AQUATIC EXERCISE ASSOCIATION

AEA
Aquatic Exercise Association

AquaBata Shallow

Take advantage of the latest trend in fitness to deliver the next level of training to your aquatic programs. High Intensity Interval Training (HIIT), including the specialized Tabata format, transitions into the water with high-powered results. Minimal choreography, maximal results – AquaBata training is the hottest workout in the pool that attracts a younger market, including men! AquaBata....for an Aqua Body!

INTRODUCTION

HIGH INTENSITY INTERVAL TRAINING DEFINED

High Intensity Interval Training (HIIT) is a form of exercise that utilizes short bouts of very intense exercise intertwined with bouts of rest. (Sherlock 2008) This format employs work intervals typically ranging from 80-90% to more than 100% maximal oxygen consumption, or VO2max. Each cycle is methodically planned out and includes a work cycle followed by a recovery cycle. This recovery or rest can range from passive recovery (very little to no movement) to active recovery of about 50%–70%. (Kravitz & Zuhl)

Developing an effective HIIT program involves setting the intensity and duration of the work cycles (as intensity increases, duration will decrease) in relation to the recovery cycles. The work to recovery ratio is designed to target the various energy systems of the body. During exercise, the body uses two types of systems to produce energy for exercise. The aerobic energy production system uses oxygen to transform glycogen and/or fatty acids into energy for exercise lasting more than a couple of minutes. The anaerobic systems do not require oxygen and produce energy for short bursts of exercise. The ATP-PCr system utilizes the body's limited supply of stored ATP, which will be exhausted after about 8-10 seconds of maximal exercise. The Glycolytic System is the primary source for intermediate energy needs, or activities lasting more than a few seconds up to approximately two minutes. (AEA, 2010)

HIIT, used successfully by athletes, can also benefit exercise enthusiasts with appropriate intensity, frequency and formatting. HIIT is a time-efficient training method for exercise participants to reach their fitness goals, both on land and in the water. As with most endurance programs, goals include cardiorespiratory, metabolic and musculoskeletal improvements. According to Kravitz & Zuhl, research shows that HIIT can provide similar and, in some cases, greater improvements in less time than continuous training. Improvements can be achieved in muscular endurance and strength, cardiorespiratory endurance and body composition.

Although our focus tends to be on the "work" of the workout, with high intensity interval training the "rest" is an extremely important component as well. Depending upon the exact format (aerobic versus anaerobic), the environmental conditions, and the population, you may choose active recovery or passive recovery. Most studies compare running and cycling intervals, rather than vertical water exercise training protocols but these practices can easily be adapted for the aquatic environment. To learn more about active versus passive recovery, please read the article, *Science of Sport: Should You Use Active or Passive Recovery Intervals?* by Owen Anderson, PhD.

General rule of thumb for our aquatic group exercise classes: include passive recovery within anaerobic intervals; for aerobic intervals, an active rest will suffice. Active recovery is also suggested for the longer rest periods between rounds of HIIT training. Active recovery options acceptable for pool programming include very low intensity activities, such as water walking or a gentle bounce in place. Passive recovery limits movement – dynamic stretches complementing the movement just completed, or a true rest from activity. Recovery periods, especially those between rounds of HIIT training, are a good time to catch your breath, get a drink (keep the water bottle poolside for easy access) and to mentally prepare for the next bout of exercise.

TABATA TRAINING DEFINED

Tabata training is a specific format of HIIT. The difference between Tabata training and other HIIT workouts, besides the very specific timing, is the sheer intensity of the work periods. The rest intervals are shorter than the work sets; therefore the intensity builds as oxygen deficit rises. This is referred to as decoupling, where the body becomes less and less efficient, so heart rate continues to rise while physical output is reduced.

Dr. Izumi Tabata conducted a study to determine if very short, very high intensity bouts of training, followed by even shorter rest periods, could benefit the elite athletes of the Japanese speed skating team. Results were published in Medicine & Science in Sports and Exercise, and showed that the subjects improved VO2 max; this in turn translated into improved performance on the ice. The other interesting finding was the Tabata Protocol improved both the anaerobic energy system (responsible for short, high intensity exercise, such as sprints) and the aerobic energy system (used for endurance exercise, such as distance running). Results from this 1996 study a 28 percent increase in anaerobic capacity and a 14 percent increase in VO_2max in six weeks.

