THE DEVELOPMENT OF A PROGRAM OF SURVIVAL SWIMMING AND LIFESAVING TO BE TAUGHT AS A PART OF BEGINNING AND INTERMEDIATE COURSES IN SWIMMING

by

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CHAPTER I

INTRODUCTION

Every year more people participate in some form of water activity than any other sport. (7:35-36) The millions of people who swim, dive, boat, fish, water ski, and skin dive give ample evidence to the popularity of water sports. This popularity, however, is not paralled with the swimming skill that should accompany it. "About 90 per cent of the individuals participating in all forms of aquatic experiences have to be classified as extremely poor swimmers." (7:35) This becomes rather astounding when one stops to think that unintelligent participation in aquatics is extremely hazardous and can easily result in death. (13:76) This hazard stems from the fact that man does not naturally belong in the water. Man's whole physical make-up including posture, shape and arrangement of limbs, specific gravity, respiration, and body temperature has been developed and arranged for terrestial living. (4:1) Nevertheless, through the ages, man's unbounded curiosity has drawn him to the water where he has found comfort, relaxation and enjoyment. His "dominant will and a marvelously adaptable brain and physical structure . . . have prompted him to develop a form of locomotion suited to his needs in this new element." (4:1)

"Since man's natural position and locomotor movements cannot serve him in the water with any degree of success, other positions must be assumed and different types of movement employed." (5:1) The process of discovering these positions and movements suited to man's needs has

taken centuries of trial and error but has finally enabled him to become one of the most versatile of living creatures in the water. (5:2-3)

Even with these fundamental principles of swimming well established, there still remains a problem of education. This knowledge and skill must be transmitted to all people, and a consciousness of safety precautions must be instilled in them. If man is to use the water as a medium for recreation or for any other purpose, he must first be taught means for safe and pleasant participation. He must be taught to survive.

The ability to swim is in itself a survival skill; however, simple swimming skill is not enough to insure one's safety. Man is limited in his adaptation to the water to the extent that a single mishap may cost his life. Since "death is a possibility, fear becomes a very potent factor in the behavior of an individual when an emergency arises, and is a factor which cannot be discounted." (13:76) When faced with such a situation, a person is often attacked by panic, a sudden unreasoning and overwhelming fear which paralyzes one's ability to think clearly and act rationally. For this reason, simply being able to propel oneself with a swimming stroke is not always sufficient. The best positive method of preventing panic is to actually accomplish a long distance swim or remain afloat for an extended period of time. Telling a student, after he completes a course in swimming, that he now has the ability to save himself should the occasion arise will never thoroughly convince him. He has only been told this; he has not tried it so that he might know by actual experience. (16:28) All frightening experiences

cannot be prevented, but a foundation can be established for clear thinking in an emergency. "The initial impact of panic, powerful as it may be, will be dissipated against a barrier of reason." (13:76)

There are two important factors to be considered in water safety: (1) personal safety and survival and (2) rescue skills. Personal safety involves competency in swimming skills, knowledge of conditions under which it is safe to swim, and mastery of skills that will enable one to survive in an emergency.

Rescue skills are important in aiding another person. Anyone, regardless of swimming ability, can learn simple forms of rescue that are safe and effective in almost any circumstance. A thorough understanding of these skills would prevent many a tragedy in which an unskilled swimmer is seized by a blind instinct to swim to the rescue of a drowning person only to become a second victim himself. This happens most frequently to parents or brothers and sisters, but sometimes even total strangers react in this manner. Often in their desire to help, they ignore perfectly safe methods of rescue. (4:29-30)

The concern is not so great for the non-swimmer as for the person with a limited amount of swimming skill. A person who cannot swim at all often stays safe by not going near the water, whereas a novice is likely to adventure beyond his capacity and get into difficulty because he lacks both the knowledge and skill to take care of himself. Likewise, an overconfidence in his ability may lead him to take rash action in attempting a rescue for which his ability does not equal his desire to help.

This problem presented by people with limited swimming skill, plus the apparent lack of adequate safety instruction in the average swimming course prompted the author to undertake this study. If there are survival skills that can be learned early in a swimming progression and rescue techniques that require little or no swimming ability, then they should be an important part of swimming instruction from the first day the student enters the water. These skills are of great importance in the early learning stages. There is no need for delaying this instruction until the student has mastered a variety of strokes and has become a competent swimmer.

CHAPTER II

STATEMENT OF THE PROBLEM

The purpose of this study was to develop a program of survival swimming and lifesaving skills to be taught as a part of the beginning and intermediate courses of swimming. Instruction was geared to college women.

There were four main objectives for the course:

1. To teach basic swimming skills.
2. To teach survival swimming and lifesaving skills appropriate to each level.
3. To instill in the students an awareness of safety precautions.
4. To provide the students with an opportunity to develop confidence in their own ability to be safe in the water.

These objectives provided for a combination of the recreational and safety values of swimming. Emphasis was placed on the form of strokes as well as their practical application and on appropriate survival and lifesaving skills that could be put to use in an emergency.

The study was also concerned with measuring the level of achievement of the students in both swimming skills and safety skills.

CHAPTER III

REVIEW OF LITERATURE

The information for this study was considered in two aspects. The first was an investigation of incidents related to drowning accidents. This information not only revealed the necessity for safety training but also made implications for the types of training needed. The second aspect was an investigation of related programs and research. This information showed the general trend in water safety to date and certain methods and techniques that have been used successfully.

Drowning ranks second to motor-vehicle accidents as a leading cause of accidental deaths of persons between the ages of five and forty-four. (11:5) The annual death rate by drowning was 6,200 in 1954 (9:6), 6,500 in 1955 (10:6), and 6,100 in 1956 (11:6). This shows the tremendous need that exists for safety training.

Gabrielsen (20:79-95) discloses the following information about drowning accidents which is of significance in determining the need and scope of training in water safety:

Swimming Ability - 70.7 per cent of victims were nonswimmers and 29.3 per cent had varying degrees of swimming ability.

Dress - bathing suits, 26.6 per cent; summer clothes, 48.4 per cent; winter clothes, approximately 14 per cent.

Number in Party - 49.7 per cent were alone.

Activity Engaged In - recreational swimming, 26.3 per cent; fishing, 18.5 per cent; boating, 16.3 per cent; falling in while wandering

or exploring near water, 16.8 per cent.

Cause of Accident - falling out of a boat or boat capsizing, 24.4 per cent; child left unattended, 16.8 per cent; falling in, 9.9 per cent.

In summary, these were some of the most significant facts established in this study:

> Only 2.2 per cent of drownings occurred in areas patrolled by life guards.
>
> . . . . . .
>
> Many drowned even though they had someone else with them while swimming or boating.
>
> Most drowning accidents occur as a result of violating some good safety procedure recommended for aquatic activities.
>
> In many of the cases reported it was indicated that no person was on hand who was trained in the skill of artificial respiration.
>
> Only 26.3 per cent of the cases studied occurred among those people participating in recreational swimming. The others occurred while people were doing various activities from boating and fishing to taking a bath and just wandering around and falling into water. (20:124a-124b)

World War II revealed a problem that stimulated one of the first extensive programs of survival swimming in our country. An estimated 40 to 50 per cent of the men going into the armed services could not swim. Records, after the first year of World War II, indicated that there were practically as many deaths from drowning as there were from gunfire. (15:41)

When this need was recognized, instruction in survival swimming became an important part of the training of men in all branches of the armed services. For example, men in the Naval Aviation Training Program

were required to pass certain minimum swimming tests. The difficulty of the tests varied with the rank and type of training in which the men were engaged. (6:209-210) Instruction was geared to survival in combat and included such tasks as staying afloat for long periods of time, basic swimming strokes, methods of escaping strafing, swimming through flame, forced breathing and underwater swimming, abandoning ship, use of life jackets and life boats, use of inflated clothing, and rescue of the injured. (6:45-46)

As a result of the wartime emphasis, an experimental course in Warfare Aquatics was introduced into the physical education curriculum at the University of Illinois in 1942. This course was developed to fill the need as determined by careful analysis of literature on military swimming, reports of drowning at the front lines, and the desires of Army and Navy officials. (15:41-42)

The American Red Cross has made a very important contribution to water safety in America. This organization has done much to stimulate widespread interest in aquatics and water safety and has carried out an extensive instructional program. The program provides for instruction at all ability levels: Beginner, Intermediate, Swimmer, Junior and Senior Life Saving, and Advanced Swimming. The course outlines for the Beginner, Intermediate, and Swimmer levels includes, in addition to swimming skills, instruction in a few selected safety skills. The following skills are included:

Beginner

1. Release of cramp.
2. Assisting a nonswimmer to his feet.

3. Reaching assists (reaches from shore with and without extensions, human chain). (3:31)

Intermediate

"1. A wading rescue using an extension.

2. A throwing rescue using line or buoy.

3. An elementary swimming rescue using a floating support.

4. Drill in artificial respiration." (3:37)

Swimmer

Practice and drill in swimming on the back using legs alone, as preparation for life saving training. (3:39)

The Red Cross has also developed courses in basic and advanced survival swimming. These courses were the result of extensive experimental work and were based partly on the work of the Red Cross in teaching functional swimming to members of the armed forces during World War II. Additional work was done at a number of military bases after the war "to determine the skills most essential for survival under military conditions and an effective method of teaching these skills in the shortest time possible." (2:iii)

> The objectives of these courses are to equip individuals with those skills that will contribute to their safety while in or on the water, and to develop and maintain physical strength and endurance. The mastery of these skills will in no way equip one to qualify as an expert swimmer, but should enable him to save his own life and possibly the life of others in an emergency.
>
> . . . emphasis is placed on the practical application of strokes and skills for survival rather than on perfection of form. (2:iii)

The Red Cross Basic Survival Swimming Course is open to anyone who is sixteen years old or over. There is no preliminary requirement. (2:iii) The test required for satisfactory completion of the course

illustrates the skill requirements.

1. Submerge and hold breath 30 seconds. Demonstrate rhythmic breathing at the rate of 24-35 times in 2 minutes.
2. Float (or remain afloat with minimum effort) for 2 minutes.
3. Swim 40 yards, using the human stroke.
4. Swim 40 yards, using the elementary backstroke.
5. Demonstrate a feet first surface dive.
6. Swim four body lengths under water.
7. Jump from a height of 5 feet, and then stay afloat for 5 minutes while clothed in shirt and trousers.
8. Demonstrate the following tows:
   a. Wrist tow -- 20 yards.
   b. Collar tow -- 20 yards.
9. Demonstrate the following improvised flotation devices:
   a. Inflation of trousers by jumping from deck.
   b. Inflation of trousers in shallow water.
10. Demonstrate the back-pressure arm-lift technique of artifical respiration.
11. First combined test
    Jump from deck and swim four body lengths under water; then come to surface and swim 40 yards, using either the human stroke or elementary backstroke. Turn over and rest on back for 3 minutes. Do a feet-first surface dive, swim two body lengths.
12. Second combined test
    Jump from deck and inflate trousers while in the air. Remain afloat 2 minutes while holding trousers, and then discard trousers and swim 20 yards in 25 seconds or less. (A hand-over-hand stroke may be used.) Hold on to swimboard and stay afloat 5 minutes. (2:10)

Advanced Survival Swimming is for people 16 years old or older who have passed the requirements for the basis course. (2:iii) The final test for this course is as follows:

1. Swim 100 yards, using the side stroke.
2. Swim 100 yards, using the breast stroke.
3. Swim 100 yards, using the hand-over-hand stroke.
4. Swim 100 yards, using the elementary backstroke.
5. Demonstrate the following modifications of the breast stroke:
   a. Silent swimming -- 40 yards
   b. Head high -- 40 yards
   c. Splash recovery -- 40 yards
6. Demonstrate the following modifications of the side stroke:
   a. Legs alone -- 40 yards
   b. Carrying rifle -- 40 yards
   c. One arm alone -- 40 yards
7. Jump from a height of 10 feet and stay afloat 10 minutes.

