

Traditional muscle exercises end at plateaus

Bodybuilding in Water™

bypasses them



Primary BBIW Certification Study Guide for Existing Physical Trainers

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This Basic Bodybuilding in Water Certification study guide, is intended for existing fitness professionals, helping one average health client at a time. It is required before other BBIW certifications for athletics and or people with mobility hindrances, will be issued.

Bodybuilding in Water

Bodybuilding in Water™ (BBIW™) is the result of a twelve year private study by a totally unathletic and aging structural engineer, Craig Wise, who had failing knees and advanced cancer. He discovered BBIW after applying the techniques that he used at work, to trace forces through building designs, through his body instead.

His intention was to create a device that would allow fully opposed exertion of his core running muscles into something other than his ailing knees. He had not used water exercise, yet his first designs were for long, leg bracing water paddles. After 24 generations of prototypes, Wise had created versions of these 'Body Oars™' that could easily overwork the core muscles of pro athletes, average folks, and people with mobility difficulties.

Remarkably, his Body Oars and now hundreds of other BBIW methods and devices, all grew from a single observation that he made about the 'direction' that forces flow through the body, during traditional exercise.

Traditional exercises (wet or dry) transfer forces 'parallel' to extremities, in and out our hands and feet (bone to bone), which compresses every joint and disc in-between. All 'pure' BBIW methods fight resistance at a 90° angle, the extremity 'crossing' direction. This direction only hinders the muscles swinging the extremity. With all of the resistance confined to muscle the usual exercise pain, of joints and disk compression, is absent.

The first independent study was conducted by the Int'l Assoc. of Fire Chiefs' magazine, *FireRescue* (Feb 2012). They said his fitness innovations are so powerful and painless, they feel more like meditation, than exercise. Read this test online at fire.epubxp.com/issue/54270/15. This 'Gear Test' is titled 'The Power of Resistance'.

BBIW is so efficient at just working the muscles hard, that the more mobility hindered an otherwise healthy person has become, the faster it works. It allows muscles to exert far harder than is possible when joints and discs are also being stressed. BBIW noticeably re-energizes lost muscle during the first session, and the more atrophy they have, the more BBIW has to rapidly restore. Athletes call this rapid return of lost muscle "Muscle Recall". Before BBIW, they still had start overloading their discs and joints again, just to recall some.

Highly conditioned athletes have no muscle to recall, they will use an advanced 'BBIW Failure Cycle', which tears muscle cells, causing them to heal stronger, every few days. BBIW can build great strength for almost anyone, but for amazingly fast results, trainers need to find new clients that have slowed down a step or two.

BBIW is also customizable, making it ideal for pro athletes. One version of his Body Oars can allow a 400LB NFL lineman to build up to full exertion of their core mobility muscles, through full hip motion range, for an hour a day, without even using their knees. One minute of hard running practice, can easily damage their knee joints.

The highest levels of BBIW brace the user's arms or legs, so they cannot do maximized exercises safely, by themselves. Without the bracing, the first level is still remarkably effective. BBIW cardio exercises trigger a 'Runner's High' for people who cannot run, which is addictive. They must continue BBIW to maintain their extra powerful muscles and energy anyway, so those who can afford it, will use BBIW physical trainers, permanently.

A (formerly) wimpy mobility hindered engineer, without a health or fitness background, suddenly pointing out a 90° turn, that can greatly strengthen almost anyone, at any age (not just the 10%, or so, born with extra strong bone genetics), has already caused many well known fitness and health organizations, and the mainstream media to ignore BBIW, much as the Ice Barons once ignored (and held off) the coming of refrigerators.

Unlike the Ice Barons, who kissed their Icebox industry good-by, BBIW is a huge bonus for related industries. Imagine all the new health fitness and clothing sales, plus health and wellness centers, already have the pools.

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Does not cover muscle failure methods, sports motion building, advanced devices or methods for the disabled

Developing the Science behind Bodybuilding in Water

The Science of BBIW

The Two forces of all muscle building exercises:

BBIW creates body levers to directly target muscles

Bypassing the 'Plateaus' of skeletal loading exercise

Stabilization Factors - Leverage requires stability

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Introduction



Imagine fully loading a chain that has many different sized steel links. You could only load this chain until its weakest link snaps.

