Manual

5th Edition

The CFES

Aquafit Instructor Certification Course

- ***Lifestyle Behavioural Changes & Health Promotion***

Advancing the Standards in Fitness Leadership Training Since 1980

Canadian Fitness Education Services

CFES Aquafit Instructor Certification Course

Resource Manual (5TH EDITION) ©

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The purpose of this manual and program is to educate. The enclosed materials have been well reviewed and every effort has been made to make this program as accurate as possible. This program is not a substitute for professional, medical, athletic or recreational counselling. Please consult the appropriate health and wellness professional for guidance. Thank you.

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- Aquafit Class Components
- Qualities of a Professional Aquafit Instructor
- Foundation Leadership Skills

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Thank you for choosing the Canadian Fitness Education Services (CFES) Aquafit Instructor course as your preferred method for becoming an Aquafit Instructor.

The current health crisis in North America continues. Chronic disease, in particular, has been associated with a lack of adequate physical activity and poor nutritional habits among people of all ages. Such diseases may include obesity, high blood pressure, high cholesterol, osteoporosis, metabolic disorders and osteoarthritis [14].

It could be argued that much of the adult population is at risk of disease because of inactivity and poor nutrition. Therefore, if aquafit exercises offer health benefits, it may be argued that regular participation in an aquafit program may also decrease the risk of disease and premature death.

Fitness in the Water (Aquafit)

The Aquafit Fitness Instructor Course is designed to teach you how to deliver a safe, challenging and fun drop-in Aquafit class. Aquatic fitness is gaining in popularity as people of all ages are seeking a safe, non-impact way to exercise. Athletes, seniors, adults, adolescents, and the general population can find an aquafit class that will meet their needs. According to the Aquatic Exercise Association [12], aquatic fitness is *"a mode of aquatic exercise that is distinctively not swimming and not therapeutic exercise, but exercise which is performed in a face-out, vertical position in various depths of water with the intent to improve physical and/or mental health."*

Reflection

Water is clean and purifying, can be powerful and strong like the tides, and then again serene and tranquil. It is a healing medium for the human mind, body and soul. It is the ideal environment for a complete holistic exercise program. One cannot help but experience the joy and fluidity of human movement in the water; getting lost in the water's vibrations and experiencing physical relaxation as the water massages the body. In a sense, water quenches a physical, psychological, emotional and spiritual thirst and leaves you with a wealth of health benefits beyond the basic group fitness or weight training class.

Margaret Hewitt-Zaitlin, BA, BPE, Executive Director, CFES

To many people, aquafit classes are more meaningful than the description above. Water based classes are a place where people go to meet friends, be inspired, participate in group activities, and have fun. As Aquatic Fitness Instructors, we are responsible for providing more than just a good physical workout; we are also responsible for facilitating the development of mental, social, spiritual and emotional health and wellness of our participants. An Aquafit Instructor should strive to make the aquafit class fun and effective, but yet still challenging while catering to a diverse group of people with varying fitness levels.

Due to the buoyancy of water, aquafit is one of the safest forms of exercise training modalities [1]. Exercising in the water provides an environment where gravity and impact are less of a concern; making exercise much easier on the joints. The water assists in controlling the speed of movement, offering a natural, accommodating resistance. A common misconception is that water fitness or aquafit is designed only as a gentle conditioning class, primarily for mature adults or those unable to tolerate impact exercise. Although this type of class can cater to those individuals, studies indicate that water aerobics or walking in waist-deep water increases the cardiovascular fitness of the young, the middle-aged and mature adults alike [7].

Aquatic Fitness Today

We never know the worth of water till the well is dry.
Thomas Fuller

Today water is recognized for its potential to promote relaxation and well-being, reduce anxiety and alleviate pain and discomfort.

Aquafit classes, similar to group fitness, have evolved to suit varying fitness levels and personal preferences. Listed below are just a few of the many types of classes.

- Aqua walking
- Aqua jogging
- Aqua aerobics
- Aqua boot camp
- Arthritis (Joint Works)
- Baby & me
- Circuit
- Common Movement Disorders (MS, Stroke, Parkinson's)
- Core conditioning classes
- Rehabilitation (pre and post)
- Sports specific conditioning
- Strength and conditioning classes

Aquatic fitness can be done in deep, shallow, or transitional depth water. In addition, some classes have a certain focus (e.g. cardio, muscular strength). Often equipment is used to enhance strength or core stability.

This course will prepare the aquatic fitness instructor with a solid foundation to be able to teach basic shallow and deep water classes. Specialty classes (e.g. aqua jogging, arthritis, common movement disorders, rehab, etc.) will require further competencies and training.

The Benefits of Aquafit

Water is life's mater and matrix, mother and medium.
There is no life without water.
Albert Szent-Gyorgyi

It is evident that water based aerobics can help to lower the risk of chronic health conditions and promote the wellness of individuals who participate on a regular basis.

More specifically, the aqua participant may experience the following health benefits:

- Lower blood cholesterol levels – especially LDL cholesterol
- Weight loss and improved body composition
- Improved cardiovascular health and better utilization of oxygen
- Reduced blood pressure
- Better insulin sensitivity
- Increased muscle strength for activities of daily living
- Improved joint mobility and range of motion
- Reduced joint stiffness

Blank

Chapter 2

The Use of Music

Learning Objectives:

- Purchasing Music
  - Prerecorded Music
  - Downloading Music
  - SOCAN Fees
- Music Selection
  - Correct Tempo
- Music Volume
  - Safe Volume
  - Voice Care
- Understanding Music Beats
  - The Downbeat
  - The Eight – Count
  - The Phrase
  - Master Downbeat
  - Half Time and Double Time

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SOCAN Fee

Regardless of the type of music used there is a tariff charged for the performance right to use music in fitness classes. SOCAN (The Society of Composers, Authors and Music Publishers of Canada) is Canada's national Performing Rights Society which serves to license commercial users (fitness facilities or instructors) of music by songwriters and composers. Tariff 19 governing music for fitness activities states the following: *"For a licence to perform in conjunction with physical exercise (for example dancercize, aerobics, body building, etc.) at any time and as often as desired, any or all of the works in respect of which SOCAN is empowered to grant a licence, the annual fee for each room where the performances take place is the average number of participants per week per room during the year multiplied by $2.14, with a minimal annual fee of $64.00".*

For more information contact:
Society of Composers, Authors and Music Publishers of Canada (SOCAN) Licensing Department
41 Valleybrook Drive, Toronto ON M3B 2S6
Current licensees: 1-866-944-6223
New licensees: 1-866-944-6210
Website: http://www.socan.ca

CFES highly recommends that instructors observe the copyright and licensing laws governing the use of music in fitness programs.

