PHYSIOLOGICAL FITNESS STANDARDS RESEARCH PROJECT

A project funded by Grant No. N1170-042
Law Enforcement Assistance Administration
National Institute of Law Enforcement & Criminal Justice

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Occupational Health Service

Interim Report
June 1971

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SUMMARY

The Los Angeles County Sheriff's Department and Occupational Health Service of the Los Angeles Department of Personnel are jointly engaged in a research study to produce physical and psychological standards for law enforcement officers on a national level.

There are several factors underlying the need for this study. Little systematic work has been undertaken to correlate the task of law enforcement officers with corresponding physical and psychophysiological requirements necessary for the task. Typically, the requirements vary from agency to agency and are outdated and inappropriate to the occupational demands made on contemporary officers.

The results from a survey conducted for this project, Law Enforcement Standards Questionnaire (see Appendix), indicate that there is very little commonality across departments in standards. The most common areas of agreement were "no" responses reflecting lack of measurement or lack of information.

National statistics indicate that police suffer from a higher prevalence and incidence of heart disease than do

other work groups of comparable age. Records of Los Angeles County indicate that the following are the leading causes of non-accidental disability retirement among policemen: (1) heart and circulatory disease, (2) back disorders, and (3) peptic ulceration. The loss of man power, due to early retirement, make it imperative to develop procedures for detection and prediction of these conditions.

The rapid rate of social change and the resultant turmoil are further indications of the need for standards by which law enforcement agencies can select appropriate personnel.

Project Objectives

The basic overall objectives of the project are twofold:

1. Develop standards for physiological fitness for screening and selection of law enforcement officers for use nationally.
2. Develop standards for psychophysiological fitness for screening and selection of law enforcement officers for use nationally.

Methodology

These objectives can then be divided into sub-goals with corresponding behavioral objectives or tasks to be accomplished to meet the project objectives. In chronological order, these are outlined below and elaborated on in the body of the report.

A. Conduct a national survey

B. Development of criterion variables

C. Development of sampling procedures

D. Development of predictor variables

E. Data collection procedures

F. Analysis of data

G. Construction of preliminary model

H. Modification of data collection procedures where necessary

I. Replication of research

J. Final analysis of data

K. Re-evaluation of model and modification where necessary

L. Development of final model

M. Writing of results

National Survey

The Law Enforcement Standards Questionnaire was sent to 126 agencies in the United States who serve cities with a population of 100,000 or more. The purpose of the questionnaire was to survey physiological and psychophysiological evaluation procedures and standards. Ninety-six, 65 percent, of the agencies returned the questionnaire. In general, the results of the survey revealed significant diversity in procedures and standards, and, most often, indicated arbitrary and fragmentary standards.

Development of Criterion Data

Developing criterion variables which accurately correspond

to actual on-the-job performance is always a difficult task. Criteria chosen for this study include most of the typical performance evaluation techniques used by law enforcement agencies. One aspect of this research is to shed light on the relationship among these techniques and on their relationship to a man's performance in the medical, physical, and psychophysiological examinations.

The criterion variables chosen are as follows:

1. Paired comparison rating	From supervisory performance appraisal arranged by the research team
2. Departmental evaluation	Average of the two half-year totals
3. Tenure	Number of years in LASD
4. Awards	Number of commendations
5. Disciplinary action	Disciplinary actions averaged for 1965-1971
6. LASD Academy ratings	Grades from the Academy
7. Personnel investigation	Ratio of complaints recorded to complaints sustained by internal investigation
8. Workmen's Compensation and Rehabilitation claims	Number of claims for job related injury or illness validated by Workmen's Compensation
9. Self-evaluation	Officer's self-evaluation of his performance on specific tasks

Development of Sampling Procedure

During the course of this research, 500 officers each year will undergo a psychological examination, medical examination, and exercise testing to determine their current functioning levels. The data will be used to help develop physiological and psychophysiological standards and appropriate tolerance ranges by age, rank, and assignment.

The sample will be stratified on three dimensions: (1) rank, (2) assignment, (3) then, as a result of the paired comparison performance ratings, equal proportions of officers who ranked above average, average, and below average will be chosen from each assignment.

Development of Predictor Variables

Based on medical and psychological expertise, a series of physiological (medical and physical fitness) and psychophysiological predictor variables have been chosen.

The physiological variables were chosen because they are indicators of potential medical problems, and the psychophysiological variables are indicators of an officer's reaction to work related activities and stresses.

Physiological Predictor Variables

Medical Studies. The medical examination performed prior to stress testing begins with a medical history form of 64 questions covering the various bodily organ systems. The individual being examined completes the questionnaire and is then given a pre-physical examination test series, which includes a test of visual acuity, a simple measurement of visual fields, a color vision test, and an audiogram. The individual's

height and weight are also measured at this time. Following these procedures, the subject has a chest x-ray taken, and then proceeds to the examining area where a complete physical examination and a battery of blood chemistry tests is performed, including the measurement of such components as serum triglycerides, serum urea nitrogen, serum uric acid, serum cholesterol, serum creatinine, glucose (fasting), alkaline phosphatase, serum potassium, serum total protein, serum albumin, serum gloulin, A/G ratio, thyroxine total column, transaminase SGP, in addition to a complete blood count. Following the venipuncture for the blood chemistries, a 12-lead resting electrocardiogram is made, and is interpreted subsequently by a cardiologist. Upon completion of all segments of the examination and the assembly of the results, the material is reviewed and a medical opinion as to the individual's physical status is rendered to determine the types of exercise testing in which he can engage.

Exercise Testing. Approximately two weeks after the medical examination, the officers are scheduled for exercise testing. This lead time is necessary to complete the laboratory analysis and to evaluate the entire medical examination. If there is evidence on the resting electrocardiogram of myocardial ischemia, the officer will not take part in the exercise testing. If there is evidence of an old myocardial infarction, at the discretion of the cardiologist it is possible that exercise testing will be undertaken.

Other measurements to be gathered are as follows:

1. Estimate of body composition
   Skin fold measurements are obtained, and the percentage of body fat and variation from the norm are determined.
2. Spinal mobility
   To determine the range of motion of the spine, measurements are made of the range of trunk flexion, extension, and rotation.
3. Muscular strength
   Dynamometers are used to secure measurements of grip strength and the strength of the back and thigh muscles.
4. Cardiac stress
   The objective of the exercise testing procedure is to determine the cardiovascular tolerance for work at heart rates of 100, 120, 140, and 160 beats per minute, maintaining each heart rate increment for five minutes.
5. Determination of pulmonary function
   Utilizing the Collin's Stead-Wells spirometer, measurements are made of the forced vital capacity and the maximum breathing capacity.

Psychophysiological Predictor Variables

The psychophysiological data are of three basic types: psychological paper and pencil tests, psychophysiological measurements of reactions to psychological stress, and verbal or written responses made during the stress situation and in an interview.

The battery of paper and pencil tests includes five tests found by previous studies with law enforcement officers to be predictors of police performance: Personal History Index, Temperament Comparator, CREE Questionnaire, and the Press Test and the Sixteen Personality Factor Questionnaire. Also, the Job Satisfaction Checklist, an instrument developed by our research team to provide a measure of stressful aspects of the officer's assignment, will be used.

Psychophysiological measurements (galvanic skin response and heart rate) will be recorded as officers view segments of film used in other stress research. Research variables include general set, particular set, anticipation reactions, stress reactions, and recovery.

It is felt that these three types of data - objective tests, psychophysiological data, and subjective reports - will give a more comprehensive analysis of a man's psychological functioning than any one of the measurements alone.

Analysis of the Data

All of the medical, physical fitness, psychological, and psychophysiological data will be analyzed by means of stepwise discriminant analysis to determine best predictors or group of predictive variables to serve as standards.

The identity of the participants will be protected by assigning each subject an identification code number which will

be used on all of his testing data.

The three groups of officers -- above average, average, and below average -- will be analyzed for variables differentiating the three groups. Using the data as continuous variables, a correlational analysis will be applied to the data. Standards which specify the present levels of functioning of men in the Department, according to age, rank, and assignment, will then be developed which will allow us to infer the limits of acceptability for each assignment and age.

Problems

Several unexpected administrative problems which delayed the start of technical work included the lack of appropriate equipment and the acquisition of adequate research offices and psychophysiological laboratory space. These, in conjunction with the reduced time for this original grant (reduced from 12 to 9 months) resulted in an inability to fulfill completely those tasks scheduled in the grant application.

Present Status

In spite of the aforementioned delays, many activities have been carried out. These are planning activities necessary for the main research and also validation studies of some of the criteria.

1. A research methodology was devised.
2. A national survey to determine physiological and psychophysiological testing procedures currently in use was conducted and the results tallied and analyzed.

3. Criteria were developed.
4. Sampling procedures were developed.
5. Personnel lists were secured.
6. Paired comparison supervisory ratings were secured.
7. A budget reallocation was submitted.
8. Psychological tests were chosen and ordered.
9. A computer program for analysis of the paired comparison data was written.
10. Office space was secured.
11. A Job Satisfaction Checklist was developed, pre-tested on a group of officers in a nearby city, and factor analyzed.
12. Policies for handling officers with medical problems were developed in conjunction with the Sheriff's Department.
13. Meetings were held with the officers in the patrol stations to explain the research.
14. Four ancillary studies to validate criteria were developed: Workmen's Compensation Study, Twenty-Year Longitudinal Study, Disciplinary Study, and Stress/Non-stress Study.
15. The films to be used for the psychophysiological measurements were chosen.
16. The research design for the psychophysiological measurements were chosen.
17. The medical examination and exercise testing of the research population were begun.

INTRODUCTION

Need for this Study

Until the recent past, scant attention has been given to medical and psychophysiological aspects of standards for law enforcement officers. Research available from these two fields of study has rarely been used in selection, career planning, or training of officers. There is a paucity of data available regarding the effects of the job itself on the physical and/or psychophysical condition of the officer or the effects of this interaction on the officer's work performance. This research is predicated on the assumptions that (1) the Department has an obligation to the County government as well as to itself to select officers who are physiologically and psychologically fit and (2) that once a man is in the Department, the County has an obligation to assist him in maintaining physiological and psychophysiological fitness.

Selection of Physiologically and Psychophysiologically Fit Officers

The President's Commission on Law Enforcement and Administration of Justice (1967) discusses the need to devise reliable procedures for "identifying and measuring the personal characteristics that contribute to good police work (p. 110)," including physical and psychological characteristics.

In a position where job-related medical problems are so prevalent, it is necessary for potential officers to have a high

overall level of physical fitness. Medical authorities agree that physically fit people live longer, manifest better work records, and participate more fully in life.

Not only are the physical stresses of police work great, but the already intense psychophysiological stresses mount as social changes occur with increasing rapidity. The officer finds himself caught between the laws of the past and the changes of the future. The officer's psychological fitness, including his ability to react appropriately under stress, to solve problems effectively, to understand another's point of view, and to have insight into the meaning of his own feelings, attitudes, and behaviors may greatly influence and be influenced by his work performance as well as his physiological fitness.

Another element in the selection problem is the cost factor. Los Angeles County spends approximately $10,000 to recruit, hire, and train one deputy sheriff. In each Academy class, between 15 and 30 percent of all officers beginning the training drop out. In 1968-69 approximately 88 did not complete the Academy. Thus, depending on the length of time the officer remained in the Academy, the cost to taxpayers in recent times has been $500,000 - $800,000 per year. This does not include the cost to those who drop out after a short period of service, or the costs accumulated when a disability retirement is necessary.

Detection and Prevention of Disability Medical Problems

Once a man has been recruited and trained it is necessary that he remain physiologically fit. This is important not only

to the officer, but also to the County.

Records of the State Compensation Insurance Fund of California, which provided the County of Los Angeles with Workmen's Compensation Insurance coverage until July 1, 1969, indicate that the leading causes of non-accidental disability retirement among policemen, in order of occurrence are the following: (1) heart and circulatory disease; (2) back disorders; and (3) peptic ulceration. The California State Legislature has recognized that police officers are more prone to certain diseases. Section 3212 of the California State Code states in part that in the case of certain occupations, among them the occupation of police officer, "the term injury includes pneumonia and heart trouble which develops or manifests itself during a period while such member is in the service of such office, department or unit."

The Workmen's Compensation and Rehabilitation Unit of Los Angeles County reports that for the fiscal year of 1969-70 there were 421 compensation claims made by officers in the Sheriff's Department for a total of $1,178,784; and for the fiscal year of 1970-71 approximately 385 claims for $1,300,000 were made. The majority of these claims were for the medical problems listed above.

It is unknown now what effect a preventive program would have had upon these cases, but it is clear that measures to alleviate them must be taken. Occupational health programs in industry have demonstrated the worth of early recognition, reassurance, counseling, and referral of problem-beset employees.

Physical problems frequently have psychophysiological components resulting from job related stress which must be treated before the physical problems can be.

The Los Angeles County Sheriff's Department is not unique in the fact that it has suffered from the loss of experienced manpower through disability retirements, a loss which is costly to the taxpayers and negatively influences the effectiveness of the organization.

Summary

In view of these facts, it can readily be seen that a need exists for a system to predict which officers are most susceptible to medical problems so that either they (1) will not be employed by the Department or (2) once in the Department their medical problems will be detected early and appropriate rehabilitation measures prescribed. For the sake of the safety of the officer, his co-workers, and the citizenry, it is essential that law enforcement agencies not place men who are physically unable to cope with the job stresses in high risk assignments.

To accomplish this task, standards must be established. In addition, alternative career assignments which utilize the maximum potential of an officer who has suffered a physical or emotional breakdown must be specified if the waste of money and human resources is to be reduced.

Purpose of the Research

Based, then, on the stated needs for physiological and psychophysiological standards, the following types of sub-goals will be reached:

(1) Determine age limits and performance levels for specific types of police tasks

(2) Identify job stresses causing physical deterioration

(3) Determine physical fitness levels necessary for various assignments

(4) Determine psychophysiological fitness levels necessary for various assignments

(5) Identify allowable time periods between re-examinations

(6) Determine alternate decisions available to those found deficient

(7) Measure impact of time on the model

History

In July 1970, the Board of Supervisors of Los Angeles County approved the proposed collaboration of Occupational Health Service and the Sheriff's Department in conducting the Physiological Fitness Standards Research Project. On September 23, 1970, the research staff began deliberations as to how the research could best be implemented.