This also means that its strongest links cannot be pushed to their limits, as long as fully loaded weaker links are in-between them and the resistance (load).

Next imagine that you strongly reinforce all weaker links so they can handle a greater load than the biggest links can handle.

Now those bigger, stronger, links act as the weakest links, and if you continued loading this chain until something snaps, those bigger, stronger, links will go next. This is how to work the strongest links harder than the weaker ones.

You could also select which link you wanted to push to its maximum by reinforcing or bypassing the others.

When normal healthy people exercise their body muscles by loading the resisting forces through their hands or feet, their extremity joints (elbows, knees, ankles, wrists, hands and feet, etc.) become the weakest links in this 'bone to bone' transfer of exercise force.

Extremity joints make it impossible for the core muscles to apply greater exertion than these weakest loaded links can handle. So nobody, not even the greatest athlete that has ever lived, has ever strengthened their core muscles anywhere close to their full potential, by overloading their bones to get at these muscles.

Great athletes genetically have the strongest weak links, so they naturally apply their muscles harder. But they still have weaker links. Thanks to the human body's amazing engineering, pain stops muscle exertion before the weakest joints break, so BBIW is the fitness science of bypassing weaknesses to fully exercise strengths.

For example, because of their size, density and working angles, healthy hips are immensely stronger than the healthy knees below them. If the average running adult tried to run with all the hip motion range their hips could swing, they would break a knee, likely on their first stride.

Bone loading exercises, like weightlifting, running and aerobics, etc., drive all of the involved energy through the skeleton, so they physically force joints and vertebrae to become the real exercise device, as only they can release the resistance energy from the skeleton, against the muscle contractions.

Pure BBIW methods do not use the skeleton to carry resistance energy, so joints and vertebrae, are not used to fight muscle exertion during exercise, pure BBIW methods directly oppose the muscle contractions instead.

BBIW can allow athletes to build strength far beyond their weakest links, while also allowing countless people with mobility hindrances, to finally have a real way to literally, and physically, run their butts off.

The tempo of BBIW is based on where the client's voice starts to stress, not a wall-chart. Since everyone has their own BBIW speed it is not well suited for group sessions. BBIW is one trainer with one client, at a time.

There is one powerful BBIW cardio workout for group socializing. The free floating, Stride Maximizer. While wearing a life jacket, it provides a painless and powerful core and heart workout for small groups, as they talk to each other as they would in a hot tub, rather than everyone acting in sync, as you do with water aerobics.

The Stride Maximizer uses opposing leg directions to counterbalance very deep core exertions, so the floating body will stay right in place. This allows for a fun and powerful group workout where each person still does this exercise at their own pace.

The scales of pain

A steel chain does not have human joints and vertebrae, laced with nerves that provide ever increasing pain, the harder they are worked. These nerves cause human joints and spinal discs to act much like a gauge on a bathroom scale, as both increase from greater compression. The body uses pain as an exertion-limiting gauge.

However, this absence of compression pain is not an entirely good thing for exercise, it can work against the naive trainer and out of shape client, causing muscle pulls from over-exertion. Even at half effort most BBIW methods can still deliver 90% of the resistance energy through muscle contractions before joints. This means far more resistance is fought by muscle, than with methods that load bones, to get at muscles.

So even with gentle full range effort, BBIW will still greatly strengthen the muscles of average to weaker clients.

Two common causes of the cardio exercise effect, 1 good 1 bad (for adults)

There are two primary causes of an increased heart rate, related to cardio exercise, feeding working muscles and or protection against intense skeletal stress. The first causes the heart to pound by working the body muscles hard enough to make them demand more oxygen (blood) therefore raising the heart rate. The second is skeletal stress.

If you were to clamp your client's hands in an iron clamp, and start smashing them, you could sustain their target heart rates long enough for a cardio workout. One way causes hard working muscles to demand more blood, the other like the iron clamp, deeply stress parts of the skeleton to work the heart.

