RAW ASSESSMENTS

Further, Faster, Harder

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Introduction

Ranger missions require a broad range of physical attributes that can be grouped into three categories: Strength, Endurance, and Movement Skills. Within each category, the requirement is further defined as follows:

- Strength sufficient for load carriage, IMT, and CASEVAC without physical bulk that detracts from endurance or movement proficiency.
- Endurance sufficient for 1) long-range movement at a relatively low speed and 2) short, explosive movements followed by short rest and then repetition.
- Movement skills sufficient for the safe and effective execution of tasks that require power, agility, balance, and coordination

The primary purpose of the RAW assessments is to identify individual and team/squad areas needing improvement. This in turn guides subsequent physical training. The first nine tasks are athletic assessments that should be conducted twice during a complete training/deployment cycle; first during OP-PREP, then again during OP-ALERT. Tasks 1-7 are conducted in order during a single, 90-minute PT session. Movement Prep as outlined in the RAW PT Manual, v3.0 (available on Darby) is conducted immediately before the assessments. Tasks 8 and 9 require gym equipment and are conducted separate from Tasks 1-7, but within five calendar days of those tasks. The RPAT is the primary tactical assessment, conducted once per training/deployment cycle and separate from any athletic assessments by at least two days.

In addition to following the task/conditions/standards below, leaders should document the conditions under which the assessments were conducted (temperature, humidity, wind, and condition of the field). Documenting the individual and team/squad scores can be facilitated by using the sample scorecards in Appendices A and B of this document. Note that the Functional Movement Screen (FMS) and BodPod (body composition expressed in percentage of body fat) scores can be documented on the individual scorecard. Those two tests are screening assessments and are conducted separate from the physical assessments listed below. The BN medical section coordinates the screening assessments.

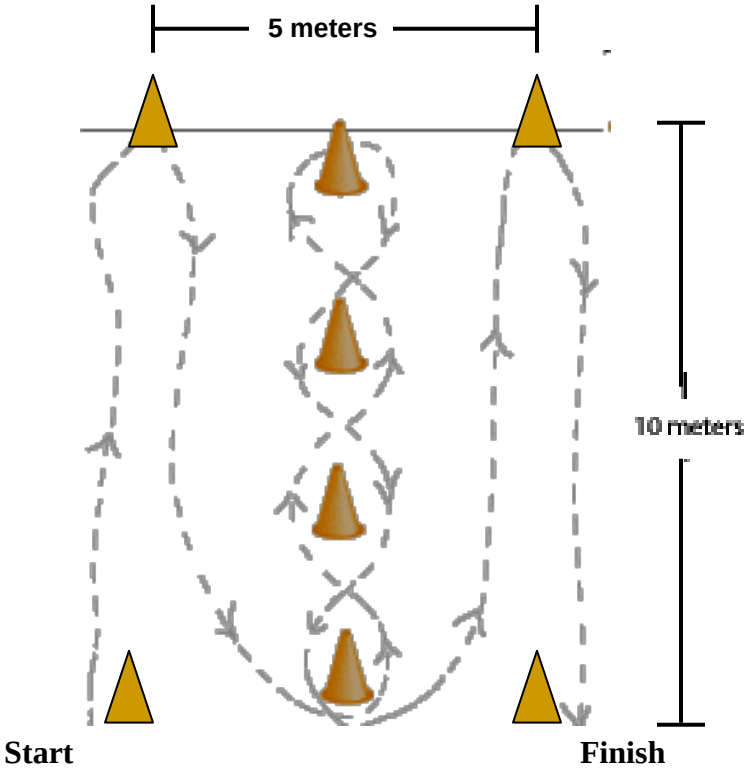
TASK/CONDITIONS/STANDARDS

TASK 1: **Illinois Agility Test.** The purpose of this test is to measure quickness and agility.

CONDITIONS: Given a flat, paved surface, with a length of 10 meters and width of 5 meters, four cones marking the outer boundaries and four other cones 3.3 meters apart in the center.