Due to delays, the research group, which also included two student workers and one secretary, had no permanent quarters, and so floated from September through November from one vacant table or room to another. Through December and until January 2, they were housed in a make-shift room in the middle of a larger, open office complex. Needless to say, this state of affairs was far from adequate and resulted in great time and energy loss. In January, they moved into part of the office suite while the rest of the office, including private offices for the research staff, was being rebuilt. On February 1 they occupied the entire office suite.

As the research team worked and planned during the early weeks, it became apparent that the funds which had been allotted for psychological testing were totally inadequate for any type of meaningful results. Rather than base the project on inadequacies, a research design was developed that was thought to be adequate, and then permission to purchase necessary equipment for the testing was sought.

At this point, some nine months after the project's commencement, we have purchased the equipment and are awaiting its arrival so that data collection can begin. Consequently, this report emphasizes the planning and design activities and the preliminary analyses necessary for the major aspects of the study.

OBJECTIVES

The main objectives of this research are two-fold:

1. Develop physiological and psychophysiological standards for selection of law enforcement officers;

2. Develop physiological and psychophysiological standards for placement and promotion of law enforcement officers.

METHODOLOGY

This chapter describes the implementation of the objectives of the study, the rationale for this approach, and the specific components of the research design. Included are the following sections discussed in approximately the chronological order in which they occurred: National Survey; Specification of Criteria; Selection of the Sample; Development of Predictor Variables (which are drawn from medical examinations, exercise testing, and psychophysiological evaluation); and Data Analysis.

National Survey

The research team developed a survey form entitled, "Law Enforcement Standards Questionnaire" (see Appendix) for the purpose of gathering data from law enforcement agencies across the nation regarding their current selection, re-evaluation, and career planning procedures. Specific information was sought on their medical examinations, physical fitness measures, re-evaluation intervals, psychological evaluation, use of professional medical and psychological personnel in the department, and special provisions made for recruitment of minority groups.

This Law Enforcement Standards Questionnaire (LESQ) was mailed to 126 law enforcement agencies serving a population of 100,000. By May 21, 1971, 96 departments had returned the questionnaire. This represents a 65% return. A follow-up letter was sent to those who did not respond to the first request, but only four additional LESQ's were returned.

The following paragraphs summarize the LESQ responses. Note that many of the following reported percentages are proportions of those departments which answered "yes" to particular questions; the categories and percentages then apply only to that specified fraction of departments replying to our survey. Included in the Appendix is a copy of the questionnaire used in the survey with the data presented above in summary form (see Appendix A).

Physical Fitness Measures

The returned questionnaires indicated that physical fitness measures used in selection of officers included: cardiovascular,

used by 42% of the departments; muscular strength, used by 54%; joint flexibility, used by 59%; motor performance, used by 56%. Physical re-evaluation was reported as being done by 42% of the departments.

Of those, 48% held re-evaluations yearly, 7% bi-yearly, 2% once every 5 years, 50% after serious injury or accident, 24% required physical examinations upon promotion, 6% required yearly examinations for officers over 40 years of age, and 15% mentioned that physical re-examinations were given on an optional or "as necessary" basis. Special allowances for the rank of the examinee were reported by 15% of the departments; 65% reported that no such allowances were given, and 21% did not respond. Types and levels of stress associated with different police assignments were reported as considered in 13.5% of the department's physical standards, although few of these met our request to enclose materials relating to such analysis.

Changes in Physical Requirements

Changes in physical requirements to encourage participation in law enforcement by minority groups were made by 21 (28%) of the departments. Of those, 33% lowered height requirements, 9% widened acceptable weight ranges, 13% changed their vision standards, and one department raised their upper age limit to 35 years.

Psychological Standards

Psychological techniques or devices are utilized by 48 (50%) of the responding departments in the selection of their recruits. Most agencies routinely use only one test, but one uses a battery of ten. The Minnesota Multiphasic Personality Inventory was most popular among agencies useing any test; 69% of them chose it. Twenty-nine percent use the Rorschach Psychodiagnostic Technique, 10.5% use Strong Vocational Interest Blank, 14.5% use polygraph testing, 12% the Wechsler Adult Intelligence Scale (WAIS), and 10% the "Tree Test." Twenty-four other tests were mentioned but were used by less than 10% of those departments using tests (n=48).

Psychological factors in an applicant's personal history considered unacceptable were the following: having had personal conflicts with several past employers (42% of the departments); having had personal problems in the service or in high school (40%); having had several divorces (29%); having seen a psychotherapist (28%); financial irresponsibility or bankruptcy (4%). In addition, 16% of the departments stated that a subjective weighting of historical factors was utilized. A written report from a psychiatrist or psychologist was reported as used by 28% of the departments and 58% used an interview of some type. Psychological re-evaluation is made by 13% of the departments using such techniques, but there were no indications of the time intervals used other than "as needed."

Aside from selection procedures, professional psychological personnel are used by 33% (32 of reporting departments). Of those, 41% use such personnel in educational programs, 34% for consultations with supervisor about officers, 28% for personal counseling, 28% for research consultation, 22% for program consultation, and 13% for group counseling. Only 3% of the departments report that they have gathered information on particular psychological stresses police officers encounter on duty, and none provided more detailed information.

Medical Standards

These data were taken from each department's physical fitness standards material which they were requested to return with the questionnaire. Of 96 departments returning the questionnaire only 84 enclosed the additional material regarding the medical standards.

Entrance Age: Minimum age requirements were available from 59 departments, ranging from 19 years to 22 years, the modal minimum age requirement being 21.

Maximum age limits ranged from 28 to 40 years old. The distribution is extremely bi-modal, with the frequencies clustering around two distinct distributions.

Height Requirements: Minimum height requirements were available from 82 departments, ranging from 64 to 70 inches with the modal requirement for minimum height being 68 inches.

Maximum height requirements were available from only

55 departments. They ranged from 74 to 80 inches, yielding a bi-modal distribution with peaks at 76 and 78 inches.

Entrance Weight: Minimum weight requirements were available from 70 departments. The range was from 130 to 170 pounds; the mode, 140 pounds.

Maximum weight limits from only 55 departments ranged from 180 to 250 pounds. The mode is 230 pounds.

It should be recognized that height and weight standards are frequently not independent of each other. Using a weight chart model, it can be seen that weight is dependent upon height, especially at the lower height requirements.

Cardiovascular Requirements: Blood pressure requirements were summarized from 22 departments. The systolic pressure ranged from 130 to 150 mm of Hg (mode at 140 mm) the diastolic pressure ranged from 80 to 100 mm or Hg (mode of 90 mm).

Heart rate requirements were available from 15 departments. The maximum ranged from 90 to 110 beats per minute, the mode being 100. Also included in eight of the department's data were minimum heart rate requirements. They ranged from 50 to 60 beats per minute, the mode being 50.

Visual Acuity Requirements: No jurisdiction demanded 20/20 visual acuity bilaterally, but permitted a refractive error in one eye to as much as 20/200, several accepting applicants with uncorrected monocular vision at 20/100. Most departments required correction up to 20/20, with a few permitting 20/30.

Uncorrected visual acuity standards were available from 76 departments. The requirements ranged from 20/20 to 20/200 vision; the distribution tended to cluster around a mode of 20/40 corrected vision.

Auditory Requirements: These were difficult to summarize due to lack of standardized testing procedures. Six departments showed evidence of giving an audiometry test. Their standards were in terms of decibels, ranging from 15 to 30 decibel loss in varying frequencies. Other departments favored a "whispered voice" test, rejecting those who cannot identify a whispered message at 10 to 20 feet. The latter test measures more effectively the perceptual abilities of the candidate in a "real" situation, but is much harder to standardize. Still other departments mentioned requirements of 15/15 or 20/20 auditory performance.

Physical Fitness Standards

Twenty-five cities returned a copy of their physical fitness requirements along with the LESQ. To summarize the types of physical fitness tests given by the various cities across the nation the tests were categorized by section of the body involved and the purpose of the test. The body divisions made were as follows: upper extremities, trunk, trunk-back-hip-lower extremities, lower extremities, and overall body. The purpose of the tests is to test strength, flexibility, agility, physical skills, or endurance. (See Appendix A)

Tests of strength and endurance appear to be the only types of tests given for the upper extremities. Tests of endurance are most common for this section of the body. In fact, the chin-up/pull-up test is given by all 25 cities. Sixteen of the cities give the push-up test.

For the trunk, tests of strength, flexibility, and endurance are given. Here, too, tests of endurance are given most frequently. Seventeen out of twenty-five cities administer the sit-up test.

Tests of strength are the most common type of test for the section of the body classified as the 'trunk-back-hip-lower extremities'. Only three cities give tests for this section of the body.

The lower extremities are tested for strength, flexibility, agility, and endurance. The standing broad jump test, a test of strength, is given by 15 cities. This is the most common test given for the lower extremities.

Tests of strength, agility, skills, and endurance are given for the overall body. The obstacle (agility run) test, a test of agility, is given by eight cities. This is the highest frequency for a test which tests the overall body.

Looking over the results as a whole, the chin-up/pull-up test, the push-up test, the sit-up test, and the standing broad jump test are given most frequently. Perhaps these tests have the highest frequencies among all the other test alternatives because they are standardized tests and are easier to administer and easier to score. Group norms are

often available for them. However, the use of a standardized test does not necessarily mean that the test is an appropriate test for the situation. It may be an easy test to administer, but it may not adequately test abilities necessary for the job.

Another factor which might influence the frequency of the administration of a particular test is the facility available for the testing. Cities with limited facilities cannot administer certain tests.

The results of this survey of the physical fitness requirements of the various cities across the nation indicate that physical fitness requirements are almost non-existent. Where standards do exist, they are based on simple, straightforward types of performance tests. None of the cities indicated the use of basic physiological measurements, such as heart rate and blood pressure responses to known work loads.

Development of Criterion Data

To obtain an appraisal of job performance is difficult on any job and especially difficult to secure for law enforcement officers. The officers often work alone and receive minimum supervision. Most departments require a semi-annual rating from supervisors, but these are generally thought not to be indicative of the varying degrees of competence among the officers. Frequent changes in the officer's work schedule and assignment means that he is supervised by more than one supervisor in almost any time period.

Review of the literature suggests that in this difficult situation, the best single criteria is paired-comparison rating by first line supervisory personnel. This technique simply requires each supervisor involved to work through a deck of cards, On each card appear names of two officers with whose work he is familiar. Each man's name is thus paired with the name of every other man in the sample known to the supervisor. A global evaluation is made by the rater, who marks the card to indicate his judgement of which of the pair is the better officer. (For a more detailed discussion of the procedure, see Baehr, et al., 1968).

It has been the experience of both the Industrial Relations Center with the Chicago Police Department and the Los Angeles Sheriff's Department that the paired-comparison rating gives meaningful appraisal of an officer's performance which is strongly related to other relevant criteria.

Reasons supporting selection of this rating measure were as follows:

1. There was a need to determine the level of competence of each officer in relation to other officers in the same station.
2. To insure confidentiality of material and the rating, it was necessary to develop a system that could only be used for the purposes of this study and not be used for promotions.
3. It was preferable to use a measure with demonstrated relationships to other criteria.

The supervisory rating technique has been used successfully in industry and has yielded meaningful results as a primary criterion in a recent large-scale study of the

Chicago Police Department. Part of the success of their results is attributed to the ease with which supervisors could make the ratings, and the apparent validity they saw in the procedure. Significant correlations were found between PC ratings and departmental evaluations, departmental awards, disciplinary actions, and number of arrests, (Baehr, et al., 1968).

In a yet unpublished study by LASD personnel, supervisors paired comparison ratings correlated significantly with ratings on eleven variables, including job knowledge, judgement, adaptability, etc.

The paired-comparison rating, which yields a composite performance for each officer in this study, is one of the principal criterion variables, In addition, the data listed below are being obtained from officer's files and will be evaluated as to their validity in serving as criterion variables.

To validate selected criterion variables several ancillary studies (see Appendix) are being conducted by examining the following sub-groups: (1) officers whose health has led to three or more Workmen's Compensation and rehabilitation claims; (2) officers who have had disciplinary hearings before the Civil Service Commission; (3) officers who were a part of a special study begun 20 years ago; and (4) officers who were trained as a part of a stress/non-stress training experiment at the Los Angeles County Sheriff's Academy.

Departmental Evaluation for 1971. Objections to this measure have been raised on the basis that there is not enough differentiation made by the supervisors -- that most men are given the same rating. Nonetheless, it is important to study the inter-relationships among the various measures of a man's performance. We should be able to say which of them overlap, support, and duplicate each other, which provide independent information, and which provide no useful information at all.

Number of Years in LASD. Although it is a measure obviously affected by many things other than the satisfactoriness of a man's performance, several studies (including one in LASD) have shown a surprisingly strong relationship between years in service with the Department and special supervisory ratings. It is included here for this reason, and also in order to study its relationship to the other aspects of performance we have selected. The Twenty-year Longitudinal Study provides additional information regarding predictors correlating with length of service. (See Appendix B).

Number of Awards or Commendations. As was the case with Departmental evaluations, there are some questions as to the validity of this measure. There are no ordinary sources of commendations either from LASD or from outside sources. It is included in this research because its face validity warrants evaluation of such an easily obtained measure.