Target heart rates in pure BBIW cardio exercises, are almost entirely obtained from hard working muscles demanding more oxygen, as there should be almost no stress on their hard joints, bones or spine.

Why BBIW is not recommended for healthy, growing children

It is very important to share something that was noticed repeatedly during the course of BBIW's development. That in order to maximize the strength of their skeletons for adulthood, children need regular exercise that causes stress on the skeleton like running, weightlifting, etc.

Traditional bone loading exercises have an opposite effect on growing skeletons, than on growing old skeletons.

The historic use of bone braces and wraps for skeletal manipulation by numerous cultures, as well as modern bracing, proves that softer growing skeletons heal stronger in ways that help them better handle prevalent stress. For example the Asian practice of tightly wrapping young girls feet to keep them tiny, or the African practice of head wrapping to elongate the skull bones.

Bone overloading exercises, in the correct doses, will help children increase their skeleton strength. However after their bones harden into adulthood, these same exercises that built up growing bones and joints, start wearing joints and spinal disc down, and this aspect increases with age.

Running - The misunderstood exercise

You may assume that the BBIW philosophy is anti-running, but that would be incorrect. In fact running for exercise is recommended by BBIW.org for all adults that can run well, however not the same way we have been taught to use it. During our research we made several observations that show why exercises are very important for adults, to help them maintain a strong walking/running ability, deep into old age.

However, this research also exposed a tragic mistake about how we use running, as an adult exercise. 'Running for exercise' is generally considered to be a cardio type exercise, and the common recommendation for cardio exercise is 20 minutes, or longer, three times a week.

What is confusing is that as a cardio exercise, 20 minutes of running looks very beneficial for those young still growing bones. However, the joint and disc wear and tear that heals strong while growing, starts to accumulate after they harden into adulthood, so running most adults thousands of strides, several times a week, is beyond excessive.

The average (running) adult should maintain a strong running/walking ability well into their old age by running for about one hundred yards, once a week. That is 400 yards instead of 20 miles a month.

At any age healthy hearts still benefit from getting 10 - 20 minutes of stout cardio exercise, and now BBIW provides numerous ways to painlessly hold targeted heart rates, without also abusing joints and vertebrae.

Even though these are short runs, running capable adult clients must still wear very supportive running shoes, and do these runs on soft rubber tracks, or on high quality treadmills. Never run them on hard pavement.

Someone needs to ask Nike or Reebok, "How many more adults would buy and use running shoes and equipment, if they were shown why they need 20-40 seconds of running each week, instead of 20-40 minutes?"

Muscle building, restoring and maintaining Yes - rehab No

BBIW exercises can be very effectively used for reenergizing atrophied muscle, building up new muscle, as well as for maintaining strength of already powerful muscles. However we often hear people say "this should be rehab exercises". However this assumption is wrong.

Rehab exercises deal directly with strengthening the injured area, as BBIW methods are designed to bypass problem or injured areas, instead. Certainly people in physical rehab would benefit by using BBIW exercise to strengthen their body as their injury heals, but not to treat their injury.

The Basic Sciences of BBIW

The two forces of all muscle building exercises:

There are two forces present in every muscle strengthening exercise. Can you name them?

You need to know them as they will be part of the BBIW examination, as well as part of every muscle exercise you have ever used. They are as important to a BBIW trainer as heat is to a chef, or water is to a firefighter.

You likely will not know them off the top of your head because they do not appear to have ever been part of the education curriculum for fitness and health professionals. Yet, understanding how these two forces move provides a universal gauge of the muscle strengthening efficiency of any physical exercise.

Muscle Effort and *Motion Resistance* are the two always present forces in every real muscle building exercise.

Muscle Effort is obviously a muscle exerting but, Motion Resistance is any, and all things that oppose (hinder, slow) a motion, or stop it if the resistance is equal, or immovable. For example, pushing on a wall is as a isometric tension muscle exercise, yet nothing moves. It has both forces, just no motion.

