



Tier 2 Physical Fitness Tests and Standards

Explosive Ordnance Disposal



April 2019

Explosive Ordnance Disposal (EOD)

Tier 2 Physical Fitness Test

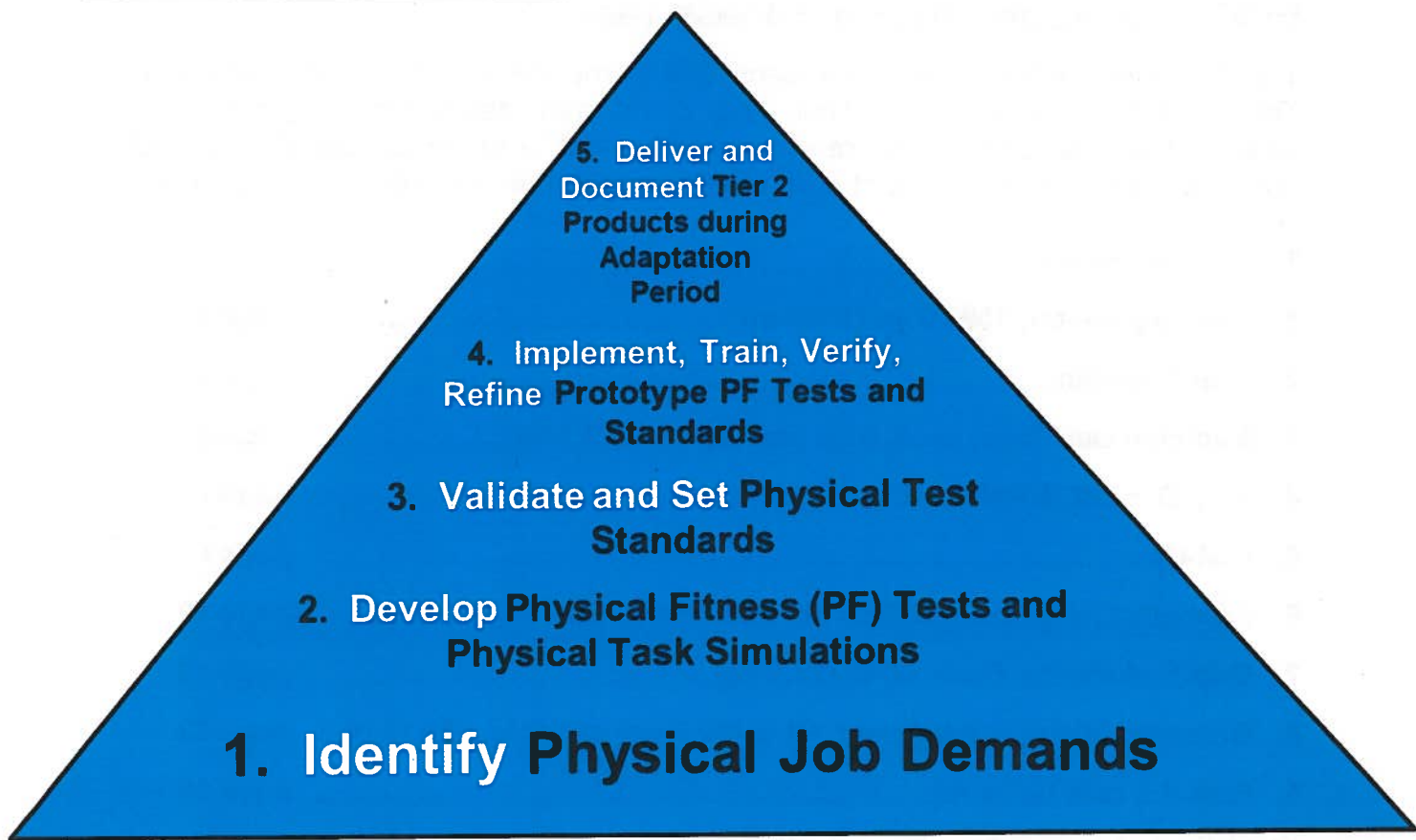
Introduction and Purpose

All US Air Force Airmen must maintain a necessary level of physical fitness to meet the science based standards of the Air Force Physical Fitness Assessment. We denote this assessment as a Tier 1 physical fitness test, designed with health criterion standards to ensure Airmen are present for duty in good health and general fitness. However, a Tier 1 level of fitness does not necessarily reflect specific military task achievement. Some Air Force (AF) occupations or AF Specialty Codes, including EOD, require higher and broader levels of physical fitness to meet the physical demands of their operational mission sets. Thus, such specialties need a set of physical fitness tests and standards based on their AFSC-specific physical duty requirements. We refer to these as Tier 2 occupationally-specific, operationally-relevant (OSOR) tests and standards.

Therefore, the EOD career field worked with the AF Exercise Science Unit (ESU) to conduct a multi-step research and development process to produce OSOR physical fitness tests and standards. The bona-fide occupational requirements process to develop Tier 2 physical fitness tests and standards includes five major steps (figure 1). With significant engagement of EOD technicians, the ESU identified, described, and quantified physically demanding job tasks (Step 1), used those tasks as a foundation to develop realistic physical task simulations and examined how well different physical fitness tests predicted performance on those simulations using Airmen from a range of occupational specialties and fitness levels (Step 2). Operational research analysts used statistical analyses to determine an optimal test battery or combination of physical fitness tests to predict physical readiness to perform AFSC-specific critical physical job tasks. The ESU then recruited a separate set of Airmen to complete the prototype physical fitness test battery and the physical task simulations to validate the test (Step 3). In conjunction with the EOD career field, the ESU implemented the EOD Prototype Physical Fitness Test at eleven world-wide EOD Flights to assess test feasibility, and conducted test-retest reliability work in the ESU Laboratory as well (Step 4). In the final step, the ESU documents the process and delivers final study products to include tests and standards at the recruit, accession, training, and operational levels. Via the Tier 2 Physical Training Leader and Exercise Principles and Methods courses, the ESU certifies EOD technicians to administer the EOD Tier 2 test and lead unit physical training programs (Step 5). These final actions run concurrently with a congressionally mandated adaptation period.

In summary, these Tier 2 requirements ensure EOD technicians have the necessary physical abilities to perform the critical physical tasks inherent to their operational duties. This document provides the guidance to conduct the EOD specific Tier 2 Physical Fitness Test.

Figure 1. Tier 2 Physical Fitness Tests and Standards Research and Development Process



EOD Technician Physical Fitness Test

The following sections describe each test component in the EOD Technician Tier 2 Physical Fitness (PF) Test. Test component descriptions highlight purpose of the test, operational relevance, Physical Training Leader (PTL) guidance, component scoring, test component protocol, and descriptive diagrams.

Test components:

1. Row Ergometer, 1093.6 yd (1000 m).....	page 1
2. Grip Strength.....	page 2
3. Medicine Ball Toss, back, side and log 20 lb (9.1 kg).....	page 4
4. Trap Bar Lift, 5 RM.....	page 6
5. Pull-Up.....	page 8
6. Farmer's Carry, 2x50 lb (22.7 kg) sandbags, 4x25 m.....	page 10
7. Grip Endurance, Beam 60 lb (27.2 kg).....	page 12
8. Grusetter, 30 lb (13.6 kg) vest, 50 lb (22.7 kg) sandbag, 20x15 m...	page 13
9. Run, 1.5 mile (2414 m).....	page 15
10. Extended Cross Knee Crunch, 56 BPM Metronome.....	page 17

Notes: Maximum rest times determined by PTL for logistical needs e.g., moving locations. Members will wear official Air Force physical fitness uniform. Reference AFI 36-2903, Dress and Personal Appearance of Air Force Personnel, for guidance.