Number and Type of Disciplinary Action. This data is being used as a measure of performance on the rather obvious assumption that a high rate of disciplinary action will be associated with a lower level of performance. As an adjunct to this aspect of the criteria, we are conducting a separate analysis of the records of all sworn LASD personnel who have been subject to disciplinary action through Civil Service Commission during calendar years 1969-1970. (See Appendix C)

Academy Rating. Some earlier evidence suggests a small positive relationship between Academy performance and field performance. We wish to re-assess this finding and to study specifically the utility of using this measure as a predictor of success in a career of a policeman. More information on this and other criteria as they relate to training technique will be provided by the ancillary "Stress/Non-stress" study. (See Appendix D)

Personnel Investigations: Ratio of Complaints made to Complaints Sustained. This measure overlaps to some extent with that discussed in "4" above, but not completely. In some cases disciplinary measures are imposed by LASD without involvement of the Civil Service Commission. Here again, we will be interested in the relationships between this and the other measures of performance, and in looking for predictor variables that might have allowed one to guess before the fact which officers would have performed in such a way that sustained complaints ensured.

Workmen's Compensation and Rehabilitation Claims. The number and type of Workmen's Compensation claims made by each officer will be determined from departmental records. This data will be correlated with the other measures of his performance and the results of his laboratory testing to determine the effect of medical problems on an officer's performance and to search for predictors or correlates of injury/illness. (See Appendix E)

Self-evaluation. Each officer will be given a copy of the job description for a patrolman in Los Angeles County Sheriff's Department. He will then be asked to indicate the three tasks which he performs best and the three he performs the worst.

Further Considerations of Criteria

Two of the most difficult questions related to the development of criteria for this research are problems inherent in the concept of the criterion: (1) How accurately does what one measures reflect the concept in which one is interested (i.e., in this case, how closely do supervisor's paired-comparison ratings, recent regular department evaluations, etc., approach the notion of police performance); (2) How can one build into a selection-career evaluation program means of changing criterion measures to keep pace with changing notions of police performance?

This section will describe our efforts to deal with these questions by means of multiple criteria and study of

special groups to illuminate the nature and interrelationships of these measures.

One conceptual aspect of desirable police performance is the interpersonal behavior of individual officers. In an attempt (1) to determine what some positively valued interpersonal police behaviors are, and (2) to assess the disparity of "ideal" police behavior among the citizenry, a device called the Interpersonal Checklist was administered to apparently different groups.

Thus far, we have obtained such descriptions from five samples. Our procedure has been to provide subjects with the 128 items comprising "The Interpersonal Checklist" (ICL), asking them to indicate those words or phrases which they view as characteristic of the ideal policeman. The five samples are new sergeants from the Los Angeles Police Department (n=27), staff members at the Los Angeles Free Clinic (n=19), members of an adult education class at the University of California, Irvine (n=19), and new sergeants from the Sheriff's Department (n=19), and officers of LASD whose primary function is administrative (n=26). Some results from analyses of these data are presented in the appendix. (See Appendix E)

The use of multiple criteria is a solution to the problem of criterion meaning which is often proposed but seldom executed. By examining the nature of a number of aspects of police performance and health, we hope to be able to derive

meaningful standards related to the important specifics of a policeman's task as well as some overall index of individual performance. Not only do we anticipate that information about individual criterion measures will be gained by studying the relationship of each to the others, we also expect that weaknesses in one will be at least partially compensated by others.

The use of ancillary studies aimed primarily at clarification of criterion meaning is another approach to the problem. As discussed elsewhere in this paper, more intensive evaluation of the Workmen's Compensation and Disciplinary Action criteria will be carried out by means of the studies so called. Information about a number of criteria will be provided by the "Twenty-year Longitudinal Study" and the "Stress/Non-stress Study."

Development of Sampling Procedures

The purpose of this research project is to develop physiological and psychophysiological fitness standards for law enforcement officers. To select a representative sample of 500 officers for each year's testing, it was necessary to stratify the officers by rank, division, age, and racial group within the Los Angeles Sheriff's Department (LASD).

The division from which samples within the LASD were selected included the Patrol Division areas of East and West, Detective Division, Administrative Division, Technical Services Division, Jail Division, Corrections Division, Civil Division, and Community Services (see Appendix C - Organization Chart. Since sworn officers are not assigned to Fiscal Management, personnel from this division were not included.). Ranking officers of each division and each of the six stations, as well as deputies who have been in their present assignment for at least a year were included. The age groups include a representative sample of officers from the following age groups: 21-29; 30-39; 40-49; 50-59.

Representative samples of Chicano and Black officers have been included in the samples for this research to evaluate the possibility of differentially useful predictors.

The Patrol Division of the Los Angeles Sheriff's Department consists of approximately half of the population of the Sheriff's Department. Six of the fourteen patrol stations whose combined population distributions most closely

represented that of Los Angeles County were selected to be used in the project. These stations were Malibu, Norwalk, East Los Angeles, West Hollywood, Industry, and Firestone stations which are strategically located through Los Angeles County and represent the variety of population groups served by the Los Angeles County Sheriff's Department. Malibu is essentially a beach type community and is populated by artists and a fairly affluent young adult population. Norwalk station contains middle and lower socio-economic whites, and Industry is white middle class community in an area heavily saturated with industrial installations. West Hollywood contains a number of hippies plus a broad cross section of upper, middle, and lower socio-economic class citizens. Firestone contains areas of white and black "ghettos." East Los Angeles is, in the main, a lower socio-economic Mexican-American community.

Selection of Participants

To get a representative sample from each station, it was decided that 30 men from stations with fewer than 100 deputies (who had been assigned to Patrol Division for one year or over) and 60 men from stations with more than 100 such deputies would be used in the preliminary paired comparison ratings.

The entire list of deputies from two stations (Malibu and West Hollywood) were used since approximately 30 officers from each station met the criterion. The other stations had

a larger number of personnel; this necessitated an intermediate step. The station captains were asked to obtain rough ratings from four supervisors of all the deputies assigned there, categorizing each as above average, average, or below average officers. Officers placed in the same category by every supervisor were chosen to make up the three groups of officers -- above average, average, and below average. If there were not 30 men placed in a given category by all supervisors the difference was resolved by including a sufficient number of deputies receiving three nominations to that category and one to the adjacent category:

Example: 3 above average ratings and 1 average rating = above average

3 below average ratings and 1 average rating = below average

Groups of 30 men (10 superior, 10 average, and 10 below average) were derived from this procedure.

A deck of IBM cards was prepared for each station. Two names appeared on each, and the name of each officer selected by the procedure outlined above was paired with the name of every other officer so selected. Each supervisor was given a deck of cards and asked to indicate which of the two men was the better officer. A computer program has been written to tabulate and analyze the data.

Implementation of the Paired-Comparison Rating

The paired-comparison performance rating was conducted by members of the Physiological Fitness Research team at each

of the stations and bureaus included in the sample. The usual sequence of events began with a meeting in the office of the station captain at which time the research team provided a general orientation to the study. The objectives of this meeting were threefold: to acquaint and elicit the cooperation of the station captain with the study, obtain a roster of officers who had been with the patrol division for more than one year, and identify qualified raters within the station.

A deck of IBM cards was prepared for each supervisor in the station based on the roster of station personnel obtained during the first meeting of the research team with the station captain. As described in the section on The Development of Criterion, this contained a pair-by-pair comparison of all possible combinations of patrolmen on his list in random order. Each man on the list was then paired with every other man in the deck.

The instructions given to all supervisors participating in the study are in Appendix H. The results of the paired-comparison performance appraisal will be given at a later date.

Development of Predictor Variables

In accordance with the stated needs in the Introduction chapter, physiological and psychophysiological variables have been chosen which, according to related research, will provide predictive information for selection and re-evaluation of law enforcement officers.

Physiological predictors related to general physical fitness, heart and respiratory diseases, back problems, and problems resulting from overweight were chosen because of the need to promote physical well-being among the officers in order to reduce Workmen's Compensation and Disability claims and to enhance job performance.

Psychophysiological variables related to job performance and ability to cope with stress were chosen.

It is expected that the effectiveness of these predictors should vary with age, assignment, rank, and race. Each section details the rationale for the various predictors.

Medical Examination

The Los Angeles County Occupational Health Service has been conducting a special program of physical examinations of employees classified under "safety personnel" (which includes fire fighters, sworn members of the Sheriff's Department, lifeguards, County Marshals, and District Attorney's investigators), in response to an order of the County Board of Supervisors.

This physical examination consists of thorough medical examination and exercise testing. The medical examination is prior to the exercise testing, and screens those who are medically unable to participate in it.

A medical history consisting of approximately 64 questions covering the various bodily organ systems is completed by the subject prior to a complete physical

examination. This consists of a test for visual acuity, measurement of visual fields, a color vision test, audiometry, height, weight, and chest x-ray.

The medical examination performed by a physician consists of a battery of blood chemistry tests including the determination of levels of such components as serum albumin, serum triglycerides, serum urea nitrogen, serum uric acid, serum cholesterol, serum creatinine, glucose (fasting), alkaline phosphatase, serum globulin, A/G ratio, thyroxine (total by column), transaminase SGP, in addition to a complete blood count.

Further, a resting 12 lead electrocardiogram is taken and interpreted by a cardiologist. Upon completion of all segments of the examination and assembly of the resulting data, the material is reviewed and a medical opinion offered as to the subject's current physical or health status.

If the electrocardiographic findings are within normal limits, the subject will proceed to be exercise tested. If there is any evidence on the resting electrocardiogram that there is an ischemia present, the candidate will not be examined on the ergometrically-controlled exercise testing bicycle. If there is evidence of an old myocardial infarction, it is possible that exercise testing will be undertaken, but with great caution at the discretion of the cardiologist.

Exercise Testing

When the subject is scheduled for exercise testing, which usually is subsequent to the first examination by about

two weeks, a second resting electrocardiogram is taken; if there is again no evidence of ischemia, the measurements during exercise will proceed. If untoward findings are encountered on the second resting electrocardiogram, the testing with exercise is deferred. See Appendix I for rationale and detailed procedures for the following measures:

Examination of Body Composition. Skin fold measurements are obtained, and the percentage of body fat and variation from the norm are determined. Measurements included at this point are height, weight, and skin fold thickness, in millimeters, the measurements being made at the mid-triceps area, the sub-scapular area, the mid-biceps area, and over the iliac crests in the mid-axillary line. The Lange skin fold calipers are utilized.

Spinal Mobility. To determine the range of motion of the spine, measurements are made of the following: range of lateral trunk flexion, range of trunk flexion, range of trunk rotation, range of trunk extension. All these procedures utilize specially developed mensuration devices.

Muscular Strength. The strength of the back muscles is checked with the subject standing with hips flexed to 156°. Measurement of thigh musculature is made with the subject standing with the knees flexed to 120°. These two procedures utilize the leg and back dynamometer. Grip strength is measured bilaterally with a dynamometer.

Cardiac Stress. The objective of the exercise testing procedure is to determine the cardiovascular tolerance for work at heart rates of 100, 120, 140, and 160 beats per minute, maintaining each heart rate increment for five minutes. The information obtained includes the heart rate in beats per minute, the work rate converted to electrical potential and recorded in watts, the electrocardiographic recording of the effect of the work which is monitored on an oscilloscope, and recorded on written strips and on a tape recording.

Blood pressures are taken intermittently during peak work loads and during rest and recovery. It is to be mentioned that both before and after exercise, blood pressure measurements are made with the subject recumbent after lying quietly for five minutes, on quick standing, and after standing for one minute.

The exercise procedure involves riding an ergometrically controlled bicycle for 20 minutes, with the subject pedaling against resistance at the rate of 60/70 revolutions per minute. The resistance is applied automatically by the equipment to maintain the pre-set, programmed heart rates mentioned previously.

Determination of Pulmonary Function. Utilizing the Collin's Stead-Wells spirometer, measurements are made of the forced vital capacity and the maximum breathing capacity.

Discussion of Physical Examination

A complete set of records will be made available to the consultant cardiologist, including electrocardiographic tracings from the exercise testing protocol. Whereas copies of all the records can be forwarded, the original tapes are retained in the Occupational Health Service, and are subject to review by the physician concerned with the particular patient.

As indicated above, when an ischemic response is encountered, no exercise testing is undertaken. In a few instances, subjects demonstrating electrocardiographic evidence of old myocardial infarctions, will undergo exercise testing, if, in the physician's judgement, his history and present cardiac condition will safely permit the use of this diagnostic procedure.

The criteria for the clinical conclusion of an ischemic response are based on contemporary medical practice. They include an abnormal ST wave depression of two millimeters below the isoelectric line persisting for at least 0.08 seconds. A J-point depression after maximum exercise is considered normal, and a slow return of the ST depression to the isoelectric line, although an early finding of ischemia, is interpreted as an equivocal finding. The conditions leading to false positive exercise tests, i.e., digitalization of the patient and complete left bundle branch block, have not been present so far in the group receiving the special examinations.

If, on the initiation of the exercise testing, hypertension appears, the test will be deferred and initiated on a second occasion, if it is believed to be anxiety caused. If hypertension appears during the exercise testing procedure without any other evidence of hypertensive change on physical examination, the subject is referred to his own physician for diagnostic studies, but does remain at work. The criteria utilized in this area are the following: (1) If the diastolic pressure exceeds 120 mm Hg, or if the systolic pressure rises above 220-240 mm Hg, or (2) if the systolic pressure rises and then falls with exercise (a drop in pulse pressure), the exercise testing is stopped.

Psychological/Psychophysiological Predictors

Evidence is accumulating that some physiological conditions can be measured or predicted by certain psychological tests. Research has shown that personality characteristics, reactions to specific stress situations and attitude toward work all bear upon one's physiological status.

Miles, et al. (1954) found personality questionnaire responses (16 PF Questionnaire) to yield differential results for younger men who had suffered heart attacks and those who had not. Ostfeld, et al. (1964) using the same questionnaire obtained idfferent mean profiles not only for subjects who had cardiac problems subsequent to testing, as compared to those who had none, but was also able to distinquish between men who later suffered angina and those who had infarcts.