Enough Motion Resistance will always cause the weakest, fully involved parts to overwork, but without it, muscles cannot be worked hard enough to cause the damages that heals them stronger. However, without Motion Resistance, high Muscle Effort becomes damaging to the skeleton.

For instance, if your client starts flapping their arms through the air as hard and fast as their muscles can fling them, they will dislocate an elbow, shoulder, or tear a ligament, before they build much muscle doing this. Motion Resistance can only overwork muscles, if it can get to them.

Exercise itself does not grow new muscle, healing from it does this. BBIW is about only overworking the parts of the body that do heal stronger, while bypassing or reinforcing the parts that wear out. Understanding these two forces will allow you to evaluate how efficient any exercise is, at muscle building. The more motion resistance that directly hinders muscle contractions, the more efficient any muscle exercise will be.

Traditional bone loading exercises drive effort, weight and resistance forces into the skeleton for delivery somewhere else, so their energy clashes inside joints and vertebrae, not inside muscles. This means that most modern exercise methods physically work joints and vertebrae much harder than they can work muscles.

When you do a traditional skeletal loading muscle exercise, it is your joints and vertebrae that physically fight your muscle contractions, not your method, weights or loading device. Force Mapping techniques, that structural engineers use show exactly why joints and vertebrae work far harder (handle far more force) than muscles, when the skeleton is used to carry all of the involved exercise forces.

Until now, we only had one approach for powerful muscle building, bone loading. This is why only people with extra strong bone genetics, are able to build extra strong muscles, by loading their bones to reach them. Once any exercise or device drives the Motion Resistance into the skeleton, it can only fight (hinder oppose) muscle contractions by exiting the skeleton, and the only exit routes go straight through joints and or vertebrae.

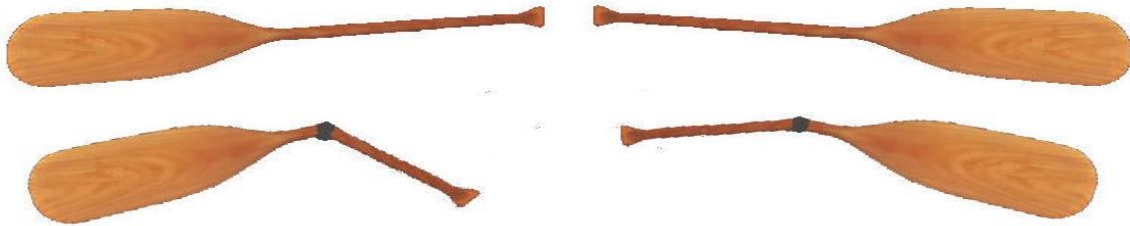
Because BBIW either eliminates, or greatly reduces bone loading, and has Levels that will fully hinder targeted (isolated) muscle contractions, every BBIW method scores extremely high efficiency at resistance only hindering big muscle contractions, far beyond any other exercise program modern humans have ever seen.

Once you realize that directly facing stout Motion Resistance against Muscle Effort is the key to the efficiency of every muscle building exercise, you are ready to learn how extremity 'Leveraging' provides the compression free path for delivering Motion Resistance exactly to where your client needs it:

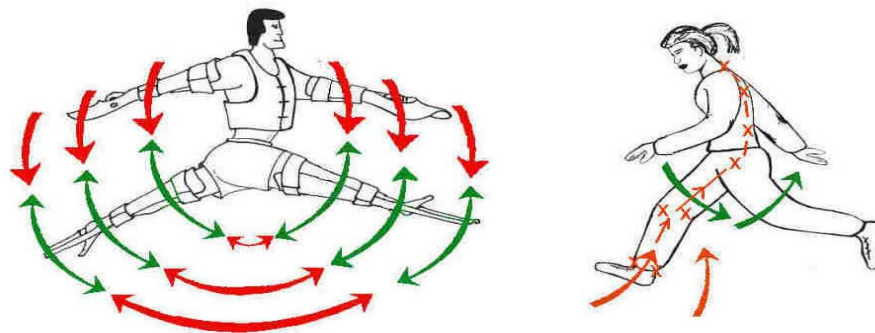
BBIW is also about creating levers to directly target muscles



Bending arms and legs are about as useful for doing deep core muscle building exercises in water as hinged boat oars are for rowing a boat.