	NAME	OPEN BOOK	CLOSED BOOK	Table Points	TOTAL			
1	Creek, Derrin	33.50	34.00	2.50	70.00			
2	Cunningham, Robin	32.75	30.00	2.50	65.25			
3	Sweeney, Michael	33.00	31.50	0.00	64.50			
4	Koski, Kyle	32.50	29.50	2.50	64.50			
5	Andresen, Erika	32.50	30.00	1.50	64.00			
6	Basabe, Alexander	29.50	31.50	2.50	63.50			
7	Cohen, Jason	31.50	28.50	2.50	62.50			
8	Giacona, Matthew	33.00	29.00	0.00	62.00			
9	Oliver, Joshua	31.00	30.50	0.00	61.50			
10	Underdahl, Scott	31.00	30.50	0.00	61.50			
11	Baird, Korrey	30.00	30.00	0.00	60.00			
12	Bellamy, Patrick	30.00	29.50	0.00	59.50			
13	Phillips, Bradley	29.00	30.50	0.00	59.50			
14	Telecsan, Dean	29.50	30.00	0.00	59.50			
15	Janssen, Adam	28.00	28.50	2.50	59.00			
16	Wilson, Tye	28.50	29.00	1.50	59.00			
17	Reynolds, RJ	29.75	29.00	0.00	58.75			
18	Catania, Anthony	28.00	28.00	2.50	58.50			
19	Lessard, Cory	30.00	28.00	0.00	58.00			
20	Horn, Derek	29.00	27.00	1.50	57.50			
21	Sulick, Dennis	27.50	28.00	1.50	57.00			
22	Bennett, James	31.00	26.00	0.00	57.00			
23	Soszynski, Laini	28.50	28.00	0.00	56.50			
24	Amirault, James	25.50	26.50	0.00	52.00			
25	Frey, Robert	30.00	21.50	0.00	51.50			

ROW ERGOMETER, 1093.6 yds (1000 m)

PURPOSE: Measure cardiorespiratory endurance, anaerobic capacity, and muscular endurance

OPERATIONAL RELEVANCE: Protective Works, Team Leader Procedures-OCNUS, Decontamination, Bomb Suit Operations, Range Clearance

PTL GUIDANCE (*do not read to member*)

EQUIPMENT: Concept 2 Model D row ergometer

1. Prepare equipment: test area, Concept 2 Model D row ergometer with PM2, PM3, PM4, or PM5 module, clipboards, scoresheets, ink pens
2. Test area: clean dust, dirt, debris from ergometer seat, slide rail, fan housing
3. Prior to testing: set the damper to 5 (gross setting). Locate ergometer drag factor setting (fine setting) on interactive screen (More Options; Display Drag Factor). Begin rowing and screen will display the drag factor; adjust the damper until the drag factor reads 130 ± 1 . Do not stand next to the fan or block the airflow in any fashion or at any time during calibration or during the test
4. Return to main menu, select "Select Workout," "New Workout," "Single Distance," input 1000m, and select "✓"
5. Ensure member does not touch damper or alter settings in anyway
6. Record time from the screen in minutes:seconds.tenths, e.g., 3:46.9
7. Maximum rest time = 60 minutes. Enforce all protocol requirements
8. Refer to manufacturer's guide for maintenance information

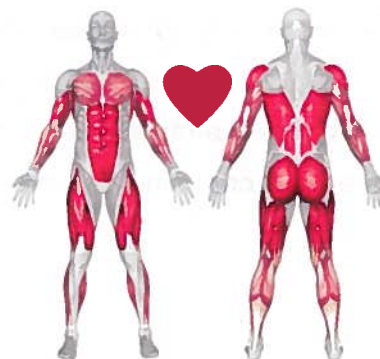
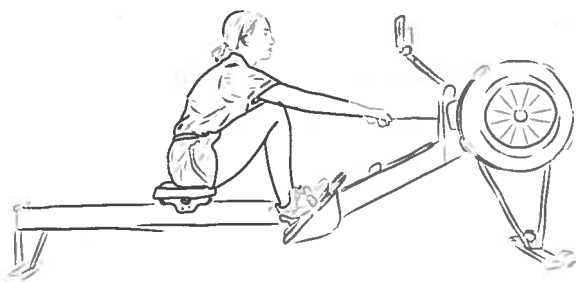
TEST SCORING

Score	1	2	3	4	5	6	7	8	9	10
Row Ergometer (min:secs)	4:33	4:23	4:17	4:11	4:06	4:00	3:55	3:48	3:39	3:31

COMPONENT MINIMUM SCORE

PROTOCOL

1. Start position: sit in ergometer with foot straps securely tightened around your shoes
2. Time starts on your first pull; ergometer module will track your time and distance
3. Time between test components: mandatory minimum time = 15 minutes



GRIP STRENGTH

PURPOSE: Measure muscular strength

OPERATIONAL RELEVANCE: Team Leader Procedures-OCONUS, Decontamination, Small Unit Tactics, Bomb Suit Operations, Protective Works, Ladder Climb and Bag Haul, Range Clearance, Robot Operations

PTL GUIDANCE (*do not read to member*)

EQUIPMENT: hand dynamometer, grip chalk

1. Prepare equipment: hand dynamometer (Lafayette), grip chalk, clipboards, scoresheets, ink pens
2. Record reading in pounds per square inch (PSI)
3. Ensure at least one minute rest between trials. Conduct one trial, right hand test, followed by left hand test, then begin member's rest period. Recommend conducting first trial for each member testing in serial order followed by second trial in same order, *i.e.*, members rest while others are testing
4. Maximum rest time = 4 minutes. Enforce all protocol requirements