Dr. Tabata did not actually design the specific workout, however the widespread interest in his findings lead to this type of training being referred to as the "Tabata Protocol." Tabata training is a very specific High Intensity Interval Training format. The 4-minute protocol includes 8 continuous work:rest cycles of 20 seconds of very high intensity, anaerobic activity followed by 10 seconds of rest.

While originally created for Olympic level athletes to enhance performance, Tabata training has hit the mainstream, offering fitness enthusiasts exciting new workouts. In the fitness industry, a Tabata class will include **up to*** eight 4-minute rounds of training with a full-minute rest period in between each. In this specific format a round of training would by 20 seconds work followed by 10 seconds rest, repeated 8 consecutive times. One minute of additional recovery time is planned before repeating another round of training. Note, that this format is not only used for cardio training, it is now also being incorporate with resistance training, calisthenics, and plyometric, and combined formats. ***(NOTE: You would not initiate this type of training with 8 rounds; instead gradually introduce this format to your group exercise classes.)***

The American Council on Exercise (ACE) decided to analyze the intensity and caloric expenditure of a 20-minute, full-body calisthenics land-based Tabata workout. A 2013 study (Emberts, et al.) showed that subjects averaged 86 percent of HRmax and 74 percent of VO_2max and burned between 240-360 calories (15/minute). Subjects perceived the workout to be "hard" or 15.4 RPE. Blood lactate levels indicated that they were working above lactate thresholds.

SAFETY CONSIDERATIONS

HIIT is not for new or beginning exercisers; participants should have a basic level of cardiorespiratory fitness prior to beginning this advanced format. Ideally, one should be able to perform 30 minutes of continuous moderate intensity exercise before moving towards a HIIT protocol. For example, 30 minutes of

- continuous deep water running
- continuous shallow water moderate to high intensity exercise
- moderate to fast paced treadmill walking/running
- moderate to fast paced indoor biking

Additionally, when exercising in the water, individuals should understand the principles of water, the physical laws as they apply to movement in water, and have adequate strength to maintain proper alignment in the water's environment.

A typical HIIT workout lasts about 20-30 minutes and may include a variety of work:recovery ratios. As with other formats, a proper warm up and cool down is recommended for overall safety and effectiveness. Typically the warm up for HIIT formats will be longer than a general fitness class. The warm up should include a gradual increase in heart rate and perceived effort by incorporating the specific movements that will be integrated into the HITT session. This also serves as movement practice or rehearsal before the intense training begins. In the pool, the pre- and post-

training segments will vary depending upon the unique environmental conditions, such as water temperature, air temperature, humidity and air circulation.

Some sources recommend 1-2 times a week for HIIT, with rest or lighter aerobic workouts in between. Emberts et al. suggested that this type of training only be performed 2-3 times per week, allowing 48-72 hours of rest between sessions.

Look at all aspects of high intensity interval training formats before adding to your classes or personal training sessions. As with many protocols developed for elite athletes, it is oftentimes necessary to adjust and modify training to safely target a general population group exercise class. As with any fitness format, there are advantages and drawbacks. If the risks outweigh the benefits, then you know this format is not for your classes or training session without significant modifications.

General High Intensity Interval Training Considerations

- Shorter training period
- Challenging workout
- Improved performance
- Effective results
- Simplistic movement patterns
- Not for Beginners
- Uncomfortable level of training
- Risk of Injury (typically will be lower in aquatic training)
- Specific cueing requirements

Leading aquatic HIIT formats from the deck – rather than from in the pool – is highly recommended for safety considerations of the participants. It is important to carefully monitor participants for proper technique and intensity levels, maintain accurate timing of training segments to achieve desired results, and to motivate the group - often to push past normal limits of training. For your safety, be able to demonstrate all movement patterns with a low-impact or non-impact version to reduce impact stress, slips & falls, and other injuries. This requires that you rely upon instructor skills, other than just physical demonstration, to motivate participants.

TARGETING THE RIGHT POPULATION

HIIT is a good choice to offer more advanced, experienced exercisers, as well as for athletic individuals, who don't mind working at uncomfortable intensity levels. It provides an excellent training option, but used as part of a well-rounded workout regime.

Who can we safely & effectively market HIIT and Tabata formats to in the aquatic environment? Below are potential target populations and marketing tips:

1. **Active & Fit Boomers** – Target Boomers who are already active and looking for cross training options or for higher levels of training. According to the April 15,

2013 FitBIts (Exercise ETC's Review of exercise-related research), baby boomers – the first generation to grow up exercising – are now less fit than the last generation. The National Health and Nutrition Examination Survey (NHANES) showed that US Baby Boomers have higher rates of chronic disease, more disability and lower self-rated health than members of the previous generation at the same age.

a. Focus on self-image, weight management, healthy aging. Boomers want to stay youthful.
b. Avoid stereotypes, pre-conceived ideas or terms such as "seniors", "cougars", "middle-aged" etc.
c. Use facts not fads; include educational aspects, as Boomers like to learn new things.

