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# Natatorium Construction and Swimming

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A Reprint from Hygiene and Physical  
Education for July, Containing  
the Following Articles:—

Introduction. By Dr. Paul C. Phillips, Amherst College.

Extracts from "Swimming Pools." By John K. Allen, Editor "Domestic Engineering".

Natatorium Construction and Supervision Answers to Questionnaires from 48 Natatoriums.—Wm. P. Hastings, Springfield, Mass.

How to Teach a Man to Swim in Fifteen Minutes. Dr. James Naismith, University of Kansas. P. 15

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Published by

The F. A. Bassette Co.

Springfield, Mass.



**11. Height of ceiling above floor.**

12 ft., 4. 15 ft., 3. 20 ft., 2. 14, 16 and 18 ft., 1. 10 ft., 2. It is clear that the ceiling should be 12 ft. or over the higher the better.

**12. Best method of marking warning lines.**

With black tile, 3. Black letters on white ground, 2. Brass, 1.

**13. Best material for water pipe.**

Galvanized iron, 7. Brass, 2.

**14. Should tile lining be tied to the outer wall?**

Yes, 9. No answer, 7.

**15. Should floor along side of pool pitch in or out?**

Out, 10.

**16. Slop trough can be pitched for good drainage without spoiling the looks of the Pool.****17. Features of excellence in pools you have seen.**

The answers are various. Balcony on four sides, 5. Southern exposure, skylight with ventilation, prism glass for strong lighting and plenty of windows, high ceiling, overflow drain at surface of the water, white tiling, Ceramic tiles, safety rail, radiation overhead, blast for heating and ventilation, baths immediately adjoining pool.

**18. Principal errors in plan, material or construction.**

Showers and plunge should not be in the same room. Bad location for sunlight. Lack of proper ventilation. Not enough slant for drainage. Drainage pipes too small. Insufficient heating capacity. Concrete not heavy enough. Use of materials affected by vapor. Pipes uncovered. Dangerously smooth materials used. Low ceiling. Pipes placed where water drips on spectators. Lack of room for spectators. No walk-way around the pool. Hand rail too far out. Inconvenient arrangement for dressing.

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## How to Teach a Man to Swim in Fifteen Minutes

DR. JAMES NAISMITH

It has been my good fortune to teach a great many men to swim but it is only in the last year that I have been able to assure a man that in 15 minutes from the time that he was ready he would be swimming a distance of at least 20 feet. It is no small pleasure to see a man enter the water utterly unable to swim a stroke, and before he leaves, plunge in at one side of a pool 8 feet deep and 20 feet wide, swim across and crawl up on the other side.

Yet this can be done and is no uncommon occurrence in the pool at the University of Kansas. Considering all the benefits that follow the ability to swim it seems that almost anyone might spend fifteen minutes to acquire the skill that might be necessary to save a life.

All exercises are best learned by acquiring the various reflexes with as little distraction from surroundings as possible. We have long known



that it was better to learn the swimming stroke on land than in the water. So long as we looked on the breast stroke as fundamental there were difficulties in the way of teaching it. To get the proper stroke of the legs it

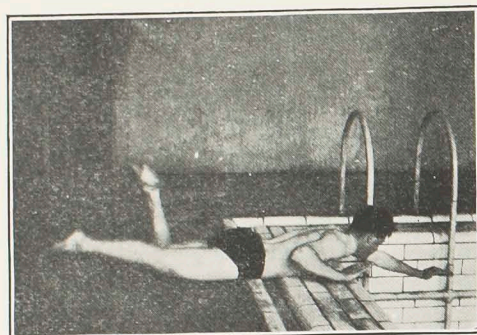


FIG. 1

was necessary to learn it on the back or to raise the learner on a stool or piece of apparatus that the knees might be drawn up under the body. While the stroke itself is unnatural and difficult to acquire.

With the advent of the Crawl a new idea of the mechanism of swimming was introduced. The principles which govern the progress of the amphibious animals were used and the process of learning to swim was no longer a matter of difficulty or of chance, but we can say to an individual that by observing a few fundamental principles and performing a few simple movements he can swim off without much effort.