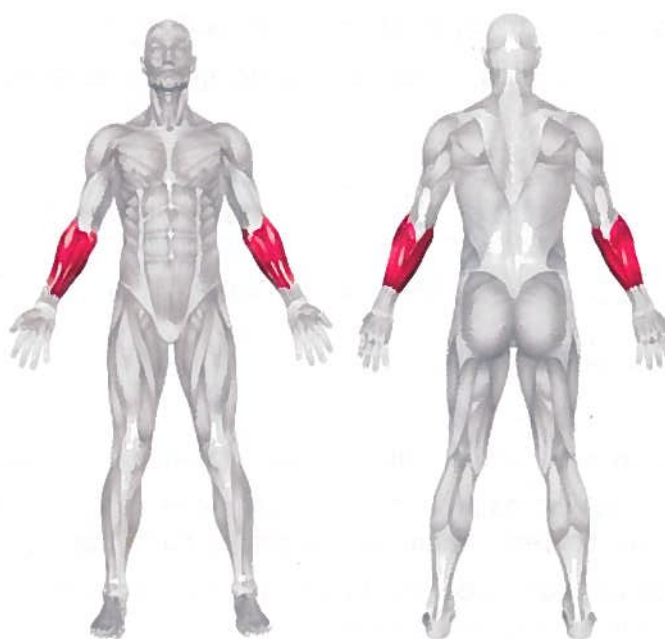
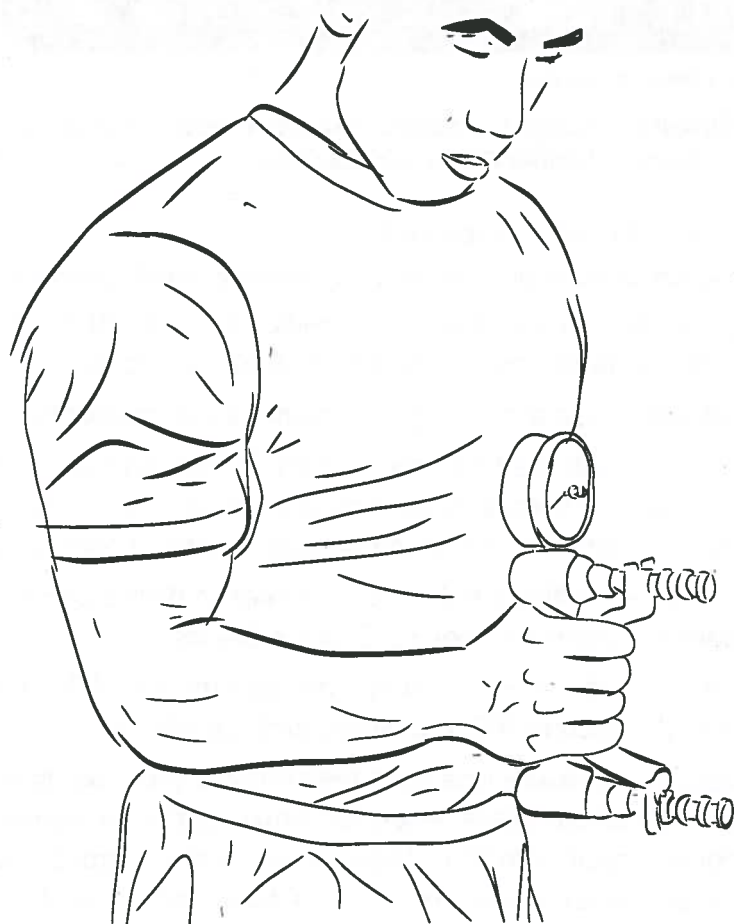
TEST SCORING

Score	1	2	3	4	5	6	7	8	9	10
Grip Strength (PSI)	72	85	94	101	108	115	123	132	144	154

COMPONENT MINIMUM SCORE

PROTOCOL

1. Prior to start, select a handgrip size that is comfortable for you; recommend the second or third setting from the gauge side
2. Starting position: grasp hand dynamometer in your hand with gauge facing away from body; stand straight with upper arm in contact with the torso, elbow flexed at 90°, forearm parallel to the ground. Wrist may be in slight extension (0° to 30°)
3. Squeeze dynamometer with maximal effort for two to three seconds with no extra body movements
4. You are permitted a maximum of two trials. One trial equals a right hand test and a left hand test; if you foul on each trial, you will complete a final third trial
5. Actions resulting in a trial foul: sudden jerking motions or any other body movements
6. Scoring is based on highest reading of either hand
7. Time between trials: a mandatory 1 minute rest period separates each trial
8. Time between test components: mandatory minimum time = 1 minute



MEDICINE BALL TOSS, back, side and log, 20 lb (9.1 kg)

PURPOSE: Measure muscular power

OPERATIONAL RELEVANCE: Range Clearance, Protective Works, Robot Operations, Decontamination, Small Unit Tactics, Ladder Climb and Bag Haul

PTL GUIDANCE (*do not read to member*)

EQUIPMENT: medicine ball, 20 lb, 14 inch diameter; tape measure, marking material, *i.e.*, tape, chalk, paint

1. Prepare equipment: test area and surface, medicine ball(s) 20 lb, 14 inch diameter; tape measure, marking tape, clipboards, scoresheets, ink pens
2. Test surface: flat, clean surface; thin government carpet, rubber flooring, turf, or court
3. Layout: mark start line with marking tape or paint, 5 feet in width; mark and label 10, 15, 20, 25, 30, and 35 foot lines with marking tape or paint, 2.5 feet in width; mark all other lines in 1 foot increments with marking tape or paint, 1 foot in width
4. Prior to testing: ensure medicine balls are 14 inches in diameter; weigh medicine ball on calibrated scale to ensure ball weighs 20 lbs \pm 0.4 lbs
5. Staff requirement: require two PTLs for this component; lead PTL directs test and monitors for foot fouls, second PTL measures and records toss
6. Measuring procedure: measure toss from the start line (member side of marking) to the point where center of ball lands; when ball impacts ground second PTL **must immediately mark landing spot with foot**, then measure and record nearest one-half foot increment. If ball lands in between one-half foot marks, round to lower mark, *e.g.*, ball lands between 20.5 foot mark and 21.0 foot mark, score is 20.5 feet
7. Ensure at least one minute rest between trials. Conduct one trial (back toss, side toss, and log toss) then member begins rest period. Recommend conducting first trial for each member testing in serial order followed by second trial in same order, *i.e.*, members rest while others are testing
8. If member fouls on all three trials, conduct a final fourth trial
9. Maximum rest time = 4 minutes. Enforce all protocol requirements

TEST SCORING

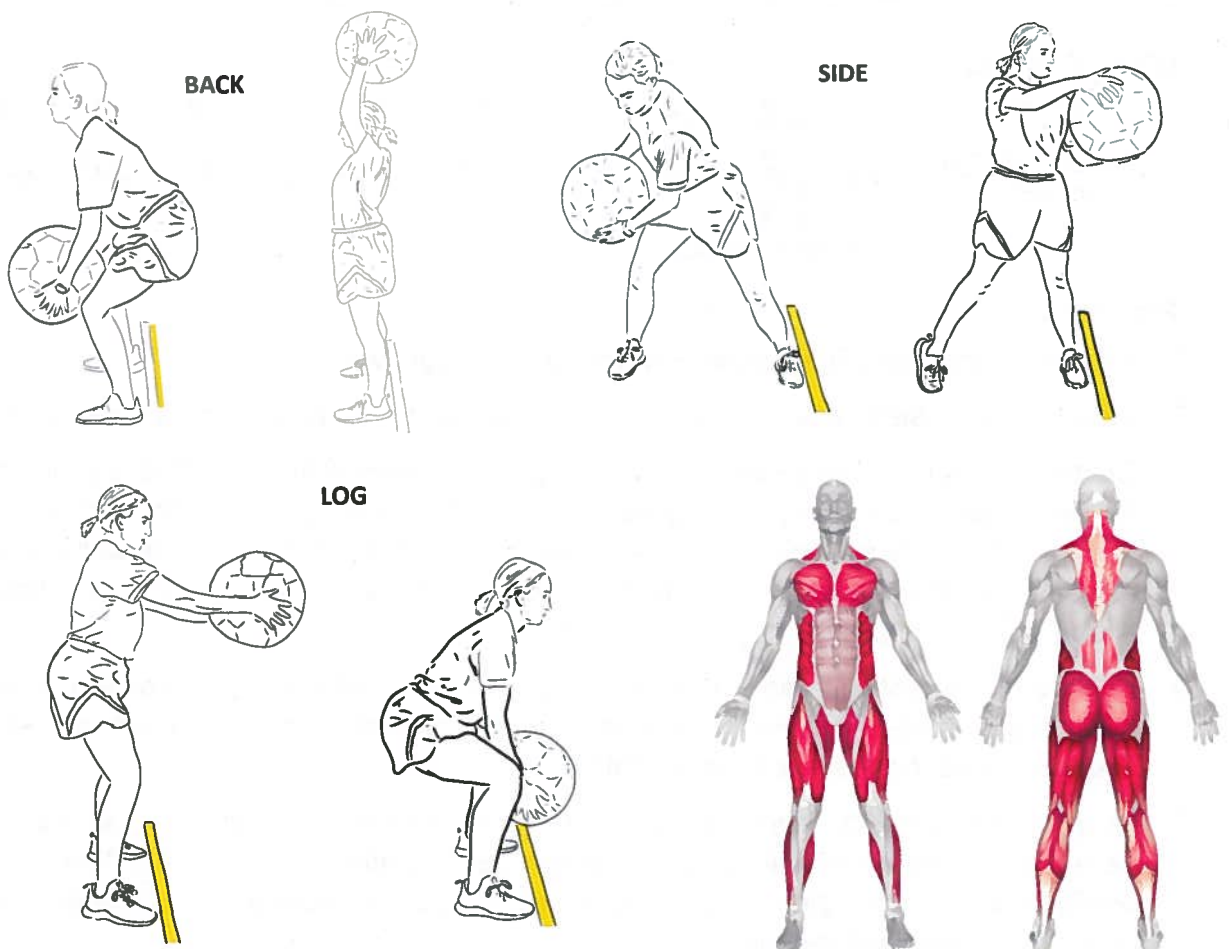
Score	1	2	3	4	5	6	7	8	9	10
Medicine Ball Toss sum (feet)	28.5	34.0	38.0	41.0	44.0	47.0	50.5	54.5	59.5	64.0

