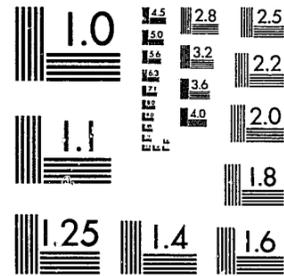


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Research & Development Section
Michigan Law Enforcement Officers Training Council



A
Job Analysis
of Police
Physical Skill
Requirements

88656

A JOB ANALYSIS OF
POLICE PHYSICAL SKILL REQUIREMENTS



Prepared for the:
MICHIGAN LAW ENFORCEMENT OFFICERS TRAINING COUNCIL

By
WOLLACK & ASSOCIATES
A Psychological Corporation

September, 1979

U.S. Department of Justice
National Institute of Justice

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SUMMARY

A systematic, carefully documented study was made of the law enforcement officers' job to determine physical skill requirements. This type of study, called a job analysis, is necessary in order to establish proper pre-employment selection standards as well as training achievement measures. The MLEOTC Research and Development staff, with consultive assistance, developed a brief but comprehensive survey form, the Law Enforcement Physical Activity Questionnaire. This survey instrument was completed by traditional and specialized law enforcement personnel within 65 Michigan agencies, i.e., municipalities, sheriff departments, parks, railroads, state police, DNR, airports, and colleges. The survey procedure required that the responding officer complete a questionnaire each time an incident involving some physical demands occurred. This type of survey method, though difficult to administer, produced a highly precise and detailed description of the law enforcement officers' job duties which are of a physical nature. An extensive training and public relations program, coupled with rigorous project control procedures, resulted in better than 19,000 usable survey questionnaires. Data were gathered during three one-week survey periods which were scattered across a nine-month period. Approximately two thousand officers participated in each of the three survey periods.

The survey findings are presented within the following pages of this report. Based upon this research, it was determined that law enforcement personnel, on the average, confront an incident requiring physical skills once every fifth workshift, or approximately 42 times per year per officer. About two thirds of those incidents

are of a critical nature, in that substantial public safety risks were involved had the officer been unable to handle the situation satisfactorily. The physical skills required of law enforcement officers included both athletic skills as well as defensive skills. The athletic skills included: lifting/carrying, dragging/pulling, pushing, climbing, running, jumping, and crawling. The precise physical dimensions of these athletic-type demands are spelled out in detail within the report. Regarding defensive skills, the data show that a police officer confronts situations in which the use of force is required better than seven times per year, on the average. Further, when the officer encounters resistance, the subject's mental or physical state, or the surrounding circumstances, typically make it infeasible to reason with the subject. Thus, defensive skills are required in the great majority of these situations. A precise description of such resistance-type situations is provided.

Finally, the various types of traditional and specialized law enforcement jobs are compared to ascertain the similarities and differences in physical skill requirements. Additional data is provided which examines the various required physical abilities with respect to their frequency, importance, and relationships to one another.

Wollack & Associates concludes that the survey results herein described provide a useful data base for the development of job-related pre-employment physical standards as well as training achievement measures.

I. PROBLEM STATEMENT

In July, 1978, the Michigan Law Enforcement Officers Training Council contracted with Wollack & Associates, A Psychological Corporation, to conduct a job analysis study of law enforcement personnel.

There has been much controversy focusing upon the problem of physical standards for law enforcement personnel. Concern has been expressed about pre-employment physical requirements because of their obvious sexual impact. There are also many questions about the appropriateness of training content in law enforcement academies. Therefore, a systematic analysis of law enforcement physical skill requirements is the necessary first step in determining job-related pre-employment and training standards. This type of systematic analysis of job requirements is called a job analysis. The purpose of this report is to describe such a job analysis study which was conducted for a highly specialized purpose, to ascertain the physical requirements of the police patrol officer.

For the purpose of this study, police officers are sworn, full-time, and uniformed personnel who are responsible for all basic police functions which may include enforcement of laws, maintenance of order, prevention of crime, and the preservation of life and protection of property. This includes officers who respond to calls for assistance and who are also responsible for observed violations of the law. This does not include officers assigned to special functions within an organization such as controlled substances, detective, intelligence, juvenile, or jail security units.

II. QUESTIONNAIRE DEVELOPMENT

A previous review of pertinent research literature by Wollack & Associates revealed that most job analysis questionnaires used to determine the physical duties and responsibilities of a police officer's job are retrospective in nature, in that they require police officers to describe previous physical incidents. This type of survey technique is traditional in job analysis studies, and is a totally satisfactory approach for determining general job requirements. However, there may be problems associated with retrospective surveys when the objective is specifically to identify physical job requirements. As a practical matter, it is difficult to see how police officers can remember the specific details of each and every physical incident in which they were involved over a period of several months. Any determination of the frequency of reported physical incidents, as well as the circumstances surrounding those incidents, may be subject to errors of recollection. Nevertheless, this type of retrospective survey to determine the physical requirements of a police officer's job is most typical.

To avoid criticisms of this nature, Wollack & Associates sought to develop a questionnaire which could be administered on a shift-by-shift basis. This technique is commonly called "the diary approach". Naturally, if police officers are to complete questionnaires each and every time a physical incident occurs, such questionnaires must be relatively brief in order to be inobtrusive. At the same time, the information provided by any such questionnaire must be comprehensive. In order to deal with these somewhat competing concerns and objectives, a unique type of physical activity questionnaire was developed. This questionnaire was

designed to be one page in length (front and back) and calls for a detailed description of the physical incidents, the persons or objects involved, the precise nature of the physical activities, etc. The physical activity questionnaire was developed as a joint effort between the contractor and the MLEOTC Research & Development staff. The form was based upon a modification of previously-developed questionnaires which were used in surveys in the States of Texas and Washington.

Without a doubt, the completion of such questionnaires on the job, and particularly immediately subsequent to a physical incident, is a substantial burden upon police departments. The traditional retrospective questionnaires, in contrast, may be completed at the convenience of police officers and do not intrude upon their law enforcement duties. Despite the added burden placed upon police officers assisting in this survey, a decision was made to utilize the diary type survey instrument. This decision was made because of the critical need to obtain a highly reliable, accurate, and detailed account of the physical requirements of police work by means of a response format requiring instant recall and reporting. Wollack & Associates believes that this type of analysis, though much more difficult than the traditional method with respect to administrative considerations, justifies a high level of confidence in the findings of this study.

The survey instrument and instructions underwent a number of revisions and modifications in the course of the research project. Pilot tests were conducted to determine the reliability and ease of administration of the prototype questionnaire.

Prior to the survey period, three seven-hour workshops were conducted. These workshops were attended by 75 law enforcement and agency personnel who served as coordinators for the project. Appendix A is a listing of workshop participants, their agencies, and the dates of the three survey workshops. Project coordinators were instructed as to the purpose and objectives of the physical survey; the administrative procedures to be followed in conducting that survey, and were given instructions for the completion of the questionnaire.

One objective of the workshops was to provide a field test of the survey instruments and corresponding instructions. A video/tape and 16 mm. film equipment were used to depict five physical incidents to be observed and evaluated by the workshop participants. These incidents were selected by the MLEOTC staff for the purpose of incorporating a wide range of physical activities and situations. Subsequent to each incident, the coordinators were instructed to complete a questionnaire as if they were the responding officers. This type of simulation permitted the Training Council staff and the consultants to evaluate the effectiveness of the questionnaire and to determine its adequacy for handling a range of situations. Workshop participants assisted in this regard by providing immediate feedback and evaluation of the survey instrument. A number of revisions were made subsequent to the completion of the survey. These revisions dealt with the form of the questionnaire as well as the instructional materials.

The actual field administration of the questionnaire will be described in a following section of this report. That field administration consisted of three separate survey periods. During the course of the actual field survey, additional minor revisions

were made in both the instructions and the survey instrument to improve upon its administrative ease as well as its general effectiveness. Appendix B is the physical activity questionnaire in its final form. Also, see Appendix C which are the corresponding instructions for the survey instrument.

The reliability of the questionnaire was tested in a group experiment involving 77 Ferris State College Criminal Justice students. The students observed four live role-playing scenarios and then recorded their observations on the questionnaire form. The purpose of this exercise was to determine the extent of agreement in completion of the questionnaire form among a large number of people who observed the same event under identical conditions. None of the reliability coefficients that were computed were lower than $r = .70$, a finding which attests to a high level of reliability for the survey instrument.

III. SAMPLE SELECTION

Twelve types of law enforcement agencies were included in the survey sample. The twelve departmental types included: (1) Michigan State Police; (2) Detroit Police Department; (3) large cities/villages/townships, i.e., 100 or more full-time officers; (4) medium cities/villages/townships, i.e., 30-90 full-time officers; (5) small cities/villages/townships, i.e., 29 or fewer full-time officers; (6) large sheriff departments, i.e., 20 or more officers assigned to patrol; (7) small sheriff departments, i.e., fewer than 20 officers assigned to patrol; (8) airport police departments; (9) railroad police departments; (10) the Department of Natural Resources; (11) local park police, and (12) university/college police departments. (See Appendix D for a complete listing of the participating police departments.)

In all, 67 law enforcement agencies were included in the survey sample. Given 606 law enforcement agencies within the State of Michigan, the obtained sample equals 11% of the population. Table 1 describes the department types, the number of each department type (population), and the number of departments included in the sample.

