



PHYSICAL FITNESS FOR THE RECREATIONAL SPORT OF SCUBA DIVING

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Similar to dribbling a basketball, hitting a line drive in baseball, or performing a deadlift for competitive weightlifting, diving skills such as clearing masks, fin kick swimming and buoyancy control are developed through practice. Seems simple; to get better at diving, learn the best and safest methods and dive regularly. Not so simple; there is more to performance for sports and diving than just skills.

Basketball players train off the court, baseball players train off the field and weightlifters train off the platform, to develop physical fitness to support the skills required for each sport. To be a better diver, the diver must also train out of the water. While diving is usually considered moderate-intensity activity, there are differences in the physical requirements for diving depending on the type of diving and the conditions. Water temperature, visibility, currents and surf vary greatly. Further, other stresses on human physiology must be considered in an underwater environment. Diving requires a unique combination of cardiorespiratory fitness, foundational strength, flexibility, and endurance.

Important Reminder: Exercise and strenuous physical activity are to be avoided within 24 hours before and after scuba diving. It is important to see a physician for a complete physical examination before beginning any exercise program. For divers, an annual physical examination is a responsibility associated with participating in the sport.

AEROBIC EXERCISE

Research demonstrates that the limiting factor on the surface is the heart, while underwater it is most likely the respiratory system (lungs). Divers who maintain a good level of cardiorespiratory fitness reduce the risks associated with scuba diving and improve overall diving performance. Based on a review of reported medical conditions by scuba divers, heart disease, cardiovascular illness and high blood pressure are the most prevalent health concerns in the scuba diving community.

The lack of aerobic exercise or physical inactivity is one of the major risk factors for heart disease. The good news is that cardiorespiratory fitness is achieved through aerobic exercise which helps prevent heart disease, high blood pressure, high cholesterol, and may help repair the damage from smoking. Repeated and regular aerobic exercise causes permanent favorable changes in health and performance, strengthens the heart, improves the ability of the body to transport and utilize oxygen and waste products such as carbon dioxide, and is also beneficial for weight loss.

Aerobic exercise is any activity that creates and utilizes greater oxygen demand by moving primarily the large muscles of the body repeatedly and rhythmically at a particular intensity beyond the usual activity of rest or relaxation. The best results are achieved when aerobic exercise is performed consistently as part of a healthy



lifestyle. Examples of aerobic exercise are walking, jogging, running, swimming, rowing, cycling, jumping rope, aerobics classes, and dancing. Aerobic exercise may be performed outdoors almost anywhere. Fitness centers and home gyms provide equipment such as treadmills, stair climbers and ellipticals and exercise bikes.

Aerobic exercise can be as simple as going for a walk. Begin gradually in both time and frequency. To get started, select an activity or a combination of activities and make a commitment to participate a minimum of two to four times a week for 20 to 60 minutes the first two weeks. Work up to three, four, five or more days per week depending on recovery, goals and the duration of workouts. Additional exercise in the form of resistance training is recommended for a balanced exercise program. To aid in weight loss, perform aerobic exercise for 20 to 40 minutes immediately following 20 to 40 minutes of resistance training.

HEALTHY BODY WEIGHT

Maintaining a healthy body weight is primary in reducing the risks and complications associated with poor health and scuba diving. For many, being fit includes some aspect of weight loss. Whether its five pounds or 70 pounds, divers can lose weight permanently with a healthy and positive lifestyle modification approach. Weight loss done well always includes a balanced program of aerobic exercise, resistance training and just the right amount and type of nutrition.

Divers need to eat and eat well. Evidence is most obvious in the profound hunger many divers experience immediately after diving. Ideal nutrition for scuba diving satisfies the

appetite of the diver and translates into improved diving performance, good health and longevity in the sport.

Ideal meals consist of lean sources of protein such as chicken and fish, unlimited quantities of raw or steamed vegetables and moderate portions and varieties of fruits. Northern Hemisphere fruits contain more fiber and less sugar than exotic tropical fruits. Try to consume 30 grams of fiber every day, avoid starchy and processed carbohydrates and creamy sauces and dressings. Use butter moderately. Eat whole fresh foods whenever possible and drink a gallon of water every day. If you enjoy alcoholic beverages remember drinks such as pina coladas and mai tai's are high in sugar and calories, which metabolize more directly to stored body fat. Red wine is an example of a lower calorie beverage that is touted as having some healthy properties.

