



## TOPIC QUESTIONS

1. True or false. The Cooper Center Longitudinal Study (CCLS) has shown repeatedly that cardiorespiratory fitness (CRF) level is a strong predictor of future health outcomes.
2. Physical fitness relates to the ability of an officer to perform the \_\_\_\_\_ function.
3. List the items included in The Cooper Institute recommended test battery for law enforcement.
4. True or false. Measurements of body composition and flexibility can be included in a fitness test battery provided that officers/recruits are not held to a mandatory standard in these areas.
5. Define frequency and criticality.
6. Is physical fitness in law enforcement justified more from a frequency or criticality perspective?
7. List at least 5 critical physical tasks for law enforcement professionals.
8. Adverse impact is demonstrated when less than \_\_\_\_\_% of a protected class pass a standard at the pass rate of white males.
9. A job task simulation (JTS) test shows \_\_\_\_\_ validity.
10. True or false. The Cooper Institute test battery shows content validity.
11. Failure to reassign officers who cannot meet the physical demands of the job is called \_\_\_\_\_.
12. True or false. Use of age and gender norms with percentile rankings is the most defensible way to establish fitness standards for an agency.
13. Holding everyone to the same fitness standard regardless of age or gender is called an \_\_\_\_\_ standard.



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## COMMON QUESTIONS REGARDING PHYSICAL FITNESS TESTING, STANDARDS, AND PROGRAMS FOR PUBLIC SAFETY

### Introduction

The Cooper Institute (CI) has worked with physical fitness programs in law enforcement, public safety, and military settings since 1976. Over the years, The CI has considered this work as part of its mission to help shape and influence fitness programs throughout the nation. We have seen **significant legal, scientific, program and policy changes** during the past four decades. Because of our leadership role in the area of public safety fitness, we frequently receive questions regarding these changes. This chapter will address many of these common questions and provide direction for your agency, based upon the most current information available. While what public safety agencies did in the past may have been acceptable at the time of implementation, recent legislation and new validation studies have provided **new direction**. This section will include specific recommendations that will help your agency move toward implementing fitness tests, standards, and programs which not only help ensure a **fit workforce**, but are also **valid and defensible** if challenged in court.

Please note that The CI does not perform law enforcement fitness testing validation studies at the present time. Rather, we report findings that we receive from other organizations that perform these types of studies.

### Background

The nature of police work can contribute to a lack of both physical fitness and overall wellness. Long ago, it was common for police officers to ‘walk a beat’ within their assigned patrol area during their shift. Thus, there was not an issue with lack of physical activity on the job during that time. Today’s law enforcement professionals have little day-to-day physical activity while on the job. Many spend the majority of their work day behind the wheel of a patrol car or at a desk completing paperwork. Oftentimes, law enforcement professionals are asked to work an irregular schedule with unpredictable meal times. Because fast food is both convenient and inexpensive, this can lead to poor dietary habits while on duty. Additionally, there are many potential sources of stress, including but not limited to potentially dangerous situations such as dealing with citizens who are upset or violent, and making the switch from inactivity to vigorous activity in a rapid manner. The following quote from the Law Enforcement Technology group sums it up well: “The majority of police work is done with a pad, pencil, and radio until the lid comes off and hell breaks loose, at which time the officer may need the physical attributes of an athlete to survive.” The stress that is inherent in the law enforcement profession may lead to overeating, tobacco use, abuse of alcohol, or use of drugs as a coping mechanism. In turn, this has a direct bearing not only on health, but also on job performance.



Currently, no national data base exists regarding the physical fitness level of law enforcement professionals. For such a data base to be developed, a random sample of several thousand in-service officers from several hundred agencies would need to be selected and tested. The cost and logistical issues for such a project, as well as potential resistance from unions make it very unlikely that such a large data base will ever be developed.

The Cooper Institute, a not-for-profit entity of the Cooper Aerobics Center, has the world's largest data base regarding the measures of cardiorespiratory fitness and body composition. Since 1971, over 100,000 patients have undergone comprehensive physical examinations at the Cooper Clinic. These exams include a maximal treadmill stress test, which is the gold standard in terms of assessing cardiorespiratory fitness level. Most Cooper Clinic patients also undergo some measure of body fatness, such as skinfolds or underwater weighing. A much smaller number of patients have undergone tests of flexibility as well as muscular strength and endurance. The Cooper Institute stores Cooper Clinic data and has used this data to publish over 600 papers in the scientific literature since 1971.

The Cooper Center Longitudinal Study (CCLS) is the oldest and largest study of its kind. As mentioned above, all Cooper Clinic patient data is stored in The Cooper Institute. Patients are followed over time for morbidity (illness) and mortality (death) using phone and mail surveys, as well as by using the National Death Index (NDI). When a Cooper Clinic patient dies, the NDI provides a copy of the death certificate to Cooper Institute scientists. Over the past 40 years, the CCLS has shown repeatedly that cardiorespiratory fitness (CRF) level is a strong predictor of future health outcomes. For example, having a moderate to high CRF level significantly decreases the risk of developing coronary artery disease, type 2 diabetes, hypertension, certain cancers, and metabolic syndrome, as well as decreases the risk of having a heart attack or stroke. These and other findings have been published in many top-tier medical journals such as *The Journal of the American Medical Association*, *Annals of Internal Medicine*, *Obesity Research*, *Circulation*, *The American Journal of Epidemiology*, and *Diabetes Care*.