Music Selection

If the instructor intends to have their movements coincide with the beat of the music, then they should use professionally made, high quality music that has an even 32-count pacing or phrasing. Please exercise caution when downloading music as the beat may vary not be crisp and clear and may vary throughout the song. Although personal preference is important, it is also important to choose music that motivates the participants, makes the movement experience enjoyable, and is the right tempo for the class. The music needs to be appropriate for the participants and the goal of the class, taking into account preference and age.

Once the music has been selected it needs to be played on quality sound equipment. The instructor should practice using the music and make sure that it is cued and ready to go. Always listen to the entire sound track prior to the class and always have back up music available. Most importantly, music that the instructor thinks may work for a specific class may not work at all for the participants. Always ask for feedback!

Correct Tempo

The speed or tempo of the music needs to be just right. If the music is too slow, there may not be enough enthusiasm, encouragement, or motivation to get a good workout. If the music is too fast, range of motion is compromised and body mechanics suffer, increasing the risk for injury. Music with a tempo that is inappropriate can leave participants feeling frustrated. Instructor often make the following mistakes regarding music tempo:

- Use land based tempo which is often too fast
- Fail to rehearse the exercises in the water

Chapter 3

Anatomy, Posture and Spinal Stability

Learning Objectives:

- Anatomy Review
  - The Skeletal System
  - Joints and Their Actions
  - The Skeletal Muscles
- Know What's Moving
- Major Muscle Pairs
- Anatomical Planes
- Anatomy & the Affect of Water
  - Heart
  - Lungs
  - Muscles
  - Bones
  - Joints
  - Connective Tissue
  - Tendons & Ligaments
- Maintaining Posture and Core Stability in the Water
  - Basic Postural Assessment
- Muscle Balance
  - Causes of Muscle Imbalance
  - Postural Deviations
  - Muscle Power Focus
  - Stabilizing Muscles
- Functional Core Training
  - Myths Associated with Training the Core in the Water
  - Balance Training
  - Isometric Core Training
- Practical Application of Core Training
  - Neutral Spine
  - Proprioception
  - Balance Training
  - Isometric Core Training

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Maintaining Posture and Core Stability in the Water

The buoyancy, drag, turbulence and other characteristics of water make posture and core stability more difficult to maintain when exercising in the water as compared to on land. Even while exercising in chest deep water, with the feet firmly planted on the bottom of the pool, the resistance and movement of the water acts to constantly challenge the endurance and stability of the core muscles. While moving the limbs in the water, the resistance of the water creates many action-reaction forces on the body. This is exaggerated when the body is suspended in the water because the participant is not able to rely on the floor for stability.

The maintenance of posture and spinal alignment requires kinesthetic awareness and muscular stabilization. Kinesthetic awareness includes the body's awareness of where the limbs are in time and space and the ability to coordinate motion. Unlike land based aerobics, aquatic participants cannot see their posture and alignment in the mirror. Therefore, the instructor must be observant and alert to understand the refractive properties of water and how it distorts the visual appearance of body alignment, and constantly reinforce proper alignment and excellent exercise technique.

The instructor must continuously provide cueing, reminders, and education regarding proper core stability and maintenance of neutral spine. When the participant learns how to initiate and maintain proper alignment and core stabilization, the movements become safer and more effective. The movements are mindful and with purpose, the result is efficiency of movement, where strength and flexibility are enhanced. In the end, the participant feels success and experiences the joy of movement.

The water provides an automatic core training program, challenging the participant to constantly work against and with the resistance of the water, buoyancy and turbulence. However, in order to ensure that the participants take advantage of this opportunity for stability training, the aquatic fitness leader must first teach the participant how to engage the core and then consistently and frequently cue posture and spinal alignment.

Chapter 4

Basic Lower and Upper Body Movement Library

Learning Objectives:

Body Alignment Cues
- Spine and Core
- Lower Body
- Upper Body
- Intensity Options

Lower Body Movements
- Jog
- Cycle Legs
- Hamstring Curl
- Rocking Horse
- Kicks
- Cross Country Ski
- Jacks
- Pendulum
- Jumps

Upper Body Movements
- Breaststroke Arms
- Reverse Breaststroke Arms
- Rows
- Chest Press
- Bow And Arrow Arms
- Tarzan Arms
- Cross Country Ski Arms
- Jumping Jack Arms
- Rotator Cuff
- Bicep Curl & Tricep Press
- Mountain Climber

