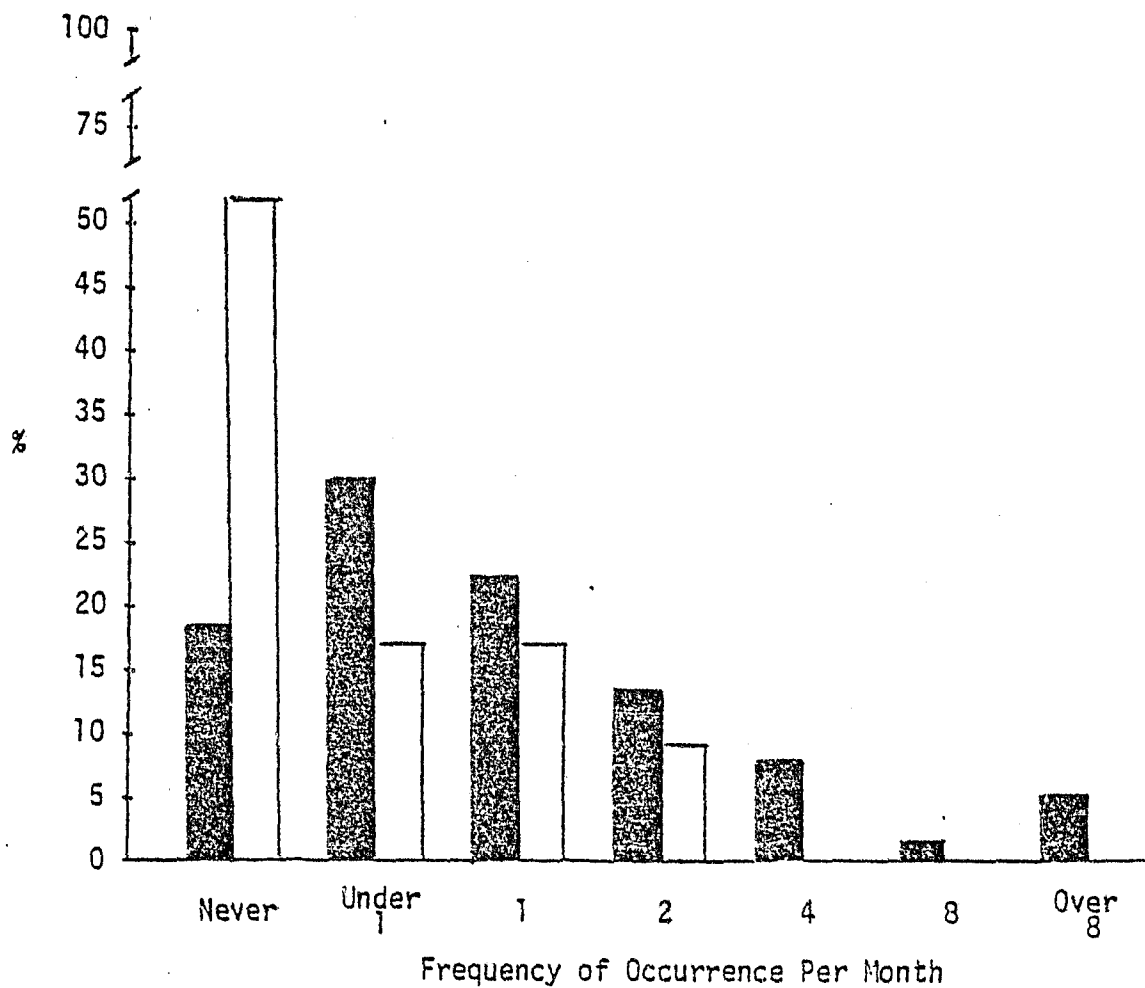
Conclusion: The men performed this activity more often than the women.