It is important to note that Cooper Clinic patients do not represent a random sample of the U.S. population, and that the data base contains very few police officers. Clinic patients are primarily white and college-educated. However, a recent study published by the Centers for Disease Control and Prevention (CDC) showed that median cardiorespiratory fitness levels of men and women who were randomly selected to participate in the National Health and Nutrition Examination Survey (NHANES) were actually similar to median values obtained in Cooper Clinic patients.

An older study (1992) performed by Penn State University showed that law enforcement professionals were below average with regard to cardiorespiratory fitness and percent body fat, but somewhat above average with regard to muscular strength. Other studies have shown that on average, officers die relatively early due to an increased prevalence of suicide, cancer, and cardiovascular disease. It is estimated that 80% of law enforcement professionals reach full retire-



ment age, 14% take early retirement or go on disability, and 6% die during employment. Most agencies report that cardiovascular disease, orthopedic problems such as back injuries, and stress disorders (anxiety, depression) are the major reasons for disability and early retirement. There is broad consensus that a lack of physical fitness is a strong predictor of disability, early retirement, and premature death. Because of this, many professional groups such as IACP and various state peace officer standards and training councils have proposed policy changes to counteract the adverse effects of low physical fitness in the law enforcement population. In fact, the IACP has stated that “the functions of a law enforcement agency require a level of physical fitness not demanded by many other occupations, and fitness requirements should be specified.”

## **Background Questions Regarding Physical Fitness Testing**

### **1. Why be concerned with physical fitness?**

- It relates to the ability of officers to perform essential functions of the job.
- It relates to minimizing the risk of excessive force situations.
- It relates to minimizing the known health risks associated with the public safety job.
- It relates to meeting many legal requirements to avoid litigation and having a defensible position if challenged in court.
- It relates to the ability to **perform the emergency function.**

Studies performed by the FBI have shown that a key factor for police survival in shooting situations is physical fitness level. A California POST study showed physical conditioning as being significant in reducing police injuries and deaths. It is often stated that the question is not if a physical confrontation will occur, but when. In short, physical fitness is a proven component of law enforcement readiness, and one of the officers prime street encounter survival tools.

### **2. What is the difference between mandatory and voluntary fitness testing?**

With mandatory testing, all sworn officers must be tested, and typically there is a standard that must be met. With voluntary testing, individuals can choose whether or not they want to be tested, and there is no standard to be met. Oftentimes with voluntary testing, only those who are currently physically fit choose to be tested. Thus, voluntary testing does not typically address the issue of low physical fitness levels within an agency.

### **3. What constitutes valid and defensible physical fitness tests, standards and programs?**

There are legal requirements regarding physical fitness testing. The Civil Rights Acts of 1964 and 1991, as well as the Americans With Disabilities Act and other legislation requires that fitness tests, standards, and programs must be:

- job related
- scientifically valid (the test must measure what you say it is measuring)



An important component of this legislation is that physical fitness tests and standards can discriminate if job-relatedness is established and documented. In fact, the very purpose of physical fitness testing and standards is to identify who can and who cannot perform critical and essential physical job functions.

### A. Requirements for Job-Relatedness

- A fitness component (or fitness area) must be an *underlying factor* for performing essential and/or critical physical functions of the job. It must demonstrate **construct validity**.
- A fitness component (or fitness area) must *predict* who can and who cannot perform the essential and/or critical physical functions of the job. It must demonstrate **criterion validity**.

### B. Requirements for Scientific Validity

- Fitness tests/standards/programs must have evidence that they are accepted within the field of exercise science as being valid and as meeting the “standard of ordinary care” of The American College of Sports Medicine (ACSM).
  1. The fitness tests are accepted as valid measures of the fitness areas (construct validity).
  2. The fitness tests must be accurate and reliable measures of the fitness area tested.
  3. The fitness standards predict who can and who cannot perform the essential and/or critical physical functions of the job (criterion validity).
  4. The fitness programs are defined and implemented according to ACSM guidelines for safe exercise training.

## 4. Is physical fitness job related and can it be scientifically validated?

Yes. Results of several public safety validation studies consistently show 20-30 moderate to strenuous and critical physical tasks that are job related. These tasks are necessary to perform essential functions of the job. There is ample data to document that physical fitness components are the underlying and predictive factors for performing tasks such as:

Sustained Pursuit	Aerobic Power
Sprints	Anaerobic Power
Dodging	Aerobic/Anaerobic Power/Flexibility
Lifting and Carrying	Muscular Strength/Muscular Endurance/Anaerobic Power
Dragging and Pulling	Muscular Strength/Muscular Endurance/Anaerobic Power
Pushing	Muscular Strength/Muscular Endurance/Anaerobic Power
Jumping and Vaulting	Anaerobic Power/Leg Power and Strength
Crawling	Flexibility/Muscular Endurance/Body Fat Composition
Use of Force <2 minutes	Anaerobic Power/Muscular Strength/Muscular Endurance
Use of Force >2 minutes	Aerobic Power/Muscular Strength/Muscular Endurance



