

**OUTLINE SHEET 2.1  
PRINCIPLES OF PHYSICAL FITNESS AND DRY-LAND CONDITIONING  
PROGRAM**

INTRODUCTION

Physical training is designed to provide the Rescue Swimmer with a balance and progression of physical training, which will develop both upper and lower body strength and cardiovascular endurance.

ENABLING OBJECTIVES:

- 2.1 State the fundamentals of physical conditioning.
- 2.2 Perform proper physical conditioning exercises and Physical Training Level 1, 2 and 3 tests in accordance with the lesson guide.
- 2.3 State the importance of proper technique and form when utilizing weight lifting equipment.
- 2.4 Demonstrate proper techniques for developing and maintaining overall muscular strength utilizing weight lifting equipment, without injury to personnel or damage to equipment.

TOPIC OUTLINE

- A. Principles of Physical Fitness
  - 1. Objectives of Rescue Swimmer conditioning program.
    - a. Achieve a level of conditioning which allows the Rescue Swimmer to operate for \_\_\_\_\_ minutes in a sea state of three (minimum). There is no substitute for practical preparation, but a comprehensive dry land conditioning program will assist toward this goal.
    - b. Pass level 1, 2 and 3 Fitness Test and the Rescue Swimmer Fitness Test (per OPNAVINST \_\_\_\_\_).
    - c. Enhance performance of Rescue Swimmer duties while reducing risk of injury to self or survivor.
  - 2. Job performance is enhanced for the Rescue Swimmer by maintaining the following:
    - a. \_\_\_\_\_ is an approach to optimal health and

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emphasizes the swimmer's deliberate effort to stay healthy and achieve the highest potential for well being. Wellness is an ongoing process which requires daily decisions in areas of proper nutrition, stress management, disease prevention, substance abuse control, and physical fitness.

- b. \_\_\_\_\_: is defined as the general capacity to adapt and respond favorably to physical effort. A physically fit rescue swimmer is able to perform normal daily activities effectively and have enough energy remaining to complete the SAR mission.

3. General Principles

**NOTE**

Aviation Rescue Swimmers are not unlike multi sport athletes in that they must be able to perform a variety of physically demanding tasks on land and water. The Aviation Rescue Swimmer requires a variety of training workouts, which focus on different goals.

Because of the high level of multi dimensional fitness required by the Rescue Swimmer 6-10 training sessions per week may be required.

- a. \_\_\_\_\_ - system must be stressed to loads greater than it is accustomed to in order to improve.  
  
Increase resistance, repetitions, intensity, or duration during exercise.
- b. Specificity - effects of exercise limited to system being stressed. (To be a good swimmer, you must swim.)
- c. Progression - is continually applying overload to experience gain. (Training effect)

4. Aerobic Conditioning

- a. Includes aerobic endurance, \_\_\_\_\_ fitness, cardiopulmonary fitness, and heart rate training. Aerobic exercise requires large amounts of oxygen, large muscle groups, is rhythmical in nature, and should be maintained over time at a moderate intensity.
- b. Examples include swimming, running, bicycling, etc. Weight-lifting and most team sports are not aerobic activities.

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- c. A good aerobic training program conforms to the \_\_\_\_\_ principle:
  - (1) \_\_\_\_\_ - minimum three times a week. If exercising daily, "Cross-Train" (alternate different activities) so skeletal muscles are not over-trained.
  - (2) \_\_\_\_\_ - heart and breathing rate must be accelerated, but only to a level which can be maintained for extended periods of time. This is 60% - 75% of an individual's maximum heart rate. As a general guideline, an exerciser should be breathing hard yet still able to talk while performing aerobic activities.
  - (3) \_\_\_\_\_ - must be an aerobic activity.
  - (4) \_\_\_\_\_ - continuous exercise for a minimum of 20 minutes.
  
- 5. Anaerobic Conditioning
  - a. Activities which are not long term or rhythmic in nature. They allow the body to recover between efforts. Many team sports and strength/speed training are considered anaerobic.
  - b. Two workouts a week can build strength (given sufficient intensity).

