

FiTOUT® DOUBLE BOOK
Turn it Over - Two in One!



FiTOUT® *Primary Aqua Certification*



2nd Edition

FiTOUR®

Aqua

Certification



www.FiTOUR.com

Quality Fitness Education at an Affordable Price!

FiTOUR® Copyright 2005
Updated 2008

WELCOME TO **FiTOUR®**

PROVIDING FITNESS PROFESSIONALS WITH AFFORDABLE QUALITY EDUCATION FOR OVER 25 YEARS.

FiTOUR® EXAM Directions, Information & Rules

* You are about to begin studying for the **FiTOUR® Primary Aqua Certification or the ACE or AFAA CEC Course**. This manual will cover the material for all examinations.

* **Certification & CEC Course Exam Access:** We encourage registrants to study the material, complete the chapter review worksheets, and prepare to take the examination within 90 days of registration. You have **one full year from date of purchase to access the Certification Exam and the CEC Course Exam**.

* **Certification & CEC Course Materials Online** *The online study manual and the online video* are located in your account with *FiTOUR®* in your Study Center. The video follows along with the manual.

* **Certification & CEC Course Timed Exam** When you have completed the study materials and are prepared to take the **online exam**, log into your *Fitour®* account, click on “Exam Center” and choose the correct exam. This is a **timed 3 hour exam** that you must complete within the timed 3 hours. You cannot start and stop the exam. Link to the *FiTOUR®* Online Exam User Guide: <https://www.fitour.com/inhome-cert-user-guide>

* **Certification Certificate** Once you take and pass the certification exam, you can print the **certificate of certification** yourself or have *FiTOUR®* mail you a certificate by logging into your account with *Fitour®*, click on Certifications and choose certificate option.

* **CEC Certificate** Once you take and pass the cec course exam, you can print the **CEC Certificate** yourself by logging into your account with *Fitour®*, click on CEC Course Credits and print.

*** Certification Exam Failed** If you do not pass the exam with a 75% or higher you can purchase a **Retest for \$25.00** at www.fitour.com/retest

*** CEC Course Exam Failed** If you do not pass the exam with a 75% or higher you can purchase a **Retest for \$25.00** at <https://www.fitour.com/retest/cec>

*** Certification Renewal** *FiTOUR® Certifications must be renewed every two years.* You will purchase a \$25 online *FiTOUR®* CEC course to renew. Renewal information is available at <http://fitour.com/renewal>

*** Submitting CEC Certificate** *FiTOUR® CEC Certificate*, per provider regulations; certificate must be submitted by customer to ACE or AFAA within the appropriate time set by ACE/AFAA applicable for ACE/AFAA certification renewals. ***The certificate has a provider number for ACE or a course number for AFAA depending on the cec course you purchased.***

*** FiTOUR®** certifications are nationally recognized and are accredited by the ***American Council on Fitness Education***, <http://qualityfitnesseducation.com>

Table Of Contents

Benefits of Aqua Fitness.....	1
Properties of H ₂ O.....	2
Components of an Aqua Fitness Class.....	4
Instructor Tips.....	8
Fit Principle/Training Concepts.....	9
Anatomy and Biomechanics Involved in Aqua Fitness.....	12
Safety Guidelines.....	16
Risk Factors and Contraindicated Movements.....	17
Special Populations and Class Adaptations.....	18
Aqua Exercises in a Class Format.....	22
Warm-Up/Warm-Down Exercises.....	24
Cardio Exercises.....	26
Muscle Conditioning.....	49
Shallow Water.....	49
Deep Water (Supplement Material).....	58
Stretches.....	61
References and Recommended Reading.....	67

Benefits of Aqua Fitness

- Improved Flexibility
- Improved Muscular Strength and Endurance
- Increased Aerobic Capacity
- Improves Balance and Coordination
- Improves Core Stability
- Improves Body Alignment
- Improves Muscle Symmetry (Because of the Antagonist and Agonist Muscles Working in Opposition)
- Speeds Up Metabolism
- Reduces Stress
- Provides an exercise mode that executes less impact on the joints and bones
- Induces a Faster Recovery Rate from Injury
- Provides a Non-Competitive Atmosphere
- Encourages Social Interaction
- Decreases Risk for Heart Disease
- Decreases Blood Pressure
- Hydrostatic Pressure Assists in a More Efficient Venous Return
- Increases HDL Cholesterol
- Improves Circulation
- Improves viscosity in the joints thereby enhancing mobility for those with osteoarthritis
- Improves lung capacity due to the humidity of the aquatic area for those with asthma
- Enhances Athletic Performance
- Improves Pregnancy
 - Water reduces hyperlordosis conditions
 - Water reduces the risk for overheating during exercise
 - Hydrostatic pressure reduces edema (swelling)

Properties of H₂O

Buoyancy*

- Definition– The upward thrust exerted by water on a body that is totally or partially immersed.
- Using Buoyancy Equipment– Perform downward exercises that utilize the law of buoyancy
- Very Beneficial for all populations because of the reduction of impact
- Buoyancy equipment enhances isometric contraction exercises
- Body Type Considerations
 - Floaters– Greater buoyancy in chest or buttocks; avoid suspended exercises because they are not as challenging
 - Sinkers– Lower body fat %; dense bones; lower lung capacity

Hydrostatic Pressure*

- Definition– The weight of the water that pushes against a submerged object from all sides.
- The force of pressure is proportionate to water depth
- Deep water exercises are 10-20% more challenging
- Increases circulation and basal metabolic rate
- Reduces edema

Drag*

- Definition– The resistance against an object in water or on land.
- Drag is always against the object's direction of movement.
- Components of Drag
 - Velocity– The speed at which an object travels through water
 - Effective Surface Area– The bigger the surface area the more drag
 - Drag Coefficient
 - Different shaped objects
 - Different shaped equipment yield a greater/lesser drag coefficient creating a different level of resistance
 - Turbulence
 - A state of water flow in which the velocities and pressures fluctuate randomly and irregularly
 - When turbulence increases so does the workload for the core muscles
 - An increase in turbulence is contributed to
 - Number of people in the pool
 - Water moving off the sides of the pool
 - Exercise Intensity
- Drag Factors
 - Wave Drag– Resistance that is created by turbulence
Example: Can be caused by other participants' movements
 - Frictional Drag– Resistance created by the texture of the object moving through the water
Example: A swimmer reduces friction by the swimwear and/or shaving the body
 - Salt water creates more drag

***These are the Predominant H₂O Properties**

Gravity

- Definition– The force of weight that is pulled down
- Gravity is decreased with water; therefore, one must work against the resistance of the water to yield a training effect.
- Specific Gravity/Is it a floater or a sinker?
 - 1.0 = Balance Example: Water is 1.0 (Neutral)
 - < 1.0 = Floater Example: Ice is .97 (Floats)
 - > 1.0 = Sinker Example: Bones 1.7-2.0 (Sinks)

Acceleration

- Definition- The rate at which velocity changes
- There is greater acceleration in air than in water.
- Acceleration forces decrease in water.

Impact

- Definition– The force that is generated when an object strikes another. In aqua fitness, impact is between the participant and the bottom of the pool.
- The force of impact depends on a person's weight, the speed at which he/she strikes the bottom of the pool, and the depth of the pool.
- Lean participants have a greater impact/Floaters have a lesser impact

Inertia

- Definition– An object in motion tends to stay in motion/An object at rest tends to stay at rest unless acted upon by an outside force.
- Once in motion, it is difficult for an object to stop and change direction.
- It is difficult to begin movement after stopping thus requiring a force to promote movement.

Action/Reaction

- Definition– For every action, there is an equal and opposite reaction.
- Example– When you move your arms forward, your body propels backwards.

Eddies

- Definition– The circular patterns that occur in the water at the rear of an object moving through the water.
- Eddies increase drag (resistance)
- Example– Slightly open your fingertips and move the hand through the water creating a greater force or resistance.

Conductor

- Definition– A substance that promotes a change in temperature.
- Water is a conductor that promotes quick changes in heat and cold (more so than air).
- Water temperature seems colder than air temperature
- If water is below 78°, then muscle flexibility will decrease.

Thermodynamic Properties– Salt water is warmer than fresh water because salt absorbs heat.



Below are a series of questions designed to help you remember the course material efficiently. Before proceeding to the next page of the course content, please answer the following review questions.

Section # 1 Review Questions

1. What are the benefits of Aqua Fitness?

2. What is the definition of:

Buoyancy

Hydrostatic Pressure

Drag

Gravity

Acceleration

Impact

Inertia

Eddies

Conductor

Components of An Aqua Fitness Class

Structure of the Aquatic Area

- Water Depth– For shallow water exercises, the depth should be chest height underneath the armpits.
- Know where the location of the slope that separates the shallow and deep ends.
- Pool Surfaces– No rough or irregularities on the deck or bottom of the pool
- Entrances and exits of the pool are safe and secure.
- Water Temperature
 - High Intense Workouts: 80°-85° (optimal)
 - Therapeutic Workouts: 86°-88° (optimal)
 - Avoid temperatures under 78° and over 90°
- Air Temperature– Avoid high air temperature and high relative humidity

Workout Format

- Warm-Up
- Rhythmic Limbering
- Cardiovascular Workout
- Warm-Down (A more positive, warmer connotation in the water than “cool-down”)
- Muscle Conditioning
- Stretch

Choreography Components and Methods

- Choreography Components– Intensity levels and variations can be created by taking one aqua exercise and changing the components of the choreography
 - Pool Orientation
 - Wall
 - Shallow Water Free Standing
 - Deep Water Free Standing
 - Body Action
 - Bounding
 - Suspension
 - Anchored
 - Movement Specifics
 - Speed
 - Force
 - Pulsing
 - Rhythm
 - Starting/Stopping
 - Drag
 - Plane Variations (See Anatomy and Biomechanics Section)
 - Seated Suspension
 - Standing
 - Lever Lengths and Angles