STANDARDS: Begin in the prone position behind the start point, outside the first cone. The grader will give a preparatory command, "Ready." On the command "GO", Ranger jumps to his feet and negotiates the course around the cones to the finish (see the diagram below). If during navigation of the course a cone is bumped enough to move its position, the test must be repeated. The grader records the total time taken from the command of "GO" to when Ranger passes the last cone. Individuals that slip are given one other attempt to improve their score. Individuals that fail to navigate the course properly may repeat the assessment either immediately or after others in the squad have finished.

No rest period is required before moving to TASK #2.



TASK 2: **4kg Medicine Ball Toss.** The purpose of this test is to measure total-body power.

CONDITIONS: Given a 4kg medicine ball, a tape measure, and a line to mark foot placement. Ranger will have three attempts to throw the 4kg medicine ball maximum distance, using a backward/overhead throw.

STANDARDS: Stand behind the line, with the back facing the direction of the throw. On each repetition, up to three preparatory movements are allowed. There is no penalty for stepping or falling beyond the line after the ball is released. The grader records the farthest throw to the nearest ft/in.

No rest period is required before moving to TASK #3.

TASK 3: **Metronome Push-up.** The purpose of this test is to measure the muscular endurance of upper body pushing and core muscles.

CONDITIONS: Given a solid, level surface and a metronome set to 1 second intervals.

STANDARDS: On the command “Get Ready,” assume the kneeling front-leaning rest position. On the command “Get Set,” assume the front-leaning rest position. On the command “GO,” lower the body until the upper arm is parallel to the ground. On the next metronome sound, immediately return to the front-leaning rest. On the next metronome sound, immediately return to the lower position as described above. When Ranger can no longer stay with the metronome cadence, the test is terminated and the last number of correct reps is recorded. There are no rest positions for this test. The body must be maintained in a straight line throughout. If Ranger maintains the metronome cadence, but fails to meet other performance standards (does not extend elbows fully on rising, fails to bring the upper arms parallel to the ground on lowering, sags/arches the pelvis/trunk at any point) the grader will repeat the number of the last correct repetition and tell Ranger to make the proper correction. Alternately, the grader may give a tap on the arms or back to indicate the need go lower or keep the trunk straight.

A five-minute rest period is required before beginning TASK #4.

TASK 4: **Pull-up.** The purpose of this test is to measure muscular strength and endurance of grip and upper body pulling muscles in relation to body weight.

CONDITIONS: Given a pull-up bar that allows full body extension without the feet touching the ground.

STANDARDS: On the command “Ready”, move to a free-hang position with arms straight and elbows locked, using an overhand grip, with the thumbs placed over the bar. On the command of "GO", pull the body upward until the chin is over the bar. Return to the straight-arm hang position with his elbows locked. Repeat this pull-up movement as many times as possible. The body must maintain a generally straight plane from head to toe. If Ranger kicks his way up, the pull-up involved will not be counted. The grader may slow the speed of movement to ensure the elbows extend fully upon lowering. The score will be the number of correct repetitions performed.

A five-minute rest period is required before beginning TASK #5.

TASK 5: **300-yard Shuttle Run.** The purpose of this test is to measure anaerobic endurance.

CONDITIONS: Given a flat, paved surface with line markings 50 yards apart.

STANDARDS: Line up in the sprint, crouch, or standup start positions with both feet and hands behind the starting line. The grader will give a preparatory command, “Ready.” On the command “GO”, run to the opposite end of the course and make a direct turn by placing at least one foot on or over the line, return to the starting line, makes another turn, and continue in this way for three round trips, sprinting past the finish line on the last trip. Do not take a circular path to make any turn. The grader records the total time taken from their command “Go” to completion of the course. A one-minute rest period is given, then the 300-yard shuttle is repeated. The rest period begins after the last Ranger in a group crosses the finish line. Leaders should organize the men so that there is minimal time separating the first and last Rangers in a group. The grader averages the two repetitions to calculate the overall score for this event.

A five-minute rest period is required before beginning TASK #6.

TASK 6: Heel Clap. The purpose of this test is to measure muscular strength and endurance of grip, pulling, and core muscles.