Source: Friedlander, ASU 1975

Figure 30

ACTIVITY: Lift- objects over 100 pounds

Males vs. Females : Males- ■ Females- □



Statistical Significance: .0000

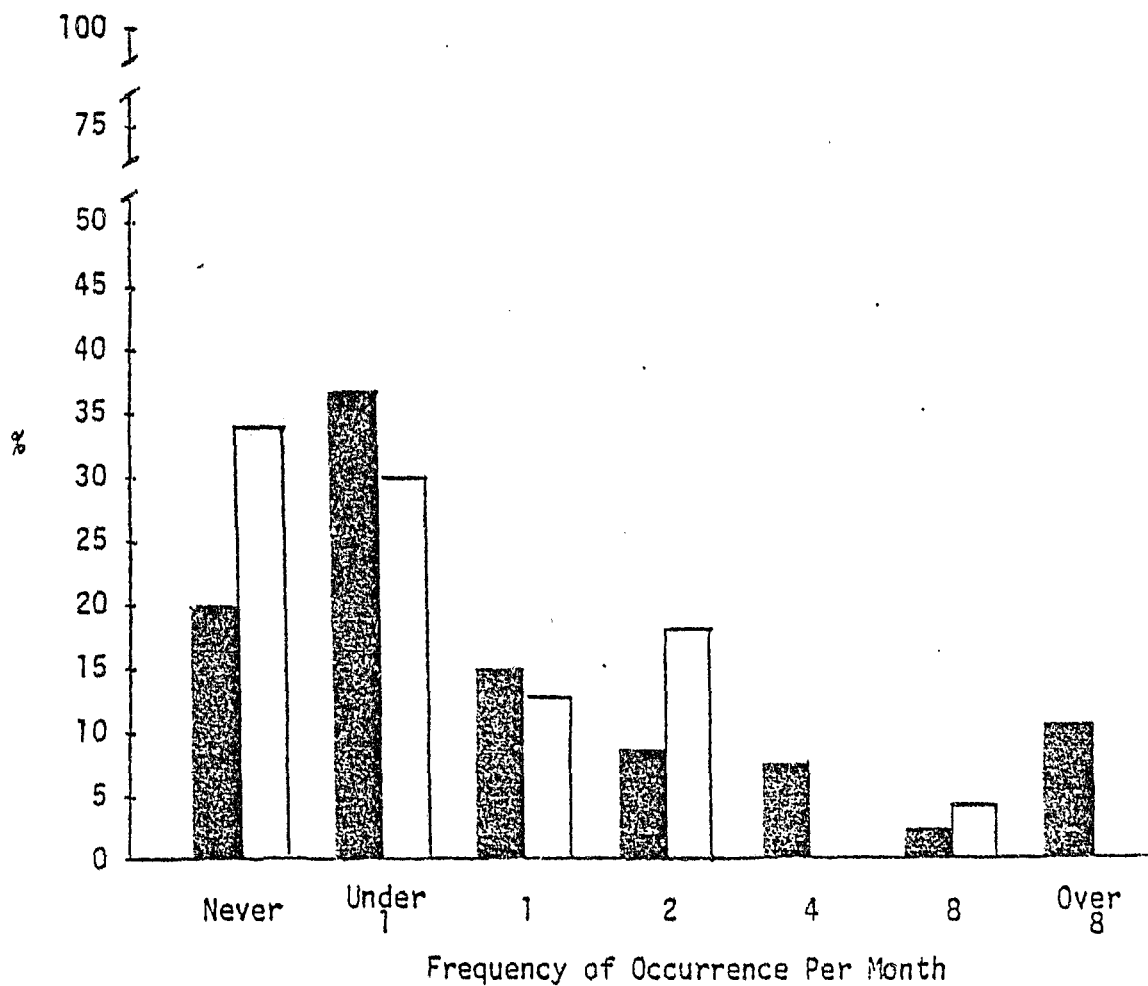
Conclusion: The male officers performed this task significantly more often than the female officers.

