

# dive fitness



ED.— ALWAYS CONSULT A PHYSICIAN FIRST BEFORE BEGINNING ANY EXERCISE OR FITNESS PROGRAM.

Text by Gretchen M. Ashton, CFT, SFT, SFN, NBFE. Founder of ScubaFit®

**Fitness for diving is not one-size-fits-all. Just as important as the proper fit for a wetsuit, BC, fins and mask, it is essential for divers to find the best combination of exercise for good health, diving performance and other personal fitness goals.**

The ideal fitness for diving program addresses the health of the individual diver, reduces the risks on human physiology associated with the stresses of the underwater environment, develops the strength, stamina and coordination for handling gear and improves performance for diving. All of this can *only* be accomplished with a balanced exercise program that incorporates aerobic exercise, good nutrition, strength training and flexibility.

**Exercise is preparation for diving.** Pushing the body through training adaptations of physical exertion to improve stamina, strength and endurance exceeding the physical demands of diving does not always feel good. But workouts on dry land are necessary so that divers can feel comfortable in the water.

Diving is *not* a workout, nor should divers think of it as such. If diving feels difficult for any reason in any condition, the

diver needs to improve their fitness level. Further, the consensus among medical dive professionals is that the weight loss sometimes experienced when diving is not permanent weight loss, and the increased hunger following diving activities is typically not the result of a profound caloric expenditure because of diving.

**Exercise can feel natural and be fun.** While training is key for optimum performance, genetics also plays a role in predisposing divers to be 'good at' various physical activities. Participating in fitness activities in which the individual diver excels will bring greater success and enjoyment.

A wide range of fun and socially supportive group exercise classes such as

Zumba, water aerobics, belly dancing and kick boxing are available to divers. Training with a partner or dive buddy is also a great way to stay motivated.

If fun equates to competitive sports, remember that divers who are athletes may need to change their exercise routine in preparation for diving. This can translate into adding weeks to a pre-competition training schedule but can

be as simple as cross training.

**Exercise methods and results may be different for men and women.** Depending on individual goals and fitness level, women seem to benefit more from moderate exercise sessions every day, while men can produce results with high intensity and perhaps shorter duration workouts a few days each week.



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**Exercise has some risk.** Like any form of physical activity exercise, if not properly performed, may result in injury. Fortunately, the benefits of traditional exercise outweigh the risk.

Some exercise programs are higher risk than others. The health and fitness of the individual diver is significant when selecting an exercise program. The type and intensity of exercise must be appropriate to the individual diver.

*Remember: Exercise is not recommended for 24 hours before or after diving activity.*

## Criteria of fitness for diving

The greatest positive impact of exercise for divers begins with activities that maintain good health and reduce the risks associated with the underwater environment. This is best achieved by improving cardio-respiratory fitness (fitness of the heart and lungs) with aerobic exercise.

Aerobic exercise is performed by moving the large muscles of the body repeatedly and for a duration that requires the heart, lungs and other systems of the body to adapt to an increased level

of functioning beyond that required of the body at rest and to prepare for a particular increased level of physical activity.

The next priority is maintaining a healthy body weight, which is primary in reducing the risks associated with poor health and diving. Being fit may include some aspect of weight loss. Weight loss done well always incorporates a balanced program of aerobic exercise, resistance training and just the right amount and type of nutrition.

Also important is overall body strength and increased levels of physical endurance. Placing demands on the body with resistance training maintains, prevents loss and/or adds muscle.

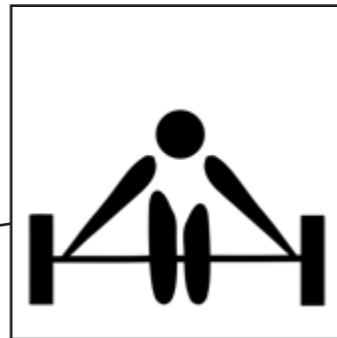
Resistance training comes in many forms both static and dynamic including variations of weight lifting and body weight movements. It is best to train muscles with movements similar to the way they are used in diving. Muscle moves, supports and protects the body throughout all activity stabilizing joints and protecting the skeleton. Muscle burns calories even when the body is resting.

Last but not least, flexibility and range of motion are important for strength when performing activities of daily living and participating in fitness, athletics and recreational activities such as diving. Flexibility and range of motion are maintained with stretching exercises and by strength training muscles in proper balance.

## Exercise combinations

Divers will find a wide variety of exercise activities to choose from. Most of these activities singularly do not meet the criteria for fitness for diving but can be combined to accomplish the best training for divers.

It is very important for divers to know as much as possible about their health and the type of exer-



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cise they are considering. The purpose and appropriateness of an exercise program is defined by the needs, preferences, goals and best interests of the individual diver.