Table 1.
Sampling Plan

Department Type	Population	Sample
Michigan State Police	1	1
Detroit Police Department	1	1
Large Cities/Villages/Townships	17	8
Medium Cities/Villages/Townships	50	7
Small Cities/Villages/Townships	419	13
Large Sheriff Departments	22	9
Small Sheriff Departments	61	6
Airport Police Departments	10	9
Railroad Police Departments	6	6
Department of Natural Resources	1	1
Local Park Police	4	4
University/College Police	14	2
	606	67

In consultation with the MLEOTC staff, a sample was selected in such a manner as to maximize such considerations as urban-rural location, geographic coverage, etc. The obtained survey sample is considered by Wollack & Associates to be highly adequate for conducting such research. The 11% overall sample is something of a misstatement if one refers to Table 1 closely. It may be seen from an inspection of that table that 419 small cities/villages/townships were identified. Of this number, 13 were included in the survey sample (i.e., a 3% sample). Given the very large number of small-size police departments, the obtained

supplemental instructions and answers to anticipated problems. An eight minute slide/tape presentation of the job analysis project was made available to all project coordinators who desired to provide the project background to the police personnel in their departments. The survey was initiated during the last week in November, 1978. Following this, in January, 1979, an additional five minute slide/tape presentation was developed which gave step-by-step instructions on how to complete the physical activity questionnaire. Special emphasis was made to clarify areas in the questionnaire and instructions which may have been overlooked by some respondents during the first survey period. While a following chapter will show a high degree of effectiveness in the survey results, every effort was made to define and improve upon the precision and accuracy of the data which we sought to gather. On April 6th, 1979, prior to the second survey period, another special workshop was conducted for law enforcement agencies in which the response rate was deemed to be below average for the first survey period. Agency project coordinators and the MLEOTC staff discussed the various problems of administration of the survey instrument and emphasized the need for following proper procedures. Several suggestions were made on how agencies could improve upon the quality of the questionnaire data which the officers prepared. At the conclusion of the meeting, each agency had proposed solutions on how to increase the number of respondents and quality of returns. A second survey period was initiated during the last week of April, 1979. Review of the survey returns indicated that the questionnaire and corresponding instructions were fully understood, and that no further revisions were deemed to be necessary.

sample is considered to be quite representative for the present purpose. This is particularly so, because the survey was conducted across three separate one-week survey periods. Moreover, a questionnaire was completed by the participating law enforcement officers each day during the survey period. This technique generates a very large number of questionnaires relative to traditional survey procedures. For this reason, the size of the sampling base must be viewed in relation to the number of questionnaires which are likely to be generated by the participating departments.

It should be noted that the sampling plan described in Table 1 does not take into consideration certain deletions which were made subsequent to the administration of the questionnaires. These deletions were as a result of a number of factors, i.e., lack of cooperation, failure to provide necessary control data, poor response rate, etc. The number of deletions which were made because of these reasons is considered to be quite small relative to the number of usable questionnaires which were obtained. These deletions will be described in a following section of this report.

IV. QUESTIONNAIRE ADMINISTRATION

Every effort was made by the MLEOTC staff to provide administrative guidance in the field implementation of the Law Enforcement Physical Activity Questionnaire. Each departmental project coordinator received extensive training in the administrative aspects of the survey, as previously indicated. Informational materials were distributed to all project coordinators and included the questionnaire materials,

The MLEOTC staff took unusual steps to promote a high rate of participation by police departments in this job analysis study. As previously indicated, the questionnaire format, i.e., diary method, places a substantial burden upon the manpower requirements of a police department. Resources in police departments are increasingly diminishing, so the cooperation and support of the departments working with us in this survey was by no means assured. Because participation was voluntary, and further, because of traditional suspicions among police management and labor organizations, an extraordinary promotional effort was necessary. A promotional effort was undertaken and directed at: police management groups, employee labor organizations, and local project coordinators and incumbent officers. A slide/tape presentation was developed describing the MLEOTC organization, the need for a job analysis survey, the survey methodology, and the intended job-related selection and training objectives. This slide/tape presentation assisted greatly in promoting the project to management, labor, and local coordinators. Representatives from the MLEOTC met with the Michigan Association of Chiefs of Police and the Michigan Sheriffs Association. Meetings were also held with each of the eleven major employee organizations representing police in the State. These meetings were considered particularly critical because police in Michigan are highly organized. Also, in an effort to gain the cooperation of the incumbent officers, a small fold-out brochure was printed. The brochure was titled: "Select Your Future Partner". On the inside, the need for the project was explained and participation and support by incumbent

officers was promoted.

The three seven-day survey periods were conducted within each department.

The dates below describe these three survey periods:

November-December, 1978

April-May, 1979

June-July, 1979

Within these date ranges, each department participated for a one-week (7 days) time period. The three survey periods were distributed throughout the year to provide ample opportunity to take account of possible variations in a police officer's job responsibilities attributable to such factors as: weather, the school year, vacation travel, etc. Accordingly, the three survey periods encompass various time and weather conditions which span a broad range of circumstances. The survey results are, therefore, deemed to be highly representative of the job responsibilities of law enforcement personnel.

V. DATA REFINEMENTS AND DELETIONS

A number of data refinements and deletions were made. Two agencies, Cheboygan and Wayne County, elected to withdraw from the study. The sample base was therefore reduced to 65 law enforcement agencies. Six agencies were unable to participate in one of the three scheduled survey periods. An additional six departments were unable to participate in two of the three survey periods. These non-response data are presented in Table 2.

Table 2.
Non-Response Data

I. Missed One Survey Period

Allegan County
Owosso
Fenton
Buena Vista Township
Houghton County Airport
Saginaw

II. Missed Two Survey Periods

Crawford County
Sault Ste. Marie
Clay Township
Delta County Airport
Kent County Airport
Twin Cities Airport

III. Withdrew From Study

Cheboygan
Wayne County

As a safeguard, departmental personnel supervising the conduct of the questionnaire survey were instructed to complete an identification roster. This roster provided a control against which the number of completed questionnaires could be compared. In other words, if a control roster identified a particular officer as having participated during five days of the survey, then it would be possible to determine whether the appropriate number of questionnaires had been completed. Such a safeguard was deemed to be important for assuring the quality of the data which we sought to gather. In eight cases, law enforcement agencies failed to return control rosters for a particular survey period. Where control

rosters were not available, data was deleted for the agency failing to submit such a roster. In the absence of a control roster, no cross-check on the questionnaire data was possible, and deletions were made for this reason. The eight agencies which failed to submit control rosters were not included within the final job analysis sample. It should be emphasized that these deletions were made for one survey period only. Therefore, the eight agencies were included in the remaining survey periods for which they did submit control rosters. Table 3 lists the agencies which were so deleted.

Table 3.
Data Deletions

I. No Roster (One Survey Period Only)

Crawford County
Livonia
Ironwood
Charlotte
Buchanan
Lapeer County
Alpena County
Chesapeake Railroad System

II. Inadequate Response Rate

Saginaw (two periods)
Royal Oak (three periods)
Sterling Heights (three periods)

One important data refinement which was made pertains to departmental response rates. The term "response rate" refers to the ratio of questionnaires completed by a particular department in relation to the number of questionnaires which were expected of them. A statistical analysis conducted by the MLEOTC staff produced

an estimate of 4.3 days per officer which is the expected number of days worked by each officer during the course of the survey period. It was possible, therefore, to develop an estimate of the anticipated number of questionnaires to be completed for a given department. This estimate would, of course, be a minimal estimate, since there is no way of knowing how many additional questionnaires would be completed because of reported physical incidents. The estimate is predicated upon the assumption of one questionnaire per shift and must be regarded as a minimal estimate for that reason. By multiplying the estimated number of days worked times the number of patrol officers on the control roster, the anticipated number of questionnaires per department was calculated. This number was compared with the actual number of questionnaires completed for a given department. Response rate data were averaged across the three survey periods, and an overall response rate was calculated for each department. A decision was made to refine the data by deleting those agencies which had an average response rate of less than 50%. In other words, departmental questionnaire data was deleted if a particular department failed to return at least half the number of questionnaires which were expected of them throughout the entire project time period. Table 3 shows that Royal Oak and Sterling Heights were deleted from the sample for reasons of inadequate response rate. The City of Saginaw, which failed to participate in one survey period, submitted data for two survey periods which also failed to meet the response rate criteria of 50%. Therefore, data from the City of Saginaw was deleted.

Wollack & Associates regards the non-response data as being quite small and constituting no problem to the reliability and meaningfulness of the total sample. The deletions and refinements which were made for the reasons stated, in our view, significantly improve upon the quality of the data and were deemed to be necessary for that reason. Table 4 shows the overall impact of the refinements and deletions upon the total survey sample.

Table 4.
Agency Participation Data (N = 65)

Level of Participation	Number	Percent
Three Survey Periods	44	68
Two Survey Periods	12	18
One Survey Period	5	8
Deleted	<u>4</u>	<u>6</u>
	65	100%

Based upon the 65 departments which elected to participate in this survey, Table 4 shows that the vast majority of those departments (i.e., 68%) participated in all three survey periods. An additional 12 departments (18%) participated in two of the three periods, and five departments (8%) participated in one of the three periods. A total of four departments were deleted for the reasons stated. The data in Table 4 clearly show that the non-response problem and the data deletions constitute a very small percentage of the overall data base for this study.

VI. SURVEY EFFECTIVENESS

Wollack & Associates strongly believes that the care which was evidenced by the MLEOTC staff in supervising this project has resulted in an extraordinarily high response rate as well as a high level of reliability and meaningfulness in the survey data. The continual refinements which were made in the process; the substantial liaison which existed with project coordinators; the comprehensive training effort which was made, and the administrative record keeping and accountability system which they developed are all factors which account for the good results which were achieved in this survey. The mere fact that better than 19,000 usable questionnaires were obtained testifies to the thoroughness and professionalism of the MLEOTC project administration. Further, the reliability analysis conducted at Ferris State College indicates quite clearly that the questionnaires were being completed in a consistent manner following the instructional materials.

Two important indices of survey effectiveness are that of response rate and participation rate. The term "response rate" has been defined previously as the ratio of the number of questionnaires completed by a department to the number of expected questionnaires for that department. The term "participation rate" refers to the number of patrol officers and other non-traditional law enforcement officers who participated in the survey as compared with the total number of patrol officers within each department. Simply put, participation rate refers to the number of officers who participated in a particular survey period for a given department in relation to the total number which might have

participated. Table 5 summarizes both measures of survey effectiveness.

Table 5.
Analysis of Survey Effectiveness

Survey Period	Number of Departments	Number of Officers	Participation Rate	Response Rate
First	64	1,952	.90	.97
Second	56	1,971	.84	.92
Third	57	2,019	.87	.84

During the first survey period, 64 departments participated for a total of 1,952 officers. The participation rate for the first survey period was 90%, while the response rate for that period was 97%. During the second survey period, 56 departments participated for a total of 1,971 officers. The participation rate was 84% and the response rate was 92% for that period. Fifty-seven (57) law enforcement agencies participated in the third survey period for a total of 2,019 officers. The participation rate for the third survey period was 87% and the response rate was 84%. These data speak for themselves. There can be little question but that the survey results reveal a high level of effectiveness, a finding which is quite extraordinary in view of the very large number of officers participating.