Source: Friedlander, ASU 1976

Figure 31

ACTIVITY: Put dead weight into vehicle- under 100 pounds

Males vs. Females : Males- ■ Females- □



Statistical Significance: .0260

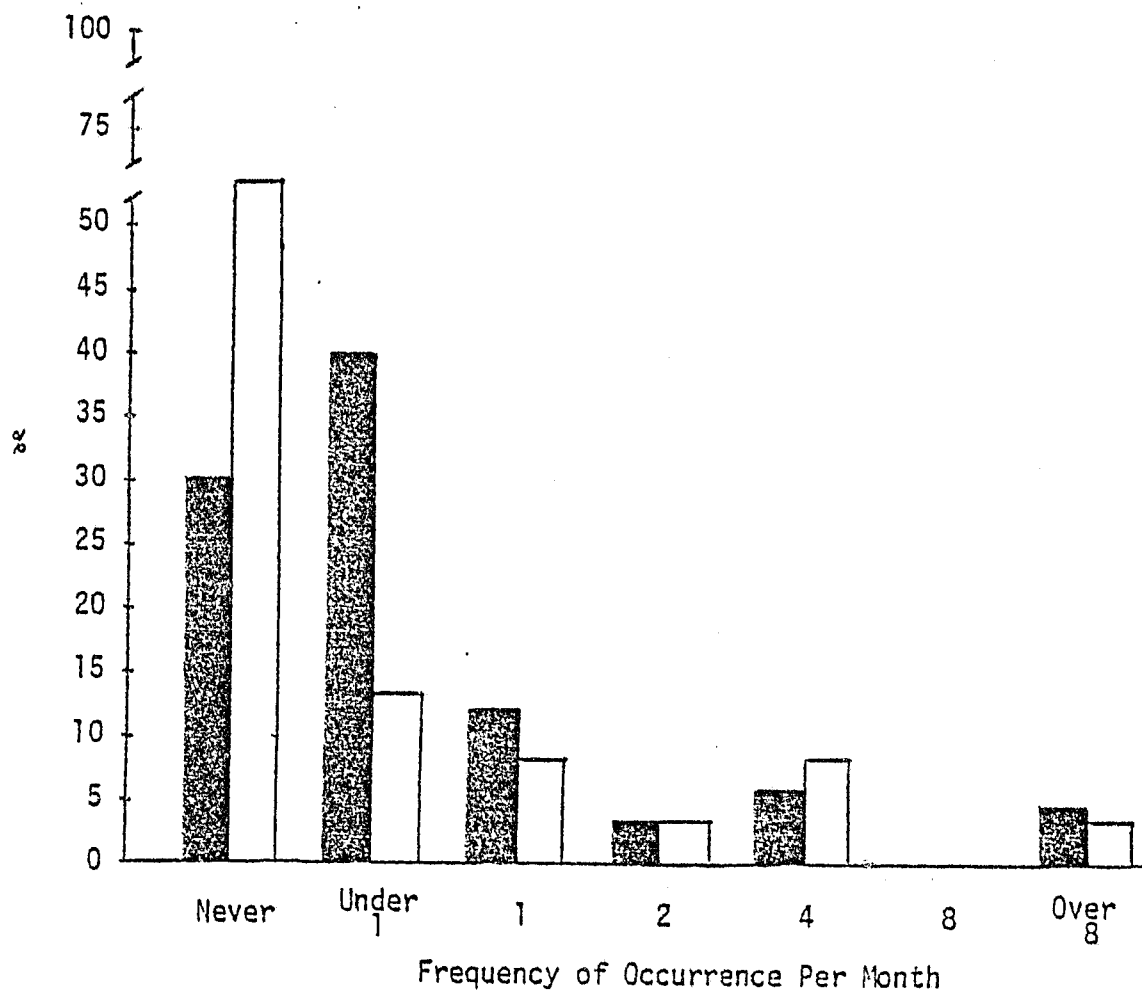
Conclusion: The men performed this task more often than the women.