Whether dining at a restaurant or a dive resort there is almost always a variety of menu choices to meet the specific energy requirements of diving. If divers regularly eat the wrong amounts and types of food they will undermine any weight management program. For many, the first approach to losing weight is to diet. Cutting back calories may be appropriate, but if not done properly can lead to quickly regaining the weight and making it harder to lose the next time. Creating a formula of calories in – calories out to meet your individual goals by increasing physical activity in combination with a purposeful nutrition plan is a better approach.

RESISTANCE TRAINING

When shore diving, divers often have to overcome an obstacle course to get to their favorite dive spot. Beach

access may be by stairs and always includes walking across grass, concrete, sand or rocks. Entries and exits are in varying surf conditions and divers regularly "kick out" or "turtle" for extended distances on the surface to conserve air before dropping down to dive.

Boat diving brings agility challenges requiring divers to maneuver on decks and ladders on constantly rolling seas. Divers do all this under the weight of 50 to 70 pounds of scuba gear while wearing bulky and somewhat restrictive protective clothing.

Muscle moves, supports and protects the body throughout all activity stabilizing joints and protecting the skeleton. Muscle burns calories. Placing demands on the body with resistance training is the only way to maintain, prevent loss and/or add more muscle.

The "Use it or lose it," cliché applies to lean muscle mass through all stages of aging. Having a good amount of muscle promotes metabolism of food energy through the demands of physical activity. Muscle allows divers to perform the activities of daily living without injury and enhances recreational and athletic performance.

Resistance training is performed primarily to develop and maintain muscle and bone. While there is a small aerobic pathway depending on the type of resistance training, it is generally considered anaerobic exercise. Anaerobic exercises are those that are performed at a relatively high intensity and often for shorter periods of

time. Anaerobic exercise utilizes energy stored within the muscle. This energy supply is limited and must be replenished causing waste products that build up fairly quickly blocking oxygen. This is typically when "failure" or the inability to perform another repetition is experienced. Resting between sets of resistance training exercise allows for replenishment of the oxygen and other fuels in the body so that exercise may continue. Resistance training places stress on muscle fibers and bone to stimulate the body to adapt toward improved strength and bone density.

Examples of resistance training include weight lifting, elastic bands, static contraction and body weight movements such as calisthenics, and specialty courses like Pilates. Resistance training may be performed outdoors almost anywhere. Fitness centers and home gyms provide equipment such as modular machines, cables and towers and free weights.

FLEXIBILITY

Joint flexibility and range of motion (ROM) is important for strength when performing activities of daily living and participating in fitness, recreation and athletics. Flexibility is maintained with stretching exercises and by strength training muscles in proper balance. Flexibility and ROM vary throughout the body depending on the type of joint and its directional purpose, the elasticity of the muscle tissue, tendons, ligaments and skin, the ability of the muscle to relax and contract and the temperature of the joint and surrounding tissues. Other factors considered to influence flexibility and ROM are age, gender, excess fat and orthopedic and medical conditions.

Divers especially need good flexibility to perform diving skills and prevent injury. Examples include reaching for air valves behind the head, reaching for dump valves behind the back, zipping a wetsuit behind the back, putting on fins (especially in the water), bending, sitting and reaching with gear on, cleaning and carrying gear, efficient fin kick swimming, looking around to observe surroundings, changing direction while swimming, assisting a buddy (especially in an emergency), putting on and removing weight belts, and walking on uneven shore terrain and sand.

It is important to incorporate stretching exercise into regular physical activity. Stretching is recommended by the American College of Sports Medicine three times a week for 10 to 20 minutes each session. Just as with aerobic exercise, gains from stretching diminish rather quickly when regular stretching stops. Inactivity for as little as three to four weeks can reduce range of motion and flexibility.



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