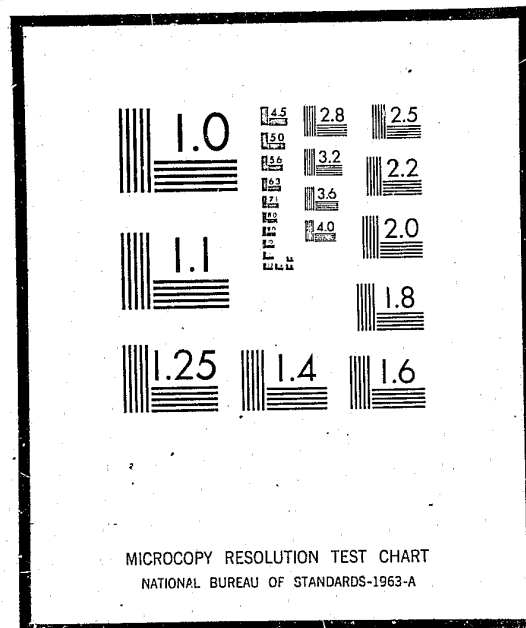


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NEEDS ASSESSMENT FOR POLICE PHYSICAL TRAINING

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TABLE OF CONTENTS

Contents.....	Page	i
List of Tables.....	Page	ii
I. Introduction.....	Page	1
A. The Problem: General.....	Page	2
B. The Problem: Specific.....	Page	4
II. Situational Analysis.....	Page	7
III. Statistical Analysis.....	Page	19
A. Injuries of San Jose Police Officers.....	Page	20
B. Assault and Battery Injuries -- Santa Clara County Police Personnel.....	Page	41
IV. Physical Fitness Levels of Current Personnel.....	Page	45
V. Minimum Standard.....	Page	73
A. Need for a Standard.....	Page	73
B. Minimum Performance Requirement.....	Page	79
VI. Physical Training.....	Page	81
A. Police Academy.....	Page	82
B. On-Going.....	Page	103
VII. Summary and Recommendations.....	Page	105
Bibliography.....	Page	107
Appendix.....	Page	110
A. Performance Test.....	Page	110
B. Task Analysis.....	Page	130
C. Injury Report Form.....	Page	139
D. Assault and Battery Report Form.....	Page	140

LIST OF TABLES

I. Contribution of Police Performance Categories to Sustained Injuries
II. Description of Police Officers Injured Between 1971 and the First Half of 1974
III. Injuries Sustained During Non-Arrest Investigative-Service
IV. Injuries Incurred During Enforcement in Which the Suspect Was Non-Resistive and Passive
V. Injuries Sustained During Enforcement When Suspect was Physically Resistive
VI. Incidence of Injury Performing Physical Tasks and the Circumstances in Which They Occurred. (Enforcement: Physically Resistive)
V. Injuries Sustained During Enforcement When Suspect Was Physically Resistive
VI. Incidence of Injury Performing Physical Tasks and the Circumstances in Which They Occurred. (Enforcement: Physically Resistive)
VII. Incidence of Injury From Objects
VIII. Type and Location of Injuries to Officers When Suspect Resists
IX. Training Injuries
X. Types of Training Injuries
XI. Location of Training Injuries
XII. Injured Assaulted and Battered Officers
XIII. Description of Sample
XIV. Performance of Police Personnel on Standard Fitness Tests
XV. Performance of Police Personnel on Job Simulation Tests
XVI. Body Composition of Police Personnel
XVII. Aerobic Capacity of Police Personnel

LIST OF TABLES - continued

- XVIII. Performance of Police Applicants on Assorted Physical Fitness Tests
- XIX. Minimum Entrance and Graduation Scores for the Police Simulation Tests
- XX. Changes in Standard Physical Fitness Tests During 30-Hour Police Academy
- XXI. Changes in Standard Physical Fitness Tests During 30-Hour Police Academy for Women
- XXII. Description of Selected Academy Cadets

CHAPTER I

INTRODUCTION

- A. THE PROBLEM: General
- B. THE PROBLEM: Specific

The crucial physical duties of police work are the concern of this study. While the majority of the police officer's duty time is spent in sedentary or minimally demanding activities, there is an aspect of his job which demands sudden and immediate responses to critical situations. His job has been created because the public realizes that in the protection of their own lives and property, they are not able to fill their needs unaided. When the police are called to intervene, the citizen has reached his last source of help. Need has escalated to the point of desperation.

What is the officer able to do when he confronts these situations? This is the key issue. Can he in fact protect the public's lives and property? The public is only as safe as the police officer is capable. Yet what is provided the officer to meet the needs of public safety amounts to a scale of mechanical equipment, and occasionally some training in manipulative psychology. We can assume that the officer can shoot or talk, but are uncertain of any intermediate action. When verbal communication breaks down, and physical force is required, we face another dilemma. If a police officer is substandard in his ability to protect himself or others and therefore uses an inappropriate means of force or an improper application of force, the quality and effectiveness of his service is questionable.

The citizenry often questions the initiation, escalation, and degree of force used by police officers. It assumes that the police

officer's training will ensure appropriate action. In this study, to bridge the gap between expectation and ability, we are attempting a specific means of evaluation, and an examination of job-related injuries, situational demands, and physical performance.

During the past 3-1/2 years in the City of San Jose, there have been 523 cases of injury to police officers in the performance of their daily work tasks. In the surrounding County of Santa Clara, from 1970 to 1973 (18 months), 129 police officers were injured as a result of assault. The population of San Jose increases nearly 25,000 per year. On an over-all scale, there are now 1.52 police officers per every 1,000 San Jose citizens. However, on a 24-hour basis, the San Jose Police Department fields an average of 60 uniformed officers per shift, resulting in an actual coverage of one police officer per 8,700 citizens. On an annual basis, these officers answer approximately 180,000 calls for service and have effected 14,976 total arrests in 1973-74.

In the last 3-1/2 years, there were approximately 550,000 calls for service. Approximately 480 of those calls resulted in an on-duty injury to a police officer; that is, one officer was injured for every 1,150 calls answered. Over this 3-1/2 year period, on the average, 425 calls were answered every 24 hours. Therefore, a trend can be seen, that one San Jose police officer was injured every three days, almost three hurt in a week, or eleven every month, and over 132 per year.

It is reasonable to conclude that as the calls for police service increase, so will the number of injuries increase. In 1974, to date, an average of 470 calls are dispatched in a 24-hour period. Using the

above figures, it can be expected that 152 San Jose police officers will be injured this year, approximately 13 officers every month.

Santa Clara County police officers are trained in various aspects of police work at a county academy over a period of 400 hours. 16 hours of this instruction time are devoted to defensive tactics and 30 hours to physical training. There are no pass-fail standards for any of the training areas. A cadet cannot fail the academy. Follow-up training for on-duty San Jose police officers during the past five years amounts to 7 hours of defensive tactics and 1 hour of physical conditioning.

Physical injuries incurred during the 1973-74 period total 224 thus far, indicating a rise in the injury rate. This figure represents only uniformed beat officers and should be considered against the City's total of 360 uniformed personnel assigned to patrol service. Total police officer injuries have caused a loss of approximately 23,000 man-hours during the past 18 months. The City of San Jose has been responsible both for salary compensation and for approximately 180,000 in medical expenses over the past 3-1/2 years.

As of 1972, San Jose has dropped its height and weight requirements. A police applicant need only have his weight in proportion to his height. This is also true of most other Santa Clara County law enforcement agencies. Of the recently hired San Jose police officers, 31% fall below the average 5'9" American citizen. The average American outweighs this same 31% by 22 pounds. The average assaulter of

police officers stands 5' 8" and weighs 156 pounds and works in a physically active blue-collar job.

The conditions indicated by all of these figures have motivated this study of fitness levels and fitness needs in police work.

CHAPTER II

SITUATIONAL ANALYSIS

SITUATIONAL ANALYSIS

SITUATION #1

This chapter offers a vivid and accurate portrayal of on-the-street police work tasks. Data was extracted from offense report forms filed in the Records Division of the San Jose Police Department. Each situation presented is one of substantial frequency. Each discussion of variables presents those factors which help to ascertain the outcome of the situation.

A police unit staffed with two officers is dispatched to a residence in response to a "violent family disturbance." The officers are further advised to respond "Code 2." When the police unit arrives at the residence, they are immediately greeted by a small pre-school child who screams that his Mommy and Daddy are fighting. The officers follow the child and enter the home. Inside the home they observe two men and one woman in the living room area. The woman is sitting on the couch, crying. The officers observe that the woman's lips are swollen and covered with blood. They also note that her blouse is torn. Her husband is standing directly in front of her, yelling. He appears to be very angry. Sitting approximately 10 feet from the husband and his wife is a second man. This man is a cousin of the husband.

Suddenly, the husband becomes aware of the presence of the two police officers and walks toward them. He demands to know why they are in his home and immediately demands that they leave. Within seconds, the husband grabs the officers by the arms and attempts to push them out of the house. The police officers attempt to restrain the man and a fight ensues. Suddenly, the second man jumps to his feet, runs toward the officers, grabs one and falls to the floor with him. Each officer is now engaged in physical combat. After three or four minutes of physical combat, the officer involved with the husband's cousin is able to retrieve his mace.

He then sprays the chemical agent into the face of the man. The man immediately halts his attack on the officer. This officer now goes to the aid of the second officer who is now prone on the floor with the husband on top of him, beating him. With the combined efforts of both officers, they are able to physically control the husband and handcuff him. The husband's cousin is also handcuffed.

The cousin is taken out of the house and to the police vehicle which is parked approximately 30 feet from the house. He gets into the vehicle willingly. When the officers attempt to take the husband to the police vehicle he continues to physically resist them. He attempts to kick them and rolls around on the floor when they attempt to grab him. Because of this situation, the officers determine that they must drag the suspect to his feet. After the suspect is raised to his feet, he abruptly pulls away from the officers and runs away from them. The officers chase the suspect and overtake him approximately 20 yards from the police vehicle. Again, the suspect kicks at the officers and must be dragged to the car. After much effort, the suspect is finally placed in the police vehicle.

When the officers arrive at the County Jail facility, they attempt to remove the suspects from the vehicle. The cousin of the husband comes out willingly; however, they are met with full resistance from the husband. He kicks at them, spits at them and a struggle ensues. Finally, after three or four minutes, the suspect is taken out of the vehicle, and dragged into a holding cell.

The situation described in this request for service, the 415 family disturbance, is one encountered frequently in the working life of a San Jose police officer. It is obvious that if the police officer fails to physically control these situations, the public safety and the officer's safety are in great peril. When physical confrontation is initiated, the key question is: Should a police officer be expected to and be capable of controlling physical conflict? Controlling physical conflict will require the officer to think, react, and perform under varying degrees of stress, utilizing techniques and applications of physical force. The resolution of physical conflict is accomplished by controlling the factors of physical combat, i.e., being struck by fist or feet, being thrown to the ground, the arms and limbs being pulled and twisted, losing one's balance, falling into numerous objects, being scratched or bitten, being struck by clubbing objects or missiles, wrestling for control of firearms or other fatal weapons. Controlling the factors of physical combat can be accomplished by the use of defensive tactic techniques or by deadly force. Only when these factors are controlled can the officer institute the restraining process: handcuffing, placing the suspect into a vehicle and booking him.

It is reasonable to expect that if the police officer is unable to physically control the situation described in the family disturbance, one may expect one or more of the following results: (1) death or injury to the Officer, (2) death or injury to the victim in peril, (3) death to the suspect, or (4) total non-involvement by the police

officer, i.e., retreat by the officer.

To understand the entire situation of the 415 Family Disturbance earlier discussed, we must first identify all the factors present in the situation which must be controlled. To accomplish this we will first focus on the original radio dispatch. When the average police officer first receives his assignment, "RESPOND TO A VIOLENT 415 FAMILY DISTURBANCE," it would be reasonable to believe that he immediately begins to ponder the nature of his task. The mere utterance of the words "Violent" and "415 Family Disturbance" will usually elicit the officer's past associations related to "violence" and "disturbances." In most cases, the very nature of this type of call will begin to produce a condition of apprehension. The peril, or danger apprehended, then manifests itself in the form of stress: a temporarily induced physiological or psychological imbalance. The stress will then usually manifest in the form of anxiety, producing increased heart rate, increased respiratory response, perspiration, nervous stomach, tightening of the muscles and other forms of tension. Both the degree of peril and the degree of stress and anxiety depend upon the individual. Two main individual variables are: psychological state of being and physical state of being. The physiological or psychological imbalance will continue until the cause of peril ceases. An in-depth examination of Situation #1 will illustrate all of the factors and variables on the scale of physical conflict, including stress, peril, the process of physically controlling conflict and the restraining process.

SITUATION VARIABLES OF #1

1. The physical confrontation was immediate and unavoidable. The sudden physical confrontation by the husband made it impossible for the officers to utilize any verbal control techniques. The situation demanded that they employ immediate physical defensive response.

2. The immediate use of a chemical agent was not possible. The initial verbal demands of the husband would not justify the use of a chemical agent. When he approached the officers, he had not yet made an overt gesture of physical force. When he finally became physically aggressive, the escalation of force was rapid.

3. Seconds after the first officer was attacked by the husband, the second officer was also attacked by the cousin. Both officers were engaged in a one-on-one combat situation, therefore, they were unable to assist each other.

4. The possibility of the officers' own weapons being used against them was great. Weapon control becomes a paramount concern when physical control has not been established. National studies clearly show that many police officers are shot with their own weapons. They must do combat and be concerned with their weapons.

5. The confines of the living room and the many obstacles in the room create many hazards. The Officer often trips or falls over the coffee table or end tables while scuffling in a house. The possibility of falling into the walls is also great.

6. The duration of the conflict was unpredictable. A combat situation may require a long period of time in order to establish control and the outcome may depend on endurance.

7. The demand for physical output was great. Both endurance and the amount of physical exertion are essential to the outcome. In this situation, the officer had to put forth 100% effort throughout the entire conflict.

8. The physical statures of the suspect and the police officer contrasted sharply.

Suspect #1: 6'2", 230 lbs.
Officer #1: 5'10", 150 lbs.

Suspect #2: 5'10", 185 lbs.
Officer #2: 5'6", 120 lbs.

Most injuries to police officers are reported to have occurred while confronted with similar combat and restraining situations. (See page 25). By analyzing situations very similar to the one discussed, it is possible to show the injuries that result from physical conflict. Below are injuries sustained by the officers and how they happened.

Officer #1: A bruised and swollen right knee resulting from the fall to the ground with Suspect #1. Cut and swollen lips resulting from fist punches. Muscle strains and pulls to the back and arms. Numerous bruises and contusions to the legs and chest when kicked by the suspect while attempting to get him into the police vehicle.

Officer #2: Swollen and bruised right eye resulting from being

struck by the fist of suspect #2. Contusion and swelling of the left leg resulting from striking the coffee table.

There are numerous situations similar to the case just examined. One could expect that the variables would differ, such as the duration of the conflict, the intensity of the conflict, the size of the officers and suspects, etc. Based on these variables, the degree of peril is determined accordingly. Each offense report which was analyzed showed some variation, however; these variations ranged from very slight to great. You will note that in the situations to follow, many tasks vary only slightly from situation to situation while others differ radically. The purpose of presenting the following cases is to show the wide range of physical tasks and variables associated with each situation.

SITUATION #2

While working on a busy Saturday night, a police officer observes a vehicle moving in a very hazardous manner. The vehicle is weaving from lane to lane and has caused several vehicles to veer off the road. The officer is able to stop the vehicle and approaches the driver. The officer asks the driver several questions and in doing so, he notes that the driver appears to have been drinking. The driver's speech is slurred, he has a strong odor of alcohol on his breath, etc. During the conversation, the driver tells the officer that he has experienced many recent problems at work and that he and his wife are on the verge of separation. After this short conversation, the officer requests that the driver exit his vehicle. The driver responds to the officer's request

by stating that he'll do no such thing, that it is his car and a free country and he'll do as he damn well pleases. The officer then goes to his vehicle and tells radio to send another officer to assist him. Radio acknowledges his request and advises that the assisting unit will be there in five minutes. As the officer secures his microphone, he observes the driver starting his vehicle and attempting to leave. The officer immediately runs toward the suspect's vehicle. He yells and demands the driver stop, but the suspect's vehicle continues to slightly move. The officer then opens the door and. . .

SITUATIONAL VARIABLES OF #2

An examination of this situation will also show the variables of physical conflict control.

1. The officer must stop the suspected drunk driver immediately. The drunk driver is an immediate danger to public safety.