Source: Friedlander, ASU 1976

Figure 32

ACTIVITY: Put dead weight into vehicle- over 100 pounds

Males vs. Females : Males- ■ Females- □



Statistical Significance: .0067

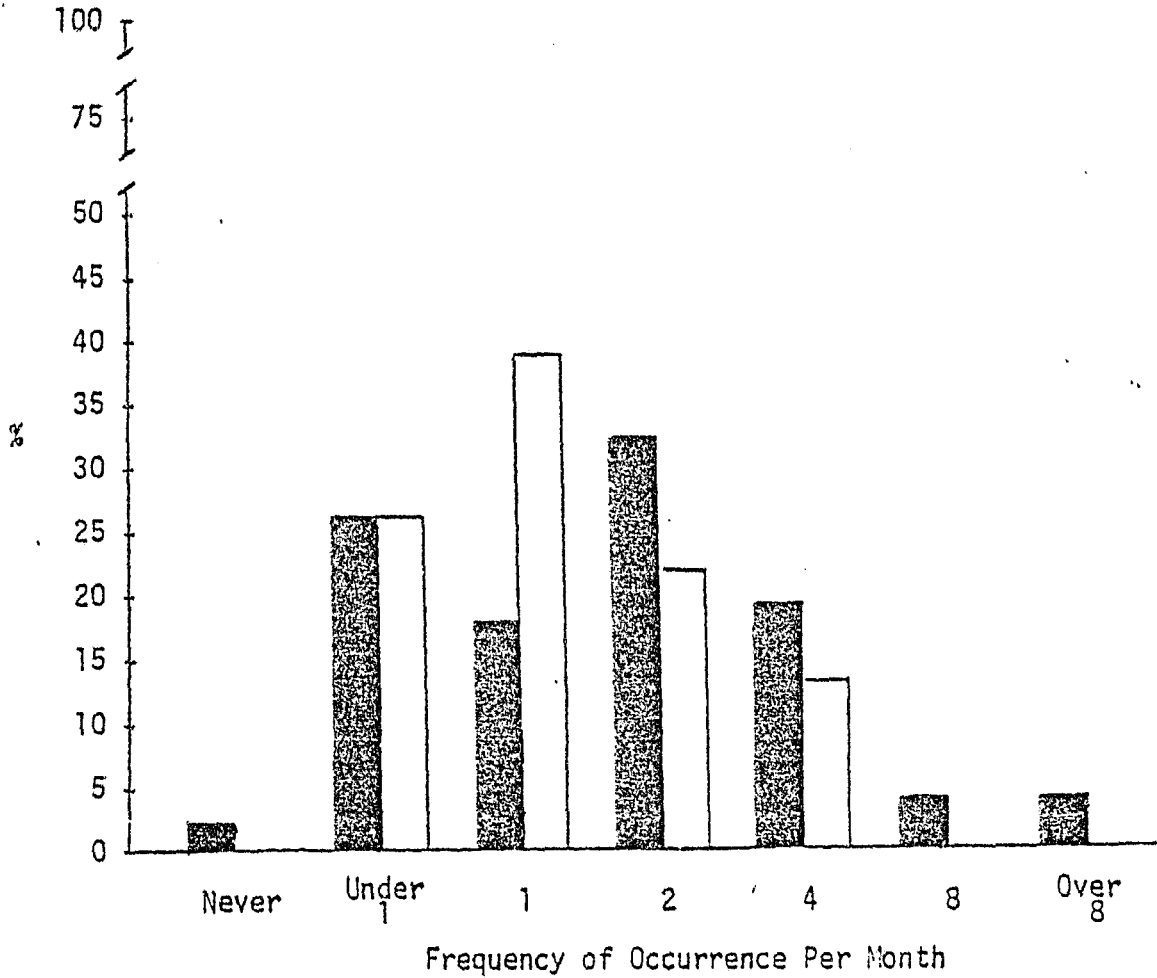
Conclusion: The men performed this task significantly more often than the women.