2. **Men** – Most men want to skip the talking (often associated with aquatic classes) during the workout and focus on the training. HIIT formats prevent excessive talking, if the proper intensity is being maintained! Self-paced format makes it comfortable for men new to group exercise to participate without feeling awkward or uncomfortable.
    a. Target training intensity and simple movement patterns (not "choreography").
    b. Name the class appropriately and describe effectively, i.e. HIIT it Hard – Fast-paced high intensity shallow water workout that pushes each individual to reach his/her maximum training levels.
    c. Discuss and promote improved performance for sports and athletic activities.

PUTTING IT INTO PRACTICE

Keep in mind the **Three Ps of Programming:**

1. **Pool**
2. **Population**
3. **Personality** (as in your teaching style)

Always design the program to work in your pool facility. For example, not every exercise that we will cover today will work in every location. Consider water depth, slope of the pool bottom and water temperature among other aspects. As discussed in the previous section, the participants will determines how you format your class. Finally your teaching style, your persona, your deck presence, your aquatic personality will determine the overall success of the program.

Also important are the **Three Ms of Movement:**

1. **Motive.** Every exercise, each technique and all class formats should have a purpose. Don't lead a class without putting some thought behind the program from start to finish. What are the class goals? Why are you adding propulsion versus suspension training? Which HIIT format is best for your particular group of participants?

2. **Measure.** In order for people to be successful, they must see results. Include some method of measuring progress, even something as simple as being able to add one more high intensity cycle to the class each week for a month. Also focus on technical performance. Make sure that your not only measure "how hard" participants are working, but also that proper form, alignment, range of motion, etc. is achieved.
3. **Modification**. Never forget that flexibility is the key to a successful group exercise instructor. Not in how flexible your hamstrings are, instead how adaptable you are to meeting the needs of various ability levels. Always have in mind a way to make a movement pattern easier *and* harder.

As mentioned previously, you need to be able to see everything the participants are doing, and simply cannot do this well from in the pool in most circumstances. You should spend most, if not all, of your time instructing from the deck.

You are a coach and a motivator when participants want to quit or slow down. Push hard but empower training within one's personal limitations. Use key words and phrases to explain and motivate, but keep verbal cues simple. Since little time is spent on a specific movement pattern, it is important to plan and practice cueing. If you teach with notes, you might want to write cueing notes beside the movement patterns. Avoid over-using the same phrase. Mix it up with a variety of motivational, form and safety cues to keep everyone engaged and enthusiastic. Tell the purpose of exercises, and communicate what participants should be feeling – rest periods often make great windows of opportunity for explaining the next exercise, reinforcing intensity perception, sharing words of caution, etc.

Music is a powerful motivator, especially for a HIIT protocol. Unlike many other class formats, the tempo or bpm is not as important because you are encouraging individuals to push personal limits rather than stay on the beat of the music. There are professionally produced CDs available with various interval formats and there are numerous apps that can be modified for specific work:rest ratios.

There are numerous formats that one can utilize for HIIT programming. A general class design might look something like the following, remembering that you can adjust to suit your pool, participants and personality!

Class Length 45 minutes
Acclimation (environment): 5 minutes
Cardio Warm Up: 5-10 minutes
HIIT: 20-30 minutes (this includes the HIIT round + in-between recovery periods)
Final Stretch: 5 minutes

However, don't feel obligated to teach an entire class with the HIIT format. Integrating this training technique gradually is a great way to prepare participants for the new format as well as add variety to existing classes. Simply include a HIIT segment or two into your continuous training format to push participants to a higher level, add some variety, and prevent the "talkers" in class from getting out of hand! Additionally, you

might want to blend HIIT cycles with other training concepts. An example would be the HIYO format developed by Lori Sherlock (AEA Trainer) and Laurie Denomme; they alternate a HIIT round with a 4-5 minute block of yoga/flexibility.

The work to recovery ratio, as well as the actual length of time spent at work and in recovery, will influence the overall outcome of the training. It can be fun to experiment with various timing cycles. Varying work:rest ratios and intensity levels can result in greater physical fitness improvements. However, should you find one timing format that works well (for example, you might have a music CD with timed intervals), make adjustments in the exercise focus to maintain interest level and training progression for participants. Remember, movement selection revolves around intensity for results, not intricate choreography.