COMPONENT MINIMUM SCORE

PROTOCOL

1. Medicine ball toss consists of three distinct tosses; back toss, side toss, and log toss
2. Back toss: grasp medicine ball with both hands, stand with heels at, not on, start line, both hands at hip level. Recommend feet slightly greater than shoulder width apart
3. Bend at your knees and toss medicine ball from an underhand position over head, ideally on a 40 degree to 45 degree trajectory
4. Side toss: grasp medicine ball with both hands and align both feet, parallel, not on start line. Recommend feet in shoulder width stance

5. Rotate your trunk and squat down on rear leg as a counter-movement. Follow this motion by rotating trunk and pressing upward with hip and leg extension in throwing direction as you toss the medicine ball as far as possible, ideally on a 40 degree to 45 degree trajectory
6. You may not overhand throw or put, e.g., shot-put
7. Log toss: grasp medicine ball with both hands with toes at, not on, start line. Recommend feet slightly greater than shoulder width apart
8. As a counter-movement bring ball backwards between your legs with your arms making contact with your thighs. Ball should break the plane formed by your ankles. Follow this motion in throwing direction using your hips, legs, and arms to toss medicine ball as far as possible, ideally on a 40 degree to 45 degree trajectory
9. For all tosses, start stationary behind the start line and feet must remain behind start line until ball makes contact with ground
10. You are permitted a maximum of three trials. One trial equals a back toss, a side toss, and a log toss; if you foul on all three trials, you will complete a final fourth trial
11. Actions resulting in a trial foul: shot putting medicine ball, crossing in front of start line before ball makes contact with the ground
12. Scoring is based on sum of highest back toss, highest side toss, and highest log toss
13. Time between trials: a mandatory 1 minute rest period separates each trial
14. Time between test components: mandatory minimum time = 1 minute



TRAP BAR LIFT, 5RM

PURPOSE: Measure muscular strength

OPERATIONAL RELEVANCE: Protective Works, Bomb Suit

PTL GUIDANCE (*do not read to member*)

EQUIPMENT: trap bar (hex bar), weight plates, collars, grip chalk

1. Prepare equipment: test area, trap bar (hex bar), weight plates, collars, grip chalk, clipboards, scoresheets, ink pens
2. Prior to testing: weigh trap bar with calibrated scale and mark mass of bar to nearest tenth of a pound on the bar
3. Staff requirements: require one PTL for this component; however, a PTL must visually monitor member's form during all lifts. Therefore, maintain a 1:1 PTL:lifter ratio
4. Do not permit use of weight belts, wrist straps, or wedges under feet. Member may or may not wear shoes
5. **DO NOT** permit any intentional 1RM, 2RM, 3RM, or 4RM efforts (5RM must be goal for each trial). Attempts resulting in less than 5RM are permitted only if staff terminates test, member loses full safe grip, member drops bar, or member fatigues
6. Record weight (bar, plates, and clips), to nearest pound, and repetitions on each trial
7. Movement is continuous; "touch and go" concept, no rest pauses or periods
8. If member is unable to complete 5RM, refer to trap bar lift predictive value table
9. Maximum rest time = 20 minutes. Enforce all protocol requirements

TEST SCORING

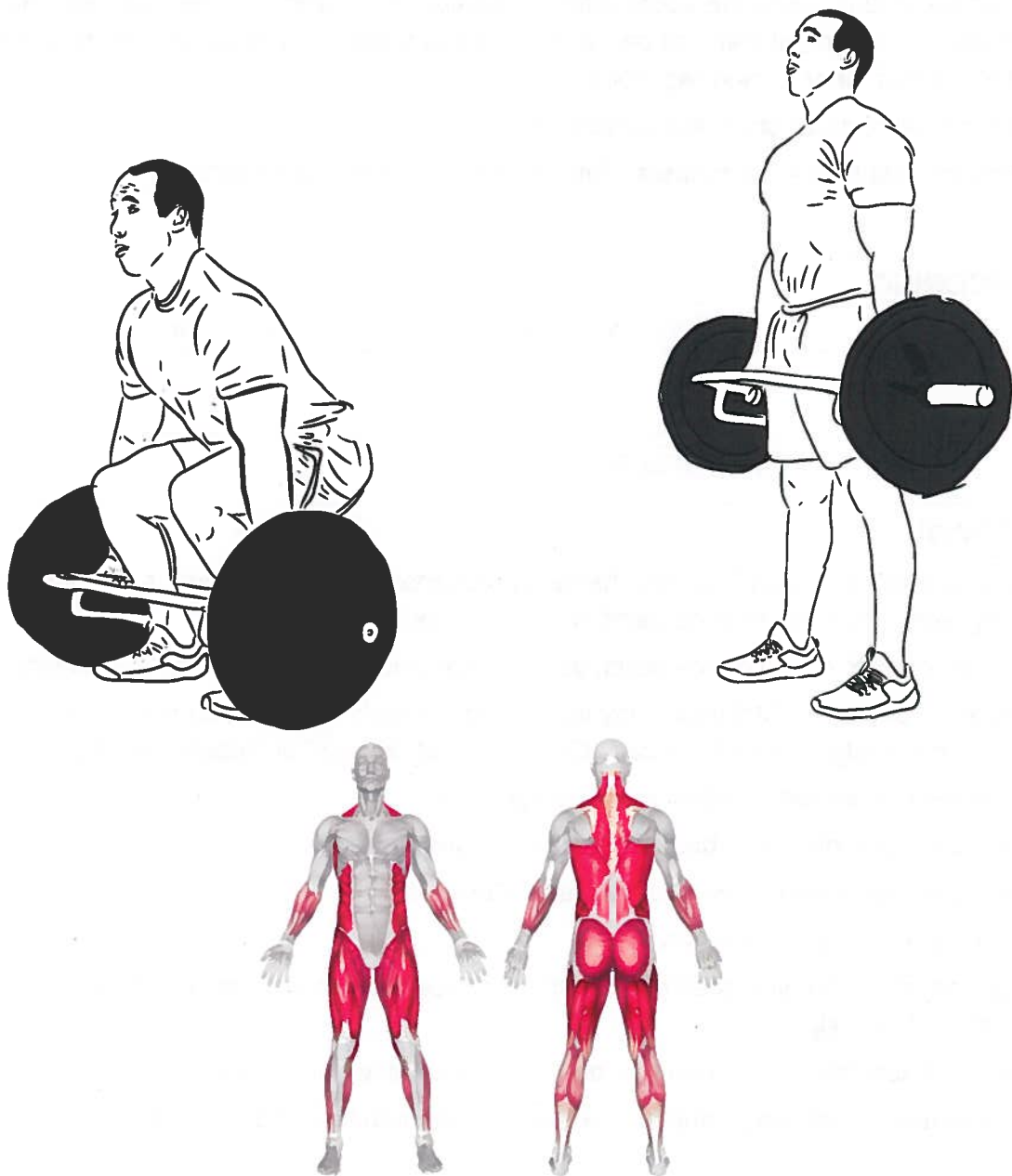
Score	1	2	3	4	5	6	7	8	9	10
Trap Bar Lift 5RM (pounds)	45	72	105	157	207	256	309	371	417	450