VII. OVERALL FINDINGS

Table 6 provides summary data pertaining to the frequency of the physical incidents reported.

Table 6.

Summary Data: Frequency of Physical Incidents

Total number of usable responses	19,171
Total number of incidents reported	3,604
Ratio of incidents to responses	0.19
Ratio of incidents to workshifts	1:5.32
Average incidents/per officer/per year	42.04

A total of 19,171 usable questionnaires were derived from the three survey periods combined. Of this number, 3,604 incidents were recorded in which physical skills by the police officer were required. The remaining questionnaires were marked as "no activity" in section 1 of the survey instrument to indicate that no significant activity had occurred for a particular officer during a particular shift. In some cases, the responding officer indicated that a physical activity had occurred, but failed to provide details of that activity. A conservative measure was taken to protect the integrity of the data. In such cases, the MLEOTC staff re-coded such questionnaires as "no activity". Therefore, this measure was taken to safeguard against obtaining an inflated estimate of the number of incidents requiring physical skills on the part of the officer. To be counted as a physical incident, the questionnaire must have contained documentary evidence of the nature

of the physical activity undertaken. The number of physical incidents thus recorded is considered to be a conservative and believable estimate for the above-stated reason.

Table 6 shows that the ratio of physical incidents to total responses is .19. This figure translates into a ratio of one physical incident per 5.32 workshifts per officer. In other words, an officer can expect to participate in an incident requiring a significant level of physical skills once every 5.32 shifts.

The number of physical incidents was related to the total number of officer/watches (19,171) for the purpose of computing the frequency rate. Three thousand six hundred and four (3,604) physical incidents were recorded, as indicated, which is 19% of the total number of officer/watches (19,171). Therefore, the rate of occurrence is 19% or, more precisely, .1880 per officer/watch. By multiplying this rate times the number of officer/watches per year, one may compute an expected annual frequency per officer for incidents requiring physical skills. The MLEOTC staff provided data to Wollack & Associates based upon their own analyses which indicate that an officer works an average of 223.6 days per year. By multiplying the ratio of physical incidents to total responses (.1880) times the total number of days worked per year (223.6), one can determine the expected number of times an officer should be involved in incidents requiring physical skills on an annual basis. The expected annual frequency (EAF) for physical incidents is 42.04 incidents per officer per year. The survey data reveal that a patrol officer can expect to encounter an incident involving physical skills once approximately every fifth shift, for a total of approximately 42 times annually.

The remainder of this report will deal with a detailed description of the nature of the physical activities which the officer must perform, the circumstances surrounding these activities, and the consequences of failing to perform such activities in a totally satisfactory manner.

Table 7 lists the reasons stated for the physical activities performed by the officers.

Table 7.

Reasons for Physical Activity

Reasons	Number	Percent
Investigation	1,061	29
Apprehension of Subject	913	25
Unspecified	747	20
Citizen Assistance	556	15
Emergency Assistance	441	12
		101%*

*Rounding error

Twenty-nine (29%) percent of the physical incidents were associated with conducting an investigation, while 25% of these incidents occurred in connection with the apprehension of subject or subjects. Providing citizen assistance was the reason for 15% of the activities, and emergency aid was rendered in 12% of the cases. The remaining 20% of the activities were conducted for reasons which were not specified.

Table 8 provides a listing of the results of the physical incidents described in the survey. Sixty-eight (68%) percent of the incidents produced a successful result.

In 24% of the cases, the physical incident resulted in an arrest. Lesser percentages are provided in Table 8 describing other outcomes such as the escape of a subject, injury, loss/damage to property, and loss of life. The expected annual frequency per officer for each of the associated outcomes is given in Table 8.

Table 8.

Results of Physical Incidents

Outcome	Number	Percent	Expected Annual Frequency Per Officer
Successful Result	2,433	68	28.38
Arrest Made	850	24	9.91
Unspecified	305	8	3.56
Property Lost/Damaged	133	4	1.55
Someone Injured	110	3	1.28
Subject Escaped	98	3	1.14
Loss of Life	27	0.7	0.31

Federal guideline requirements in the area of employment testing, as well as common sense, dictate that special attention be paid to those job activities which are of a high criticality level. This survey sought to distinguish the physical incidents reported on the basis of their criticality. Those activities of a physical nature which are characteristically deemed to be most critical would certainly have important implications for both employment testing as well as training curriculum development. While the frequency of a job activity is certainly an important bit of information, the criticality of that activity would seem to be of yet greater significance. For example, if analyses were predicated primarily on the basis of task frequency, it could be argued that police officers need not be proficient

in the use of their weapons, because such weapons are used infrequently. However, hardly anyone would agree with this conclusion, as it is commonly recognized that the use of a weapon would be confined to important life-death situations. This illustration shows that the criticality of a job task is of greater logical significance than its frequency. On the other hand, what is the importance of a job duty which is frequent but inconsequential? For the purpose of this research study, an incident was regarded as critical based upon the probable consequences of a failure to perform the task in a competent manner. Responding officers were asked to evaluate the probable consequences if a patrol officer was unable to perform the activity. Three categories of criticality were identified in the questionnaire: (1) injury to self/others, (2) escape of subject(s), and (3) loss/damage to property. Table 9 indicates the percentage of physical incidents which were described as being critical in one or more of the three areas of risk identified.

Table 9.

Criticality of Physical Incidents

Consequences	Number	Percent	EAF
Total of Critical Incidents	2,267	63	26.44
Loss/Damage to Property	1,195	33	13.94
Injury Risk	1,123	31	13.10
Escape of Subject	1,080	30	12.60

Approximately one-third of the responses indicated a high level of criticality for physical incidents performed by the patrol officers in each of the three areas specified. For example, 1,123 of the physical incidents described or 31% of

those incidents were associated with a significant risk of injury to the officer or to others as a result of a failure to perform. The expected annual frequency associated with injury risk is 13.10 times per officer per year. Of the 3,604 questionnaires completed indicating a physical incident, 2,267, or 63%, were associated with one or more of the critical areas of risk identified in the survey. Simply put, on the average of 26.44 times per year, a police officer can expect to be involved in physical incidents which are associated with a high level of risk and are deemed to be critical.

Incidents Involving Athletic Skills

The questionnaire was divided roughly into two broad categories measuring physical activities, that is, those activities involving athletic skills and those activities involving defensive skills. First, we shall consider the physical activities which involve athletic skills. Table 10 summarizes those activities.

Table 10.

Description of Athletic Skills

Type of Activity	Number	Percent	EAF
Lifting/Carrying	1,213	34	14.15
Dragging/Pulling	955	26	11.14
Pushing	885	25	10.32
Climbing	837	23	9.76
Running	762	21	8.89
Jumping	431	12	5.03
Crawling	166	5	1.94

Table 10 describes the various types of physical activities which were identified in the survey and their associated frequency. The term "activity" should be distinguished from the term "incident". The latter term refers to a more comprehensive situation or occurrence. For example, the pursuit and apprehension of a subject would constitute an incident. A questionnaire form was to be completed for each such incident. However, a physical activity might consist of such diverse events as: running, climbing, pushing, jumping, etc. In other words, a physical incident would be comprised of one, or more, types of activities. Table 10 lists all of the physical activities which were identified in order of their frequency. An inspection of this table will show that the activity of lifting/carrying was recorded 1,213 times and was associated with 34% of the physical incidents which occurred. The expected annual frequency of this lifting/carrying activity was 14.15 times per officer. The physical activities in descending order of frequency are interpretable directly from Table 10. In order to understand better the specific nature of these physical demands, the remainder of this portion of the job analysis report will be devoted to a detailed description of these required athletic skills.

Incidents involving lifting/carrying. Of the 1,213 incidents involving lifting/carrying, 816 incidents were identified in which the object lifted and/or carried was a non-person, while 397 incidents were identified in which the object lifted and/or carried was a person. Table 11 provides detailed information regarding the lifting/carrying of objects (non-persons).

Table 11.

Lifting/Carrying: Objects (N = 816 Incidents)

Dimensions	Number	Percent	EAF
I. Height of Lift			
1 ft.	107	11	1.25
2 ft.	197	19	2.30
3 ft.	432	43	5.04
4 ft.	184	18	2.15
5 + ft.	<u>93</u>	<u>9</u>	<u>1.08</u>
	1,013	100%	11.82
II. Distance of Carry			
1 - 19 ft.	441	62	5.14
20 - 39 ft.	69	10	0.80
40 - 59 ft.	49	7	0.57
60 - 79 ft.	26	4	0.30
80 + ft.	<u>126</u>	<u>18</u>	<u>1.47</u>
	711	101%*	8.28
III. Weight of Carry			
25 - 49 lbs.	266	34	3.10
50 - 99 lbs.	219	28	2.55
100 - 149 lbs.	173	22	2.02
150 - 199 lbs.	40	5	0.47
200 + lbs.	<u>97</u>	<u>12</u>	<u>1.13</u>
	795	101%*	9.27
IV. Circumstances			
Officer Unassisted	562	69	6.55
Speed Required	65	8	0.76

*Rounding error

Data are provided in Table 11 with respect to: the height of the lift; the distance of the object carried; the weight of the object, and the circumstances surrounding the incidents. Where a non-person was lifted, the average height of the lift was 2.95 feet (mean) with a corresponding standard deviation of 1.09 feet. The average distance which the object was carried was 30.86 feet with a corresponding standard deviation of 31.40 feet. The average weight of the object carried was 95.37 pounds with a standard deviation of 61.65 pounds. In 69% of the situations described, the officer was unassisted. The associated annual frequency for this type of physical event in which the officer was unassisted is 6.55 times per officer per year. In 8% of the situations involving the lifting/carrying of objects, speed was a requirement. In other words, it was necessary that the officer move the object as quickly as possible.