Cattell, Eber, and Tatsuoka (1970) assert that those results give "... some basis for arguing that the personality traits are contributory rather than by-products." (p. 827). Sixteen PF Questionnaire differences have been found in high-frequency vs. low-frequency of illness groups, conversion-reaction vs. normal, and psychosomatic vs. normal groups (Cattell, et al., 1970). Personality characteristics associated with individuals who have coronary disease have also been studied by Friedman, et al. (1960), Kahn, et al. (1964), and Jenkins, et al. (1967). Common conclusions from these several studies are that high activity levels, ambitiousness, competitiveness, and need for achievement characterize the individual most likely to develop cardiac problems.

Caplan and French (1968) cited in Sales (1969, p. 328) "cholesterol and heart rate were both affected by job stresses: heart rate change ... is primarily determined by the way a person perceives the environment and only indirectly by objective overload ... (while) both objective and subjective overload seem to independently influence cholesterol ..." Complementary and corroborative findings emphasizing the importance of job stresses and the individual's perception of those stresses are provided by Sales (1969), Friedman, and Rosenman (1957), and French and Caplan (1970).

Strong evidence exists, then, for the predictive value of self-report measures of personality characteristics, reactions to stress and attitude toward work, for identifying individuals who have a high risk of physical disability.

Some promising devices for measuring officer's reactions to stress and attitudes toward work will be evaluated in this research, using wherever possible those which also have a demonstrated relationship to job performance. These measuring devices are listed below with a brief description of each:

Press Test. This device taps individual responses to standardized stress. We will evaluate the relationships between scores on this test and blood chemistry, heart function, and laboratory measures of psychophysiological functioning as well as job performance. This test measures one's ability to work rapidly and accurately under stress. An objective paper-and-pencil test, the Press Test is scored for speed of reaction to verbal stimuli, color stimuli, and color stimuli in a stress situation caused by the interference of distracting verbal stimuli.

Temperament Comparator. Since the temperament comparator yields information on personal characteristics discussed above as bearing upon cardiac status, we will compare scores on this device with measures of the healthiness of the heart as determined in the cardio-pulmonary laboratory. Its relationship to job performance will also be tested.

This is a circular disc-shaped instrument with a separate paper insert used for each individual. On the insert is a list of traits more-or-less characteristic of everyone. The subject turns the disc and matches up pairs of traits; for each pair, he chooses the one most characteristic of himself.

Because he judges all possible pairings of 18 temperament traits, he is able to indicate the extent to which each trait is characteristic of him. All of the 18 traits and the five factors for which scores are derived are within the normal range of behavior. The 18 traits are as follows: calm, cautious, decisive, demonstrative, emotionally stable, energetic, enthusiastic, even tempered, lively, perservering, prompt starter, quick worker, seeks company, self reliant, serious, socially at ease, steady worker, talkative.

These traits yield five factors: (1) controlled (vs. outgoing); (2) stable (vs. non-stable); (3) self reliant (vs. dependent); (4) excitable (vs. placid); (5) sociable (vs. solitary).

Sixteen Personality Factor Questionnaire. The 16 PF as mentioned above, has been shown to have a relationship to many aspects of physical condition. Scores on this questionnaire will be related to medical examination results, cardio-pulmonary status, functioning in the psychophysiological testing situation, Workmen's Compensation data, and job performance.

This is a 108 item questionnaire which yields 16 statistically distinct scores reflecting major dimensions of the normal personality. The response made is a checkmark for one of three possible reactions to each statement, indicating agreement, disagreement, or neutral reactions to it. This

questionnaire was chosen over a large number of others because it is shorter than many, and the questions are not of the "prying" sort; and because the questions do reflect concern with ordinary kinds of behavior. There is a great deal of research already being done on this device, including a growing body of work on police.

Personal History Index (PHI). Because the PHI provides information on past behavior which is directly reflective of high or low cardiac failure risk, its results will be evaluated for predictive value regarding cardiac function to job performance.

The Personal History Index is simply a scorable questionnaire on which each subject will provide factual information about his life history and background. As is the case with all the other measuring devices listed here, we tried to choose not only those with empirical promise, but those which make sense and are not offensive to subjects.

CREE Questionnaire. The CREE Questionnaire yields information on personality and approach to work tasks. Besides studying its efficiency in predicting job performance, therefore, we will examine its relationship to cardiac health and blood chemistry data.

The CREE is a 145 item questionnaire answered "yes," "no," or "undecided." It is oriented to the degree of creativity an individual expresses in his orientation to social and to work situations, in his personal behavior and in his interests.

Job Satisfaction Questionnaire. In as much as this questionnaire provides data on personal perception of job stress, we will assess its relationship to job performance and blood chemistry analysis.

The JSQ is being constructed specifically for this research and consists of 105 statements presenting situations, events, or people a policeman might encounter in his present job. The subject is asked to indicate whether he does, in fact, meet such situations, and if so, to show on a seven point scale the extent to which each contributes to making his job pleasant or unpleasant. (See Appendix J)

Psychophysiological Measurements. Although we feel confident that some of the measures described above will show a consistent relationship to the quality of field performance and physical condition, there is considerable value in taking an additional and different approach to the problem of prediction by exposing officers to a stress situation through the use of filmed material commonly used in psychophysiological studies of stress.

Research in this field indicates that a person's level of internal reactivity can be assessed by taking galvanic skin response (GSR) and heart rate measurement during exposure to such stimuli.

The psychophysiological research plan calls for us to expose the officers to stressful films and to take GSR and

heart rate measures. After the filmed sequence, the officer will also be asked to respond to questions about his reactions. Recent research has indicated that such procedures should involve manipulation of the expectation of each subject. (Cooley, 1971)

Psychophysiological measurements of an officer's reactions are important because officers may, in effect, have been trained to inhibit many of their emotions. However, psychological theory indicates that eventually these feelings come to the surface in some manner. An important part of this research is an investigation of what officers feel, how they express their emotion, and the effect of these two variables on their performance. At the time of this writing the specific psychophysiological research design is being developed.

DATA COLLECTION

The data collection for the main study has not yet begun because none of the psychophysiological and some of the exercise testing equipment had been received. However, it was possible to begin partial procedures on some of the officers in the ancillary studies.

On May 4, 5, and 6, 1971, the officers from the Twenty-year Longitudinal Study had their medical examination, were scheduled for the exercise testing, and will be scheduled later for the psychophysiological testing.

Beginning in July, eight to twelve officers per week will begin receiving their series of appointments. Appointments are made individually with each man. He receives a letter explaining the research and instructing him to call for his appointments. In addition, the inspectors of each division receive notification of those men in the division to be tested, and a Departmental teletype discussing the project and listing personnel to be tested at this time is circulated to all personnel. (See Appendix K)

Clarification of Departmental Policy Regarding Use of Testing Results

At the beginning of the research project, the research team and the Sheriff's Department had the understanding that data from the three phases of testing would not be used by the Department to make administrative decisions about the

officers. It was felt that research objectives could not be linked with disciplinary or placement functions. Also, it was hoped that this knowledge would lessen a man's anxiety about participating in the research.

However, several factors arose which necessitated certain alterations in this procedure from the medical point of view. If a man were found to have heart disease, it would not be possible to have him in a high risk assignment, such as driving a patrol car. The risk he would encounter if he were driving in a high speed chase, for example, would be too great for him, his partner, and for bystanders.

Clarification of the respective policies of the Occupational Health Service of the Department of Personnel and the Sheriff's Department produced this agreement: medical and physical fitness examination data will not be used to make personnel decisions about a man except in the case of heart disease. If a man is found to have heart disease, his individual situation, including his total physical condition, his age, rank, and assignment, will be considered before taking action. Since the Department has assignments involving low risk and stress, the man could be assigned to another position.

In addition, it was decided that the Health and Welfare Unit of the Sheriff's Department would notify officers when positive medical findings were found or when additional testing or consultation is necessary.

ANALYSIS OF THE DATA

The medical, physical fitness, psychological, and physiological data will be coded, key punched, and analyzed by computer. The identity of the participants will be protected by the assignment of identification code numbers ~~to be used on all of the test~~ data.

The data will be analyzed by the method of stepwise discriminate analysis to determine systematically the variables that contribute to successful police work. Also, the three groups of officers -- above average, average, and below average -- will be analyzed for variables that differentiate among the three groups. Norms which specify the present levels of functioning of men in the Department, according to age, rank, and assignment, will then be developed which will allow us to infer the limits of acceptability for each assignment and age.

Utilizing the results of the above analysis, a model will be built ~~giving cut-off~~ points for each age, assignment, and job situation. This model will be then replicated and applied to a new group of officers.

Upon the termination of the replication phase, the second year data with the necessary alterations ~~will be made~~ and the final model will be prepared for dissemination.

CONCLUSION

The Physiological Fitness Standards Research Project was undertaken for the purpose of developing physiological and psychophysiological standards for law enforcement officers. The grant application objectives specify that standards, with tolerance ranges, be developed for each age, rank, and assignment. The results of this investigation should assist law enforcement agencies in their selection processes and in detection of medical problems, with emphasis on those serious enough to lead to early retirement.

This report describes the activities that were engaged in up to the time of completion of development of criteria and data collection procedures. Actual data collection, analysis, and development of standards will be continued in a follow-on grant.

RECOMMENDATIONS

This report chronicles the first nine month's work of a two year research study. During this time the original grant application has been used as the basis of preparation for research. However, at this time it is felt that certain alterations in the research design would be appropriate.

Given the delays encountered in preparation, we feel that restricting the goals of the research to developing standards for screening, selection and re-evaluation of patrolmen is a more realistic approach to the research. The basic methodology will remain the same, but the research population will be altered.

The following sections present the objectives, the basic methodology, and the time frame to be followed during the next 15 months.

Objectives

1. Develop physiological and psychophysiological standards for selection of patrolmen.
2. Develop physiological and psychophysiological standards for periodic re-evaluation of patrolmen.

Methodology

The following are tasks to be accomplished to meet the project objectives:

A. Development of appropriate measures of an officer's on-the-job performance to be used as criterion variables. Those to be evaluated include:

1. Paired-comparison Ratings - These are forced-choice ratings by supervisors from which the sample of above average, average, and below average officers will be chosen.

2. Number and type of Workmen's Compensation claims made by the officer.

3. Number and type of disciplinary actions taken against the officer by the County Civil Service Commission.

4. Tenure - length of time the officer has been with the Department.

5. Number of awards or commendations given to the officer.

6. Academy ratings earned during the officer's initial training.

7. Ratio of citizen complaints against each officer recorded to complaints sustained by internal investigation.

8. Most recent regular departmental evaluation of each officer.

9. Officer's own evaluation.

10. Descriptors of ideal performance compared with ratings of the officer's actual performance.

B. Selection of a representative sample for the research

1. Patrolman Sample.

a. Select a representative sample of 500 patrolmen from the 13 patrol stations with equal proportions of above average, average, and below average officers as determined by the paired comparison ratings.

2. Cadets.

a. All members of the Academy class beginning in September 1971 will be tested.

C. Development of predictor variables

1. Medical Examination: A complete medical examination, including EKG, blood chemistry analyses, vision, hearing,

chest x-ray, will be given by the Occupational Health Service of the Department of Personnel.

2. Exercise testing: Following the medical examination officers with no evidence of medical problems contra-indicating their participation will be scheduled for exercise testing which will provide the following measurements: estimate of body composition, spinal mobility, muscular strength, cardiac response to exercise stress, determination of pulmonary function.

3. Psychological Examination

1. Personal History Index

2. CREE Questionnaire

3. Temperament Comparator

4. Press Test

5. Sixteen Personality Factor Questionnaire

6. Job Satisfaction Checklist

7. Interview

4. Psychophysiological Testing:

1. Procedures for testing patrolmen - Psychophysiological measurements will be made while the officer views segments of films used in other research on stress. The officers will make verbal and/or written responses to questions about the film.

2. Procedures for testing cadets - Necessary alterations will be made in the testing procedure to complete testing during the first two - three days of the class period.

D. Data Collection

E. Preliminary Analysis of Data

F. Construction of Preliminary Model

G. Modification of data collection as suggested by preliminary results

H. Replication of Research

I. Final Analysis of the Data

J. Re-evaluation and/or Modification of Preliminary Model

K. Development of Final Model for Physiological and Psychophysiological Standards

L. Writing of Final Report

Monthly Schedule

Month 1

Edit and prepare stimulus film

Prepare psychophysiological laboratory for testing

Conduct pilot study in the psychophysiological laboratory

Evaluate procedures and make necessary changes in film sequence

Arrange for group testing at the six stations (paper and pencil tests)

Secure Phase II sample - contact station captains

Evaluate testing procedure

Month 2

Schedule 48 officers for medical, exercise, and psychophysiological testing

Conduct psychological testing at the Sheriff's Academy

Prepare paper and pencil test for administration at the patrol stations

Make arrangements with the stations, i.e., room, total number of officers involved, tec.

Administer psychological paper and pencil tests at three patrol stations

Month 3

Schedule 48 officers for medical, exercise, and psychophysiological testing

Code tests from Academy and submit to be keypunched

Score and code tests administered at the stations and submit to be keypunched

Month 4

Send in Quarterly Report including:

a. Criterion data

b. Preliminary psychophysiological standards

c. Medical and exercise testing standards

Schedule 48 officers for medical, exercise, and psychophysiological testing

Submit paired-comparison rating cards to have the ratings keypunched on the card

Score psychological paper and pencil tests for Phase I

a. Prepare data sheet

b. Submit to be keypunched

Month 5

Schedule 48 officers for medical examination, exercise testing, and psychophysiological testing

Submit the paired-comparison cards to the Computer Center for analysis

Month 6

Schedule 48 officers for medical and exercise testing

Interpret results of paired-comparison ratings

Select a sample of 250 officers for Phase II

Administer post-test to the cadets at the Academy

Score tests from Academy

End of month is the final day of testing for Phase I subjects

Month 7

Quarterly Report

Schedule 48 officers for medical, exercise, and psycho-physiological testing

Transfer Academy test scores to code sheet

Submit code sheets to be keypunched

Gather medical, exercise eesting, psychophysiological data from Phase I for analyzing

Conduct psychological paper and pencil test at three patrol stations (Phase II)

Month 8

Schedule 48 officers for medical, exercise, and psycho-physiological testing

Conduct Phase II psychological paper and pencil tests at three patrol stations

Code, keypunch, and analyze Phase I data

Write report on Phase I data

Month 9

Schedule 48 officers for medical, exercise, and psycho-physiological testing

Revise psychophysiological standards

Score, code, and submit to heypunch psychological tests administered to Phase II sample

Month 10

Quarterly Report to Washington

Schedule 48 officers for medical, exercise, and psycho-physiological testing

Analyze psychological test scores of Phase I and Phase II

Month 11

Schedule 48 officers for medical and exercise testing

End of month is final day of testing for Phase II subjects

Month 12

Score, code data for Phase II

Decide on date of LEAA Seminar

Month 13

Analyze Phase II

Write Project Report

Month 14

Send draft of final report to LEAA

Month 15

Submit final report to Washington

Seminar - LEAA

REFERENCES

Baehr, M.E., Furcon, J.E., and Froemel, E.O. Psychological Assessment of Patrol Qualifications in Relation to Field Performance. Law Enforcement Assistance Administration Project #046, 1968. United States Government Printing Office, Washington, D.C.