2. The officer was alone. On the average, a San Jose police officer must work a one-man car.

3. The officer's help was five minutes away. The response time for the assisting unit is not uncommon. One could expect even greater response time on typical Saturday nights in the City of San Jose.

4. The officer is obligated by law to prevent the driver from operating his vehicle.

5. The physical statures of the two men differ greatly:

Suspect: 5'11", 195 lbs.
Officer: 5'7", 130 lbs.

SITUATION #3

Two officers are assigned to investigate a burglary alarm at a business. When the officers arrive, they note that the building is surrounded by a 10-foot chain link fence. The first officer gets out of the car and cautiously walks to the rear area of the building outside of the fence and waits. The second officer waits near the Police vehicle parked in the front portion of the building, also outside of the fence.

In a short time, the owner of the building arrives and opens the gate to the fence. Together, the second officer and the owner walk toward the building. When they are approximately 30 yards from the building, two male suspects jump from the roof and run away toward the rear area. The second officer is now approximately 20 yards from them. When the two suspects hit the ground on the other side of the fence, they encounter the first officer. This officer has his revolver drawn and orders them to halt. The two men look at him, but break out into a run toward an open field. The first officer observes that they are unarmed and teenaged. He holsters his weapon and runs after them. The second officer is now at the fence attempting to climb it, but he is physically unable to climb it quickly. After chasing the suspects 150 yards into the field, the second officer is able to tackle one of the youthful suspects. The suspect and the officer are now engaged in a

hand-to-hand combat situation. The first officer has not yet cleared the fence. Suddenly, the first suspect returns to his comrade and also attacks the first officer. . .

SITUATIONAL VARIABLES OF #3

1. No other assistance was available. The two officers were assigned this call on a routine basis.
2. The immediate use of deadly force was not justified based on the officers' available information.
3. The second officer could not get over the 10 foot fence quickly enough to help the first officer.
4. The first officer was outnumbered by the suspects and unable to employ any of his defensive tools (mace, baton, revolver).
5. The first officer was fatigued from running after the suspects.
6. The field where the chase took place was dark and the ground surface was very rocky and unstable.

SITUATION #4

At 2:00 a.m., radio assigns a two-man car to a prowler call. When they arrive at the home of the complainant, the first officer exits the car and cautiously runs to the rear yard area of the home. The second officer remains in the front yard area. Seconds after the first officer enters the rear yard, a male figure emerges from behind a bush and runs. The first officer runs after the suspect. In the path of the

officer are several children's toys, and small shrubs. The suspects jump over them but the officer is unable to hurdle them, therefore he goes around them. The suspect then vaults over the six-foot wooden fence and continues to run away from the officers. When the officer reaches the fence, he attempts to jump over it but he is physically unable to do it. . .

SITUATIONAL VARIABLES OF #4

1. The first officer is extremely overweight, and because of his condition he is unable to jump over the obstacles and the fence.
2. His partner is both unaware of the situation and too far from the suspect to pursue him, even if he were aware.

CONCLUSION

The examples in this essay indicate that there is a crucial question to be resolved: What is the police function? Only after this issue is decided can we deal with more specific questions: What are the physical requirements to accomplish this function? What is the current physical ability level of the San Jose Police Department? What is the discrepancy between this level and the required performance level? And, finally, what is the relationship between inadequate job performance and injury rates?

When we discuss police functions, we approach the issue of expectations, those of the police administration, those of the City administration, and those of the public. At this time, these expectations are

loosely defined, constantly changing, politically controversial, and placing more and more stress on the individual officer. We are trying to decide what action an officer should resort to in the protection of life and property. Philosophical changes have led to administrative changes, and both have led to a search for better techniques in dealing with violence. Yet, violence is a constant. Creating, changing or modifying orders or policies which direct a police officer when he should use physical force and the degree of force he should use totally ignores the officer's actual knowledge and ability to use that physical force.

The situations described in this essay show that while approaches, either philosophical or mechanical, may vary, physical violence is a part of police work. It is, therefore, a reasonable expectation that the police officer be able to deal with and control violence on a physical level when necessary. The police administration, the City administration, the public and the police officer should expect that the police function demands this capability. It is up to the City to decide how it wants its officers to function. Once it clearly defines the expected functions of police officers, the results of this study can be used for identification of ability levels, measurement of ability, maintenance of ability levels, and identification of job-related injuries and other physical inadequacies.

CHAPTER III

- A. INJURIES OF SAN JOSE POLICE OFFICERS
- B. ASSAULT AND BATTERY INJURIES - SANTA CLARA
COUNTY POLICE PERSONNEL

The purpose of this statistical taxonomy was to identify specific on-the-job situations in which San Jose police officers were injured while performing a wide range of physical work tasks. 523 individual cases were studied, analyzed, and classified. Specific variables have been identified and their relationship to various work tasks noted and discussed.

Data was collected from the Supervisors Report of Accident report forms (Appendix C). These forms are provided by the City of San Jose Insurance Underwriters, the State Compensation Insurance Fund. This report is written by the injured officers' immediate supervisor directly following the reporting of a job-related injury. The reports used for this study encompassed all reports of job-related injuries, including training exercises, from the Uniformed Division for the years 1971 through June of 1974. Injury reports submitted from other divisions accounted for only 10% of the total number submitted for those years. However, it was found that of this 10% approximately 80% of these injuries were originally sustained while the officer was assigned to the Uniformed Division.

Injuries are reported as those incurred during the course of non-arrest investigative service, those during an arrest in which the suspect was passive and non-resistive; during arrests in which the suspect resisted, and during training. The relative contribution of each of these areas to the total injuries is shown in Table I.

TABLE I - CONTRIBUTION OF POLICE PERFORMANCE CATEGORIES TO SUSTAINED INJURIES

CATEGORY	N	% OF TOTAL INJURIES
Non-arrest Investigative	59	11.3
Enforcement Non-resistive/Passive	7	1.3
Enforcement Physically Resistive	411	78.6
Training	46	8.8

The injury forms provided the following information:

1. The police officer's name
2. The police officer's age
3. The month of the incident
4. The time of day of the incident
5. The nature of the injury
6. The extent of the injury
7. The part of the body injured
8. The major work task and sub-task being performed by the officer when he sustained his injury.
9. Months experience as police officer

In addition to this information, medical records for the City of San Jose provided the officer's height and weight during the time of his injury. Table II shows the profile of the injured officers.

TABLE II - DESCRIPTION OF POLICE OFFICERS INJURED BETWEEN 1971 AND THE FIRST HALF OF 1974

YEAR		1971 N=123	1972 N=166	1973 N=140	1ST HALF OF 1974 N=94	TOTAL
AGE (YEARS)	\bar{x}	27.9	29.2	28.1	28.1	28.3
	s	4.4	5.2	4.5	4.2	4.6
HEIGHT (inches)	\bar{x}	70.4	70.9	70.3	70.3	70.5
	s	2.4	2.4	2.5	2.5	2.5
WEIGHT (lbs.)	\bar{x}	189	188	184	184	186
	s	30.4	25.4	26.6	26.6	27.3
YEARS EXPERIENCE (months)	\bar{x}	42.6	56.8	43.2	34.3	44.2
	s	29.2	45.2	36.5	36.5	36.9

PERFORMANCE CATEGORIES

I. NON-ARREST

INVESTIGATIVE SERVICE

The 59 cases in this section show non-criminal, as well as criminal investigations. These investigations and service cases range from investigating burglary alarms and prowler calls to removing injured persons from wrecked vehicles and searching for lost children. None of these cases involved an arrest. Injuries sustained during non-arrest investigative service appear in Table III.

This category involved the following physical tasks and circumstances in which injuries occurred:

1. Running
2. Walking
3. Standing
4. Lifting: Person or Object
5. Jumping Fence
6. Jumping Obstacles
7. Avoiding Obstacles

Circumstance

1. Unstable Ground Surface (wet, rocky, slick)
2. Angular Slopes (stream banks, hills, roofs)
3. Encountered Obstacles
4. Falling

This performance category involves eleven physical tasks which were being performed and caused the injury. For example, the officers responded to calls of service to investigate possible prowlers, burglary alarms, injury accidents, to search for lost children, and to assist with injured or insane persons. While in the process of performing these tasks, the investigating officers were injured while running, walking, lifting persons or objects, jumping a fence or obstacle, and avoiding striking obstacles. Many of these injuries were caused by unstable ground surfaces such as wet asphalt or rocky fields. In other cases, these injuries occurred on angular slopes such as sharp stream banks, hills, roof tops, etc. In most of these cases, the officers either fell or ran into (struck or encountered) an obstacle such as a child's bike, a lawn mower, a large rock, or a clothesline pole while performing the physical task.

TABLE III - INJURIES SUSTAINED DURING
NON-ARREST INVESTIGATIVE SERVICE

<u>PHYSICAL TASK</u>	N	% OF THIS CATEGORY	% OF TOTAL INJURY (N=523)
1. Running	6	10.16	11.28
2. Walking	18	30.50	3.44
3. Standing	3	5.08	.57
4. Lifting: Person or Object	14	23.72	2.67
5. Jumping Fence	8	13.55	1.52
6. Jumping Obstacles	4	6.77	.76
7. Avoiding Obstacles	3	5.08	.57
<u>CIRCUMSTANCE</u>			
1. Unstable Ground Surface (wet, rocky, slick)	13	22.03	2.48
2. Angular Slopes (stream banks, hills, roofs)	5	8.47	.95
3. Encountered Obstacles	18	30.50	3.44
4. Falling	21	35.59	4.01

ENFORCEMENT: NON-RESISTIVE-PASSIVE

INJURY ANALYSIS

PHYSICAL TASKS

1. Lifting Suspects
2. Carrying Suspects

This category deals with the handling of intoxicated persons who were unable to stand or walk by themselves. In these cases, injuries were the result of lifting and/or carrying these persons. These persons offered no resistance. Injury analysis of this category appears in Table IV.

TABLE IV

Injuries incurred during enforcement in which the suspect was Non-Resistive and Passive.

<u>PHYSICAL TASKS</u>	N	% OF TOTAL GROUP
1. Lifting Suspects	7	1.52
2. Carrying Suspects	3	.57

ENFORCEMENT: PHYSICALLY RESISTIVE

PHYSICAL TASKS

RESTRAINING PROCESS

HAND-TO-HAND COMBAT

CONFRONTING CROWD OR MOB

This category represents over 77% of the 523 cases studied. All of these cases deal only with persons who physically resisted the efforts of the police officer to take them into custody. There are three major physical tasks in this section: the restraining process, hand-to-hand combat, and confronting mobs or crowds. This category represents injuries sustained while attempting to arrest or subdue persons involved in criminal activity. The most typical crimes charged against the arrested individuals were: resisting arrest, assault and battery on a police officer and assault on a police officer with a deadly weapon.

RESTRAINING PROCESS

In these cases the officer's physical exertion is not greatly taxed. The exertion is usually momentary and may or may not be maximal. The process is usually quick and the peril is generally transient. The Officer has physical control and is injured only when he loses control

momentarily. When this occurs, he is struck with a fist or foot or strains or pulls a muscle.

In this category, he is always able to regain physical control and the arrest process of handcuffing, placing the suspect into the police car, etc., proceeds.

HAND-TO-HAND COMBAT

In the cases of hand-to-hand combat the officer's physical exertion is greatly taxed and demands maximal effort. The peril is on-going and the probability of success is unpredictable. The process is not quick, and there is generally an extended effort. The goal of the hand-to-hand combat is physical supremacy and control. The restraining process cannot take place until the officer is in total physical control. The majority of the cases of serious injury are found in this category. The degree of peril in this physical situation depends upon exerted strength or physical effort, time, and probability of success.

PHYSICAL EFFORT + DURATION + UNCERTAIN PROBABILITY = PERIL

CONFRONTING MOBS OR CROWDS

This task has proven to be one of the most hazardous faced by the Police officer in San Jose. The number of mob and crowd confrontations has risen sharply in the past five years and the officers' injury rate has risen accordingly. These mobs and crowds always out-number the

police officers. Frequently, the members of the mob or crowd have been drinking or have consumed some type of drug.

Most of these cases occurred as a result of large, unruly groups such as neighborhood parties, dances, etc. Generally, the number of persons in the crowds and mobs exceed 100 persons. The reports of all injuries sustained from missiles appear in this section.

Most of the injuries were by cuts, lacerations, bruises and contusions. Injuries occurring in this category are shown in Table V.

Each of the major categories involves a number of physical tasks during which the injury occurred. These tasks were:

1. Running
2. Jumping Fence
3. Jumping Obstacles
4. Avoiding Obstacles (dodging, weaving, stooping, etc.)
5. Climbing Fence and Wall
6. Placing Suspect into Vehicle

The injuries occurred under the following circumstances while performing these tasks:

1. Hit by Missile (rocks, bottles, etc.)
2. Unstable Ground Surface
3. Angular Slopes (stream banks, hills, roofs)
4. Encountered Obstacles

5. Falling

6. Dog Bite

Table VI shows the incidence of injury sustained performing these physical tasks and the incidence of occurrence under various circumstances.

Injuries sustained dealing with a resisting suspect are often due to external objects. These injuries can be either self- or suspect-inflicted. The object is usually the fist or hands of the suspect, but may include a gun, knife, club, feet or missile. Incidence of injuries from objects is reported in Table VII. 76% of the suspects' weapons were fists, while 85% of self-inflicted injuries were from the officer's gun or rifle.

Most injuries were strains, pulls or sprains (40%); cuts or lacerations (26%); or bruises or contusions (34%) (Table VIII). The most commonly injured areas were knees, back, hand, head and arms.

SUMMARY

An analysis of injuries incurred during a 3-1/2 year period clearly shows that they are largely caused by physical competition with resisting suspects (78% of total). Of these injuries, 41% were strains, pulls or sprains. These types of injury can be prevented to a large extent by adequate levels of physical fitness. Strong muscles are good insurance against muscle injury.

TABLE V - INJURIES SUSTAINED DURING ENFORCEMENT
WHEN SUSPECT WAS PHYSICALLY RESISTIVE

<u>TASK</u>	<u>N</u>	<u>% OF THIS CATEGORY</u>	<u>% OF TOTAL INJURIES</u>
Restraining Process	272	66.18	52.00
Hand-to-Hand Combat	105	25.54	20.07
Confronting Crowd or Mob	34	8.27	6.50

TABLE VI - INCIDENCE TO INJURY PERFORMING PHYSICAL TASKS
AND THE CIRCUMSTANCES IN WHICH THEY OCCURRED
(ENFORCEMENT: PHYSICALLY RESISTIVE)

<u>PHYSICAL TASK</u>	<u>N</u>	<u>% OF THIS CATEGORY</u>	<u>% OF TOTAL INJURY</u>
Running	66	16.29	12.61
Jumping Fence	13	3.20	2.48
Jumping Obstacles	18	4.44	3.44
Avoiding Obstacles (dodging, weaving, stooping, etc.)	20	4.93	3.82
Climbing Fence and Wall	6	1.48	1.14
Placing Suspect into Vehicle	23	5.67	4.39
<u>CIRCUMSTANCE</u>			
Hit by Missile (rocks, bottles, etc.)	21	5.18	4.01
Unstable Ground Surface (wet, rocky, slick)	9	2.29	1.72
Angular Slopes (stream banks, hills, roofs)	6	1.48	1.14
Encountered Obstacles	20	10.12	7.83
Falling	108	26.66	20.65
Dog Bite	9	2.22	1.72

TABLE VII - INCIDENCE OF INJURY FROM OBJECTS

<u>CAUSED BY SUSPECT WITH WEAPON</u>	<u>N</u>	<u>% OF CATEGORY</u>	<u>% OF TOTAL INJURIES</u>
			35.18
1. Gun	4	2.17	.76
2. Knife	5	2.71	.95
3. Club	14	7.60	2.67
4. Fist and Hands	97	52.71	18.54
5. Feet	44	23.91	8.41
6. Missile	20	10.86	3.82

SELF-INFLICTED INJURY WITH WEAPON

Gun	7	85.72	1.33
Club	1	14.28	.19

TABLE VIII - TYPE AND LOCATIONS OF INJURIES TO OFFICERS
WHEN SUSPECT RESISTS

<u>TYPE OF INJURY</u>	<u>N</u>	<u>% OF CASES</u>
	471	
A. Strain, Pull or Sprain	191	40.55
B. Cuts or Lacerations	125	26.53
C. Bruises or Contusions	161	34.18
D. Broken Bones	13	2.76
E. Concussions	2	.42
F. Dog Bite	9	1.91
TOTAL	501	

INJURED AREA

A. Feet	10	2.12
B. Ankle	23	4.88
C. Legs	38	8.06
D. Knee	73	15.49
E. Abdominal and Chest	29	6.15
F. Back	62	13.16
G. Shoulder	25	5.30
H. Arms	46	9.76
I. Elbow	17	3.60
J. Wrist	21	4.45
K. Hand	125	26.53
L. Head	73	15.49
M. Neck	15	3.18

TRAINING INJURIES

Training injuries are considered separately from other categories of injuries reported previously. Training injuries are categorized as defensive tactics, physical training, officer survival, canine training, and range. Those categories are described:

DEFENSIVE TACTICS

These injuries include those involving training related to defensive tactics, i.e., hand-to-hand combat, handcuffing, restraining techniques, searching persons, etc.

