The Methods of Free Diver's Training

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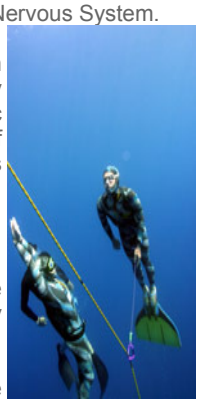
Every sport shapes its own specific morpho-functional aspect. Investigation into specificities of free diver's training is primarily based on the knowledge of requirements placed upon functions and peculiarities in functioning of the neuromuscular system in the process of swimming respiration (while the diver keeps his respiration restrained). Providing the organism with energy occurs under the conditions of a rapidly increasing oxygen deficiency, while the compensatory activation of anaerobic glycolisis results in accumulating acid It occurs up to the toxic level.

The basic problem in free diving lies in loss of consciousness that may happen because of failing in the brain compensatory abilities of adaptation (occurring) on the background of a certain load, which is inadequate to its reserved possibilities. It happens due to some combination of high level of metabolic activity of the cerebrum cells, allow storage of oxygen and small reserve of high energetic phosphates, whereas the muscles contain myoglobin which incorporates oxygen six times faster than hemoglobin does reduction of adenosine triphosphoric acid.

This gives rise to the basic task of free diver's training, i. e. enhancing of resistance to hypoxia and first and foremost of cerebrum at the expense of reorganizing of all systems of survival through activating a number of earlier inactive genes.

In practice it means that in the course of training the preference is to be given not to overcoming longer distances with restrained breathing which leads to development of protective inhibition within the Central Nervous System, but to overcoming series of smaller parts of the distance which gradually postpones the threshold of onset of inhibition state for the Central Nervous System.



In performing of exercises, the organism's energy resources expend which in its turn leads to activation of the processes of reduction after a sufficient rest they are characterized as the phase over reduction. A super compensation of structure and energetic resources of the organism follow it: the number of energy sources increase, the deficit at the process of functioning is a biologic stimulator of genetic apparatus of the sell. The permeability of mitochondrics and the efficiency of their functions change; the activity of synthesizing and oxygenic ferments increase; the syntheses of nucleus acids and protein activates and provide the shaping of all structure changes.

Owing to this high level adaptive variability of the hutches the adaptation to the loud happens. Herewith the amount and the directivity of the restoration processes depend on the sort of work and the depth of the biomechanical shifts.Thus, the result is determined not only by the training loud but also by the reaction of the body on the loud.

To increase the function possibilities of the body a free diver's training should be directed to the increasing of the level of maximal oxygen consumption and also the capacity to continue the work in terms of the accumulation of the maximal oxygen debt. The amount of oxygen that the body is able to utilize is determined:

- The system of ventilation, the level of the cardio – vascular system functioning,
- The blood system, the tissue utilization of the oxygen.

The factors of the maximal oxygen debt depend on the power fermentative systems, the stores of organic material, the capacity to compensation of the shifts in internal ambience and the level of tissue adaptation to the terms of hypoxia

And hypercapnia (raised contents of carbon dioxide).

Coming from these requirements the next methods of training are selected.

1. The distance swimming is an unceasing swimming with rare breathing. It is directed to the improving of the arrival, transportation, utilization of oxygen. The swimming on the 400, 800 meters by crawl – a breath on each 5-, 7-, 9- stroke, or by brass – a breathing through1, 2, 3 cycles, or swimming with a monofin – a breathing through 3, 4, 5 cycles. Headaches can appear after long distances. Probably, it happens in consequence of narrowing the cerebrum vessels. So at first it is preferable to divide the distance: 4x 100 meters, a breath on the 5 stroke, free rest; then on measure of adaptation to go to the distance 2x 200, 400, 2x 400 and 600 meters. At sensation of swimming lightness during swimming it is acceptable to complicate the rhythm of breathing: a breath on the 7 stroke, beginning with 100 meters, and under the same scheme increasing the distance.

2. The exercises of the variable nature activate the systems of breathing and blood circulation quickly. After the first distance moderate oxygen debt is formed, this is liquidated during free swimming. Aerobic processes have enough time to turn round by power, and the 2 length occurs on the background of an intensive aero bios. The distance of 400 meters (25 meters an athlete should dive by brass + 75 meters by crawl in a free manner) or 600 meters with fins (25 meters diving + 25 meters swimming on the back).

3. The interval training is a swimming on short distances with a delayed breath and a short interval for the rest. It is directed to the increasing of heart functional capabilities and the products of anaerobic disintegration forming at functioning serve powerful facilitator of the respiratory processes. So the first 10 – 30 seconds of

the rest the oxygen consumption and heart capacity increased. If a repeated load these factors are still high then from one repetition to another the oxygen consumption grows. After the achievement of the limiting values (as a rule, after the forth length) the oxygen consumption is fixed on one level and does not fall to the end of the series.

For this type of training is recommended: 8x25 meters by brass diving or with fins or swimming by crawl with a delayed breath, the rest is 8 slow breaths and exhalations.

Gradually it is possible to bring the series to 24x25 meters, then again to begin with 8 repetitions, but to reduce the rest to 7 breaths (slow!) and again to increase the number of repetitions. It is important to choose the optimal mode of functioning and rest, so as the condition should be stable to the end of the series.