8. While in the water demonstrate ability to make a satisfactory flotation device from the following articles:
   a. Shirt
   b. Trousers
   c. Helmet liner (or bucket)
   d. Barracks bag (or pillow slip)
9. With both victim and rescuer clothed in shirt and trousers, demonstrate the following lifesaving skills:
   a. Tired swimmer carry -- 40 yards
   b. Cross chest carry -- 40 yards
   c. Block and carry -- 15 yards
   d. Release from front head hold
   e. Release from rear head hold
10. Demonstrate the back-pressure arm-lift technique of artifical respiration.
11. First combined test (student clothed in shirt and trousers): plunge, swim 50 feet under water, and then come to surface and tread water 1 minute without using hands. Swim 200 yards employing any stroke or combination of strokes.
12. Second combined test (student clothed in shirt and trousers): Jump, come to surface in a vertical position, and splash a hole as if there were burning oil on the surface. Swim 20 yards, using a splash recovery; then do a feet-first surface dive and swim 10 feet under water. Return to surface, support buddy for 3 minutes and tow him 20 yards. (2:20-21)

Lanoue (22:1) developed a technique of staying afloat for long periods of time which is fundamentally a method of breathing while swimming in deep water with a minimum of energy expenditure. This technique, called "drownproofing", is described as follows:

1. With lungs full, float face down, with back of neck on the surface.
2. Expel water from mouth, then get ready for a downward thrust using arms, legs, or both.
3. Keeping shoulders under, exhale through NOSE <u>WHILE</u> raising head till mouth is out.
4. With head vertical, inhale through mouth while thrusting downward wide and slow.
5. With lungs full, first drop head forward, then immediately thrust again downward and backward.
6. Relax with head, arms, and legs dangling. Hold all air while traveling forward and upward. Beginners rest three seconds in this phase, experts rest ten. (22:1)

"The slow rhythm of this technique builds confidence . . . and produces rest instead of exhaustion." (22:2) Lanoue states that this

technique, which works equally well on all types of people regardless of size, age or sex, has the following distinct advantages:

> First, after putting the face back in the water the air provides all the buoyancy needed thus eliminating many tiring unnecessary movements. Second, the vertical head minimizes the possibility of choking by utilizing the reservoir capacity of the lower mouth. Third, real relaxation and long rest periods are obtainable by proper spacing of the arm and leg movements. Fourth, the method works nearly as well with arms alone, or legs alone, or using one of each. Folks do get cramps, disabling injuries, etc. while swimming. (22:2)

Lanoue (21:1) conducted several experiments to test the effectiveness of this technique. In one such experiment the pool was filled with fifty-seven poor swimmers, with the announced objective of staying up for eight consecutive hours. Volunteers were solicited, rejecting all known good swimmers and pressuring all known poor swimmers. Fifty-five of the participants were freshmen men at Georgia Institute of Technology, and the remaining two were girls ages fourteen and ten. "Twelve of the Tech boys had started in the current term as non-swimmers, and had had approximately eight lessons." All of those who thought they could were asked to try the experiment with either the arms or legs tied.

The results of the experiment were as follows:

> 57 started, and a total of 16 stayed up the full 8 hours.
> 29 had nothing tied, 6 (including the two girls) stayed up the full 8 hours.
> 17 had legs tied Buddah fashion, 6 stayed up the full 8 hours.
> 11 had hands tied behind back, 4 stayed up the full 8 hours.
>
> Average quitting time of all 57 was 4 hrs. 40 min.
> Average quitting time of the legs tied was 4 hrs. 42 min.
> Average quitting time of the hands tied was 5 hrs. 25 min.
> Average quitting time of the free swimmers was 4 hrs. 21 min.
> Average quitting time of the 12 nonswimmers was 4 hrs. 24 min. (21:1)

The success achieved by the students participating in this experiment seems to be ample evidence of the effectiveness of the drownproofing technique.

Emory University requires all freshmen to take a swimming course patterned after the Georgia Tech course of "Drownproofing". Minimum requirements for passing the course are these:

1. Swim 200 yards, no more than 175 on back.
2. Stay up for 10 minutes any way.
3. Swim 45 feet underwater with clothes.
4. Dive comfortably from low board.
5. Jump comfortably from high board.
6. Score a minimum of 60 points. (28:1)

Grades are earned on a point basis with skill being demonstrated in seven different areas. Within each area a student may elect to do one of several different test items which are given a point value according to difficulty. The tests cover (a) arm efficiency, (b) leg efficiency, (c) underwater swimming, (d) distance swimming, (e) 300 yard speed swim, (f) life saving swim, and (g) assorted skills and stunts. (28:1-2)

Smyke (21:1-5) has made comparisons of the test performances of men and women students in the Emory University swimming program. This comparison revealed that the program was practical for both men and women. For example, on the arm efficiency test 90.75 per cent of the girls scored a grade of "B" or above as compared to 91 per cent of the boys. Similar results were obtained on the leg efficiency test in which a "B" grade or above was scored by 82.75 per cent of the girls and 86 per cent of the boys. A survey to determine the reactions of Emory and Georgia Tech students to the drownproofing course showed that the attitudes of the girls compared favorably with those of the boys.

The American Red Cross conducted a study to determine if there was a need to add a basic survival swimming skill to the present Beginners Swimming Course. Only 40 per cent of the people enrolled in beginning courses actually get certificates. This study was an attempt to help the other 60 per cent who do not pass the requirements for a certificate. (19:1) The survival skill developed for this purpose was called the Bobbing Jelly Fish and was "based on the individual's ability to control the breathing and do the Jelly Fish Float." (18:1)

The Bobbing Jelly Fish is done in the following manner:

1. Assume a Jelly Fish Float position. Allow the arms to hang suspended toward the bottom: drop the head so the chin is on the chest. Allow the legs to hang free and relaxed. Hold the breath. Remain in this position as long as it is comfortable.
2. When a breath of air is required, simply move the hands up and forward below the surface and at the same time exhale through the mouth....
3. As a continuation of the previous movement, press the hands down and back as in the Butterfly Breast Stroke and at the same time lift and turn the head to one side.
4. Slowly allow the hands to move back to their free hanging position, return the face to the water, chin on the chest, and hang suspended until another breath of air is desired, after which the same cycle is repeated...." (18:1)

There were 4,519 subjects who took part in the study. For statistical analysis, subjects were grouped in age brackets and classified according to the length of time (two minute intervals from 0-10 minutes) they were able to do the Bobbing Jelly Fish. An average of 22.3 per cent were able to remain afloat for ten minutes or more in deep water.

The thirteen to fifteen year old age group showed the greatest achievement with 41 per cent of the subjects remaining afloat for ten minutes or more in deep water. The average time for staying afloat in deep water was 7.5 minutes for this age group.

The average time of the entire group for remaining afloat was 5.7 minutes. An average of 9.5 per cent could not learn the skill. An average of 7.3 per cent were able to do the skill in shallow water but not in deep water. (19:2)

Davis (16:27) stated that water safety may be divided into three categories:

1. Possession of basic swimming skills (swimming, water entry, bobbing, treading, etc.) necessary to be reasonably safe in relatively small enclosed pools or limited swimming areas where life guards are employed for supervision.
2. Possession of swimming skills and ability to cover long distances or to remain afloat until help arrives.
3. Possession of mental and physical confidence in one's own safety in the water.

In order to satisfy each of these categories of water safety, Davis recommended the following program of minimum requirements:

1. Rhythmic breathing: Uninterrupted and in proper crawl-stroke cadence, one and one half minutes.
2. Back Float: Minimum movement, 15 seconds.
3. Dive and Glide: From side of pool, 5 seconds.
4. Underwater Swim: Started by dive from side of pool, 15 yards minimum.
5. Tread Water: With comparative ease, 3 minutes.
6. Stroke Skills: Passing based on ease of accomplishment.
   a. Elementary backstroke
   b. Side stroke
   c. Breast stroke
   d. Crawl stroke or Trudgen
7. 440-yard Distance Swim: Continuous and uninterrupted, no time limit. Encourage the use of all strokes, floating, and treading. (16:28)

An experiment with this program was made on 222 college students at the University of Massachusetts. Classes were conducted for eight weeks, with each class meeting three days a week for thirty minutes.

Of the 222 students participating, only 13 failed to pass all phases of the program in the first eight-week period of instruction. The 13 who failed were required to enroll for an additional eight-week

> course of instruction. . . . Several of the 13 students needed only an additional two or three weeks practice, and only one needed the entire second eight-week course to pass. (16:28, 64)

McMaster (25) in a current study at Mt. Holyoke College, is developing a series of progressions to serve as "a guide for the teaching of life saving, water safety, and survival swimming skills within the framework of a swimming program, on all pre-life saving levels." The progressions are geared to the Red Cross Beginner, Intermediate, and Swimmer Courses.

The first series of progressions was taught in the fall of 1958, then, on the basis of statistical and critical analyses, underwent a revision. At the present time the revised series is undergoing a second trial.

In general, the progressions contain material on personal safety, elementary forms of rescue, rescusitation, and elementary first aid. A separate progression was devised for each of the three ability levels, "so that skills may be taught according to the pupil's ability to learn, and the capabilities and needs of each particular level." (25)

The beginning progression contains the following skills which are taught in the order given:

1. Assisting nonswimmer to feet.
2. Jelly Fish Float: release of cramp.
3. Jump into water from shallow end.
4. Motionless float.
5. Deep water adjustment.
6. Treading.
7. Jump from deck into deep water.
8. Drownproofing.
9. Jump from low board. (24:2)

The intermediate progression starts first with a review of the

motionless float, drownproofing, and jump from the low board, then proceeds to the following safety factors:

1. Special water area problems (currents, debris, unclear water).
2. First Aid (procedure for serious accidents, artificial respiration, general first aid treatment).
3. Treading.
4. Disrobing.
5. Use of clothes as flotation devices.
6. Extension assists with pole from dock.
7. Extension assists with arm from dock.
8. Ring buoy.
9. Free-floating supports.
10. Jump off high board. (27:2-4)

The advanced progression includes all the skills taught at the intermediate level, plus the following three new skills:

1. Quick reverse.
2. Wading rescue.
3. Elementary swimming rescue using flotation devices. (23:2-4)

In each of these progressions she describes the procedure for teaching the skills mentioned above and gives rules for general swimming safety.

With the exception of the work being done by McMaster at Mt. Holyoke College, there has been very little research done that is directly related to this study. Most instruction in swimming seems to have followed one of two extreme patterns: mastery of swimming form, or practical application of swimming for survival. As a result of the previously developed courses in survival swimming, various skills and techniques have been developed and proved effective. Limited experimentation has also been done in determining the practicality of such instruction for women as well as for men. All this opens the way for additional research in developing a more comprehensive swimming program that will satisfy both the recreational and the safety needs of an individual.

CHAPTER IV

PROCEDURE

The purpose of this study was to develop a program of survival swimming and lifesaving skills that could be combined with instruction in basic swimming skills usually considered appropriate for the beginning and intermediate levels. The proposed program was then put to a practical test in class situations in order to obtain data for evaluating its effectiveness.

SUBJECTS

The subjects for this study were freshman and sophomore students at The Woman's College of the University of North Carolina. Participation was determined by voluntary enrollment in the four regular physical education swimming classes previously scheduled to be taught by the author. Both beginning and intermediate classes were used in order to get a broader perspective of the possibilities of such a program of survival swimming.

Three sections of beginning swimming were scheduled as follows:

9:10 a.m. Monday and Wednesday 10 students

10:10 a.m. Monday and Wednesday 8 students

9:10 a.m. Tuesday and Thursday 10 students.