PHYSICAL TRAINING

Deals with injuries associated with body conditioning.

The conditioning was very basic and limited to calisthenics. Isotonic mechanical devices such as weight machines, dumb bells, pulleys, etc., were not used. All the injuries were a result of doing push-ups, sit-ups or some other form of calisthenic exercise.

OFFICER SURVIVAL

Injuries incurred during such training exercises as anti-sniper drills, felony car stops, and other types of related training.

CANINE TRAINING

Injuries incurred during all aspects of Police Canine Training.

RANGE

Injuries incurred during regular P.P.C. target shooting and range qualifications. The variable of dark and light conditions have been added for detailed analysis.

Incidence, type and location of training injuries appears in Tables IX to XI. The majority of injuries (41.3%) occur during defensive tactics training. This coincides with the large percentage of injuries occurring in regular police work of officers subduing resisting suspects. Most of these injuries were strains, pulls, and sprains which could be the result of weak muscles.

TABLE IX - TRAINING INJURIES

<u>TRAINING ACTIVITY</u>	<u>N</u>	<u>%</u>
	46	
Defensive Tactics	19	41.30
Physical Training	8	17.39
Officer Survival	7	15.21
Canine Training	6	15.21
Range:	6	13.04
1. Day	4	
2. Night	2	

TABLE X - TYPES OF TRAINING INJURIES

<u>TYPE OF INJURY</u>	<u>N</u>	<u>%</u>
Strain, Pull, Sprain	24	45.28
Cuts or Lacerations	14	30.43
Bruises or Contusions	7	13.20
Broken Bones	2	3.77
Concussions		
Dog Bite	6	11.32

TABLE XI - LOCATION OF TRAINING INJURIES

<u>INJURED AREA</u>	<u>N</u>	<u>% OF TOTAL INJURIES</u>
Feet		
Ankle	1	2.0
Legs	22	44.6
Knee	7	14.4
Abdominal Chest	5	10.3
Back	5	10.3
Shoulder	9	18.4

ASSAULT AND BATTERY RESULTING IN OFFICER INJURY

The assault and batteries to police by suspects were examined for an 18 month period. These occurrences included only those that resulted in an injury to the officer (N=129). A sample of the form from which this data was obtained appears in Appendix D.

DESCRIPTION OF THE ASSAILANT

The average assailant was employed as a blue-collar worker (laborer, painter, etc.), was 156.4 ± 29 lbs., 68.2 ± 3.4 inches tall, and was 27.4 ± 7.6 years of age.

DEGREE OF INJURY TO THE OFFICER

Injuries to officers were classified as minimal, moderate, or severe. 68 percent of assault and batteries to police resulted in minimal injury, 29 percent resulted in moderate injury, and 2 percent resulted in serious injury. Step-wise multiple regression was used to discover possible relationships between serious injuries and involvement in assault and battery situations. The results indicate that serious injuries of officers are significantly related to the use of knives and clubs by the assailant. Moderate injuries of officers are closely related to wrestling with suspects, bites by suspect, and altercations involving vehicles by the suspect.

There is a significant negative correlation between the weight of

the officer and injuries sustained by police officers taking suspects into custody ($r = -.42$ (16)). This finding is of interest on two counts: smaller officers are more likely to be injured while taking suspects into custody; and smaller officers are more likely to be involved in assault and battery incidents when taking a suspect into custody. This relationship serves to magnify the importance of strength and body weight of police officers. Body weight is highly correlated to the ability to move external objects ($r = .75$) (16).

• Thus, the officer must have sufficient strength and possess adequate body size to perform well in physical competition with suspects.

Comparison of assaulted and battered officers were compared with the total police force. These officers were 9 lbs. lighter than the typical officer on the force (significant $P < .05$). However, these officers were the same height, same age, and possessed the same number of years of service. This again emphasizes the tendency for the smaller officer to assume a less desirable position when in physical competition with a suspect. Thus, the smaller, weaker officer is at a distinct disadvantage when dealing physically with a suspect. The description of officers assaulted and battered by suspects is shown in Table XII.

TABLE XII

INJURED, ASSAULTED AND BATTERED OFFICERS

	<u>\bar{X}</u>	<u>S</u>
Weight (lbs.)	177.8	24.3
Height (in.)	70.7	2.6
Age (yrs.)	29.4	6.1
Years Service	5.0	4.2
Ratio Weight/Height ³	.50	.05

The incidents occurred on the following types of calls: traffic stops, 13%; burglary, 3%; civil disorder, 2%; disturbing the peace, 43%; "other," 38%. Officers were with a partner or a group of officers 45% of the time. This indicates that the presence of other police personnel is no guarantee of preventing assault and battery by suspects. Thus, an officer must be able to sustain himself, physically, on an individual basis in an altercation involving a suspect.

Officers' injuries were sustained with the suspect's gun, 4%; with officer's gun, 1%; with a knife, 8%; by the suspect's teeth, 3%; by the suspect's vehicle, 3%; by a club, 10%; by wrestling or falling, 10%; and by the suspect's limbs, 58%.

SUMMARY

There is a tendency for smaller officers to be assaulted and battered in situations involving taking a suspect into custody. These situations typically involve wrestling with the suspect and competitive exertion of force. These situations are independent of the number of officers present at the incident. Thus, an officer must possess adequate size and strength to avoid injury in these situations.

CHAPTER

IV

PHYSICAL FITNESS LEVELS OF CURRENT POLICE PERSONNEL

PHYSICAL FITNESS LEVEL OF CURRENT POLICE PERSONNEL

Physical fitness is a very difficult concept to test because of its many connotations. Physical fitness can be defined as the absence of disease (good health) and in the present study, the ability to perform the physical demands of the job. The assessment of good health is basically the job of the physician. However, the assessment of physical fitness for police tasks cannot be assessed in a doctor's office. Physical tasks are highly specific (11, 12, 13, 26, 27, 28, 29, 34, 38); the ability to perform one physical task does not predict the ability to perform another task. With the principle of motor specificity in mind, physical fitness for police work should be tested using tasks typically performed in the course of law enforcement employment. Assessment of physical fitness for the job involves measuring performance in job situations in addition to the assessment of good health in the physician's office.

In addition to police task simulation tests, the condition of the cardiovascular system of the officer should be assessed. The cardiovascular system is obviously critical to good health and plays a vital role in physical situations involving sustained effort; maximal oxygen uptake (VO2 max) is the best test available to test the maximum capacity of the cardiovascular system (6). This test measures the ability of the heart to pump blood (cardiac output) and the ability of muscles to utilize oxygen (arterio-venous oxygen difference). VO2 max is best measured in an exercise physiology laboratory. In the lab, the work rates can be controlled and an accurate assessment of aerobic capacity

accomplished. In addition, the electrical activity of the heart can be constantly monitored, so that any cardiovascular problems experienced by the individual can be immediately detected and the exercise stopped. VO2 max can also be estimated with a simple field test, the 1-1/2 mile run. This test is highly correlated with VO2 max ($r = .90$); and has the advantage of being inexpensive and easy to administer. However, this test can be dangerous to sedentary individuals because constant monitoring of cardiac activity cannot be accomplished. The 1-1/2 mile run should not be administered to sedentary individuals over 30 years of age without at least a 6 week regular physical conditioning program. In the present investigation, laboratory assessment of VO2 max was used.

Body composition, the proportion of fat and lean weight, is another indicator of health and fitness. Physically fit persons tend to have a lower percent fat (7), and persons with less fat are a lower risk of cardiovascular disease (14, 30, 42). Body composition was estimated by underwater weighing in this study.

PROCEDURES

SUBJECTS

A stratified random of 58 Police Officers from the San Jose Police Department was chosen as the sample. Subjects were stratified according to assignment. The number of subjects in each sub-group was representative of the group's representation of the total force. A table of random numbers was used to choose the sample. In addition 5 volunteers randomly chosen from the Santa Clara Police Department were used. Description of the subjects appears in Table VIII.

Three categories of physical performance tasks were administered; laboratory tests, standard fitness tests, and typical police tasks. Laboratory tests included measurement of maximal oxygen uptake, minimal heart rate, maximal ventilation, total body fat, and lean body mass. The standard physical fitness tasks were pushups, situps, grip, back lift, and pullups. Typical police tasks were fence climb, stair climb, scramble, foot pursuit, and rescue.

TABLE XIII
DESCRIPTION OF SAMPLE

	<u>x</u>	<u>s</u>
Age (years)	30.8	6.1
Height (inches)	72.2	2.5
Weight (pounds)	185.7	20.0
Months Experience	82.6	60.7

LABORATORY TESTS

I. Underwater Densitometry

Total body fat is an important indicator of physical fitness. Excess fat is a detriment to physical performance. Obese individuals are an increased risk for coronary heart disease as well as being less able to perform police tasks.

Hydrostatic determination of body composition was done in a specially built 900 gallon tank. The temperature of the water was recorded so that water density could be determined. A 15-kg chatillon autopsy scale suspended directly above the water tank was used to weigh the subjects. The subjects were asked to void their bladders before taking the test. The subjects' dry land body weights were taken in the laboratory on an Accu-weigh Precision Beam Scale.

All the subjects wore racing swimming trunks and a weighted belt (4.0kg) which was secured around the subject's waist before he climbed into the tank. The subject then seated himself on a canvas seat supported by a rope sling from the scale. Once the subject was in the proper position, he was told to maximally exhale, then duck his head under water, assuming a tuck position (knees and hips flexed with the hands clasped around the knees), and to continue to attempt to force all the air out of his lungs, making sure that there was no contact with the bottom or sides of the tank. A minimum of 7 consecutive determinations was obtained for each subject. The selection of the

representative underwater weight was accomplished by one of the following criteria: (1) the highest observed weight, if observed more than once; (2) the second highest observed weight, if highest value not repeated.

This method determines the density of the body using Archimedes' principle. The volume of the body is determined by its displacement of water. By dividing the subject's mass by his estimated total body volume, the density of the body is calculated. The difference between the body weight and the underwater weight is the weight of the displaced volume of water. The formula of Brozek et al, (8), was used to determine lean body weight and percent body fat. A constant value of 1.5L was used for correction of residual volume.

$$D_b = \frac{Ma \times DH_2}{Ma - Mw (RV \times DH_2O)}$$

$$\% \text{ fat} = (4.950/D_b - 4,500) \times 100$$

$$\text{Lean body weight} = \text{body weight} - (\text{body wt} \times \% \text{ fat})$$

where:

Ma = body weight

DH₂O = density of water

Mw = net underwater weight

RV = residual lung volume

MAXIMAL AEROBIC CAPACITY

Maximal oxygen uptake ($\text{VO}_2 \text{ max}$) is considered the best method of assessing the fitness of the cardiovascular system. $\text{VO}_2 \text{ max}$ test is a junction of maximal cardiac output (heart rate x stroke volume) and maximal arterio-venous oxygen difference ($a - \text{VO}_2 \text{ diff.}$). It is basically a test of the ability of the heart to pump blood (and thus transport oxygen) and the ability of muscles to use oxygen. $\text{VO}_2 \text{ max}$ is highly correlated to work capacity and, perhaps more importantly, is an indication of the physical well-being of an individual. A Monark bicycle Ergometer was used as the exercise apparatus to elicit maximal oxygen uptake in the subjects. The seat height was adjusted so that each subject had the front part of his foot on the pedal, yielding a slight bend at the knee joint when the pedals were in the down position.

The subjects were required to pedal at a constant rate, paced by a metronome set at 120 beats per minute, or 60 rpm's. The monitor of pedal revolutions by a Gilson recorder was made possible by a micro-switch attached to the pedal arm of the bike. The frictional resistance was set at 15 kilogram-meters per revolution (2.5 setting) or 900 kilogram-meters per minute. The resistance was increased 3 kilogram-meters per revolution every 2 minutes thereafter until the subject could no longer move the pedals. Strong verbal motivating encouragement was given to all subjects.

Pulmonary ventilation was recorded on the Gilson recorder with a Godart-Statham pneumotachograph regularly calibrated with a Collins

120-liter gasometer. Inspired gas temperatures were continuously recorded to the nearest tenth of a degree centigrade with a Yellow-Springs Instruments telethermometer with thermistor probes situated on each side of the flow sensor. Barometric pressure was measured before each test. Gas temperatures and barometric pressures were used to correct gas volumes to STPD and BTPS conditions.

Minute-by minute oxygen consumptions were obtained according to the methods described by Wilmore (43). Briefly, one-liter rubber aliquots bags were filled with samples of the expired air through the use of a small vacuum pump connected to the outlet tubing. A 3-way stopcock facilitated the constant switching from bag to bag, and enabled expired air samples to be taken continuously throughout each test. The expired air samples were immediately analyzed for percent oxygen by use of Applied Electrochemistry O_2 -Analyzer model S-3A and for percent CO_2 by a Godart Capnograph CO_2 Analyzer. The O_2 and CO_2 analyzers were regularly calibrated with known gas samples verified by the Scholander apparatus.

Oxygen uptakes were calculated by a modified formula of Consolazio, Johnson, and Pecora (9):

$$\text{VO}_2 = \left[\frac{\text{VI} \times 79.04}{100 - (\text{FeCO}_2 + \text{FeO}_2)} \right] \text{ STPD} \times \left[\frac{(100 - (\text{FeCO}_2 + \text{FeO}_2))}{79.04} \right] \times .2093 - \left(\frac{\text{FeO}_2}{100} \right)$$

where

FeO_2 = Fraction of oxygen in expired air

FeCO_2 = Fraction of CO_2 in expired air

STPD = Standard temperature and pressure, dry (0°C, 760 mm)

VI = Inspired ventilation

Inspired ventilation (VI) was corrected to expired ventilation (VE) and adjusted to standard conditions (BTPS). Maximal oxygen uptake was identified as the highest VO_2 reached during the work capacity test.

Heart rates were determined by counting the QRS complexes of the electrocardiogram (ECG). The ECG was monitored by a Gilson recorder Beckman surface electrodes using a bipolar chest lead. The A electrode was placed at the distal end of the sternum, the xiphoid process; the B electrode was placed above the left clavicle and the C electrode was placed between the seventh and eighth ribs at heart level.

Maximal heart rate was identified as the highest value recorded during the test.

STANDARD FITNESS TESTS

These tests are used in many standard physical fitness batteries.

As used in these descriptions; the term "time limit" test indicates that the subject had a set time to complete the test; "timed" indicates that a subject had a set time to complete the test; "to limit" indicates no timing was involved but the subject continued as long as he was able to.

In each type of test, the examiners made every effort to keep the subjects performing at their maximum level.

SITUPS: time limit - The subject was on his back, hands clasped

behind neck, knees bent, and feet placed under restraining bar of situp board placed flat on the floor. The subject pulled himself to a verticle position touching his elbows to his thighs as many times as possible in 60 seconds. Both shoulder blades were required to touch the board before each situp. The movement was performed rapidly and continuously without jerky movements from the trunk. Score was the number of times the verticle position was attained in 60 seconds.

PULLUPS: to limit - The subject began the movement hanging from the bar with palms facing away from the body. He pulled himself straight up until his chin was just over the bar, and then let himself down until his arms were fully extended to complete the cycle. The subject was told to continue until unable to do any more. He was cautioned against kicking and twisting, or stopping in any one position for more than two seconds.

Observers stopped excessive swaying. The examiner counted aloud and if the subject's arms were not fully extended, or if the chin did not reach the bar, he counted "one-half" instead of "one." The bar used was 1-3/4" in diameter and was 8 feet off the ground. Score was the number of chins completed.

PUSHUPS: to limit - In a prone position the subject's hands were beside his chest, fingers pointed forward. His hands were placed far enough apart so that the forearms made a right angle with the floor. With feet together and body straight, the subject lowered himself until his chest touched the fist of the administrator which was placed on the floor. The body was then raised until the arms were extended. The back

was not to be arched. Score was the total number of pushups completed.