FORMAT SAMPLES
Below are four of the numerous variations that are possible when designing HIIT classes for the pool. We will discuss and experience sample workouts to get you started on designing the best format for your specific situation.

For additional information on shallow water HIIT protocols, AEA Trainer, Stephanie Thielen, offers an AEA Approved workshop – A Whole Lotta Tabata and More – that includes five training formats. AEA Trainer, Lindsay Mondick, offers an AEA Approved workshop – Aqua Tabata – that provides more information on the Tabata protocol for the pool.

HIIT 40-30-20 Pyramid

This format will pyramid the training from longer duration/lower intensity to shorter duration/ higher intensity.

Work to Recovery Ratio = 2:1
Duration of Work & Recovery segments decreases as intensity increases

Pyramid Round:

Work HARD for 40 seconds / rest 20 seconds
Work HARDER for 30 seconds / rest 15 seconds
Work HARDEST for 20 seconds / rest 10 seconds
REPEAT – repeat the 2 minute 15 second cycles, adding rest periods as needed between cycles, for the training period

HIIT 30-60-90 Double Pyramid

This format pyramids up & down (double pyramid) in regards to duration: 90 – 60 – 30 – 30 – 60 – 90. Beginning with the 90-second bout of work and decreasing the duration allows you to "ease" into training format after the warm up is complete.

Work to Recovery Ratio = 1:1
Duration of Work & Recovery segments decrease as intensity increases, but the training rounds alter between decreasing duration 90-60-30 and increasing duration 30-60-90.

Double Pyramid Round:

Decreasing Duration =
Work HARD for 90 seconds / rest 90 seconds
Work HARDER for 60 seconds / rest 60 seconds
Work HARDEST for 30 seconds / rest 30 seconds
Increasing Duration =
Work HARDEST for 30 seconds / rest 30 seconds
Work HARDER for 60 seconds / rest 60 seconds
Work HARD for 90seconds / rest 90 seconds
REPEAT – repeat the 6 minute decreasing & 6 minute increasing cycles, adding rest periods as needed between cycles, for the training period

HIIT 30-20-10 Stacked Interval

(Adapted from Michele Stanton's Triple Interval "Turn Up Your Fat Burn", Prevention October 2013)

This format has five 1-minute "sub-intervals" that make up one round of training, so therefore referred to as a stacked interval (i.e. intervals within an interval).

Work to Recovery Ratio = Overall 5:1 with five 1-minute segments of work, followed by 1 minute of rest. Within each 1-minute segment are three levels of training 30 seconds HARD, 20 seconds HARDER, 10 seconds HARDEST.

Stacked Interval Round:

Work HARD for 30 seconds
Work HARDER for 20 seconds
Work HARDEST for 10 seconds
REPEAT 1-minute cycle 4 more times for a total of 5 minutes of work
Rest 1 minute
REPEAT the full 6-minute work:rest cycle for the training period

Tabata 20:10

The traditional Tabata protocol.

Work to Recovery Ratio = 2:1

Tabata Round:

Work 20 seconds / rest 10 seconds
REPEAT the 30-second cycle for total of 8 times = 4 minutes
Rest 1 minute
REPEAT the full 5-minute work:rest cycle (Tabata) for the training period

HOW TO SELECT MOVES

Of course you need to consider your pool parameters and your target market when selecting moves, but there are some general methods to designing the class to the process easier and provide a well-balanced workout. Intensity alteration can be effectively achieved by using the physical laws, the principles of water, and speed. Don't rely solely upon speed for intensity adjustments, as this will limit the advantages that the aquatic environment can provide.

When we look at the Tabata protocol developed for the Japanese Olympic speed skating team, the workout was strictly focused on stationary biking. Keep in mind that doing the same exercise 8 times can cause boredom and muscular fatigue, so you may find your intensity (and your form) lagging as you get to the end. One way to combat this is to mix and match exercises in the same Tabata cycle. For example, alternating a jumping jack with a cross-country ski or even 8 different exercises throughout the cycle.