This made a total of 28 students that ranged in ability from extreme fear cases with no previous experience in the water to a few students who were well adjusted to the water and possessed some elementary locomotor skill. The small class size was unintentional.

There was one section of intermediate swimming used in the study:

2:00 p.m. Tuesday and Thursday 21 students.

A wide range of ability was evident at the beginning of the semester. All of the students were able to swim the front crawl to some degree and the majority of them had experienced previous work with the elementary back stroke. The skill in performing these strokes and the confidence of the students varied greatly.

All classes were taught by the author during the second semester of the 1959-60 school year. Classes met twice weekly and consisted of approximately thirty-five minutes of actual instructional time.

COURSE CONTENT

The course outlines and lesson plans were developed in advance with only minor changes made during the semester in order to adjust to the specific needs of a class and to compensate for time lost when classes were suspended temporarily. Skills to be included in the courses were selected after careful study of the literature on swimming and lifesaving and after analysis of the content of numerous swimming courses. Basic strokes and swimming skills appropriate to each level served as a foundation. To these were added certain survival and life-saving techniques that seemed to be appropriate for the ability level of beginning and intermediate classes. An attempt was also made to analyze the situations surrounding drowning accidents in order to select skills that would be of practical value in an emergency. The intent was to keep safety instruction to a minimum yet still provide the students with an opportunity to become proficient in the use of enough skills to meet

a variety of circumstances. Rules for safety while swimming were also brought out at appropriate times throughout the course. Outlines of the beginner and intermediate lesson plans and descriptions of the survival and lifesaving skills are included in the Appendix.

Since the first class meeting was devoted to preliminary announcements and preparations for the class, this opportunity was used to give a brief explanation of the purpose and content of the course. The students were told that the course would provide instruction in basic swimming skills usually taught at that level plus elementary forms of rescue and survival swimming. The course was designed to combine the practical aspect of safety in swimming with its values for pleasure and recreation. The importance of instruction in safety skills was discussed in light of the need brought about by increased participation in aquatics and the importance of being prepared to meet emergencies in any situation. It was explained that the classes would be taught in connection with a thesis study for the purposes of testing the results of the course and getting the students' reactions to it.

Throughout the semester periodic skill tests were given in order to (1) provide the students with a constant challenge and an opportunity to evaluate their own progress, (2) give the instructor some basis for evaluating the instruction and determining areas in which additional practice was needed, and (3) provide data to be used in plotting the amount of achievement. The tests were spaced at intervals of approximately three weeks and were arranged to provide intermediate goals between the initial instruction in a skill and the final achievement that

was desired.

BEGINNER

An attempt was made to standardize instruction in the three classes by following the same general lesson outlines for each. Lessons were identical as far as skills taught, but because each of the three classes tended to progress at a different rate and had a different range of ability within the class, there were sometimes slight variations in presentation or length of time spent on a skill.

There were no new or different methods used in teaching other than the attempt to relate as closely as possible the survival and life-saving skills to other skills to make them an integral part of the learning process. For instance, a simple skill such as the jelly fish float became the foundation for the bobbing jelly fish, release of cramp, and disrobing. The students first practiced the jelly fish float until they felt secure with it, then when rhythmic breathing was established the two were combined for the bobbing jelly fish. This not only served as a lead-up to the drownproofing technique to be learned later, but was also of value in learning how to come up for air while disrobing or releasing a cramp.

The transition was made from the bobbing jelly fish to drown-proofing at the time the class was introduced to swimming in deep water. Performing the skill in deep water made it possible to let the legs hang free and relaxed without touching the bottom. After each student had found her most natural floating position she proceeded as with the bobbing jelly fish except that the head was lifted forward instead of to

the side and an additional arm movement was employed when the face was returned to the water after breathing.

Reaching assists were taught the lesson before going into deep water so the students might see some immediate use for this skill. Emphasis was on the use of these techniques as a means of mutual helpfulness while learning new skills in deep water, as well as on their value for actual rescue. At first, each student worked with a partner who held on to the side ready to give assistance when needed. This helped eliminate much hesitancy in the initial adjustment to this new situation and also made the students more conscious of the safety of others.

The techniques for disrobing and using flotation devices were presented in shallow water, then after sufficient practice were performed in deep water. The students were first told to jump in and swim with their clothes on in order to feel how the added weight of water-soaked clothing could hinder their progress. This led naturally to a desire to know how to disrobe, and further to know how certain articles of clothing could be inflated and used as flotations devices.

The use of selected articles as flotation devices was then presented. The students were first asked to use their imaginations to think of everything that might possibly be used to help keep them afloat if they knew they would soon be forced to leave a sinking boat or be marooned in a flood area. Several different types of articles were then made available for the class to try, such as buckets, kick boards, pillow cases, etc.

An attempt was made to begin developing endurance by progressively extending the distance to swim. When the students were able to swim across the pool they were taught to make a turn at the side so they could begin increasing their distance to two or more widths. As soon as they were able to swim a full length of the pool (twenty-five yards) with comparative ease by changing from the crawl to the elementary back stroke and back to the crawl, they then began work on a fifty yard swim using any stroke or combination of strokes they wished.

INTERMEDIATE

During the first part of the intermediate course, instruction was concentrated on basic swimming skills interspersed with occasional practice on reaching and wading assists, release of cramp, and flotation devices.

Instruction and practice in drownproofing was started early in the course and continued throughout. This skill was first presented and practiced in shallow water for the first two lessons to make it easier for the students to stop and concentrate on instructions. From then on all practice was done in deep water. Most of the students benefited from group instruction and learned the skill rather rapidly, while others required considerable individual help. Since drownproofing can be done with arms alone or legs alone or by using both arms and legs, all three of these variations were tried in order to show the students the possibilities for modifying the technique out of necessity or just for the sake of variety.

During the later part of the course the majority of the time was

spent on survival and lifesaving skills, diving, and endurance. By this time the students had developed fair skill with strokes and were able to adapt them for use in such skills as an extension tow, underwater swimming, and swimming with arms or legs alone.

The use of the ring buoy was a different and more advanced type rescue skill and presented an interesting challenge to the class. With four ring buoys available it was possible to divide the class into groups to rotate so that each group would practice another skill while waiting its turn to use the ring buoy.

After disrobing had been explained and the students had tried swimming with their clothes on, they attempted to disrobe and knot the ends of their trouser legs while doing a jelly fish float in deep water. This was followed by practice in inflating the trousers while standing in shallow water. After this technique had been mastered in shallow water it was easily accomplished in deep water.

TESTING PROCEDURES

Most testing was done in stagger formation or in small groups. For items that took considerable time such as treading, drownproofing, and distance swimming, mass testing procedures were used. A class of twenty could circle the pool two abreast with the students keeping count of the number of laps. It was also possible to time the whole class at one time in treading or floating on the back.

The procedure used for testing drownproofing varied slightly for the beginning and intermediate classes and with the progress of each class. In all cases achievement was measured in terms of the length of time the students could remain afloat. The goal for the end of the

semester was fifteen minutes for beginners and thirty minutes for intermediates. The lesson plans found in the Appendix show the sequence of lead-up tests given throughout the semester. In the intermediate class a second person assisted the instructor during the first two testing sessions. The instructor, looking at a stop watch, announced the time every five seconds while the other person watched the group. At the time of the first testing a partner system was used so that the students not being tested could hear the time being called out and notice the time their partners stopped. However, this was found unnecessary and from then on the entire group was tested at the same time. After the first two testings the second person was no longer considered necessary for the safety of the class since the students had developed more confidence and skill. By this time most of the students could continue for the full time they were being tested and it was only necessary for the instructor to take an occasional glance at the watch to announce the time.

In the beginning classes the same general procedure was used with the instructor announcing the time every five seconds. The main difference was that a partner system was used in deep water for safety reasons.

Each student's time was recorded to the nearest five seconds. When a student missed a testing session, it was made up the next class period she participated if not over two class periods had elapsed.

QUESTIONNARE

The students were given a questionnaire at the end of the course

that was developed for the purpose of finding out their reactions to the course. It was felt that in order for a program of survival swimming and lifesaving to be most effective, it was necessary for the students to recognize the need for this training and be able to see the value of what they had learned. The response on the questionnaire helped reveal the students' understanding of the courses and what they thought particularly valuable or unreasonable. In this way it was possible to get a broader perspective of the effectiveness of the courses as well as to gain ideas for making improvements.

ANALYSIS OF DATA

After the data were collected, they were used to analyze the achievement of the students in the beginning and intermediate classes. This was done primarily by computing the average performance on various timed skills and by determining the per cent of students who passed and failed each of the other items on which they were tested. Achievement curves were plotted to show the amount of progress made in certain skills that could be objectively measured, as well as to point out certain differences among the classes.

In addition to treating the data on the survival and swimming skills, the responses to the questionnaire were summarized by numbers and by percentages.

CHAPTER V

ANALYSIS OF DATA

The analysis of data which follows describes the achievement of students enrolled in the three beginning and one intermediate swimming classes included in this study, and, in addition, discusses the reactions of the students to these special survival courses. This information is presented in two major sections: the data on achievement in the swimming classes, and the summary of the results of the questionnaire. Within each of these sections a further distinction is made between the beginning and intermediate levels of swimming skill.

THE DATA ON THE ACHIEVEMENT IN SWIMMING CLASSES

BEGINNER

The three beginning classes used in the study had a total enrollment of twenty-eight students. All students were not always in the water or able to make up tests they had missed within the next two lessons, so the number varies some for the various tests. One student was unable to participate in the final testing because of medical restrictions.

Drownproofing

Five drownproofing tests were scheduled throughout the semester. For each test there was a set goal that the students were trying to reach. Table I shows the average time achieved by the total beginning group and the average time achieved by the students who were unable to reach the goals. The average time for the group ranged from thirty-one

TABLE I

PERFORMANCE OF BEGINNING SWIMMERS
ON DROWNPROOFING TESTS

Tests	Total Group N	Total Group Av. Time	Students Reaching Goal N	Students Not Reaching Goal N	Students Not Reaching Goal Av. Time
1 minute Shallow water Lesson 7	28	0:31	9	19	0:17
5 minutes Shallow water Lesson 13	26	1:27	2	24	1:10
5 minutes Deep water Lesson 21	26	1:54	5	21	1:09
10 minutes Deep water Lesson 25	25	4:03	8	17	1:15
15 Minutes Deep water Lesson 28	27	7:54	13	14	1:18

seconds at the time of the one minute test, to seven minutes and fifty-four seconds for the final fifteen minute test. Improvement was very slow at first but became more pronounced during the time between the ten and fifteen minute tests. Even so, these averages seem relatively low since they are only around half or less than half of the time expected.

The number of students who were successful on each of the drown-proofing tests ranged from two to thirteen. At the time of the first test, for one minute, there were nine students who were successful. After this the number decreased to two when the goal was set at five minutes, then gradually increased until thirteen students were successful on the final fifteen minute drownproofing test.

An examination of the average time achieved by the students who did not reach the goal set for each test gives a partial explanation of why the total group average did not rise more. These scores show little improvement after the second testing. Apparently their fear of deep water and their inability to relax and adjust their breathing were some of the causes. An examination of the raw scores showed that most of the students seem to fall at one extreme or the other with very few having average scores. This seems to confirm an earlier observation that most students catch on to the technique rather suddenly instead of making gradual progress. In all cases however, this did not take place until the students had learned to feel secure in the water.