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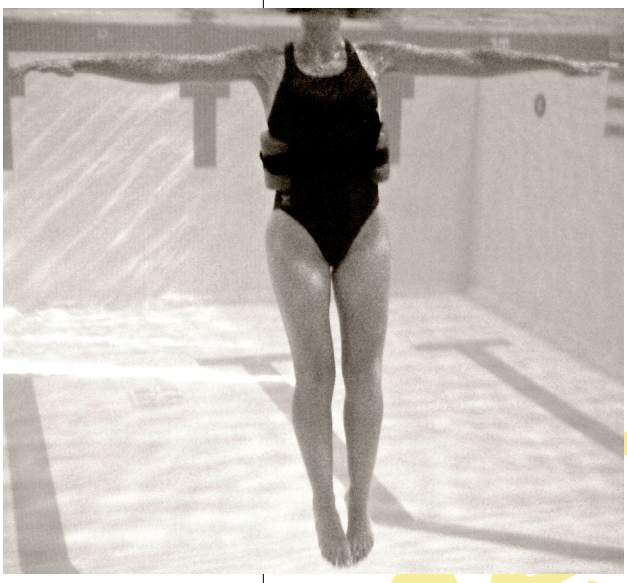
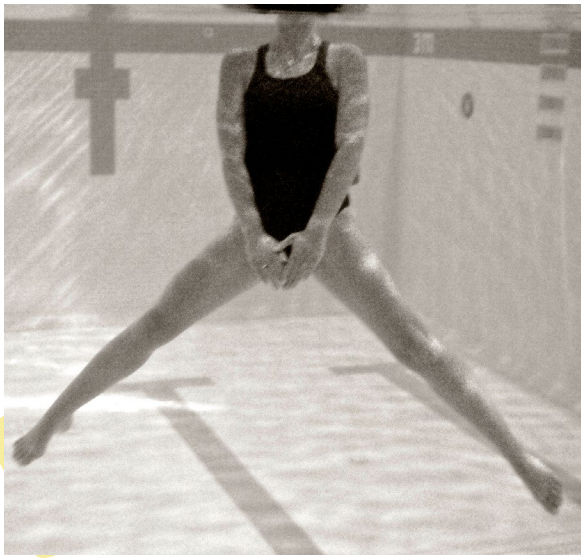
Jumping Jacks Arms

Movement Dynamics
Alternate adduction and abduction of the shoulders with the arms straight and elbows soft. (Think: jumping jacks)

Muscle Groups
Middle deltoid; Latissimus Dorsi, Pectoralis major



Jumping Jacks start (deep water)



Jumping Jacks finish (deep water)

Safety Precautions
- Ensure elbows and wrists are neutral and not locked; hands remain under water for maximal resistance
- Avoid pulling hands down behind the back, as it may cause hyper-extension of the lumbar spine

Movement Variations
- Unilateral
- Bilateral
- Cross in Front
- Cross Behind (caution)
- Muscle focus
- Supine
- Side plank
- Elbow bent (eg. chicken wings)
- Pendulum Arms (both arms swing to each side in unison)

Direction of Travel
Side to side, circular

Chapter 5

Aquatic Biomechanics

Learning Objectives:

- Body Position
- Base of Support
- Buoyancy vs. Gravity
- Water Depth
- Impact Options
- Inertia (Newton's 1st Law)
- Acceleration (Newton's 2nd Law)
- Resistance (Newton's 3rd Law)
  - Drag
  - Body Position
  - Limb Position
  - Lever Length
- Velocity
- Turbulence
- Other Things to Consider
  - Refraction
  - Surface Tension
  - Hydrostatic Pressure
  - Thermodynamics
  - Muscular Contractions

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Aquatic Biomechanics Principles

As fitness in the water was being developed, many land based fitness instructors brought their choreography and put it into the water without making any changes to their pre-existing lesson plans. As water classes evolved, there was a realization that exercising in the water was quite different due to the unique properties of water than exercising on land.

In order to put together an appropriate and effective class in the water, the Instructor must have a clear understanding of movement mechanics in the water. In this section we will look at Aquatic Biomechanics.

Biomechanics: the study and analysis of human movement patterns [7]

Understanding the biomechanics and properties of water is essential in order to formulate and execute an effective lesson plan. Knowing how to manipulate specific biomechanical principles will allow the instructor to modify the class components to ensure that each participant is able to work at their own level while still challenging their own personal cardiovascular, muscular strength/endurance and flexibility systems. The biomechanical principles that will be discussed are:

- Body position
- Base of support
- Buoyancy vs. Gravity
- Water depth
- Impact options
- Inertia (travel)
- Resistance
- Surface area
- Lever length
- Velocity
- ROM
- Turbulence
- Muscle focus

Note that although the biomechanical principles are explained separately in this chapter, these concepts are most often applied in conjunction with one another. The following are the main principles that make exercising in the water different than exercising on land.

Body Position

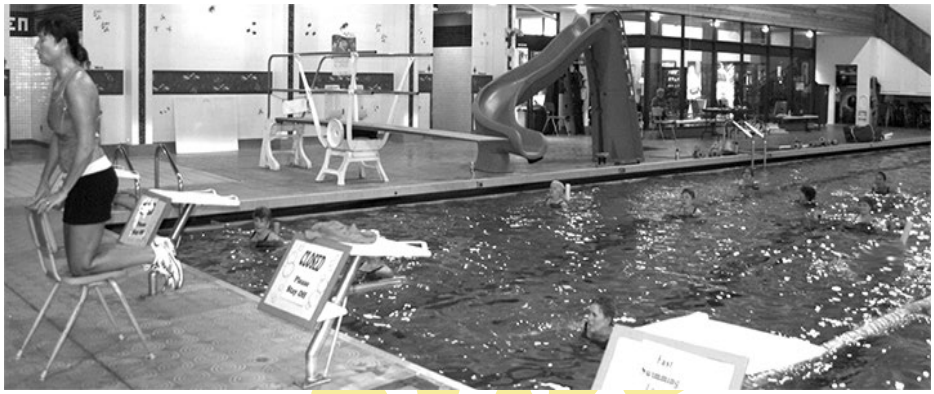
Biomechanics and movement dynamics are affected by the various ways that the body is positioned in the water. In general, the orientation of the body, specifically the torso, changes the relationship between the centre of gravity and the centre of buoyancy. This changes the requirements for core stability, base of support, turbulence, drag and resistance.

Although there are various positions that can be obtained in the water, this manual will concentrate on standing or erect, seated, kneeling and prone/supine postures. The standing or erect posture also includes variations of a slight lean forward or to one side.