- Direction of Movement
 - Forward/Backward
 - Sideways
 - Diagonal
 - Circular
 - Against/With the Current
- Upper Body Movement/Lower Body Movement Changes
- Equipment
 - Resistance/Buoyancy Equipment
 - Foambells, Noodles, etc.
 - Floatation Belts– Intensity is increased when the belt is removed
 - Aqua wrist and ankle cuffs
 - Floatation Vests
 - If buoyancy equipment is placed under the armpits, ensure that the shoulders do not impinged to the ears. Limit the time that is spent in this position.
 - Drag Equipment
 - Webbed Aqua Gloves
 - Kick Boards
 - Parachutes
 - Paddles
 - Tethers
- Choreography Methods- Intensity levels and variations can be created by formatting the aqua class into different methods.
 - Timed Freestyle Choreography Method
 - The entire class format is continuous by taking one exercise performing it for a specified period of time then moving onto the next exercise and performing it for a period of time, and so on.
 - Example:
 - Jacks 2 minutes
 - Cross Country Ski 2 minutes
 - Jog 2 minutes
 - Leap Frog 2 minutes
 - Additional exercises until 20-60 minutes is accomplished
 - Building Block Choreography Method
 - Take one exercise, perform it for a number of reps, then add on a second exercise for a number of reps. Always return to the first exercise. Keep adding on exercises, then break down the reps.
 - Example:
 - Jacks 16 reps
 - Jacks 16 reps, Cross Country Ski 16 reps
 - Jacks 16 reps, Cross Country Ski 16 reps, Jog 16 reps
 - Jacks 16 reps, Cross Country Ski 16 reps, Jog 16 reps, Leap Frog 16 reps
 - Jacks 8 reps, Cross Country Ski 8 reps, Jog 8 reps, Leap Frog 8 reps
 - Jacks 4 reps, Cross Country Ski 4 reps, Jog 4 reps, Leap Frog 4 reps
 - Jacks 2 reps, Cross Country Ski 2 reps, Jog 2 reps, Leap Frog 2 reps
 - Jacks 1 rep, Cross Country Ski 1 rep, Jog 1 rep, Leap Frog 1 rep
 - *Build back up to 16 reps
 - *Add Direction or Chang a Choreography Component for intensity variation

- Interval Training Method
 - A type of training that incorporates bouts of high intensity activity followed by a period of active or passive recovery.
 - This type of training enables one to burn extra calories and to increase his/her aerobic capacity.
 - Always give the lower option for those who need to rest
 - Example 1: Beginner Aerobic Interval
 - This type of interval training builds a beginner up to performing an aqua aerobic class for a continuous 20-60 minute session.
 - 60-90% of MHR- Should work at a lower % of Maximum Heart Rate (lower than conditioning anaerobic interval training) for a longer period of time followed by a rest period
 - Cardio Work 2 minutes/Recovery 15 to 30 seconds
 - Gradually increase the work time and decrease the recovery time until the participant is continuously performing the cardio work.
 - Example 2: Conditioning Anaerobic Interval
 - This method is for the more conditioned individual to improve power and speed.
 - 85-95% of MHR
 - Cardio Work 30 seconds to 2-3 minutes/Recovery is relevant to the intensity and length of cardio work (the higher the intensity, the longer the rest)
 - Perform in cooler water (80°-84°)
- Circuit Method
 - A combination of cardio exercises and muscle conditioning exercises
 - Example:
 - Set up various equipment that represents a station around the pool.
 - Each station represents a different muscle group
 - Perform cardio exercises for 3-5 minutes as a group
 - Each individual breaks to a station for 1-2 minutes
 - Perform cardio exercises for 3-5 minutes as a group
 - Move to the next muscle station
 - Follow the same format until each individual completes each station
 - Participants can share the same station depending on the number of participants
- Exercise Variation Method
 - Take one exercise and change as many choreography components as you can.
 - Example:
 - Cross Country Ski Performed
 - Add More Height to the Bounding
 - Add Another Bounce or Pulse to Change the Rhythm
 - Add Direction
 - Perform in Suspension
 - Perform in Deep Water
 - Change Arm Movement Pattern
 - Use Aqua Webbed Gloves
- Teams/Partners/Games

- Deep Water Method
 - Incorporates a component of balance
 - Abdominals and core strength are developed
 - Water running and walking are the core exercises
 - Deep water training provides more hydrostatic pressure that increases metabolism and circulation
 - Avoid leaning forward or backwards more than 5%
 - Non-Swimmer
 - Use an Aqua Jogger
 - Ensure that a lifeguard is on duty
 - Stay in shallow water
 - Equipment
 - Noodles
 - Aqua Jogger
 - Aqua Belt
 - Buoyancy Cuffs (ankles, arms, and wrists)



Below are a series of questions designed to help you remember the course material efficiently. Before proceeding to the next page of the course content, please answer the following review questions.

Section # 2 Review Questions

- 1. Explain the Components of an Aqua Class, include:**

Structure

Workout Format

Choreography/Methods

Interval Training Methods

Circuit Training Methods

Deep Water Methods

Instructor Tips

- Teaching Position: Deck vs. Water
 - Deck– Students are more apt to understand the execution of the exercise. Instructor is able to check body alignment and movement pattern better.
 - Water– Instructor is able to motivate students better.
 - Combination is best– Demo the move on deck then get in the water to motivate!!
- Cueing
 - Visual
 - Hand Signals
 - Deck Demonstration
 - Use facial expressions and eye contact for positive reinforcement and motivation
 - Verbal
 - Cueing vocally is challenging in an aquatic environment due to acoustics and external noise
 - Keep verbal cues short and specific
 - Use an aqua microphone
- Music
 - Style– Choose music that corresponds with the demographics of your participants.
 - 120-155 BPM
 - Using Music with Choreography
 - Water tempo is slower than land tempo
 - Land Tempo– One movement per beat/count
Example: Jack out 1 Jack in 2
 - Water Tempo– One movement per 2 beats/counts
Example: Jack out 1, 2 and Jack in 3, 4
 - Using Music as a Motivator– An instructor can use music for background ambience only for motivation....no specific choreography to the music.
- Use transitions that are smooth
- Teach all levels of abilities/show variations of each exercise/give options
- Complete First Aid and CPR certifications
- Obtain Liability Insurance
- Acquire Proficient Communication Skills
- Arrive early to class
- Stay current in the fitness industry by reading and maintaining certification
- Project a Professional and Positive Image
- Use Waivers (facility may already do this)
- Obtain Medical Releases (facility may already do this)
- Conduct Health Screening: Health History Form and PAR-Q Form (facility may already do this)
- Conduct Fitness Assessment (facility may already do this)
- Complete Accident Reports when an incident occurs

FIT Principle/Training Concepts

FIT Principle

- **Frequency**
 - 3-5 days a week
 - Anaerobic Conditioning Interval Training: No more than 3 days a week
- **Intensity**
 - Aerobic Training– 60-90% of MHR
 - Anaerobic Conditioning Interval Training– 85-95% during the cardio work
 - Dive Reflex– Hydrostatic pressure creates a reflex that lowers the heart rate and blood pressure
 - Ways to Increase Intensity
 - Use of equipment
 - Covering more pool distance
 - Increase speed
 - Change directions
 - Methods of Monitoring Intensity
 - Taking a Pulse
 - Either at the neck (carotid artery) or at the wrist (radial artery)
 - 6-Second Count– Due to water being a conductor, the body cools rapidly
 - Get the count and add a zero (0)
 - Not the most accurate method for aqua exercise
 - Rate of Perceived Exertion
 - Borg's Scale

Original Scale		Revised Scale	
6	no exertion at all	0	
7	extremely light	.5	extremely weak
8		1	very weak
9	very light	2	weak
10		3	moderate
11	light	4	*
12		5	*strong
13	*somewhat hard	6	*
14	*	7	very strong
15	*hard (heavy)	8	
16	*	9	
17	very hard	10	extremely strong (MAX)
18			
19	extremely hard		
20	MAX		

*The intensity level that is optimal for cardiovascular improvements.

 - Talk Test
 - Intensity is too high– If one cannot speak
 - Intensity is too low– If one can sing songs and make long speeches
 - Optimal Intensity– One should be breathing heavily and be able to speak in short phrases
- **Time**
 - 20-60 minutes of continuous vigorous activity
 - When just beginning, do as much as you can
 - 1996 Surgeon General's Report– Accumulate 30 minutes of vigorous activity throughout the day for health purposes

Training Concepts

- 5 Components of Fitness
 - Cardiorespiratory Fitness (CRF)- A measure of the heart's ability to pump oxygen-rich blood to the working muscles
 - Cardio– Heart
 - Respiratory– Lungs and Ventilation
 - Vascular– Blood Vessels
 - Aerobic– Working with Oxygen
 - Anaerobic– Working without Oxygen
 - Measurement of Cardiorespiratory Fitness
 - 3-minute step test
 - 1.5 Mile Walk/Run
 - Cardio Training Guidelines
 - 3-5 days/week
 - 20-60 minutes per session
 - 60-90% of MHR
 - Muscular Endurance– The ability of a muscle to perform repetitive contractions over a period of time or the ability to sustain an amount of weight over a period of time.
 - Abdominal Curl-up Test
 - Push Up Test
 - Muscular Strength– The ability of a muscle to generate the maximum amount of force in a single effort.
 - Measurement
 - 1 Repetition Maximum Test (Bench Press/Leg Press)
 - Vertical Jump Test
 - Dynamometer Test (Grip Test)
 - Resistance Training Guidelines
 - Minimum 2 days/week
 - 8-10 major muscles
 - 8-12 reps/1-2 sets
 - Flexibility– The ability to move a joint through a full range of motion without discomfort or pain.
 - Measurement
 - Sit and Reach Test
 - Shoulder Reach Flexibility Test
 - Stretching Guidelines
 - At least 3 days/week
 - Stretch all major muscles to a feeling of mild discomfort
 - Hold each stretch 15-30 seconds
 - Repeat each stretch 3-5 times
 - Body Composition– Relative percentages of various components of the body, usually divided into fat mass (%of body fat) and fat free or lean mass (%fat free mass).
 - Fat Mass– Subcutaneous Adipose Tissue
 - Lean Mass– Muscles, bones, blood, organs, skin, hair, teeth, etc.
 - Measurement
 - Hydrostatic Underwater Weighing– Gold Standard
 - Skinfold Calipers
 - Infrared
 - Bioelectrical Impedance
 - Body Fat Standards for Active Individuals
 - Men– 5-15%
 - Women– 15-25%

- 4 Components of Fitness Performance
 - Speed– The rate at which a limb moves through a range of motion around a joint
 - To improve speed is to break down the movement involved in the skill and develop the primary muscles involved in that skill
 - Once the muscles are developed and the specific movement is strengthened, then the overall speed increases.
 - Power– Force X Speed (Velocity) How fast a muscle exerts force against any object (water) or against the ground translates into power.
 - Developed by resistive exercise at high speeds or with bounding or plyometrics
 - Practice drills in the water to develop power
 - Skill– Neuromuscular habit patterns that allow one to perform activities with efficiency.
 - Being highly skilled at an activity is characterized by being able to duplicate performance on demand.
 - Establishing a skill requires repetition.
 - Agility– The ability to start, stop, and move the body quickly in different directions.
- Overload Principle– Progressively increasing the intensity or volume of workouts over the course of a training program as exercise tolerance improves.
- Specificity Concept– The idea that one should train in a specific manner for a specific outcome. Physiological adaptation is specific to the muscle that is overloaded.
- Cross Training– Incorporating different modalities of exercise into one's overall training regimen to avoid overtraining, boredom, and/or plateau.
- Rest– One must plan days of rest to yield an improvement in one's overall performance
 - Active Rest– Days that consist of light, fun activities different from one's normal workout program
 - Passive Rest– Days that consist of doing no activity.
- Reversibility– A marked decrease in endurance, muscular strength, and flexibility with the cessation of exercise
 - Muscular Strength– Begins to reduce after 72 hours of cessation
 - Cardiovascular Endurance– Begins to reduce after 2 weeks of cessation
- Overtraining Syndrome– A state of undue mental and/or physical fatigue brought on about by excessive training without sufficient rest.
- Periodization of Training– A rational organization of training cycle to achieve optimal development of all aspects of fitness. The cycle ends with a period of rest to allow the body to recover from an extended training session and prepare for the next cycle of training to follow. Frequency, Intensity, and Time are all manipulated throughout the cycle to yield constant performance improvement.