Imagine trying to row a boat using oars that have rubber joints, halfway down their length. They will be very easy to row, but you will not go very far, nor could you exert much muscle effort. Why? The bending yields (gives in) to the motion resistance, before the muscles rowing the oars, get to fight it.



'No Compression' deep muscle exercise?

The image on the left, Mr. Paddleman, demonstrates how the body's largest muscle contractions can be intensely hindered by crossing them with Motion Resistance in water. This happens without added compression because there are no forces pushing his feet toward his knees, or his legs into his hips.

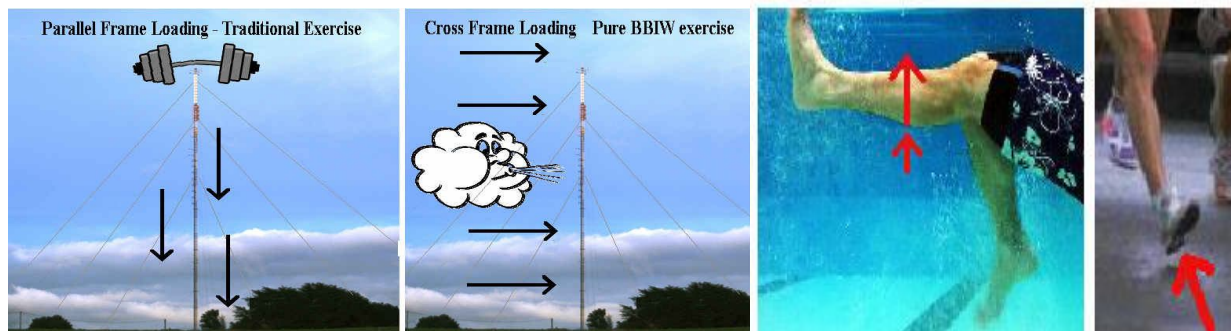
Even if he applies all of the core Muscle Effort he can muster into his extremities, his joints and discs are not going to be compressed as much as when he stands still on dry land. This is simply because the Motion Resistance energy is not moving parallel to his body, so his bones are not being jammed together.

All of this 'crossing' resistance is only fighting with his big body attached muscles that swing his extremities.

The running lady is also trying to exercise her core muscles. However, all of her leg joints and vertebrae are having compression battles between motion resistance energy pushing up against gravity pulling her down.

With the use of flotation devices and/or other 'Stability Factors' covered in this class, you will be able to run your client's core mobility muscles and heart through rapid exercise marathons with less joint/back compression and pain, than standing still.

BBIW is a 90° direction change - From Parallel to Crossing



Traditional muscle and cardio exercises load the skeleton to get at the muscles. This is much like placing a load on top of a tower that is supported by cables. The cables do work harder to hold the heavier tower in place, however the tower frame, just like a human skeleton works immensely harder than the cables (or muscles) because most of the resistance force is used up as the frame compresses.

All pure BBIW methods drive the resistance forces across the bones and skeleton, thus using all of it to push the muscles all the way to failure, before compressing the skeleton. It is the same thing as a powerful wind pushing the tower from the side, which will work the cables up to as hard as they can work, without compressing the tower.

Bypassing the 'Plateaus' of skeletal loading exercise

Most muscle strength maximizing exercises are based on "skeletal overloading". This simply loads as much weight on a client's bones as their joints and vertebrae can handle, to supposedly build maximum muscle strength. However, you can only strengthen their muscles to the point something else starts to fail before the muscles can be overworked again.

Overloading bones to exercise muscles is the primary cause of athletic plateaus, as well as why millions of people with motion hampered issues find traditional methods too painful or totally useless.

For example, the bench press is a staple of traditional muscle building, however, as long as everything is working normally the bench press plateaus at the mechanical limits of the user's elbows, not close to the full potential of the pectoral muscles for strengthening.

Once the bench presser has strengthened their pecs and triceps to the point they match the mechanical limits of their elbow joints, the muscle strengthening plateaus because their elbow joints, not their chest muscles, cannot work any harder.