Tabata Example 1 – Choose two exercises (A & B). Perform exercise A for the first 4 work cycles, and exercise B for the last four work cycles.
Tabata Example 2 – Choose two exercises (A & B). Perform exercise A on work cycles 1, 3, 5, 7; perform exercise B on work cycles 2, 4, 6, 8.
Tabata Example 3 – Choose four exercises (A, B, C & D) and perform in this order for the work cycles: A, B, C, D, A, B, C, D
Tabata Example 4 - Choose four exercises (A, B, C & D) and perform in this order for the work cycles: A, A, B, B, C, C, D, D.
Tabata Example 5 – Choose eight exercises and perform in sequence with a different move for each work cycle.

The same methodology can be applied to any HIIT format. For a round of training you might choose to perform one basic movement and adjust the intensity based upon the work cycle. In this scenario, you would likely want to adjust the movement for each round of training. The following examples using one primary method to alter intensity, but you can mix and match methods of intensity alteration within each round.

HIIT 40-30-20 Pyramid Example with Acceleration

- Level I Jumping Jack for 40 sec / Bounce 20 sec
- Level I Jumping Jack – power legs together for 30 sec / Bounce 15 sec
- Propulsion Jumping Jack 20 sec / Bounce 10 sec

HIIT 30-60-90 Double Pyramid Example with Levers *(alternate from anterior to posterior focus for better muscle balance and less muscle fatigue & boredom)*

DECREASING DURATION

- Knee High Jog w/ Pump Arms 90 sec / Easy Heel High Jog 90 sec
- Straight Leg Front Kick w/ Pumping Arms 60 sec / Easy Heel High Jog 60 sec
- Straight Leg Front Kick w/ Long Arm Sweep 30 sec / Easy Heel High Jog 30 sec

INCREASING DURATION

- Straight Leg Back Kick w/ Long Arm Sweep 30 sec / Easy Knee High Jog 30 sec
- Straight Leg Back Kick w/ Pumping Arms 60 sec / Easy Knee High Jog 60 sec
- Heel High Jog w/ Pumping Arms 90 sec / Easy Knee High Jog 90 sec

Another option is to change the exercises within the round of training. This method alters intensity through the moves selected, which in turn are influenced by the physical laws and properties of water. You might have new exercises for each round of training, or you may choose to repeat the series of exercises in more than one round. Let's explore this method for designing rounds of training with a couple more examples.

HIIT 40-30-20 Pyramid Example

- Land Tempo Jog with Pumping Arms 40 sec / Bounce 20 sec
- Skate Kick with Long Arm Reach Across 30 sec / Bounce 15 sec
- Back Karate Kick with Double Arm Forward Scoop 20 sec / Bounce 10 sec

30-20-10 Stacked Interval Example – *same or similar move within the "sub-intervals" but different exercise choices for each of the five "sub-intervals" in the round of training; repeat the same series for each round*

- Level I Jumping Jack for 30 sec
- Level II Jumping Jack & Tuck for 20 sec
- Propulsion Jack (Heel Clicks) for 10 sec
    - Level I Cross Country Ski for 30 sec
    - Level II Cross Country Ski & Tuck for 20 sec
    - Propulsion Ski (Split Jump) for 10 sec
- Level II Moguls for 30 sec
- Level II Side Shoot with Center Tap Down for 20 sec
- Level III Side Shoot for 10 sec
    - Wide Jog for 30 sec
    - Football Jog (out-out-in-in) for 20 sec
    - Land Tempo Wide Jog with Neutral Arms ("surrender" arms) for 10 sec
- Front Karate Kicks for 30 sec
- Side Karate Kicks with Punch Across for 20 sec
- Back Karate Kick for 10 sec

MOVEMENT LIBRARY

- **Propulsion Jumps (plyometric type training, focus on lifting out of water)**
  - **Hip Adduction focus (heel clicks)**
  - **Hip Abduction focus (straddle jump)**
  - **Narrow Straight jump (feet & legs together)**
  - **Wide Straight Jump (feet & legs wide)**
  - **Spilt Jump (ski legs)**
  - **Frog Jump**
  - **Single Leg Jumps**
  - **Combination Jumps (e.g. tuck jump – frog jump – split jump in sequence)**

- **Jumps**
  - **Level I Mogul**
  - **Level II Mogul**
  - **Knee Tuck**
  - **Wide Knee Tuck**
  - **Heel Tuck**
  - **Around the World (jump front, right, back, left OR opposite direction)**
  - **Center Power Knee (right foot forward, drive left knee to chest powering off right leg, repeating for one work cycle; repeat on opposite lead for another work cycle)**
  - **Side Power Knee (similar to above, but rotation is involved: bring knee across and pull both arms toward outside of hip to target obliques)**