Source: Friedlander, ASU 1976

Figure 33

ACTIVITY: Immobilize and/or restrain struggling victim or suspect

Males vs. Females: Males- ■ Females- □



Statistical Significance: .0478

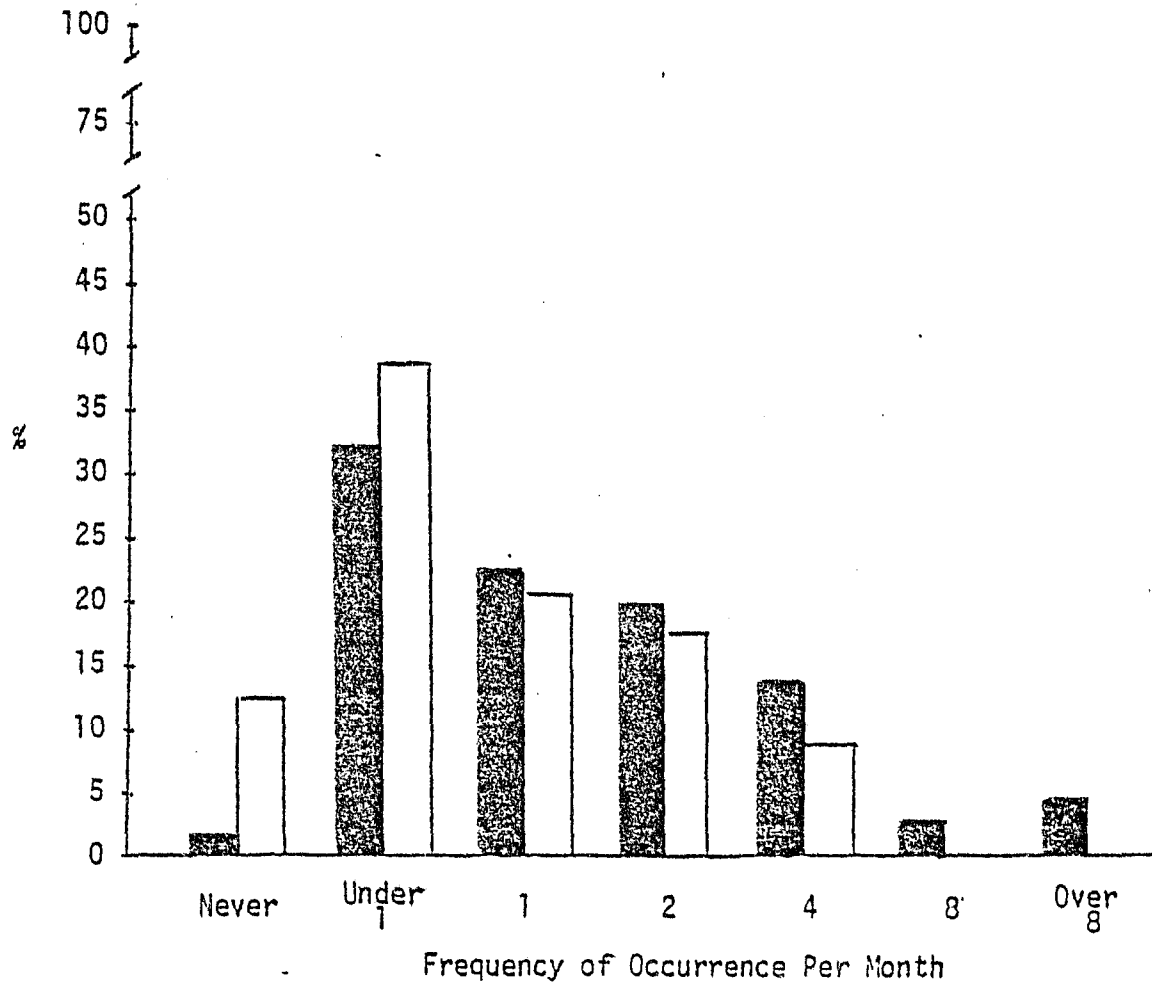
Conclusion: The men performed this activity more often than the women.

Source: Friedlander, ASU 1976

Figure 34

ACTIVITY: Force struggling suspect into the rear seat of the police vehicle

Males vs. Females : Males-■ Females-□



Statistical Significance:  $\sim .0024$

Conclusion: The male officers performed this activity significantly more often than the female officers.