Table 12, as follows, describes comparable data for those 397 incidents in which the object lifted and/or carried by the officer was a person.

Table 12.

Lifting/Carrying: Persons (N = 397 incidents)

Dimensions	Number	Percent	EAF
I. Height of Lift			
1 ft.	38	10	0.44
2 ft.	75	20	0.87
3 ft.	163	44	1.90
4 ft.	71	19	0.83
5 + ft.	<u>27</u>	<u>7</u>	<u>0.31</u>
	374	100%	4.35
II. Distance of Carry			
1 - 19 ft.	206	58	2.40
20 - 39 ft.	61	17	0.71
40 - 59 ft.	43	12	0.50
60 - 79 ft.	13	4	0.15
80 + ft.	<u>31</u>	<u>9</u>	<u>0.36</u>
	354	100%	4.12
III. Weight of Carry			
25 - 49 lbs.	13	3	0.15
50 - 99 lbs.	17	4	0.20
100 - 149 lbs.	100	25	1.17
150 - 199 lbs.	188	47	2.19
200 + lbs.	<u>81</u>	<u>20</u>	<u>0.94</u>
	399	99%*	4.65
IV. Circumstances			
Officer Unassisted	74	19	0.86
Speed Required	117	29	1.36

*Rounding error

When the officer was required to lift and/or carry a person, the mean height of the lift was 2.93 feet with a standard deviation of 1.04 feet. The average distance carried was 27.30 feet with a standard deviation of 25.88 feet. The average weight of the person carried by the officer was 163.75 pounds with a standard deviation of 44.97 pounds. In 19% of the situations involving lifting and/or carrying of persons, the officer was unassisted. Speed was a requirement in 29% of these situations.

Incidents involving dragging/pulling. There were 955 incidents in which the officer was required to drag and/or pull an object or person. In 537 incidents of this nature, the object moved was not a person. In 418 incidents, the object moved was a person. Table 13 describes the details of the dragging/pulling of objects (non-persons).

Table 13.

Dragging/Pulling: Objects (N = 537 incidents)

Dimensions	Number	Percent	EAF
I. Distance Moved			
1 - 19 ft.	318	60	3.71
20 - 39 ft.	80	15	0.93
40 - 59 ft.	34	6	0.40
60 - 79 ft.	24	5	0.28
80 + ft.	<u>74</u>	<u>14</u>	<u>0.86</u>
	530	100%	6.18
II. Weight of Object			
25 - 49 lbs.	73	14	0.85
50 - 99 lbs.	76	14	0.89
100 - 149 lbs.	155	29	1.81
150 - 199 lbs.	69	13	0.80
200 + lbs.	<u>155</u>	<u>29</u>	<u>1.81</u>
	528	99%*	6.16

Table 13 (cont'd.)

Dimensions	Number	Percent	EAF
III. Circumstances			
Officer Unassisted	224	74	2.61
Speed Required	51	9	0.59

*Rounding error

The above table describes the distance which the object was moved, its weight, and the circumstances surrounding the incident. The mean distance which the object was moved was 29.40 feet with a standard deviation of 29.06 feet. The mean weight of the object moved was 140.84 pounds with a standard deviation of 66.97 pounds. In 74% of those incidents involving dragging/pulling of objects, the officer was unassisted. Speed was a requirement in 9% of those cases.

Table 14 provides similar data for the dragging/pulling of persons.

Table 14.

Dragging/Pulling: Persons (N = 418 incidents)

Dimensions	Number	Percent	EAF
I. Distance Moved			
1 - 19 ft.	265	66	3.09
20 - 39 ft.	56	14	0.65
40 - 59 ft.	28	7	0.33
60 - 79 ft.	15	4	0.17
80 + ft.	<u>39</u>	<u>10</u>	<u>0.45</u>
	403	101%*	4.69

Table 14 (cont'd.)

Dimensions	Number	Percent	EAF
II. Weight of Person			
25 - 49 lbs.	2	0	0.02
50 - 99 lbs.	5	1	0.06
100 - 149 lbs.	117	28	1.36
150 - 199 lbs.	224	55	2.61
200 + lbs.	<u>63</u>	<u>15</u>	<u>0.73</u>
	411	99%*	4.78
III. Circumstances			
Officer Unassisted	116	28	1.35
Speed Required	142	34	1.66

*Rounding error

There were 418 incidents where police officers were required to drag/pull a person. The average distance moved was 25.67 feet with a standard deviation of 26.23 feet. The average weight of the person being moved was 166.92 pounds with a standard deviation of 33.78 pounds. In 28% of the situations described, the officer was unassisted, and speed was a requirement in 34% of the incidents.

Incidents involving pushing. A total of 885 incidents were recorded in which the officer was required to push an object. Table 15 provides a breakdown of the distance which the object was moved, the type of object, the weight of the object (non-vehicles), and the circumstances surrounding the associated incident.

Table 15.
Pushing (N = 885 incidents)

Dimensions	Number	Percent	EAF
I. Distance Moved			
1 - 19 ft.	532	62	6.20
20 - 39 ft.	169	20	1.97
40 - 59 ft.	64	8	0.75
60 - 79 ft.	26	3	0.30
80 + ft.	<u>60</u>	<u>7</u>	<u>0.70</u>
	851	100%	9.92
II. Type of Object			
Vehicle	491	55	5.72
Other	<u>394</u>	<u>45</u>	<u>4.60</u>
	885	100%	10.32
III. Weight of Non-Vehicles			
25 - 49 lbs.	37	10	0.43
50 - 99 lbs.	29	8	0.34
100 - 149 lbs.	101	28	1.18
150 - 199 lbs.	156	44	1.82
200 + lbs.	<u>33</u>	<u>9</u>	<u>0.38</u>
	356	99%*	4.15
IV. Circumstances			
Officer Unassisted	286	32	3.34
Speed Required	190	21	2.22

*Rounding error

On the average, the object pushed was moved a distance of 23.96 feet with a standard deviation of 23.51 feet. In 55% of these situations, the object pushed by the police officer was a vehicle. The associated annual frequency of this type of activity is 5.72 times per year. The associated annual frequency of pushing non-vehicles was 4.60 time per year. Table 15 describes the weight distribution of the non-vehicles or objects other than automobiles which were pushed by the police officer. The mean weight of such objects was 142.56 pounds with a standard deviation of 52.07 pounds. In 32% of the cases, the officer was unassisted. Speed was a requirement for performing this task in 21% of the cases.

Incidents involving climbing. Another relatively frequent activity performed by police officers in the line of duty is that of climbing. Eight hundred thirty-seven (837) incidents of this nature were recorded. Table 16 provides a description of the types of objects which are typically climbed by officers, the circumstances surrounding the incident, and the size of the barriers climbed.

Table 16.
Climbing (N = 837 incidents)

Dimensions	Number	Percent	EAF
I. Object Climbed			
Embankment	244	24	2.85
Fence/Wall*	228	22	2.66
Stairs	177	17	2.06
Ladders	153	15	1.78
Ditches	140	14	1.63
Unspecified	87	8	1.01
	<u>1,029</u>	<u>100%</u>	<u>11.99</u>
*Handholds			
Footholds	147	64	1.71
Solid	118	52	1.38
	57	25	0.66
II. Circumstances			
Speed Required	216	26	2.52
III. Barrier Size (Mean)			
Embankment	28.80 ft.		
Fence/Wall			
Handholds	6.68 ft.		
Footholds	7.06 ft.		
Solid	**		
Stairs	1.91 flights		
Ladders	11.03 ft.		
Ditches	7.98 ft.		

**Data base too small to analyze

Most frequently climbed objects are embankments, followed closely by fences/walls. The average dimensions of the embankments climbed are 28.80 feet. Fences and walls are also frequently climbed by police personnel in the course of their job duties. Sixty-four (64%) percent of the barriers climbed were reported as having handholds, while 52% of the barriers were reported as having footholds. Solid barriers were

climbed in only 25% of the cases. The average height of a barrier having hand-holds is 6.68 feet. The average height of a barrier with footholds is 7.06 feet. The data base for computing the average height of solid barriers is considered to be too small for a meaningful analysis. To a lesser extent, officers are required to climb stairs, ladders, and ditches in their daily duties. The data analysis shows that on the average the officer will climb 1.91 flights of stairs. The average distance climbed on ladders is 11.03 feet, and the average depth of the ditches climbed is 7.98 feet. Speed was deemed to be a requirement in 26% of the situations described.

Incidents involving running. The 762 incidents in which the officer was required to run are summarized in Table 17.

Table 17.
Running (N = 762 incidents)

Dimensions	Number	Percent	EAF
I. Distances			
1 - 24 yds.	256	36	2.99
25 - 49 yds.	132	19	1.54
50 - 74 yds.	78	11	0.91
75 - 99 yds.	65	9	0.76
100 + yds.	<u>177</u>	<u>25</u>	<u>2.06</u>
	708	100%	8.26
II. Obstacles Encountered			
Shrubs	214	22	2.50
Ditches	202	21	2.36
Unspecified	181	19	2.11
Fence/Wall	165	17	1.92
Vehicles	107	11	1.25
Stairs	<u>91</u>	<u>9</u>	<u>1.06</u>
	960	99%*	11.20

climbed in only 25% of the cases. The average height of a barrier having hand-holds is 6.68 feet. The average height of a barrier with footholds is 7.06 feet. The data base for computing the average height of solid barriers is considered to be too small for a meaningful analysis. To a lesser extent, officers are required to climb stairs, ladders, and ditches in their daily duties. The data analysis shows that on the average the officer will climb 1.91 flights of stairs. The average distance climbed on ladders is 11.03 feet, and the average depth of the ditches climbed is 7.98 feet. Speed was deemed to be a requirement in 26% of the situations described.

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50 - 74 yds.	78	11	0.91
75 - 99 yds.	65	9	0.76
100 + yds.	<u>177</u>	<u>25</u>	<u>2.06</u>
	708	100%	8.26
II. Obstacles Encountered			
Shrubs	214	22	2.50
Ditches	202	21	2.36
Unspecified	181	19	2.11
Fence/Wall	165	17	1.92
Vehicles	107	11	1.25
Stairs	<u>91</u>	<u>9</u>	<u>1.06</u>
	960	99%*	11.20

Table 17 (cont'd.)