CONDITIONS: Given a pull-up bar that allows full body extension without the feet touching the ground, and is long enough to allow the movement to standard.
STANDARDS: On the preparatory command, “Ready,” Ranger moves to a free-hang position with elbows bent to approximately 90 degrees, using an alternating grip so that the body faces along the length of the pull-up bar rather than toward the bar. On the command "GO", Ranger lifts his lower body upward and raises the feet over the bar to tap the heels together (repetitions will not be counted if only the toes touch over the bar). He returns to the starting position, maintaining the elbows at 90 degrees throughout. He repeats this sequence as many times as possible. The body must be held approximately straight in the lower position. Ranger cannot rest the legs on the bar or swing past the starting position on lowering. If Ranger extends the elbows to less than 90 degrees, that repetition does not count. Ranger must return to and pause at 90 degrees before attempting the next repetition. Ranger’s score will be the number of correct repetitions performed.

A ten-minute rest period is required before beginning TASK #7.

TASK 7: **BEEP Test.** The purpose of this test is to measure aerobic endurance.

CONDITIONS: Given two points, marked 20 meters apart, and one beep test audio file/CD.

STANDARDS: Wait behind the start line and begin the event at the direction of the audio file/CD. When prompted, run continuously back and forth between the marked points, attempting to touch the line with at least one foot at the recorded beeps. It is not necessary to touch the line with the hands, nor is it necessary for both feet to cross over the line. When Ranger fails to make it to the line on the beep twice in a row the test is terminated. The score given to the Ranger is the last level he successfully completed. This score can then be used to estimate VO2 Max, a measure of aerobic fitness.

TASK 8: **185-pound Bench Press.** The purpose of this test is to measure upper body push strength.

CONDITIONS: Given a flat bench with a 45-lb Olympic bar with both one 45-lb and one 25-lb plate loaded on each side for a total of 185 lbs, and at least one spotter.

STANDARDS: Lie on the bench with feet on the ground and the head, shoulders, and buttocks in contact with the bench. Grasp the bar using an over-hand grip. Remove the weight from the rack. Help from a spotter is authorized when removing the weight from the rack but is not allowed once lowering of the bar begins. Ranger will then perform repetitions by lowering the bar completely to touch his chest and pressing the bar until the elbows are completely extended. Repetitions are counted every time the elbows are locked out while maintaining all contact points. Repetitions with correct form will be performed until Ranger can no longer complete a repetition, at which point the spotter will help rack the weight. There is no time limit. The event is terminated in the following ways: 1) Ranger stops or fails to maintain upward movement once a lift is started (hits a sticking point in the middle of a lift), or 2) Ranger violates execution standards for two consecutive repetitions despite prompting from the grader after the first violation. The score is the number of correct repetitions performed.

TASK 9: **225-pound Dead Lift.** The purpose of this test is to measure total-body lift strength from the ground.

CONDITIONS: Given a 45-lb Olympic bar with two 45-lb plates loaded on each side for a total of 225 pounds.

STANDARDS: Standing behind the bar with foot and hand placement of preference, lift the bar until standing erect. At the top of the lift, the body is perpendicular to the ground, without bend in the hips or knees. The grader states the number of the repetition at this point. If Ranger lowers the weight before achieving the fully erect stance, that repetition does not count. A pause of up to two seconds at the top of the lift is allowed. Ranger then lowers the weight to the ground in a controlled manner. No rest is allowed while the weight is on the ground. Repeat as many repetitions as possible. There is no time limit. The event is terminated when Ranger exceeds the two-second time limit at the top or bottom of the lifts, drops the weight or fails to maintain upward movement once a lift is started (hits a sticking point in the middle of a lift). The score is the number of correct repetitions performed.

TASK 10: **Ranger Physical Assessment Test (RPAT).** The purpose of this test is to measure all components of fitness (strength, endurance, movement skills), using tactically relevant tasks.

CONDITIONS – Given a 3 mile course, RBA, MICH helmet, Skedco w/ 160-lbs load, 20-foot fast rope apparatus, 20-foot caving ladder apparatus and an 8-foot wall.