Figure 1 shows graphically the same information comparing the a-chievement of the students who failed to reach the goal for each of the tests with the performance of the total group in relation to the goals

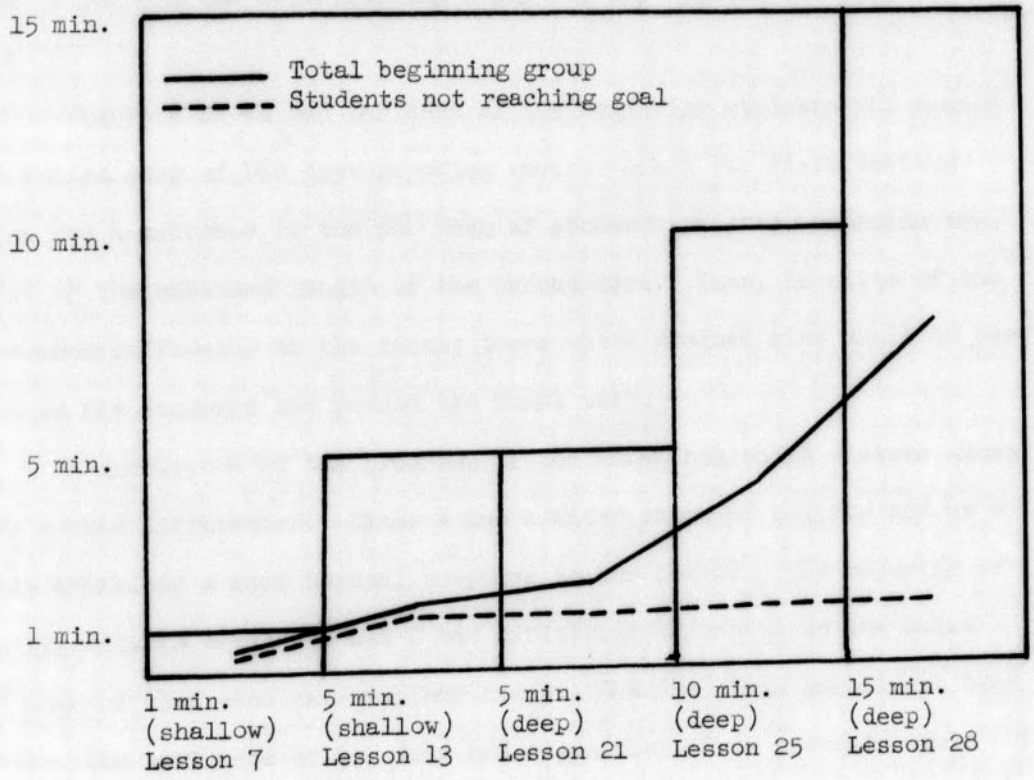

Figure 1

Average Performance of Total Beginning Group on Drownproofing Tests as Compared With Average Performance of Students Not Reaching Set Goals

that had been established. The achievement trend is quite evident as well as the performance level of some of the students who were never able to perform the drownproofing skill for any appreciable length of time.

Figure 2 shows the per cent of the beginning students who passed and failed each of the drownproofing tests. After the first testing there was a decrease in the per cent of students passing, probably because of the extended length of the second test. Then, in spite of the increased difficulty of the tests, there was a gradual rise until 48 per cent of the students had passed the final test.

A comparison of the progress of the three beginning classes shows some marked differences. Class A had a wider range of ability and as a whole exhibited a more typical response to the course. The majority of the students in classes B and C had difficulty adjusting to the water and some of them were extreme fear cases. Had the class enrollment been larger, the influence of the fear and adjustment cases probably would not have seemed so pronounced.

Table II shows the performance of each class and the total group on the drownproofing tests. A comparison of these scores shows the differences that exist for this particular skill. This same information is shown graphically in Figure 3.

In addition to the fifteen minute drownproofing test, a final check was made on several other skills, the results of which are shown in Table III. Each of these will be discussed separately starting with the survival and lifesaving skills.

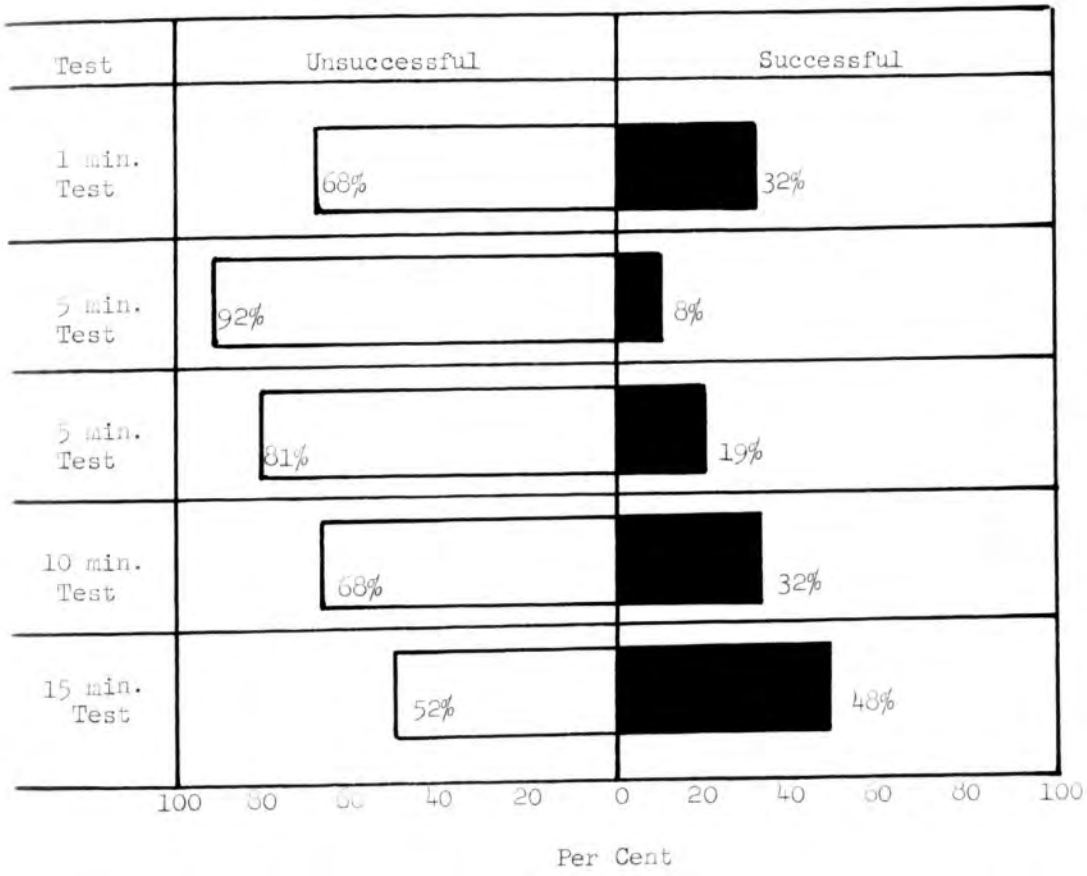

Figure 2

Per Cent of Beginning Swimmers Who Were Successful and Unsuccessful on Drownproofing Tests

TABLE II

PERFORMANCE OF BEGINNING SWIMMERS ON DROWNPROOFING TESTS
FOR EACH CLASS AND FOR TOTAL GROUP

	Class A		Class B		Class C		Total	
Tests	N	Time	N	Time	N	Time	N	Time
1 minute Shallow water Lesson 7	10	0:40	8	0:24	10	0:28	28	0:31
5 minutes Shallow water Lesson 13	9	1:46	8	1:25	9	1:11	26	1:27
5 minutes Deep water Lesson 21	8	2:08	8	1:34	10	1:27	26	1:54
10 minutes Deep water Lesson 25	8	5:44	8	2:23	9	4:01	25	4:03
15 minutes Deep water Lesson 28	9	10:10	8	5:45	10	7:36	27	7:54

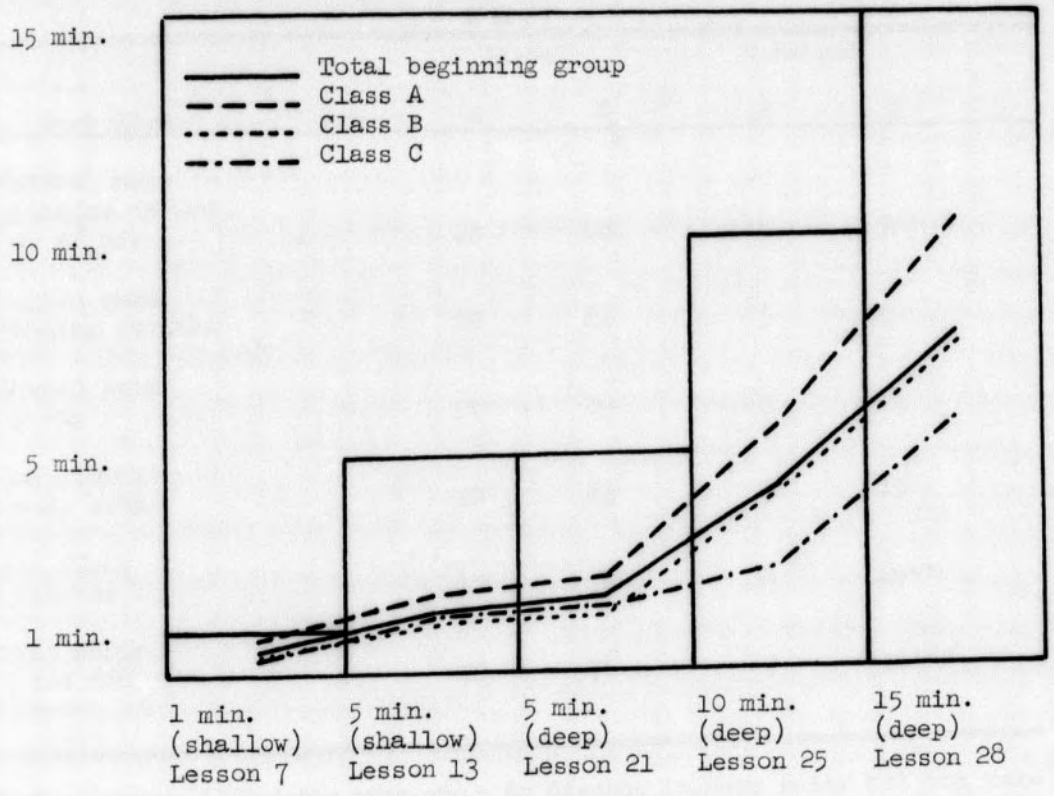

Figure 3

Average Performance of Each Beginning Class
As Compared With Average Total Performance
on Drownproofing Tests

TABLE III

PERFORMANCE OF BEGINNING SWIMMERS
ON FINAL SKILL TEST

N = 27

Test Items	Passed N	Passed %	Failed N	Failed %
Disrobe, make flotation device, stay afloat	13	48	14	52*
25 yard swim Changing strokes	22	81	5	19
50 yard swim Any way	24	89	3	11
Jump, swim, tread, swim	22	81	5	19
Back float 2 minutes	19	70	8	29**
Tread water 30 seconds	20	74	7	26***

* Two of these students were able to disrobe in deep water but not make a flotation device. Three others were able to disrobe, stop to rest, then continue with a flotation device.

** Three students did not completely fail. Their average time was 20 seconds.

***Two students did not completely fail. Their average time was 14 seconds.

Disrobe, make flotation device and stay afloat

Thirteen students, or 48 per cent of the beginners, were able to disrobe in deep water, make a flotation device by inflating a pair of slacks, and then stay afloat for several minutes. Three students were able to do both the disrobing and making of a flotation device but had to stop for a rest in between the two. Two additional students were able to disrobe but could go no further with the test. The remainder of the group was unable to completely disrobe in deep water.

Nonswimming rescues

The nonswimming rescues covered in class consisted of wading assists, human chain, free floating support rescue, and various reaching assists from shore both with and without extensions. Although there is no objective means of measuring the student's ability to use these skills, an informal test was given to the beginning classes. Each student, after having an emergency situation described to her, had to follow through with immediate rescue of a victim using the safest and fastest method possible under the conditions described. As a whole the students showed excellent judgement and good use of rescue techniques in meeting the situations.