## More Specific Questions Regarding Physical Fitness Assessment

### 1. What fitness test battery accurately measures the underlying fitness areas?

Aerobic Capacity (Cardiorespiratory)	1.5 Mile Run ***
Anaerobic Power (Sprinting Ability)	300 Meter Run ***
Anaerobic Power (Explosive Leg Strength)	Vertical Jump***
Muscular Strength (Upper Body)	1RM Bench Press ***
Muscular Endurance (Upper Body)	1Minute Push Ups **
Muscular Endurance (Core Body)	1 Minute Sit Ups **
Muscular Strength (Lower Body)	1RM Leg Press*
Flexibility (Lower Back and Hamstrings)	Sit and Reach*
Body Composition (Percent Body Fat)	% Fat (caliper/underwater weighing/impedance)*

\*\*\* Is highly predictive of performing job tasks in all cases

\*\* Is predictive of performing job tasks in most cases

\* Is not predictive or is predictive in only a few cases

### 2. What does The Cooper Institute recommend as a fitness test battery?

The fitness test battery for which standards are enforced should contain only those items that measure both the *underlying* fitness components (they have construct validity) and *predictive* fitness components (they have criterion validity). The tests applied must have the validity to predict an officer's ability to perform essential and critical physically demanding tasks regardless of age, gender, ethnicity, or any disability that might be present.

#### The Cooper Institute Recommended Fitness Test Battery

- Vertical Jump
- 1 RM Bench Press
- 1 Minute Sit-up
- 300 Meter Run
- 1 Minute Push-up
- 1.5 Mile Run

### 3. What about testing for body fat and flexibility?

These two fitness components do not function as significant predictors of a person's ability to perform essential tasks in public safety work. It is suggested that you continue testing for flexibility to help prevent injuries and to maintain good posture and range of motion, but you should not use flexibility testing as a standards qualification for selection, training or maintenance. Also, as long as cardiorespiratory fitness level (aerobic capacity) and strength are measured, a body fat measurement is not needed. It does not provide any additional information about the ability to do the job and it is a "red flag" for potential ADA litigation (as a handicapping condition). Body fat





measurement can be provided as feedback to be factored into an appearance evaluation within an academy setting or for an incumbent performance review, but it should not be used as a “stand alone” mandatory fitness standard.

#### **4. What about using the leg press test?**

The ability of the leg press test to predict an officer’s job performance was marginal in some studies and not present in others. There is an additional problem in using the leg press test because there is considerable variability among leg press machines. The vertical jump was clearly predictive and this is the test we now recommend.

#### **5. What is an alternative to the 1.5 mile run?**

The 12 minute run test is an accurate measure of aerobic capacity and can be substituted for the 1.5 mile run. If the officer is permanently disabled and unable to run, there should be a review to determine if the officer is able to continue serving in a position that requires running as an essential task. On a temporary basis, however, we recommend using either the maximum Schwinn Air-Dyne test or the maximal treadmill exercise test as an alternative to the 1.5 mile run for mandatory programs. The one mile walk test with heart rate monitor can also be used on a temporary basis. However, as with any fitness test, the one mile walk is only valid if the individual puts forth a maximal effort during the entire test.

#### **6. Should the bench press and the push up tests be administered?**

The bench press test is a measure of upper body muscular strength and the push up test is a measure of upper body muscular endurance. Both strength tests measure upper body strength, are highly correlated, and function as predictors of job performance. Some departments choose to use the bench press and push up tests, while others use only one test to measure upper body strength. If both tests are used, do not administer them consecutively.

#### **7. What can be substituted for the Universal DVR machine?**

Since the norms were established using the Universal DVR machine, no other weight training machine will be accurate. However, you may test with free weights and use the conversion formula (developed by The Cooper Institute) that allows you to use the Universal bench press norm chart. The conversion formulas are as follows:

Males: Estimated 1RM Universal =  $(1.016 \times \text{free weight 1RM}) + 18.41$

Females: Estimated 1RM Universal =  $(.848 \times \text{free weight 1RM}) + 21.37$

Note: Because males and females differ in terms of amount of lean muscle mass, there are different equations to convert the bench press scores accurately. The standard, however, for the bench





press is the same for males and females. It is similar to determining body fat measures for males and females. The sites for measurement are different but both protocols will result in a body fat measurement that is accurate for that person.

### **8. What changes in the test battery can be made if a voluntary program is applied instead of a mandatory program?**

If your department has mandatory compliance to standards/programs, then the recommended fitness battery should be used and all protocols should be followed exactly. If your program is voluntary, then you have certain other test options that are available such as a sub-max bike test or a one mile walk test with no heart rate monitor as a cardiorespiratory fitness measure. Although these tests are a little different from the recommendations for a mandatory program, they reflect a good measurement of the fitness components. The scores can provide a baseline for training and improvement. The voluntary test battery can also include the sit and reach test and percent body fat determination.

### **9. What about changing how a test is delivered such as cupping the ears or crossing the hands over the chest for the sit up test?**

The validity and accuracy of any test is compromised if the procedure for administering the test is altered in any way. In other words, if a test protocol is changed, the test results are invalid. All test protocols must be followed exactly in the same manner that was used to establish the norms. For example, The Cooper sit up test protocol requires the person to interlock the fingers and place them behind the head. However, the individual should be instructed not to pull on the neck and should be monitored during the test. There is no data which demonstrates that individuals are injured during the sit up test when proper screening and test protocols are followed.