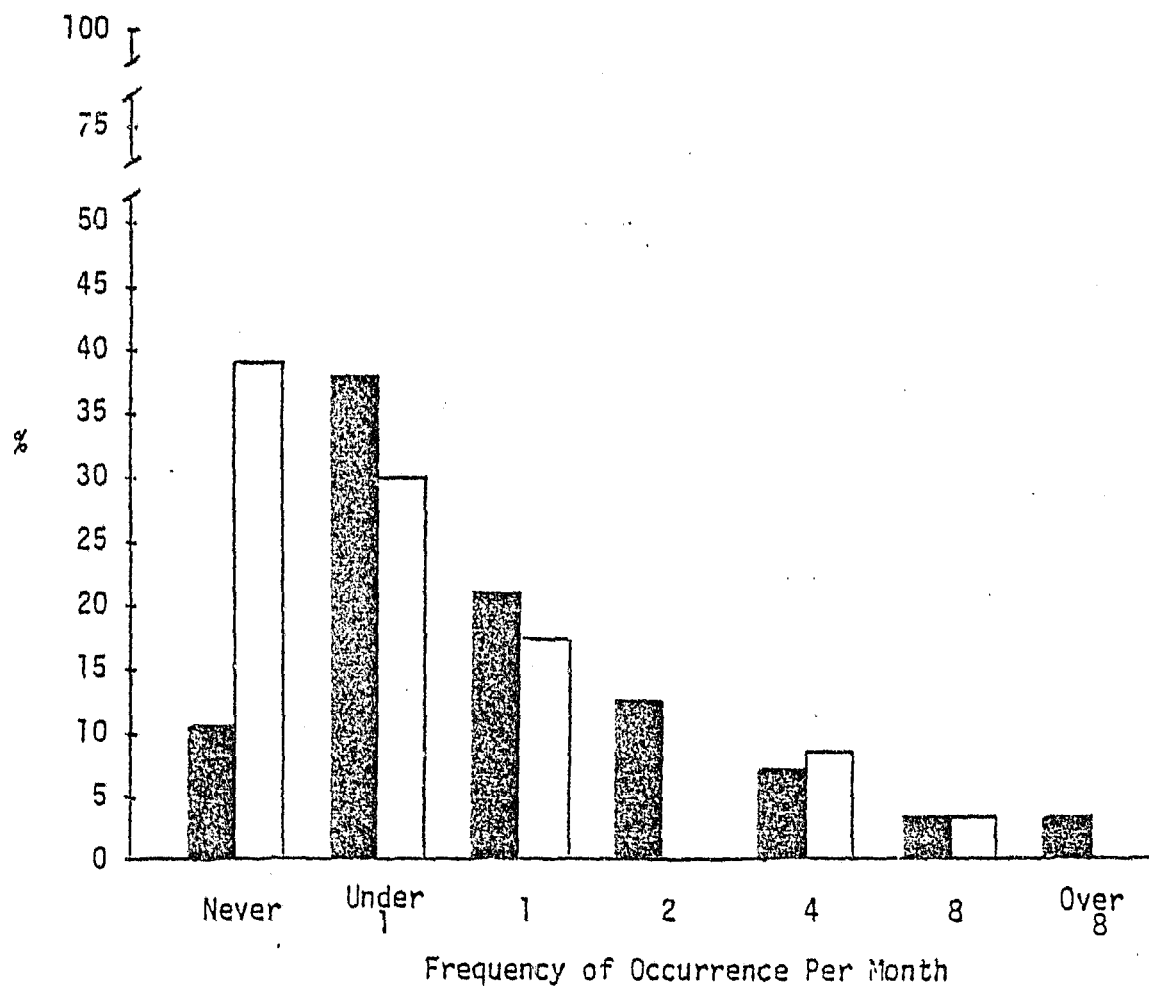
Source: Friedlander, ASU 1976



Figure 35

ACTIVITY: Use brute physical strength in any other manner

Males vs. Females : Males- ■ Females- □




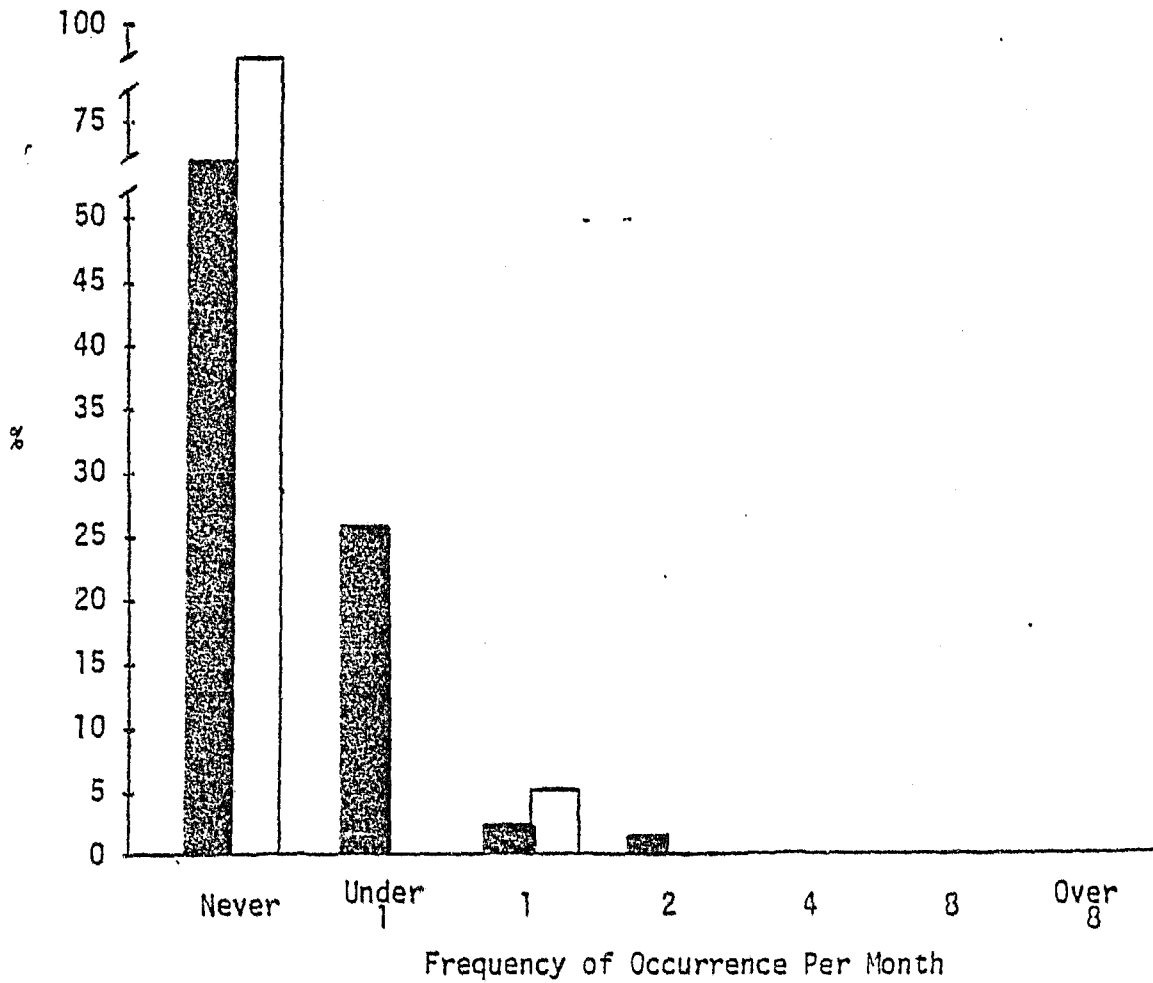
Statistical Significance: .0003

Conclusion: The male officers used brute force significantly more often than the female officers.

Source: Friedlander, ASU 1976

Figure 36

ACTIVITY: Fire police weapon

Males vs. Females : Males-  Females- 

Statistical Significance: .0135

Conclusion: The male officers fired their police weapons more often than the female officers.

Source: Friedlander, ASU 1976

## APPENDIX G

Physical Abilities Examination  
Final Test Battery  
Entrance Level Standard

## Test Item # 1 - 5 Foot Ditch Jump

Test Material

Ditch 5 feet wide, 1 foot deep, 11 feet long, bordered with wooden planks, stopwatch.

Scoring

Time in seconds.

Instructions

On the supervisor's command the candidate must run from the starting point (the base of the 6 foot wall, 13 feet from the edge of the ditch) to the ditch, jump over the ditch, run over a line 10 feet from the edge of the ditch, turn around and run back to the ditch, jump over the ditch again, and touch the finish point (the 6 foot wall, 13 feet from the edge of the ditch, which is also the starting point) with both hands.