Twenty-five yard swim, changing strokes

The students were required to swim twenty-five yards starting with the crawl, changing to the elementary back stroke for the middle third of the way, and then finishing the last third of the distance with the crawl. Twenty-two of the twenty-seven students tested were able to accomplish this.

Fifty yard swim

Any stroke or combination of strokes could be used for the fifty yard swim. It is interesting to note that twenty-four students, or two more than passed the twenty-five yard swim, were able to swim fifty yards. The choice of strokes accounts for this difference since these students had a very weak crawl but had experienced much more success with the elementary back stroke and were able to use it for the entire fifty yards. For those who had previously done the twenty-five yard swim, the fifty yard swim was easily accomplished.

Jump, swim, tread, swim

To pass this test it was necessary to jump into deep water, level off and swim several yards, stop and tread water, then level off and swim again. The same twenty-two students were able to pass this test who passed the twenty-five yard swim.

Back float for two minutes

The back float was done in deep water with the student floating motionless or as nearly motionless as possible. Nineteen students were able to remain afloat for the full two minutes while three others were able to stay up for only a part of the time. The remainder of the students were completely unsuccessful.

Tread water for thirty seconds

Twenty students completed the task of doing elementary treading for thirty seconds, while five were unable to tread at all. The two additional students who were partially successful had an average treading time of fourteen seconds.

It is difficult to draw conclusions from the data collected on the beginning students because of the small number of cases involved. It is also believed that the group was not a typical sample of beginning swimmers because of the large number of fear cases. Although some of these students made remarkable progress, there were five students who at the end of the course failed to pass the requirements and several others who met only the minimum requirements. Five failures out of twenty-eight, or 18 per cent of the students, is not an unusually high per cent of failures. In light of this fact, it seems reasonable to assume that the addition of survival and lifesaving skills to the beginning course did not detract from the achievement in the other swimming skills.

The accomplishment of a fifteen minute drownproofing test by almost half of the students indicates that this goal is within reach of at least a portion of beginning students. The goal is probably very reasonable for the average beginner who does not have extreme fear of the water. Although the poor achievement of these fear cases might seem to indicate that the fifteen minute goal was expecting too much of them, the possibility of perfecting the teaching methods in order to get better performance from these people must not be discounted. It is this group of students that particularly needs the added confidence that comes with the realization that they can stay afloat for an extended period of time.

INTERMEDIATE

The intermediate class used for the study had twenty-one students

enrolled. As with the beginners, the number varies at the different testing periods since it was not always possible to make up a test within the next two classes. Two of these students were unable to participate at the time of the final testing because of medical restrictions.

Drownproofing

Five drownproofing tests were scheduled during the semester at intervals of approximately five lessons. The original time of five minutes was increased gradually up to the final thirty minute goal. As is shown in Table IV, many of the students in this class began to experience success with drownproofing early in the semester. The level of achievement rose steadily in terms of the length of time the students were able to perform the drownproofing skill. This seems to indicate that, for the majority of the class, the goals were more realistic than those set for beginners.

In addition, Table IV and Figure 4 show the average time for the students who were unsuccessful in reaching the goals. As students who were previously unsuccessful were able to achieve the goals at various levels, they were always able to remain in the successful group from then on. At no time did one of these students fall back to the unsuccessful group even though the expectations were higher. An examination of the raw scores of the unsuccessful students indicates that on each test they tend to stop before they have been afloat for five minutes. This seems to be a crucial point. Once they have mastered the skill sufficiently well to pass this five minute level they have little further difficulty with it. It seems likely then, that once a student

TABLE IV

PERFORMANCE OF INTERMEDIATE SWIMMERS
ON DROWNPROOFING TESTS

Tests	Total Class N	Total Class Av. Time	Students Reaching Goal N	Students Not Reaching Goal N	Students Not Reaching Goal Av. Time
5 minutes Lesson 7	21	3:00	10	11	1:12
10 minutes Lesson 12	19	8:14	14	5	3:16
15 minutes Lesson 17	19	12:41	15	4	4:01
20 minutes Lesson 21	16	17:50	14	2	2:42
30 minutes Lesson 27	20	24:47	16	4	3:57

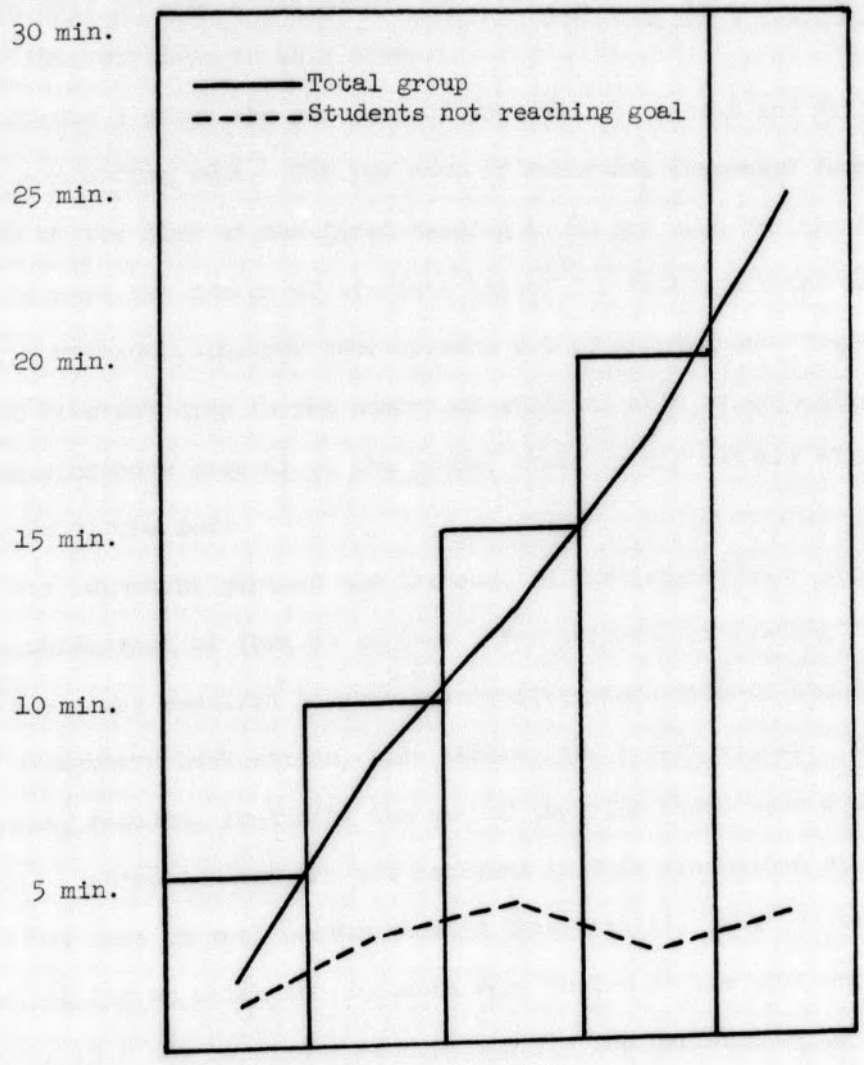

Figure 4

Average Performance of Intermediate Class on Drownproofing Tests as Compared with Average Performance of Students Not Reaching Set Goals

has made this initial achievement, her time could be increased much more rapidly than was done in this study.

Figure 5 shows the per cent of students who passed and failed each drownproofing test. The per cent of successes increased from 48 per cent at the time of the first testing to 80 per cent for the final test. Because the number of students tested for twenty minutes was smaller than usual, the per cent appears out of proportion. There is an apparent rise and drop in the number of students able to accomplish the goal, only because several of the poorer students did not take this particular 20 minute test.

One important part of the instruction for intermediate swimmers was the perfection of form on strokes. For purposes of grading form, each student was required to swim twenty-five yards each of the front crawl, elementary back stroke, side stroke, and breast stroke. Various nonswimming rescues, including the use of the ring buoy, were a part of the class instruction but are not included in this discussion since no attempt was made to test performance in these skills. Each of the additional skills on which the students were tested at the conclusion of the course will now be discussed separately. The performance of the students on these skills is shown in Table V.

Disrobe, make flotation device, stay afloat

In order to pass this test the students were required to swim approximately fifteen yards with their clothes on, disrobe, inflate their slacks and use this flotation device to stay afloat several minutes. All twenty-one members of the class were successful.

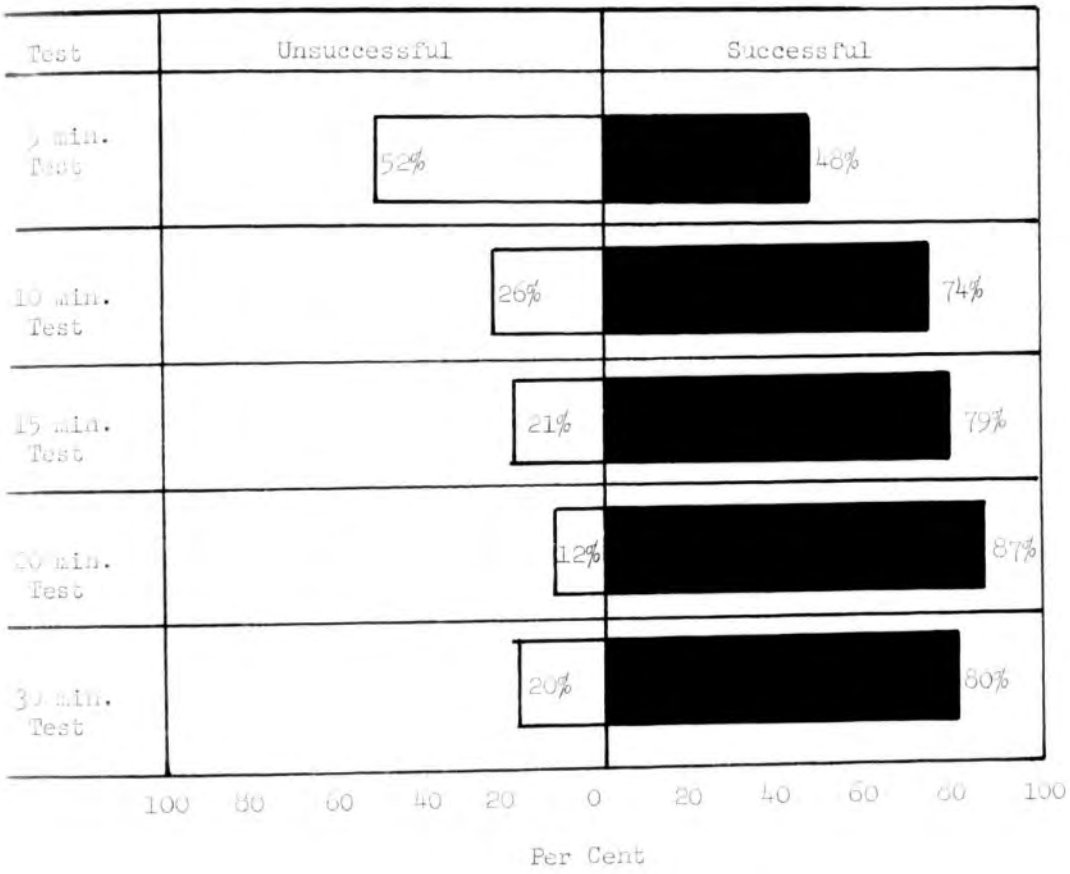

Figure 5

Per Cent of Intermediate Swimmers Who Were Successful and Unsuccessful on Drownproofing Tests

TABLE V

PERFORMANCE OF INTERMEDIATE SWIMMERS
ON FINAL SKILL TEST

Test Items	Passed		Failed	
	N	%	N	%
Disrobe, make flotation device, stay afloat	21	100	0	0
Swim with arms alone, 25 yards	21	100	0	0
Swim with legs alone, 25 yards	21	100	0	0
Extension tow 15 yards	21	100	0	0
Underwater swim 10 yards	12	63	7	37*
225 yard swim	19	100	0	0
100 yard swim	19	100	0	0
Tread water 3 minutes	19	95	1	5
Sculling 10 yards	19	100	0	0
Back float 2 minutes	20	100	0	0

*The range in distance for those students failing to swim 10 yards underwater was from 5 to 8 yards with an average of 6 yards.