STANDARDS – Complete a 3-mile run and combat focused PT course in less than 1 hour. The event will be conducted at squad level, with the mindset that the Ranger is competing against himself. Each time the event is conducted, each Ranger should see constant improvement in his time and ability to negotiate the course.

1. Conduct a 2-mile run wearing ACUs, boots, RBA and MICH helmet. The run will begin and end at a 20-foot fast rope.
2. After the completion of the run, immediately climb the 20-foot fast rope and do a controlled descent.
3. When the rope climb is complete, drag a 160-pound SKEDCO litter 50 yards, turn round and drag it back 50 yards to the start point.
4. Immediately following the SKEDCO pull, climb a 20-foot caving ladder and climb all the way back down.
5. At the bottom of the Caving ladder, sprint 100 yards, turn around, sprint back 100 yards and climb over the 8-foot wall.
6. Conduct a 1 mile run wearing ACUs, boots, RBA and MICH helmet. The run will begin and end at the 8-ft wall. Time stops when you cross the line at the 8-foot wall.

Training for the RAW Assessments

RAW assessments support the program's philosophy in several ways:

- Recognizing those Rangers with the best blend of strength, endurance, and movement skills
- Identifying individual areas of strength/weakness relative to other Rangers
- Guiding training decisions based on performance
- Promoting competition

To a large degree, simply following the training guidance provided in the RAW PT Manual, v3.0 will prepare Rangers for the assessments. The following information is meant to supplement that guidance and offer more specific suggestions for training. For information on how best to integrate these training suggestions into your overall workout plan, see the RAW SME-trained Rangers in the battalion or consult the Regimental RAW team.

1. **Illinois Agility Test**

   Training: This test begins from the prone position, so the ability to move quickly out of the prone matters. Mountain climber sprints and plyometric pushups should help. While some agility tests have significant amounts of lateral movement, the Illinois test is more about stopping and starting. You have to be able to maintain sprint speed as far up to the turn points as possible. This means you need braking power and then acceleration. In training, explosive lunges will help with both the breaking and acceleration out of the flexed knee position. When performed on a regular basis, the power drill described in the RAW PT Manual should also help.
   Technique: As for the actual technique of cutting around the cones in this assessment, the key is to use appropriate body lean to keep the center of the body inside the base of support (the feet, especially the outermost foot). For both safety and performance, get low when cutting.

2. **4-kg Med Ball Throw**

   Training: This is a test of total-body power. Power is a product of strength and speed. Because this assessment uses a relatively light weight, the speed component is very important. Plyometrics, hang cleans with a relatively light weight, and exercises from the RAW power drill should help. Of the many plyometric exercises, one that should have particular value for this assessment is the depth jump (step off of a platform, absorbing the impact with plenty of bend in the hips and knees, then with absolutely no pause at the bottom, jump straight up as high as possible…perform just a few reps with adequate rest between reps…perform after movement prep and before any fatiguing exercise). Training with a slightly heavier medicine ball might help; however, the size of the ball should be very similar.
   Technique: Use two or three preparatory "swings" to get the movement grooved, then on the actual throw, move as fast as possible into and out of the squat. Keep the elbows extended to exert maximum leverage. If body lean and follow through are optimal, you should fall onto your back.

3. **Metronome Pushups**

   Training: The metronome style of pushup requires stabilizing effort of the core and shoulder girdle muscles throughout. There is no sagging/arching rest position, nor is there the brief unloaded moment that occurs with the momentum of fast-paced pushups. Therefore, core endurance exercises such as planks are helpful. Consistent with our philosophy of full-spectrum strength, training according to

guidance in the strength section of the RAW PT Manual should help. Working heavy resistance, power-endurance, and body-weight endurance at least once every 7-10 days will ensure that all muscle fiber types that contribute to the metronome pushup are being trained.
Technique: Establish a tight core before the first repetition and maintain throughout. However, do not waste energy by squeezing the core so tight that breathing is altered. Incorporate the breathing cycle into repetitions – breathe in during the lowering and exhale on the way up. Do not waste energy going lower than is necessary.