Dimensions	Number	Percent	EAF
III. Number of Obstacles			
1 - 3	320	68	3.73
4 - 6	64	14	0.75
7 - 9	20	4	0.23
10 - 12	17	4	0.20
13 +	<u>46</u>	<u>10</u>	<u>0.54</u>
	467	100%	5.45

*Rounding error

In 75% of the cases involving running, the officer was required to run a distance of 99 yards or less. Statistics based upon those cases in which the officer ran less than 100 yards show that the actual average distance which was run was 34.49 yards with a standard deviation of 26.17 yards. A separate analysis of those 177 situations in which the officer ran distances of greater than 100 yards resulted in a mean of 423.39 yards with a standard deviation of 512.49 yards. The types of obstacles encountered in the course of the officer's run characteristically consisted of shrubs, ditches, fences and walls, etc. The average number of obstacles encountered in running situations was 4.20 with a standard deviation of 3.93.

Incidents involving jumping. There were 431 incidents in which the officer was required to jump over, across, or down some object. Various types of jumps were fairly evenly distributed as shown by Table 18.

Table 18.

Jumping (N = 431 incidents)

Dimensions	Number	Percent	EAF
I. Type of Jump			
Over	161	34	1.88
Across	179	38	2.09
Down	<u>136</u>	<u>28</u>	<u>1.59</u>
	476	100%	5.56
II. Obstacles Encountered			
Ditch	182	37	2.12
Fence/Wall	129	26	1.50
Unspecified	113	23	1.32
Shrubs	<u>65</u>	<u>13</u>	<u>0.76</u>
	489	99%*	5.70
III. Distance Jumped (Over)			
1 - 3 ft.	69	44	0.80
4 - 6 ft.	74	47	0.86
7 - 9 ft.	7	5	0.08
10 - 12 ft.	3	2	0.03
13 + ft.	<u>3</u>	<u>2</u>	<u>0.03</u>
	156	100%	1.80
IV. Distance Jumped (Across)			
1 - 3 ft.	69	38	0.80
4 - 6 ft.	89	50	1.04
7 - 9 ft.	9	5	0.10
10 - 12 ft.	9	5	0.10
13 + ft.	<u>3</u>	<u>2</u>	<u>0.03</u>
	179	100%	2.07

Table 18 (cont'd.)

Dimensions	Number	Percent	EAF
V. Distance Jumped (Down)			
1 - 3 ft.	37	28	0.43
4 - 6 ft.	69	52	0.80
7 - 9 ft.	11	8	0.13
10 - 12 ft.	13	10	0.15
13 + ft.	<u>3</u>	<u>2</u>	<u>0.03</u>
	133	100%	1.54
VI. Speed Required			
Jump (Over)	101	63	1.08
Jump (Across)	93	52	1.08
Jump (Down)	44	32	0.51

*Rounding error

In the course of jumping, the obstacles typically encountered involved ditches, fences and walls, and shrubs. Where the officer was required to jump over an object, the mean height of the jump was 3.99 feet with a standard deviation of 2.24 feet. In those cases where the officer jumped across an object, the mean distance jumped was 4.47 feet with a standard deviation of 2.66 feet. In jumping down from some object, the mean distance jumped was 5.18 feet with a standard deviation of 2.92 feet. Speed was a requirement in better than one-half the situations in which the officer jumped over or across some object.

Incidents involving crawling. Of the activities requiring athletic skills, the activity of crawling was shown by the survey to be least frequent. A total of 166 incidents of this nature were identified, and the details are shown in Table 19.

Table 19.
Crawling (N = 166 incidents)

Dimensions	Number	Percent	EAF
I. Distance Traveled			
1 - 3 ft.	62	42	0.72
4 - 6 ft.	27	18	0.31
7 - 9 ft.	10	7	0.12
10 - 12 ft.	10	7	0.12
13 + ft.	<u>40</u>	<u>27</u>	<u>0.47</u>
	149	101%*	1.74
II. Terrain			
Across Ground	55	35	0.64
2 - 3 ft. crawlspace	67	42	0.78
4 - 5 ft. crawlspace	<u>36</u>	<u>23</u>	<u>0.42</u>
	158	100%	1.84
III. Circumstances			
Speed Required	64	39	0.75

*Rounding error

In those situations where the officer was required to crawl across or through an object, the average distance crawled was 6.78 feet with a standard deviation of 5.06 feet. In 35% of those situations, the officer crawled across the ground, while in 42% of the situations, the officer was required to go through a crawlspace with a 2 - 3 foot diameter. Speed was a requirement in 39% of the incidents involving crawling.

Incidents Involving Defensive Skills

Of the physical incidents which were recorded, 784 (22%) involved subjects who offered resistance. This section of the report deals with those situations in which defensive skills were required. Table 20 provides a description of the subjects who offered resistance.

Table 20.

Description of Subjects Who Resisted (N = 784 incidents)

Characteristics	Number	Percent	EAF
I. Sex of Subjects			
Males	781	83	9.11
Females	<u>132</u>	<u>17</u>	<u>1.54</u>
	913	100%	10.65
II. Subjects' Height			
Mean = 5'9"			
S.D. = 3.6"			
III. Subjects' Weight			
Mean = 164.2 lbs.			
S.D. = 32.7 lbs.			

In 83% of the situations, the subject offering resistance was a male. The associated expected annual frequency of an officer confronting a resisting male subject is 9.11 times per officer per year. Female subjects offering resistance were identified in only 17% of the situations described. The average height of the individual offering resistance was 5'9" with a standard deviation of 3.6". The mean weight of the

resisting subject was 164.2 pounds with a standard deviation of 32.7 pounds.

Obviously, one key factor to be considered in dealing with a resisting subject is his or her mental state. For this reason, the survey inquired as to the mental state of the person offering such resistance. Responding officers reported that they were able to reason with 30% of the subjects, while they were unable to reason with 70% of the subjects. The data analysis shows that a police officer can expect to confront 7.43 subjects per year who are resisting and with whom that officer is unable to reason.

Table 21.

Subjects' Mental State (N = 913 subjects)

Circumstances	Number	Percent	EAF
I. Ability to Reason			
Able to reason with subject	276	30	3.22
Unable to reason with subject	<u>637</u>	<u>70</u>	<u>7.43</u>
	913	100%	10.65
II. Subjects' State (Unable to Reason)			
Under influence of alcohol/drugs	368	55	4.29
Mentally/emotionally upset	152	23	1.77
No opportunity to reason	79	12	0.92
Mental state unknown	<u>71</u>	<u>10</u>	<u>0.83</u>
	670	100%	7.81

A further inquiry was made to determine the subjects' mental or physical state in the event that the officer was unable to reason with that subject. In 55% of these circumstances, the officer reported that the subject was unable to reason because

he was under the influence of drugs or alcohol. The associated expected annual frequency of encountering such an individual is 4.29. In 23% of the cases, the subject was judged to be mentally or emotionally upset. In another 12% of the situations, the officer reported that there was no opportunity to reason with the subject.

Undoubtedly, a police officer's persuasive skills are highly important as an effective means of avoiding physical confrontations with subjects. However, these data strongly indicate that such confrontations may be unavoidable because the subject is not amenable to a logical or reasonable approach in many circumstances. For fully 70% of the subjects confronted subsequent to offering resistance, the responding officer felt that verbal control was not effective because of the subject's psychological or physical state or because of the suddenness of the encounter.

The specific types of resistance which the police officer sample experienced are spelled out in Table 22.

Table 22.
Resistance Encountered (N = 784 incidents)

Types of Resistance	Number	Percent	EAF
Pulled Away	375	28	4.37
Wrestled	359	27	4.19
Ran Away	180	14	2.10
Passive Resistance	174	13	2.03
Hit/Kicked	160	12	1.87
Weapon*	48	4	0.56
Threw Object	16	1	0.19
Barricade	13	1	0.15
Special Tactics	4	**	0.05
	1,329	100%	15.51
*Gave up weapon by force	45	52	0.52
Gave up weapon voluntarily	36	42	0.42
Weapon not recovered	5	6	0.06
	86	100%	1.00

** Less than one percent

Most often, the resistance encountered consisted of the subject pulling away from the police officer. In 27% of the incidents, a surprisingly high percentage, the officer wrestled with the subject. The expected annual frequency of this type of activity is 4.19. In 12% of the incidents, the officer was hit or kicked by the subject. Forty-eight (48) incidents were recorded in which the officer confronted a subject with a weapon. The expected annual frequency of this type of encounter is 0.56 times per officer per year. In other words, an officer, on the average, can expect to encounter a subject brandishing a weapon once every two years in the line of duty. The data also indicate that in approximately half of those situations where the officer is confronted by a weapon, the weapon is surrendered only by means of force.

Certainly the types of action required by the officers to deal with the resisting subjects is of primary importance with respect to training needs. Force was required to resolve 79% of the situations, whereas 21% of the resisting subjects submitted to verbal orders. Where force was required, in approximately three-quarters of the situations, an unsuccessful verbal order preceded the use of force. In most other situations, the opportunity to give a verbal order did not occur. The above data clearly show that a police officer can be expected to confront situations in which the use of force is required on the average of 7.38 times per officer per year.

Table 23.
Action Taken by Officer (N = 801 subjects)

Description of Events	Number	Percent	EAF
I. Resolution of Situation			
Force Required*	633	79	7.38
Submitted to Verbal Order	<u>168</u>	<u>21</u>	<u>1.96</u>
	801	100%	9.34
*Verbal Order Given First	481	76	5.61
*No Chance to Give Order	124	20	1.45
*Other	<u>25</u>	<u>4</u>	<u>0.29</u>
	630	100%	7.35
II. Force Used By Officer			
Handcuffs**	436	40	5.09
Wrestled	301	27	3.51
Restraining Holds	237	21	2.76
Hit/Kicked	44	4	0.51
Displayed Firearm	39	4	0.45
Unspecified Action	26	2	0.30
Nightstick/Blackjack	10	1	0.12
Chemical Agent	8	1	0.09
Discharged Firearm	<u>5</u>	<u>***</u>	<u>0.06</u>
	1,106	100%	12.89
** Applied Handcuffs Unassisted	100	23	1.16

Table 23 (cont'd.)