Swim with arms alone for twenty-five yards and swim with legs alone for twenty-five yards

The entire class was able to pass each of these requirements.. It was not necessary to use any particular stroke, but each student was allowed to choose the method that was best for her.

Extension tow for fifteen yards

A kick board was used as an extension with the rescuer using a modified side stroke to tow the victim. All the students were able to do this for the full fifteen yards but with varying degrees of success. The majority of the class achieved average or above average skill in the use of this lifesaving technique. Several students, who had a weak side stroke, had difficulty swimming with the added weight of the victim.

Underwater swim for ten yards

Twelve students, or 63 per cent, were successful in their attempts to swim fifteen yards underwater. The remaining seven students had a range in distance from five to eight yards with an average of six yards.

225 yard swim

For this endurance swim any desired combination of strokes could be used. All nineteen students who attempted this passed the requirement.

100 yard swim

This involved swimming 100 yards continuously on the front or side using the crawl, breast stroke, or side stroke. Nineteen students completed this requirement.

Tread water three minutes

All but one student were able to tread water for three minutes using auxiliary arm movements. This person was able to tread for two minutes.

Sculling for fifteen yards

All nineteen of the students who were tested on this skill were able to scull for fifteen yards.

Back float for two minutes

The students were tested on their ability to float motionless or as nearly motionless as possible. All twenty of the students who attempted this were able to remain afloat for the full two minutes.

According to data collected, the intermediate swimmers were very successful in performing the skills for the final test. With the exception of drownproofing and underwater swimming, the students were almost 100 per cent successful on each of these skills. With this record there should be little question about the practicality of including survival and lifesaving skills in the course with successful results.

At the intermediate level it is very important that the students' swimming skill be paralleled with appropriate safety skill. The interest and skill of these students are likely to lead them into situations in which their ability to handle an emergency does not equal the enthusiasm that got them into the situation. For this reason the success of 80 per cent of the students on the thirty minute drownproofing test seems particularly significant. Mastery of this skill is excellent insurance of personal survival in an emergency. Likewise, the skill developed in the use of rescue techniques should make each student a valuable addition to

any group participating in aquatic activities. Their training in this area should make them aware of the many safe and effective means of rescuing a drowning person, and at the same time impress upon them their limitations along this line.

QUESTIONNAIRE

The students were given the questionnaire at the end of a class period and requested to return it the next class. Since they were asked not to put their names on the questionnaire, returning them was placed on a voluntary basis. Of the twenty-eight students in beginning classes, twenty-four, or 86 per cent of the students, filled out and returned the questionnaire. Twenty, or 96 per cent, of the intermediates returned them. In general, the analysis of the questionnaire given to both beginner and intermediate classes indicated a favorable attitude of almost all students toward the swimming courses. The summary of the responses is given separately for the beginners and intermediates. A copy of the questionnaire is included in the Appendix. It should be noted that except for the yes and no answers, it was possible for the students to give several responses for each question. This accounts for the per cents totaling more than 100.

BEGINNER

An attempt was made to determine why the students enrolled in a swimming class, and the responses are summarized in Table VI. The reasons checked by the students indicated that twenty-one people, or 88 per cent, thought they should know how to swim for safety reasons, and twenty people, or 83 per cent, wanted to know how to swim for pleasure

TABLE VI

REASONS FOR TAKING SWIMMING
AS EXPRESSED BY BEGINNING STUDENTS

N = 24*

Reasons	N	%
Wanted to know how to swim for safety reasons	20	83
Wanted to know how to swim for pleasure and recreation	21	88
Could not schedule anything else they wanted to take	2	8
Parents wanted them to take swimming	1	4
Other reasons	4	17

*Some students gave more than one reason.

and recreation. These two reasons were by far the most prevalent.

Table VII analyses the responses to several questions concerning the students' understanding of the course and their reactions to it. When asked if they understood that the objectives of the course were to prepare them to meet emergency situations in the water as well as to help them develop basic swimming strokes and other swimming skills, twenty-one students, or 88 per cent, said "yes", and three students said "no". Twenty-four, or 100 per cent of the beginning students who answered the question, now consider themselves able to recognize their capabilities and limitations in swimming. All twenty-four of the responding students thought they had increased their understanding of water accidents and how to handle them. They also thought the safety skills added to the value of the swimming course. A 100 per cent affirmative reply was received in regard to their enjoyment of the course.

Safety skills were mentioned by sixteen, or 67 per cent of the students, as one of the things they thought particularly valuable or enjoyable in the course. Some students listed particular survival or lifesaving skills and others stated them collectively as safety skills in general. Table VIII shows the specific skills that were mentioned. Nine students, or 38 per cent, listed diving and five, or 20 per cent, listed disrobing. These were the most frequently mentioned. One student who had never cared about learning to swim and who took the course purely for safety reasons, said she was surprised to discover she enjoyed swimming after learning a few basic skills.

The students were also asked to indicate their dislikes about the beginning course. The only dislike mentioned by more than one person

TABLE VII

RESPONSE OF BEGINNING STUDENTS TO QUESTIONS ON THEIR UNDERSTANDING OF THE SWIMMING COURSE AND THEIR REACTIONS TO IT

N = 24

Questions	YES		NO	
	N	%	N	%
Did you understand the objectives of the course?	21	88	3	13
Do you consider yourself able to recognize your capabilities and limitations in swimming?	24	100	0	0
Do you think you have increased your understanding of water accidents and how to handle them?	24	100	0	0
In your opinion did the safety skills add to the value of the swimming course?	24	100	0	0
Did you enjoy the course?	24	100	0	0

TABLE VIII

SKILLS LISTED BY BEGINNING STUDENTS
AS PARTICULARLY ENJOYABLE OR VALUABLE

N = 24*

Skills	N	%
Drownproofing	9	38
Diving	6	25
Disrobing	5	20
Safety skills in general	4	17
Elementary back stroke	3	13
Back float	1	4
Learning right way to swim	1	4
Getting used to water and learning to relax	1	4

*Some students listed more than one skill.

was drownproofing. Five students, or 20 per cent, did not like it. It is possible that these students were the ones who were unable to achieve any real degree of success with drownproofing because of their fear of deep water and inability to relax. Two of these people said that, even though they disliked it, they realized it was very valuable.

None of the beginners felt there was anything unreasonable in the course. This was interesting in light of the fact that the course differed from the usual beginning course and in some instances the requirements were more difficult. A different reaction may have been evident had the class not been told that failure to pass the fifteen minute drownproofing test would not keep them from passing the course.

When asked to explain any suggestion made by the instructor or any technique they discovered themselves that helped them master drownproofing, seventeen of the students offered suggestions which are shown in Table IX. The most frequently mentioned was learning to relax, with ten students, or 42 per cent, listing relaxation as an important factor. Six of the students, or 25 per cent, described some adjustment in their breathing process that was helpful to them. Five students, or 21 per cent, found it helpful to think of something besides what they were doing after the movement became fairly automatic.

INTERMEDIATE

Most intermediates took swimming in order to learn to swim for pleasure and recreation. Sixteen, or 80 per cent of the students who returned the questionnaire, stated this as their reason as shown in Table X. Taking swimming for safety reasons was checked by seven, or 35

TABLE IX

BEGINNING SWIMMERS' EXPLANATIONS OF WHAT HELPED THEM MASTER DROWNPROOFING

Suggestions	N	%
Learning to relax	10	42
Adjustment in breathing	6	25
Thinking of something else	5	21
Forcing yourself to do it	3	13
Remember second arm push	1	4
Experiment with different ways	1	4
Practice	1	4
Be confident that the water will hold you	1	4

TABLE X

REASONS FOR TAKING SWIMMING
AS EXPRESSED BY INTERMEDIATE STUDENTS

N = 20*

Reasons	N	%
Wanted to know how to swim for pleasure and recreation	17	85
Wanted to know how to swim for safety reasons	7	35
Parents wanted them to take swimming	1	5
Could not schedule anything else they wanted to take	0	0
Other reasons	4	20

*Some students gave more than one reason.

TABLE X

REASONS FOR TAKING SWIMMING
AS EXPRESSED BY INTERMEDIATE STUDENTS

N = 20*

Reasons	N	%
Wanted to know how to swim for pleasure and recreation	17	85

CORRECTION

TABLE X

REASONS FOR TAKING SWIMMING
AS EXPRESSED BY INTERMEDIATE STUDENTS

N = 20*

Reasons	N	%
Wanted to know how to swim for pleasure and recreation	17	85
Wanted to know how to swim for safety reasons	7	35
Parents wanted them to take swimming	1	5
Could not schedule anything else they wanted to take	0	0
Other reasons	4	20

*Some students gave more than one reason.

per cent of the class. The intermediates probably already felt safe since they knew how to swim, thus accounting for the relatively low per cent taking the course for safety reasons as compared with the beginners.

The second portion of the questionnaire covered reactions to, and understanding of the values of the course. The responses are summarized in Table XI. Fourteen of the twenty students, or 70 per cent, stated that they did understand that the objectives of the course were to prepare them to meet emergency situations in the water as well as to help them develop basic swimming strokes and other swimming skills. All twenty of the students considered themselves able to recognize their capabilities and limitations in swimming. They also thought the safety skills added to the value of the course. Nineteen of the students, or 95 per cent, thought they had increased their understanding of water accidents and how to handle them. The one student that answered no, commented that she had acquired considerable knowledge through previous experience. In answer to the question, "Did you enjoy the course?", nineteen students, or 95 per cent, said "yes" and one student said she did not enjoy it.

When asked what they thought was particularly enjoyable or valuable, seventeen students, or 85 per cent of those responding to the questionnaire, mentioned some aspect of the survival swimming and lifesaving training. Some students referred to the safety skills in general, while others mentioned some particular safety skill. Table XII shows the specific responses to this question. Drownproofing and safety skills in general were each listed by nine, or 45 per cent of the

TABLE XI

RESPONSE OF BEGINNING STUDENTS TO QUESTIONS ON THEIR UNDERSTANDING OF THE SWIMMING COURSE AND THEIR REACTIONS TO IT

N=20

Questions	YES		NO	
	N	%	N	%
Did you understand the objectives of the course?	14	70	6	30
Do you consider yourself able to recognize your capabilities and limitations in swimming?	20	100	0	0
Do you think you have increased your understanding of water accidents and how to handle them?	19	95	1*	5
In your opinion did the safety skills add to the value of the swimming course?	20	100	0	0
Did you enjoy the course?	19	95	1	5

*This person commented that she had acquired considerable knowledge through previous experience.

TABLE XII

SKILLS LISTED BY INTERMEDIATE STUDENTS
AS PARTICULARLY ENJOYABLE OR VALUABLE

N = 20*

Skills	N	%
Safety skills in general	9	45
Drownproofing	9	45
Correct form for strokes	4	20
Diving	3	15
Disrobing	3	15
Artificial respiration	2	6
Endurance swimming	1	5
Flotation devices	1	5
Side stroke	1	5
Surface diving	1	5

people. These were the features of the course listed most frequently as enjoyable or valuable.

The only dislike expressed by more than one person seemed to center around drownproofing and endurance swimming. There were two people who did not like drownproofing. One said she realized its value but thought it was boring to do. This brings out a point that is of great importance. The students need not only to perfect the manual skill for drownproofing, but they also need to develop a means of keeping their minds off of what they are doing and off of any physical discomfort they may be enduring. It is hoped that this mental attitude would carry over to any actual emergency situation as well as help combat boredom during practice sessions in class. In addition to this dislike of drownproofing, two students did not like endurance swimming.

