SECTION D

PHYSICAL PERFORMANCE PROFILES

The major focus for validating standards is the data from the fitness testing and the officer performance on job task scenarios.

Current study's data

Validation testing was performed on a sample of 201 incumbent law enforcement officers from all 19 participating agencies. The sample tested was representative of all officers in the total data base of 882 officers from the 19 agencies. Officers selected were stratified by age (decade) and gender for the total data base. Likewise, officers chosen for testing were randomly selected (within each stratification category) from the 19 agencies based upon the number of officers each agency could release for testing. Of those 201 officers tested, only 180 completed both the job task simulation scenarios and the fitness tests due to weather related test cancellations and scheduling conflicts. As a consequence the data reported will only be on the 180 officers from which there is complete data. Those 180 officers, while a smaller sample, still are representative of the total sample in terms of gender and age.

Table D1 contains the demographic breakdown of the sample of 180 and the median (50th percentile) scores on all then fitness and job task simulation tests. The first column are the data for the total sample followed by the data from each agency. Plain City is not represented because the one officer selected from that agency failed to complete all tests.

TABLE D1
PHYSICAL FITNESS TEST PERFORMANCE

Agency		Total Sample	Brig. City	Cedar City	Center ville	Esca lanti	Kanab City	Layton City	Maple Ton		
N		180		6	8	4	1	2	16	1	
Gender	Male	93.3%		83.3%	100%	100%	100%	100%	93.7%	100%	
	Female	6.7%		16.6%	0%	0%	0%	0%	6.3%	0%	
Age (years)		34.8		31	30.5	35.5	23	32.5	31.5	47	
Race	White		91.1%		83.3%	100%	100%	100%	100%	93.8%	100%
	Black		1.7%		0%	0%	0%	0%	0%	6.2%	0%
	Hisp.		5.5%		16.6%	0%	0%	0%	0%	0%	
	Other		2.7%		0%	0%	0%	0%	0%	0%	
Years experience					10.3	7.6	7.8	1.0	8.8	6.8	3.5
Flexibility (in.)			17.0		15.4	16.7	19.5	17.8	19.4	15.3	15.5
Vertical jump (in.)			17.4		18.0	17.5	18.0	20.5	18.8	18.0	14.0
Sit-Ups (reps)			38		35	41	36	34	40	39	26
Push-Ups (reps)			30		28	40	27	15	33	36	26
1.5-Mile Run (min. and sec.)			15:05		15:34	15:35	16:06	20:00	14:48	13:36	17:40
300-Meter Run (sec.)			64.3		67.0	51.0	75.0	63.0	53.5	62.0	84.0
Illinois agility run			17.9		18.0	17.5	18.4	17.4	17.2	16.9	20.4
1 RM bench press raw(lbs.)			175		160	210	170	185	180	175	165
1 RM bench press ratio (lbs. pushed by body weight)			.88		.89	1.2	.91	.74	.96	.93	.89
% body fat			22.7		21.4	13.6	19.0	25.8	18.9	19.5	22.7
Clearing a roadway (sec.)			34.4		34.1	35.2	34.5	32.0	35.4	33.0	36.2
Extraction (sec.)			21.3		24.4	19.0	26.1	15.4	19.9	19.0	25.7
Pursuit (min.sec.)			3:31		3:30	3:01	3:56	3:33	3:03	2:53	4:26
Total time (min.sec.)			4:25		4:25	3:52	4:55	4:44	3:58	3:44	5:28

Agency		Mt. Pleasant	Ogden City	Orem	River dale	Roy City	South Jordan	Span. Fork	Spring ville
N		1	36	18	3	4	4	3	5
Gender	Male	100%	94.4%	100%	100%	100%	75%	100%	100%
	Female 0%	5.6%	0%	0%	0%	25%	0%	0%	
Age (years)		32.4	37	35.5	31	30	31	44	35
Race	White	100%	86.1%	83.4%	100%	75%	75%	100%	100%
	Black	0%	2.7%	0%	0%	0%	0%	0%	0%
	Hisp.	0%	8.3%	11.1%	0%	0%	25%	0%	0%
	Other		2.7%	5.5%	0%	25%	0%	0%	0%
Years experience		3.2	11.8	8.6	8.0	6.3	4.3	8.0	5.4
Flexibility (in.)		17.5	16.5	15.8	15.0	18.5	20.3	11.5	16.0
Vertical jump (in.)		12.0	15.0	17.0	16.0	21.0	16.0	16.5	18.0
Sit-Ups (reps)		45	37	35	39	41	33	30	34
Push-Ups (reps)		25	30	30	15	40	22	26	21
1.5-Mile Run (min. and sec.)		13:17	16:16	15:03	15:09	16:15	17:39	13:44	18:54
300-Meter Run (sec.)		51.0	74.0	62.0	77.0	64.0	67.0	67.0	69.0
Illinois agility run		17.9	18.8	18.2	18.6	17.6	18.9	18.9	17.9
1 RM bench press raw(lbs.)		145	185	153	135	265	150	145	165
1 RM bench press ratio (lbs. pushed by body weight)		.94	.88	.81	.62	.75	.83	.68	.74
% body fat		19.1	25.0	26.9	29.0	20.0	29.0	26.0	24.2
Clearing a roadway (sec.)		32.8	37.5	34.1	33.9	32.2	32.9	33.7	35.3
Extraction (sec.)		21.3	24.2	20.3	26.1	19.0	26.8	25.5	24.0
Pursuit (min.sec.)		3:24	3:40	3:37	3:43	3:03	4:06	3:24	4:25
Total time (min.sec.)		4:18	4:44	4:33	4:42	4:00	5:06	4:20	5:30