Description of Events	Number	Percent	EAF
III. Evasive Maneuver			
Push/Shove	263	38	3.07
Pull	205	30	2.39
Block	84	12	0.98
Duck/Dodge	81	12	0.94
Unspecified	<u>55</u>	<u>8</u>	<u>0.64</u>
	688	100%	8.02
IV. Circumstances			
Immediate Action Required	571	73	6.66
Officer Unassisted	<u>433</u>	<u>68</u>	<u>2.60</u>
***Less than one percent			

Handcuffs were used by the responding officers in 436 cases. In approximately one-quarter of those situations involving the use of handcuffs, the officer was unassisted in applying them. The force used by the officer in overcoming the subject's resistance also most frequently involved wrestling and the use of restraining holds. Evasive maneuvers, primarily pushing, shoving, or pulling, were also frequently required by the officer. It is important to note that in 571 reported incidents, or 73% of all incidents involving resisting subjects, immediate action was required by the officer, without the opportunity to wait for a backup unit. In 68% of those situations involving resistance, the police officer was not assisted.

VIII. COMPARISONS BY DEPARTMENT TYPE

One important purpose of this job analysis study is to determine whether meaningful differences exist among the twelve department types with respect to job physical skill requirements. Table 24, which follows, provides an overview of the similarities and differences among the twelve departmental types in the expected annual frequency of physical activities.

Table 24.
Comparisons By Department Type (EAF)

Department Type	Questionnaires	Total EAF	Critical Incidents	Running	Crawling	Jumping
State Police	2,186	32.83	19.64	6.03	1.02	2.86
Detroit	2,814	25.90	18.59	8.66	1.91	3.02
Municipal: Large	3,433	45.92	34.78	11.46	1.37	4.36
Municipal: Medium	1,884	37.27	26.47	8.43	2.61	3.20
Municipal: Small	1,231	37.24	21.98	5.63	1.09	2.72
Sheriff: Large	2,191	30.82	16.23	6.23	1.02	4.59
Sheriff: Small	515	19.10	6.51	6.51	0.43	2.17
Airports	986	5.67	3.40	2.49	0.23	0.45
Railroads	953	40.83	30.97	8.92	2.58	8.92
DNR	2,134	101.11	52.60	15.19	5.97	16.14
Parks	496	45.98	24.79	8.11	0.00	3.61
University/College	348	77.75	54.61	17.99	1.93	2.57

Table 24 (cont'd.)

Department Type	Climbing	Pushing	Drag/Pull	Lift/Carry	Resistance Encountered	Force Used	Evasive Maneuver
State Police	4.50	12.27	7.88	13.20	5.83	5.22	2.86
Detroit	4.93	6.20	6.20	4.37	12.79	10.41	7.07
Municipal: Large	8.14	11.53	11.40	14.46	17.19	13.81	8.79
Municipal: Medium	5.93	11.27	10.56	12.34	14.24	11.39	7.36
Municipal: Small	5.09	14.35	8.90	11.63	8.90	8.54	5.09
Sheriff: Large	6.33	13.98	6.12	8.47	5.51	4.39	3.16
Sheriff: Small	3.04	4.78	6.51	8.68	3.91	3.47	1.74
Airports	2.49	0.45	0.45	0.91	0.68	0.68	0.00
Railroads	24.17	8.68	5.63	9.15	1.64	0.47	0.00
DNR	30.92	11.32	36.99	42.12	0.00	0.94	0.52
Parks	11.27	9.92	7.21	18.48	8.57	5.86	4.96
University/College	16.06	12.21	10.92	32.13	13.49	11.57	5.14

The analysis reported in the previous chapter separated the physical skill requirements into two broad categories: athletic skills and defensive skills. It is meaningful to maintain this distinction for the purpose of examining the data in Table 24. Seven activities are of an athletic nature: running, crawling, jumping, climbing, pushing, dragging/pulling, and lifting/carrying. Two of the activities

pertain to defensive skills: force used and evasive maneuver. By adding the expected annual frequencies for each type of physical activity in the two clusters, one may obtain an index of the athletic job requirements and the defensive job requirements. The sum of the expected annual frequency in each category is a meaningful statistic and may be used to provide an index for the purpose of comparing the twelve departmental types.

Table 25 presents the summary data based upon the preceding table.

Table 25.

Comparison of Department Types By General Activities

Department Types	Athletic Skills	Defensive Skills
State Police	47.76	8.08
Detroit Police Department	35.29	17.48
Municipal (Large)	62.72	22.60
Municipal (Medium)	54.34	18.75
Municipal (Small)	49.41	13.63
Sheriff Departments (Large)	46.74	7.55
Sheriff Departments (Small)	32.12	5.21
Airport Police Departments	7.47	0.68
Railroad Police Departments	68.05	0.47
Department of Natural Resources	158.65	1.46
Local Park Police Departments	58.60	10.82
University/College Police Depts.	93.81	16.71

The interpretation of Table 25 is straightforward. The composites for athletic skills and defensive skills have been calculated for each of the twelve department types. The data show that the Department of Natural Resources personnel, by far, engage in the highest number of athletic type job requirements of the twelve departmental types. On the average, Department of Natural Resources personnel can expect to be involved in 158.65 athletic type activities per year. These athletic type activities are based upon the previously-noted seven variable composite. An examination of the previous table, Table 24, reveals that the athletic activities required for the Department of Natural Resources are actually quite diverse. University/college police departments, railroads, park police, and municipal police departments all rate highly with respect to the athletic skill requirements.

The data in Table 25 on athletic skill requirements should be put into a proper perspective. Small sheriff departments which are ranked 11 out of 12 departmental types still report a highly significant number of athletic type activities in the course of an officer's year. A deputy on patrol in a small sheriff's department can expect to engage in 32.12 athletic type activities per year. This is a very substantial number, and the need for selecting individuals who possess the required athletic capabilities is clear-cut. Moreover, the implications for training qualified personnel in general athletic skills is also substantiated by

these data. Airport police departments, on the other hand, encounter very little in the way of athletic job requirements in the course of a year, and the corresponding expected annual frequency is 7.47. Interestingly, the data in Table 25 describing defensive skill requirements tell a different story. It comes as no surprise that the most substantial job demands exist within larger and medium sized municipal departments. Large and medium-sized municipal police departments and the Detroit Police Department, rank at the top of this distribution. The data show further that university/college police departments, small towns, park police, state police, and the sheriff departments all require substantial demands in the area of an officer's physical skills. The defensive skill requirements for personnel in the Department of Natural Resources, as well as airport and railroad police, are, indeed, quite small. The Department of Natural Resources which rates first among the departmental types with respect to athletic skills also ranks tenth with respect to defensive skills. A similar sharp difference exists for railroad police personnel. The data on both athletic and defensive skill requirements for airport police departments are so discrepant from the other departmental types as to raise substantial questions with respect to pre-employment and training standards.

Another important set of data in Table 24 bears discussion, i.e., the criticality of associated incidents. Table 26 presents the department types and their associated expected annual frequency of reported critical incidents of a physical nature.

Table 26.
Comparison of Department Types By Criticality of Incidents

Department Types	EAF Critical Incidents
State Police	19.64
Detroit Police Department	18.59
Municipal (Large)	34.78
Municipal (Medium)	26.47
Municipal (Small)	21.98
Sheriff Departments (Large)	16.23
Sheriff Departments (Small)	6.51
Airport Police Departments	3.40
Railroad Police Departments	30.97
Department of Natural Resources	52.60
Local Park Police Departments	24.79
University/College Police Depts.	54.61

An inspection of the above table reveals that university/college police departments rank first among the twelve departmental types with respect to the anticipated number of critical physical incidents per year. The data in this table are self-explanatory. Certainly, the expected annual frequency of physically-oriented critical incidents provides a meaningful index of the potential risk associated with inadequate job performance.

IX. HIGH CRITICALITY ANALYSIS

In the data analysis, a distinction was made between all physical incidents and those physical incidents associated with a high-level of criticality as previously defined. Of the 3,604 physical incidents reported, 2,267 were described as being critical in one or more respects. Governmental guidelines on pre-employment testing mandate that standards or tests with employment implications should be based upon important aspects of job performance. For this reason, the data were analyzed for the purpose of determining whether any meaningful difference exists between the physical activities associated with high levels of criticality and all physical activities in general. A correlational analysis was undertaken for this purpose in which patterns of physical activity were compared for the overall data and for those data which had been refined on the basis of criticality. A comparison of the relative frequency of all physical activities under general conditions and high criticality conditions resulted in a correlation coefficient of $r = .78$. This coefficient is regarded as being highly statistically significant and reveals a very high degree of similarity in the overall job requirements within both sets of data. Given this high level of correlation, it is proper that the job analysis results be based upon the overall data rather than those data which are confined to highly critical situations. This is a preferable state of affairs, because job analysis results based upon a greater sample size will, of course, be more statistically reliable and meaningful than that which is based upon a smaller sample.

The data in Table 27 provide some interesting insights with respect to the various

physical activity requirements of a law enforcement officer's job in relation to their criticality.

Table 27.
Comparison of Activities By Criticality

Activity	Frequency: Overall	Frequency: High Criticality	Criticality Ratio	EAF: High Criticality
Evasive Maneuver	401	359	.90	4.19
Use of Force	633	562	.89	6.55
Dragging/Pulling (Person)	418	351	.84	4.09
Running	762	615	.81	7.17
Crawling	166	127	.77	1.48
Jumping	431	321	.74	3.74
Lifting/Carrying (Person)	397	294	.74	3.43
Climbing	837	540	.65	6.30
Pushing	885	567	.64	6.61
Dragging/Pulling (Object)	537	279	.52	3.25
Lifting/Carrying (Object)	<u>816</u>	<u>400</u>	<u>.49</u>	<u>4.67</u>
Total Activities	6,283	4,415	.70	51.48
Total Incidents	3,604	2,267	.63	26.44

Table 27 shows that a law enforcement officer can expect to engage in 26.44 physical incidents per year which are of a critical nature, that is, where there is adjudged to be a critical risk of injury, loss/damage to property, and/or escape of subject. Further, the data show that approximately two-thirds (63%) of all physical incidents in which law enforcement officers engage are associated with a high level of criticality. Also, an officer can expect to engage in 51.48 physical activities per year which are deemed to be highly critical.