The 225 yard swim was the only requirement in the course that was considered unreasonable. This was brought out by two students. It would have been interesting to find out the students' reactions to the thirty minute drownproofing test, had they not been told that failure to reach this goal would not keep them from passing the course. It would seem reasonable that some of the students who were unsuccessful with this phase of the program would feel that it was unreasonable as a course requirement.

When asked to explain what had helped them master drownproofing, eighteen of the students offered some suggestion. These are shown in Table XIII. Learning to relax was the factor mentioned most frequently, with 50 per cent of the students listing it. Six students, or 30 per cent, found that some adaptation of their normal breathing process

TABLE XIII

INTERMEDIATE SWIMMERS' EXPLANATION OF WHAT HELPED THEM MASTER DROWNPROOFING

Suggestions	N	%
Learning to relax	10	50
Adjustment in breathing	6	30
Thinking of something else	2	10
Practice	1	5
Slowly increase time	1	5
Simply get accustomed to it	1	5
Establish a rhythm	1	5

helped them accomplish the skill. Thinking of something besides what they were doing was listed by two students. The following additional suggestions were made: practice, slowly increase the time, simply get accustomed to it, and establish a rhythm. In their comments some students indicated that they thought it was very difficult and others thought it very natural and easy.

This information revealed from the questionnaire returns is an interesting addition to the data on the swimming achievement. Not only does the level of achievement reached by the students indicate that this type program is worthwhile, but the students themselves seem to have been favorably impressed by the value of these survival and lifesaving skills.

CHAPTER VI

SUMMARY AND CONCLUSIONS

This study was conducted for the purpose of developing a program of survival swimming and lifesaving skills that could be combined with instruction in basic swimming skills usually considered appropriate for the beginning and intermediate levels.

After the course content had been decided upon and the lesson plans developed, the proposed program was then tried in class situations. The subjects were freshman and sophomore women enrolled in the three beginning and one intermediate swimming classes used for the study.

Data were collected throughout the course on the performance of the students on the basic swimming skills and the selected survival and lifesaving skills. The following conclusions seem justified on the basis of these data:

1. Survival and lifesaving techniques, which are recognized as valuable in meeting emergency situations in the water, can be included in a swimming course without jeopardizing the progress of the students in the usual swimming skills.
2. The addition of survival and lifesaving skills to beginning and intermediate swimming courses is practical. If careful planning is used, safety skills can be closely integrated with the rest of the instruction so that good results can be obtained without consuming too great a proportion of class time.
3. The students as a whole showed a favorable reaction to the

course both in terms of the pleasure and the value they had received from it.

4. Certain elementary forms of rescue are appropriate for the beginning and intermediate skill levels. On the basis of subjective evaluation, the students appeared to acquire good skill and sound understanding for using these techniques.
5. Due to the success of 48 per cent of the beginning students in performing a fifteen minute drownproofing test, it may be concluded that this skill is within range of the ability of a sufficient number of beginning students to warrant its inclusion in the course.
6. The success of 80 per cent of the intermediate swimmers on the thirty minute drownproofing test indicates its appropriateness for this ability level.

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APPENDIX

DESCRIPTION OF SURVIVAL AND LIFESAVING SKILLS

SURVIVAL SKILLS

BOBBING JELLY FISH (18:1)

1. "Assume a jelly fish float position. Allow the arms to hang suspended toward the bottom; drop the head so the chin is on the chest. Allow the legs to hang free and relaxed. Hold the breath. Remain in this position as long as it is comfortable.
2. When a breath of air is required, simply move the hands up and forward below the surface and at the same time exhale through the mouth. (Some may be able to exhale through both the nose and mouth, while others will use the nose alone). Note the hands are extended forward just below the surface at the conclusion of the phase.
3. As a continuation of the previous movement, press the hands down and back as in the butterfly breast stroke and at the same time lift and turn the head to one side.
4. Slowly allow the hands to move back to their free hanging position, return the face to the water, chin on the chest, and hang suspended until another breath of air is desired, after which the same cycle is repeated. Note: In the event the swimmer tends to go too far below the surface when the face is returned to the water, it is suggested that a modification of the vertical flutter kick or scissors kick be done as the face returns to the water. However, in most instances if the swimmer secures an adequate supply of air, the body will remain at or near the surface in a satisfactory floating position."

Teaching suggestions

1. First practice rhythmic breathing and jelly fish float.
2. Practice moving hands from hanging position to an extended position in front.
3. Standing in chest deep water, practice coordinating arm movement with breathing.
4. Stress relaxation and lifting the head only high enough to get the mouth out of water.

DROWNPROOFING (22:1)

"1. With lungs full, float face down, with back of neck on the surface.
2. Expel water from mouth, then get ready for a downward thrust using arms, legs, or both.
3. Keeping shoulders under, exhale through NOSE WHILE raising head till mouth is out.
4. With head vertical, inhale through mouth while thrusting downward wide and slow.

5. With lungs full, first drop head forward, then immediately thrust again downward and backward.
6. Relax with head, arms, and legs dangling. Hold all air while traveling forward and upward. Beginners rest three seconds in this phase, experts rest ten."

Teaching suggestions

1. Avoid a vertical position during resting phase.
2. Have students practice floating face down with arms and legs dangling until they find the position most natural for them and realize that they will stay up without any effort. The only effort needed is to keep the body at the surface while the head is lifted for a breath of air.
3. Do not lift the head higher than necessary.
4. Stress relaxation.
5. When practicing for long periods of time encourage students to think about something or daydream in order to get their minds off what they are doing and combat boredom.

RELEASE OF CRAMP (13:83)

In releasing a cramp it is necessary to stretch the affected muscle by contracting the antagonistic muscle group. In case of a severe cramp it may be necessary to assist this action by going into a tuck float position to knead and massage or stretch the affected muscle. For a cramp in the calf of the leg or foot the muscle may be stretched by grasping the toes and pulling the foot upward.

DISROBING (4:26-29)

Inflate the lungs and assume a tuck float position. Using both hands take off shoes, slacks or skirt and then the shirt. This will take several breaths to accomplish. Clothing that must be removed over the head should first be gathered up to the armpits then grasped on both sides with arms crossed and pulled over the head.

Teaching suggestions

1. For beginners teach first in neck deep water.
2. If trousers are to be used as a flotation device they should be removed last.

ARTIFICIAL SUPPORT FROM MISCELLANEOUS OBJECTS (14:166-167)

"Selected articles can provide artificial support when there is time for premeditated action." Objects such as buckets, pots and pans, and trash cans can be used by trapping air underneath them. Cloth bags or pillow cases may be inflated by the same method described for inflating clothing. Boards, paddles, and any debris that will float can also be used.

Teaching suggestions
1. Point out that it is not necessary to put full weight on the floating object; slight pressure is usually sufficient.
2. Have several different types of articles available for class to try.

FLOTATION DEVICES FROM TROUSERS

While still in a tuck position after removing the trousers, tie a knot in the end of each leg. Place the trousers on the surface and hold the back of the waist with one hand, and with the other hand strike diagonally downward from above the surface to a point below the open waist. The air forced underwater will bubble up and inflate the trouser legs. Use the float water wing style or in a back float position. (14:180)

It is also possible to tie the ends of both trouser legs together and use the float as a swimming support with the head and arms slipped between the legs, or as stationary support on the back with the head between the trouser legs and the hands holding the waist together. (13:89)

Teaching suggestions
1. First perfect inflation in shallow water.
2. Beginners may find it easier to inflate trousers while floating on the back and holding them to one side. Intermediates and stronger swimmers can do it while treading water.

FORCED BREATHING FOR UNDERWATER SWIMMING (6:112)

Forced breathing will enable the swimmer to stay underwater longer than he could ordinarily. This is accomplished by forcibly inhaling and exhaling as rapidly as possible for about ten minutes. This increases the amount of oxygen in the system, thus increasing the length of time it takes for the blood to become over supplied with carbon dioxide and force the swimmer to come up for air.

Teaching suggestions
1. Students must be cautioned not to overdo this and continue forced breathing to a point where dizziness occurs. Start off with only a few forced breaths and work up gradually.

ADAPTATIONS OF STROKES (ARMS ALONE, LEGS ALONE)

Each student should develop some means of swimming that could be used in the event of a disabling injury to either the legs or arms. The style used may vary with different students. The most effective method is probably to use the elementary back stroke kick for the legs alone and either a hand over hand or elementary back arm stroke for the arms alone.

LIFESAVING SKILLS

WADING ASSISTS (4:118)

The rescuer proceeds cautiously to the victim being careful not to step off into deep water himself. The rescuer's body should be inclined toward the shore and his feet braced firmly on the bottom so as not to be pulled off balance. The victim should be drawn in slowly with the rescuer remaining in a safe position between the victim and shore. Any type of extension may be used to extend the reach over a greater distance.

Teaching suggestions

1. Stress the importance of the rescuer not putting himself in a position of danger.
2. Practice first with a passive victim then have victims struggle. Very buoyant individuals may find it impossible to control a struggling victim. They should realize this limitation and know not to attempt such a rescue without the aid of other people to form a human chain or the use of an extension that will allow them to stay in a safe place.

HUMAN CHAIN (4:252-253)

Five or six people join together using an interlocking wrist grip and facing in alternate directions. The anchor man stands in thigh-deep water and the chain is extended out far enough for the last person to seize the victim.

NONSWIMMING ASSISTS (REACHING)

Reaching Assists (4:107)

The rescuer lies in a prone position with the upper body extended over the water without overbalancing and grasps the victim's hand.

Extensions for Reaching Assists (4:109)

The same procedure is followed as for any reaching assists with the addition of some article that will serve as an extension of the reach of the arm.

Reaching Assists from the Water (4:107-108)

With the rescuer in the water, he gets a good grip on the side of the pool or dock and extends a hand or leg to the victim.

Reaching Assists with a Pole (13:92-93)

The rescuer takes a firmly braced crouching position and extends the pole to the victim. If the victim's head is underwater he will usually seize the pole if it is held firmly against his body. The rescuer should maintain a firm grip on the pole and be careful not to jerk it from the victim's hand as he is being pulled in.

Teaching suggestions
1. Stress the importance of the rescuer not putting himself in a position of danger.
2. Practice first with a passive victim then with a struggling victim to make sure the rescuer is firmly balanced.
3. Warn the student about the danger of injuring a person if they do not use caution in extending a reaching pole.

FREE FLOATING SUPPORT RESCUE (4:116-117)

An object that will float can be thrown, dropped or pushed to a drowning person. This is only a temporary measure since once the object is launched there is no control by the rescuer. Immediate follow-up is necessary to bring the victim to shore.

THROWING THE RING BUOY (13:122)

"The rescuer, if he is right handed, stands in a slightly crouched position with his left foot forward. . . . He should fix his eyes on a spot just within reach of the victim's hands or, to increase the chances of success, a few feet behind the victim. . . . The rescuer drops the unattached end of the line to the ground, places his left foot on the line next to the lemon, and holds the coiled line loosely in his left hand. The ring buoy is held on the inside rim and is thrown with a vertical under-hand motion. . . . When hauling the victim to safety the rescuer should employ a steady hand-over-hand pulling action to avoid tearing the ring buoy from the victim's grasp."

EXTENSION TOW (4:121)

The rescuer swims a board, stick, or line to the victim, extends the free end to him, then swims to safety pulling the victim behind him. This may also be used as a follow-up for the free floating support rescue.

Teaching suggestions
1. First practice side stroke with one arm.
2. Explain to students that they can always let go of victim if they think they are in danger.