- **Sprinting**
  - **Level I Knee High Sprint**
  - **White Water Run (Level II, knees up, elbows pull behind)**
  - **Level I Heel High Sprint**
  - **Level I Wide Knee Sprint**
  - **Level II Wide Knee Sprint**
  - **Level I Football Run (out-out-in-in)**
  - **Level II Football Run**

- **Kicks**
  - **Straight Leg Front, focus on kick (hip flexion)**
  - **Power Pull Down Kick (front kick with focus on hip extension)**
  - **Karate Front**
  - **Karate Side**
  - **Level I Jump Kick Side (1-foot or 2-foot stance; jump and tuck knees before powering the kick to the side; land back at start position)**
  - **Level I Jump Double Kick Side (1-foot or 2-foot stance; jump and tuck knees before powering BOTH legs out in a side kick; land back at start position)**

- Level II Tuck Kick Side (tuck knees before powering the kick to the side; land back at start position)
- Level II Tuck Double Kick Side (tuck knees before powering BOTH legs out in a side kick; land back at start position; similar to side shoot through)
- Karate Side with Power Pulldown (long leg on adduction)
- Straight Leg Back
- Karate Back

- **Cross Country Ski**
  - Level I
  - Level I, Elevated (tucks)
  - Level II
  - Level II with Tucks
  - Level III (IF participants able to perform with intensity and not simply focus on staying above water)

- **Jacks**
  - Level I
  - Level I, Elevated (tucks)
  - Level II
  - Level II Land Tempo
  - Level II with Tucks
  - Level II with Tuck & Extend (shoot both feet forward on 'extend')
  - Level III (IF participants able to perform with intensity and not simply focus on staying above water)

- **Other Moves**
  - ½ WT Side Lunge
  - WT Side Lunge
  - Speed Drill Punches (Jabs, Cross, Upper Cut, etc.)

- **Wall Work – where deck/gutter design appropriate**
  - Push Off & Sprint Back – push off the pool wall in a supine glide, drop to vertical and sprint back to wall
  - Wall Climb – jog feet up, up, down, down on pool wall
  - Wall Jumps – stand facing poolside and assist jump elevation with hands on the pool deck (legs together, straddle, etc.)
  - Wall Burpee – hands on pool deck: jump both feet to wall, shoot feet behind into modified prone, power legs down to standing, wall jump
  - Mountain Climber – hands on pool wall and body leaning forward in plank position, alternately pull the knee to the chest and press powerfully back to start position

HIIT 40-30-20 Pyramid

ROUND 1 = 2 minutes 15 seconds

Work or Rest	Intensity	Length	Exercise
Work	Hard	40 sec	**JOG**
Rest	**Passive**	**20 sec**	
Work	Harder	30 sec	**JOG w/ NEUTRAL ARMS**
Rest	**Passive**	**15 sec**	
Work	Hardest	20 sec	**WHITE WATER RUN (level II LT)**
Rest	**Passive**	**10 sec**	

ROUND 2 = 2 minutes 15 seconds

Work or Rest	Intensity	Length	Exercise
Work	Hard	40 sec	**JUMPING JACK**
Rest	**Passive**	**20 sec**	
Work	Harder	30 sec	**POWER JACK (tuck out & in)**
Rest	**Passive**	**15 sec**	
Work	Hardest	20 sec	**PROPULSION JACK (adductor focus, click heels)**
Rest	**Passive**	**10 sec**	

ROUND 3 = 2 minutes 15 seconds

Work or Rest	Intensity	Length	Exercise
Work	Hard	40 sec	**FRONT KICK, straight leg**
Rest	**Passive**	**20 sec**	
Work	Harder	30 sec	**FRONT KARATE KICK**
Rest	**Passive**	**15 sec**	
Work	Hardest	20 sec	**POWER PULL DOWN KICK**
Rest	**Passive**	**10 sec**	

ROUND 4 = 2 minutes 15 seconds

Work or Rest	Intensity	Length	Exercise
Work	Hard	40 sec	**½ WT SIDE LUNGE**
Rest	**Passive**	**20 sec**	
Work	Harder	30 sec	**SKATE KICK**
Rest	**Passive**	**15 sec**	
Work	Hardest	20 sec	**TWIST w/ TUCK**
Rest	**Passive**	**10 sec**	

TOTAL TIME AT THIS POINT = 9 minutes, unless additional rest periods have been added between rounds.