Caplan, R.D. and French, J.R.P., Jr. Physiological responses to workload: an exploratory study. Working Paper, University of Michigan, 1968.

Cattell, R.B., Eber, H.W., and Tatsuoka, M.M. Handbook for the Sixteen Personality Factor Questionnaire (16 PF). Champaign, Illinois: Institute for Personality and Ability Testing, 1970.

Cooley, Elizabeth. Differential Reactions to Induced Stress as a Function of Preparatory Set and Time Unpublished Doctoral Dissertation. University of California, Los Angeles, 1971.

French, J.R.P., Jr., and Caplan, R.D. Psychosocial factors in coronary heart disease. Industrial Medicine, 1970, 39, 31-45.

Friedman, M., Rosenman, R.H., and Carroll, V. Changes in the serum cholesterol and blood clotting time of men subject to cyclic variation of occupational stress. Circulation, 1957, 17, 852-861.

Friedman, M. and Rosenman, R.H. Overt behavior pattern in coronary disease. Journal of the American Medical Association, 1960, 173, 1320-1325.

Jenkins, C.D., Rosenman, R.H., and Friedman, M. Development of an objective psychological test for the determination of the coronary prone behavior pattern in employed men. Journal of Chronic Diseases, 1967, 20, 371-379.

Kahn, R.L., Wolfe, M., Quinn, R.P., Snock, J.D., and Rosenthal, R.A. Organizational Stress. New York: Wiley, 1964.

Marsh, Stewart. A Follow-up Examination of Four Examinations for Deputy Sheriff. Unpublished Manuscript. (Los Angeles County, Department of Personnel, Workmen's Compensation Unit).

Miles, H. W., Waldfogel, S., Barrakee, E.L., and Cobb, S. Psychosomatic study of 46 young men with coronary artery disease. Psychosomatic Medicine., 1954, 16, 455-477.

Ostfeld, A.M., Lebovits, B.Z., Shekelle, R.B., and Paul, O. A prospective study of the relationship between personality and coronary disease. Journal of Chronic Diseases, 1964, 17, 265-276.

President's Commission on Law Enforcement and Administration of Justice: The Challenge of Crime in a Free Society. United States Printing Office, Washington, D.C., February, 1967.

Sales, S.M. Organizational role as a risk factor in coronary disease. Administrative Science Quarterly, 1969, 14, 325-335.

APPENDIX A

County of Los Angeles
Office of the Sheriff
Hall of Justice
Los Angeles, California 90012

PETER J. PITCHESS, SHERIFF

January 22, 1971

Dear Chief

Under the terms of a grant from the Law Enforcement Assistance Administration, U.S. Department of Justice, the Sheriff's Department of Los Angeles County is undertaking a study of physiological fitness standards for law enforcement officers. As a part of this project, we are seeking information regarding current practices throughout the United States. For this reason, we have prepared the accompanying brief questionnaire to be filled-out by you or your designee. The importance of receiving accurate information cannot be overstated. Future Law Enforcement Assistance Administration guidelines, recommendations and actions on a National level will in part be premised upon the research into police standards of which this questionnaire is a part.

The last item provides a convenient means for you to request information on our summarization of the responses to this questionnaire. If you have comments, questions or suggestions, please use the space provided in item number eight. This summary will be compiled using an identification code to insure confidentiality of this material.

Your cooperation is earnestly requested and sincerely appreciated. If my staff or I can provide any information or assistance, please do not hesitate to call upon us.

We would greatly appreciate your returning these materials to us by February 28, 1971.

Sincerely,

PETER J. PITCHESS, SHERIFF

HOWARD H. EARLE, CHIEF
ADMINISTRATIVE DIVISION
OFFICE OF THE SHERIFF

N=96

Law Enforcement Standards Questionnaire

1. Please enclose a copy of your Department's physical fitness standards used in selection of officers.

2. Which of the following physical fitness measures does your Department use? (Check as many as applicable)

   a. 42% cardiovascular
   b. 54% muscular strength
   c. 59% joint flexibility
   d. 56% motor performance
   e. ____ other (please specify)

   If you have checked any of the above measures, please enclose a copy of your data sheets and other test materials.

3. Does your Department require physical re-evaluation at periodic intervals?

   N=42 44% Yes 53% No 2% No Response

   A. If "Yes" please check at what periods re-evaluation is done. (More than one response)

   48% yearly 7% 2 years 0 3 years 0 4 years

   2% 5 years 50% after serious injury or accident

   24% other (please specify)
   6% over 40 years 15% optional/as necessary

   B. Are special allowances made in application or re-evaluation standards according to the rank of the re-examinee? 15% Yes 64% No 21% No Response

   C. If summary statistics on periodic re-evaluations are available, such as the effects of age upon an officer's physical condition, please include a copy in the return envelope.

4. Are types and levels of stress associated with different police assignments a consideration in your Department's physical standards? 13.5 Yes 80% No
   If "yes," please enclose any materials relating to such analysis. 8% No Enclosure

5. Does your Department use psychological techniques or devices in selection?

   50% Yes 50% No

   A. If "yes," check which of the following is utilized:

(2) N=48 psychological tests

(a) 6% Minnesota Multiphasic Personality Inventory
(b) 29% Rorschach Psychodiagnostic Technique
(c) 10.5% Strong Vocational Interest Blank
(d) 14.5% Other tests (please specify) Polygraph

10% Tree-Test; 12% WAIS; 24 other tests used less than 10% of the time

(3) ____ psychological factors in personal history. If you use this selection technique, please place a checkmark before any of the following events which you normally consider unacceptable:

(a) 28% having seen a psychotherapist (psychologist or psychiatrist)
(b) 40% having had personal problems in the service or in school
(c) 42% having had personal conflicts with several past employees
(d) 29% having had several divorces
(e) 4% other (please specify) Irresponsibility or Bankruptcy; 16% used subjective weighting of above factors

(4) 28% written report from a psychiatrist or psychologist

(5) 8% "cutoff points" (specific unacceptable scores) for psychological tests

(6) 58% interview

(7) ____ other (please specify) _____

B. Does your Department require re-evaluation at periodic intervals? 13% Yes 73% No If "yes," please indicate at what periods re-evaluation is done. 14% No Response

6. Aside from selection procedures, does your Department make use of professional psychological personnel? 33% Yes 66% No

A. If "yes," please check which of these functions they serve:

Percentages N=32

(1) 28% Personal counseling
(2) 34% Consultation with supervisors about particular officers
(3) 13% Group counseling
(4) 41% Educational programs
(5) 22% Program consultation
(6) 28% Research consultation

7. Has your Department gathered information on particular psychological or physical stresses police officers encounter on duty? 3% Yes 93% No
If "yes," please include copies of such information with your reply. 4% No Answer

8. If your physical fitness standards sheet does not contain height, weight, vision, hearing, or other similar criteria, would you please send a copy of that information, or list it below?

9. Have you made any change in physical requirements to encourage participation in Law Enforcement by minority groups?

28% Yes

67% No 5% No Answer

10. If the above answer was "yes," please explain changes made in the fields listed:

(a) Height 33% lowered
(b) Weight 9% widened acceptable ranges
(c) Vision 13%
(d) Hearing 0
(e) Other 2 departments raised age to 35 for upper limit

11. Do you wish to receive a summary of the results of this questionnaire?

96% Yes

4% No

MEASURES OF PHYSICAL FITNESS

Section of Body Involved	Physical Fitness Test	Purpose of Test: Strength	Flexibility	Agility	Skills	Endurance
UPPER EXTREMITIES	Arm parallel bar walk	1				
	Chin up - pull up					25
	Dip					1
	Dumbbell press	2				
	Military press bar	1				
	Wt. lifting (overhead from chest)	1				
	Grip	2				
	Push up					16
	Rope climb	3				
	Shoulder dynometer	2				
	Straddle chinning					1
TRUNK	Abdomen sit up w/wt.	3				
	Extended press ups	1				
	Sit up					17
	Toe touch		3			
	Trunk extention, lying		1			
	Trunk flexion		2			
	V-sit					1
TRUNK, BACK HIP, LOWER EXTREMITIES	Hip extension	1				
	Leg raise	2				
LOWER EXTREMITIES	High jump			4		
	Hopping (Musc. end.)					2
	Jump			1		
	Knee bend		2			
	Kneeling jump			1		
	Standing broad jump	15				
	Vertical jump			1		
	Wall jump			4		
	¼ mile run					4
	½ mile run					3
	1 mile run					2
	1-¼ mile run					1
OVERALL	Balance				2	
	Bar vault	2				
	Breath holding (after running in place)					1
	Burpee					4
	Dash (short run)	3				
	Jack spring			1		
	Jump and reach				1	
	Ladder climb			1		
	Lift/carry	3				
	Obstacle (agility run)			8		
	Rotate (Denver)					1
	Sack carry					2
	Shuttle run			3		
	Squat thrust jump					4
	Swimming				2	
	Valuting				1	
	Weight lifting (dumbbells)	3				

*Total number cities = 25

**A city may give more than one test per body section and test purpose

Figure 6.

APPENDIX B

Twenty-Year Longitudinal Study

In 1958 Marsh conducted a study to "evaluate the tests and procedures used in civil service examinations for deputy sheriff for the Los Angeles County Department of Sheriff (p. 1)." The study reported in this paper is in part a follow-up of Marsh's study. It is a 20 year longitudinal study of law enforcement officers to delineate variables that contributed to and predicted successful police performance over a 20 year period.

Marsh (1958) evaluated the results of the four Los Angeles County civil service examinations and other data on the subjects as predictive of an officer's performance over a 10 year period. These potential predictors were as follows:

1. Civil service test scores, consisting of interview scores and written test scores. The latter included general ability, practical judgement, and memory tests.
2. Personality and interests tests, including the Guilford-Martin Temperament Inventory, The Kuder Personal Preference Record, and the Minnesota Multiphasic Personality Inventory.
3. Personal and biographical data, such as years of school completed, previous occupations; age, and height as compiled from the personnel records.
4. Grade in Sheriff's Recruit Training Center.

The performance criteria Marsh selected were special supervisory ratings of performance, discharge rates, tenure of employment, and auto accident rate.

Using the special rating from supervisors, the two groups of deputy sheriffs rated the highest fifth and the lowest fifth were compared. The Chi-square test of significance was used for the analysis of Marsh's study.

The findings indicated that when using the written test scores from civil service examination, the higher scores on the written examination were associated with a lower discharge rate ($p<.05$).

With regard to the predictive power of the personality and interest tests, subjects attaining a C-score of 6 or higher on the General Activity scale of the Guilford-Martin Temperament Inventory had a greater discharge rate ($p<.01$). Using the data from the Minnesota Multiphasic Personality Inventory, scales 9 (Ma) and 1 (Hs) showed "exceptional promise" in differentiating between good and poor employees. In examining the relationship of scale 9 with high and low ratings in the patrol assignment a Chi-square of 8.03 ($p<.01$) was found. This indicated that a $\underline{t}$ score of 55 or higher on the Ma scale was directly related to successful police work.

As far as the results of biographical data and grades from Sheriff's Recruit Training Center was concerned, subjects six feet or more in height were found to be considered significantly better performers and less apt to be

discharged, ($p < .01$) and low grades in Sheriff's Recruit Training Center were found to be directly related to discharge ($p < .01$).

This follow-up of Marsh's study was conducted to assess the efficiency of these predictors for the time period 1950-1970, a 20 year period. In addition, the following new hypotheses were evaluated: (1) the MMPI scales related to job performance for the first ten years are positively related to the number of compensation claims made by this group; (2) Academy rating in 1950 is positively related to present rank; (3) the presence of cardiovascular disease is positively related to present rank.

Method

Marsh's subjects consisted of 619 men who had been appointed to the position of deputy sheriff during the years 1947 to 1950 as a result of four civil service examinations. This 20 year follow-up was conducted on 96 of the 619 men from Marsh's study. These 96 men were selected on the basis of whether the subjects had MMPI scores on file. Only those men who had taken the MMPI at the beginning (1947-1950) of the recruit training were used for the 20 year follow-up.

These variables were collected on each of the 96 Ss:

1. MMPI Scale 1, MMPI Scale 2, and MMPI Scale 9.
2. The Kuder Personal Preference Record (Mechanical and Social Service scores).

3. Written test score - a standard score making up part of the civil service test score compiled and converted from scores from a general ability test, "practical judgement" test, and a memory test.
4. Weighted average - weighted average of civil service written test scores (weighted 60%) and interview scores (weighted 40%), exclusive of veteran credit.
5. Academy rating - final performance rating from the Sheriff's Recruit Training Center.
6. Guilford-Martin - individual scores based on C-score norms.
7. Previous occupation - type of occupation prior to entry into the Sheriff's Department using the following categories: (a) administrative, professional, managerial; (b) skilled; (c) semi-skilled; (d) unskilled; (e) unemployed, student, military experience only, occupation unknown.
8. Discharge - whether or not the S was discharged by the Department between 1950 and 1970.
9. Tenure - whether or not the S was still employed by te the Department as of 1970.
10. Auto accident - preventable patrol car accidents between 1950 and 1970.
11. Rank 1970 - S's rank in the Department as of 1970 (i.e., Deputy, Sr. Deputy, Sergeant, Lieutenant, Captain, Inspector, Chief).
12. Cardiovascular problem - whether or not the subject had some type of cardiovascular problem (recorded as a Workmen's Compensation claim).
13. Compensation claim - whether or not any Workmen's Compensation claims were filed because of job injuries.
14. Supervisor's rating - annual performance ratings made on the subject by his supervisor.
15. Height.