The stopwatch starts on the supervisor's command and stops when the candidate touches the wall with both hands after completing the event. Each failure to completely jump the ditch receives 5 seconds penalty, making a maximum of 10 seconds penalty time added on to the total time on this item. If a candidate fails to completely jump the ditch he/she should not try to re-jump the ditch, but continue running through the event until reaching the finish.

## Test Item # 2 - 106 Yard Run

Test Material

106 Yard Course, stopwatch.

Scoring

Time in seconds.

Instructions

On the supervisor's command the candidate must run from the starting line (the speed bump in the asphalt road) to the southeast corner of the observation tower (13 yards from the starting line), angle to the right towards the middle tree and run the 40 yards to that tree, run around the tree and run the 40 yards back to the southeast corner of the observation tower, turn left and run the 13 yards to the finish line (also the starting line). The candidate may run around the tree on either

side, but he/she must run AROUND the tree; not just up to the tree.

The stopwatch starts on the supervisor's command and stops when the candidate crosses the finish line. Failure of a candidate to negotiate the course receives a maximum time of 60 seconds on this item.

### Test Item # 3 - 30 Yard Rough Terrain Run

#### Test Material

30 Yard course located parallel and on the west side of the path that crosses the 40 Yard Small Openings Run at sewer pipe # 2, stopwatch.