HAND GRIPS: A Laffeyette grip dynamometer, calibrated from 0 - 100 kg. was used. The subject used the hand he thought strongest. The dynamometer was placed in his palm, dial up, fingers curled over so that part of the fingers between the second and third knuckles were touching the grip. The subject held his arm down at his side, away from his body. He was not allowed to rest his forearm against his body. The subject squeezed the dynamometer as hard as possible. Subjects were given three trials with at least 30 seconds between trials. Score was the best of the three trials.

BACK LIFT: A Chatillon leg and back dynamometer was used. With knees straight, the subject grasped the bar of the dynamometer and bent over until the proximal aspect of the patella was reached. The chain was then attached to the bar. The subject, with arms straight, pulled as hard as possible, three trials were given with at least 30 seconds between trials. The score was the best of the three trials.

TYPICAL POLICE TASK PERFORMANCE TESTS

These tests are based upon physical tasks performed by police officers. A physical task analysis of police work appears in Appendix B. An analysis of the face validity of the police task performance tests appears in Appendix A. The physical layout and specific description of the tests appears in Appendix A. All tasks were demonstrated to the subjects. Instructions were given in a uniform manner.

The tests administered were rescue, foot pursuit, stair and scramble. A more detailed description appears in Appendix A.

RESCUE: Measures the ability to carry or drag an unconscious victim. A heavy external object is handled in this task so that strengths required in hand-to-hand apprehension of resisting suspects and the ability to apply corrective force in accident situations is also measured. The test consisted of lifting an 80 pound birdseed bag and carrying it on an alternate pass course through five pylons. A change station was located halfway between the last pylon and an end marker; at that station, the subject put the bag carefully on the ground. The subject left the bag and proceeded around the end marker, came back to the change station, grabbed the bag by the ears and dragged it back through the pylons passing the first return pylon on his left side, the next by his right, and so on. The subject's score was the time in seconds.

FOOT PURSUIT: Measures the ability to pursue a suspect where difficult field conditions require running with considerable precision and body control. The test was designed to require specific and precise movements in unusual sequences and positions. The test required that the subject jump a series of hurdles (representing typical obstacles such as hedges, tricycles, etc.); step through a series of tires (representing precise foot placements such as rocks in a stream or the avoidance of obstacles such as shovels, rakes, etc.); weave through a series of pylons requiring rapid changes of direction required in areas such as parking lots, and a sprint to the finish through irregularly placed tires (required in areas of uneven surface). The subject's score was the time in seconds.

FENCE: Measures the ability to move the body vertically in a variety of pursuit tasks and to maintain balance and direction when changing from verticle to horizontal pursuit. This test required the subject to run 15 feet, climb a six foot fence (typical height of fence in San Jose), go around a pylon placed 15 feet from fence, and climb back over the fence to the start.

STAIR: Measures the ability to make stair ascents and controlled drops and to keep balance and control direction in pursuit situations requiring gross body movement. The test consisted of the subject's running up a flight of stairs, ducking under a rail and jumping to the ground, and running to the starting point. This cycle was performed continuously three times. The subject's score was his time in seconds.

SCRAMBLE: Measures ability for low profile movement and rapid change in body position and center of gravity. In this test, the subject started from a prone position, flat on the ground, arms at sides, 90° from the direction of the course. The subject then got up and ran to the bench, dived under it, got up and jumped over the hurdle, ran to the next bench and dived under it and then ran around a pylon. The subject then returned to the same course but belly-crawled on elbows under the benches to the finish line. The subject's score was his time in seconds.

SUMMARY OF RESULTS

The results of this study indicate that San Jose Police personnel are comparable in physical fitness with the average population in their same age group. They tend to be slightly overweight and possess minimal

aerobic capacities. However, in physical tasks encountered in police work which typically involve short bursts of energy, they perform quite adequately.

Relative deficiencies in aerobic capacity and body composition, which are typical for most adult Americans in general, do not appear to hamper the ability of the average police officer to handle the physical demands of the job. However, these deficiencies indicate an increased risk to coronary heart disease which is prevalent among the police profession as a whole.

The police ranks contain individuals who are physically very able as well as those who are physically inadequate; just as the population with whom they must deal. The police officer should be expected to perform as well as his typical adversary. A physical standard is presented to meet this objective.

THE TESTS

The tests were divided into four areas: standard fitness tests, police task simulation tests, body composition tests, and aerobic capacity.

STANDARD FITNESS TESTS

Scores are presented in Table XIV. Subjects did 36.1 ± 11.2 situps in one minute ($\bar{X} \pm S$) 33.6 ± 13.64 pushups; 5.9 ± 4.02 pullups; 52.5 ± 7.0 kg on the grip; and 35.5 ± 7.6 on the back lift. The subjects performed similarly with police applicants and with the typical

population tested by Fleishman (17) on several tests.

There is no apparent decline with age in any of these tests except in pullups. However, 40-45 year olds performed comparably with 25-30 year olds, and both age groups are significantly ($P < .05$) greater than either the 30-35 or 35-40 year age groups.

Performing on these tests is more a function of practice than of age. Individuals who remain in good physical condition can perform well in spite of advancing age.

TABLE XIV - PERFORMANCE OF POLICE PERSONNEL ON STANDARD FITNESS TESTS

AGE GROUP:		20-24 N=4	25-29 N=23	30-34 N=14	35-39 N=8	40-44 N=4	45-49 N=2	TOTAL
CHIN-UPS	\bar{X}	5.7	8.1	3.8	3.8	8.7	0	5.9
	S	1.2	4.4	2.6	1.1	5.0	(N=1)	4.0
PUSH-UPS	\bar{X}	34.8	34.9	30.9	37.0	35.0	17.5	33.6
	S	6.4	14.7	13.0	14.9	12.9	7.8	13.6
SIT-UPS	\bar{X}	45.8	40.2	34.4	38.4	39.4	34.0	36.1
	S	2.5	6.8	6.3	7.0	11.7	1.4	11.2
BACK LIFT (kg.)	\bar{X}	33.4	35.2	37.3	37.1	36.4	24.8	35.6
	S	5.0	6.8	8.9	9.8	4.6	1.1	7.6
GRIP (kg.)	\bar{X}	52.0	51.9	53.0	54.6	53.0	47.5	52.5
	S	1.8	7.9	7.1	5.7	6.0	10.6	7.0

POLICE TASK SIMULATION TESTS

These tasks are simulations of situations that typically arise in police work. They characteristically require short bursts of energy lasting less than one minute. Data of current police personnel is compared with police applicants who are similar to the general public (19). Data is presented in Table XV.

Police personnel performed better than police candidates on the pursuit, wall climb and rescue ($P < .05$) and were the same on the stair and scramble tests. The results may indicate that these selected tasks can be improved by regular performance in the course of police work.

As in the standard fitness tests, there was no decline in performance with age. The 30-40 year groups showed less variance with the group as a whole on these tests than on the standard fitness tests. This clearly shows the necessity of evaluating fitness for police work by the use of tasks specific to the job. Standard fitness tests such as pushups, pull-ups, etc. are subject to a great deal of variance due to practice, i.e., if one practices pushups he will be good at pushups. The police officer is seldom, if ever, required to demonstrate his pushup ability to the public. However, the public does expect the officer to perform physical tasks to protect their lives and property and keep the peace.

TABLE XV - PERFORMANCE OF POLICE PERSONNEL ON JOB SIMULATION TESTS

AGE GROUP:		20-24 N=4	25-29 N=20	30-34 N=14	35-39 N=6	40-44 N=4	45-49 N=1	TOTAL
STAIR (Seconds)	\bar{X}	18.6	18.20	18.3	18.9	17.9	22.8	18.4
	S	1.9	1.6	1.4	1.5	1.9	--	1.7
FENCE CLIMB (Seconds)	\bar{X}	10.4	10.2	10.1	11.0	11.8	dnf.*	10.5
	S	1.5	1.5	.8	1.6	2.6	--	1.5
SCRAMBLE (Seconds)	\bar{X}	18.4	18.8	20.1	20.6	18.7	29.5	19.6
	S	1.3	2.0	2.0	1.7	2.6	--	2.6
FOOT PURSUIT (Seconds)	\bar{X}	15.0	15.2	15.5	16.9	16.6	22.0	15.8
	S	.6	1.0	1.0	1.3	1.2	--	1.5
RESCUE (Seconds)	\bar{X}	18.4	19.4	19.7	19.6	18.9	22.9	19.5
	S	1.4	2.0	3.5	1.8	1.3	--	2.4

dnf: Subject didn't complete test: couldn't climb fence.

BODY COMPOSITION

Body composition values appear in Table XVI. The average police officer is slightly overweight as judged by their percent of 20.9% fat. Although this value is typical for the adult male population, it is considered somewhat overweight. The typical values a college-age male (18-25 years) is between 12 and 16%. Percent fat typically increases with age, but this increase is partly due to overeating and lack of activity as well as metabolic changes that come with adulthood (20, 21, 24, 25, 40, 41).

There is a small, but significant correlation ($r = .36-.42$) between percent fat and performance on the police task simulation tests. The Officers who failed to complete the wall climb were markedly overweight.

The setting of a physical standard for percent fat is a different task. There are obvious sex differences in fat deposition. Women typically have a higher percent fat than men.

However, physically trained women typically have considerably less fat than the average female and closely resemble males in subcutaneous fat deposition (7). It is clear that through training, women can lose a considerable amount of fat. However, due to the natural differences in fat deposition between the sexes and the low correlation that exists between performance and percent fat (in non-obese individuals) different minimal standards should be set for men and women. Women should be allowed to have 5 percent higher fat levels than men.

Body fat is not only related to job performance, but to the incidence of heart disease as well (14, 30, 42). Maintenance of an adequate body weight is important in preventing coronary artery disease which occurs at a higher incidence in police officers than in the general population.

Finally, the measurement of body composition is important due to the diverse physical capabilities of police personnel. An example is Officer J.P., one of the leading discus throwers in the world who was tested previously and was not part of this study. This officer has a body weight of 240 lbs. which is clearly overweight according to standard height/weight tables. However, this officer had only 17 percent fat which is less than the majority of men on the force. He possessed a great deal of muscle tissue and could not be considered fat. Yet by common standards, he was obese.

TABLE XVI - BODY COMPOSITION OF POLICE PERSONNEL

AGE GROUP:		20-24 N=4	25-29 N=23	30-34 N=14	35-39 N=8	40-44 N=4	45-49 N=2	TOTAL
LEAN BODY MASS (kg.)	\bar{X}	61.6	63.8	67.2	64.1	63.5	56.9	64.1
	S	2.9	8.6	7.3	5.3	4.3	6.4	7.5
PERCENT FAT	\bar{X}	22.8	21.8	23.1	25.1	24.5	26.5	22.9
	S	2.6	5.3	4.4	2.4	2.9	2.1	4.5
BODY DENSITY (g/Cm ³)	\bar{X}	1.04	1.04	1.03	1.03	1.03	1.03	1.03
	S	.01	.01	.01	.01	.01	.00	.01

AEROBIC CAPACITY

The average maximal oxygen uptake of the subjects was 35.5 ± 5.72 ml O_2 /kg. body weight with gross values at $3.06 \pm .54$ l/min. If oxygen uptake values are extrapolated to a heart rate of 190 beats per minute, the values rise to 39.9 ± 8.94 ml O_2 /kg bw. The values divided by age are shown in Table XVII. The VO_2 max values typify the normal values of the general population. The data indicates that approximately 30% of current police personnel are deficient in aerobic capacity and should begin an exercise program. Subjects achieved a peak work rate of 1443.25 ± 151.63 kpm/min on the bicycle ergometer. The work rate for the terminal minute was less than the work rate of the second to the last minute indicating a lack of motivation on the part of the subjects because oxygen uptake and heart rate continued to climb. Maximal heart rate was 181.04 ± 10.37 beats per minute. This value is lower than heart rates characteristically achieved during this test which indicates that the subjects did not work until exhaustion. For this reason VO_2 max values are reported as achieved values and as predicting values using 190 beats per minute as maximum heart rate, individual regression equations were calculated for each subject ($VO_2 = b190 + c$).

TABLE XVII - AEROBIC CAPACITY OF POLICE PERSONNEL

AGE GROUP:		20-24 N=4	25-29 N=21	30-34 N=14	35-39 N=8	40-44 N=4	45-49 N=1	TOTAL
VO ₂ MAX l/min	\bar{X}	2.7	3.0	3.1	3.3	3.0	2.7	3.1
	S	.3	.6	.5	.6	.4	-	.5
VO ₂ MAX ml O ₂ /kg	\bar{X}	34.2	35.4	35.3	37.53	36.0	29.4	35.5
	S	5.8	6.0	6.0	5.6	5.3	-	5.7
VO ₂ MAX meO ₂ /kg* at H.R. 190	\bar{X}	36.7	39.2	39.95	41.6	43.3	38.8	39.9
	S	4.3	6.8	12.02	11.0	6.5	-	8.9
PEAK HEART RATE	\bar{X}	180.6	184.8	182.5	176.5	167.3	166	181.0
	S	7.2	10.1	7.7	10.0	6.2	-	10.4
PEAK WORK kpm/min	\bar{X}	1386.5	1375.9	1504.6	1436.1	1404.8	1392	1443.3
	S	65.6	175.1	142.7	179.3	90.2	-	151.6

*Individual regression analysis prediction of VO₂ at a heart rate of 190 lpm is probably applicable for the entire age group. Older age groups will have a maximum heart rate below 190 bpm and younger groups will have a heart rate above 190 bpm.

SUMMARY

The results of this study indicate that current police personnel are similar to the general public in most aspects of physical fitness: aerobic capacity, body composition. Policemen perform better than the average person on police job simulation tasks which indicates that performance of these tasks is improved during the course of police work.

STANDARD FITNESS TASKS

The value of these tests for the prediction of performance on police tasks is extremely dubious. These tests have a low correlation with police work simulation tasks ($r < .50$). Although several common factors evolve when standard fitness tests and police tasks are grouped with factor analysis, these factors are extremely weak.

The exercises used as fitness tests are good for improving performance of the police tests. Thus, an exercise program involving pushups will improve shoulder strength which would help a person climb a fence; etc. Thus, traditional calisthenics such as pushups, pullups, etc. have a place in the exercise program of the police officer and of the Police cadet.

POLICE SIMULATION TESTS

Police performed better on most of these tests than police applicants tested previously (Table XVIII). These tasks generally require practice. However, if the upper and lower quartiles of the Police Department in body fat and aerobic capacity are compared on an index of police tasks,

there is a startling difference between the fit and the unfit ($P < .05$, $t = 4.25$). Thus making the sample heterogeneous results in magnifying the importance of physical fitness and low fat levels in the performance of police work.

BODY COMPOSITION

Although body composition is typical of the population as a whole (7), the average officer is somewhat overweight.

The average college age male has 12 to 15 percent fat while the average officer has 20% (7). The increase in percent fat that occurs with age is to a large extent due to inactivity rather than a naturally occurring physiological phenomenon. Conditioned individuals over 30 years of age generally have less than 20 percent fat. Due to the basically sedentary nature of police work, increasing body fat will always be a problem to officers. Officers cannot afford excess fat because they may be involved in a situation demanding physical fitness in which their lives and the lives of members of the public depend.

AEROBIC CAPACITY

Police are similar to the general population in aerobic capacity (2, 3, 4, 5). Lack of exercise has been identified as a risk factor in coronary heart disease (15, 18, 19, 22, 23, 31, 35). Cardiovascular disease accounts for 54.1% of the deaths in the United States each year (1). Police personnel are particularly susceptible to heart disease due to the high stress characteristics of the job. There are clearly individuals on the force who have weak cardiovascular systems and are thus susceptible to heart attack. It is doubtful that these individuals

could successfully engage in tasks requiring prolonged exertion such as crowd control situations encountered in student confrontations of the late 1960's.

GENERAL CONCLUSION

There are a number of men on the police force who are clearly unfit and should begin a fitness program. These men must be fit if they are expected to perform the physical tasks demanded of them in police work. The National Advisory Commission on Criminal Justice Standards and Goals (36) has stated that "every police agency should establish physical fitness standards that will insure every officer's physical fitness and satisfactory job performance throughout his career. If the officer fails to meet the predetermined standards, a program should be prescribed to improve his physical condition."

TABLE XVIII
PERFORMANCE OF POLICE APPLICANTS ON ASSORTED PHYSICAL
FITNESS TESTS
(TESTED PREVIOUSLY)

N=200	Wt=172.6 ± 21.5	Ht=70.4 ± 2.6 ($\bar{X} \pm S$)
TEST	\bar{X}	S
Fence	11.4	3.6
Scramble	20.5	3.1
Rescue	22.6	3.2
Stair	18.6	1.5
Foot Pursuit	19.5	3.0
Pullups	8.8	3.9
Grip	53.9	8.6
Situps	42.9	7.8
1-1/2 Mile Run*	12 min. 26 sec.	44 sec.