### **10. What about using job task simulation (JTS) tests?**

We generally do not recommend job task simulation (JTS) tests because they are not as accurate and predictive of physical ability as fitness tests. A job task simulation test battery, which is also known as an obstacle course or agility test, accounts for only 20-25% of performance for all critical and essential physical tasks. These tests do not discriminate or predict well, and do not measure fitness. A fitness test battery is far more predictive of an officer's ability to perform critical and essential job tasks and is more defensible if challenged in court. If your department chooses to use job task simulation tests, then we recommend that it be used in combination with fitness testing. Agencies should use only job task simulation tests that have been validated in a research study.

## **Legal Issues: Background**

We have already established that the rationale for physical fitness in law enforcement is physi-



ological readiness to perform the emergency function, and that the purpose of fitness testing is to identify who can and who cannot perform essential physical job tasks. We will now explain some important terminology:

- 1) Frequency: how often a job-related task is performed
- 2) Criticality: how crucial a job-related task is, regardless of how often it is performed

Example: Use of a firearm while on the job.

Other than for training purposes, most officers will not have to use their firearm during the course of their career. Thus, the frequency of firearms use in law enforcement is rated very low. However, it is indisputable that use of a firearm is a critical job task. Thus, firearm use is rated very high from a criticality perspective, and it is fairly simple to justify the time and expense devoted to firearms training.

Likewise, physical fitness for law enforcement professionals cannot easily be justified from a frequency perspective, as the job is fairly sedentary most of the time. There are however, on-duty situations which require an officer to make a rapid adjustment from rest to all-out physical effort. Thus, physical fitness in law enforcement is fairly simple to justify from the criticality perspective.

Critical physical tasks for law enforcement professionals were identified earlier in this section. Briefly, they include walking, running short and moderate distances, climbing stairs and ladders, jumping and dodging obstacles, lifting, carrying, dragging, pulling, pushing objects and people, use of restraining devices/holds, as well as short to moderate duration use of force.

- 3) Adverse Impact: when less than 80% of a protected class of employees (females and minorities) or potential employees pass a standard at the pass rate of white males.

Example: Let's say that a group of white males take a test and that 70% of them meet the passing standard. If we multiply their passing rate by 80%, we will identify the point where adverse impact against protected classes would be demonstrated. We'll show the math and explain the result below.

$70\% \times 80\% = 56\%$ . So, if less than 56% of a protected class pass the same test, then adverse impact on that protected class has been demonstrated. However, adverse impact is not illegal if the agency can demonstrate that the test and the passing standard are job-related.

- 4) Validity: If a test measures what you say it is measuring, then the test is said to be valid.

There are 3 types of validity; content, construct, and criterion. As long as a fitness test shows any of the 3 types of validity, it can be used in a mandatory test battery.



Content validity: the test matches the essential job-related task.

Examples: A dummy drag test matches the essential job-related task of dragging an individual. A JTS typically matches several job-related tasks such as running, climbing, crawling, dragging, carrying, etc.

Construct validity: the test measures an underlying factor that enables the individual to successfully accomplish the essential job task. For example, having an acceptable level of upper body strength enables an officer to successfully accomplish several essential job tasks such as pulling, pushing, lifting, dragging, carrying, etc. The push-up test is a valid test of upper body strength, and thus shows construct validity. The push-up test does not show content validity because the officer would not perform push-ups during the course of a normal shift.

Criterion validity: the test measures a factor that predicts the ability to successfully accomplish the essential job task. For example, having an acceptable level of performance in the 1.5 mile run (a measure of cardiorespiratory fitness) is predictive of an officers ability to successfully perform sustained pursuit, then to be able to successfully engage in use of force. Thus, the 1.5 mile run shows criterion validity. One could also say that the 1.5 mile run shows construct validity as well. Without a doubt, there is overlap between construct and criterion validity. The 1.5 mile run does not show content validity because it is very unlikely that an officer would ever have to run 1.5 miles during the course of a normal shift.

To summarize, while the recommended Cooper Institute fitness test battery does not show content validity, it clearly shows construct and criterion validity.

## Questions Regarding Legal Issues

### 1. What are the legal requirements regarding tests, standards and programs?

Tests/standards/programs cannot discriminate against protected classes (females, minorities, handicapped or older adults) as defined by the Civil Rights Acts of 1964 and 1991, the Americans with Disabilities Act (ADA) and the Age Discrimination in Employment Act (ADEA).

**However, if job relatedness is established and documented, then the fitness tests, standards and programs can discriminate against anybody. It is important to implement tests/standards/programs that do discriminate between those who can and cannot do the job regardless of age, gender, ethnicity, or handicap condition.**

### 2. What about legal concerns of liability and negligence?

There are two levels of legal concern:

- The *first* concern revolves around potential negligence by the agency in the delivery of the fitness tests/standards/programs. The concern here is safety. The agency must docu-



ment in writing the policies and procedures that meet the “standard of ordinary care” as demonstrated by following ACSM guidelines.

- The *second* concern revolves around the liability of an agency for not having tests, standards and programs. An agency that does not address the fitness requirements and needs of officers is susceptible to litigation for the following:
  - a. Negligent hiring: failure to hire applicants who are fit to do the job.
  - b. Negligent training: failure to train recruits and incumbents so that they are physically capable of doing the job.
  - c. Negligent supervision: failure to supervise incumbents to ensure that they can meet the physical demands of the job.
  - d. Negligent retention: failure to reassign officers who cannot meet the physical demands of the job.

Note: There has been one court case (Parker vs Washington, DC Police Department 1988) in which the agency was found negligent for not requiring a physical fitness program for officers.