#### Scoring

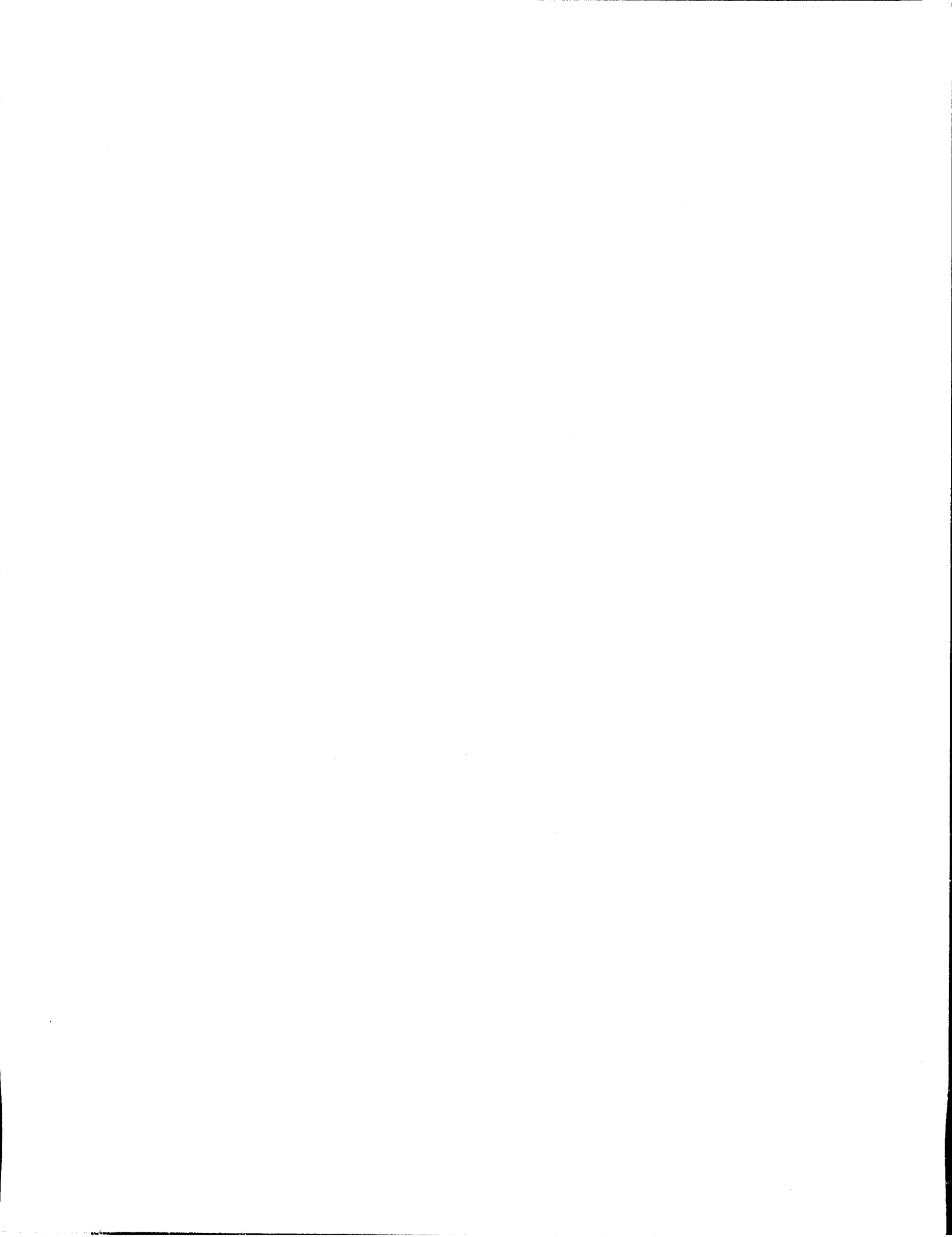
Time in seconds.

#### Instructions

On the supervisor's command the candidate must run from a sitting position on top of sewer pipe # 2 (the starting line), to the finish line 30 yards away in as straight a line as possible.

The stopwatch starts on the supervisor's command and stops when the candidate has crossed the finish line. Failure to complete the 30 yard course and cross the finish line receives a maximum score of 30 seconds on this item.

Entrance Level Minimum Standard - Minimum Mean Z Score from the three items is -5.85.



**END**