Kneeling Posture

Optimal kneeling posture is described as:

- The back is erect;
- Scapula retracted (e.g. shoulder blades in back pockets);
- All three normal back curves should be present;
- Hips and knees are directly under the shoulders;
- Knees are flexed at 90 degrees (hamstrings isometrically contracted);
- Knee caps are pointing directly down to the pool bottom;
- Heels are behind the body (gastrocnemius are isometrically contracted);
- Feet are in neutral position.



Prone Posture

Participant's are on their stomach either floating or moving while suspended. Optimal prone posture is described as:

- Belly and abdominals are pointing toward the bottom of the pool;
- Head is slightly above the water.
- ***Caution: avoid if any cervical or spinal complications***;
- Scapula retracted (e.g. shoulder blades in back pockets);
- All three normal back curves should be present – pelvis in neutral alignment;
- Transverse abdominals and inner core muscles should be activated (e.g. abdominal bracing);

Blank

Chapter 6

Core Strengthening Library

Learning Objectives:

- General Body Alignment Cues

- Isometric Core Exercises
  - Balance
  - Front plank
  - Side plank
- Isotonic Core Exercises
  - Abdominal crunch
  - Oblique crunch
  - Side bend
  - Swivels
  - Superman or Birddog
  - Sartorius Jog
- Partner Activities

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The breathing pattern used in the water is very different than on land. During land based exercise, the participant is taught to 'exhale during effort' or during the concentric contraction. In the water, the muscular effort may occur during all phases of the movement. Therefore, the participants are cued to maintain regular, abdominal breathing.

Where there is a defined concentric, working phase, the participant should be cued to exhale during the muscular effort. When performing an isometric hold, the participant should be cued to maintain regular, abdominal breathing.

Before reviewing the exercises, it is important to know and review the stabilizing muscles of the core:

- anterior – transverse abdominals, rectus abdominals, internal obliques, external obliques, diaphragm, serratus anterior, pectoralis minor, deep neck flexors
- posterior – pelvic floor muscles: multifidus, quadratus lumborum, erector spinae, mid and lower trapezius, rhomboids, deep neck extensors.

Exercises can be done to target the core muscles directly (isotonic contractions) or to challenge them isometrically. Below are a series of exercises that involve concentric contractions of specific core muscles.

Isometric Core Exercises

Balance

Standing on bottom of pool or on a noodle maintain static position for a period of time. Participants will gain a great understanding of how to alignment their centre of gravity (COG) with their centre of buoyancy (COB). Lots of fun and challenging for many. Can narrow the base of support or add arm or leg movements for an additional challenge.

Noodle Plank Level 1

Front Plank

Buoyancy device (noodle or dumbbell) is held in hands, wrists are neutral, scapula is retracted and hands are shoulder width apart. The body is in straight alignment with wrist directly below shoulders.

Muscle Groups

Erector spinae, gluteus maximus, mid trapezius and rhomboids; rectus abdominus, pectoralis major

Noodle Plank Level 3

Safety precautions

- any pain advise to stop immediately
- ensure sufficient abdominal strength to come to vertical again if in semi prone or prone position
- cue tight abdominals

Chapter 7

Planning, Preparing and Teaching an Aquafit Class

Learning Objectives:

- Planning a Successful Aquafit Class
  - Establish Goals
  - Lesson Plan Development (Micro Plan)
  - Teaching
  - Evaluation
  - Redesign
- Preparing for a Successful Aquafit Class
- Health Screening
  - The Get Active Questionnaire
  - Informed Consent
- Teaching a Successful Aquafit Class
  - Scanning and Monitoring
  - Feedback
- Creating a Positive Atmosphere

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Preparing for a Successful Aquafit Class

A great class starts with preparation. The aquatic fitness instructor typically arrives 15 minutes early to set up equipment and music and to greet the participants as they arrive. In addition, the following is important:

- Formally introduce oneself to new participants;
- Inquire as to whether they have been to an aquafit class prior;
- Inquire as to whether they have had a chance to read the Get Active Questionnaire, or other recognized health screening tool;
- Determine whether there are any physical issues that the instructor needs to be aware of.

The making of a great class is one that is very well prepared and starts on time.

The most challenging aspect of being a fitness leader is teaching to the level of the advanced participants that never miss a beat while catering to the brand new participants. This type of mixed class is the norm in group exercise rather than the exception. As we will discuss in great detail, constant scanning and monitoring is essential, as well as providing modifications for all movements and exercises.

Getting to know participants is the key to providing an effective class. This includes understanding their needs, fitness levels, capabilities, limitations and health concerns if any. This knowledge will enable the Aquafit Instructor to provide a challenging class that is safe and fun for all.

The next section will review the Health Screening process mandatory to better understand the participants and to mitigate any facility or instructor liability.

Health Screening

Almost everyone has some sort of health concern that makes them less than physically *perfect*. It is argued that much of the adult population currently participating in aquafit classes are at *risk of disease* because of poor lifestyle choices [1].

Our role as Aquafit Instructors is to be diligent in obtaining medical clearance from each individual prior to participation in a water based fitness class. This is a tricky proposal because many people choose to attend a water based class instead of a land based class specifically because of physical issues or concerns. That said, it is our mandate to ensure that every participant is cleared to participate in the level of class that they are attending. We need to possess the confidence to request that a participant obtain medical clearance when we are unsure.