### 3. Are The Cooper Institute tests and norms defensible in court?

The Cooper tests have scientific evidence for having construct and criterion validity as measuring job related factors and are defensible.

- The Cooper age-gender norms are scientifically valid in terms of describing the fitness levels of various age-gender groups.
- **Absolute cutpoints** (single standard for all) for the Cooper tests have been found to be job related and defensible if validated for a specific agency.
- Using **percentile rankings** of the Cooper age-gender norms for standards is not as defensible. The percentile rankings do not predict the ability to do the job and do not demonstrate criterion validity as well as using absolute cutpoints.

## Questions Regarding Fitness Standards

### 1. Are separate age and gender standards acceptable for mandatory programs?

Not according to the Civil Rights Act of 1991. Section 106 of this law addresses the issue of Same Job=Same Standard:

“It shall be unlawful employment practice for a respondent, in the connection with the selection of referral of applicants or candidates for employment or promotion, to adjust the scores of, use different cutoff scores for, or otherwise alter the results of, employment related tests on the basis of race, color, religion, sex or national origin”



We at the Cooper Institute are fitness experts, not legal experts. However, in our opinion it would appear that the use of age and gender standards with percentile rankings are in conflict with this law if applied as mandatory standards for selection (academy entrance), completion of training (academy exit) or maintenance programs for incumbents.

The age and gender based fitness norms were commonly used in the past to set standards because there was no data to suggest a single standard cutpoint (absolute standard). Likewise, agencies and the court accepted age and gender based norms because they did appear reasonable and they minimized adverse impact against protected classes. However, with a required emphasis on job-relatedness brought about by the Civil Rights Act of 1991 and the ADA, the age and gender based norms are likely not as defensible in court as they were prior to this legislation.

## **2. What standards are recommended?**

If the goal of your agency is to be in compliance with the Civil Rights Act of 1991, absolute standards (single cutpoints for everyone) are recommended. Same job=Same standard makes sense to most people. However, the use of absolute fitness standards will likely demonstrate adverse impact against females. Thus, it is important that the standards be validated and that the test cutpoints predict who can and cannot do the job. Even if adverse impact is shown, if the standards have evidence for their validity, they should be upheld if challenged in court.

If the goal of your agency is to promote diversity, then the use of age-gender norms as a fitness standard is probably the best approach. Although the use of such norms appears to violate the Civil Rights Act of 1991, these types of norms are much less likely to result in adverse impact against women. Consequently, there is less likelihood of litigation when agencies use age-gender norms. However, agencies need to be aware that the use of age-gender norms as a fitness standard is not as predictive of the ability to do the job as absolute standards.

## **Summary of Validation Studies**

The affiliates of The Cooper Institute (Fitness Intervention Technologies and FitForce) have conducted validation studies for over 180 federal, state, and municipal agencies. A summary of those validation studies was reported in Police Chief magazine (Collingwood, Hoffman, and Smith, March 2004, pages 32-37). The studies defined specific job-related fitness standards for each agency. There was a range of scores defined as standards for the various agencies. In other words, different standards were validated (identified) for each agency. However, the range was not very large. Here is the range of absolute standards recommended for each test for 180 federal, state, and municipal agencies combined:



Test	Range
1.5 mile run	14:40 - 15:54 minutes
300 meter run	64.3 - 66.0 sec
1RM bench press raw score	151 – 165 lbs
1RM bench press ratio	.78 - .84 of body weight
Push-up	25 – 34 reps
Sit-up	30 – 38 reps
Vertical Jump	15.5 – 16 inches

### 3. What standards should be applied within an agency?

There are three approaches that agencies have applied for setting standards. The approaches vary as to the degree that job relatedness is documented and to the extent that they can be defended in court. In evaluating the different approaches, it is important to keep in mind that the defensibility of any physical fitness standard is dependent upon the degree of documentation (data) that supports the standard as being predictive of performing critical physical job tasks for the specific agency.

- *Approach 1—Construct/Criterion Validation Study:* The **most defensible** fitness standards are those in which a validation study is performed for a specific agency. The results of the study should document which specific fitness test cutpoints should be the job standard. Those standards would be the same for academy graduation job standard. Those standards would be the same for academy graduation (recruits) and for maintenance (incumbents). Assuming a valid, safe, and effective PT program is part of the academy experience, improvements in recruit fitness levels are likely to take place during the weeks spent in the academy. Thus, the selection standards for academy entrance can be set at a score that is lower than the exit standard for test items. For example, if performing 30 sit ups in one minute is required for academy exit and for maintenance, then a reasonable selection standard for entrance into the academy might be approximately 20 sit ups.

It should be noted at this point that a validation study is the most expensive option for an agency to choose.

- *Approach 2—Transferability Study:* The next most defensible fitness standards are those which have been based on a “commonality study.” This study documents that an agency has a strong degree of commonality (or similarity) to an agency (federal, state, or municipal) for which there are validated standards. This can be accomplished by doing a commonality analysis. An evaluation is made by comparing job analysis information and job descriptions. After the study is complete, then the agency simply “adopts” the standards of another agency that has completed a validation study. This approach is less expensive but is also somewhat less defensible.



- *Approach 3—Applying Another Agency’s Absolute Standards:* With this approach, an agency applies the standards validated from another agency that is considered a “similar” type department (i.e. a municipal agency adopts another municipal agency’s standards). This approach has no cost associated with it because there is no commonality analysis and no validation study conducted to provide cutpoints specific to that agency. Therefore, this approach is the least defensible of the three approaches discussed thus far. If challenged, the agency’s only defense is to provide documentation (with data) that the physical demands of the job are essentially the same as the agency whose standards were adopted. Without those data, there is no defensibility.