* $\dot{V}O_2$ = 35 - 42 ml O_2 /kg body wt.

CHAPTER V

MINIMUM STANDARD

A. NEED FOR A STANDARD

B. MINIMUM PERFORMANCE REQUIREMENT

THE NEED FOR A STANDARD

A minimum standard seeks to produce officers with increased ability to provide safety for the public by assuring that each officer can operate at and maintain the level of physical fitness which this study determines necessary. Our two criteria are: 1) a healthy cardiovascular system, and 2) acceptable performance on work-related basis. An inter-relationship is immediately seen, because police work tasks indeed require cardiovascular fitness.

We have seen that police work does include intensely demanding physical exertion and that the injury figures are both extremely high and obviously related to the performance of physical tasks. We are also aware that the public expects officers to adequately perform the tasks of the job which require the use of more than the use of verbal communication, yet less than weaponry techniques.

Sociologically, we are recognizing that when confrontation is needed but ignored, it builds. Our officers must have the confidence and the physical ability to deal with physical confrontation. It is startling to measure the physical capabilities of the Elmwood inmates against those of the Santa Clara County Sheriff's Office and the San Jose Police Department in the work-task obstacle course test conducted in June of 1973. In the test, time was relevant to distance, and the inmates would have escaped by 50 yards had it been an actual situation. The inmates were clearly more fit than the police.

We are told that "minimum standard" must be geared to the least man.

This concept actually encourages a downgrading. Many of the police officer participants in this test stated that they were former athletes, but felt that their physical condition was deteriorating due to lack of incentive as well as to their mostly sedentary working hours.

It should be emphasized that the purpose of our minimum standard relates directly to job-performance, and that it seeks to include, not to exclude. We wish to bring police applicants and sworn officers up to a competent fitness level, not to build a case against minorities of any kind.

MINIMUM PERFORMANCE REQUIREMENT

A police officer is expected to perform the duties outlined in the task analysis under normal circumstances with a minimum possibility of injury to himself. Minimum fitness standards are necessary for the development of defensive tactics techniques (32, 39, 44). These techniques will minimize escalation of force and uphold public expectation of police function. In addition, specific physical abilities as outlined in the task and analysis, are required of the officer so that he will adequately perform the duties of his job.

In assessing the minimum fitness requirements of police, the physical condition of the adversary must be taken into account. This individual was described in Chapter III. The police officer must be as fit as the typical suspect that he encounters. Experts (32, 39, 44) agree that in hand-to-hand combat, equal height, weight, and fitness are required to be equally competitive. Deficiencies in height, weight, and

fitness can only be compensated for by years of intense training in the martial arts. Likewise, suspect pursuit requires at least an equal fitness for a successful capture.

The average person is typically defined by insurance companies as being one standard deviation above and below the mean. This area comprises about 66 percent of the population. Minimum physical standards should be set at one-half standard deviation below the mean of the average suspect. This standard enables the police officer to be at least competitive with most suspects that he will have to deal with physically. This standard will satisfy the public demand of performing the tasks outlined in the task analysis under ordinary circumstances. A lower standard than this would mean that the officer would be unable to meet the physical demands of the job in the majority of situations involving competition with the average person. This minimum standard will insure that police officers can satisfy the demands of the job without an escalation of force.

The fitness levels of the typical suspect can be predicted from the data available from the normal population. The typical suspect is in his late 20's and is a blue collar worker. This group tends to be somewhat more physically fit than the population as a whole, due to the physical nature of their jobs. However, due to the lack of knowledge of fitness levels of this group, fitness levels of the normal population in this age group will be used. Fitness norms will be taken from subjects tested by Fleishman (17), from police applicants who have been shown to

represent the normal population (37], from subjects tested by Wilmore (7] (for body composition], and from several other investigators (6, 10, 33] (aerobic capacity). Although these values are probably lower than actual fitness levels of the average suspect, the standard is based on readily identifiable data, rather than estimation of a group for which no fitness data is available.

FITNESS STANDARDS FOR POLICE PERSONNEL

<u>Police Task Simulations</u>	<u>Maximum Allowable Time</u>
<u>Test</u>	<u>Seconds</u>
1. Fence	13.2
2. Scramble	22.0
3. Rescue	24.3
4. Stair	19.3
5. Foot Pursuit	21.0

The maximum allowable times have been selected on the basis of norms computed on police applicants. Although many of the applicant performances are inferior to that of current personnel, the times more closely resemble the physical performance of a typical adversary.

There will be no standard recommended for the standard fitness tests. The correlations between police task simulations and standard fitness tests have been found to be no greater than .50 indicating no more than 25% variance in common. These findings are consistent with the principle of motor specificity. Thus, performance on one skill may not lead to prediction of another skill.

However, because of at least 30% generality of strength, speed, "agility," etc., pushups, pullups and other such exercises can be practiced to improve performance on police tasks and thus are valuable in training programs.

Aerobic Capacity

Aerobic capacity is perhaps the most important component of physical fitness. This is a measure of the functional capacity of the cardiovascular system. Aerobic capacity is highly correlative to work capacity and to efficiency of work performance at submaximal work loads. An adequate aerobic capacity is related to the reduction of risk of coronary heart disease (20, 22, 24).

MINIMUM RECOMMENDED AEROBIC CAPACITY

$\dot{V}O_2$ max	35 ml \dot{O}_2 /kg/min-1
(measured on a bicycle ergometer)	
1-1/2 mile run	13 min. 10 sec.

The minimum standard above represents the level of marginal aerobic capacity (10). It is recommended that this test be administered in a laboratory using continuous electrocardiographic monitoring to any Officer over 30 years of age. Older officers, without their involvement in a regular physical training program, risk cardiac arrest in a 1-1/2 mile run. Officers under 30 years of age may take a field test (1-1/2 mile run) to estimate $\dot{V}O_2$ max. This test gives a good approximation of performance in the laboratory, but does not give the test administrator constant evaluation on cardiac performance during the test.

Body Composition

It is not recommended that assessment of body composition be included in the physical performance inventory. Excessive fat percentages should be determined by the City physician. If there is a question of the fat percentage of an individual (i.e., such as in an individual who engages in weight training and has large muscles and a high body weight), then the individual should be weighed underwater so that his percent fat could be determined.

It is recommended to the City physician that 23% fat be the maximum allowable for men and 28% for women (due to natural differences in fat

deposition).

Age

The data indicates no clear decline in the physical performance of police with age. However, in this study, several older officers were not allowed to participate in the study due to poor health. Thus, a decline in fitness normally seen in the average population may have been missed in this study.

It is recommended that no allowance in minimum physical standards be allowed for age. The physical standards demanded of the officers during the course of their work does not change with age, and thus the minimum standards cannot change.

Time Interval Between Tests

It is recommended that officers be tested at two-year intervals. It is essential that field tests be administered on a dry field so that reliability of administration is assured. Officers should be examined by the City physician before participating in the fitness test.

Non-Uniformed Personnel

It is recommended that these physical standards apply to uniformed officers, only. Administrative personnel, detectives, etc., are not required to perform the duties outlined in the task analysis and should not be held accountable to the same physical standard.

CONTINUED

1 OF 2

CHAPTER VI
PHYSICAL TRAINING

A. POLICE ACADEMY

B. ON-GOING

PHYSICAL TRAINING:
POLICE ACADEMY AND ON-GOING

A comprehensive physical training program is essential at the academy level in order to prepare for the adequate performance of police tasks and to ensure good health. At this time the police cadet should receive the basic knowledge for a lifetime of fitness. He should learn pertinent physiological concepts, and principles of physical fitness and injury avoidance as well as undergo an effective active training program. He should demonstrate, both physically and academically, that he has this information.

The following section provides a complete general design and a specific ten-week course to guarantee that the cadet will, in fact, perform at the recommended level of fitness and that he/she will understand how physical fitness relates to job performance and good health.

THE DESIGN FOR ACADEMY CURRICULUM

I. PURPOSE:

To instill confidence in the officer and prepare him for service.

II. GOALS:

1. To bring every cadet up to an established level of physical fitness.
2. To give the cadet the knowledge of why physical fitness is important in police work.
3. To give the cadet the understanding of the contributing factors to physical fitness.
 - a. Diet
 - b. Obesity
 - c. Smoking
 - d. Exercise

III. BEHAVIORAL OBJECTIVES:

1. The cadet will explain in a written test how diet and nutrition contribute to physical fitness.
2. The cadet will explain in a written test how the lack of exercise, obesity, and smoking affect his/her physical fitness.
3. The cadet will explain in a written test the most common types of injuries pertaining to police work, how they happen, and how to prevent them.

4. The cadet will explain in a written test why the police officer must be physically capable.
5. The cadet will demonstrate his physical fitness for police work on police task simulation tests.
6. After the demonstration of fitness and the provision of test results data, the cadet will assess his/her level of fitness and compare it to the academy's physical fitness standard.
7. The cadet will be able to chart his own physical fitness program designed to bring him/her up to the academy standard and will use their self-developed program to maintain that standard.
8. The cadet will explain in written form the relationship between physical fitness and the learning and performing of defensive tactic skills.

IV. ACTIVITIES:

1. Movies
2. Video Tapes
3. Various related literature and Xerox copies as needed.
4. Universal weight lifting machine
5. Free Weights (barbells, dumbbells, etc.)
6. Materials for police task simulation course (see Appendix A).

7. Mats
8. Stop Watches

VI. FACILITY:

1. Weight Lifting Room
2. Mat Room
3. Lawn Practice Field
4. 440-Yard Track

VII. STAFF:

One trained and qualified instructor per every 15 students.

ACADEMY CURRICULUM: LESSON PLANS

It is recommended that academy curriculum be 50 hours (1 hour, 45 minutes, three times per week). This time will be spent in developing physical fitness for police work and developing positive attitudes and knowledge of physical conditioning. As with other areas of the academy curriculum, cadets will be required to spend additional hours of preparation in physical conditioning and studying concepts of physical fitness.

WEEK 1

Day 1:

1. Lecture: Introduce cadet to concepts of physical conditioning (1/2 hour).
2. Individual assessment of initial fitness levels (1/2 hour).

a. Qualifying examination.

3. Physical conditioning

a. Calisthenics (15 minutes)

1. Pushups (25 repetitions)
2. Situps (20 repetitions)
3. Dorsal arch (10 repetitions)
4. Hamstring stretching (10 repetitions)
5. Jumping jacks (20 repetitions)

b. Aerobic conditioning (15 minutes)

1. Jog-walk one mile.

Day 2:

1. Lecture: Role of exercise in the prevention of cardiovascular disease (45 minutes).
2. Weight training (45 minutes)
 - a. Introduction to Universal Gym and weight training activities.
 - b. Description of exercises.
3. Aerobic conditioning
 - a. Jog for 15 minutes.

Day 3:

1. Lecture: Role of exercise in heart disease (continued) (1-1/2 hours).
2. Mat conditioning (15 minutes).
3. Weight training: introduction (continued) (1/2 hour).
4. Aerobic conditioning (20 minutes).

- a. Jog-walk for 20 minutes.
- 5. Calisthenics (10 minutes)
 - a. See Day 1

WEEK 2

Day 1:

- 1. Lecture: Development of aerobic capacity (30 minutes).
- 2. Calisthenics (10 minutes)
 - a. See Day 1
- 3. Weight training (50 minutes)
 - a. Bench press - 2 sets, 10 reps.
 - b. Seated press - 2 sets, 10 reps.
 - c. Leg press - 2 sets, 10 reps.
 - d. Pullups or bar hangs - 2 sets maximum
 - e. Situps - 2 sets, 20 reps.
 - f. Curls - 2 sets, 10 reps.
- 4. Aerobic conditioning (15 minutes)
 - a. Jog for 15 minutes

Day 2:

- 1. Introduction to police task simulations (1 hour, 45 minutes).
 - a. Explanation of police physical task analysis.
 - b. Demonstration of tasks
 - c. Test on tasks

Day 3:

- 1. Film, "Run Dick, Run Jane." (30 minutes)
- 2. Weight training (50 minutes)
 - a. See Day 1, Week 2
- 3. Aerobic conditioning (20 minutes)
 - a. Continuous jogging for 20 minutes

WEEK 3

Day 1:

- 1. Lecture: Obesity (30 minutes)
- 2. Calisthenics (10 minutes)
 - a. See Day 1, Week 1
- 3. Mat conditioning (35 minutes)
- 4. Aerobic conditioning (20 minutes)
 - a. Continuous jogging

Day 2:

- 1. Police simulation tasks (one hour)
 - a. Practice and instruction on techniques
- 2. Physical fitness and the prevention of job-related injury (1/2 hour).
- 3. Aerobic conditioning (15 minutes)
 - a. High intensity interval training.

Day 3:

- 1. Lecture: Strength, physiology (45 minutes)
- 2. Weight training (45 minutes)

- a. See Day 1, Week 2
- b. Increase intensity of program
- 3. Aerobic conditioning (15 minutes)
 - a. Jogging continuously

WEEK 4

Day 1:

- 1. Test: 1-1/2 mile run (45 minutes)
 - a. Aerobic capacity evaluation (comparison with entrance level)
- 2. Calisthenics (10 minutes)
 - Lecture: Development of strength (50 minutes)

Day 2:

- 1. Test: Police task simulation tests (1 hour, 45 minutes)
 - a. Comparison with entrance levels

Day 3:

- 1. Weight training (1 hour, 15 minutes)
 - a. Bench press - 3 sets, 5 reps.
 - b. Leg press - 3 sets, 5 reps.
 - c. Pullups or bar hangs - 2 sets maximum
 - d. Seated press - 3 sets, 5 reps.
 - e. Curls - 3 sets, 5 reps.
- 2. Aerobic conditioning (30 minutes)
 - a. Jog-walk for 30 minutes

WEEK 5

Day 1:

- 1. **Lecture:** Specificity of training (30 minutes).
- 2. **Mat conditioning** (30 minutes)
- 3. **Aerobic conditioning** (30 minutes)
 - a. Interval training (20 minutes)
 - b. Continuous

Day 2:

- 1. **Police simulation task** (1 hour)
 - a. Practice and instruction
- 2. **Weight training** (45 minutes)
 - a. Circuit training

Day 3:

- 1. **Lecture:** Specificity of police physical tasks (30 minutes)
- 2. **Weight training** (45 minutes)
 - a. Circuit training
- 3. **Aerobic conditioning** (15 minutes)
 - a. Continuous jogging

WEEK 6:

Day 1

- 1. **Lecture:** Body composition (30 minutes)
- 2. **Individual assessment of body fat by a simple anthropometric method** (15 minutes).

3. Mat conditioning (15 minutes)
4. Aerobic conditioning (45 minutes)
 - a. Interval training (30 minutes)
 - b. Jogging (10 minutes)
5. Stretching (5 minutes)

Day 2:

1. Police simulation task testing (1 hour, 45 minutes)
 - a. Progress evaluation by video tape

Day 3:

1. Aerobic capacity and evaluation (30 minutes)
 - a. 1-1/2 mile run test
2. Weight training (1 hour, 15 minutes)
 - a. See Week 4, Day 3

WEEK 7

Day 1:

1. Lecture: Physical fitness and defensive tactics (30 minutes)
2. Calisthenics (30 minutes)
 - a. Progress evaluation on pushups, pullups, and situps.
3. Aerobic conditioning (45 minutes)
 - a. Continuous jogging (45 minutes)

Day 2:

1. Physical fitness for police tasks. Additional tasks not specifically tested on police simulation tasks: (1 hour, 45 minutes).