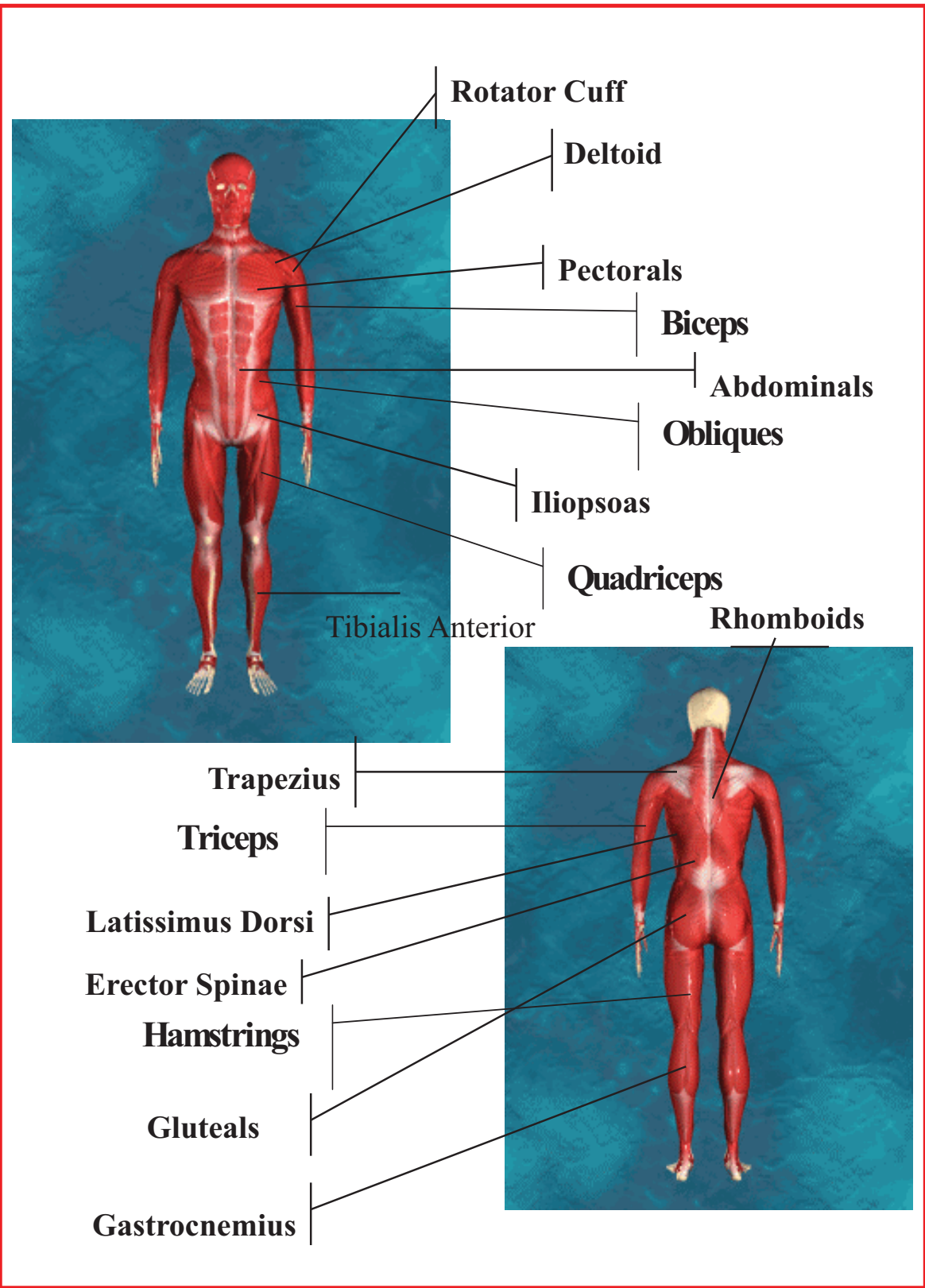
Anatomy and Biomechanics Involved in Aqua Fitness

Joint Actions Defined

- Flexion– Decrease in Joint Angle
- Extension– Increase in Joint Angle
- Abduction– Movement Away from the Midline of the Body
- Adduction– Movement Toward the Midline of the Body
- Prone– Face Down
- Supine– Face Up
- Circumduction– Circular Motion
- Rotation– Internal (toward body) and External (away from body)
- Dorsi Flexion– The top of the foot moves upward
- Plantar Flexion– The bottom of the foot moves downward
- Protraction– The scapula abducts or moves away from the midline of the body
- Retraction– The scapula adducts or moves toward the midline of the body
- Avoid Hyperextension or Hyperflexion

Anatomy: Muscles and Joint Action

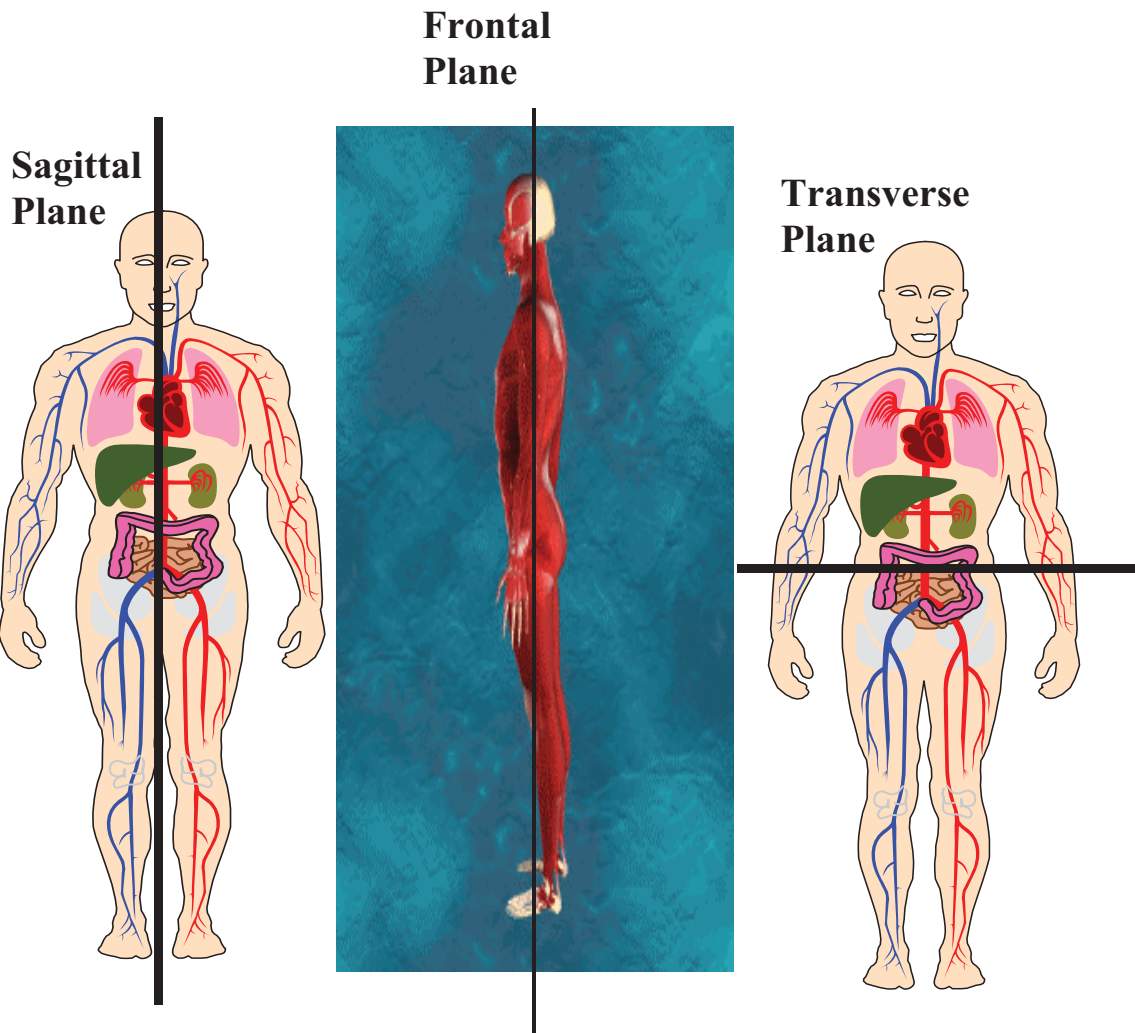
- Trapezius– Shoulder Elevation and Scapular Adduction (Retraction)
- Deltoid
 - Anterior– Shoulder Flexion
 - Posterior– Shoulder Extension
 - Mid– Shoulder/Arm Abduction
- Rotator Cuff– Circumduction
- Biceps Brachii– Elbow Flexion
- Triceps Brachii– Elbow Extension
- Latissimus Dorsi– Shoulder/Arm Adduction
- Pectorals– Shoulder Adduction
- Rhomboids– Scapular Adduction (Retraction)
- Abdominals
 - Rectus Abdominis– Spinal Flexion
 - Transverse– Abdominal Stability (Anatomical Girdle)
 - Internal/External Obliques– Trunk/Spine Rotation and Assists in Spinal Flexion
- Erector Spinae– Spinal Extension
- Gluteals
 - Gluteus Medius– Hip Abduction
 - Gluteus Minimus– Hip Abduction
 - Gluteus Maximus– Hip Extension
- Iliopsoas– Hip Flexion
- Quadriceps– Knee Extension
- Hamstrings– Knee Flexion
- Gastrocnemius– Ankle Extension (Plantar Flexion)
- Tibialis Anterior– Ankle Flexion (Dorsi Flexion)