COMPONENT MINIMUM SCORE

PROTOCOL

1. Prior to testing you will adequately warm up with a light weight
2. Trap bar lift consists of two movements; upward movement and downward movement
3. Starting position: stand inside trap bar and grasp handles with a centered grip (if a dual-handled trap bar is used, you will grasp lower handles, with upper handles facing down). Arms must be fully extended, back flat, chest held up and out, head in line with spinal column or slightly hyperextended, heels in contact with floor, and eyes focused straight ahead or slightly upward
4. Upward movement: lift trap bar by extending your hips and knees until you are standing fully upright; there is a slight pause at top of this movement; hips should not rise before your shoulders; back should remain flat
5. Downward movement: lower bar to floor in a controlled manner while maintaining a flat-back position (do not lean forward). Trap bar weight plates must touch the floor very briefly before beginning next repetition, "touch and go" no pausing, do not set weight down or rest between repetitions

6. For re-grip (safety) purpose **only**, you may pause in the bottom position for no greater than 1 second. Do not rest in down position or rise up without trap bar
7. If you are unable to maintain proper form, we will terminate trial
8. Do not use weight belts or wrist straps. Do not use wedges under your feet, but you may or may not wear shoes
9. You **must attempt** to accomplish five repetitions on each trial
10. Attempts resulting in less than 5RM are permitted only if we terminate test, you lose a full safe grip, you drop the bar, or you fatigue to point of being unable to safely complete the rep(s)
11. Time between trials: a mandatory 5 minute rest period separates each trial
12. Time between test components: mandatory minimum time = 5 minutes



PULL-UP

PURPOSE: Measure muscular strength, muscular endurance

OPERATIONAL RELEVANCE: Range Clearance

PTL GUIDANCE (*do not read to member*)

EQUIPMENT: standard pull-up bar, grip chalk

1. Prepare equipment: test area, pull-up bar, tally counter, grip chalk, clipboards, scoresheets, ink pens
2. Staff requirements: require one PTL for this component; however, a PTL must visually monitor member's form during exercise. Therefore, maintain a 1:1 PTL:member ratio
3. Stand 45 degrees from front of member
4. Count one pull-up upon the successful completion of movements one and two; ensure chin breaks horizontal plane of bar, and ensure member returns to full extension (dead hang) position prior to next repetition
5. Record total number of correct repetitions
6. Maximum rest time = 20 minutes. Enforce all protocol requirements

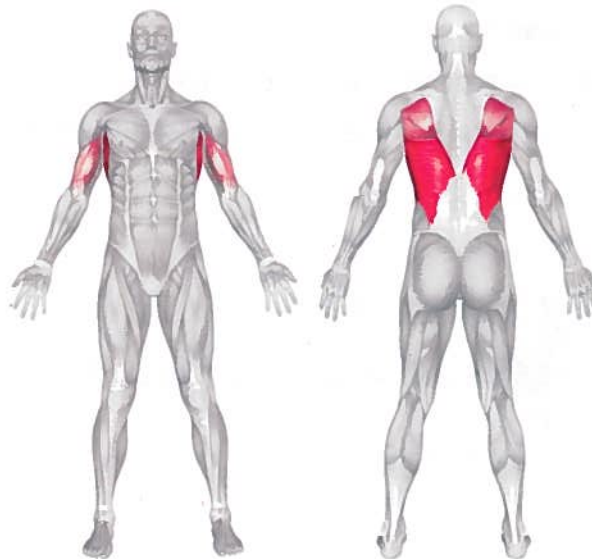
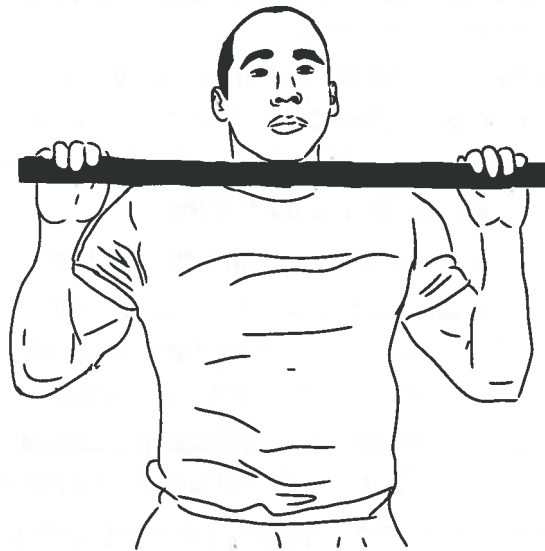
TEST SCORING

Score	1	2	3	4	5	6	7	8	9	10
Pull-Up (repetitions)		1								

COMPONENT MINIMUM SCORE

PROTOCOL

1. Starting position: hang from bar, hands approximately shoulder-width apart, palms facing away from you with no bend in your elbows, *i.e.*, "dead hang"
2. Pull up consists of two movements; upward movement and downward movement
3. Upward movement: pull your body up until your chin is over (not at) the bar (chin breaks horizontal plane of the bar). Chin must not "stretch" or "reach" over bar
4. Downward movement: return to starting position
5. Successful completion of both movements is one pull up
6. Repeat movements to limit of muscular endurance
7. You may rest in down position
8. Legs may bend but you shall not kick them or use them in any way to aid upward movement (no "kipping")
9. If you release from bar or hang by one hand, we will terminate test
10. Time between test components: mandatory minimum time = 5 minutes



FARMER'S CARRY, 2x50 lb (22.7 kg), 4x25 meters

PURPOSE: Measure muscular strength and anaerobic capacity

OPERATIONAL RELEVANCE: Protective Works, Team Leader Procedures—OCONUS, Small Unit Tactics, Bomb Suit, Ladder Climb and Bag Haul, Range Clearance, Robot, Decontamination