**WARNING**



- c. A muscle which is too fatigued to contract can still be exercised using a technique called "negatives". For example, an exerciser performing pull-ups will reach a point where he/she can no longer lift themselves. The partner then assists (or "spots") the exerciser by QUICKLY lifting him/her all the way up. The exerciser SLOWLY returns to the starting position. Do not rest at the top or

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bottom of the cycle. This process can be repeated until the muscle achieves total failure.

6. Ideal Workout
  - a. An adequate \_\_\_\_\_ period (light jogging, jumping jacks) increases the core temperature 1-2o, warming up the muscles for more effective stretching and exercise.
  - b. Slow, steady stretching reduces the risk of strains and improves performance. Avoid ballistic (jerking) stretches - they can cause strains. Avoid unsupported bending at the waist - it can cause back trouble.
  - c. Training period - aerobic or anaerobic.
  - d. A cool-down period of light exercise helps the body returns to its normal state.
  
7. Preventing Dehydration
  - a. Dehydration, a below normal level of water in the body, is a dangerous situation which can lead to heat injuries (\_\_\_\_\_ and heat \_\_\_\_\_) in the worst case and muscle cramps (including "side stitches") and sub-par performance at a minimum.

**WARNING**

Exercisers, especially in hot, humid environments, are especially vulnerable to dehydration. Up to two quarts of water per hour may be lost through sweating during exercise and one quart per day is lost through urine.

- b. Drink large amounts of clear, non-alcoholic, non-caffeinated, non-carbonated beverages before, during and after exercise.
  - (1) Water.: The recommended amount for adults is ten 8oz cups during a normal day.
  - (2) Sports drinks with less than 8% dissolved sugar.

Make your own: 1 gallon water, 6 oz sugar, 1 TBSP salt, flavored Koolaid sweetened with fructose (not sugar).

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- (3) Six to eight ounces of fluid consumed every 20 minutes of exercise can help replenish the sweat lost during exercises.
- c. By the time an active individual feels thirsty, he/she is behind the "\_\_\_\_\_."

NOTE

The best indication of adequate hydration is clear to light yellow urine.

- 8. Exercises to avoid.
  - a. \_\_\_\_\_ Avoid exercises which require the knee to bear weight while bent beyond \_\_\_\_\_ degrees.
  - b. \_\_\_\_\_:
    - (1) Avoid unsupported bending at the waist (i.e. standing toe touch).
    - (2) Avoid doing flutter kicks, leg levers, and horizontal scissor kicks in excessive amounts. These common exercises, mistakenly thought to strengthen the abdominal, predominantly work the Illio Psoas (hip flexor) muscles. These muscles are attached to the top front of the leg, wrap around outside the hip, and attach to the back of the pelvic girdle. Over-developed hip flexor causes a lordotic (sway-backed) spinal curve and result in lower back pain.

9. Rest and Basic Nutrition

- a. The Rescue Swimmer School is a very demanding physical program. Hard work outs without adequate rest or nutrition will result in over-use injuries and illness.
- b. Adequate rest is vital if muscles are to recover and gain strength. \_\_\_\_\_ to \_\_\_\_\_ hours of uninterrupted sleep is adequate for many adults, however, participants in this program need to "listen to their body" and get more sleep as required.
- c. Proper nutrition provides the Rescue Swimmer with the energy required to perform duties.
  - (1) Carbohydrates: Provide energy and is the main fuel source

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to the cells within the body. Glucose is the main product of carbohydrate digestion. Carbohydrates are usually referred to as the following:

- a. \_\_\_\_\_ derive from fruits and sugars.  
 (IE. Soda, candy, cake)
- b. \_\_\_\_\_: derive from vegetables, grains, fruits, and beans.

(2) Avoid fatty, fried, and oily foods.

10. **Conclusion:**

- a. The Rescue Swimmer School Dry Land Conditioning program is a comprehensive, total body workout designed by an exercise physiologist from the Naval Aeronautical Medical Institute. Special emphasis is given to muscle groups utilized in Rescue Swimming, specifically the \_\_\_\_\_ muscles of the upper body and the muscles in front of the \_\_\_\_\_ (which power the flutter kick).
- b. The principles of this unit apply to the training environment and the fleet.