Agency		Unitah	West Jordan	West Valley
N		2	23	42
Gender	Male	100%	100%	85.7%
	Female 0%	0%	14.3%	
Age (years)		38.5	31	31
Race	White	100%	100%	88.1%
	Black	0%	0%	2.3%
	Hisp.	0%	0%	9.5%
	Other	0%	0%	0%
Years experience		3.4	5.1	7.6
Flexibility (in.)		13.0	18.5	18.0
Vertical jump (in.)		16.8	17.5	17.0
Sit-Ups (reps)		26	42	39
Push-Ups (reps)		13	40	30
1.5-Mile Run (min. and sec.)		17:00	13:32	14:42
300-Meter Run (sec.)		70.0	52.0	58.0
Illinois agility run		16.9	17.3	18.0
1 RM bench press raw(lbs.)		155	185	165
1 RM bench press ratio (lbs. pushed by body weight)		.69	1.0	.85
% body fat		23.5	18.8	24.0
Clearing a roadway (sec.)		36.0	31.7	36.8
Extraction (sec.)		27.0	18.0	21.8
Pursuit (min.sec.)		3:54	3:15	3:31
Total time (min.sec.)		5:01	4:05	4:25

Comparative analysis of test results

A major question is, ñWhat do the various physical performance test profiles mean?ò It is difficult to compare between agencies because of the small sample sizes from many of the agencies. In some cases the agency had only one subject tested. Consequently, an analysis of the test scores can only be made for the total sample results. In turn, the level of performance exhibited by the total sample of incumbents has no meaning until the test performance is compared to some "norm" performance.

Many of the various physical fitness tests employed in the study have age- and gender-based norms and/or norm sampling distributions from representative law enforcement populations. For the job-test battery, the trained Fitness Coordinators observed subjects undergoing the job-test battery and made a judgment as to the subjectôs effectiveness for completing each scenario. This procedure is discussed in Section G, Test Battery Score Standards Definition. For the various physical fitness tests, where normative data exists and can be compared, the median comparisons (%tile rank) will be made.

The comparisons that can be made are presented in Table D2. This table shows how the samplesô median scores on each test compare to each normative data base. The police norms are from the Cooper Institute for Aerobics Research (CIAR) law enforcement norms (Collingwood, Hoffman, and Sammann 1995) which are based on data from a stratified random sample of over 1500 law enforcement officers. Additional comparisons are provided with a CIAR sample of over 30,000 male and female subjects using both single standard general population norms and age and gender-based general population norms with median scores by age (decade).

TABLE D2
COMPARISON OF ADDISON INCUMBENT SAMPLE (MEDIAN PERFORMANCE)
TO FITFORCE AND CIAR NORMS

FITNESS VARIABLE	**CIAR POLICE NORMS**	**CIAR SINGLE POPULATION NORMS**	**CIAR NORMS (age x sex)**
	Incumbent	Incumbent	Incumbent
Sit and reach	45th%tile	50th%tile	55th%tile
Vertical jump	_____	_____	25th%tile
Sit-ups	70th%tile	80th%tile	55th%tile
Push-ups	45th%tile	75th%tile	60th%tile
1.5-mile run	35th%tile	40th%tile	15th%tile
300-meter run	50th%tile	_____	25th%tile
Agility run	_____	_____	45th%tile
1RM bench ratio	20th%tile	80th%tile	40th%tile
1RM bench weight	_____	_____	_____
% body fat	35th%tile	45th%tile	30th%tile

The conclusions from these comparisons are as follows:

1. The total sample officers scored higher than all other samples on sit ups.
2. The total sample officers scored lower than all samples on the 1.5 mile run, body fat, vertical jump and agility run.
3. There were mixed results for the measures of upper body strength. In terms of push ups the total sample officers scored higher than the general population samples but lower than the law enforcement samples. The 1RM bench ratio scores were higher than CIAR general population single norms but lower than the CIAR police norms and age and gender based norms.

4. The total sample officer 300 meter run scores were equal to the law enforcement sample but lower than the CIAR age and gender norms.
5. In terms of flexibility, the total sample officers scored lower than the law enforcement norm sample but were equal to or higher than the general population samples.

In summary, it can be concluded that incumbent officers of the 19 agencies have lower levels of cardiovascular or aerobic fitness, body fat, agility and lower body explosive strength than both the general population and other law enforcement agencies. However, incumbent officers have higher abdominal muscular endurance than both comparative groups. The mixed results of the upper body strength and muscular endurance, flexibility and anaerobic measures would suggest that incumbents may or may not have adequate fitness levels in those areas when compared to the various sample groups.

REFERENCES

1. Collingwood, T, Hoffman, R., and Sammann, P. (1995) The FitForce Coordinator Guide. Champaign, IL: Human Kinetics.

2. Cooper Institute for Aerobics Research. (1985) Physical Fitness Norms. Dallas, Texas.