The above data was analyzed to determine if predictive variables from 1947-1950 test scores could be delineated to determine and predict rank, promotion, tenure, and accident rate of these 100 officers' 20 year service. The criterion

and predictor variables were paired in the following manner: discharge with written test scores, weighted average test score, and Academy rating; tenure with written test score and weighted average test score; auto accidents with MMPI Scale 9, MMPI Scale 2, Kuder "Mechanical," and Kuder "Social Service"; supervisor's rating with Guilford-Martin, MMPI Scale 9, MMPI Scale 1, height, and previous occupation; rank, 1970 with Academy rating; and cardiovascular disease with rank, 1970. The Chi-square test of significance was used in the analysis.

Results

[See Table 1]

It is obvious at a glance that none of the significant Chi-square relationships discovered in 1958 lasted to 1970. Also, the new hypotheses were uniformly unsupported.

Because the difference in sample size in 1958 and 1971 has several implications for the utility of the Chi-square statistics, a stepwise discriminant analyses was performed on the 1971 data. Partial results are summarized in Table 2 and discussed in the following sections.

TABLE 1

Summary of Chi-square Analyses, 1958 and 1970

Criterion Variables	Predictor Variables	X^2(1970)	p(1970)
1. discharge	written test scores*	0.0	.99
	weighted average test score**	1.10	.30
	Academy ratings**	0.0	.99
2. tenure	written test score**	0.54	.50
	weighted average test score**	0.0	.99
3. auto accidents	MMPI Scale 9*	0.65	.50
	MMPI Scale 2*	0.0	.44
	Kuder "Mechanical"*	0.11	.80
	Kuder "Social Service"*	1.89	.20
4. compensation claim	MMPI Scale 9	0.17	.70
	MMPI Scale 1	0.65	.50
	MMPI Scale 2	0.03	.95
5. supervisor rating	Guilford-Martin*	2.14	.20
	MMPI Scale 9**	0.44	.70
	MMPI Scale 1*	0.31	.70
	height**	2.40	.20
	previous occupation*	1.41	.30
6. rank, 1970	Academy rating	0.0	.99
7. cardiovascular disease	rank, 1970	0.35	.70

*$p<.05$; **$p<.01$ in Marsh's (1958) data.

TABLE 2

Criterion Variable	Discriminant Function	Constant
ES	-0.22640 GM	-0.88988
RS	-0.12030 WTS + 0.03088 Me + 1.10674 OS	-3.92987
JT	-0.20403 A -0.01500 Me	-5.96323
SR	-0.03192 Me	-1.43646
A58	-0.06373 Ma + 0.23161 H	12.78760
A70	-0.08639 Ma	-5.13176

This table presents for the criterion variables the estimated linear discriminant function and constant for the best set of discriminators. The definitions of criteria and predictors are as follows:

Criteria

ES = employment status as of 1970

Group 1: in service as of 1970 (n=45)

Group 2: not in service due to resignation, retirement, or dismissal (n=48)

RS = rank status as of 1970

Group 1: deputy or senior deputy sheriff (n=14)

Group 2: sergeant, lieutenant, captain, inspector, or chief (n=31)

JT = last job type as of 1970 or termination date

Group 1: patrol (n=38)

Group 2: non-patrol (n=56)

SR = supervisor's ratings. The average of all ratings prior to 1970 or to the last year of employment

Group 1: low rating (n=11)

Group 2: high rating (n=22)

A58 = number of job related auto accidents prior to 1958

Group 1: no accidents (n=70)

Group 2: at least one accident (n=25)

A70 = number of job related auto accidents prior to 1970

Group 1: no accidents (n=65)

Group 2: at least one accident (n=30)

Predictors

GM = Guilford-Martin Temperament Inventory C-score

WTS = written test score. A standard score from the Civil Service entrance examination in use at the time these men entered service

Me = score on "mechanical" scale of the Kuder Vocational Preference Record

OS = occupational status before joining the Department (1 = administrative, professional-managerial; 2 = skilled labor; 3 = semi-skilled labor; 4 = unskilled labor; 5 = unemployed, student, military, unknown)

Ma = T-score on Scale 9 of the MMPI

H = height (in inches) at time of appointment to the Department

Table 2 may be used in the following way: to predict whether a candidate will remain at the level of deputy or senior deputy as opposed to reaching the rank of sergeant or higher, one compares the sum of his weighted written test score, Kuder Mechanical score and Occupational Status index with the constant for that variable (in this example, the constant is -3.92987). If the sum is greater than that constant, we predict that in twenty years (or the time of termination, if that occurs first), the officer in question will be a deputy or senior deputy. If the sum of his weighted WTS, Me, and OS values are less than this constant, we predict he will have reached the rank of sergeant or higher.

A more complete presentation of the results of this ancillary study will be made in subsequent reports.

APPENDIX C

Disciplinary Study

All disciplinary case files involving sworn personnel of LASD from the beginning of calendar year 1968 to October 1970 were pulled from the Civil Service Commission files. There are 95 individuals in this group. The following data were abstracted from the individual's personnel files: date of entry into the Department, supervisory ratings prior to disciplinary action, assignment at the time of the offense, and disciplinary action taken.

Of the officers who have been disciplined by means other than discharge, a number remain active in the Department. These officers will be included in the portions of the research which involve gathering of psychological, medical, and physical fitness data. As the research progresses, comparable information on a large group of officers who have had no such disciplinary action taken against them will be gathered. The data from these two groups will be statistically analyzed to see what might have allowed for the prediction of such problems and to isolate variables which will differentiate between the disciplinary and the non-disciplinary group. Any differentiating variables will be cross-validated, and if they prove to be reliable, they will be suggested for inclusion in standards for law enforcement officers.

Stress/Non-stress

In 1968 a study was begun under the auspices of Chief Howard Earle of the Sheriff's Department. The purpose of the study was to assess the relative merits of stress and non-stress training. Currently, the LASD training academy uses a training philosophy common to many police academies and to introductory military training. This is referred to as stress training. Verbal harassment, rigorous protocol and extensive physical exertion are characteristic of the activities to which the cadet is exposed.

In order to study the value of stress training as opposed to non-stress training, two classes entering the academy were matched on several variables. The cadets in the stress training and the non-stress training classes were exposed to identical class content, examination, course material, and teachers. The only difference was that the non-stress training classes were trained in an atmosphere of informality with guidance from the training officer.

The above procedure was replicated with two other classes entering the academy six months later. Officers from both stress and non-stress training classes were subsequently assigned to either jail or patrol duty.

The question of the merits of stress training is now being considered by researchers within the Sheriff's

Department. Considerable unused data amenable to other analyses, directly relevant to the terms of the present grant have been made available to us, however. Prior to entering the Academy, the cadets from stress and non-stress classes were administered a battery of psychological tests. These tests were Minnesota Multiphasic Personality Inventory (24 scales) and the Edwards Personal Preference Schedule (16 scales). The data from psychological tests, background information (marital status, military experience, previous employer's ratings, etc.), pre-placement medical examination results, and academy performance will be analyzed to study the relationship of the above variables (singly and in combination) to the work performance of each officer.

Since the design of this research involved (a) two conditions of stress, (b) replication, and (c) subsequent assignment of an officer whether to jail or patrol duty, it is possible to evaluate the predictors as they relate to the interactions of these three dimensions. Thus, complex relationships between personality characteristics, training, assignment, and performance could be identified. If, for example, individuals scoring high on a given MMPI scale do well on jail duty only if they have been given stress training, this information could be uncovered from the results of this study. Because of the replication, exposure of a second group of cadets six months later to the same conditions cross-validation of these findings will be possible.

At this point the progress of this study is as follows: All the data including background information, academy performance, peer evaluation, and medical data for the original test group and replication group have been coded and put on IBM cards.

Questions which these data will be used to answer include the following:

1. What combinations of pre-academy measures best predict job performance?
2. What is the relationship of academy performance to job performance?
3. What effect does type of training, i.e., stress or non-stress, have on performance in jail assignments? In patrol assignments?
4. Do personality characteristics interact with type of training to affect field performance?

Care will be taken to include these men in our current testing program so that additional psychological and physical fitness data will be available on them.

Analysis of the above data will provide suggestions as to the predictive value of certain psychological tests, personal history, background information, and academy behavior as they interact with type of trianing and type of assignment.

APPENDIX E

Workmen's Compensation and Rehabilitation Study

This group was selected for study for several reasons. First, injuries or illnesses often have an identifiable psychological component, whether it be precipitating, predisposing, perpetuating, or directly causal. A study of individuals who have experienced job-related injury or illness might turn up reliable, identifiable characteristics which will differentiate them from others, and which could be considered in the selection and placement process. One of our paper and pencil devices has, for example, differentiated men who had heart trouble from those who did not (Cattell, 1970). Second, the grant application includes consideration of "cost-benefit," and this group represents a currently unpredictable and costly problem.

Fifteen hundred of the most recent cases on whom information is available were selected from Workmen's Compensation files as the sample for this group. In the survey of the compensation files a coding system appropriate to computer analysis was developed. This code includes type of injury or illness, part of body affected, and amount of money involved in compensation. We will study officers with "psychosomatic" illness, as specified in the grant application, as well as officers with other types of problems. In comparing this sample with a master list of currently employed officers, we have noted which "currents" have filed claims and how many they have filed for the time period sampled.

Those who have had multiple injuries or illness and are still with the Department will be studied with the experimental measures to ascertain whether they have special characteristics which differentiate them from officers who have not filed compensation claims. We recognize, of course, that differentiating variables thus discovered are only suggestive because they may be only post hoc phenomena. Nonetheless, such variables merit special attention in later predictive studies. Other variables thought to be less confounded are statistical comparisons between the pre-injury (or illness) data of the compensation group and a group of officers not filing compensation claims. Such comparisons will evaluate personal factors (such as general pre-employment medical condition, age, and the like) and work factors (such as tenure with the Department, assignment, academy performance, etc.).

APPENDIX F

Descriptors of Ideal Police Performance

Another aspect of the problems of determining adequate criteria is the difficulty of developing procedures through which the criteria can be updated. Evaluations of police performance must include not only the physiological and psychophysiological standards of an officer's performance, but also descriptors of "good" police behavior which reflect the beliefs of citizens at that particular time. Using the Interpersonal Checklist, we are gathering such descriptions of the "ideal policeman" from a number of different citizen and police groups. The five groups from whom we have data are as follows: new sergeants from the Los Angeles Police Department (n=27), staff members of the Los Angeles Free Clinic (n=19), members of an adult education class at the University of California Irvine (n=19), new sergeants from Los Angeles County Sheriff's Department (n=19), and Los Angeles County Sheriff's Department Administrators (n=26).

Table 1 presents the coefficients indicating the correlation among the descriptions provided by the five groups.

CONTINUED

1 OF 2

TABLE I

Correlation Matrix Describing the "Ideal Policeman"
Based on 128 ICL Items

Sample	LAPD Sgts.	Free Clinic	Adult Education	LASD Sgts.	LASD Admin.
LAPD Sgts.	———	.90	.95	.97	.98
Free Clinic		———	.92	.89	.87
Adult Education			———	.94	.95
LASD Sgts.				———	.97
LASD Admin.					———

The correlation coefficients are very high, indicating a nearly perfect agreement in descriptions among these groups. The police and clinic groups differ most, but not much. We suspect some of the indicated agreement to be spurious, however, because the ICL was made to describe all varieties of interpersonal behavior - the obviously bad as well as the obviously good. There were, therefore, many items never or infrequently endorsed by any sample. We recalculated the matrix, omitting from this analysis any item which was not chosen by more than one person in any sample. These coefficients are shown in Table 2.

TABLE 2

Correlation Matrix Describing the "Ideal Policeman"
Based on 77 ICL Items*

Sample	LAPD Sgts.	Free Clinic	Adult Education	LASD Sgts.	LASD Admin.
LAPD Sgts.	———	.83	.92	.95	.96
Free Clinic		———	.88	.79	.78
Adult Education			———	.90	.91
LASD Sgts.				———	.95
LASD Admin.					———

*Endorsed at least twice by at least one sample

This analysis reduces the coefficients somewhat, but clearly, there is still strong agreement among the three groups on the interpersonal characteristics of the ideal policeman. Both tables are presented because it can be cogently argued that in mutually not endorsing certain items, members of the various samples were still truly agreeing in their descriptions. Table 2 emphasizes differences among the groups, and the differences are minor, though interesting.

The items having a high frequency of endorsement by all three samples are presented in Table 3. The rank order of the frequency with which each item was selected by each sample is given.