The CSEP Get Active Questionnaire

The Get Active Questionnaire (and other approved health screening tools) is an exercise readiness form for all individuals that asks a series of questions and directives to assess current physical activity status for moderate and vigorous activities. At a minimum, the Questionnaire

Chapter 8

The Fundamentals of Choreography

Learning Objectives:

- Less Structured (Freestyle) Choreography
- Structured Choreography
- Teaching Methodology
  - Describe
  - Demo
  - Do
- Teaching Choreography
  - Building Basic Combinations
  - Pyramiding
  - Adding on
  - Layering
- Transitions
  - Start and End position
  - Leading leg
- Modifications
- Cueing
  - Movement Change
  - Exercise Technique Modification
  - Motivation
- Non-Verbal Cueing
  - Hand Signals
  - Body Language
- Deck Teaching

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Non-Verbal Cueing

Incorporating non-verbal cuing is a must in an Aquafit class. Verbal cuing particularly on the pool deck without the use of a microphone is not always clearly heard by the participants. This is due to the architecture of most pools, the music volume, the positioning of the instructor, the voice of the instructor or just simply that some participants have hearing difficulties. Regardless of the reason, we need to look at ways of supplementing the verbal cues to make the directions clear and easy to follow. We do this with non-verbal communication.

Non-verbal cues are the visual cues and other audible sounds used to lead and motivate the class. They include hand signals, pointing, counting with fingers, motioning with the head, clapping, or snapping. They can be very effective on their own or used together with verbal cues. It is very important that the instructor provides a clear visual demonstration of proper body posture, position and movement ROM dynamics. This means that the instructor demonstrates a clear start and end position for every movement.

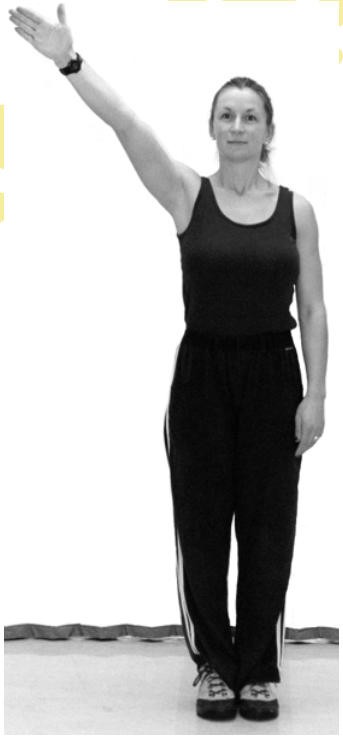
The instructor may have to change their teaching positioning to show it from the front, side or back

When using non-verbal cues, there are two variables that can be manipulated:

Hand Signals

When using hand signals it is important to teach the class what the hand cues mean and use them consistently. The hand should be held high above the head so it can be seen and the instructor should try to use the same hand as the lead foot.

Hold the Move



Direction of Movement

Count Down

Following are some of the most commonly used hand signals:
- *Watch the change, Watch me now* (index and middle finger point to eye and signal change);
- *Posture cues* (point ears over shoulders over hips);
- *Heel down* (point to heal then to the ground);
- *Adding-on* (circle a finger in the air or make a “T”);
- *Adding arms* (circle finger in air and point to arm);
- *Hold the move* (open palm in air like a stop sign);
- *From the top* (place hand on head);
- *Traveling* (point in the direction of the movement);
- *Number of reps* (fingers in the air – usually 4);
- *Count down beats* with fingers (4, 3, 2, 1).

Chapter 9

The Warm-up

In this chapter you will learn about:

- The Goal
- The Duration
- The Objective
  - Gradual Increase in Intensity
  - Rehearsal of Movement
  - Postural Awareness
- Dynamic Stretching

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The warm-up component is particularly important in an Aquafit class due to the water temperature and its cooling effect on the body. In other words, the water temperature will dictate the recommended intensity and duration of the warm-up. For example:

- Below 30 degrees Celsius - a more vigorous and slightly longer duration to promote thermo regulation of the body
- 30 degrees or above - normal intensity and duration as the water is considered to be thermo-neutral

The Goal

The goal of the warm-up is to prepare the participants physically, mentally and socially for the workout. This preparation is a gradual process that allows the body to adapt from a resting to a pending state of activity. In other words, the warm-up physically prepares the body by gradually:

- Elevating the heart rate
- Increasing the breathing rate
- Increasing the internal body temperature
- Improving oxygenation of the muscles
- Lubricating the joints
- Producing a mild sweat

This gradual increase in physiological responses reduces the risk of injury and improves the effectiveness of the workout by increasing neuromuscular coordination and making the tissue less susceptible to damage [1].

The Duration

The length of the warm-up is dictated by the water temperature, the intensity of workout, the complexity of movements and the fitness level of the participants. A typical warm-up is eight to 10 minutes in length (typically two songs at a minimum), however, a more intense and complicated workout will require a longer warm-up. Additionally, participants who are newer to exercise may require a longer, more gradual warm-up, especially if the temperature of the pool is cool.

Component of Class	Minutes	Number of Songs	Percentage
Warm-up	8 to 10 minutes	2 songs	13 – 17%

The Objectives

There are three general objectives of a warm-up. They are:

1. Gradual Increase in Intensity

The first component is a gradual increase in activity, which involves low impact, low intensity, full range of motion movements such as walking, jogging, light cross country ski, or jacks in the water. It is important to warm-up slowly, as this will give the body time to:

- Increase breathing rate
- Increase oxygen distribution to the lungs and skeletal muscles
- Redirect blood flow to the working muscles
- Lubricate the joints

Chapter 10

The Cardiovascular Section

Learning Objectives:

- The Goal
- The Duration
- The Objectives
  - Aerobic Endurance
  - Anaerobic Capacity
- Designing the Cardiovascular Section of the Class
- The Energy Systems
- Interval Training
- Intensity
- Monitoring Intensity
  - Heart Rate
  - Rate of Perceived Exertion
  - Talk Test
  - Monitoring for Over-Exertion
- Additional Factors to Consider
  - Safety
  - Full Body Workout
  - Cueing - Non-Verbal and Verbal
  - Modifications
- Post-Cardiovascular Cool-down

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Include intervals using appropriate work to rest ratios.

- Provide higher intensity options for a period of time (e.g. 30 seconds).
- Duration of working interval will depend on intensity and fitness of the participants.
- Modify the rest period between intervals (e.g. increase rest period for beginners and decrease for fitter more experienced participants).
- Must motivate and challenge the participants while still allowing them to work within their capabilities.