PTL GUIDANCE (*do not read to member*)

EQUIPMENT: two 50 lb sandbags with handles, two cones, two standard stopwatches, two timers are required for this test

1. Prepare equipment: test area and surface, 2 x 50 lb sandbags, tape measure, marking tape, cones, stopwatches, clipboards, scoresheets, ink pens
2. Test surface: flat, level, non-banked, smooth, 25 meter surface with area beyond start line and 25 meter line for turning
3. You **must** sweep/mop surface free of dirt/debris for consistent performance and safety
4. Layout: mark start/finish line and 25 meter line with marking tape or paint, eight feet in width. Outer edge of marking tape must be at zero and 25 meter points. Place a cone at each end, 25 meters apart; outer edge of cone even with outer edge of tape
5. Prior to testing: weigh sandbags on calibrated scale to ensure mass of each bag is 50 lbs \pm 0.6 lbs. No alteration of sandbags permitted
6. Staff requirements: require a primary and a secondary timer for this component; primary timer **MUST** be a trained Tier 2 PTL
7. Timing procedures: timers should use index finger for start and stop actions on the stopwatch. Use primary timer's finish time unless: 1) primary timer was mistaken (late start, early finish, other), or 2) difference between primary and secondary timers' finish times is > 0.2 seconds. If difference is > 0.2 seconds and both timers are confident in their timing actions then mean times
8. Record time to hundredth of a second, e.g., 25.87 seconds
9. Maximum rest time = 20 minutes. Enforce all protocol requirements

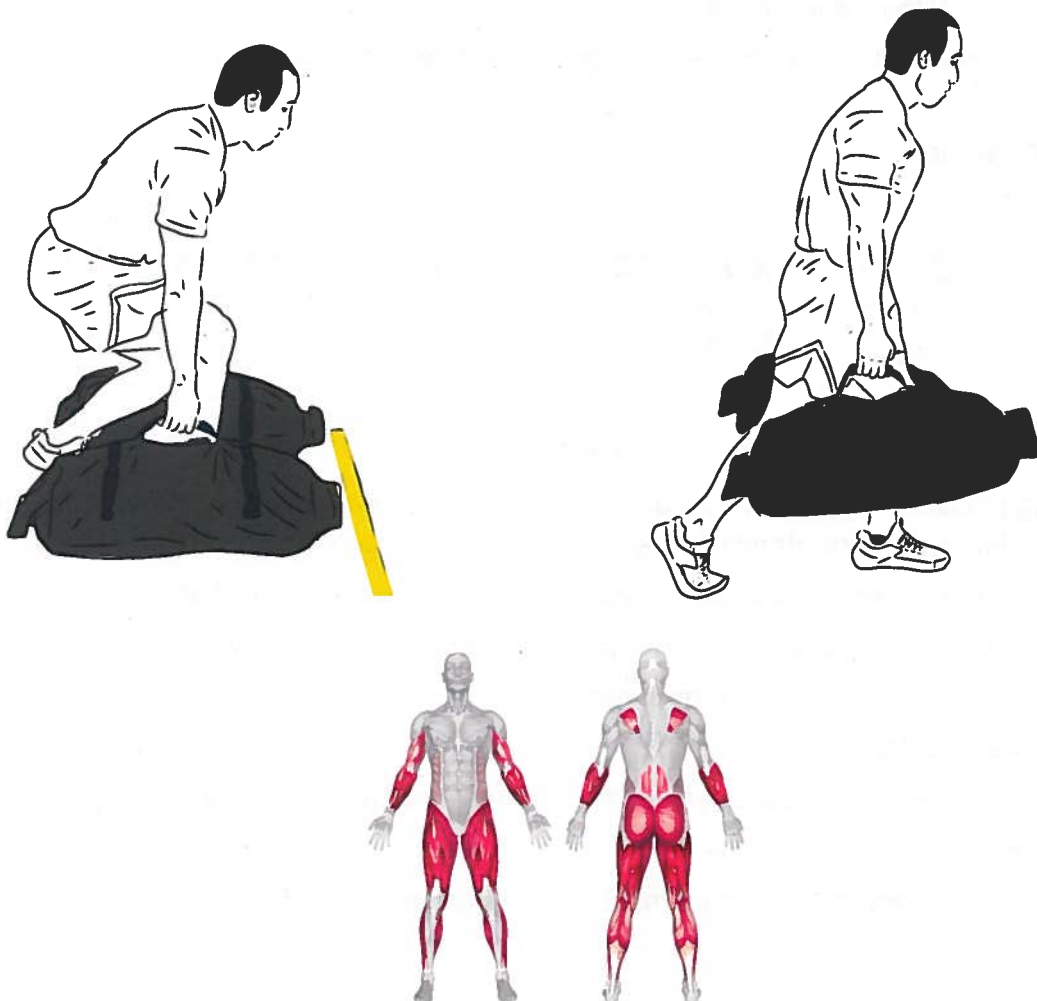
TEST SCORING

Score	1	2	3	4	5	6	7	8	9	10
Farmer's Carry (seconds)	50.9	46.6	43.5	40.9	38.5	36.0	33.4	30.3	26.0	22.5

COMPONENT MINIMUM SCORE

PROTOCOL

1. Prior to start you may lift sandbags, 50 pounds each, to familiarize yourself with weight, then return them to start position. Bags and your body must be behind start line before test begins
2. Starting position: you will stand between two sandbags behind start line. Squat down between sandbags and grasp single middle handle of each sandbag, but do not lift the bags prior to start
3. Commands: PTL will say "Timer Ready" and "Runner Ready." Upon ready confirmation from both timer and runner, PTL will say "Go." Time starts on the "Go" command
4. Lift sandbags and traverse (walk, jog, or run) course as fast as possible with one sandbag remaining in each hand for entire 100 meters. Maneuver around 25 meter cone, return to start line, maneuver around start line cone, and repeat a second lap. You may choose either a clockwise or counterclockwise direction around cones
5. You must carry sandbags by single middle handle, you may not carry them on your shoulders or cradled in your arms. If you drop a sandbag you must pick it up prior to any further advancement
6. Time stops when you and sandbags are entirely across finish line. You may not toss sandbags or release them prior to fully crossing finish line
7. Time between test components: mandatory minimum time = 5 minutes



GRIP ENDURANCE - BEAM 60 lb (27.2 kg)

PURPOSE: Measure muscular endurance

OPERATIONAL RELEVANCE: Range Clearance, Protective Works, Small Unit Tactics, Team Leader Procedures-OCONUS, Bomb Suit

PTL GUIDANCE (*do not read to member*)

EQUIPMENT: beam, two 10 lb bumper weight plates, collars, grip chalk, one standard stopwatch, two timers required for this test

1. Prepare equipment: beam 3 inch x 3 inch x 38.5 inch x 39 lb, plate weights 2 x 10 lb, clamps, grip chalk, stopwatch, clipboards, scoresheets, ink pens
2. Prior to testing: set up beam with 10 lb weight and clamp on each end
3. Member **must** use grip chalk
4. Timing procedures: timers should use index finger for start and stop actions on stopwatch. Use primary timer's finish time unless: 1) primary timer was mistaken (late start, early finish, other), or 2) difference between primary and secondary timers' finish times is > 0.2 seconds. If difference is > 0.2 seconds and both timers are confident in their timing actions then mean times
5. Record time to hundredth of a second, e.g., 25.87 seconds
6. Staff requirements: require a primary and a secondary timer for this component; primary timer **MUST** be a trained Tier 2 PTL
7. Maximum rest time = 20 minutes. Enforce all protocol requirements