#### 4. What about using percentile rankings of the age-gender fitness norms as standards?

No. Several years ago, The Cooper Institute recommended using age and gender norms with the 40<sup>th</sup> percentile as the standard for academy entrance and the 50<sup>th</sup> percentile as the standard for academy exit and for incumbents. In other words, there were different standards for various age-gender groups. Because of legislative changes requiring Same Job = Same Standard, CI feels that this approach is no longer defensible. At the request of many agencies, we collapsed our age-gender general population norms and our age-gender law enforcement norms into 2 separate tables. Thus, the physical fitness scores of men and women of all ages are contained in these tables; which contain percentile rankings. This type of table is sometimes known as a ‘single norm’. Some agencies have chosen to use the single norm tables, with the 40<sup>th</sup> or 50<sup>th</sup> percentile often used as the fitness standard. The age and gender norms and single norms represent a ranking of fitness scores from the 99<sup>th</sup> to the 1<sup>st</sup> percentile. The percentile scores (whether age and gender norms or single norms) have limited validity data for predicting who can and who cannot do the job. Consequently, they pose problems if used as a *mandatory* standard for selection, training or maintenance. They do not pose a significant legal problem if used to set *voluntary* standards.

- **Age and Gender Norm Standards Using Percentile Ranking**

**Description:** The standard is dependent on the individuals age and gender. As an example, the fitness standard for 20-29 year old males is different than for 20-29 year old females.

Most agencies use the 40<sup>th</sup> or 50<sup>th</sup> percentile as the standard when utilizing this approach  
*Advantage:* These standards should minimize adverse impact against females and thus avoid potential litigation. In other words, these standards help ensure diversity.

*Disadvantages:* If challenged in court, there is no defense that the age-gender percentile rankings effectively identify who can and who cannot perform essential physical job tasks. Furthermore, this approach appears to be in violation of the Civil Rights Act of 1991.

- **Single Norm Standards Using Percentile Ranking**

*Advantage:* These standards require the same level of performance regardless of age and gender (Same Job = Same Standard).

*Disadvantages:* These standards will probably demonstrate adverse impact on females





and, if challenged, there is limited data to support that the percentile rankings are job related. There is limited data to support that these standards predict capability to do the job.

### **5. Can an average of scores on the fitness battery be used as standards?**

No. If fitness test scores are used as mandatory standards, then each test must be treated separately. Each fitness test measures a specific fitness component required by the officer to perform the essential job functions. Therefore, the officer must meet the cutpoint score for each fitness test. For voluntary standards, however, an average score is acceptable.

## **Questions Regarding Fitness Programming**

### **1. Should on-duty time be allowed for incumbents to train?**

Some agencies allow three hours a week on-duty time to train. This provision encourages and motivates officers to exercise. Some type of monitoring system is needed to ensure that the officers are using that time for exercise. A court case decision by the Ohio Supreme Court (FOP vs Ohio Highway Patrol, 1983) stated that the agency did not have to provide facilities, equipment or on-duty time for officers to train although the agency had mandatory fitness qualifications.

### **2. What are the steps to develop and implement a physical fitness program?**

A good starting place is to send an officer through the Law Enforcement Fitness Specialist course conducted by The Cooper Institute. This week-long course will prepare the officer to be a fitness coordinator who can set up a testing and training program in the department. Each department will have to make a decision whether to use age and gender standards, single standards or absolute standards. Advantages and disadvantages of each have been delineated in this text. We recommend the absolute standards that are *valid* and *defensible* because they are *job related* and *scientifically valid*. Next, determine if the program will be voluntary or mandatory compliance or a combination of the two. For example, some agencies have mandatory compliance for academy exit and voluntary programs for incumbents, or mandatory testing but voluntary compliance for incumbents. Looking toward the future, some agencies will implement mandatory compliance to fitness standards throughout an officer's career because it is the right thing to do to ensure that officers are fit for duty. Agencies must give their officers a fair chance to prepare for the implementation of mandatory fitness standards/programs. Applicant and recruit fitness standards/programs may be implemented at any time. Incumbent fitness standards/programs should be phased in over time. "Grandfathering" of incumbents is not recommended because it undermines the basic premise that physical fitness is job related.



## CONCLUSION

A given agency has the latitude to implement physical fitness testing, standards and programs. No one can legitimately argue that physical fitness is not job related. The key issue and the one necessitating considerable planning, thought, research and effort is **what level of physical fitness is required to do the job?** In other words, which fitness cutpoints or standards will be chosen and implemented. The standards your agency selects for applicants, recruits and incumbents has legal, scientific and practical issues. The recommendations put forth by The Cooper Institute reflect our judgment as to the legal and scientific validity requirements for tests, standards and programs. However, your department's legal and HR specialists should be included when fitness testing, fitness standards, and policies are being made.