Ensure a balance of joint movements.

- Add travel
- Add directional change
- Incorporate joint movement in all planes of motion.
- Write a lesson plan and choreograph this section to ensure appropriate flow and balance of muscle work across the joints.

Keep people motivated to move.

- Use a variety of choreography, movement patterns, sequences and music.
- Select appropriate music — upbeat, familiar, etc.
- Include different planes and angles of movements, travel and directional change, options for impact and intensity modification
- Give energetic and encouraging instructions.
- Cue well so that participants are able to follow and feel successful.

Keep participants safe.

- Continuously cue for proper posture and body alignment
- Provide adequate options for modification of movements.
- Continually scan and monitor the participant's movement patterns and reaction to exercise.

Post cardio cool down.

- Finish this section with gentle, easy movements, focusing on posture, alignment and breathing.
- Gradually bring the heart and breathing rate down
- Make a safe and smooth transition to the muscle conditioning section.

Chapter 11

The Muscular Conditioning Section

Learning Objectives:

- The Goal
- The Duration
- The Objectives
  - Specificity
  - Progressive Overload
- Programming Variables (F.I.T.T. Principle)
- Intensity
  - Body Position
  - Base of Support
  - Impact Options
  - Inertia
  - Acceleration
  - Resistance
  - Drag
  - Frontal Resistance or Surface Area
  - Velocity
  - Muscular Focus
  - Lever Length
  - Turbulence
- Monitoring for Over-Exertion
- Rest and Recovery
- Additional Factors to Consider
  - Safety
  - Muscular Balance
  - Full Body Workout
- Circuit Training
  - Setting Up and Teaching
  - General Recommendations
  - Different Types of Circuits
  - Group Circuits

Circuit Training

There are many different formats that can be used during the muscular conditioning section. Apart from having the participants do the same movement at the same time, the instructor can set up a simple circuit.

Circuit training is a form of interval training that takes a person through a series of exercise stations that have a predetermined work to rest ratio. These stations can include exercises that train cardiovascular fitness, muscular strength, muscular endurance, flexibility, or a combination of these fitness components. Resistance training equipment for a circuit can include noodles, dumbbells, flutter boards, aquatic steps, gloves, resistance bands, and other surface area or buoyancy devices.

When designing a circuit, it is important to adhere to the class format and the goals of the participants. The class format will dictate the types of exercises incorporated into the circuit (e.g. cardio, endurance, strength or combination). It is the goals of the participants that will help to determine the exercises that are chosen for the circuit and the length of time spent at each station.

The amount of time spent at each station will vary, depending on the fitness component(s) being trained, the fitness level of the participants, and the length of the class. The length of each station should be based on the time required to challenge the desired energy system, as well the desired training outcome. For example, in order to train the cardiovascular system, using the lactic acid system, the circuit may involve sprinting for 30 seconds with 90 seconds rest.

Important factors to consider while designing an Aquafit circuit include:
- Pool space
- Equipment availability
- Water depth
- Access to a wall

These variables may influence the number, type and duration of each exercise in the circuit.

The length of the class will determine:
- Number of stations
- Length of time at each station
- Number of rotations through the circuit

Setting up and Teaching

In order to teach a successful circuit class, it may be beneficial to plan for the following:
- Arrange all equipment at each station before class. Give a variety of equipment intensity options, if available;
- Arrange the stations in the order that participants can easily follow;
- Demonstrate the movements for each station before participants try them on their own;
- Provide a photo with a description of each exercise at each station. Laminated, water proof cards will last longer, and can be re-used;

Chapter 12

The Resistance Training Library

Learning Objectives:

- Surface Area Equipment
  - Fins
  - Gloves
  - Hydro Boxer
  - Flex Paddles
  - Resistance Bands
  - Aquatic Fitness Step
- Buoyancy Equipment
  - Belts
  - Dumbbells
  - Buoyant Cuffs
  - Kickboard
  - Noodles

Resistance Training Exercises

- Shoulder Joint
  - Flexion
  - Extension
  - Shoulder Joint Abduction
  - Adduction
  - Transverse Abduction
  - Transverse Adduction
  - Lateral Rotation
  - Medial Rotation
- Elbow Joint
  - Flexion
  - Extension
- Hip Joint
  - Flexion
  - Extension
  - Adduction
  - Transverse Abduction
  - Transverse Adduction
  - Lateral Rotation
  - Medial Rotation
- Knee Joint
  - Flexion
  - Extension
- Ankle Joint
  - Dorsi-Flexion
  - Plantar Flexion

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As participants begin to adapt to the resistance of the water, they will need to progressively overload their muscles to maintain or improve their muscular endurance, strength or power. This can be achieved through the use of water based equipment.

Prior to recommending any equipment, participants must be both physically and mentally prepared. They should have the ability to:

- Properly stabilize their core
- Maintain proper posture during powerful dynamic movements without equipment
- Perform full range of motion exercises with maximal resistance without any equipment

Incorporation of water based equipment can be challenging, appealing and fun for participants as long as they are ready. Not all equipment is suitable for all participants as they have different ages, preferences, goals, skill and fitness levels. Therefore it is important that the aquatic instructors selects the equipment that suits the overall goal(s) of the class as well as the needs and goals of the participants.

Different facilities will have different equipment. This will depend on the budget, type of facility, classes offered, and the participants capabilities.

Instructors can often bring in their own equipment or request the need for specific equipment be purchased when the budget allows.

There are two main categorizes of water based equipment: surface area equipment and buoyancy equipment. Each of them will be reviewed separately on the following pages.

Surface Area Equipment

Surface area equipment are resistance tools that are not effected too much by buoyancy. As a result, many participants will find this equipment much easier to use as compared to buoyancy devices.