Examples:

- a. Climbing chain link fences
- b. Quick exits and entrances from police cars
- c. Climbing trees
- d. Sprinting techniques
- e. Running on irregular or wet surfaces

Day 3:

1. Aerobic and anaerobic conditioning (45 minutes).
 - a. Windsprints (15 minutes)
 - b. Jogging (30 minutes)
2. Weight training (1 hour)
 - a. Circuit training

WEEK 8

Day 1:

1. Physical fitness and stress (30 minutes).
2. Weight training (1 hour)
 - a. See Week 4, Day 3.
3. Aerobic conditioning (15 minutes)

Day 2:

1. Police simulation task testing (1 hour, 45 minutes)
 - a. Performance analysis
 - b. Video tape analysis
 - c. Performance efficiency instruction

Day 3:

1. Aerobic capacity evaluation (45 minutes)
 - a. 1-1/2 mile run test
 - b. Each Cadet will design personal program for lifetime aerobic capacity maintenance.
2. Weight training (1 hour)
 - a. See Week 4, Day 3

WEEK 9

Day 1:

1. Lecture: Nutrition and physical fitness (30 minutes).
2. Weight training (1 hour)
 - a. See Week 4, Day 3
3. Aerobic conditioning (15 minutes)
 - a. Continuous jogging

Day 2:

1. Police simulation tasks (1 hour, 45 minutes)
 - a. Instruction
 - b. Video tape analysis

Day 3:

1. Calisthenics (30 minutes)
 - a. Progress evaluation on pushups, pullups, and situps.
2. Mat conditioning (15 minutes)
3. Circuit training (30 minutes)
4. Aerobic conditioning (30 minutes)
 - a. Interval training (20 minutes)
 - b. Jogging (10 minutes)

WEEK 10

Day 1:

1. Lecture: Physical fitness and the police officer (1 hour).
2. Calisthenics (15 minutes)
3. Aerobic conditioning (30 minutes)
 - a. Jogging

Day 2:

1. Police simulation task testing (1 hour, 45 minutes)
 - a. Evaluation of cadet for physical capability of police work (see academy physical standard).

Day 3:

1. Aerobic capacity evaluation (1 hour, 45 minutes)
 - a. Test on 1-1/2 mile run.
 - b. Personal evaluation of physical fitness for police work.

DEFINITIONS

Weight Training - Progressive overload of muscles in a systematic manner with weights. It is recommended that a weight machine such as the "Universal Gym" be used due to its versatility and safety with groups.

Circuit Training - A physical fitness program in which the cadet attempts to complete a set of prescribed exercises as rapidly as possible. Exercises include weight lifts, calisthenics and running.

Aerobic Conditioning - Exercises such as running that develop the cardiovascular system. (O_2 transport and utilization).

Interval Training - High intensity running. The distance, pace, repetitions and rest intervals are varied systematically.

Calisthenics - Exercises using the body as its own resistance. These are well known exercises such as pushups, pullups, situps, etc. Performance on these tests are poorly correlated with performance on police tasks. However, using calisthenics as training exercises will strengthen muscles needed to perform police physical tasks. Calisthenics are used as a warmup for regular physical activity in the academy. They are to be practiced by cadets on their own time so that they can improve the strength of muscle groups needed in performance of police tasks.

Mat Conditioning - Mat conditioning involves wrestling with a minimum

amount of instruction on wrestling techniques. This conditioning develops strength that is essential for defensive tactics training. The injury analysis shows that a large percentage of injuries are muscle pulls, strains and sprains occurring during confrontation with a suspect. Mat conditioning is the best means of developing this kind of strength.

Specificity - An extremely important concept that is vital in the training of police officers. The ability to perform one motor task does not necessarily predict the ability to perform another motor task. This academy curriculum spends a great deal of time preparing the cadet for the performance of police tasks. It is essential that cadets are physically prepared to perform police tasks rather than a conglomeration of non-related physical tasks.

RECOMMENDATIONS

Instructors - It is recommended that instructors of physical conditioning have knowledge of the scientific principles of physical conditioning. In addition to possessing a knowledge of training programs, the instructor should have knowledge in the area of exercise physiology, kinesiology, nutrition, motor learning, health and the epidemiology of heart disease. The instructor should also have a good knowledge of the physical tasks performed by the police officer.

Facilities - It is recommended that adequate physical training facilities

be provided. These facilities could be used by regular police officers as well as by cadets. These facilities should include shower and locker facilities, weight room (one Universal gym per 10 cadets plus free weights), field space for police simulation tasks and running.

Academy Physical Fitness Standard - Three different physical fitness

standards have been established: minimum academy entrance standards, minimum academy graduation standards and minimum physical standards for Bureau of Field Operations. These standards are based on the estimated physical fitness of the typical suspect. The entrance standard is the lowest because the cadet's fitness is expected to rise during the academy training. The cadet will hopefully improve his physical fitness and knowledge of physical conditioning during the academy. The academy standard is the highest because the cadet is engaged in regular physical training and should be expected to improve his fitness. The standard for working personnel is in the middle: the officer is not engaged in regular intensive training, but possesses the knowledge to maintain adequate fitness. A certain amount of deconditioning is expected after cessation of the vigorous training of the academy.

Recommended entrance and graduation minimum standards appear in Table XIX. Tests should be administered exactly as in the instructions in Appendix A. It should be noted that none of the standards exceed the estimated mean value of the typical suspect. This is certainly not unreasonable, and a higher minimum standard is perhaps justified.

Fitness Improvement Expectation - Considerable improvement in the physical capability for police work can be expected from the academy curriculum outlined.

Tables XX and XXI show the results of tests given to a recent academy class. These results are reported for female cadets as well as the class as a whole.

TABLE XIX - MINIMUM ENTRANCE AND GRADUATION SCORES FOR THE POLICE SIMULATION TESTS

POLICE SIMULATION TESTS

	ENTRANCE SCORES	GRADUATION SCORES
1.5 Mile Run	13 minutes 10 seconds	12 minutes 26 seconds
The Fence Climb	15 seconds	11.4 seconds
The Scramble	23 seconds	20.5 seconds
The Rescue	25 seconds	22.6 seconds
The Stair Climb	20 seconds	18.6 seconds
The Foot Pursuit	22 seconds	19.5 seconds

TABLE XX - CHANGES IN STANDARD PHYSICAL FITNESS TESTS DURING 30 HOUR POLICE ACADEMY

N = 64		♂ = 56		♀ = 8
Pre-Test		Post-Test		t
1.5 Mile Run	\bar{X}	13 minutes 47 seconds	11 minutes 47 seconds	4.43 (P < .05)
	S	2 minutes 56 seconds	2 minutes 0 seconds	
Chinups	\bar{X}	7.1	8.9	2.12 (P < .05)
	S	4.0	4.8	
Pushups	\bar{X}	13.2	48.6	12.06 (P < .05)
	S	31.3	16.6	
Situps	\bar{X}	38.3	47.4	5.65 (P < .05)
	S	10.8	9.1	
Burpees	\bar{X}	15.5	18.0	4.99 (P < .05)
	S	2.4	3.2	

TABLE XXI - CHANGES IN STANDARD, PHYSICAL FITNESS TESTS DURING 30 HOURS POLICE ACADEMY FOR WOMEN

N = 8

	Pre-Test	Post-Test	t
1.5 Mile Run	\bar{X} 18 minutes 43 seconds S 3 minutes 38 seconds	14 minutes 20 seconds 2 minutes 19 seconds	5.5
Chinups	\bar{X} 0	0	0
Pushups	\bar{X} 9.0 S 7.0	29.3 10.9	8.29
Situps	\bar{X} 20.9 S 7.5	42.0 8.5	10.03
Burpees	\bar{X} 11.6 S .9	13.1 2.0	2.09

Subjects are described in Table XXII.

Female cadets made startling improvements in the 1-1/2 mile run, pushups, situps and burpees. No data is available on performance of police simulation tasks by an academy group. The data clearly shows that female cadets can make large improvements in physical fitness during the academy. These results would no doubt be magnified with 50 hours devoted to physical conditioning and the development of knowledge of physical conditioning.

It is recommended that extensive research be conducted in the development of physical capability in prospective women police officers. This research should explore areas such as aerobic capacity, strength, body composition and specific police physical tasks.

TABLE XXII
DESCRIPTION OF SELECTED ACADEMY CADETS

N = 66		Male N = 64	Female N = 8
Age:	\bar{X}	25.3 yrs.	
	S	4.0 yrs.	
Height:	\bar{X}	70.3 inches	
	S	2.5 inches	
Weight:	\bar{X}	172.1 pounds	
	S	25.8 pounds	

PHYSICAL FITNESS FOR CURRENT PERSONNEL

Physical fitness standards for entrance to the academy, graduation from the academy, and for on-going personnel are meaningless and unfair unless the officer is provided with a vehicle for the maintenance of physical fitness.

Recommendations

1. It is recommended that the Police Department have a physical fitness resource person who could serve in a dual capacity as academy physical fitness expert and physical fitness consultant to on-going personnel. This individual would work closely with the City physician. His qualifications are described previously in the police academy section.
2. It is recommended that an adequate training facility be provided for on-going personnel. This facility could be used in conjunction with the police academy. This facility is described as the police academy section.
3. It is recommended that seminars on physical fitness be available to current personnel so that they possess the knowledge to devise their own physical training programs.
4. It is recommended that current personnel involve themselves in regular physical activity such as aerobic conditioning (10),

weight training and police simulation tasks. A typical program might be similar to that found in the police academy curriculum. Such programs could be established with the help of academy physical training officer.

CHAPTER VII

SUMMARY AND RECOMMENDATIONS

SUMMARY AND RECOMMENDATION

This study has examined the need for a physical standard. In consideration were the public's expectations, administrative policies, and the police officer's capability. In the process, injury and assault factors were examined to ascertain their relationship to physical fitness.

It was determined that physical standards are necessary for uniformed police personnel, for the applicant, the cadet, and for the beat officer. Injuries are clearly related to the performance of physical tasks performed during the course of police work. There are police officers currently employed whose physical fitness levels fall significantly below those of the average American. A standard has been set which requires the police officer to be of equal fitness with the average person. This standard will enable the officer to perform physical tasks during the course of police work in accordance with reasonable expectations. An adequate training program has been offered to ensure that the officer is provided with the knowledge of fitness and to enable him to feel confident in his abilities. It is up to administration to provide the means of training.

We offer the following recommendations as a result of this study:

General Recommendations

1. The role and expectations of the police officer in all aspects of police work must be clearly defined.

2. The abilities of the police officer must be at least equal to this defined expectation.
3. There should be consistency between Academy training and on-the-job performance.

Specific Recommendations

1. Academy cadets and on-going personnel should be required to maintain at least a minimum standard of physical fitness. (See Chapter V).
2. The administration should provide positive incentives for the maintenance of this standard such as:
 - a. A physical fitness facility, including equipment.
 - b. Trained advisory personnel in physical fitness.
 - c. Mandatory compliance with standard.
3. More research is needed on the evaluation of the physical demands of police work.
4. More research is needed on the physical performance characteristics of women and police work.

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APPENDIX A

POLICE SIMULATION TESTS DESCRIPTION AND GENERAL INFORMATION

The following pages show:

1. The tasks associated with each test taken from the critical moment list on page 130.
2. A summary of what the test measures.
3. A description of the test.
4. The test instructions.
5. Penalties
6. Additional general information pertaining to each test.
7. An illustration of each test.
8. Minimum qualifying scores.

THE STAIR CLIMB

Task No.

- | | |
|----|--|
| 2 | Running through house |
| 3 | Climbing stairs |
| 4 | Run up staircase |
| 7 | Vertical jump |
| 15 | Land in balanced position following drop |
| 16 | Run quickly upon landing after drop |
| 44 | Landing on balance after climbing an object in off-set terrain |

Summary: Measures ability to make stair ascents and controlled drops and to keep balance and control direction in pursuit situations requiring gross body movement.

Description of Test

On command, you will run up a flight of 7 stairs, duck under rail on the right and jump to the ground; run to starting point. You will repeat this 3 times. That is the end of the test. You will carry a baton in your left hand. The test requires explosive leg strength; ability to maintain equilibrium after jumping from a high place; and recovery from jumps and drops from walls.

Instructions

You will be allowed 3 attempts to qualify on this event. You must fol-

low instructions or default on that attempt. Standing start with a 14" baton held in your left hand. I will say, 'Ready' (1 sec.), 'Set' (1 sec.), 'Go.' You will run up the stairs, one at a time, duck under the right rail and jump off the platform onto the ground and run back to the start and around the pylon.

Repeat ~~this~~ twice more, 3 in all. That is the end of the test. Your score ~~will~~ be the number of seconds required to complete the course. If you knock the pylon down do not stop, continue the test and the scorer ~~will~~ reset the pylon. You must follow instructions or default that attempt. Are there any questions?

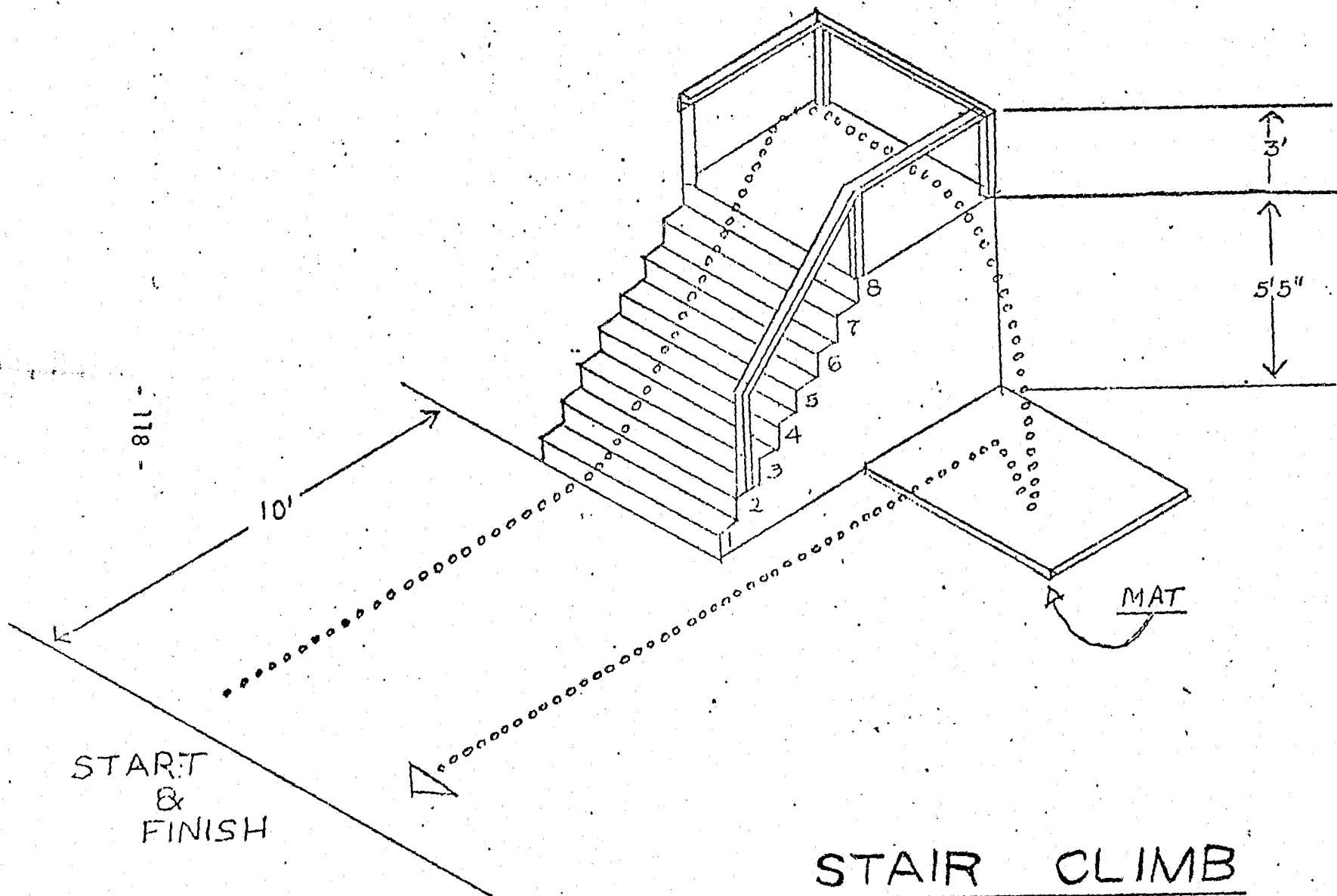
Penalty

One second penalty for each step skipped. One second penalty for each time the pylon is knocked down.

Minimum Standard

Minimum qualifying score is 19.3 seconds, including penalties. If a police officer defaults or scores above 19.3 seconds, he will immediately repeat the event. The police officer will be allowed a total of 3 attempts to qualify.

- 118 -



STAIR CLIMB

THE FOOT PURSUIT

Task No.

- 2 Running through house
- 4 Run up staircase
- 21 Dodge obstacles
- 22 Trip and regain balance
- 23 Hurdle objects
- 34 Jump hedges
- 36 Dodging and weaving while running among objects
- 38 Making sharp turns while running on alternating surfaces
- 50 Full speed broken field running
- 60 Running through slippery terrain
- 61 Running through entangling terrain
- 69 Running through bushes
- 70 Running and hopping from stone to stone
- 71 Running through traffic
- 72 Running through crowds
- 74 Sidestep
- 131 Broken field running under limited visibility (gas mask)

Summary: Measures the ability to pursue a suspect where different field conditions require running with considerable precision and body control.