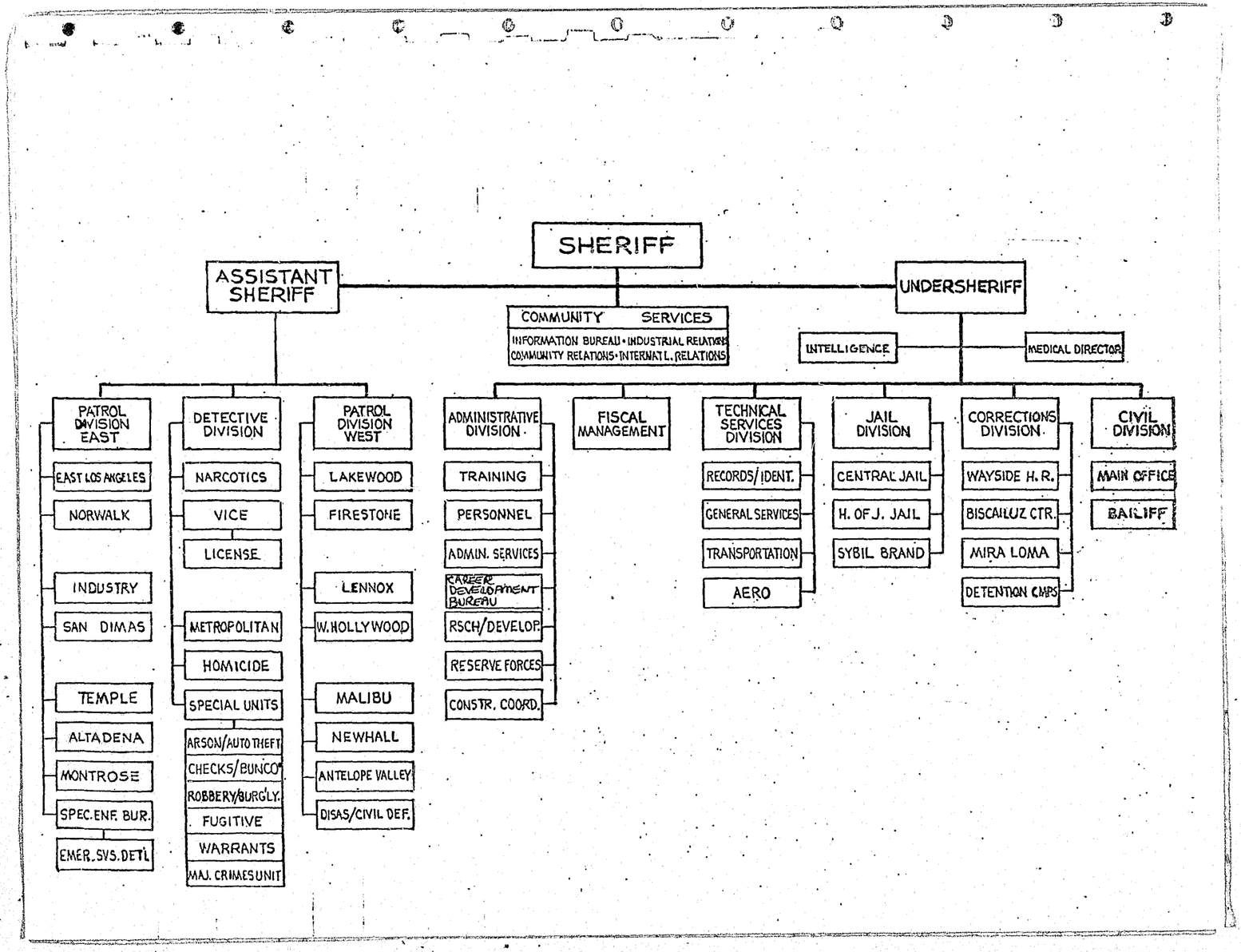
TABLE 3

Rank Order of Frequency of Commonly Selected Items
(1 = most frequently chosen)

ITEM NUMBER	CONTENT	RANKING BY SAMPLE				
		LAPD Sgts.	Free Clinic	Adult Educ.	LASD Sgts.	LASD Admin.
1.	well thought of	5	6	6	4	6
2.	makes a good impression	5	7	8	2	2
3.	able to give orders	5	9	3	1	2
5.	self-respecting	2	1	1	2	3
6.	independent	8	7	5	2	5
7.	able to take care of self	3	5	1	1	2
9.	can be strict if necessary	4	8	2	2	2
10.	firm but just	3	2	4	1	2
11.	can be frank and honest	2	3	4	1	4
17.	able to criticize self	3	2	2	2	4
19.	can be obedient	6	8	6	2	4
25.	cooperative	3	2	4	1	2
27.	friendly	5	1	4	2	4
29.	considerate	6	3	4	3	3
30.	encourages others	5	5	7	2	7
31.	helpful	5	2	4	1	1
34.	respected by others	4	3	3	2	4
35.	good leader	2	5	3	1	1
36.	likes responsibility	4	3	2	1	2
37.	self-confident	1	4	1	1	2
38.	self-reliant and assertive	8	4	3	1	3
42.	stern but fair	3	6	5	2	8
44.	straightforward and direct	7	3	4	2	9

These results suggest that apparently different groups agree quite closely in their descriptions of ideal interpersonal behavior for policemen. Such a finding is quite encouraging, inasmuch as it suggests that it may be possible to construct a model for selection and maintenance of a police department based upon values (i.e., criteria for good job performance) which are shared by a diverse sampling of the citizenry.

APPENDIX G


SHERIFF
ASSISTANT SHERIFF
UNDERSHERIFF
COMMUNITY SERVICES
INFORMATION BUREAU • INDUSTRIAL RELATIONS
COMMUNITY RELATIONS • INTERNATL. RELATIONS
INTELLIGENCE
MEDICAL DIRECTOR
PATROL DIVISION EAST
EAST LOS ANGELES
NORWALK
INDUSTRY
SAN DIMAS
TEMPLE
ALTADENA
MONTROSE
SPEC. ENF. BUR.
EMER. SVS. DET'L
DETECTIVE DIVISION
NARCOTICS
VICE
LICENSE
METROPOLITAN
HOMICIDE
SPECIAL UNITS
ARSON/AUTO THEFT
CHECKS/BUNCO
ROBBERY/BURGLY.
FUGITIVE
WARRANTS
MAJ. CRIMES UNIT
PATROL DIVISION WEST
LAKEWOOD
FIRESTONE
LENNOX
W. HOLLYWOOD
MALIBU
NEWHALL
ANTELOPE VALLEY
DISAS/CIVIL DEF.
ADMINISTRATIVE DIVISION
TRAINING
PERSONNEL
ADMIN. SERVICES
CAREER DEVELOPMENT BUREAU
RSCH/DEVELOP.
RESERVE FORCES
CONSTR. COORD.
FISCAL MANAGEMENT
TECHNICAL SERVICES DIVISION
RECORDS/IDENT.
GENERAL SERVICES
TRANSPORTATION
AERO
JAIL DIVISION
CENTRAL JAIL
H. OF J. JAIL
SYBIL BRAND
CORRECTIONS DIVISION
WAYSIDE H. R.
BISCAILUZ CTR.
MIRA LOMA
DETENTION CMPS
CIVIL DIVISION
MAIN OFFICE
BAILIFF

APPENDIX H

Name _____

Rank _____

Badge No. _____

LAW ENFORCEMENT STANDARDS RESEARCH

1. This deck of IBM cards is based on the roster obtained in our first meeting. Each card contains the names of two men, and the rating deck consists of all possible pairs of names on your list.

2. Try not to consider what you may have heard others say about these men. Rather, base your judgments upon your own experience with them.

3. Consider the two men on each card, and ask yourself the following question: "Which of these two men is the better performer on the street -- which is the better patrolman in terms of performance in the field?"

4. When you have made your choice, place a check mark in the box next to the name of the man that you feel is doing the better job. Make a choice for <u>each</u> card and make only <u>one</u> check mark on each card.

5. This is the only judgment you have to make. You do not have to rate any specific characteristics or traits of these officers, nor do you have to justify the choices that you make. All you do is decide which of the two men on each card is the better patrolman, and then place a check mark next to his name. You choice should be based on (1) the factors you consider important for effective performance as a patrolman, using standards you have developed as a police officer and as a police supervisor and (2) your knowledge of the job performance of each man.

6. Work rapidly, and do not spend too much time on any one card. The rating deck of cards based on a list of 30 names can be completed in approximately 30 minutes.

Name _____

Rank _____

Badge No. _____

Homa M. Snibbe, Ph.D.
Law Enforcement Standards
Research Project

APPENDIX I

Exercise Testing

There are nine basic cardiopulmonary measurements to be made during the exercise testing. This section outlines the objectives, rationale, information obtained, procedure, and equipment needed for each measurement:

A. Basic Electrocardiography

1. Test Objective:

   a. Obtain resting 12 lead electrocardiogram for comparison with previous electrocardiogram taken during medical examination

2. Rationale

   a. Electrocardiographic change between the two electrocardiograms is a contraindiction to stress testing

3. Information Obtained:

   a. Cardiac condition in steady state or recently changed

4. Procedure:

   a. Standard clinical procedure for resting 12-lead electrocardiogram

5. Equipment and Cost:

   a. Sanborn electrocardiograph - $795.00

B. Vasular Measurements at Time of Positional Change

1. Test Objective:

   a. Detect changes in blood pressure accommodation resulting from changes in body position

2. Rationale

a. The degree of change in blood pressure, as well as the direction, i.e., up or down, is associated with the level of physical fitness

b. Cardiovascular abnormalities show marked variations in blood pressure which can be computed by utilization of the Hyman blood pressure

c. The Hyman Index is the computation of the percent of change between recumbent mean blood pressure and quick-standing mean blood pressure.

d. Negative Hyman Index values demonstrate cardiovascular weakness

3. Information Obtained: (Both before and after exercise)

a. Recumbent blood pressure

b. Quick-standing blood pressure

c. One-minute standing blood pressure

4. Procedure: (Blood pressure recorded both before and after exercise)

a. After subject lies quietly for 5 minutes, a recumbent blood pressure is measured

b. After subject stands quickly, another blood pressure is recorded immediately

c. After subject remains standing for one minute, the final blood pressure is recorded

5. Equipment and Cost:

a. Aneroid blood pressure cuff $50.00

b. Physician's stethoscope $15.00

C. Pulmonary Function Testing:

1. Test Objective:

a. Determine ventilation efficiency

b. Detect obstruction or restriction hinders physical performance

2. Rationale

a. Pulmonary obstruction or restriction hinders physical performance

b. Severely impaired lung function is a contraindiction to stress testing

3. Information Obtained:

a. Timed Forced Vital Capacity (FVC)

Measures volumes determined in one, two, and three seconds

b. Maximum Breathing Capacity (MBC)

Calculated by measuring ventilatory rate and depth recorded for 12 seconds

4. Procedure:

a. Forced Vital Capacity

Instructions: Have subject stand in front of spirometer. Subject takes maximum inspiration. Subject expires rapidly and completely into mouthpiece.

b. Maximum Breathing Capacity

Instructions: Have subject stand in front of spirometer. Have subject breathe deeply and rapidly into mouthpiece for 12 seconds.

5. Equipment and Cost:

Collins Stead-Wells spirometer - $789.00

D. Body Composition:

1. Test Objective:

a. Obtain skin fold measurements

b. Determine percent of body fat and variation from norms

2. Rationale:

a. A positive relationship exists between obesity and increased mortality

b. Excessive amounts of body fat hinder physical performance

3. Information Obtained:

   a. Height (inches)

   b. Weight (pounds)

   c. Skinfold thickness (millimeters)

4. Procedure:

   a. Subject stands on scales with attached stadiometer.

   b. Using skin pencil, measurement sites are marked on right side of body at: mid-triceps area, subscapular area, mid-biceps area, and crest in mid-axillary line.

   c. A double fold of skin is picked up between examiner's fingers, and measured with Lange skinfold calipers.

5. Equipment and Cost:

a. Lange skinfold calipers	$68.00
b. Continental stadiometer and counter balanced scale	$73.00

E. Spinal Mobility

1. Test Objective:

   a. Determine the range of motion of the spine

2. Rationale:

   a. A large percentage of back problems are due to weak and shortened connective tissue.

   b. The level of function of the spine reveals the possible presence of back abnormalities.

3. Information Obtained: (Measurements recorded in centimeters)

   a. Range of lateral trunk flexion -- a measure of the ability to bend sidewards

   b. Range of trunk flexion--a measure of ability to sit and reach.

   c. Range of trunk rotation--a measure of the angular rotation of the thorax while the hips are held stationary. (This is measured in degrees and converted to metric scale.)

   d. Range of trunk extension--a measure of the ability to arch the trunk upward while lying prone on a bench.

4. Procedure

   a. Lateral trunk flexion: subject stands with legs straight and hips, shoulders, and head against wall, grasps handles of a metric scale, extends arms and depresses shoulders completely to determine zero position. Right hand is released from handle and subject bends to left as far as possible, maintaining wall contact.

      Left hand is released and subject returns to upright position. The right handle then is grasped and the right lateral flexion determined in the same manner as the left. The measurement is recorded from a reading of the metric scale.

   b. Trunk flexion: subject sits on versatile goniometer with feet against foot rest, legs straight and with hands resting on metered scale so that tips of middle fingers of both hands touch indicator. Subject slowly and steadily leans forward without bending knees, as far as possible, knees restrained. Measurement is recorded by reading the metric scale indicator.

   c. Trunk rotation: subject straddles goniometer bench with chest touching end of metric scale and with hips restrained. A pointer is attached to the chest by an elastic band and arms are folded above this. A large protractor is positioned so the zero plane would bisect the spinal column horizontally. Subject exhales and rotates trunk to left, pushing indicator on protractor with pointer. Right trunk rotation is obtained in a similar manner.

d. Trunk extension: subject lies prone on versatile goniometer bench with heels and hips restrained. Subject arches back in hyperextension and the distance from chin to top of bench is measured by metric scale.

5. Equipment and Cost

a. Versatile goniometer - $400.00

F. Muscular Strength

1. Test Objective:

a. Obtain a measure of the ability to exert maximum tension

2. Rationale:

a. The level of muscular strength reflects the ability to perform duties effectively

3. Information Obtained:

a. Grip strength in both right and left hands in pounds

b. Leg strength and back strength in pounds

c. Ratio of strength to weight

4. Procedure:

a. With the arm pendant and the hand holding the dynamometer, the instrument is pointed toward the floor like a gun, and the whole hand is contracted as forcefully as possible to measure the grip strength.

b. Standing with hips flexed to 155 and with a firm grasp of the handle of the dynamometer, the back muscles only are used to exert maximum tension by contraction.

c. Standing with knees flexed to 120 and the dynamometer secured to the hips, by attempting to straighten the legs against the dynamometer, the force is measured.