The main function of surface area equipment includes:

- Concentric contractions (e.g. muscular endurance, strength or power)
- Improve flexibility

Surface area equipment often has resistance adjustments or lighter and heavier options that allow the participants to decrease or increase the resistance and thus intensity and muscular effort required.

When using resistive equipment for upper body strengthening, the extremities should not break the surface of the water, as this places undue stress on the shoulder joint. The participant must be cued to maintain control through both phases of the movement. This allows for better spinal alignment and less stress on the shoulders.

Surface area equipment can be:

- Worn on the participant (e.g. fins, gloves, hydro boxers)
- Held in the hand (e.g. flex paddles, resistance bands)
- Adhered to the bottom on the pool (e.g. Aquatic fitness step)

Below is a brief description of the equipment, its purpose, proper usage and any safety precautions.

Fins

Fins come in various foot sizes and lengths and are a great piece of equipment used extensively by swimmers but not as common among Aquafit participants. The longer the fins, the greater the propulsion through the water. In other words, to increase the effort required, decrease the fin length.

Fins are often used in individual training sessions. The purpose of using fins would be to:

- Enhance quadriceps work
- Increase lower body strength
- Improve aerobic capacity
- Add variety to a work out
- To challenge the advanced participant
- Can be used with various body positions (e.g. side lying) or other equipment (e.g. kickboard)

Care must be taken when using fins to prevent any hip, knee or ankle discomfort or pain.

Gloves

Gloves are available in various sizes and are webbed to provide extra resistance when moving the hands through the water. When

Chapter 13

The Stretching Section

In this chapter you will learn about:

- The Goal
- The Duration
- The Objectives
- Factors that Affect Flexibility
- Physiology of Stretching
- Types of Stretching
  - Active and Passive Stretching
  - Dynamic and Static Stretching
- Designing the Stretching and Flexibility Section of the Class
- Teaching the Flexibility Component
  - Describe the Stretch
    - Postural Cueing
    - Starting Position
    - Movement Mechanics
  - Demonstrate the Stretch
  - Do the Stretch
- Additional Factors to Consider
  - Safety
  - Muscular Focus
  - Breathing
  - Atmosphere is Key

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Flexibility is the ability to move a joint smoothly through its complete range of motion. Stretching is an integral component of exercise programs [2].

Stretching in an Aquafit class is typically done at the end of the class to allow participants to elongate the muscles that they worked during the class, centre themselves, reflect on the class experience, and 'thank' their body.

Stretching exercises are put together with smooth transitions, creating a relaxing, calm flow of movement. The inclusion of purposeful breathing and gentle music help the participant to centre and focus their body, mind, and spirit.

There are six basic criteria that should be met in order to maximize the benefits of stretching:

- Muscle temperature is elevated
- Proper technique is used
- F = frequency is adequate (e.g. three to five times per week)
- I = proper intensity (force or tension)
- T = time is adequate (e.g. 30+ seconds)
- T= type is appropriate (e.g. static vs. dynamic)

The Goal

The goal of the flexibility section is to stretch and relax the muscles back to their pre-exercise state. Due to the thermodynamic and buoyancy properties of the water, stretching in an Aquafit class is slightly different and can be challenging.

Below are some of the FITT recommendations for the American College of Sports Medicine regarding designing a flexibility program.

Summary of F.I.T.T. Recommendations for Designing Flexibility Programs for Adults
(ACSM, 8th edition, 2017)

Frequency	2-3 days per weeks (minimum) for at least 10 minutes
Intensity	4 repetitions of each stretching exercise Below the pain threshold and never beyond pain-free range of motion
Time	15 to 60 seconds
Type	Slow static stretching

When looking at guidelines and recommendations regarding stretching, you have to take into account what the guidelines are trying to achieve. The ACSM guidelines above are geared towards the goal of increasing or enhancing muscular flexibility. Therefore, if a participant's goal was to increase the flexibility of the major muscle groups these are the guidelines that they would follow.

Chapter 14

The Stretching Library for Aquafit

Learning Objectives:

- Stretches for the Spine
  - Sternocleidomastoid and Neck Flexors
  - Erector Spinae
  - Rectus Abdominis
  - Obliques
- Stretches for the Upper Body
  - Latissimus Dorsi
  - Pectoralis Major, Anterior Deltoid, Biceps
  - Middle and Posterior Deltoid
  - Rhomboids and Middle Trapezius
  - Triceps
- Stretches for the Lower Body
  - Hip Flexors
  - Quadriceps
  - Hamstrings
  - Hip Abductors
  - Hip Adductors
  - Hip Rotators
  - Gluteus Maximus
  - Gastrocnemius
  - Soleus
  - Tibialis Anterior

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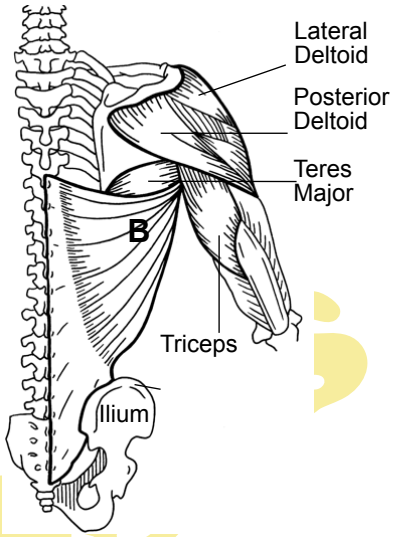
Stretches for the Upper Body

All stretches should be held for a minimum of 15 seconds. It should be noted that the Pectoralis Major and Anterior Deltoids are typically tight due to poor posture. Therefore, stretches for these muscles should be held for at least 60 seconds to ensure an effective stretch.