ROUND 5 = 2 minutes 15 seconds

WORK OR REST	INTENSITY	LENGTH	EXERCISE
Work	Hard	40 sec	**LEVEL II CROSS COUNTRY SKI**
Rest	**Passive**	**20 sec**	
Work	Harder	30 sec	**LEVEL II CC SKI w/ TUCK**
Rest	**Passive**	**15 sec**	
Work	Hardest	20 sec	**LEVEL II CC SKI w/ TUCK & NEUTRAL ARMS**
Rest	**Passive**	**10 sec**	

ROUND 6 = 2 minutes 15 seconds

WORK OR REST	INTENSITY	LENGTH	EXERCISE
Work	Hard	40 sec	**STRAIGHT LEG BACK KICK**
Rest	**Passive**	**20 sec**	
Work	Harder	30 sec	**KARATE BACK KICK**
Rest	**Passive**	**15 sec**	
Work	Hardest	20 sec	**KARATE BACK KICK w/ DOUBLE ARM SCOOP FORWARD**
Rest	**Passive**	**10 sec**	

ROUND 7 = 2 minutes 15 seconds

Work or Rest	Intensity	Length	Exercise
Work	Hard	40 sec	**FOOTBALL JOG**
Rest	**Passive**	**20 sec**	
Work	Harder	30 sec	**LEVEL II FOOTBALL JOG w/ NEUTRAL ARMS**
Rest	**Passive**	**15 sec**	
Work	Hardest	20 sec	**LEVEL II WIDE KNEE SPRINT**
Rest	**Passive**	**10 sec**	

ROUND 8 = 2 minutes 15 seconds

Work or Rest	Intensity	Length	Exercise
Work	Hard	40 sec	**PUSH OFF & SPRINT BACK**
Rest	**Passive**	**20 sec**	
Work	Harder	30 sec	**MOUNTAIN CLIMBERS at wall**
Rest	**Passive**	**15 sec**	
Work	Hardest	20 sec	**WALL JUMPS (your choice)**
Rest	**Passive**	**10 sec**	

30-20-10 Stacked Interval

ROUND 1 = 6 minutes

Work or Rest	Intensity	Length	Exercise
Work	Hard	30 sec	**LEVEL I CC SKI**
Work	Harder	20 sec	**LEVEL II CC SKI & TUCK**
Work	Hardest	10 sec	**LEVEL III CC SKI**
Work	Hard	30 sec	**JUMP FRONT & BACK**
Work	Harder	20 sec	**JUMP F & B – cover more distance**
Work	Hardest	10 sec	**JUMP F & B – tuck knees higher**
Work	Hard	30 sec	**JUMPING JACK**
Work	Harder	20 sec	**LT JUMPING JACK**
Work	Hardest	10 sec	**PROPULSION JACK – aBductor focus**
Work	Hard	30 sec	**LEVEL II MOGUL**
Work	Harder	20 sec	**LEVEL II DOUBLE TUCK KICK SIDE – alternating sides**
Work	Hardest	10 sec	**LEVEL III DOUBLE SIDE KARATE KICK – Alternate sides "shoot"**
Work	Hard	30 sec	**LEVEL II JACK & TUCK**
Work	Harder	20 sec	**LEVEL II JACK, TUCK & EXTEND**
Work	Hardest	10 sec	**LEVEL III JACK**
Rest	**Active**	**60 sec**	

ROUND 2 = 6 minutes

Work or Rest	Intensity	Length	Exercise
Work	Hard	30 sec	**PROPULSION JUMP – NARROW STRAIGHT**
Work	Harder	20 sec	**PROPULSION JUMP – WIDE STRAIGHT**
Work	Hardest	10 sec	**PROPULSION JUMP - FROG**
Work	Hard	30 sec	**SPEED DRILL CROSS PUNCH**
Work	Harder	20 sec	**SPEED DRILL UPPER CUT**
Work	Hardest	10 sec	**SPEED DRILL SPEED BAG (paddle wheel)**
Work	Hard	30 sec	**HEEL HIGH JOG**
Work	Harder	20 sec	**FOOTBALL PUNT (jazz kick)**
Work	Hardest	10 sec	**STRAIGHT LEG FRONT KICK (toe reach)**
Work	Hard	30 sec	**JUMPING JACK + FRONT-BACK JUMP**
Work	Harder	20 sec	**LEVEL I JJ + LEVEL III DOUBLE KNEE EXTENSION**
Work	Hardest	10 sec	**LEVEL II FRONT SHOOT & TAP DOWN**
Work	Hard	30 sec	**½ WT CC SKI w/ CENTER BOUNCE**
Work	Harder	20 sec	**PROPULSION JUMP – SPLIT (ski legs)**
Work	Hardest	10 sec	**LT CC SKI**
Rest	**Active**	**60 sec**	