Biomechanics

- **Isotonic Muscle Contraction**– A muscle contraction in which the force of the muscle is greater than the resistance, resulting in joint movement with shortening of the muscle.
 - **Concentric Phase**– The phase of an isotonic contraction that is characterized by the angle of the joint decreasing or the muscle shortening.
 - **Eccentric Phase**– The phase of an isotonic contraction that is characterized by the angle of the joint increasing or the muscle lengthening.
- **Isometric Muscle Contraction**– A muscle contraction in which the length of the muscle is unchanged. Can be accomplished with equipment in the water
- **Isokinetic Muscle Contraction**– A muscle contraction with controlled speed, allowing maximal force to be applied throughout the range of motion. Can be accomplished in water by concentrating on pushing and pulling with an even amount of force through the water.
- **Proper Biomechanics During Aqua Fitness**
 - Correct biomechanics and body form illicit more efficient movement.
 - More efficient movements prevent the risk for injury.
 - Once correct form is established, then one can develop speed.
 - Think about lifting out through the crown of the head.
 - Keep chest lifted, but the shoulders down and relaxed.
 - Keep the head level and the eyes straight ahead. This will prevent the back from arching or the body folding inward.
 - Maintain a neutral pelvis. Keep the abdominals engaged and the knees soft.
 - Keep feet parallel and the toes pointing forward. Always lower the heel of the foot to the floor when bounding. In other words, avoid jumping up and down only on the ball of the foot.
 - Rotate the spine only in specific exercises that illicit the movement, i.e., Twist Jumps.
 - When performing muscle conditioning exercises don't compensate by using other muscles. Isolate the muscles called into action.

- Planes of Movement– To be more symmetrical, work in all planes of movement. The more symmetrical one is the more balanced he/she is.
 - Sagittal (Median) Plane– Flexion and Extension
 - Coronal (Frontal) Plane– Abduction and Adduction
 - Transverse (Horizontal) Plane– Rotation





Below are a series of questions designed to help you remember the course material efficiently. Before proceeding to the next page of the course content, please answer the following review questions.

Section # 3 Review Questions

1. Name 5 Instructor Training Tips:

- 1.
- 2.
- 3.
- 4.
- 5.

2. What is the FIT Principle/Training Concepts:

3. Explain Joint Actions:

4. Explain the Anatomy: Muscles and Joint Action

5. Explain Biomechanics:

Safety Guidelines

- Ensure that a lifeguard is on duty
- Make sure that pool conditions are safe, i.e., pool chemicals
- Wait at least 2-3 hours after a heavy meal before exercising; Wait an hour after a light meal
- When breathing during the workout, inhale at the height of the bounce and exhale at the lowest point. This will prevent one from swallowing water.
- Gradually ease into an anaerobic interval workout.
- Begin each session slowly, then increase the intensity as the workout session progresses.
- Nonswimmers should be encouraged to join a swim class to build confidence.
- Wear protective aqua shoes
- Avoid water exercise if one has the following conditions:
 - Fever, diarrhea, and/or is vomiting
 - Open wound
 - Infectious disease
 - Skin condition
- One should stop exercising if he/she obtains one of the following warning signs:
 - Extreme breathlessness
 - Dizziness
 - Nausea
 - Racing Heart Rate
 - Hypothermia/Hyperthermia
 - Pain in Chest
 - Signs of Heat Cramps, Heat Exhaustion, or Heat Stroke
- Be aware of signs of distress
- Drink water before, during, and after exercise
- Wear sun protection
- Avoid electrical shock– Avoid using electrical cords, use battery operated sound equipment and mic.
- Basic First Aid– R.I.C.E.
 - **R**est the affected area
 - **I**ce the affected area for 20-30 minutes
 - **C**ompression above or below the affected area using elastic wrapping
 - **E**levate the affected area above the heart
- Never diagnose or prescribe, always refer to a physician if and when:
 - After first aid is administered
 - Severe swelling and pain is present
 - Participants complain of pain that lingers for 7-10 days
- Cue Participants on the Following:
 - Neutral Spine/Proper Body Alignment
 - Proper Breathing
 - Intensity Options
 - Safe Entry and Exiting of the Pool
- Check Safety of Equipment
 - Wrist Alignment– There should not be a break in the wrist
 - Grasping of Equipment– Firm but relaxed

Risk Factors and Contraindicated Movement

Risk Factors

- Primary
 - Family History
 - Age
 - Males over 40 years old
 - Females over 50 years old
 - Male Gender
 - Sedentary Lifestyle*
 - Smoking*
 - High Concentration of LDL Cholesterol*
 - Hypertension (High Blood Pressure)*
 - 120/80 Normal/Optimal for Men
 - 110/70 Normal/Optimal for Women
 - 140/90 High
 - 90/50 Low– No major risk involved with low blood pressure, maybe just a feeling of sluggishness
- Secondary
 - Race– African American in Particular
 - High Levels of Stress*
 - Obesity*
 - High Fat Diets*

***Indicates that this risk factor can be altered for the better.**

Contraindicated Movements

- Maintain Neutral Spine
 - In a vertical position, keep the ears over the shoulders, shoulders over the hips, and hips over the knees.
 - Avoid hyperextension of the neck when looking up on deck
 - Avoid hyperextension of the spine when executing flutter kicking
 - When in deep water, keep the torso erect. Avoid bending at the waist when in a vertical position.
- Avoid full rotation of the head and neck.
- Do not let the knee protrude past the toes in exercises where the foot is anchored and the knee is flexed. Unload the knee during twists.
- Always land with the entire foot (toe, ball, heel). Stay off the balls of the feet.
- When hopping or bounding on one leg, perform no more than 8 jumps in succession on one leg.
- When grasping equipment, use a firm but relaxed grip keeping the wrist in alignment with the forearm.
- Do not perform suspended exercises with floatation equipment that require shoulder abduction in deep water for an extended period of time. This may cause unnecessary shoulder impingement.
- Avoid hanging off the wall for an extended period of time.
- Avoid moving the arms quickly from the water to the air and from the air to the water

Special Populations and Class Adaptations

Seniors

- Classifications of Seniors
 - Athletic-old >55 years with good fitness (10 METS)- Can do much of the same as a young adult but with some modifications
 - Young-old >55 years with moderate fitness (6-7 METS)- Limited to activities such as the ones seen in cardiac rehab
 - Old-old >75 years with very low fitness (2 METS)- Limited to seated or standing with support exercises
- Exercise Guidelines
 - Perform a longer warm-up
 - Allow extra time in cueing when transitioning from one move to another
 - Avoid contraindicated exercises involving the knees, hips, and back
 - Perform more repetitions
 - Perform simple moves
 - Encourage social interaction to promote adherence

Pregnant Women

- Benefits
 - Hydrostatic pressure reduces edema
 - Hyperlordosis is minimized or prevented
- Discuss first with the physician an exercise plan of action.
- Exercise 3 days a week
- Perform a longer warm-up (10-15 minutes)
- Avoid overheating
 - Keep heart rate at 140 bpm or lower
 - Keep pool temperature between 80-84°
 - Drink water before, during, and after exercise
- Avoid exercising to exhaustion
- Avoid exercises that are performed while lying on the back after the 1st trimester
- As part of the muscle conditioning, perform kegel exercises
- Avoid deep stretches
- Consume 300 more kcals a day

Hypertension/Cardiac/Stroke Rehab Released Participants

- Instructors should work only with those who have been release by their doctors.
- Exercise 3-5 days/week
- Perform a longer warm-up.
- Emphasize large muscle dynamic movement done at moderate intensities (40-60% of MHR or RPE= 10-12) for long durations.
- Avoid interval training.
- Avoid raising the arms overhead for an extended period of time.
- If an individual complains of pain or pressure in the chest or feels dizzy, he/she should stop exercising and contact his/her doctor.
- Those who are recovering from stroke may need to wear a buoyancy vest for support and balance. Also this individual should wear protective footwear.
- Encourage those who are prescribed medications to take them on a regular basis.

Individuals with Diabetes Mellitus

- Type I Diabetes– A metabolic disorder characterized by inability to oxidize carbohydrates because of inadequate insulin. (Insulin Dependent)
 - Accounts for 10% of all diabetics
 - If blood glucose is below 80-100 mg/dl, one should consume carbohydrates before exercising.
 - If blood glucose is above 250 mg/dl, one should delay exercise until the glucose is lowered.
 - One should not exercise during the peak insulin action. One should avoid injecting insulin into the working muscles and instead inject the insulin into a skinfold.
 - One should consume additional carbohydrates after exercise.
- Type II Diabetes– A metabolic disorder characterized by inability to oxidize carbohydrates because of a resistance to insulin. (Noninsulin Dependent)
 - Adult Onset
 - Individuals with Type II Diabetes usually have other conditions such as obesity, high blood pressure, and high cholesterol.
 - Can be controlled with diet and exercise. Individuals may take oral medication.
- Exercise Guidelines (set by The American Diabetes Association)
 - Participants should drink water before, during, and after exercise
 - Participants should plan the insulin injection in conjunction with the exercise session.
 - Participants should wear protective footwear.
 - Avoid extreme heat and cold environments.
 - Exercise at a steady pace, about 50-70% of VO₂ MAX or HRR. Avoid interval workouts.
 - Exercise with a buddy in case hypoglycemia or hyperglycemia occurs.
 - Have easily digestible carbohydrates on hand in case of a drop on glucose.
 - Instructors should determine prior to class if there are diabetics in the class. Ensure that they have instructions from their doctors on how to alter carbohydrates and insulin prior to exercise.

Individuals with Arthritis

- Avoid exercise when the joint is inflamed.
- Avoid exercise in the morning. This is when an individual has the least amount of mobility.
- Perform a longer warm-up to increase the viscosity of the joint due to synovial fluid being released.
- Move all joints through full range of motion including fingers and toes.
- Perform exercises gently with little to no bounding. Deep water exercise is optimal.
- Keep water temperature between 86-90°
- Build a strong foundation before adding equipment.

Individuals with Asthma

- Exercise Induced Asthma– A condition that occurs when an individual breathes large volumes of dry air that cools and dries the respiratory tract. This causes the airway to constrict making it difficult to receive oxygen.
- The warm, humid air in an aquatic setting makes it easier for one to breathe.
- Chlorine vapors could cause difficulties in breathing.
- Perform a longer warm-up
- Interval training is optimal
- Avoid eating at least 2 hours prior to exercise.
- Take prescribed medication prior to exercise
- Have the bronchodilator on hand
- Exercise with a buddy in case of an incident

Obesity

- Encourage a complete program of diet and exercise for weight loss
- Instructors should place importance on health as opposed to physical appearance
- Exercise 3-5 days/week
- Exercise for longer durations
- Avoid high impact moves; however, suspended moves may not provide the needed challenge if the individual is a “floater.”
- Wear protective footwear
- Deep water is very beneficial

Individuals with Osteoporosis

- A disease characterized by a decrease in the total amount of bone mineral and a decrease in the strength of the remaining bone.
- Water exercise strengthens bones and the ligaments and tendons around the joints for stability.