### Top Ten Physical Fitness Policy Checklist

- 1. Are the purposes and goals clearly defined?**  
(What do we want to do?)
  - The goals are expressed in terms of ensuring the physical performance capabilities of officers.
- 2. Is the rationale behind the purposes and goals clearly defined?**  
(Why do we need to do it?)
  - The rationale is expressed in terms of job-relatedness.
- 3. Has the job related validity for the tests, standards and programs been demonstrated and documented?**  
(Why is it valid and job related?)
  - There is documentation from a validation study or process to support the selection of the tests, standards and programs.
- 4. Are the personnel subject to the policies and programs identified from the top down?**  
(Who needs to do it?)
  - Ideally, all sworn personnel are required to meet the policy.
- 5. Are the personnel responsible for implementing and supervising the program identified?**  
(Who delivers the program and how are they trained, certified and supervised?)
  - Ideally, a fitness coordinator has been trained and certified as a Law Enforcement Fitness Specialist to implement a fitness program based on the standard of ordinary care according to ACSM.
- 6. Are the primary fitness components of the program clearly identified and explained?**  
(What is the program?)
  - screening



- assessment
- goal setting
- exercise prescription
- education
- trained leadership

### **7. Are the operational components of the program clearly defined and explained?**

(What occurs in the program and which agency operations are affected?)

- There is a detailed process flow chart.
- There is a defined officer fitness selection process.
  - selection testing
  - selection standards
  - job descriptions and job announcements
- There is a defined recruit fitness training curriculum.
  - academy objectives
  - entry and exit testing
  - curriculum
  - graduation standards
- There is a defined incumbent fitness maintenance program.
  - in-service training and education (meeting ACSM guidelines)
  - periodic fitness assessment (meeting ACSM guidelines)
  - standards compliance process and procedures (incentives, progressive sanctions)
  - personnel performance review system
  - medical “fit for duty” review
  - specification of limited duty assignments
  - remedial programming

### **8. Is the implementation process with timelines defined?**

(How will the program be phased in?)

### **9. Are the organization’s responsibilities specified?**

(What is the expectation of the agency?)

- provision of screening and assessment
- provision of education
- provision of trained fitness leadership
- provision of on-duty time for training, if appropriate
- provision of facilities and equipment, if appropriate
- record keeping
- program evaluation
- ensuring job descriptions and officer evaluation reports reflect the need for fitness
- supervision of incentive and/or compliance process



### 10. Are the individual officer's responsibilities defined?

(What is the expectation of the officer?)

- acquire and maintain the necessary fitness level
- participate in assessment and education/training activities
- participate in remedial training as deemed necessary

## OPTIONS FOR FITNESS TESTING AND STANDARDS IN LAW ENFORCEMENT

Law enforcement, military and other public safety organizations often require their applicants, trainees, and incumbents to maintain a certain level of physical fitness to be “fit for duty.” Job-related duties require an individual to be prepared to perform optimally in certain situations with strength, stamina, speed and power.

There is no governing body that dictates to organizations how they are to implement fitness tests, choose their fitness standards, or implement their fitness programs.

Some organizations have voluntary fitness testing with recommended standards that are not enforced (voluntary compliance). Other organizations have mandatory compliance for fitness tests and standards, meaning that the individual will not be hired or will be fired if fitness standards are not met or maintained. Still others have mandatory testing but voluntary compliance to fitness standards.

Furthermore, organizations often differ in fitness requirements for applicants, trainees and incumbents. For example, some law enforcement departments require their academy graduates to meet a fitness standard, but the incumbent officer is never tested for fitness again. The Cooper Institute has the opinion that fitness should be maintained throughout an individual's career, if his or her job requires a readiness to respond physically. Currently, there are many approaches that are being used successfully to accomplish this purpose. One of the main concerns, however, is to avoid litigation brought about because of unfair standards or perceived inequalities. There is no *foolproof* solution to avoid litigation, but we hope to provide you with the pros and cons to each approach.

What follows are basic definitions often used to implement fitness tests & standards and a chart to indicate some of the options or scenarios currently used by different organizations:



## Definitions

*Fitness Norms:* a representation of how individuals compare to one another with regard to performance on physical fitness tests. The Cooper Institute has one of the largest and most valid data bases in the world with respect to fitness norms for age and gender.

*Fitness Standards:* minimal scores that must be attained on each physical fitness or job task simulation test to indicate that an individual can perform his/her job. Organizations generally determine which standards they choose to use.

*Percentile Rankings:* a number that tells individuals what percentage of the group scored worse than them. For example, if someone scores at the 40<sup>th</sup> percentile, then 40% of the group scored worse and 60% of the group scored better.

*Age & Gender Norms:* a representation of how individuals in a specific age and gender group compare to one another with regard to performance on physical fitness tests. Example: a norm chart of Males 20-29 years old will contain fitness scores for individuals in this age and gender group and indicate if they have scored Superior, Excellent, Good, Fair, Poor or Very Poor and will give percentile rankings for each category as well.

*Single Norms:* use of percentile rankings after all ages and both genders are combined into a single norm chart.

*Absolute Standards:* minimal scores or “cutpoints” that have been determined in law enforcement validation studies as the fitness standard that must be attained by everyone regardless of age, gender or handicapping conditions for the person to be considered “fit for duty.” Note: Organizations determine absolute standards by three methods: 1) they conduct a “validation study” for their own department; 2) they perform a “transferability study” by comparing their commonalities to an organization that has completed a validation study and (if comparable) they adopt or “transfer” those absolute standards; or 3) they informally adopt absolute standards conducted by other organizations if they perceive their organization to be similar in job tasks.