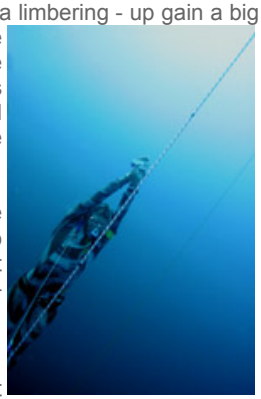
Interval tense training is possible only at the definite period of preparation, after creating a sufficient functional base so it demands the swimming of 50 meters' lengths with the delay of breath in a hard mode or with a reducing interval of the rest, which is determined by the dynamics of glycolysis. It is estimated by the contents of the lactic acid in blood and its maximal level of content is determined after a few minutes later after the work, from repeating to repeating the time of maximal level approaches to the moment of finishing the distance.

Consequently, the interval of the rest reduces; a repeated length is swum in the phase of insufficient recreation on the background of fatigue from the previous one.

The increasing of stability to disadvantage shifts in the internal ambience of the organism occurs, the tissue adaptation to hypoxia and hypercapnia conditions increases; the psychological borders of stability enlarge. For example: 2 – 3 series 4x50 meters diving with floppers or brass, an interval is 2 minutes, 1 minute 30 seconds, 1 minute. The rest between series is 15-20 minutes in the type of free swimming for eliminating of the lactic acid and redemption of the oxygen debt. Or the series 6x50 meters diving with monofloppy, the mode is 2 minutes (the time for functioning and rest). The number of repeating and interval of the rest are determined by the readiness of the organism to fulfill a suggested work. On measure of adaptation the series increases, but the rest reduces.

4. The repeating training is a swimming of the lengths with the intensity 70 -90% from the maximal distance with the delay of breath. The intensity is not calculated on the dependence from the power of the work, but by the length of the distance. If it is 100 meters, the length of free diving is 75-90 meters, the rest to getting the complete recreation, the number of repentances 2 - 6 times.

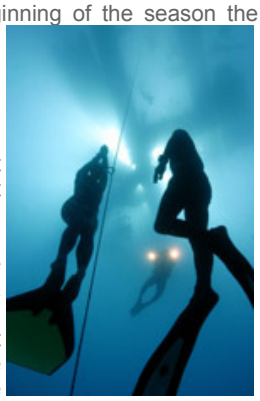
So as the organism does not feel the overweening stressful influence at the training process a limbering - up gain a big importance. It is directed to the functional adjustment; a preliminary reinforcement of vegetative functions and it is a physiological adjustment of the organism. Its effect is connected with the changes, happening in the central nervous system, the mobility and excitability of the nervous processes increase, the activity of cardio-vascular system improves, capillaries enlarge, the blood comes out of the closed place, the blood circulation increases, at the result of these changes the oxygen capacity of the body becomes greater.

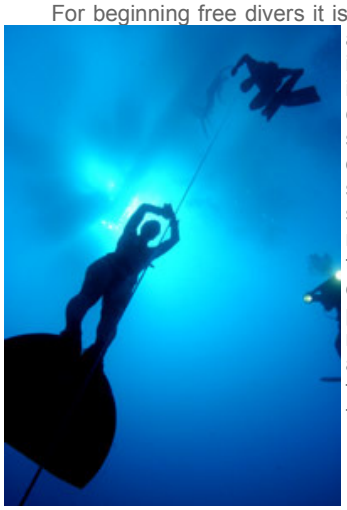


The metabolic processes increase in the nervous-muscular system, the temperature of the muscles grows and the viscosity of the muscles and ligaments reduces. The limbering-up includes the exercises by crawl, brass, with floppers and a distance swimming with soft comfort rare breathing: 300 meters by crawl with interleaving on 50 meters breaths at 3-, 5-, 7-, 7-, 5-, 3-strike; or swimming by brass with the breath through 1, 2, 3, 3, 2, 1 cycles on 25 and 50 meters; or swimming with a monoflopper with the breath through 3, 4, 5, 5, 4, 3 cycles on 100 meters.

It is important to take into consideration the phases of development of a sports form that serves as a natural ground of a periodic character of the training process.

The choice of the training influences comes from this statement. The usage at the beginning of the season the repeated method of training without necessary basic training leads to a breakage of adapted mechanisms.





For beginning free divers it is necessary to remember at the preliminary stage of organism adaptation to diving an increase of pulmonary volume and improving of ventilation function of the lings have the most importance; at the second stage the most significant contribution is from the cardio – vascular system; at the final stage there are factors, providing high capacity of utilization oxygen. Consequently, one should start training with distance swimming, a rare breathing and variable swimming with a short delay of breathing and free swimming. Then an interval method of training with a sparing rest and in 2- 3 trainings at the period of creating the functional base swimming with the delay of breathing in a hard mode can be included. At the process of training the choice of direction and amount of the loud is determined not so much by the final aim as the information about a dynamic of the current condition. Then a transformation of the quantity changes transfers into quality changes of the organs and functions, the figures of the efficiency, economy, reliability of the functioning systems of the body increase.