Individuals with Knee/Hip Problems

- Deep water exercise is optimal
- Keep the movements fluid; avoid jerky, rushed movement
- Avoid twisting while keep the feet planted on the floor
- Keep knees flexed
- Individuals with hip replacement should avoid crossing one leg over the other. Avoid hip flexion beyond 90°.

Individuals with Low Back Problems

- Avoid bounding movements
- Avoid hyperextension of the lower back when performing flutter kicks
- Strengthen abdominals
- Develop core strength
- Maintain neutral spine
- Stop if an exercise is painful

Children

- Encourage children to exercise on a regular basis.
- Perform activities that are intermittent or resemble interval training.
- Incorporate games and songs making the experience fun!!
- Encourage partner movements
- Incorporate both cardio and muscle conditioning
- Children should be supervised always.
- Encourage children not to hold their breath.
- Involve the parents with what the children are accomplishing.

Athletes

- Provide a variety of activities that offer a challenge
- Incorporate plyometric moves and interval training
- Incorporate games
- Incorporate deepwater exercises



Below are a series of questions designed to help you remember the course material efficiently. Before proceeding to the next page of the course content, please answer the following review questions.

Section # 4 Review Questions

Name 5 Safety Guidelines

- 1.
- 2.
- 3.
- 4.
- 5.

What are the Risk Factors and Adaptations for:

1. **Pregnant Women**
2. **Individuals with Diabetes**
3. **Individuals with Knee/hip problems**
4. **Individuals with Low Back Pain**
5. **Children**
6. **Athletes**

Aqua Exercises in a Class Format

The following list consists the aqua exercises that you can format into a class setting. To assist you as you are teaching, you may copy and laminate this list to have readily available at poolside. The class format components are in order of execution (Warm-up, Cardio, Warm-down, Muscle Conditioning, and Stretches). There is no specific order of exercises within the components that needs to be followed; therefore, let your creative juices flow as you organize your class format.

Warm-Up/Warm-Down Exercises

1. Side Step
2. Walking
3. Running
4. Any cardio exercise at a lower intensity

Cardio Exercises

1. Wide Knee Jog
2. Cross Country Ski
3. Jacks
4. Crossovers
5. Single Heel Kick
6. Double Heel Kick
7. Front Kicks
8. Back Kicks
9. Can-Can
10. V Kicks
11. Front Split Jumps
12. Cheerleaders
13. Rocking Horse
14. Side Leaps
15. Pendulum
16. Leap Frog
17. Power Knee Jumps
18. Single Bunny Hop
19. Double Bunny Hop
20. Leg Swings
21. One Leg Frog Jump
22. Football Drill
23. Downhill Ski
24. Twists
25. Side Knee Lift
26. Sponge

Muscle Conditioning

• Shallow Water

1. Straight Leg Kick
2. Bicycle
3. Wall Crossovers
4. Front Flutter Kick
5. Slap Kick
6. Leg Circles
8. Toe RaisesSagital Leg Lifts
9. Side Straight Leg Lifts
10. Fire Hydrant
11. Tricep Push-ups
12. Wall Abs
13. Butterfly
14. Lateral Raises
15. Sagital Arm Swing
16. Arm Curls
17. Quad Extension
18. Leg Curl

• Deep Water (Supplement Material)

1. Vertical Cross Country Ski
2. Vertical Jacks
3. Vertical Crossovers
4. Vertical Quick Scissors
5. Vertical Knee Lifts
6. Vertical Double Heel Kick
7. Vertical Egg Beater
8. Seated Jacks
9. Seated Crossovers
10. Seated Quick Scissors
11. Ab Curls
12. Knees to Chest
13. Oblique Twists

Stretches

1. Side Stretch
2. Quad Stretch
3. Hamstring Stretch
4. Ankle Rotations
5. Calf Stretch
6. Upper Back
7. Chest
8. Shoulders
9. Triceps
10. Biceps
11. Head 1/2 Rolls
12. Back Stretch



Below are a series of questions designed to help you remember the course material efficiently. Before proceeding to the next page of the course content, please answer the following review questions.

Section # 5 Review Questions

Name 2 Warm-Up/Warm-Down Exercises:

- 1.
- 2.

Name 5 Cardio Exercises:

- 1.
- 2.
- 3.
- 4.
- 5.

Name 5 Muscle Conditioning exercises in Shallow Water:

- 1.
- 2.
- 3.
- 4.
- 5.

Name 5 Muscle Conditioning exercises in Deep Water:

- 1.
- 2.
- 3.
- 4.
- 5.

Warm-Up/Warm-Down Exercises

The following exercises may be used for both warming up prior to the cardio workout and the warm-down after the cardio workout. Warm up for approximately 10 minutes using the following exercises and include mild rhythmic limbering and stretching. Warm down using these exercises for approximately 5 minutes, then finish the workout with the muscle conditioning exercises and final stretches.

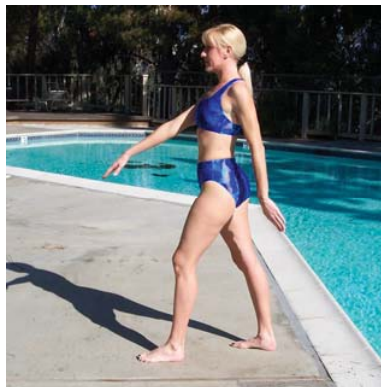
1. Side Step

Traveling laterally, step the lead leg out wide and then follow it with the other leg by closing the legs together. The arms extend to the surface and then lower to the sides to help propel the body. Continue this movement until you travel the width of the pool.



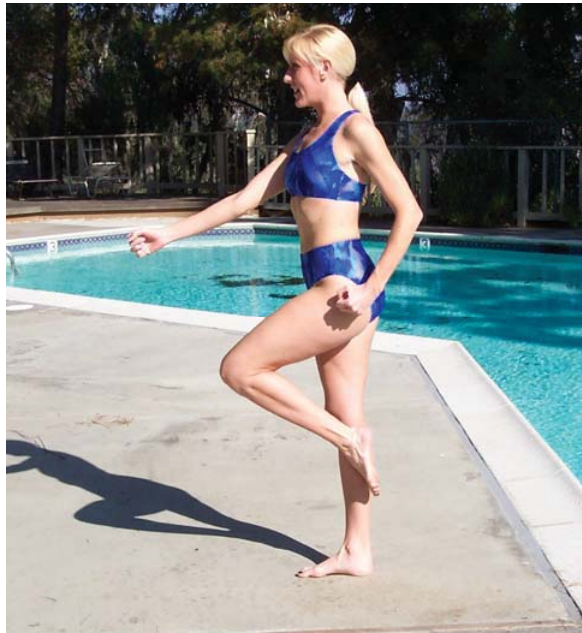
2. Walking

Walking can be done in either shallow water or deep water. Maintain an erect posture while using wide strides. When at the shallow end, make sure that you land on your feet heel, ball, toe. You can use your arms to help you propel yourself forward. When using walking as a warm-down, the instructor can form the class into a circle. Have the participants change direction to create some spice!!!



3. Running

Alternate right and left legs keeping the body erect. This exercise can be performed in either shallow or deep water, remaining in place or adding direction. When at the shallow end, be sure to land toe, ball, heel. The elbows are to remain at 90° so that the arms move through the water as one unit. The hands can be fisted or the fingers can be slightly separated pushing through the water for more resistance.



4. Any Cardio Exercise

Experiment with the warm-up performing any cardio exercise at a lower intensity. This will provide some variety in your classes.



Below are a series of questions designed to help you remember the course material efficiently. Before proceeding to the next page of the course content, please answer the following review questions.

Section # 6 Review Questions

1. During the Side Step Warm-UP you should travel_____.
2. During the Walking Warm-Up walking can be done in_____.
3. During the Running Warm-Up you should _____ the left and right legs.
4. During Any Cardio Exercise you can_____.

Cardio Exercises

Perform the cardio exercises for approximately 30-40 minutes 3-5 days a week. Make sure to perform the talk test with the participants to ensure proper intensity levels.

1. Wide Knee Jog

Place your hands under the water with your arms extended out from your sides. In a jogging motion raise your right knee to meet your right hand. Then raise your left knee to meet your left hand. You may opt to push your hands through the water in front of the body. Ensure that the heels come down to the floor.



2. Cross Country Ski

With your arms and legs working in opposition, place your right foot in front of your body and your left foot in back creating a wide stride stance. Your arms are in opposition with the left arm in front and the right arm back. Jump up and switch arms and legs coming down to the floor in a wide stride stance with the arms and legs in opposing positions.



3. Jacks

Extend your legs wide in a wide-straddle stance with your arms out wide from your sides and the palms facing down. Jump your feet together and your arms come down next to your sides. Jump out and push your arms to just below the water level. Keep your arms under the water.



4. Crossovers

Extend your legs wide in a wide-straddle stance with your arms out wide from your sides and the palms facing down. Jump moving your legs together but crossing one leg over the other and crossing one arm over the other. Jump your legs out wide to starting position and then alternate legs and arms as you crossover again. When the arms come together, the palms face each other. When the arms move to the surface of the water, the palms face out. Keep your arms under the water.



5. Single Heel Kick

Stand on your right foot and lift your left heel towards the buttocks. Jump and switch heels by kicking the right heel towards the buttocks and the left foot lowering to the floor. Keep alternating heel kicks. Keep your knees together with the hips remaining in neutral position and abs contracted for stability.



6. Double Heel Kick

Stand on both feet, jump and powerfully kick your heels towards your buttocks. Keep your knees together pointing down towards the floor. The hips remain in neutral position and gluteals and abs are contracted for stability. Lower the feet back to the floor and repeat.



7. Front Kicks

Stand on your right foot with the left leg extended straight out in front. The right arm is extended forward and the left arm is extended back for counterbalance. Jump and bring the left leg down and the lift the right leg up switching arms to counterbalance. Repeat.



8. Back Kicks

Stand on your right foot with the left leg extended straight out in back. The right arm is extended forward and the left arm is extended backwards for counterbalance. Jump and bring the left leg down and the lift the right leg up switching arms to counterbalance. Squeeze your gluteals as you switch. Repeat. If you have lower back problems, avoid this exercise.



