

the oxygen intake is sufficient to meet the output of energy, a "steady state" of muscular functioning will be reached.* This means that a swimmer who keeps the flow of oxygen consistently replenished can endure great swimming effort. The recruits should be given drills and breathing exercises both on land and in the water. Deep breathing exercises out of water to develop facility for large intake of oxygen are especially recommended. The breathing exercises should be practiced daily.

The above mentioned law of inertia depends on force and time. In other words, a body at rest will tend to remain at rest. However, if a great deal of force is applied to that body its state of rest will be changed. Let us examine this in relation to water activity. If we throw a block of wood in the water, it will bob up and down until it stabilizes. In order to change this position of stability some force must be applied to the block in order to push it below the surface of the water. If, however, we place the block of wood carefully in the water to the proper depth, it will not bob up and down.

*Physiologically it is impossible for a muscle to function without oxygen. Experimentation on fatigue has clearly demonstrated the importance of oxygen to man during strenuous, active work. In laboratory experiments a muscle electrically stimulated by a succession of shocks to simulate work, was at the same time deprived of an adequate supply of oxygen. The muscle soon lost its ability to work and ceased functioning. Another muscle similarly stimulated, but with oxygen adequately supplied weakened at first and finally reached a "steady state". In this "steady state" the muscle breakdown was balanced by the muscle recovery. In other words the oxygen-supplied muscle was not fatigued as in the case of the non-oxygen supplied muscle, but endured even through strenuous work.