**STRETCH SET**

STRETCH	COUNTS	REP
Ankle rotations	10 CW and 10 CCW	1
Jumping Jacks	Four-Count	30
Rotator Cuff Stretch	15 Seconds Each Arm	1
Triceps Stretch	15 Seconds Each Arm	1
Quadriceps Stretch	15 Seconds Each Arm	1
Inside Hurdler Stretch	15 Seconds Each Leg	1
Groin Stretch	15 Seconds Each Leg	1
Knee to Chest	15 Seconds	1
Both Knees to Chest	15 Seconds Each Leg	1
Back Twist	15 Seconds	1
Calf Stretch	15 Seconds Each Leg	1
Achilles Stretch	15 Seconds Each Leg	1

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**CALISTHENICS SET (REPETITIONS FOR LEVELS I, II AND III FOLLOW)**

<b>CALISTHENICS</b>	<b>LEVEL 1</b>	<b>LEVEL 2</b>	<b>LEVEL 3</b>
Pull-ups	5	6	8
Four-Count Lunges	15	18	20
Push-ups	25	30	35
Bent Knee Sit-ups	20	25	30
Pull-ups	5	6	8
Two-Count Squats	15	18	20
Wide-Arm Push-ups	25	30	35
Crunches	25	30	35
Four-Count Quadriceps Leg Raises	15	20	25
Four-Count Oblique Crunches	15	18	20
Four-Count Supermans	15	18	20
Four-Count Flutter Kicks	25	30	35
Triceps Push-ups	15	20	25
Calf Raises	30	35	40
Cross Knee Oblique Crunches	15	18	20
Eight Count Body Builders	10	12	15
Hip-Flexor Stretch	30 seconds each leg	30 seconds each leg	30 seconds each leg

**NOTE**

Students are required to bring a full squeeze bottle of water to all Physical Training sessions.

**STRETCH SET FOR STRENGTH TRAINING AND SWIMMING**

<b>STRENGTH TRAINING AND SWIMMING STRETCHES</b>	<b>COUNTS</b>
Push-ups	10 Reps
Arm Circles	15 seconds each direction
Flutter Kicks	25 Reps
Lunges	10 Reps
Crunches	15 Reps

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Abdominal Stretch	15 Seconds
Rotator Cuff Stretch	15 Seconds
Chest Stretch	15 Seconds
Triceps Stretch	15 Seconds
Quadriceps Stretch	15 Seconds
Inside Hurdler Stretch	15 Seconds
Back Twist	15 Seconds
	15 Seconds

**POST SWIM/STRENGTH TRAINING:**

<b>POST SWIM/ STRENGTH TRAINING</b>	<b>COUNTS</b>
Rotator Cuff Stretch	15 Seconds
Chest Stretch	15 Seconds
Triceps Stretch	15 Seconds
Quadriceps Stretch	15 Seconds
Inside Hurdler Stretch	15 Seconds
Back Twist	15 Seconds
Calf Stretch	15 Seconds

**STRENGTH TRAINING EXERCISES:**

<b>CORE EXERCISES</b>	<b>AUXILIARY EXERCISES</b>
* Power Cleans	Seated Cable Row
Pull-ups	Triceps Cable Press Downs
Back Squats	Incline Dumbbell Bench Press
Dead Lifts	Dumbbell Biceps Curl
Standing Military Press	Leg Press
Standing Bent over Row	Latissimus Pull Downs
Flat Bench Press	Sit-ups
Sit-ups	Crunches
Crunches	Oblique Sit-ups
Oblique Sit-ups	

**\* OPTIONAL EXERCISES FOR ADVANCED TRAINEES ONLY. POWER CLEANS SHOULD BE AFTER QUALIFIED INSTRUCTION ON APPROPRIATE TECHNIQUE.**

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**PHYSICAL TRAINING TEST OUT:**

<b>EXERCISES</b>	<b>LEVEL 1</b>	<b>LEVEL 2</b>	<b>LEVEL 3</b>
Pull-ups	3	4	5
Lunges	15	18	20
Regular Width Push-ups	25	30	35
Bent Knee Sit-ups	20	25	30
Wide Arm Push-ups	25	30	35
Crunches	25	30	35
Flutter Kicks	25	30	35
Triceps Push-ups	15	20	25
Run	18-20 minutes	22.5-25 minutes	27-30 minutes