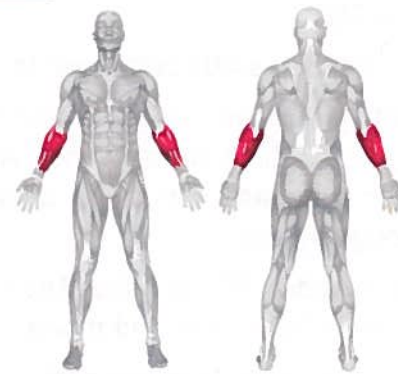
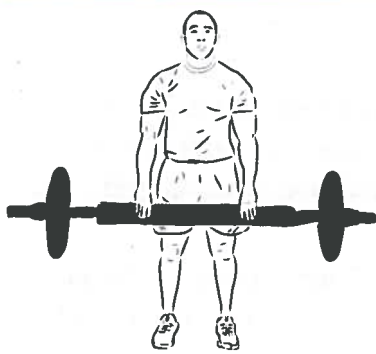
TEST SCORING

Score	1	2	3	4	5	6	7	8	9	10
Grip Endurance, Beam (seconds)	1.0	6.2	12.6	23.1	32.8	42.6	53.1	65.3	82.3	96.3

COMPONENT MINIMUM SCORE

PROTOCOL

1. Prior to start, stand with feet shoulder width apart
2. Starting position: bend over and grasp beam with an overhand grip, shoulder width apart; raise beam until standing fully erect with arms extended and elbows straight
3. You must grip beam so your palm faces top of beam, parallel with floor
4. Time starts once arms are fully extended and elbows are straight
5. Hold beam to limit of muscular endurance
6. Beam shall not touch legs or hips
7. Time stops when beam departs/slips from hands; you may drop beam
8. You **must** use chalk during this test
9. Time between test components: mandatory minimum time = 5 minutes



GRUSETER (Drop-Roll-Lift-Run) 20 x 15 m (300 m)

PURPOSE: Measure muscular endurance, anaerobic capacity and cardiorespiratory endurance

OPERATIONAL RELEVANCE: Decontamination, Range Clearance, Robot Operations, Bomb Suit Operations, Team Leader Procedures-OCONUS, Small Unit Tactics

PTL GUIDANCE (*do not read to member*)

EQUIPMENT: one 30 lb weighted vest, one 50 lb sandbag, one tally counter, two standard stopwatches, two timers are required for this test

1. Prepare equipment: test area and surface, 50 lb sandbag, 30 lb vest, tally counter, marking tape, cones, stopwatch, clipboards, scoresheets, ink pens
2. Test surface: flat level surface
3. Layout: mark a start and finish line 15 meters apart with marking tape or paint, eight feet in width. Outer edge of marking tape must be at zero and 15 meter points. Place a cone at each end, 15 meters apart; outer edge of cone even with outer edge of marking tape
4. Prior to testing: weigh sandbag and vest with calibrated scale to ensure mass of each bag is 50 lbs \pm 0.6 lbs and mass of each vest is 30 lbs \pm 0.4 lbs
5. Staff requirements: require one PTL at each end of course to monitor arm release, 360 degree roll, knee-elbow-hand contact, and sandbag lift and carry without use of handles; two PTLs total. Primary timer is PTL at starting line, secondary timer at start line does not have to be a PTL
6. Timing procedures: timers should use index finger for start and stop actions on the stopwatch. Use primary timer's finish time unless: 1) primary timer was mistaken (late start, early finish, other), or 2) difference between primary and secondary timers' finish times is > 0.4 seconds. If difference is > 0.4 seconds and both timers are confident in their timing actions then mean times
7. Record time in minutes and seconds, e.g., 5:13
8. Maximum rest time = 60 minutes. Enforce all protocol requirements

TEST SCORING

Score	1	2	3	4	5	6	7	8	9	10
Grusetter (min:secs)	6:59	6:33	6:15	5:59	5:44	5:29	5:13	4:55	4:29	4:07
COMPONENT MINIMUM SCORE										

PROTOCOL

1. You will don a 30 pound vest for this test
2. Starting position: lie on ground in prone position parallel to sandbag, you and sandbag fully behind the start line. At "Ready" command you will raise your upper arms, lower arms, and hands fully off the ground - this is "arm release" position required throughout test
3. Commands: PTL will say "Timer Ready" and "Runner Ready." Upon ready confirmation from both timer and runner, PTL will say "Go." Time starts on the "Go" command
4. Grusetter consists of two parts
5. Part one: press your body up and over sandbag, clutch sandbag and complete a 360 degree lateral roll with sandbag; ensure your knees, near elbow and opposite elbow or hand contact ground at end of roll. Move to an upright position with sandbag on your shoulder, on your hip, or cradled in your arms, but without use of sandbags handles. Traverse (walk, jog, run) as fast as possible with sandbag 15 meters fully crossing opposite line. Ground sandbag fully behind line, perpendicular to line and parallel to direction of travel. Rotate 180 degrees to face in direction you just traveled, drop to prone position parallel to sandbag and accomplish an "arm release" with both arms (upper arm, forearm, and hands), *i.e.*, quickly raise arms up and down in a palm down position. Repeat sandbag clutch, roll, carry and traverse back across start line
6. Part two: after crossing start line drop to prone position, accomplish an arm release, push yourself up and traverse (walk, jog, run) as fast as possible to opposite line without sandbag. Drop to prone position, accomplish an arm release, raise up and traverse (walk, jog, run) as fast as possible back across start line
7. Successful completion of part one and part two is one round
8. Repeat part one and two continuously for a total of five rounds
9. You must accomplish an arm release each length of course
10. You shall not use any sandbag handles at any time during test
11. Time between test components: mandatory minimum time = 15 minutes



RUN, 1.5 Mile (2414 m)

PURPOSE: Measure cardiorespiratory endurance

OPERATIONAL RELEVANCE: Protective Works, Team Leader Procedures-OCNUS, Small Unit Tactics, Bomb Suit Operations, Robot Operations

PTL GUIDANCE (*do not read to member*)

EQUIPMENT: stopwatch, measuring wheel

1. Members must complete the Run, 1.5 Mile up to 72 hours prior to or after completing test components above. Air Reserve Command (ARC) members must complete Run, 1.5 Mile component within one regular scheduled drill (before or after)
2. Prepare equipment: test surface, measuring wheel, tape measure, marking tape, stopwatches, clipboards, scoresheets, ink pens
3. Test surface: flat, level, non-banked, smooth surface. Measure course or track, total distance 1.5 mile (2414 meters). Measure and mark splits every one-quarter mile or 402.34 meters (\approx one lap on track); sweep/mop surface free of dirt and debris for consistent performance and safety. Must measure, do not trust other base entities for accuracy
4. Layout: if using a multi-lap test track employ a waterfall start; if not using a track start members evenly across a start line perpendicular to running direction
5. Staff requirements: require a primary and a secondary timer for this component; primary timer **MUST** be a trained Tier 2 PTL
6. Timing procedures: timers should use index finger for start and stop actions on stop watch. Use primary timer's finish time unless: 1) primary timer was knowingly mistaken (late start, early finish, other), or 2) difference between primary and secondary timers' finish times is > 0.4 seconds. If difference is > 0.4 seconds and both timers are confident in their timing actions then mean times
7. Record time in minutes and seconds, e.g., 9:15
8. Maximum rest time = 60 minutes. Enforce all protocol requirements