The first of these principles is that the body must be kept in a position as nearly horizontal as possible with the head slightly elevated but close to the water. To accomplish this it is necessary to make an effort to keep the feet near the surface, for the chest, containing the lungs, has a less specific

gravity than the limbs so that the feet tend to sink and an effort must be made to keep the horizontal position. This is best done by a stroke of the leg from the knee down, making a motion as if striking the surface of the water with the back of the foot, keeping it well extended. The thigh is kept in line with the rest of the body. This is illustrated in figures 1 and 2. This movement is easy to acquire and will with very little effort keep the body in a horizontal position. The feet may be brought above the water as shown in figure 2.

The second principle is that which we use when we skip a stone on the water. If a heavy body strike the water in a slanting position and has an impetus more or less parallel with the surface it is impossible for that body to sink. Therefore with the body in the position already described if we can give it a forward movement

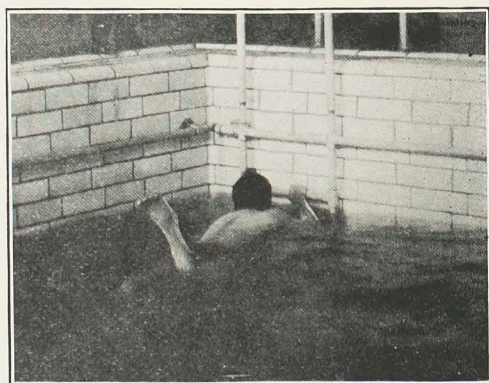


FIG. 2

it is impossible for it to sink. Therefore all our power should be exerted to pull the body forward and the floating will take care of itself. It is because of a lack of appreciation of this fact that many persons sink. As soon as they attempt to keep the body

afloat it assumes the erect position, the knees are drawn up as in walking, the body becomes tilted backwards and it sinks in spite of all our efforts.



FIG. 3

To get this forward motion we should depend on the stroke of the arms at first, keeping the body straight to offer as little resistance as possible to the water. The arm should assume the position of the right in figure 1 and should then be shot forward to the position of the left in the same figure. From this position it should be brought down and back keeping it straight to the finish of the stroke so as to get the full benefit of the resistance to the arm in driving the body through the water. The arm should not at first be brought above the water as the splashing tends to frighten and to choke the learner, but it should be a smooth, easy stroke reaching well forward as if we were crawling over the water.

With these two principles explained

to the learner the next step is to have him put them into practice. To accomplish this have him lie on the ground face down as in figure 1, let him practice the foot stroke until he can keep it up without thinking and be able to stop and start at pleasure. Then by allowing him to lean over the edge of the pool he can acquire the arm stroke until it too becomes reflex. Neither of these motions are unnatural and both are easily acquired.

The next step is to practice these strokes in the new environment and for this purpose he enters the water, going down into it facing the ladder and holding firmly to it. When he is down to the neck get him to push away the body from the ladder and by means of the foot stroke let him keep the body in a horizontal position as in figure 2. It is the work of a



FIG. 4

moment to have him hold this position at will. Then let him loosen his hold on the ladder with one hand and make the arm motion with the free arm as



in figure 3. Then let him change his hold, practicing the other arm. Then he may alternate arms and the reflex is complete. The next step is to use this reflex while the body is away from any support.

Let him enter the water with his back to the ladder as in figure 4, letting himself well down and reaching well forward with one hand while he supports himself with the other; by bending the knees he gets the push which will send him well out into the water and all he needs to do is to keep his feet going and pull himself forward with his arms.

In the great majority of cases he will swim across at the first attempt and then return for another trip. It is well to have a short pole to render any assistance needed and to give the learner confidence. It is not necessary to hold the person up as it will make him feel that the instructor is necessary to him and he keeps depending on him. But once he has crossed alone he feels that he has accomplished the deed by himself and has confidence to attempt it alone.

There are two faults that the beginner is likely to have, one is the tendency to draw up the knees to the body which instantly has the effect

of stopping the forward progress and causes the body to assume an erect position and the person soon sinks. The other is the tendency to bend the arm at the elbow during the stroke which so limits the stroke that there is no progress and the inevitable follows.

By getting the confidence of the learner and following the principles laid down it is perfectly safe to say to a person who has normal control of his body that inside of 15 minutes from the time that he enters the room he will swim across the pool alone.

There is no reason why these strokes should not be taught in class. As many as four have been taught on land and with the practice in the water they have one after the other been able to strike out and swim across the pool.

The water should be so deep that the person cannot reach the bottom without going under water then the thought of the bottom does not interfere with the action of the reflexes. The best results have been obtained when the surface of the water was level with the floor. The head of the swimmer is then above the floor instead of being below the level and fear was greatly lessened and confidence inspired.