SKILLS FOR BEGINNING COURSE

SWIMMING SKILLS:

Breathing
Floats
Glides
Recover footing
Kick glides
Turning over
Finning
Front crawl
Elementary back stroke
Changing direction
Leveling off
Elementary treading
Jump (shallow and deep water)
Dive

SURVIVAL SKILLS:

Bobbing jelly fish and drownproofing
Disrobing
Flotation devices from slacks
Artificial support from debris, buckets, etc.
Release of cramp

LIFESAVING SKILLS:

Reaching assists
Free floating support rescue
Wading assists and human chain
Artificial respiration

FINAL TEST:

Back float for 2 minutes
Tread water for 30 seconds
Drownproofing for 15 minutes
Swim 50 yards (any way)
Jump in deep water, disrobe and use slacks to make a flotation device, and stay afloat for 3 or 4 minutes.
Make a nonswimming rescue
Swim 25 yards changing from crawl, to elementary back stroke, and back to the crawl
Jump in deep water, level off and swim, stop and tread water, then level off and swim again
Dive

LESSON PLANS FOR BEGINNING COURSE

LESSON 1:
- Announcements
- Explanation of course and special features of course
- Assign baskets

LESSON 2:
- Breathing
- Tuck float
- Prone float
- Recover footing
- Back float
- Glides

LESSON 3:
- Review
- Rhythmic breathing
- Flutter kick

LESSON 4:
- Review floats
- Bobbing jelly fish
- Finning
- Arm stroke and breathing for crawl
- Review flutter kick
- Combine kick and arm stroke for those ready for it

LESSON 5:
- Review: kick glides, finning, arm stroke with breathing
- Combine kick and arm stroke
- Turning over
- Bobbing jelly fish

LESSON 6:
- Review: finning, turning over
- Crawl
- Additional practice with arm stroke and breathing
- Bobbing jelly fish
- Elementary back stroke kick

LESSON 7:
- Skill test:
  - Back float - $\frac{1}{2}$ minute
  - Front and back glide
  - Rhythmic breathing - 15 times
  - Bobbing jelly fish - 1 minute
- Crawl - add breathing
- Elementary back stroke

LESSON 8:
- Review elementary back stroke kick
- Add arm stroke to elementary back stroke
- Crawl
- Bobbing jelly fish

LESSON 9:
- Elementary back stroke
- Crawl
- Jump into shallow water
- Bobbing jelly fish

LESSON 10:
- Elementary back stroke
- Turns at side of pool
- Crawl - increase distance and try for more than one width of pool
- Back float - try for 45 seconds
- Bobbing jelly fish

LESSON 11:
- Wading assists
- Elementary back stroke
- Crawl - try for 2 widths of pool

LESSON 12:
- Review floats:
  - Back float - 1 minute
  - Tuck float - release of cramp
- Crawl
- Elementary back stroke
- Change direction
- Bobbing jelly fish

LESSON 13:
- Skill test:
  - Crawl - 1 width of pool
  - Elementary back stroke - 1 width of pool
  - Bobbing jelly fish - 5 minutes
- Reaching assists
- Crawl and elementary back stroke

LESSON 14:
- Leveling off
- Introduction to deep water:
  - Back float
  - Try to touch bottom
  - Swim across corner
  - Treading
  - Drownproofing (Begin to make transition from bobbing jelly fish to drownproofing technique)

LESSON 15:
- Elementary back stroke
- Crawl
- Review leveling off
- Swim across deep end
- Drownproofing
- Treading

LESSON 16:
- Crawl and elementary back stroke
- Jump into deep water
- Drownproofing
- Treading
- Change of positions - level off, change to back float from vertical position

LESSON 17:
- Shallow water practice with clothing:
  - Try swimming with clothes on
  - Disrobing
  - Inflate slacks
- Jump into deep water
- Drownproofing

LESSON 18:
- Swim length of pool on back
- Diving
- Review disrobing and inflating slacks in shallow water

LESSON 19:
- Skill test:
  - Treading - 15 seconds
  - Crawl - 2 widths of pool
  - Elementary back stroke - 2 widths of pool
  - Back float in deep water - 1 minute
- Swim length of pool changing from crawl to elementary back stroke to crawl
- Diving
- Drownproofing

LESSON 20:
- Artificial support from boards, buckets, pillow cases, etc.
- Free floating support rescue
- Swim length of pool on back
- Drownproofing
- Review crawl and elementary back stroke

LESSON 21:
- Drownproofing - 5 minute test in deep water
- Diving
- Swim length of pool changing from crawl to elementary back stroke to crawl
- Individual practice and review

LESSON 22:
- Crawl and elementary back stroke
- Diving
- Drownproofing
- Swim length of pool and start working on two lengths
- Individual practice and review

LESSON 23:
- Jump in deep water, swim, stop and tread, level off and swim
- Elementary back stroke
- Drownproofing
- Diving

LESSON 24:
- Crawl
- Elementary back stroke
- Disrobing and flotation devices - review in shallow water and then repeat in deep water

LESSON 25:
- Skill test:
  - Drownproofing - 10 minutes
  - Swim length of pool changing from crawl to elementary back stroke to crawl
  - Disrobe and inflate slacks
  - Individual practice and review

LESSON 26:
- Review nonswimming rescues
- Drownproofing
- Swim length of pool or two lengths
- Individual practice and review

LESSON 27:
- Artificial respiration
- Diving
- Individual practice and review

LESSON 28:
- Drownproofing - 15 minute test
- Test - jump into deep water, swim, stop and tread, level off and swim
- Diving

LESSON 28: (continued)
Individual practice and review
Give out questionnaires

LESSON 29:
Testing
Grade on strokes and diving
Back float - 2 minutes
Treading - 30 seconds

LESSON 30:
Complete all testing
Review for written test

LESSON 31:
Written test

SKILLS FOR INTERMEDIATE COURSE

SWIMMING SKILLS:

Front crawl
Elementary back stroke
Side stroke
Breast stroke
Treading
Back float
Surface dive
Underwater swimming
Turns
Sculling
Dive

SURVIVAL SKILLS:

Drownproofing
Swim with clothes on
Disrobing
Flotation devices from slacks
Artificial support from debris, buckets, etc.
Release of cramp
Endurance swimming
Underwater swimming with forced breathing
Adaptations of strokes (swim with arms alone, legs alone)

LIFESAVING SKILLS:

Reaching assists
Free floating support rescue
Wading assists
Ring buoy
Extension tow
Artificial respiration

FINAL TEST:

Drownproofing 30 minutes
Swim 225 yards (any way)
Tread water 3 minutes
Back float 2 minutes
Surface dive and swim under water 10 yards
Jump in with clothing on, swim 15 yards, disrobe, make flotation device and remain afloat 3 or 4 minutes
Swim 15 yards and return with victim using extension tow
Swim 25 yards each: crawl, elementary back stroke, side stroke, breast stroke
Swim 100 yards continuously on front or side
Dive
Sculling 15 yards

LESSON PLANS FOR INTERMEDIATE COURSE

LESSON 1:
- Announcements
- Explanation of course and special features of course
- Assign baskets

LESSON 2:
- Check on skill: crawl, elementary back, swim 25 yards
- Crawl
- Back float

LESSON 3:
- Elementary back stroke
- Crawl
- Drownproofing
- Treading

LESSON 4:
- Elementary back stroke
- Crawl
- Floating: back - 1 minute, tuck - release of cramp
- Drownproofing
- Turns

LESSON 5:
- Scissor kick
- Elementary back stroke - 25 yards
- Drownproofing
- Crawl - 25 yards
- Treading

LESSON 6:
- Reaching and wading assists
- Side stroke
- Crawl
- Drownproofing

LESSON 7:
- Skill test:
  - Crawl - 25 yards
  - Elementary back stroke - 25 yards
  - Drownproofing - 5 minutes
  - Treading - 1 minute

LESSON 8:
- Diving
- Sculling
- Side Stroke
- Drownproofing

LESSON 9:
Review crawl and elementary back
Crawl and elementary back - 25 yards each
Breast stroke kick
Sculling
Drownproofing

LESSON 10:
Side stroke
Breast stroke

LESSON 11:
Side stroke
Artificial support from debris, buckets, etc.
Free floating support rescue
Breast stroke
Drownproofing

LESSON 12:
Breast stroke
Side stroke - 25 yards
Surface dive
Drownproofing - 10 minute test

LESSON 13:
Skill test:
Breast stroke - width of pool
Side stroke - 25 yards
Breast stroke
Surface dive and underwater swim
Crawl - 25 yards

LESSON 14:
Swim 75 yards - side stroke, crawl, elementary back stroke (25 yards each)
Breast stroke
Extension tow
Drownproofing

LESSON 15:
Crawl - 50 yards
Surface dive
Forced breathing for underwater swimming
Drownproofing
Breast stroke - 25 yards

LESSON 16:
Side stroke - 50 yards
Review surface dive and underwater swimming
Treading - 2 minutes
Review strokes

LESSON 17:
Drownproofing - 15 minute test
Ring buoy
Review extension tow and underwater swim

LESSON 18:
Swim 75 yards - crawl, breast stroke, side stroke (25 yards each)
Diving
Swim with legs alone and arms alone

LESSON 19:
Skill test:
Surface dive and underwater swim - 10 yards
Extension tow - 15 yards
Drownproofing
Diving

LESSON 20:
100 yard swim - side stroke, crawl, elementary back, breast stroke (25 yards each)
Diving
Swim with clothes on
Disrobing

LESSON 21:
Drownproofing - 20 minute test
Artificial respiration

LESSON 22:
Swim length of pool with clothes on
Disrobing
Flotation devices from slacks
Swim 125 yards
Individual practice

LESSON 23:
Skill test:
Swim with legs alone - 25 yards
Swim with arms alone - 25 yards
Swim 15 yards, disrobe, make flotation device and stay afloat 3 or 4 minutes
Diving

LESSON 24:
Swim 150 yards
Skill test:
Treading - 3 minutes
Back float - 2 minutes
Surface dive, swim under water - 10 yards
Review and individual practice

LESSON 25:
Swim 175 yards
Diving
Review strokes
Sculling - 15 yards

LESSON 26:
Swim 200 yards
Review and individual practice

LESSON 27:
Drownproofing - 30 minute test

LESSON 28:
Testing:
Swim 225 yards
Grade on strokes

LESSON 29:
Testing:
Swim 100 yards continuously on front or side
Grade diving
Complete all testing
Review for written test

LESSON 30:
Written test

QUESTIONNAIRE ON SWIMMING COURSE

This questionnaire is for the purpose of obtaining your opinion of this swimming course. Please give thoughtful consideration to each question and answer it honestly, since this is the only way of obtaining a useful evaluation of the course. Please do not sign your name.

1. Why did you take swimming?
   ____I wanted to know how to swim for pleasure and recreation.
   ____I thought I should know how to swim for safety reasons.
   ____My parents wanted me to take swimming.
   ____I could not schedule anything else I wanted to take.
   ____Other_____

2. Did you understand that the objectives of this course were to prepare you to meet emergency situations in the water as well as to help you develop basic swimming strokes and other swimming skills?
   ____Yes
   ____No

3. Do you now consider yourself able to recognize your capabilities and limitations in swimming?
   ____Yes
   ____No

4. Do you think you have increased your understanding of water accidents and how to handle them?
   ____Yes
   ____No

5. In your opinion did the safety skills add to the value of the swimming course?
   ____Yes
   ____No

6. Did you enjoy the course?
   ____Yes
   ____No

7. Was there anything in the course you particularly enjoyed or thought particularly valuable? If so, what?

8. Was there anything you disliked? If so, what?

9. Was there anything you thought was unreasonable? If so, what?

10. Drownproofing is difficult for many people to learn. From your experience in learning this skill, can you think of anything, such as a suggestion made by the instructor or some technique you discovered yourself, that helped you "catch on"? Please explain.