Massive bench pressers have massive elbow joint strength before they become massive bench pressers. People with very weak elbows may be at their bench pressing plateau with the weight of the bar, so they could never build powerful upper body muscle with exercise methods based on their elbow joint abilities. Which is just about all traditional upper body muscle methods.

With everything working normally, the human dry running strength plateaus at how much stress the knees can handle. This is very easy to see. If a normal adult runner tried to run with all of the motion range that their hips could swing, they would destroy a knee, likely on their first stride.

So it is impossible to maximize human running muscle by running, its not even remotely close. Running becomes how hard can the knees and feet be pushed once the muscles have strengthened to match them.

Exercise Plateaus = Stressed-Out Weak Links

Remember that steel chain with different sized links? To a fitness engineer, the exercise plateaus of weightlifters, pro athlete and everyone else, are simply the point when their weakest loaded part starts overworking (stressing out), thus stopping the muscle building progress.

The methods of BBIW, reinforce or bypass weaknesses, to fully exert the strengths. Until now muscle building methods and devices were stopped by plateaus, BBIW can start at them.

Why bodybuild in water?

Water weighs roughly the same as the human body by volume, so in water gravity's pull is equal to the surrounding environment, which provides many weightlessness like properties like keeping the body weight from smashing spinal discs and extremity joints during exercise.

On dry land gravity only provides powerful resistance when forcing something upward, as water will provide massive resistance in any direction the body is able to, or is artificially equipped to, push it.

Next understanding what we call 'Stabilization Factors', allows muscles to apply full muscle exertion in water. This does not happen with swimming and traditional water exercise methods, because they do not provide a stable foundation for full exertion, as all exercises in a weight room do. BBIW always uses Stabilization factors.

Stabilization Factors

Imagine trying to do a set of pushups on top of a mountain of feather pillows

The reason this would not be an efficient muscle builder is basically the same reason why olympic swimmers still go to gyms to work out with weights, instead of the water. They were never shown how to use stabilization in water to deeply load massive resistance energy against muscle contractions. So doing muscle building exercises in swimming pools has been like doing pushups, on top of a mountain of feather pillows.

In water stabilization is needed to direct the path of Motion Resistance energy. When stabilization is missing, muscle building water exercises are like doing pushups on a mountain of pillows, as they release most resistance energy as motion, without forcing it to oppose muscle contractions.

Stability Factors are the methods and devices used to prevent secondary energy draining motions. The lack of Stability Factors are why swimming and water aerobics are not efficient muscle building exercises, while still being much better cardio exercise methods, than any methods that drop body weight on adult legs.

Swimming has one partial exception, the butterfly stroke. It requires a stability factor of *Isometric Tension*, to hold the swimmer's elbows locked straight for about half of this stroke. The swimmers who do a couple butterfly laps a session, build some extra strong upper body and lat muscle.

However, butterfly swimmers release the Isometric Tension during the return motion, so the opposing muscles are still missed.

Every method you will learn in this certification uses Stabilization Factors (SFs). Most of these methods also have upper levels based on using combinations of Stability Factors simultaneously, or different ones entirely.

The Stabilization Factors you will be tested on (for primary BBIW certification) are:

Isometric Tension - Using muscle to hold joints and vertebrae motionless

Unyielding Traction - Shoes locking feet to the pool floor without any sliding

Suspension - Instead of floatation, body is suspended in a soft swing, then lowered into the pool

Counterbalance - The extremities move in opposing directions that counterbalance each other

Seating - Client sits underwater, on descending pool steps, or in seats like in hot tubs

Holding Rails, walls, etc. with hands or feet - Stabilizing body by holding on,

Flotation devices - Flotation belts, noodles, life Jackets, etc.

Extremity Bracing - Using external devices to brace extremity joints. ExoWraps (at levels 1-2) and Body Oars (levels 3-4). ExoWraps from reusable cast like braces around joints.

Trainer Support - Trainer physically helps holds client's core motionless for upper body exercises. Should not be needed for this certification