4. Pull-ups

Training: The pull-ups rely heavily on the lats and biceps. Exercises training those muscles, particularly in a combined pulling motion, will contribute to pulling strength. Lat pulls, dumbbell rows, and assisted pull ups (gravitron, elastic bands, or partner) are all good training options. If using assistance on the pull, go without assistance during the lowering phase. If you can already do 15 or more pull-ups, adding resistance with body armor or weights hanging from a lifting belt will help ensure you continue to develop more pulling strength.
Technique: Typically the best grip is shoulder-width or slightly wider. Ensure you use a thumbless grip when you train as this will be the same grip you use when you test. If you are doing weighted pull-ups, we recommend fully grasping the bar with your thumb to avoid slipping. Do not kip when preparing specifically for this assessment. Leaning back slightly can help engage other muscles in the back and allow you to squeeze out a few more reps.

5. 300-Yard Shuttle Run

Training: This is primarily an anaerobic assessment, so just about any intense training where reps resume before recovery is complete will help. Sprints, intervals on the track, bike, rower, etc…Tabata intervals…hybrid workouts from X-Fit, Gym Jones…performing a couple of these each week will help. Because of the turns involved, training described for the Illinois Agility assessment should also help with shuttles runs.
Technique: Practice pacing to ensure more or less equal time for each segment. Practice turns to maximize efficiency. As with all cuts, lower your center of gravity and keep it inside the base of support. The work of braking your momentum and pushing off to change direction should be shared by both legs. Practice hop turns (180 degree change of body alignment occurs in the air) and pivot turns (place the plant foot parallel to the end line) to determine which method feels best for you. Do not round the turns.

6. Heel Claps

Training: This event requires isometric strength of the gripping and pulling muscles, as well as the trunk flexors. Consider training the isometric strength at the end of pull-up workouts. Improve trunk flexor strength for this task on an incline sit-up board, using the resistance of a plate/dumbbell/med ball/kettle bell at the chest or overhead. The weight used should permit no more than 20 good reps. Perform this exercise at a controlled speed because no momentum is allowed for the heel clap assessment.
Technique: The tilt of the pelvis may influence the potential strength of the trunk flexing muscles. From the hanging position, experiment with tilting the pelvis forward (belly and buttocks sticking out further

than normal) or backward (belly and buttocks tucked in more than normal). Incorporate the breathing cycle into repetitions – breathe in during the lowering and exhale on the way up.

7. Beep Test

Training: This test is used primarily to assess aerobic fitness. It can be used to predict VO2Max with reasonable accuracy. Unlike most running tests of aerobic fitness, the Beep Test involves repeated stops/starts. This likely benefits those that have developed their aerobic efficiency through soccer, basketball, or other stop/start sports rather than distance running. Therefore, you should not only train with traditional aerobic methods (bike, run, swim, etc.), but also include stop/start activities that train the legs to brake, then accelerate quickly (see training for the Illinois Agility test above).
Technique: Practice pacing to avoid too much time waiting at the line for the next beep. As speed increases, make turns more efficient by lowering your center of gravity and keeping it inside the base of support. The work of braking your momentum and pushing off to change direction should be shared by both legs. Practice hop turns (180 degree change of body alignment occurs in the air) and pivot turns (place the plant foot parallel to the end line) to determine which method feels best for you. Do not round the turns.

8. Bench Press

Training: The bench press is a measure of upper body push strength. Any pressing movements, to include dumbbell bench press, weighted dips, floor presses, and machine presses can potentially improve your bench press performance. There are two workouts that should be performed weekly. First, to stimulate the fast-twitch motor units of the pressing muscles, perform several sets with a weight that allows no more than four good reps. Rest between sets should be at least a couple minutes. Rest should be sufficient so that the weight need not be lowered during the later sets due to fatigue. The second workout should occur 3-4 days later and involve a weight that can be pressed 8-12 times. The rest between sets should be shorter so that the later sets are performed with some degree of fatigue. The weight for the later sets may be decreased in order to stay in the 8-12 rep range. For both of these workouts, perform at least a couple of warm-up sets with a lighter weight, then perform 4-6 sets with the training weight.
Technique: To establish a natural grip width, jump down into a push-up position. The width that you naturally place your hands should be the width at which you grab the bar on the bench press. Now, place your back flat on the bench and contract the muscles between the shoulder blades. Lower the bar down to touch your nipple line while maintaining a full breath in, then press up and back toward your chin, releasing the breath as you pass through the most challenging part of the lift. Be sure not to exaggerate the arch in your back or bounce the bar off of your chest.