Divers may encounter both dive and fitness professionals who sell themselves as the one-and-only-best instructor or recommend a specific exercise method as the 'answer for everything'. This be-all-and-end-all approach is a red flag. There are a number of successful ways to learn to dive, many forms of exercise to choose from, and numerous quali-

fied instructors that can contribute to the skill, safety, health and fitness of the individual diver.

When divers are researching and selecting diving and exercise activities it is important to remember the criteria for fitness for diving. Along with good nutrition, divers can best prepare for diving with a combination of exercise methods that provide aerobic exercise, strength training and flexibility.

Fitness facilities (including home gyms and outdoor exercise circuits) usually offer all of the components of fitness for diving under one roof (or sky). A diver can participate in aerobic dance classes and indoor cycling sessions, utilize cardio machines including treadmills, bikes, rowers, and ellipticals, develop strength with free weights, benches, cables and resistance equipment, and if they wish, benefit from the supervision of both exercise and nutrition professionals.

For divers wishing to exercise outdoors, there are endless options from hiking to road cycling, swimming, running, walking, stroller strides, and boot camp style programs in parks and on beaches.

While traditional exercise pro-

### CRITERIA FOR FITNESS FOR DIVING

Develops and maintains:

1. Cardio-respiratory fitness
2. Healthy body weight
3. Overall strength and endurance
4. Flexibility and range of motion



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Crewmembers at sea aboard USS Nimitz doing calisthenics inside hangar bay



U.S. NAVY PHOTO BY PHOTOGRAPHER'S MATE 3RD CLASS ELIZABETH THOMPSON

grams are deemed the safest and remain the mainstay of a sound fitness for diving plan, other physical activities in which divers are known to participate include yoga, crossfit and kettlebells. Each of these interests must be combined with other forms of exercise for a balanced and safe exercise program and to meet the criteria for fitness for diving.

**Yoga** with its various body postures primarily meets the criteria of stretching for diving. Yoga does not replace cardio exercise or strength training for diving and (along with good nutrition) must be supplemented with both. The practice of yoga includes breathing techniques and spiritual meditation based in ancient Indian philosophy.

Research on the benefits and risks associated with yoga vary widely because of the many forms, teaching styles and intensities of yoga. A good source for the science of yoga is the National Center of Complementary and Alternative Medicine (NCCAM), an agency of the National Institutes of Health (NIH).

The NCCAM also describes other relaxation techniques such as "progressive relaxation, guided imagery, bio-feedback, self-hypnosis and deep breathing exercises". Divers can combine these techniques with traditional stretching exercises for improved flexibility, breathing control and stress reduction.

Other options for spiritual meditation, breathing and body pos-

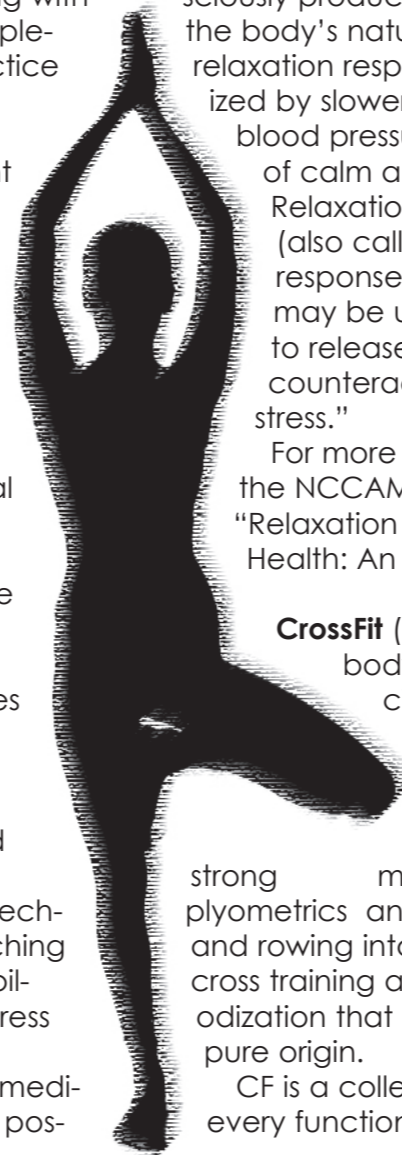
tures that improve flexibility include those body postures described for praise and worship in the Bible and Tai Chi. Tai Chi originated in China as a martial art with focus on body awareness and breathing and is described as moving meditation.

According to NCCAM, "The goal is similar in all: to consciously produce the body's natural relaxation response, characterized by slower breathing, lower blood pressure, and a feeling of calm and well-being. Relaxation techniques (also called relaxation response techniques) may be used by some to release tension and to counteract the ill effects of stress."

For more information see the NCCAM fact sheets on "Relaxation Techniques for Health: An Introduction".