Muscles: Latissimus Dorsi and Obliques



B Latissimus Dorsi

Static Stretch - Latissimus Dorsi and Obliques

1. Side Flexion Stretch (standing)

- Extend the arm overhead but do not lock the elbow
- Laterally flex the spine to the side
- Place the opposite hand on the thigh or hip to support the trunk

Please ensure that the participant does not:

- Flex the head forward
- Dropping the chin toward the chest
- Shrug the shoulder toward the ear
- Place both arms into the air – one hand should be on the hip or thigh in order to support the weight of the trunk
- Extend or rotate the spine
- Move the lower body out of starting posture

Static Stretch - Latissimus Dorsi and Obliques

2. Bilateral Arms Overhead

Option: Holding Noodle

- Hands and arms shoulder width apart, arms parallel to one another
- Extend the arms but do not lock the elbows
- Slowly lift the arms up and over the head, until a stretch is felt
- Move the hands closer together or interlock the fingers for a greater stretch

Chapter 15

A Focus on Safety

Learning Objectives:

- CPR and Emergency First Aid Certification
- Water Related Distress
  - Recognizing When a Participant is in Trouble
  - Weak or Non-swimmers
  - Deep Water Phobia
  - Distressed Participants
  - Drowning Victims
- Acute Injuries
- Injuries - Environment Related
  - Floors
  - Noise
  - Temperature and Humidity
  - Improperly used Water Equipment
- Injuries - Participant Related
  - High Expectations and Unrealistic Goals
  - Predisposing Factors
  - Poor Exercise Technique
  - Exercise Selection
- Joint Safety in the Water
- Safety Supervision
  - Positioning and Class Formations
  - Scanning
- The Implementation of Prevention Strategies

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The Aquafit Instructor must do their due diligence to keep their participants safe and free of injury. This includes proper health screening, proper planning and execution of their classes, adequate instruction, monitoring, and supervision, and appropriate selection and modification of exercises.

Aquafit instructors should be able to recognize certain participant behaviours and activities that if left unchecked, could lead to potential problems. In addition, they must be aware of the various signs of distress that will require an intervention from a lifeguard.

CPR and Emergency First Aid Certification

The Aquafit Instructor must maintain a current CPR and Emergency First Aid certification and ideally should practice CPR regularly. It is recommended that all Aquafit leaders have Basic Emergency First Aid training and easy access to an emergency medical kit. It should be noted, that depending on the registration body, the certification body, or the employer, Emergency First Aid training and CPR training may be mandatory and renewal of such may be required every one to two years. It will be the responsibility of the instructor to contact their registration/ certification body to clarify the rules regarding CPR and First Aid requirements.

***Note**: If the Aquafit Instructor is conducting classes in a pool without a lifeguard present, it is strongly advised that the instructor has basic lifeguard training and is able to respond to emergencies in the water.*

Water Related Distress

Recognizing When a Participant is in Trouble

There are many behaviours and activities that should warn the instructor about potential problems. If the fitness leader does not intervene and get help if necessary, these behaviours can result in the participant becoming a distressed or drowning victim. These can include, but are not limited to:

Weak or Non-swimmers

- Unusual facial expressions or gestures (e.g. breath holding, wide eyes, waving arms and a fearful expression)
- Participants who have a more vertical versus horizontal body position while swimming
- Participants who stand up frequently
- Shallow water waders who do not like to get water in their face
- A participant who is timid about entering the water
- Shallow water participants who have difficulty maintaining the same exercise position

Deep Water Phobia

- Participants who are turning 360 degree circles are often looking for the nearest edge
- Participants who move to deep water by hanging on to the edge (e.g. moving hand over hand towards deep water can indicate non-swimmers or someone who is uncomfortable in the water)

Chapter 16

Becoming a Certified Aquafit Instructor

Learning Objectives:

- Scope of Practice
- Professional Ethics and Conduct Guidelines
- Insurance
  - Professional Certification
  - Liability Insurance
  - Documentation
  - Potential Negligence
- Professional Certification
- Professional Re-Certification and Continuing Education

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Becoming a certified Aquafit Instructor is a challenging and rewarding career path. Once certified, you will be responsible for instructing safe and effective classes to your participants.

You are the key to making a positive difference in people's lives by giving them the gift of physical activity and personal wellness. Your positive attitude, professionalism and education can make a real difference in people's lives. Your journey toward changing lives has begun.

Scope of Practice

The CFES Aquafit Instructor certification is meant to provide individuals with the competencies necessary to provide a safe, effective, and appropriate water based fitness class to a group of participants.

The CFES Aquafit Instructor is able to provide:

1. Appropriate aquatic fitness classes and programs to apparently healthy adults. Apparently healthy adults are those individuals who have:
   a. answered "no" to all questions on the Get Active Questionnaire or other approved health screening tools, or
   b. been cleared by a qualified health professional (e.g. medical doctor) to participate in unrestricted physical activity using other health screening tools;
2. On-going screening and monitoring of the participants for the duration of the program and provide modifications to accommodate all levels of ability.
3. Aquafit class that includes a warm-up, work-out (cardio, strength, endurance) and cool down (flexibility) components. The Aquafit instructor must design, teach and monitor participants throughout the class.
4. Appropriate exercises based on the needs and physical abilities of the participants;
5. The use of appropriate portable equipment based on the participant's needs, physical abilities and personal fitness goals;
6. Responses to general healthy eating inquiries based on the Canada's Food Guide to Healthy Eating and Canada's Physical Activity Guide to Healthy Active Living;
7. Information and support regarding credible online support tools (Dieticians of Canada). The CFES Aquafit Instructor is NOT able to provide:
   1. Individualized eating plans or recommendations for supplementation to clients. Clients who indicate interest in these areas or require other advanced nutritional information must be referred to their doctor or a Registered Dietician;
   2. Individualized, personalized training programs, group aquafit programs only. Participants who request, or graduate to more advanced individualized training are to be referred to qualified and certified Personal Trainers, physiotherapists, Kinesiologists, or other allied health professionals.
8. Safe aquafit programs (proper balance, flow, progression as outlined by CFES protocols) using appropriate exercises and providing modifications based on the needs and physical abilities of participants;