9. Can-Can Girl

Stand on your right foot with the left leg extended straight back behind you. Swing your left leg forward across the body. Jump and bring the left leg down and swing the right leg forward from behind the body and across the body. Keep switching legs, but making sure the kick across the body initiates from the rear. The hands remain on the waist or hips. Be mindful of this exercise if you have lower back problems.



10. V Kicks

Stand on your right foot with the left leg extended in front of the body at 45°. Jump up and switch legs. The arms are parallel with each other swooping to the extended leg. When you switch legs, swoop the arms to the standing leg each time. Repeat.



11. Front Split Jumps

Begin by jumping up and down. When you jump up split your legs with the right leg in front and the left leg in back. Your arms extend out to the sides just underneath the water surface (the arms are shown on the hips). Before you land on the floor, pull both legs together so that the feet touch the floor together. The arms come down along side the body. Jump up again and switch leading legs. Repeat. Remember to soften the knees when you land on the floor.



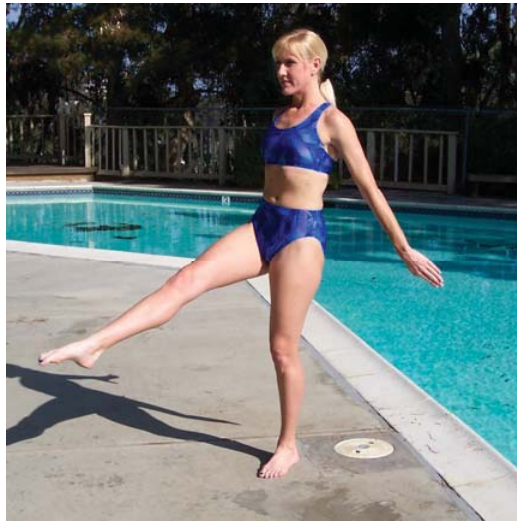
12. Cheerleaders

Begin by jumping up and down. When you jump up split your legs wide in a straddle stance out to the sides. Your arms extend out to the sides just underneath the water surface. Before you land on the floor, pull both legs together so that the feet touch the floor together. The arms come down along side the body. Repeat. Remember to soften the knees when you land on the floor.



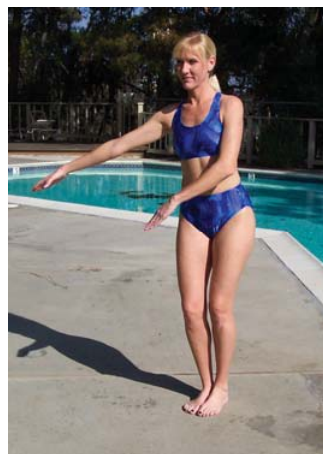
13. Rocking Horse

Stand on your left foot with your right leg extended in front of the body. The arms are extended to the sides just beneath the water surface. Add a bounce. Rock forward onto the right leg as the left leg extends back behind the body lifting off the floor. At the same time swoop the arms forward to let the palms touch together. Then rock back onto the left foot with the right leg extended in front of the body lifting off the floor. At the same time the arms swoop back to the sides. Repeat for a number of reps or for a period of time then switch lead legs (left foot forward and right foot back).



14. Side Leaps

Stand with your feet together. Take your right foot and hop out to the right side. Bring the left foot close to the right foot as it follows in delay. The right arm leads out with the right leg and the left arm is natural. Repeat until one travels the width of the pool then change directions to be balanced on the left side.



15. Pendulum

Stand on the right foot with your left leg extended out to the left side. Both arms are extended to the right side to counterbalance. Hop to the opposite (left) foot. Now the left foot is on the floor and the right leg is extended to the side. The arms simultaneously swoop to the opposite side to counterbalance. Repeat. This repeating motion resembles a pendulum.



16. Leap Frog

Stand with feet together with arms extended in front of the body and hands grasping one another. (The arms are shown behind the body so that one can see the leg position.) Jump up as high as possible with the feet remaining together and the knees flexing to the sides like a frog. The arms and hands remain in a downward position. Repeat. One may use the side of the pool for balance.



17. Power Knee Jumps

Jump with your feet together and your arms extended out to your sides just underneath the surface of the water. Jump off both feet and bring your knees towards your chest. As your knees lift, swoop your arms down to touch your knees. Lower down both feet simultaneously touching the floor, and your arms extend back up to just underneath the water surface.



18. Single Bunny Hop

Hop up and down on one foot no more than 8 consecutive reps, then switch to the other foot. For variety, you can add direction with this exercise and different arm movements.



19. Double Bunny Hop

Hop up and down on both feet. You can hop low then hop very high. You can hop low for 2 reps and hop high for 2 reps. Change arm movements and direction for variety.



20. Leg Swings

Bounce on your left foot with the right leg extended out in front. The right arm is extended out in front and the left arm extended in back to counterbalance (the arms are shown on the hips). While bouncing on the left foot swing your right leg backwards behind the body then forward in front. The arms swing in opposition. Bounce no more than 8 reps then switch to the other leg. If one has a lower back problem, he/she should avoid swinging the leg back behind the body, only towards the front of the body.



21. One Leg Frog Jump

While bouncing on the left foot, hold the right foot off the floor with the right knee bent at 90°. Jump up and push off the left foot bringing the left knee up to meet the right knee. Keep the right knee bent and lower the left foot down to the floor. The arms are natural for balance. Repeat. Switch to the other leg.



22. Football Drill

Bend your knees to where your shoulders are just beneath the water surface. The hips are flexed slightly. Run as fast as you can in place with pitter-patter movement. The feet barely come off the floor. The elbows are at 90° with the hands in a fist position moving vigorously back and forth in the water. You can use this exercise in interval type formats. Change direction to provide variety. For example, face the north side of the building for 10 seconds, face the east side of the building for 10 seconds, face the south side of the building for 10 seconds, and then face the west side of the building for 10 seconds. Take a 30 second break and do it again.



23. Downhill Ski/Log Jumpers

Downhill Ski– Begin by jumping up and down. Whether you have lines on the bottom of the pool or an imaginary line, jump side-to-side over that line. Keep your hands on your waist or hips or just let them work naturally for balance.

Log Jumpers– As you are downhill skiing, pretend that you are coming up on some logs and you have to jump over them. Bend your knees towards your chest as you are jumping over the line. This is more advanced than the downhill ski.



24. Twists

Begin by hopping up and down. While keeping your feet and knees together and your shoulders forward, twist your lower body to one side as you unload in the hop. Land the feet on the floor, then twist to the other side. Your arms are either parallel working in opposition with the body or the hands are on the hips. Ensure that you flex the knees when you land and you unload the feet when you twist.



25. Side Knee Lift

While hopping on one foot, lift and lower the opposite knee. Switch to the opposite foot. The arms are free to perform any movement. For variety add direction. Avoid hopping on one foot for more than 8 reps before switching to the other foot.



26. Sponge

Begin with the legs in a straddle wide stance. The arms are extended out to the sides just beneath the water surface. Jump up and bring the chest forward into torso flexion, cross the arms over the chest, and bring the knees as close to the chest as possible. Squeeze the body as tight as possible like wringing out a sponge. Then extend the legs and arms out wide lowering back to the floor to the beginning position.





Below are a series of questions designed to help you remember the course material efficiently. Before proceeding to the next page of the course content, please answer the following review questions.

Section # 6 Review Questions

Complete the sentence

1. During the Cross Country Ski exercise your arms and legs should be _____.
2. For the Crossover exercise you need to extend your legs _____.
3. For the Front Kicks exercise stand _____.
4. For the V Kicks exercise stand on your _____.
5. For the Front Split Jumps begin _____.
6. For the Side Leaps exercise stand with your feet _____.
7. For the Pendulum exercise stand on the right foot with _____.
8. For the Double Bunny Hop exercise hop _____.
9. For the Leg Swings exercise bounce on your _____.
10. For the Sponge exercise begin _____.

Muscle Conditioning

After the cardio portion of the workout and warming down for 5 minutes, perform the following muscle conditioning exercises for approximately 10-15 minutes depending on the length of the class.

- **Shallow Water**

- 1. Straight Leg Kick**

With the back towards the wall and the arms resting on the wall, alternate leg lifts. As the right leg lifts to the surface of the water, the left leg lowers to the floor. Avoid sinking into the shoulders and performing this exercise too long. If one has a lower back problem, he/she should not kick so high.



- 2. Bicycle**

Place the body with the back up against the wall and the arms resting on the wall. Bend your knees and kick in a bicycling motion. As the leg extends forward bring the foot out of the water and pull the heel towards the buttocks. Pull the knee in as close to the chest as possible. Avoid performing this exercise for a long period of time and avoid sinking into the shoulders.



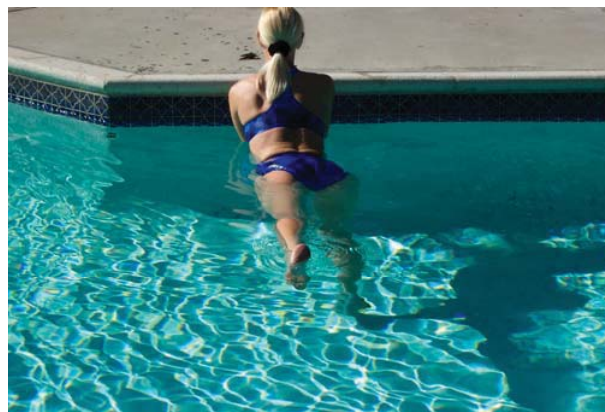
3. Wall Crossovers

With the back up against the wall and the hands resting on the wall, extend your legs out wide to the sides. Pull your legs together crossing one over the other. Open the legs again and cross the other leg over the other one alternating the legs each time. Keep your lower back against the wall and avoid sinking into your shoulders.



4. Front Flutter Kick

While facing the wall place one hand on the gutter or side and place the other hand under the water bracing the wall. Push your body up to where it is parallel to the floor. From the hips kick with straight legs in a flutter type motion. By keeping your feet under the water, you can create more resistance. Avoid this exercise if you have lower back problems.



5. Slap Kick

While facing the wall place one hand on the gutter or side and place the other hand under the water bracing the wall. Push your body up to where it is parallel to the floor. From the knees alternate kicking the heels towards the buttocks. As the right foot slaps the water the left heel is kicking towards the buttocks. Avoid this exercise if you have lower back problems.



6. Leg Circles

Stand with your side next to the wall. Place one hand on the wall and the other hand rests on the waist. Extend in front the leg that is closest to the center of the pool. Then swing that leg to the side, then swing it back behind the body. Finish the circle by taking the leg from behind and brushing it past the standing leg to begin another circle. Perform this exercise for a number of reps, then switch directions on the same leg. Switch sides. Avoid this exercise if you have lower back problems.