A criticality ratio was computed for the various types of physical activities required of law enforcement personnel. This index is simply the ratio of the number of high criticality incidents requiring a particular type of physical activity in relation to the total number of incidents requiring the same type of activity. For example, law enforcement personnel engaged in evasive maneuvers in 359 incidents which are regarded as highly critical. This number compares to a total of 401 incidents in which officers were required to use evasive maneuvers. The ratio of these two numbers results in a criticality index of .90. In other words, evasive maneuvers prove to be the most critical type of physical activity required of law enforcement personnel, because when they occur, they are most frequently associated with a high level of criticality, i.e., severe consequences as a result of a failure to perform. The expected annual frequency for each type of highly critical activity is also provided within Table 27. Use of force ranks second on the basis of criticality among the various activities listed. Table 27 clearly shows the compelling criticality and importance of both types of defensive skills which were identified in this questionnaire survey.

The criticality level of the athletic type activities may be ascertained from an inspection of the previous table. Dragging/pulling persons is the third most critical activity, a finding which is not too surprising considering the implications of this type of activity for medical assistance and rescue. What is striking regarding these data is that the average criticality ratio for all physical activities is .70. The interpretation of this statistic is straightforward: in the great majority of situations, we conclude that significant risks are associated with physical activities performed by the police officers in a substandard manner. The data on expected annual frequency also argue rather clearly that law enforcement personnel do, indeed, perform a substantial number of highly critical physical job requirements on a routine day-to-day basis.

X. RELATIONSHIPS AMONG PHYSICAL ACTIVITIES

This job analysis study has identified a variety of physical activities in which police officers must engage on a routine basis. The specifics of these physical skill requirements and the circumstances surrounding the corresponding job behaviors have been described in previous sections of this report. One highly important question which remains to be addressed deals with the relationships which may exist among the required physical activities. One may inquire as to the extent to which certain activities occur in combination. This question has very important implications for the development of pre-employment measures as well as training proficiency measures. For example, events which are not apt to occur jointly in actual job behavior should not be combined into a single examination event for the purpose of evaluating job applicants. Tests which profess to be content valid

must parallel as closely as possible the actual job behaviors which are evidenced by incumbent law enforcement personnel. Should certain physical activities have a habit of occurring in combination, it would then be appropriate to combine such activities within an employment test. However, should a job study reveal that such activities habitually occur independently, then it would not be appropriate to combine them for the purpose of evaluating job applicants or recruits in training.

The 11 basic physical activities which were identified in this study were inter-correlated to determine whether a stable intercorrelational pattern exists among the variables. Table 28 presents the intercorrelational matrix for these 11 physical activities.

Table 28
Intercorrelational Matrix: Physical Activities

Run										
Crawl	.77									
Jump	.74	.95								
Climb	.80	.92	.97							
Push	.02	.00	.06	.02						
Drag Persons	-.28	-.64	-.74	-.74	.14					
Drag Objects	.74	.96	.98	.93	.07	-.73				
Lift Persons	-.14	-.54	-.59	-.60	.26	.95	-.58			
Lift Objects	.82	.91	.93	.94	.14	-.69	.97	-.55		
Force	-.22	-.64	-.74	-.72	.00	.98	-.73	.92	-.69	
Evade	-.27	-.64	-.72	-.73	-.04	.96	-.72	.90	-.71	.99

Normally, one applies data reduction techniques such as cluster analysis or factor analysis to these types of data for the purpose of determining whether meaningful clusters or factors exist. A cluster or factor is a term which refers to a homogeneous set of variables which are distinct from other homogeneous sets. Because the number of variables is quite limited, and, further, because the relationships among the variables are extremely clear, a formal factor analytic procedure is not deemed to be necessary. Table 29, which follows, is predicated upon the intercorrelational matrix shown here and describes the three very distinct "factors" or groupings which have been identified.

Table 29.
Activity Factors

Factor	r Within	r Between
1. <u>Resistance</u>		
- Force	$\bar{r} = .95$	$\bar{r}_{1.2} = -.60$
- Evade		
- Drag Person		$\bar{r}_{1.3} = .09$
- Lift Person		
2. <u>General</u>		
- Run	$\bar{r} = .89$	$\bar{r}_{2.3} = .05$
- Jump		
- Climb		
- Drag Object		
- Lift Object		
- Crawl		
3. <u>Push</u>	--	--

The first factor, which is entitled Resistance, is comprised of four activities: use of force, evasive maneuvers, dragging/pulling persons, and lifting/carrying persons. These four physical activities have an average intercorrelation of .95. This value indicates a very high level of relationship among the four physical activities identified. In other words, it is highly probable that these activities will occur together whenever they have occasion to occur at all.

A second factor which was identified we call General, because the activities which describe the factor may pertain to a broad-range of actual job behaviors. The specific six activities which comprise the "General" factor are: running, jumping, climbing, dragging/pulling objects, lifting/carrying objects, and crawling. The average intercorrelation among these six activities is $r = .89$. This intercorrelational value is also considered to be quite high and indicates that a high degree of internal consistency or homogeneity exists within this general factor.

The third factor identified is that of Pushing, a job activity which apparently does not covary with other physical activities of law enforcement personnel. Apparently, Pushing exists as an independent activity unrelated to the other activities which have been identified.

Also of significance are the correlational values between factors. Interestingly, the correlation between the Resistance and General factors is $-.60$. This average intercorrelation indicates that the four homogeneous Resistance-type activities do not occur in combination with the internally consistent job activities which comprise the General factor. Conversely, those General physical activities are not likely to occur in combination with the activities associated with Resistance

situations. An average intercorrelation of $r = .09$ exists between the Resistance factor and the Pushing factor. Simply put, the two factors are independent, i.e., the activities do not occur jointly. Moreover, an average correlation of $r = .05$ between the General factor and Pushing factor also attests to the independence of these two sets of job activities.

It is the opinion of Wollack & Associates that the data herein described provide a highly useful basis for grouping various physical activities in a job-related manner for the purpose of developing physical skills measures.

PHYSICAL ACTIVITY SURVEY WORKSHOPS

Tuesday, October 3, 1978

Captain Gerald Higgins
Inspector Jack Fairfield
Sgt. Joseph D. Smith
Captain Bruce Lucey
Deputy Dave Harken
Cpl. Andrew Henderson
Inspector Paul A. Schnarr
Lt. Burton Kleeves
Sgt. Robert Aguirre
Ms. Karen McCracken
Training Coordinator Michael Ramsey
Sheriff David O. Wood
Sgt. Joseph K. Pavlick
Asst. Jail Admin. Tony Shannon
Ptlm. Stanley Dziuba
D/Sgt. Ronald Tuscany
Captain Allan A. Nalepa
Lt. Calvin W. Wylie
Ptlm. Kent Maurer
Undersheriff Wilbur Bond
Sgt. John Wilson
Sgt. Kenneth Giles
D/Sgt. John Bodenschatz
Sgt. Donavon Stockbridge
Lt. James Doty
Captain James McDonagh

Saginaw PD
Roseville PD
Ingham Co. SD
Lenawee Co. SD
Muskegon Co. SD
Marquette PD
Westland PD
Grand Rapids PD
Flint PD
Flint PD
Pontiac PD
Barry Co. SD
Dearborn PD
Wayne Co. SD
Detroit PD
Macomb Co. SD
Sterling Heights PD
Midland PD
Jackson PD
Lapeer Co. SD
Allegan Co. SD
Allegan Co. SD
Ann Arbor PD
Livonia PD
Calhoun Co. SD
Calhoun Co. SD

APPENDIX A: WORKSHOP PARTICIPANTS

Tuesday, October 24, 1978

Sgt. G. Paul Cross
Sgt. Eugene Bombich
Chief Willard Irwin
Lt. Stan Dinius
Asst. Chief Clyde Weaver
Undersheriff Roger Good
Officer William Shafer
Officer Milton Stringer
Sgt. David Emerson
Chief William L. Hartley
Sgt. Scott Fitzgerald
Asst. Chief Lee. E. Edward
Sgt. Gary Sauer
Sgt. Elmer Haustein
Sgt. William Pertner
Sgt. Charles Keebler
Sgt. Robert Ring
Sgt. John Fiedler
Sgt. James Witz
Sgt. David Aho

Royal Oak PD
Kalamazoo Township
Cadillac PD
Central Michigan University
Buchanan PD
Delta Co. SD
Fenton PD
Clay Township
Adrian PD
Ludington PD
Sault Ste. Marie PD
Sault Ste. Marie PD
MSP - Northville
MSP - West Branch
MSP - Battle Creek
MSP - South Haven
MSP - Rockford
MSP - Gaylord
MSP - Negaunee
MSP - Wakefield

Tuesday, October 24, 1978 Cont'd

Sgt. Robert Vezzetti
D/Sgt. Ernest Berry
Ptlm. Gary E. Kusz
Sgt. Frank E. Stevens
Officer Christopher Jens
Lt/Asst. Chief W. Robert Huff
John Longstreth, Admin. Analyst
Chief Barton E. Howe
Sgt. Wayne Thomas
Lt. Lyle Reddy
Jack Jankovic

MSP - Sault Ste. Marie
Woodhaven PD
Ironwood PD
Isabella Co. SD
Wayne State University
Buena Vista Township
MSP - East Lansing - Headquarters
Charlotte PD
Gaylord PD
Cadillac PD
Owosso - Dept. of Public Safety

Thursday, October 26, 1978

Captain Earl L. McGaw
Donald Kelley, Parks Director
Lt. A. Randall
Detective R. Mehl
Sgt. Ronald M. Yura
Officer Terry L. Nelson
Sgt. Robert S. Tobolski
Robert F. Selig
Captain D. F. Miller
Lt. L. M. Corbin
Roger L. Wood, Law. Enf. Exec.
Officer Hassan Makled
Captain Richard Potts
Albert A. Sheaffer, Senior Park Ranger
Sgt. Phil Davis
Ptlm. David Bush
Ptlm. Elroy Green
Chief Robert Skellenger

Tri-County Airport Security
Kalamazoo County Parks & Rec.
Grand Trunk Railroad
Grand Trunk Railroad
ConRail Railroad
Muskegon County Airport
Detroit Terminal Railroad
Kalamazoo Municipal Airport
Norfolk & Western Railroad
Norfolk & Western Railroad
Department of Natural Resources
Detroit Metro Airport
Detroit Toledo & Ironton Railroad
Genesee County Parks & Rec.
Capital Regional Airport
Chessie System
Lansing Parks & Rec.
Huron/Clinton Metro Authority

APPENDIX B:
LAW ENFORCEMENT PHYSICAL ACTIVITY QUESTIONNAIRE



Michigan Law Enforcement Officers Training Council
LAW ENFORCEMENT PHYSICAL ACTIVITY QUESTIONNAIRE

DIRECTIONS: Complete this form each time you have a physical activity. If you have no physical activity during a shift, complete Section 1 and check "No Activity." For physical activity with no resistance, complete Sections 1, 2 and 3. If you encounter resistance, complete both sides of this form.