ROUND 3 = 6 minutes

Work or Rest	Intensity	Length	Exercise
Work	Hard	30 sec	**WIDE JOG**
Work	Harder	20 sec	**LT WIDE JOG**
Work	Hardest	10 sec	**LT WIDE JOG w/ NEUTRAL ARMS**
Work	Hard	30 sec	**SIDE STEP**
Work	Harder	20 sec	**SHUFFLE LATERALLY – 8x and change**
Work	Hardest	10 sec	**SHUFFLE LATERALLY – 4x and change**
Work	Hard	30 sec	**JOG ACROSS THE POOL**
Work	Harder	20 sec	**SPRINT ACROSS THE POOL**
Work	Hardest	10 sec	**SPRINT & DRAG ARMS AT SIDES**
Work	Hard	30 sec	**ROCKING HORSE RIGHT (RHR)**
Work	Harder	20 sec	**RHR w/ POWER ARMS**
Work	Hardest	10 sec	**RHR w/ POWER ARMS & LONG LEVER LEGS**
Work	Hard	30 sec	**ROCKING HORSE RIGHT (RHL)**
Work	Harder	20 sec	**RHL w/ POWER ARMS**
Work	Hardest	10 sec	**RHL w/ POWER ARMS & LONG LEVER LEGS**
Rest	**Active**	**60 sec**	

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ROUND 1 = 4 minutes

Work or Rest	Intensity	Length	Exercise
Work	Hardest	20 sec	**CENTER POWER KNEE - R**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**CENTER POWER KNEE - L**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**SIDE POWER KNEE - R**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**SIDE POWER KNEE - L**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**CENTER POWER KNEE - R**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**CENTER POWER KNEE - L**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**SIDE POWER KNEE - R**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**SIDE POWER KNEE - L**
Rest	**Passive**	**10 sec**	

REST BETWEEN ROUNDS = 1 minute

Rest	**Active or Passive**	**60 sec**	

ROUND 2 = 4 minutes

Work or Rest	Intensity	Length	Exercise
Work	Hardest	20 sec	**LEVEL II TUCK KICK SIDE - R**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**LEVEL II TUCK KICK SIDE - R**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**LEVEL II TUCK KICK SIDE - L**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**LEVEL II TUCK KICK SIDE - L**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**LEVEL II DOUBLE TUCK KICK SIDE - R**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**LEVEL II DOUBLE TUCK KICK SIDE - R**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**LEVEL II DOUBLE TUCK KICK SIDE - L**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**LEVEL II DOUBLE TUCK KICK SIDE - L**
Rest	**Passive**	**10 sec**	

REST BETWEEN ROUNDS = 1 minute

Rest	**Active or Passive**	**60 sec**	

ROUND 3 = 4 minutes

Work or Rest	Intensity	Length	Exercise
Work	Hardest	20 sec	**JUMPING JACK – Full ROM w/ Power**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**LT JACK – Adductor Focus**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**JUMPING JACK – Full ROM w/ Power**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**LT JACK – ABductor Focus**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**CROSS COUNTRY SKI – Full ROM w/ Power**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**LT CROSS COUNTRY SKI**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**CROSS COUNTRY SKI – Full ROM w/ Power**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**LT CROSS COUNTRY SKI**
Rest	**Passive**	**10 sec**	

REST BETWEEN ROUNDS = 1 minute

Rest	**Active or Passive**	**60 sec**	

ROUND 4 = 4 minutes

WORK OR REST	INTENSITY	LENGTH	EXERCISE
Work	Hardest	20 sec	**WHITE WATER RUN**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**WHITE WATER RUN**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**WHITE WATER RUN**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**WHITE WATER RUN**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**KARATE BACK KICK w/ DOUBLE ARM SCOOP FORWARD – Partners face each other to provide added turbulence/resistance**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**KARATE BACK KICK w/ DOUBLE ARM SCOOP FORWARD – Partners face each other to provide added turbulence/resistance**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**KARATE BACK KICK w/ DOUBLE ARM SCOOP FORWARD – Partners face each other to provide added turbulence/resistance**
Rest	**Passive**	**10 sec**	
Work	Hardest	20 sec	**KARATE BACK KICK w/ DOUBLE ARM SCOOP FORWARD – Partners face each other to provide added turbulence/resistance**
Rest	**Passive**	**10 sec**	

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