THE FOOT PURSUIT (continued)

Description of Test

This test is designed to require specific and precise movements in unusual sequences and positions. From a standing start the police officer clears four hurdles of varying heights and performs a tire run with tires of two degrees of precision demand. The test requires coordination and the ability to maintain equilibrium when rapidly changing direction and the body's center of gravity. It requires explosive strength, particularly of lower part of body.

Instructions

You will be allowed 3 attempts to qualify in this event. You must follow instructions or default on that attempt. I will say, 'Ready, Set, Go.' On 'Go' you are to run and jump hurdles, step in tires, and dodge around pylons. You must step inside each tire. Your score will be the time in seconds plus a one-second penalty for each hurdle rail you knock down, and an additional one-second penalty for each tire center you fail to step in. There is no penalty for tripping, but you must follow the course correctly. If you do not follow the course, you will default that attempt. Remember, step in all tires. Are there any questions?

Penalty

Each rail downed, plus one second. Each tire missed or tire center missed, plus one second penalty.

Minimum Standard

Maximum qualifying score is 21 seconds including penalties. If the police officer defaults or scores above 21 seconds he will immediately repeat the event. The police officer will be allowed a total of 3 attempts to qualify.

PYLONS



TIRES

TIRES

HURDLE

START
&
FINISH

THE RESCUE

Task No.

- 18 Move furniture
- 19 Lift furniture
- 28 Pulling doors open
- 32 Drag suspect from under furniture
- 33 Pry open grip
- 58 Lifting people
- 59 Carrying people
- 62 Restraining injured persons
- 63 Lifting an injured person
- 64 Carrying an injured person
- 81 Forcing damaged auto door
- 83 Uprighting police motorcycles
- 84 Pushing vehicles
- 91 Partially lift and drag semi-conscious person
- 92 Partially lift and drag struggling person
- 98 Forcing protesting person into prone position
- 103 Pry suspect's arm into small of back, using one hand
- 104 Cuff one hand, transfer, and hold with other hand.
- 116 Maintain two (2) hand weapon control
- 148 Apply bear hug
- 149 Apply wrist restraint to women
- 155 Running while carrying injured persons

THE RESCUE (continued)

Summary: Measures ability to carry or drag an unconscious victim. Measures strengths required in hand-to-hand apprehension of resisting suspects. Measures ability to apply corrective force in accident situations.

Description of Test

From a standing start, the police officer lifts the bag and carries it on an alternate-pass course through the five pylons. A change station is halfway between the last pylon and the end marker; at this station he/she puts the bag carefully on the ground. He leaves the bag there and goes around the end marker, comes back, grabs the bag by the ears and drags it back through the pylons passing the first pylon by his/her left side, the next by his right, and so-on. The test demands explosive strength, trunk strength, body equilibrium and coordination under the stress of an external force. In the handling of the sack, it requires static strength.

Instructions

Sack on ground parallel to the course and offset 2 feet to the left of center of course. Standing start astride the bag. You will be allowed 3 attempts to qualify in this event. You must follow instructions or default on that attempt. You will have 24.3 seconds for the test.

I will say 'Ready, Set, Go!' When I say, 'Go,' you lift the bag before moving onto the course. Go to the right following the arrow on

THE RESCUE (continued)

the pylon and pass the first pylon on your right, next on your left, and so on. When you pass the last pylon, go to the mark half-way between the last pylon and the end marker. Set the bag down carefully and lay it out flat. Carefully means that you do not drop or throw the bag down. Hold it with your hands all the way down. After you set the bag down, you continue on around the end marker, come back, grab the bag by the ears, and drag it back through the pylons. Follow the arrow. You must pass each pylon on alternate shoulders. Remember, on the outward course you pass the first pylon with your right shoulder. Put the bag down carefully and flat on the ground in the circle and go around the end. Come back dragging the bag through the pylons. Your score is the seconds required to complete the course plus a 2-second penalty if you do not set the bag down carefully. If you drop the bag, pick it up and continue; there is no penalty. Are there any questions?

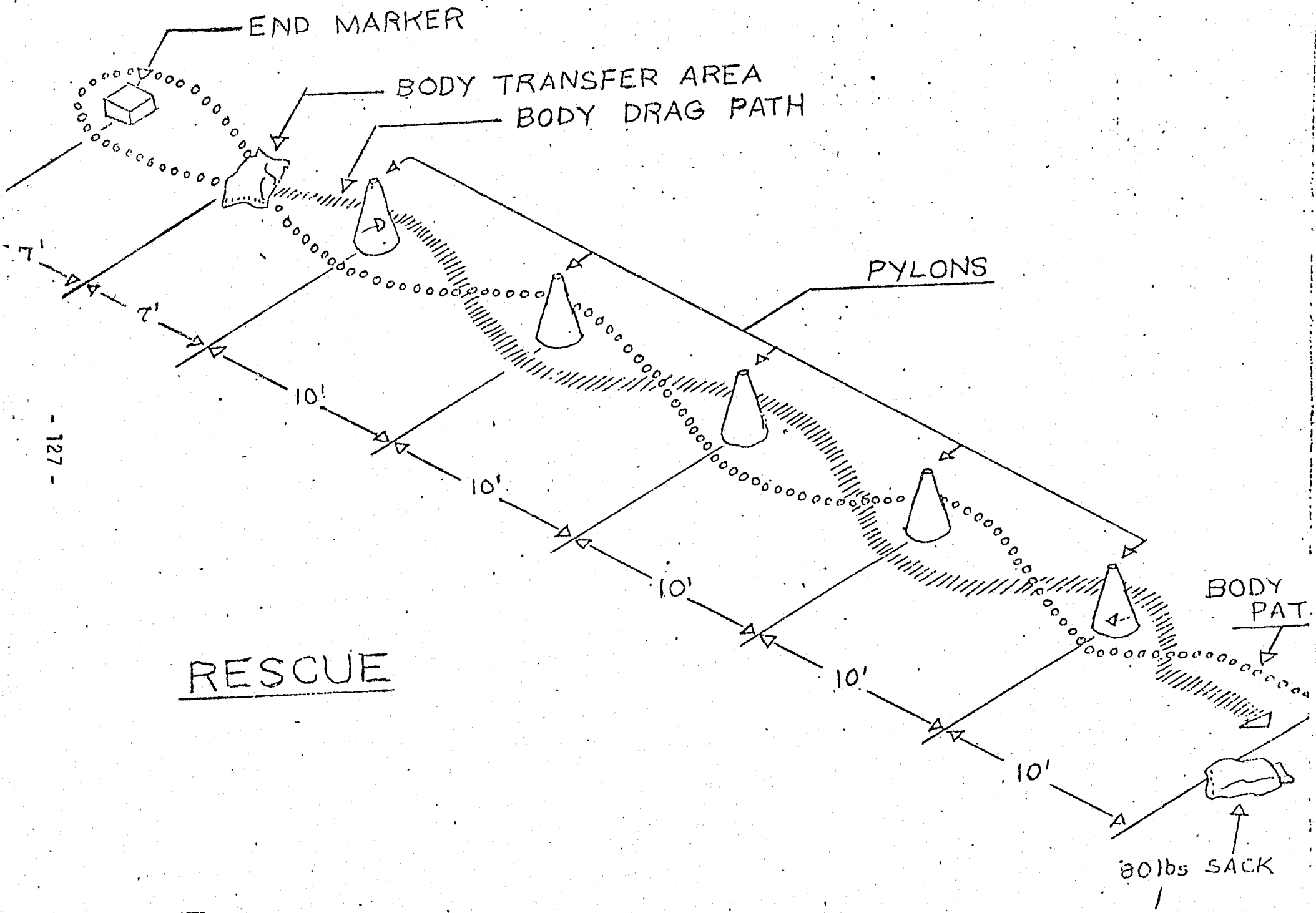
Penalty

If a police officer does not set the bag flat on the ground carefully, 2-seconds penalty. "Carefully" means a controlled handling of the bag rather than a drop or throw. If a police officer does not pass with right shoulder first but does pass alternate shoulder, no penalty. If a police officer drops the bag before getting to the circle, no penalty, but he must pick it up, and continue. Other substantial deviations from test instructions constitute default for that attempt. One-second penalty for each pylon knocked down.

THE RESCUE (continued)

Minimum Standard

Maximum qualifying score is 24.3 seconds including penalties. If the police officer defaults or scores above 25 seconds he will immediately repeat the event. The police officer will be allowed a total of 3 attempts to qualify.



THE FENCE CLIMB

Task No.

- | | |
|----|------------------------------------|
| 8 | Chin up into attic |
| 9 | Struggle up (palms down) |
| 15 | Drop and land in balanced position |
| 16 | Run after drop |
| 42 | Vault fences |
| 43 | Climb fences |
| 45 | Climb a drainpipe |
| 54 | Climb a rope |
| 56 | Climb trees |
| 67 | Climb cliffs |

Summary: This test measures the ability to move the body vertically in a variety of pursuit tasks and to maintain balance and direction when changing from vertical to horizontal pursuit.

Description of Test

You will run 15', climb the fence, go around the pylon and back over the fence to start. This test requires explosive strength of upper body with the body as resistance, trunk strength, and gross coordination skills.

Instructions

You will be allowed 3 attempts to qualify in this event. You must follow instructions or default on that attempt.

THE FENCE CLIMB (continued)

Proctor Demonstrate

Palms down and clammer method. "I will say 'Ready, Set, Go.' On the word 'Go' you are to run from a standing start and get over the fence without using any of the side supports.

Come back across the starting line. That is the end of the test. Your score is the number of seconds it takes to complete the test properly. If you use the side supports or fail to go around the pylon, you default that attempt. Are there any questions?

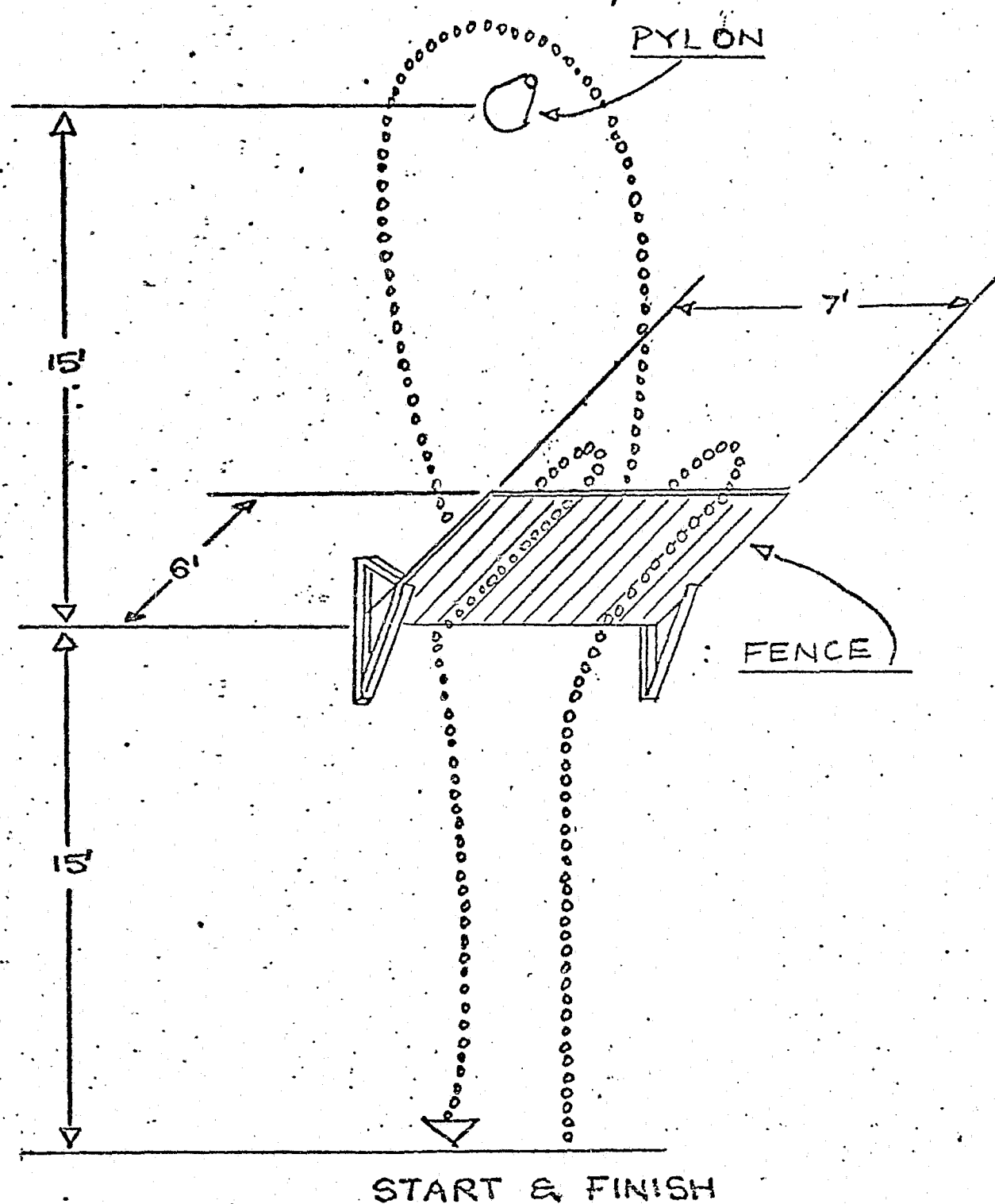
Penalty

Touching fence supports or failure to go around pylon is a default on that attempt.

Minimum Standard

Maximum qualifying score is 13.2 seconds including penalties. If the police officer defaults or scores above 13.2 seconds he will immediately repeat the event. The police officer will be allowed a total of 3 attempts to qualify.

FENCE CLIMB



THE SCRAMBLE

Task No.

- | | |
|----|--|
| 5 | Crawl on knees in attic |
| 10 | Crawl (bent over) for 5-10 minutes |
| 22 | Trip and regain balance |
| 23 | Hurdle objects |
| 34 | Jump hedges |
| 51 | Diving through door |
| 85 | Jump out of vehicle window |
| 90 | Change from prone position to full speed pursuit without using hands |

Summary: Measures ability for low profile movement.

Description of Test

Each police officer will start from a prone position, flat on the ground, arms at your sides, 90° from the direction of the course. You will get up and run to the first bench, dive under it, get up and jump over the hurdle, run to the next bench and dive under, and then run around the pylon. Return the same course but belly-crawl on elbows under the benches to the finish line. The test demands the ability to maintain equilibrium with a rapid change of position and center of gravity. It requires back flexibility and trunk strength.

Instructions

You will be allowed 3 attempts to qualify in this event. You must

THE SCRAMBLE (continued)

follow instructions or default on that attempt. I will say, 'Ready, Set, Go.' You will start from a prone position, laying flat on the ground with your hands at your sides. You will be parallel to the nearest bench. When I say, 'Go,' get up, run to the nearest bench and dive under, jump up and run to the hurdle and jump over, run to the next bench and dive under, jump up and run around the pylon marker and back to the bench going under it in a belly-crawl and continue the crawl, going under the next bench back to the finish line. A belly-crawl means keeping forearms and knees or elbows and knees on the ground. The body trunk may be off the ground. That is the end of the test. Your score will be total seconds plus a 2-second penalty for each bench, hurdle or pylon you knock down. Are there any questions?