**CrossFit** (CF) combines body weight exercises, gymnastics, Olympic weightlifting, calisthenics, power lifting, strong man movements, plyometrics and some running and rowing into a hybrid of cross training and a form of periodization that deviates from its pure origin.

CF is a collection of nearly every functional exercise in



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the fitness portfolio combined with bursts of high intensity, momentum and varying duration. The fitness achieved with CF happens the same way it does with any of its individual components if they were performed at the same fast pace and high intensity. Divers who participate in CF may or may not be in better physical condition than divers who participate in more conservative forms of exercise.

The 70% and 80% training heart rates are the most effective in preparing the body for diving. Typically, CF works the individual above these heart rate ranges, and the body begins to adapt to the exercise method itself. Depending on the selected activities, the short 20-minute brackets of exercise utilized by CF may not produce the same results as aerobic exercise maintained for a sufficient length of time to complete all of the adaptations of the body to prepare for diving.

The weight loss from CF has to do with energy expenditure. Generally speaking, the harder an individual exercises (at any form of exercise)

the more calories burned and the likelihood that more fat is burned. However, ideally fat reduction is accomplished with aerobic exercise as oxygen is necessary to metabolize fat as fuel. Intense exercise can become anaerobic (lack of oxygen) and therefore not as efficient for fat loss.

Research discounting CF is abundant, while research supporting CF is limited. Some units of the U.S. Army embraced CF for military preparedness, while the U.S. Navy Center for Personal and Professional Development advised caution because of the high incidence and severity of injuries with CF. The Navy also stating CF is not in line with their 'core values' because of the exercises named after women.

While some say CF changes lives, i.e. helping participants go from being unfit to healthy, CF crosses all boundaries of proper form and safe use of equipment. For most, it is considered too high risk versus the benefits of exercise.

Fitness professionals have known long before CF came along that



exercise improves health. The results achieved with CF can be achieved with a wide variety of proven exercise methods including sophisticated applications of periodization and cross training in a more efficient and safe manner.

CF participants are more likely to have sustained serious injury to internal organs, life threatening break down of muscle fibers—called Exertional Rhabdomyolysis (ER)—and injury to joints.

ER can be experienced when participants are not well adapted to a fitness activity, from military type training or long-distance events such as marathons. Some individuals are more susceptible to ER than others.

Instructors must know their client well. Divers who choose CF are best served by instructors with a broad fitness education over and above a CF certification. That

being said, some divers love CF and participate regularly without injury.

**Kettlebells (KB)** Although KB have been around as long as dumbbells, they seem to be growing in popularity. Recent studies reported in the *Strength and Conditioning Research Journal* sought to “determine whether performing continuous two-handed KB swings would create an energy cost capable of improving cardiorespiratory fitness” and the “effects of weightlifting vs. kettlebell training on vertical jump, strength and body composition”.

The studies revealed that the KB workouts show some cardio, strength and weight loss benefits. Yet, the treadmill and traditional weightlifting produced a slightly lower heart rate (more conducive to training for diving), “significantly higher oxygen consumption and calorie expenditure” and “significantly greater strength and performance gains”.

The first and only biomechanical study assessed spinal loading during various KB exercises.

“The KB swing (regardless of style of swing or snatch) appears to create a hip-hinge squat movement pattern together with patterns of rapid muscle activation-relaxation cycles that elicit considerable magnitudes of load on the spine,” stated researchers. “This type of exercise results in unique compression and shear load ratios in the lumbar spine which may explain why it causes discomfort in the lower backs of people who otherwise tolerate very heavy loads.”

As with yoga and CF, KB

needs to be supplemented with one or more of the exercise criteria for diving. Aerobic exercise in the heart rate training zones recommended for divers and good nutrition should be added to all three of these activities.

Yoga also needs to be supplemented with strength training. CF and KB provide strength training, but also need flexibility to create a balanced exercise program for diving. Further, CF and KB are typically forms of strength training with higher risk of injury than traditional resistance training and according to research may not produce better results.

### Exercise programming for diving is as unique as the individual diver.

The health profile of the diving community, an understanding of the stresses of the underwater environment on human physiology, and sound research provide divers with a great deal of information. Using this information, divers can participate in a wide variety of safe, fun and effective forms of exercise to become and stay fit for diving.

Just as each piece of dive gear has its purpose and must fit properly for successful and enjoyable diving, each component of a balanced exercise program

is essential for fitness for diving, and the type of exercise performed must be a good fit for each individual diver. ■

*Gretchen M. Ashton is registered with the National Board of Fitness Examiners. An advanced diver, International Sports Sciences Association Elite Trainer, and world champion athlete, Ashton developed the ScubaFit® program and the comprehensive FitDiver® program, which includes the first mobile app for scuba diver fitness. Ashton is the co-author of the PADI ScubaFit Diver Distinctive Specialty course. For more information, visit: [ScubaFit.com](http://ScubaFit.com)*



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