9. Dead Lift

Training: The dead lift mainly tests the strength of the legs, core, and grip. Exercises that can aide your dead lifting ability are squats, back extensions, rack pulls, and ground base dead lifts. Train without the use of lifting straps to develop adequate grip strength. There are two workouts that should be performed weekly. First, to stimulate the fast-twitch motor units involved with the dead lift, perform several sets with a weight that allows no more than four good reps. Rest between sets should be at least a couple minutes. Rest should be sufficient so that the weight need not be lowered during the later sets due to

fatigue. The second workout should occur 3-4 days later and involve a weight that can be lifted 8-12 times. The rest between sets should be shorter so that the later sets are performed with some degree of fatigue. The weight for the later sets may be decreased in order to stay in the 8-12 rep range. For both of these workouts, perform at least a couple warm-up sets with a lighter weight, then perform 4-6 sets with the training weight.

- Technique: Squat down and grasp the bar with an alternating grip slightly wider than shoulder width. Keeping your head up and back flat, drive your feet into the floor while contracting your abs and keep your core tight. Foot pressure should be greatest through the heel, not the toes. The bar should remain close to your body as you lift it. A repetition is complete when you stand completely erect. Lower the weight in a controlled manner until it touches floor. Do not let your back round or your weight shift forward to the balls of the feet because this could increase your chance of injury. Incorporate breathing by holding a full breath until you have passed through the most difficult part of the lift. Other methods, such as the sumo dead lift are also acceptable.

Appendix : Data collection samples and blank sheets

Sample Assessment Scorecard

Ranger 1	**FMS: 17/21**	**BodPod: 12% Body Fat**
Performance Assessments	**Raw Data Score**	**Squad Rank**
Illinois Agility Test	15 sec.	3
4-kg MedBall Throw	18 yards	3
Metronome PU	12 reps	4
Pull Up	15 reps	5
300-Yard Shuttles	62 sec. avg.	4
Heel Claps	8 reps	3
Beep Test	Level 11	2
RPAT	34 min.	3
Deadlift	7 reps	4
Bench Press	12 reps	3
		AVG 3.4*
*Lowest score represents best overall fitness within the squad.		

Blank Assessment Scorecard

Ranger _____	**FMS: ____**	**BodPod: ___% Body Fat**
Performance Assessments	**Raw Data Score**	**Squad Rank**
Illinois Agility Test		
4-kg MedBall Throw		
Metronome PU		
Pull Up		
300-Yard Shuttles		
Heel Claps		
Beep Test		
RPAT		
Deadlift		
Bench Press		
		AVG_____

Sample Squad Data for a Single Event 300-Yard Shuttle Run (2 trials with 1-minute rest between)				
	1st Trial (s)	2nd Trial (s)	Average	Squad Rank
Ranger 1	60	62	61	4
Ranger 2	61	64	62.5	6
Ranger 3	58	59	58.5	2
Ranger 4	64	67	65.5	10
Ranger 5	59	62	60.5	3
Ranger 6	60	62	61	4
Ranger 7	62	64	63	8
Ranger 8	63	65	64	9
Ranger 9	57	59	58	1
Ranger 10	61	64	62.5	6
Average	60.5	62.8	61.7*	

* Can be used for comparison between squads.

Sample Squad Overall Ranking	
	Squad Rank
Ranger 1	**2.8**
Ranger 2	**3.2**
Ranger 3	**2.9**
Ranger 4	**7.2**
Ranger 5	**5.7**
Ranger 6	**4.4**
Ranger 7	**6.9**
Ranger 8	**6.9**
Ranger 9	**1.7***
Ranger 10	**4.7**

*Best score