7. Toe Raises

While facing the wall, place your hands on the side of the pool. Raise up on your toes, then lower down to where your heels lightly touch the floor. Although this exercise is designed to condition the calves, add gluteal conditioning by squeezing the buttocks. To make this exercise more intense, tuck one foot behind the opposite ankle and raise up and down on one foot at a time (not shown).



8. Sagittal Leg Lifts

Stand with your side next to the wall. Place one hand on the wall and the other hand rests on the waist. Extend in front the leg that is closest to the center of the pool. Then lower the leg back down to starting position. Apply equal force as you lift and lower the leg. Add variety by pointing the toes for a set of reps and by flexing the foot for a set of reps. Switch to the other side.



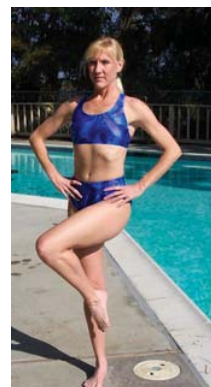
9. Side Straight Leg Lifts

Stand with your side next to the wall. Place one hand on the wall and the other arm extends out to the side in the air. (Arms are shown on the hips.) Abduct out to the side the leg that is closest to the center of the pool. As the leg abducts to the side keep the knee forward and the foot parallel to the floor with the toes forward. With equal force, pull the leg down to the other leg. Repeat and then switch sides.



10. Fire Hydrant

Stand with your side next to the wall. Place one hand on the wall and the other arm extends out to the side. Bend the knee of the leg that is closest to the center of the pool. The foot of the bended knee is in line with the knee of the standing leg. Swivel the knee out to the side as wide as possible and swivel the knee across the body as far as possible. Keep the torso stationary and keep the leg under the water. Repeat for a number of reps. Switch sides.



11. Triceps Push-Ups

Face the wall with the hands on the gutter or on top of the deck. Jump up and extend your elbows; this is the starting position. Lower the body down until the elbows are at 90° then push back up. Avoid touching your feet to the floor. To modify, you may touch your feet to the floor, or keep your feet on the floor and perform regular push-ups on the wall.



12. Wall Abs

Stand with your back up against the wall and your arms resting along the wall. Flex forward in a crunch motion. Contract your abdominal muscles, then release. Repeat for a number of reps. This movement is very small.



13. Butterfly Arms

Stand in a wide stance. Extend your arms out to the side with the palms facing forward. Pull your arms together crossing one over the other. Turn your palms back and push your arms back to beginning position. Repeat with alternating the top and bottom arms.



14. Lateral Arm Raises

Stand in a wide straddle stance. The arms are extended shoulder height wide out to the sides with the palms facing down. Pull the arms down and together touching the palms. Without changing the position of the hands, push the arms back up to the starting position.



15. Sagittal Arm Swing

Stand with one foot in front of the other in a wide stance. Extend both arms in front of the body above the surface of the water. With the hands cupped and the palms facing down, push the arms down swinging past the hips and reaching behind the body. Flip the hands up and pull the arms back up to the surface of the water. Break the surface of the water, flip the hands over and repeat.



16. Arm Curls

Stand in a wide straddle stance. The arms are extended shoulder height wide out to the sides with the palms facing forward. Bend at the elbows pulling your lower arm toward your chest. Extend your elbows straightening your arms back to starting position.



17. Quad Extension

Stand with your side next to the wall. Place one hand on the wall and the other arm extends out to the side. Bend the knee of the leg that is closest to the center of the pool. The quadricep of the bended leg is parallel to the floor. Keep the toes pointed. Kick the lower leg forward and pull it back to starting position.



18. Leg Curl

Stand with your side next to the wall. Place one hand on the wall and the other arm extends out to the side. (The arms are shown on the hips.) Bend the knee of the leg that is closest to the center of the pool so that the heel raises to the buttocks and the knees are together. Push the foot back down to the floor at starting position. Pull and push the heel towards and away from the buttocks with equal force.





Below are a series of questions designed to help you remember the course material efficiently. Before proceeding to the next page of the course content, please answer the following review questions.

Section # 8 Review Questions

Fill in the Blank

1. For the Straight Leg Kicks exercise start with the back towards_____.
2. For the Leg Curls exercise stand with your sides_____.
3. For the Toe Raises exercise raise up on your _____.
4. For the Fire Hydrant exercise place _____ hand(s) on the wall.
5. For the Wall Abs exercise flex_____.
6. For the Arm Curls exercise stand_____.
7. For the Leg Curls exercises pull and push the heel_____.
8. For the Quad Extension exercise kick the lower leg_____.
9. For the Butterfly Arms exercise stand in a _____.
10. For the Lateral Arm Raises exercise stand in a _____.

- **Deep Water (Supplement Material)**

The following exercises are provided as supplemental material to the certification. Pictures are not shown, but are demonstrated at the live certification workshops. These exercises are to be performed at a minimum of 7 feet depth of water.

- 1. Vertical Cross Country Ski**

One can use a noodle or anything buoyant to keep the body floating. This exercise is much like the Cross Country Ski in shallow water but suspended and without arms if using floatation under the arms. From a suspended vertical position, the right leg is in front of your body and your left leg is in back creating a wide stride stance. Jump up and switch legs coming down in a wide stride stance with the other leg in front. Keep switching legs for a number of reps. Avoid sinking into the shoulders if using a noodle under the arms.

- 2. Vertical Jacks**

One can use a noodle or anything buoyant to keep the body floating. This exercise is much like the Jacks in shallow water but suspended and without arms if using floatation under the arms. From a suspended vertical position, begin with the legs in a wide straddle stance. Pull the legs together, then push them back out to starting position. Avoid sinking into the shoulders if using a noodle under the arms.

- 3. Vertical Crossovers**

One can use a noodle or anything buoyant to keep the body floating. This exercise is much like the Crossovers in shallow water but suspended and without arms if using floatation under the arms. From a suspended vertical position, begin with the legs in a wide straddle stance. Pull the legs together crossing over each other, then push them back out to starting position. Alternate top leg when crossing over. Avoid sinking into the shoulders if using a noodle under the arms.

- 4. Vertical Quick Scissors**

One can use a noodle or anything buoyant to keep the body floating. From a suspended vertical position, begin with the legs shoulder width apart. Pull the legs together crossing over each other vigorously as fast as you can then snapping them apart and crossing immediately the other leg over. Keep alternating foot over foot in a scissor type motion. Avoid sinking into the shoulders if using a noodle under the arms.

- 5. Vertical Knee Lifts**

One can use a noodle or anything buoyant to keep the body floating. From a suspended vertical position, pull the knees into the chest and lower back down to a vertical position. Contract the abdominal muscles as you pull the knees in. Repeat for a number of reps. Avoid sinking into the shoulders if using a noodle under the arms.

6. Vertical Double Heel Kick

One can use a noodle or anything buoyant to keep the body floating. From a suspended vertical position, pull the heels into the buttocks and lower back down to a vertical position. Contract the abdominal muscles as you pull the heels in and keep the knees pointing down. Repeat for a number of reps. Avoid sinking into the shoulders if using a noodle under the arms.

7. Vertical Egg Beater

One can use a noodle or anything buoyant to keep the body floating. From a suspended vertical position, rotate the legs in opposite directions like an egg beater motion. This resembles treading water. Repeat for a number of reps. Avoid sinking into the shoulders if using a noodle under the arms. For more of a challenge, perform this exercise without buoyancy equipment.

8. Seated Jacks

One can use a noodle or anything buoyant to keep the body floating. From a suspended position, sit erect with the legs extended in front of the body. The hips are at 90°. Open the legs into a wide straddle stance and then close together. Keep the body in a seated erect position throughout the exercise. Use equal force opening and closing the legs. One may travel forward if he/she is using enough force. Avoid sinking into the shoulders if using a noodle under the arms.

9. Seated Crossovers

This exercise is much like the Wall Crossovers but one is in deep water. One can use a noodle or anything buoyant to keep the body floating. From a suspended position, sit erect with the legs out wide to the sides. The hips are at 90°. Pull your legs together crossing one over the other. Open the legs again and cross the other leg over the other one alternating the legs each time. Keep your torso in an erect position and avoid sinking into your shoulders.

10. Seated Quick Scissors

This exercise is much like the Vertical Quick Scissors, but seated in an erect position. One can use a noodle or anything buoyant to keep the body floating. From a suspended seated position with the hips at 90° and the body erect, begin with the legs shoulder width apart. Pull the legs together crossing over each other vigorously as fast as you can then snapping them apart and crossing immediately the other leg over. Keep alternating foot over foot in a scissor type motion. Keep the torso erect. Avoid sinking into the shoulders when using a noodle under the arms.

11. Ab Curls

One can use a noodle or anything buoyant to keep the body floating. With the equipment under the arms and the body in a supine position, extend the legs straight forward lifting your buttocks up. The body is floating on top of the water, and the toes may even break the surface. Lift the chest up contracting the abdominal muscles. The buttocks should remain lifted and not sink down. Repeat for a number of reps. Avoid sinking into the shoulders when using a noodle under the arms.

12. Abs Knees to Chest

One can use a noodle or anything buoyant to keep the body floating. With the equipment under the arms and the body in a supine position, extend the legs straight forward lifting your buttocks up. The body is floating on top of the water, and the toes may even break the surface. Pull the knees into the chest and extend them back out again. Contract the abs as you pull the knees in. Repeat for a number of reps. Avoid sinking into the shoulders when using a noodle under the arms.

13. Oblique Twist

One can use a noodle or anything buoyant to keep the body floating. With the equipment under the arms and the body in a supine position, extend the legs straight forward lifting your buttocks up. The body is floating on top of the water, and the toes may even break the surface. Pull the knees into the chest contracting the abdominal muscles. Rotate the knees to one side while keeping the torso straight. Then, rotate the knees to the other side. Repeat for a number of reps. Avoid sinking into the shoulders when using a noodle under the arms.



Below are a series of questions designed to help you remember the course material efficiently. Before proceeding to the next page of the course content, please answer the following review questions.

Section # 9 Review Questions

List and Explain 5 of the Deep Water Exercises:

1.

2.

3.

4.

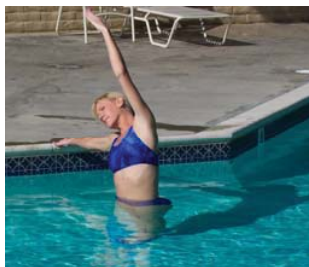
5.