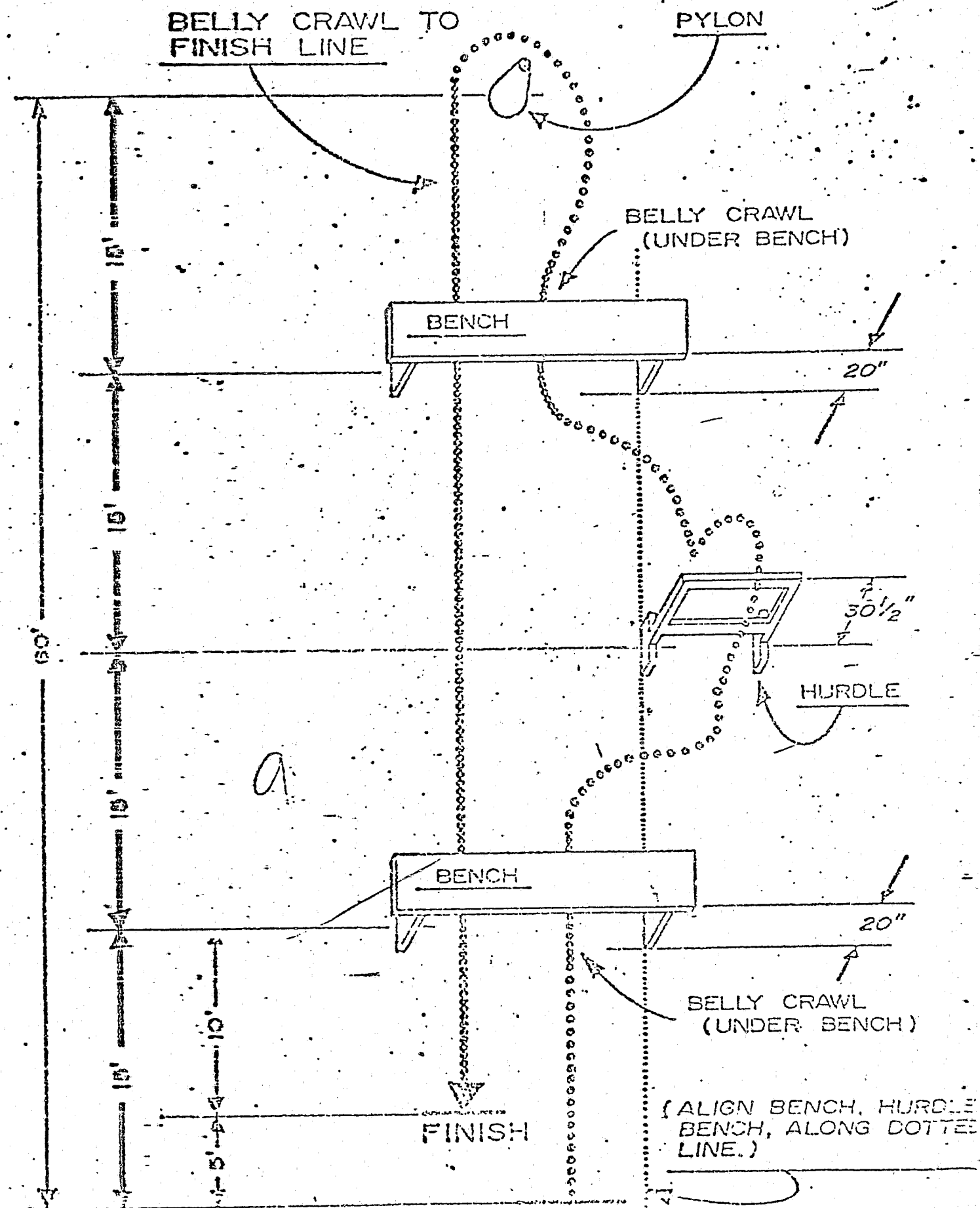
Penalty

Record total seconds plus 2 seconds penalty for each thing knocked down or over.

NOTE: If the police officer hits something and it does not go over or down, no penalty. If the police officer catches and rights something before it hits the ground, no penalty.

Minimum Standard

Maximum qualifying score is 22 seconds, including any penalties. If the police officer defaults or scores above 22 seconds, he will immediately repeat the event. The police officer will be allowed a total of 3 attempts to qualify.



1-1/2 MILE RUN

Description

This is a walk-run. The police officer will be tested in small groups. All candidates will start at the same time and are separately timed at finish. This test is a measure of maximal oxygen uptake, or simply, the efficiency of the cardiovascular system.

Instructions

(Standing Start)

You must follow instructions or default for a zero score. You will have 13 minutes 10 seconds to complete 1-1/2 miles. The course requires you to run once around the track and then follow the course around the grass field. You will follow the fence and must not cut any corners. On returning to the track you will run twice around to finish. After you reach the finish line, you should, for your own good, walk around the inside of the track one time. This will help prevent muscle cramping. The group will start at the same time but individual scores will be kept. You will be disqualified if you leave the track or take longer than 13 minutes 10 seconds.

I will say, 'Ready, Set, Go,' and on the word 'Go' you will all start. Are you ready? 'Ready' (1 second), 'Set' (1 second), 'Go.'

Penalty

Getting out of course is disqualifying. Excess time (above 13 minutes

1-1/2 MILE RUN (continued)

10 seconds) is disqualifying.

Minimum Standard

Time limit is 13 minutes 10 seconds.

CRITICAL MOMENT TASKS FOR SAN JOSE POLICE OFFICERS

In August of 1973, 13 uniformed police officers met for two consecutive days with Dr. Thomas Fahey (co-author of this study), Dr. Jay Rusmore (San Jose State University Industrial Psychologist), and Ronald Stasch (Personnel Analyst Specialist for the City of San Jose).

All officers were men with not less than two years and not more than ten years of on-the-street experience. These officers were asked to draw upon their field experience to identify all the physically demanding tasks of their work, and to determine those moments when the performance of a physical task was critical to the success of a particular emergency. The process involved first the recall of major emergencies encountered by each officer, and then the careful breakdown of the officer's actions into detailed physical performance tasks.

All tasks have been listed in order of their occurrence by a recording secretary. The following pages show these tasks.

NUMBER

TASKS

1. Exiting of patrol car
2. Running through house
3. Climb stairs
4. Run up stairs
5. Crawl on knees in attic (18"-4')
6. Supporting partner on shoulders
7. Vertical jump from chair
8. Chin up (palms forward) into attic
9. Struggle up (palms down)
10. Crawl (bent over) 5-10 minutes
11. Duck walk while balancing on 2x4 beams (joint)
12. Duck walk in basement (low overhead)
13. Belly-crawl
14. Hang from beams
15. Land in balanced position following 2'-10' drop
16. Run quickly upon landing after drop
17. Performing physical activities quietly
18. Move furniture
19. Lift furniture
20. Lift suitcases
21. Dodge items
22. Trip and regain balance.
23. Hurdle objects
24. Shove objects while moving

NUMBERTASKS

- 25. Shove people while moving
- 26. Forcing doors (bedroom, closet) open
- 27. One-man kick to force doors
- 28. Pulling doors open
- 29. Forcing sliding doors
- 30. Forcing windows open
- 31. Crawl through windows
- 32. Drag suspect from under furniture
- 33. Pull object from suspect's hands
- 34. Jump hedges (1'-3')
- 35. Dodge low hanging objects while running
- 36. Dodging and weaving while among objects
- 37. Performing #36 in alternate good and poor footing
- 38. Making sharp turns while running on alternate surfaces
- 39. Performing #38 with equipment on
- 40. Running full speed up hills
- 41. Running full speed down hill
- 42. Vaulting fences (3'-4')
- 43. Climbing fences
- 44. Landing in balance after climbing an object in offset terrain
- 45. Climbing drain pipes (up and down)
- 46. Obtain foothold while hanging from roof
- 47. Walking on steep angled roofs
- 48. Running on steep angled roofs

NUMBERTASKS

- 49. Jumping from roof top to roof top
- 50. Full speed broken field running
- 51. Diving head first through door
- 52. Climbing fire escapes
- 53. Reverse direction in closed space
- 54. Climb a rope
- 55. Climbing ladders
- 56. Climbing trees
- 57. Balancing and walking on branch
- 58. Lifting people
- 59. Carrying people
- 60. Running through slippery terrain
- 61. Running through entangling terrain
- 62. Restraining injured people
- 63. Lifting injured people
- 64. Carrying injured people
- 65. Climb hills
- 66. Swim out of pools with clothes on
- 67. Climbing up and down cliffs
- 68. Climbing up and down stream banks
- 69. Running through bushes
- 70. Running and hopping from stone to stone (slippery)
- 71. Running through traffic
- 72. Running through crowds

NUMBERTASKS

73. Running backwards
74. Sidestep
75. Run sideways
76. Walking on narrow unstable surface
77. Walking and balancing on toes and balls of feet
78. Standing in position for long periods of time
79. Dodging flying objects
80. Throwing objects
81. Force open damaged auto doors
82. Bending auto fenders
83. Uprighting police motorcycle
84. Pushing vehicles
85. Jump out of car window
86. Rolling to crouch following dive
87. Rolling from prone position following dive
88. Rolling from position to position laterally
89. Maintaining crouch position for prolonged periods of time
90. Changing from prone to full speed pursuit without using hands
91. Partially lift and drag - semi-conscious person
92. Partially lift and drag - struggling person
93. Hanging onto rear of moving van (using drip-rail)
94. Entering van and removing protesting person
95. Strip clothing from limp person
96. Strip clothing from protesting person.

NUMBERTASKS

97. Supporting persons upright for long periods (semi-conscious)
98. Forcing protesting person into prone position
99. Forcing protesting person into small opening (patrol car)
100. Pull protesting person into small opening (car)
101. Forcing resisting person onto stomach
102. Knee into small of suspect's back
103. Pry arm into small of back using one (1) hand
104. Cuff one hand, transfer and hold with other hand
105. Pry suspect's remaining hand into small of back and cuff
106. Stand cuffed suspect on two feet
107. Keep suspect upright when consciously resisting (going limp)
108. Pinning resisting suspect to car hood for searching
109. Pinning resisting suspect to wall for searching or cuffing
110. Maintaining balance while warding off kicks and blows while handling suspect
111. Apply neck restraining hold to resisting suspect (choke hold)
112. Maintaining balance and control while performing wall search (unresisting)
113. Perform search and cuff operations while warding off suspect's friends
114. Wrestle suspect with one hand while maintaining control of gun with other
115. Warding off blows and kicks from crowd while maintaining weapon control and finding secure position

NUMBERTASKS

- 116. Maintaining weapon control (2 handed) when being beaten by several suspects (fetal position)
- 117. Use baton in clubbing motion
- 118. Striking with fist
- 119. Kicking
- 120. Uses any available object as clubbing weapon (clipboard, flashlight, cuffs, etc.)
- 121. Striking with knees and elbows
- 122. Grabbing and pulling hair to maintain control of suspect
- 123. Lifting and throwing suspect to ground
- 124. Breaking suspect's choke hold
- 125. Stomping on suspect's instep
- 126. Twist suspect's fingers to maintain control of direction
- 127. Twist suspect's wrist to maintain control of direction
- 128. Maintaining physical control in areas contaminated with chemical irritants (mace) and restricted breathing
- 129. Performing strenuous activities in contaminated atmosphere
- 130. Performing strenuous activities with gas mask on
- 131. Broken field running under limited visibility (gas mask)
- 132. Rapidly entering and exiting bus with full riot gear
- 133. Performing physical activities with flak vest on
- 134. Climbing fences with weapons in hands (one or both)
- 135. Maintaining night vision in sudden change (light/dark)
- 136. Performing any physical activities while injured or in pain

NUMBERTASKS

- 137. Running long distances (1/4 mile +)
- 138. Fighting for long time periods (3 minutes +)
- 139. Coming to abrupt stop from full speed
- 140. Change direction after running full speed
- 141. Tackling a suspect while running
- 142. Parrying and blocking blows and kicks
- 143. Body slam suspect against object
- 144. Cross body block suspects
- 145. Apply one (1) hand front choke
- 146. Performing high kick to suspect's chest (5')
- 147. Explosive back jump (defensive)
- 148. Apply bear hug
- 149. Apply wrist restraint to women or weaker suspects
- 150. Perform physical activities while holding breath
- 151. Performing physical activities under nauseating conditions
- 152. Performing physical activities under emotional stress (fear, anger, anxiety, etc.)
- 153. Safely operate high-speed vehicle (reaction time) while using radio and other equipment (coordination)
- 154. Force air into suspect during mouth resuscitation
- 155. Running while carrying injured persons
- 156. Pick up and move barricades and portable signal
- 157. Hold weapon at full extension for extended time (pistol 37-52 ounces)

NUMBER

TASKS

- 158. Fire 12-gauge shotgun with one hand
- 159. Fire weapon with either hand
- 160. Loading weapon under stress
- 161. Firing while running
- 162. Firing weapon from moving vehicle
- 163. Making loud commands (shouting)
- 164. Pinning suspect's arms to sides (women)

TRIPLICATE—SUPERVISOR'S COPY			
SUPERVISOR'S REPORT OF ACCIDENT			
Employer _____			
Name of Injured _____			
Age _____	Married _____	Occupation _____	
Date of Accident _____ 19____		Hour _____	A.M. P.M.
Nature of Injury _____			
Who gave first aid, if any? _____			
Name and address of physician _____			
Did injured leave work? _____		Date _____	Time _____ A.M. P.M.
Did injured return to work? _____		Date _____	Time _____ A.M. P.M.
Was injured acting in regular line of duty? _____			
Names of Witnesses _____			
Where and how did accident occur? _____			
What steps have been taken to prevent a similar accident? _____			
Date _____ 19____			
SUPERVISOR'S SIGNATURE _____			
STATE COMPENSATION INSURANCE FUND 525 Golden Gate Avenue San Francisco, California 94102			
FORM 78			

REPORT OF LAW ENFORCEMENT OFFICER
KILLED OR INJURED IN ACCIDENT OR ASSAULT

OFFICER'S NAME (13-24)		RANK (25)		HT. (26-27) IN INCHES	WT (28-30)	SEX (31) M <input type="checkbox"/> F <input type="checkbox"/>	RACE (32)	AGE (33-34) IN YRS.	YRS. (35-36) EXPERIENCE	SSN	<input type="checkbox"/> FELONIOUS ASSAULT (1) <input type="checkbox"/> ACCIDENT <input type="checkbox"/> FATAL <input type="checkbox"/> SEVERE (HOSP) <input type="checkbox"/> MODERATE (DOCTOR) MINOR (FIRST-AID)		
OFFICER'S DUTY (38-39) <input type="checkbox"/> PATROL <input type="checkbox"/> JAIL <input type="checkbox"/> DETECTIVES <input type="checkbox"/> OFF DUTY <input type="checkbox"/> OTHER Specify _____		TYPE OF ASSIGNMENT (40-41) <input type="checkbox"/> 1 MAN VEH. <input type="checkbox"/> 2 MAN VEH. <input type="checkbox"/> FOOT PATROL <input type="checkbox"/> MOTORCYCLE <input type="checkbox"/> OTHER Specify _____		OFFICER'S ACTIVITY (42-43) RESPONDING TO: <input type="checkbox"/> ROBBERY <input type="checkbox"/> BURGLARY <input type="checkbox"/> DISTURBANCE <input type="checkbox"/> CIVIL DISORDER <input type="checkbox"/> TRAFFIC STOP <input type="checkbox"/> HANDLING CUSTODY PRISONERS		<input type="checkbox"/> SUSP. CIRCUMSTANCE <input type="checkbox"/> MENTALLY DERANGED <input type="checkbox"/> AMBUSH <input type="checkbox"/> ATTEMPT OTHER ARREST <input type="checkbox"/> OTHER Specify _____							
DATE OF INCIDENT (44-47) <input type="checkbox"/> LIGHT <input type="checkbox"/> DARK <input type="checkbox"/> UNKNOWN		DAY OF WEEK (48)		WAS OFFICER (50) <input type="checkbox"/> ALONE <input type="checkbox"/> W/PARTNER <input type="checkbox"/> GROUP OF OFFICERS <input type="checkbox"/> OTHER Specify _____		IF ACCIDENT, GIVE TYPE (51-52) <input type="checkbox"/> TRAF. COLLISION <input type="checkbox"/> TRAINING CLASS <input type="checkbox"/> ANIMAL BITE <input type="checkbox"/> OTHER Specify _____		TYPE OF WEAPON USED (53-56) <input type="checkbox"/> KNIFE <input type="checkbox"/> CLUB <input type="checkbox"/> FIREARM IF FIREARM WHOSE _____ TYPE _____ CALIBER _____ <input type="checkbox"/> HANDS/FEET <input type="checkbox"/> BITE/TEETH <input type="checkbox"/> OTHER Specify _____					
OWN, PERSON(S) RESPONSIBLE		HT. (57-58)		WT. (59-60)		SEX (62)		RACE (63)		AGE (64-65)		PRIOR RECORD (66-67)	

SYNOPSIS OF INCIDENT

PREPARING REPORT

RANK

BADGE NO.

Count an assault or accident only when the severity of the injury to the officer is great enough to require at least some form of first aid treatment. The first aid may be administered by the officer himself.

Bruises, broken teeth, cuts, etc., are considered requiring first aid treatment.

Complete this form for every law enforcement officer assaulted or killed within your agency whether a charge or arrest was made or not. This includes off duty officers and reserves. Mail all completed forms at the end of each month to:

BUREAU OF CRIMINAL STATISTICS
3301 C STREET P.O. BOX 13427
SACRAMENTO, CALIF. 95833

END