Section No. 1

DEPARTMENT NUMBER	<input type="text"/>	<input type="text"/>	<input type="text"/>	DATE	<input type="text"/>	<input type="text"/>	<input type="text"/>	SHIFT	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	NO ACTIVITY	<input type="checkbox"/>
		Month	Day			Days	Aft.	Mids.	Other					

Section No. 2 (Complete this ENTIRE section each time you have a physical activity)

REASON(S) FOR ACTIVITY	<input type="checkbox"/> Investigation <input type="checkbox"/> Apprehension of Subject <input type="checkbox"/> Emergency Assistance <input type="checkbox"/> Citizen Assistance <input type="checkbox"/> Other: (Describe) _____													
DURATION	Duration of This Physical Activity (Write in minutes and seconds) <input type="text"/> <input type="text"/> Minutes <input type="text"/> <input type="text"/> Seconds													
OUTCOME(S)	<input type="checkbox"/> Successful Outcome <input type="checkbox"/> Arrest <input type="checkbox"/> Escape Of Subject <input type="checkbox"/> Injury To Self/Others <input type="checkbox"/> Loss/Damage To Property <input type="checkbox"/> Loss Of Life <input type="checkbox"/> Other													
CRITICALITY	If A Patrol Officer Was Unable To Do This Activity, What Would The Probable Consequences Have Been? (Rate all three.)		Injury To Self/Others		Escape Of Subject(s)		Loss/Damage To Property		Yes		No			
DESCRIBE WHAT HAPPENED														

(Continue On Reverse)

Section No. 3

ACTIVITY	DESCRIPTION OF ACTIVITIES																		
RUNNING	Distance In Yards			Exact Distance			Number Of obstacles			Type Of Obstacle(s)									
	1-24	25-49	50-74	75-99	100+	IF 100+ YARDS			1-3	4-6	7-9	10-12	13+	<input type="checkbox"/> Fence/Wall	<input type="checkbox"/> Stairs				
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Shrubs	<input type="checkbox"/> Ditch				
														<input type="checkbox"/> Vehicle	<input type="checkbox"/> Other				
CRAWLING	Distance In Feet			Height Of Crawl Space In Feet			Speed Required?												
	1-3	4-6	7-9	10-12	13+	GROUND 2-3 4-5			YES NO										
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>										
JUMPING	Distance In Feet			Jumped			Type Of Obstacle(s)				Speed Required?								
	1-3	4-6	7-9	10-12	13+	OVER ACROSS DOWN			<input type="checkbox"/> Fence/Wall <input type="checkbox"/> Shrubs				YES NO						
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Ditch <input type="checkbox"/> Other				<input type="checkbox"/> <input type="checkbox"/>						
CLIMBING	Write in No. of Feet/Flights:						Embankment		Feet		Speed Required?								
	Fence/Wall _____ Feet						Ditch		_____ Feet		YES NO								
	Did the Fence/Wall have: <input type="checkbox"/> Handhold						Ladder		_____ Feet		<input type="checkbox"/> <input type="checkbox"/>								
	<input type="checkbox"/> Foothold						Stairs		_____ Flights										
	<input type="checkbox"/> Solid						Other (Describe) _____		_____										
PUSHING	Distance In Feet			Weight In Pounds			Vehicle		Were You Assisted?		Speed Required?								
	1-19	20-39	40-59	60-79	80+	25-49	50-99	100-149	150-199	200+	YES NO	YES NO	YES NO						
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
DRAGGING/PULLING	Distance In Feet			Weight In Pounds			Person		Were You Assisted?		Speed Required?								
	1-19	20-39	40-59	60-79	80+	25-49	50-99	100-149	150-199	200+	YES NO	YES NO	YES NO						
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
LIFTING/CARRYING	Height Of Lift In Feet		Distance of Carry In Feet			Weight In Pounds			Person		Were You Assisted?		Speed Required?						
	1	2	3	4	5+	1-19	20-39	40-59	60-79	80+	25-49	50-99	100-149	150-199	200+	YES NO	YES NO	YES NO	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IF INCIDENT INVOLVES RESISTANCE BY SUBJECT, PLEASE COMPLETE OTHER SIDE OF THIS FORM

APPENDIX C: INSTRUCTIONS

LAW ENFORCEMENT PHYSICAL ACTIVITY QUESTIONNAIRE



INSTRUCTIONS
LAW ENFORCEMENT PHYSICAL ACTIVITY QUESTIONNAIRE

The following instructions describe the procedures for completing this questionnaire. Accuracy and completeness are essential, so please read these instructions carefully.

When to fill out a questionnaire?

NO PHYSICAL ACTIVITY during a shift — Fill out Section No. 1 and mark "No Activity."

PHYSICAL ACTIVITY, NO RESISTANCE — Fill out Sections No. 1, No. 2, and No. 3.

PHYSICAL ACTIVITY WITH RESISTANCE — Fill out both sides of the questionnaire.

- ★ HOW TO REPORT MORE THAN ONE PHYSICAL ACTIVITY IN A SHIFT — For each physical activity, use a separate questionnaire. **Use as many questionnaires as needed to report each separate activity during the shift.**

Section No. 1: (Complete Section No. 1 even if you have no physical activity for a shift.)

DEPARTMENT NUMBER — A number has been assigned to your department. Please use this number on each form you complete.

DATE — Enter the current date.

SHIFT — Check the shift you are working.

NO ACTIVITY — If you had no activity for the shift, check this box and turn in the questionnaire.

Section No. 2:

REASON(S) FOR ACTIVITY — Indicate why the physical activity occurred. Check as many as apply.

INVESTIGATION — This means you were investigating on a complaint.

APPREHENSION OF SUBJECT — This means an apprehension started the activity.

EMERGENCY ASSISTANCE — Rescue, medical assistance, etc.

CITIZEN ASSISTANCE — Pushing stalled cars, changing a tire, etc.

OTHER — Anything else, please describe it.

- ★ DURATION — Write in the minutes and seconds of the **actual physical activity**. This period begins and ends with exertion of the body; driving a car should not be reported as part of the duration. Duration is NOT the total time for the complaint.

OUTCOME(S) — Indicate as many as apply.

- ★ CRITICALLY — Indicate what the probable consequences would have been if a patrol officer was unable to do the reported activity. Do not report what you did.

Be sure to rate ALL three.

DESCRIBE WHAT HAPPENED — Write a brief description of what you did.

- ★ Information that was frequently omitted in previous surveys.

APPENDIX D: PARTICIPATING POLICE DEPARTMENTS

PHYSICAL ACTIVITY SURVEY

Participating Departments by Agency Type

MICHIGAN STATE POLICE (9 Posts)

Negaunee	Gaylord
Wakefield	Northville
Sault Ste. Marie	Battle Creek
Rockford	South Haven
West Branch	

DETROIT POLICE DEPT. (8 Precincts)

1st Precinct	7th Precinct
2nd "	12th "
5th "	15th "
6th "	16th "

LARGE CITIES/VILLAGES/TWPS. (8 Depts.)

Grand Rapids	Dearborn
Flint	Sterling Heights
Livonia	Saginaw
Ann Arbor	Royal Oak

MEDIUM CITIES/VILLAGES/TWPS. (7 Depts.)

Westland	Marquette
Roseville	Sault Ste. Marie
Jackson	Adrian
Midland	

SMALL CITIES/VILLAGES/TWPS. (13 Depts.)

Owosso	Ludington	Buchanan
Cadillac	Cheboygan	Gaylord
Woodhaven	Ironwood	Kalamazoo Twp
Fenton	Charlotte	Buena Vista Twp
		Clay Twp

LARGE SHERIFF (9 Depts.)

Wayne Co.	Washtenaw Co.	Lenawee Co.
Macomb Co.	Muskegon Co.	Allegan Co.
Ingham Co.	Calhoun Co.	Lapeer Co.

SMALL SHERIFF (6 Depts.)

Isabella Co.	Delta Co.
Barry Co.	Crawford Co.
Alpena Co.	Marquette Co.

(Continued)

(Page two)

AIRPORTS (9 Depts.)

Capital City	Muskegon Co. Airport	Kalamazoo Municipal
Delta Co. Airport	Tri-Co. Airport	Kent Co. Airport
Detroit Metro	Houghton Co. Memorial	Twin Cities Airport

RAILROADS (6 Depts.)

Conrail	Norfolk & Western
Grand Trunk & Western	Detroit Terminal
Chessie System	Detroit Toledo & Ironton

STATE DEPT. OF NATURAL RESOURCES (1 Dept.)

DNR

LOCAL PARKS (4 Depts.)

Genesee Co. Parks & Rec.
Huron-Clinton-Metro Authority
Kalamazoo Co. Parks & Rec.
Lansing Parks & Rec.

COLLEGES/UNIVERSITIES (2 Depts.)

Wayne State Univ.
Central Michigan Univ.



While portions of this document are illegible, it was micro-filmed from the best copy available. It is being distributed because of the valuable information it contains.

END