Stretches

Perform the following stretches after the muscle conditioning portion of the class. Hold each stretch for 15-30 seconds. The stretch portion of a class normally lasts 5-8 minutes. Always incorporate stretching into your overall workout regimen at least 3 days a week.

1. Side Stretch

Stand alongside of the pool wall about arms length away with your feet together. The arm that is closest to the center of the pool is extended out to the side with the other hand resting on the lip or gutter of the pool. Extend the arm up over the head while pushing your hips toward the center of the pool. Then, lean your hips into the pool wall while lowering your arm back down to the surface of the water. Hold each stretch for about 15-30 seconds, then rhythmically move your hips in and out for a more dynamic stretch. Switch sides.



2. Quad Stretch

Stand on your right foot and raise the left heel towards the buttocks. Grab the foot or the ankle pulling the foot closer to the buttocks. Keep your knees together and your hips in neutral alignment. Hold this stretch for 15-30 seconds, then switch legs.



3. Hamstring Stretch

Stand facing the wall with your left foot on the floor and your right leg extended straight forward resting the foot on the wall. The hands are placed on the lip or gutter of the pool. Keep your hips and shoulders squared off in the direction of the pool wall. Try to straighten the extended leg as much as possible. Hold this stretch for about 15-30 seconds, then switch legs.



4. Ankle Rotations

Stand on your right foot with your left leg extended. Rotate your ankle in one direction for a number of reps and then rotate the ankle in the opposite direction for the same number of reps. Switch legs. For an added stretch in the hamstring, grab the leg just above the ankle lifting the leg to the surface of the pool as you rotate your ankle.



5. Calf Stretch

Stand facing the wall with your hands resting on the lip or gutter of the pool. Place your left foot to the corner of the pool with the right leg extended back and the right foot on the floor. With both sets of toes facing the wall, ensure that you are pressing the heel of the back foot against the floor. Hold this stretch for 15-30 seconds, then switch legs.



6. Upper Back

From a standing position, extend your arms in front of you grasping the hands. Round the upper back feeling a stretch between the shoulder blades. Hold this stretch for 15-30 seconds.



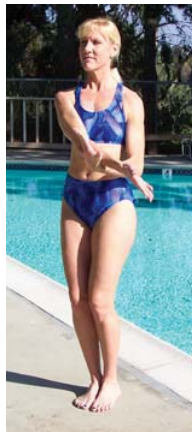
7. Chest

From a standing position, extend your arms behind your back grasping your hands. Pull your arms back feeling a stretch in the chest. Hold this stretch for 15-30 seconds.



8. Shoulders

From a standing position, cross one arm in front of the chest grabbing the extended arm below the elbow with the opposite hand. Pull the arm towards the chest to feel a deeper stretch in the deltoid. Keep the shoulders away from the ears. Hold this stretch for 15-30 seconds, then switch arms.



9. Triceps

From a standing position, bring the right arm up next to the ear with the elbow bent and the forearm reaching behind you with the hand reaching between the shoulder blades. Place the left hand just beneath the elbow gently pressing the arm backwards. Hold this stretch for 15-30 seconds, then switch arms.



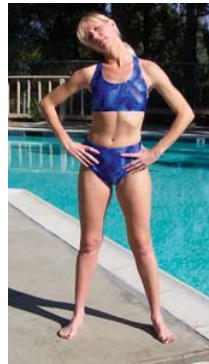
10. Biceps

From a standing position, extend the right arm in front of the body with the palm supine. Place the left hand on the right fingertips pressing the palm forward. Hold this stretch for 15-30 seconds, then switch arms.



11. Head 1/2 Rolls

From a standing position, place your hands on your hips. Lower the chin to the chest and slowly roll your head to the right bringing the right ear to the right shoulder. Hold this stretch for a few seconds, then slowly roll the head forward to the opposite side. The left ear lowers to the left shoulder. Hold this stretch for a few seconds, then lower the chin to the chest and raise the head up. Avoid rolling the head back.



12. Back/Hamstring Stretch

While facing the pool wall, place your hands on the lip or gutter of the pool and your feet on the wall with your knees bent. Then straighten your arms and your legs as much as possible. The higher up on the wall your feet are placed the deeper the stretch. Hold this stretch for 15-30 seconds.





Below are a series of questions designed to help you remember the course material efficiently. Before proceeding to the next page of the course content, please answer the following review questions.

Section # 10 Review Questions

- 1. Explain how to do the Side Stretch:**
- 2. Explain how to do the Ankle Rotations Stretch:**
- 3. Explain how to do the Calf Stretch:**
- 4. Explain how to do the Upper Back Stretch:**
- 5. Explain how to do the Triceps Stretch:**
- 6. Explain how to do the Biceps Stretch:**
- 7. Explain how to do the Head $\frac{1}{2}$ Rolls Stretch:**
- 8. After completing the review of the study manual, please take the time to complete the Instructor Observation form located on the next page of this study manual. This is an optional review exercise. However, completion of this exercise will significantly increase the knowledge and understanding necessary to become a certified fitness instructor.**

References and Recommended Reading

A.C.S.M. *Guidelines for Exercise Testing and Prescription*. Lea & Febiger: Philadelphia, PA, 2000.

Case, L. *Fitness Aquatics*. Human Kinetics: Champaign, IL, 1997.

Forster, R. and Huey, L. *The Complete Waterpower Workout Book*. Random House: New York, 1993.

Franks, B.D. and Howley, E. T. *Fitness Leader's Handbook*. Human Kinetics: Champaign, IL, 1998.

Katz, J. *Water Fitness During Your Pregnancy*. Human Kinetics: Champaign, IL, 1994,

Krasevec, J. *HydroRobics-2nd Edition: A Water Exercise Program for Individuals of All Ages and Fitness Levels*. Human Kinetics: Champaign, IL, 1985

Lees, T. *Water Fun and Fitness*. Human Kinetics: Champaign, IL, 1995.

Sova, R. *Water Fitness After 40*. Human Kinetics: Champaign, IL, 1995.

White, M. *Water Exercise*. Human Kinetics: Champaign, IL, 1995.

Aquatic Exercise Association: www.aeawave.com

Aquatic International: www.aquaticsintl.com

Aquatic Therapy and Rehab Institute, Inc.: www.atri.org

Arthritis Foundation: www.arthritis.org

Fitness Wholesale: www.fwonline.com

****Note:** For instructional purposes so that the reader may see the proper execution of the exercises, the photos were shot with the demonstrator out of the water on the pool deck. The photos that demonstrate the exercises in the water show the demonstrator with the level of water slightly lower than optimal. This, again, was shot at an angle so that the reader has optimal view of the execution of the exercises. Optimal water level comes to the participant's chest underneath the armpits.



About FiTOUR® Certifications

FiTOUR® offers affordable, nationally recognized, advanced fitness certifications. Join the thousands of fitness professionals who have chosen to become a **FiTOUR®** Professional and take your fitness instruction to the next level! **FiTOUR®** offers various certification programs for any fitness instructor or trainer looking to advance their knowledge while simultaneously creating a marketing edge for themselves as a serious fitness professional. **FiTOUR®** offers In-Home Certifications and Workshop Certifications to accommodate every fitness professional!

FiTOUR® Certification Programs

- **LEVEL I - FiTOUR® Instructor**
Increase your earning potential and jump-start your career by becoming certified with **FiTOUR®**. **FiTOUR®** is a nationally recognized certifying organization ranked high among their class. We offer a wide range of fitness certifications that will meet the demands of the novice all the way to the veteran fitness professional. This program requires successful completion of one certification course.
- **LEVEL II - FiTOUR® Specialist**
Two course required program which includes the **FiTOUR®** Group Exercise certification course and any other **FiTOUR®** certification program. This program requires successful completion of two certification courses. The **FiTOUR®** Specialist status will be achieved when you have completed the **FiTOUR®** Group Exercise certification course AND the course of your chosen discipline. **FiTOUR®** Specialist programs are available in Pilates, Yoga, Aqua, Personal Training, Kickbox, Cycling, Elderly Fitness, and more.
- **LEVEL III - FiTOUR® Practitioner**
Take your business to the next level with these high quality, affordable, advanced level certification programs. Become a **FiTOUR®** Practitioner in Pilates, Yoga or Personal Training! These **FiTOUR®** programs are advanced level fitness certifications that require learning through a progression of three required courses.
- **LEVEL IV - FiTOUR® MASTER Practitioner**
The **FiTOUR®** MASTER Practitioner program is for any fitness instructor or trainer looking to advance their knowledge while simultaneously creating a marketing edge for themselves as a serious professional. The **FiTOUR®** MASTER Practitioner program is the highest level certification available and is clearly a mark of distinction. Become a **FiTOUR®** Practitioner in Pilates, Yoga or Personal Training! These **FiTOUR®** programs are advanced level fitness certifications that require learning through a progression of four required courses.



About the FiTOUR® Renewal Program

FiTOUR® is dedicated to providing fitness professionals with high quality, convenient, fitness education. Because many of the fitness organizations have raised the CEC requirements resulting in an increased cost to maintain your certification, **FiTOUR®** has designed a renewal program that will save you valuable money and is unlike any other in the fitness industry.

- **NO Continuing Education Credits required!!** Simply complete a 25 question renewal examination in the area which you hold the certification!
- The **FiTOUR®** renewal fee is **ONLY \$25** for any **FiTOUR®** Certification! That means that \$25 every two years renews your **FiTOUR®** Certification!
- Your certification is valid/current for two (2) years from the date issued on the certificate

Renewal Fees

Each **FiTOUR®** certification is valid for two years from the date issued and can be renewed anytime within 90 days prior to the expiration date. The renewal fee is **ONLY \$25** for each **FiTOUR®** Certification.

About the Renewal Examination

The certification renewal examination consists of 25 questions that are derived from the original certification examination. Please reference your **FiTOUR®** certification study manual in the area of which you hold the certification prior to taking the renewal examination.

If the minimum score (75%) is not achieved on the renewal examination, a retest is available. You may retest as many times as necessary. The fee for each retest is \$25.

How To Renew Your FiTOUR® Certification

1. Login to the Exam Center located at www.FiTOUR.com within 90 days prior to the expiration date. Certifications will not be eligible for renewal until 90 days prior to the expiration date. (you may check the expiration date(s) of your certification(s) by logging into you're the My Account section at www.FiTOUR.com).
2. Pay the \$25 renewal fee via our secure online processing system
3. Begin and successfully complete (75% or higher) the 25 question renewal examination in the area of your certification
4. Receive an updated certificate with an expiration date for another two years!
5. Maintain your fitness certification for **ONLY \$25** and **NO CEC's!!**