5. Equipment and Cost:

a. Handgrip dynamometer $80.00

b. Leg and back dynamometer $275.00

G. Cardiac Stress

1. Test Objective:

a. Determine cardiovascular tolerance for work at heart rates of 100, 120, 140, and 160 beats per minute, maintaining each heart rate step for 5 minutes.

2. Rationale:

a. Under prolonged stress, cardiovascular functional abnormalities most likely to become evident

3. Information Obtained:

a. Heart rate in beats per minute

b. Work rate converted to electrical potential and recorded in watts.

c. Electrocardiographic recording of effect on written strips recorded on tape, and constantly monitored oscilloscope

d. Intermittent blood pressures taken during peak work loads and during rest and recovery

4. Procedure:

a. Ride an ergometrically controlled bicycle for 20 minutes

b. Pedal against stress at the rate of 60 to 70 revolutions per minute

5. Equipment and Cost:

a. Collins physiologically paced ergometric system - $11,500

b. Electro-medical monitoring system - $7,750

c. Hoffman-LaRoche blood pressure monitor - $3,500

H. Determination of Oxygen Consumption

1. Test Objective:

   a. Determine the amount of oxygen consumed at various levels of cardiovascular stress

2. Rationale:

   a. Positive relation between low aerobic power and low circulatory function

3. Information Obtained:

   a. Pulmonary ventilation

   b. Oxygen consumption in terms of body weight, classical physical fitness index

   c. Carbon dioxide production

   d. Respiratory quotient

4. Procedure:

   a. Collect subject's expired air in a bag at various times during exercise

5. Equipment and Cost:

a. Valves and bags to collect air	$5,000
b. Gasometer to measure expired air	$1,500
c. Gas analyzers to determine the oxygen, carbon dioxide, and nitrogen content of inspired and expired air	$18,000
d. Calculator to perform complicated mathematical procedures	$1,100

I. Determination of Pulmonary Function

1. Test Objective:

   a. To determine the efficiency of subject's lungs

2. Rationale:

   a. Positive relation between low pulmonary function and pulmonary disease

   b. Ease of administration with maximum information acquired

3. Information Obtained:

   a. Maximum breathing capacity

   b. Vital capacity

   c. Timed vital capacity

   d. Functional residual capacity

   e. Residual volume

   f. Nitrogen washout curve

4. Procedure:

   a. To determine the maximum breathing capacity, vital capacity, and timed vital capacity, have subject take a maximum inspiration, followed by a maximum expiration

   b. To determine functional residual capacity, residual volume, nitrogen washout curve, have subject breathe 100% oxygen for seven minutes, and analyze each exhaled breather for nitrogen content.

5. Equipment and Cost:

   a. Pulmonary function com puter - $16,000

APPENDIX J

Job Satisfaction Questionnaire

Pretesting on a group of officers from Inglewood, California Police Department suggests that this experimental device does indeed differentiate police job assignments on the basis of stresses and satisfactions present. Use of the "not applicable" category differentiated patrolmen (n=12) from investigators (n=10), both in terms of frequency with which they described the job stress or satisfaction items as present in their jobs (X^2=18); p .01) and the simple number of items each group selected as reflecting relevance to their assignments (X^2=3.7; .05 p .10).

Histogram analysis of the frequency with which each of the seven response categories was used by S's for each item indicated that most of the items elicited responses varied enough to make it useful. There were no items, in other words, which elicited responses in only one or two categories. Further, on a randomly selected sample of patrolmen (n=5), test-retest reliability over a two week period in no case was less than .99 (Spearman rho).

APPENDIX K

COUNTY OF LOS ANGELES

SHERIFF'S DEPARTMENT

DATE

OFFICE CORRESPONDENCE FILE NO.

FROM: James Downey, Assistant Sheriff TO: Division Chiefs

SUBJECT: Physiological Fitness Standards Research Project -- Scheduling of Personnel

As you are aware, the Sheriff's Department received a supporting research grant from the Department of Justice, Law Enforcement Assistance Administration to study the physical and emotional fitness of its officers as a first step in developing national standards for law enforcement officers. (See Sheriff's Bulletin No. 51, December 30, 1970)

The research calls for three examination phases for each man. The first is a comprehensive examination (medical); the second, exercise testing; and the third is testing to identify stresses related to on-the-job activities and their effects on the performance of the officers.

The testing is for the purpose of research -- to gather information which will be used to establish standards for law enforcement officers. The data from phase three are not for the use of the Sheriff's Department, but are to be used by the research team only.

If a man is identified as having heart disease, his physical condition and his assignments will be considered prior to the taking of any action. The Department does not wish to dismiss any officer; but it does have the obligation to all the officers and the public to consider their physical capacities when making assignments.

The project requires the testing of 1000 men during the next two years. The men will be randomly chosen by age, rank, and assignment to get a cross section of the Department. Every effort is being made to spread the appointments so that no one division or station is overburdened at one time by having men absent. One of the Department's contributions to the project is in the form of released time for the officers to be tested during their on-duty time.

The attached roster lists the personnel who are scheduled to participate at this time in the research. You will receive additional information and lists at future times. Each man will be scheduled for three appointments. He will be scheduled for Appointment One, the medical examination (between 7:30 a.m. and 9:30 a.m.), only following on off-duty period. He must come for the examination after sleep. In addition, he must not have eaten or drunk anything after midnight of the previous day. Appointment Two, exercise testing, and Appointment Three, personality testing, will be scheduled two to three weeks after Appointment One.

Each man will be notified by letter of his selection. He will be instructed to call the research office to schedule his own appointments. (See attached letter)

The research team is composed of personnel specially employed to conduct the research: Judith M. Grencik, Ph.D.; and Homa M. Snibbe, Ph.D; and Hugh R. Montgomery, Ph.D. Their office is located at 125 West Fourth Street, Suite 307.

Further information regarding the research can be obtained from Dr. J. Grencik at 680-2212.

COUNTY OF LOS ANGELES

SHERIFF'S DEPARTMENT

DATE

OFFICE CORRESPONDENCE

FILE NO.

FROM: **Peter J. Pitchess, Sheriff**

TO: **All officers chosen to participate in the research**

SUBJECT: **Physiological Fitness Standards Research Project**

You are a part of a randomly chosen group of officers who are to participate in a Physiological Fitness Standards Research Project funded by the Law Enforcement Assistance Administration (LEAA). The Sheriff's Bulletin, No. 51, dated December 30, 1970, provides basic information about the supporting grant.

The purpose of this letter is to provide you with more information regarding the project and to explain the scheduling procedures which you will follow.

In order that there be as little disruption as possible in your work schedule, it will be your responsibility to call the research office to schedule your own appointments at a time convenient to you. Please call Mrs. Richardson at 680-2212 within the next three days to arrange for your schedule.

Objectives

The Research Project is funded jointly by the Los Angeles County Sheriff's Department and the LEAA. The work of the Project will have no bearing with your present or future standing in the Department. There are basically four objectives of the study:

1. **One of the primary objectives is to determine (a) the different levels of physical and emotional fitness necessary for the efficient functioning of a law enforcement officer according to his assignment and (b) appropriate tolerance ranges which allow for changes occuring during career progression.**

Physiological Fitness Standards
Research Project--2

2. We also hope to discover, by testing groups of deputies, the characteristics of successful patrolmen, i.e., in what ways patrolmen are like each other, in what ways they are different, and how rank, age, assignment, fitness level, and performance are related.

3. As a first step in developing preventive and rehabilitative programs, we want to identify job stresses which cause the level of fitness to deteriorate.

4. Finally, we want to find ways in which men and jobs can be matched most effectively for the benefit of the men and the Department.

As a result of this research, standards will be established that can be used later as criteria for employment in law enforcement agencies across the United States.

Most law enforcement agencies in the United States have inadequate and untested standards. The fact that the Los Angeles County Sheriff's Department is recognized as an agency with high standards and good officers is attested to by its selection as one which can be used to develop standards for organizations through out the United States. This is, indeed, an honor.

Research Procedures

The Physiological Fitness Project of the Sheriff's Department calls for medical examination, exercise testing, and personality study. Since the County already is gathering the medical and exercise testing data, the project will use this data, and in addition, gather data from personality testing which will provide information about job stresses and ways of coping with the stress. The project will be carried out by a professional research team that has been specially employed by the Sheriff's Department to execute the project.

Physiological Fitness Standards
Research Project--3

The personality testing is not part of regular County or Department procedure--it is for research purposes only, and the Department will not have access to it. The confidentiality of the data will be maintained by assigning code numbers to all participants. The results of the medical examinations will be given to you, and, if you wish, to your private physician. Discussion of any part of the procedure can be arranged, if you are interested.

An additional word of explanation about data gathered for research--this research is being conducted for exploratory purposes to determine current physical and psychological fitness levels. The exploratory data will later be computer-analyzed to determine with accuracy, these existing levels. The purpose of the research data is not to look at an individual's data, but to view the Department as a whole. Therefore, the data cannot be used for evaluation of individuals--the research is for the purpose of setting standards to be used at later times.

Policy of the Sheriff's Department and Occupational Health Service

For the 1000 men who will be tested in connection with this research, the results of the testing will be confidential and will not be available to the Sheriff's Department except in the case of heart disease discovered in an officer in a high-risk assignment. For example, an officer with heart difficulties should not be assigned to duties which involve such risks as driving a patrol car during a high-speed chase or pursuing criminals on foot. The potential danger to himself or his partner is too great to ignore. The basic policy of the Department will be to reassign a man with a cardiac disorder so that he will be in a position which fully utilizes his capabilities.

Scheduling

Contact Mrs. Richardson at 680-2212 within the next three days to arrange for your schedule. It is necessary for you to have three appointments to complete the testing.

(Schedule information on the attached sheets)

76T291 - R103 3/70

Physiological Fitness Standards
Research Project--4

APPOINTMENT ONE - This is the medical examination.

SPECIAL INSTRUCTIONS:

- It is essential that you come to the medical examination without having drunk or eaten anything after midnight of the previous day. You may rinse your mouth with water. Also, you should limit your smoking and dispense with taking medicine prior to the testing.
- Please report to the Occupational Health Service, Room B-50, at the Hall of Administration.
- This appointment will last approximately two hours. You may park in Lot 17 on the corner of Hill and Olive Streets while you are in the Hall of Administration. Please present the enclosed parking permit.
- After the test procedures you may eat. Some of you will be involved in the second examination on this same day. If that is the case with you, then please do not drink coffee or alcoholic beverages and limit your smoking please. You will then proceed to Appointment Two.

APPOINTMENT TWO - This is the personality testing.

SPECIAL INSTRUCTIONS:

- Come to 125 West Fourth Street, Suite 307. While you are there you may park at Joe's Parking Lot, 114 East Third Street, by presenting the enclosed permit.

APPOINTMENT THREE - This is exercise testing.

SPECIAL INSTRUCTIONS:

- Report to the Hall of Administration, Room B-50. You may park in Lot 17 again by presenting the other enclosed permit.

If there are any questions regarding any portion of your participation, please do not hesitate to call Sgt. Paul Miller or Deputy Sheralyn Irwin at 626-9511 ext. 83575 or Dr. Judith Grencik at 680-2212.

TO: ALL PERSONNEL

FROM: PETER J. PITCHESS, SHERIFF

RE: PHYSIOLOGICAL FITNESS STANDARDS RESEARCH PROJECT - PURPOSE SCHEDULING AND PARTICIPANTS

In accordance with the Sheriff's Bulletin, No. 51, dated December 30, 1970, the Physiological Fitness Standards Research Project will be beginning in April. The main purposes of this project are to determine (a) the different levels of physical and emotional fitness necessary for the efficient functioning of a law enforcement officer according to his assignment, and (b) appropriate tolerance range which allows for changes occurring during career progression.

Most law enforcement agencies in the United States have inadequate and untested standards. The fact that the Los Angeles County Sheriff's Department is recognized as an agency with high standards and good officers is attested to by its selection as the one to be used in this research to develop standards for organization throughout the United States. This is indeed an honor for the department.

The research calls for a medical examination, exercise testing, and personality study. Since the County of Los Angeles already has a program

to provide a medical examination and exercise testing for all safety employees, the Research Grant will use this data, and add to it the personality testing.

The personality testing is not part of regular County or Department procedure--it is for research purposes only, and the Department will not have access to it. The confidentiality of the data will be maintained by assigning code numbers to all participants. The results of the medical examinations will be given to you, and, if you wish, to your private physician. Discussion with you of any part of the procedure can be arranged, if you are interested.

An additional comment about data gathered for research: this research is being conducted for exploratory purposes to determine current physical and psychological fitness levels. The exploratory data will later be computer-analyzed to determine with accuracy the existing levels. The purpose of the research data is not to look at an individual's data, but to view at the Department as a whole. Therefore, the data cannot be used for evaluation of individuals--the research is for the purpose of setting standards to be refined for future selection and career planning.

Deputies of the Sheriff's Department and Occupational Health Service

For the 1000 men who will be tested in connection with this research, the

results of the testing will be confidential and will not be available to the Sheriff's Department except in the case of serious heart disease discovered in an officer in a high-risk assignment. For example, an officer with heart difficulties should not be assigned to duties which involve such risk as having to drive a patrol car during a high-speed chase, or to pursue criminals on foot. The Department has no blanket policy with regard to what action it will take in the case of such an officer--many comparable health problems do not interfere with a man's performance in some assignments, even though they may interfere in others. The basic policy of the Department will be to reassign a man with a cardiac disorder so that he will be in a position which utilizes his capabilities without endangering his health.

Three appointments two of which may be arranged on the same day, are necessary for the research. Those who are part of the randomly chosen group will receive letters of instruction regarding scheduling procedures.

In order that there be as little disruption as possible in an officer's work schedule, it is each man's responsibility to call the research office to schedule his own appointments. It is the Unit Commander's responsibility to insure that all men in his unit participate as indicated.

If you desire additional information, call Judith M. Grencik, Ph.D., Project Director at 680-2212.

The following men are to be involved in the research at this time:

END