TEST SCORING

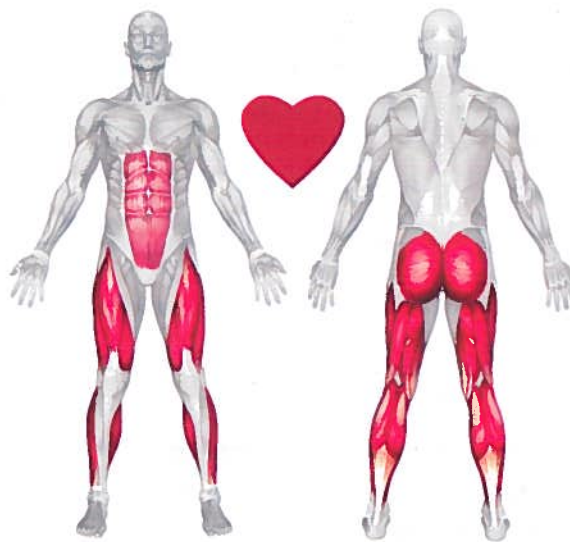
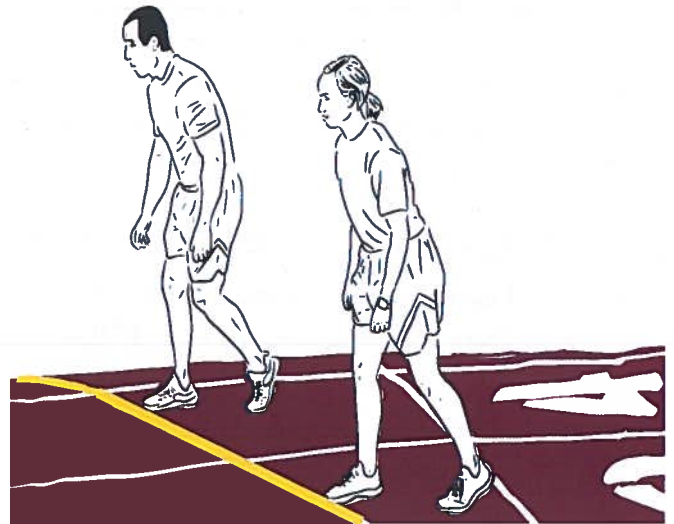
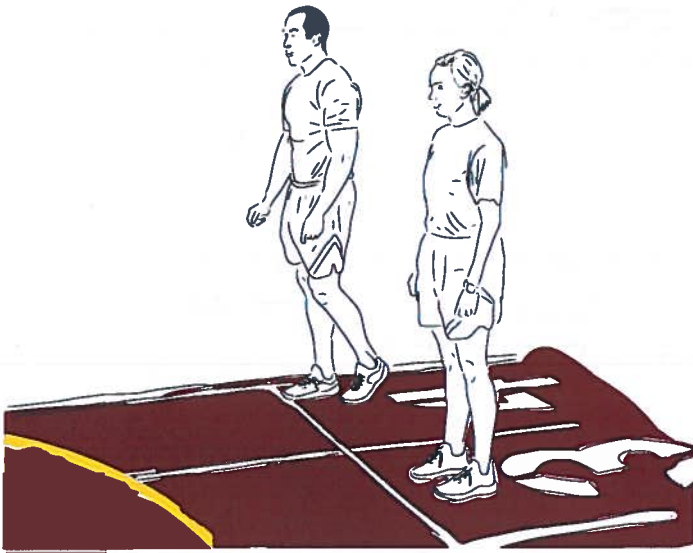
Score	1	2	3	4	5	6	7	8	9	10
Run (min:secs)	13:49	13:14	12:48	12:27	12:06	11:46	11:24	10:58	10:23	9:54

COMPONENT MINIMUM SCORE

PROTOCOL

1. Starting position: if multi-lap test track is used line up on the straight line across all lanes of track behind curved waterfall start line; if test track is not used line up evenly across a start line perpendicular to running direction
2. Commands: PTL will say, "Runners to your mark," upon this command you will move up to waterfall start line if you are on a test track or start line on a road course. PTL will say "Go." Time will start on the "Go" command
3. You are not permitted physical assistance from anyone or anything
4. You must stay on marked course; we will disqualify you if you depart from the course for two or more consecutive steps

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5. Run the test to the best of your ability. We recommend relatively even pacing, keeping lap time differential to < 10 seconds
 6. Time stops when your chest crosses start/finish line
 7. Time between test components: mandatory minimum time = 15 minutes



EXTENDED CROSS KNEE CRUNCH, 56 BPM Metronome

PURPOSE: Measure muscular endurance

OPERATIONAL RELEVANCE: Ladder Climb and Bag Haul, Robot Operations

PTL GUIDANCE (*do not read to member*)

EQUIPMENT: level surface or mat, metronome 56 bpm

1. This component must be accomplished *only* after first nine components have been completed
2. Prepare equipment: test area, mat, metronome, tally counter, clipboards, scoresheets, ink pens
3. Test area: level surface or mat, thin only ($\approx \frac{1}{2}$ inch) permitted
4. Staff requirements: require one PTL for this component; however, a PTL must visually monitor member's form during exercise. Maintain a 1:1 PTL:member ratio
5. Warn member if hands depart armpits, wrists bent with finger tips only in armpit, thumbs depart armpit, or if feet are "floating"; terminate test on second consecutive warning for any of these
6. Set metronome to 56 beats per minute and ensure sound is distinct and loud enough for members to hear clearly
7. Member **must** remove shoes
8. Record total number of correct repetitions completed in cadence
9. Enforce all protocol requirements

TEST SCORING

Score	1	2	3	4	5	6	7	8	9	10
Extended Cross Knee Crunch (repetitions)	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

PROTOCOL

1. Starting position: remove shoes, lie on your back on a flat, level surface, legs straight, arms crossed, and hands locked **completely** under armpits (including thumbs). If using a mat, hips must be close to edge of mat so feet remain on floor during test
2. Extended cross knee crunch consists of two movements; upward movement and downward movement
3. Upward movement: slide feet in while bringing torso upwards and your left elbow across your body to reach *top* of your right knee; back must reach vertical, perpendicular to surface
4. Downward movement: return to starting position, pushing feet outward along surface
5. Successful completion of both movements in cadence is one crunch

6. PTL will count repetitions upon completion of downward movement
7. Alternate left and right elbow with right and left knee, respectively
8. Repeat movements in cadence, 56 beats per minute, to limit of muscular endurance
9. If your movements are not continuously in cadence with metronome for two or more repetitions, we will terminate test
10. There is no authorized rest position for this test
11. Again, you **must** remove your shoes for this component and your feet **must** remain in contact with surface throughout test
12. Hands must remain under armpits for test duration
13. PTL will warn you if your feet depart surface, *i.e.*, start "floating," your hands depart your armpits, your wrists are bent with finger tips only in armpit, or your thumbs depart armpit; we will terminate the test if any of these occur for two or more repetitions