*Job-Task Simulation:* a test that incorporates specific physical tasks that an individual is likely to perform on the job. In law enforcement, such a test might include tasks such as climbing a wall, pushing a vehicle, dragging a dummy, and so on. These tests are often called obstacle courses or agility tests. Some departments develop a test and set a standard while others conduct a formal Job Task Simulation Validation Study.



## OPTIONS FOR FITNESS TESTS AND STANDARDS

	Applicant	Trainee/Academy	Incumbent
<i>Fitness Standards</i>	1. Age X Gender 40 <sup>th</sup> *	Age X Gender 50 <sup>th</sup> *	Age X Gender 50 <sup>th</sup> *
	2. Age X Gender 40 <sup>th</sup> *	Single 50 <sup>th</sup> *	Single 50 <sup>th</sup> *
	3. Single 40 <sup>th</sup> *	Single 50 <sup>th</sup> *	Single 50 <sup>th</sup> *
	4. Age X Gender 40 <sup>th</sup> *	Absolute**	Absolute**
	5. Absolute** (10-15% lower)	Absolute**	Absolute**
<i>Job-Task Simulation</i>	1. Job Task (same as incumbent)	Job Task (use fitness tests for programming)	Job Task (use fitness tests for programming)
	2. Job Task (10-15% lower ) than incumbent	Job Task (use fitness tests for programming)	Job Task (use fitness tests for programming)
<i>Fitness &amp; Job Task Combinations</i>	1. Age X Gender 40 <sup>th</sup> * (trainability)	Single 50 <sup>th</sup> * (Job Task used when 50 <sup>th</sup> is not reached)	Single 50 <sup>th</sup> * (Job Task used when 50 <sup>th</sup> is not reached)
	2. Age X Gender 40 <sup>th</sup> *	Job Task	Job Task (use fitness tests for programming)
	3. Absolute** (10-15% lower than incumbent)	Job Task (use fitness tests for programming)	Job Task (use fitness tests for programming)
	4. Single 40 <sup>th</sup> *	Single 50 <sup>th</sup> * (use fitness tests	Job Task  for programming)
	5. Single 40 <sup>th</sup> *	Job Task	Single 50 <sup>th</sup> *
	6. Absolute**	Job Task	Job Task

\*Derived from Cooper norms using percentile rankings as the standard

\*\*Absolute standards derived from law enforcement validation studies using Cooper tests

Note: Job Task Tests are obstacle-course type of tests that may/may not be validated



## SUMMARY CONCEPTS

With regard to physical fitness and law enforcement, there have been many significant legal, scientific, program, and policy changes over the past four decades.

The nature of police work can contribute to a lack of both physical fitness and overall wellness. Little day-to-day physical activity, irregular schedules, fast food, and stress are among the contributing factors.

The Cooper Center Longitudinal Study (CCLS) is the oldest and largest ongoing study of its kind. Since 1971, over 100,000 patients have undergone comprehensive physical examinations at the Cooper Clinic. These patients are followed over time for morbidity (illness) and mortality (death). Over 600 CCLS papers have been published in peer-reviewed medical journals since 1971.

The CCLS has shown repeatedly that having a moderate to high level of cardiorespiratory fitness significantly decreases the risk of developing coronary artery disease, type 2 diabetes, hypertension, certain cancers, and metabolic syndrome.

The physical fitness level of an officer relates to his/her ability to perform the emergency function.

Physical fitness tests and standards must be job-related and scientifically valid.

Critical physical job tasks in law enforcement include pushing, pulling, lifting, carrying, dragging, jumping, vaulting, crawling, sprinting, use of force, and sustained pursuit.

The Cooper Institute recommended physical fitness testing battery includes vertical jump, 1RM bench press, 1 minute sit-up, 300 meter run, and 1.5 mile run. This has been our recommended test battery since approximately 2000.

Body fat and flexibility can be measured for educational purposes, but individuals should not be held to a standard for these items. By themselves, they are not strongly predictive of the ability to perform essential physical tasks.

Frequency refers to how often a job-related task is performed. Criticality refers to how crucial a job-related task is, regardless of how often it is performed.

Adverse impact occurs when less than 80% of a protected class of employees pass a standard at the pass rate of white males. Adverse impact is not illegal, but the passing standard must not be arbitrary.

A test is said to be valid if it measures what you say it is measuring.





Content validity is shown when the test matches the essential job-related task. An example of a test that shows content validity is a dummy drag, which matches the job-related task of dragging an individual.

From a physical fitness perspective, negligent training is defined as the agency's failure to train recruits and incumbents so that they are physically capable of doing the job. Similarly, negligent retention is defined as the failure to reassign officers who cannot meet the physical demands of the job.

There are several approaches to implementing physical fitness standards. Each approach has advantages and disadvantages.

The most defensible fitness standards are those in which a validation study is performed for a specific agency. A disadvantage of this approach is the expense involved.

Many agencies continue to use age and gender norms with percentile rankings to determine physical fitness standards. An advantage to this approach is that it helps prevent adverse impact on females. A disadvantage to this approach is that it seems to violate the Civil Rights Act of 1991.

Using the same physical fitness standards for both genders and all ages is called an absolute standard. The rationale for this approach is that since the job is the same for everyone, the same tests and same passing standard should be used for everyone. The advantage to this approach is that it helps ensure a physically fit department. A disadvantage to this approach is that it is more likely to lead to adverse impact on females.

The Cooper Institute is not a policy making organization. Your agency's chief, attorneys, and HR staff must decide on which approach to physical fitness testing and standards will be used.

