62'- OTC-GNB
State inst fon
of
State Inst Convin
Dr. E. J. Engberg
Faribault State School & Hospital
Dr. T. Smith. ✓
Mr. Krafve ✓
Supo. ✓
(Mr. Roach has a
Copy.)

MEMORANDUM

TO: Superintendents at

Anoka State Hospital
Brainerd State School and Hospital
Cambridge State School and Hospital
Hastings State Hospital
Moose Lake State Hospital
Rochester State Hospital
St. Peter State Hospital
Willmar State Hospital
Faribault State School and Hospital
Owatonna State School

Attention: Rehab Therapies Supervisors

FROM: Ardo Wrobel, Consultant
Rehabilitation Therapies

1. Enclosed are copies of the "Orientation and Training Course For Physical Therapy Technicians" as developed and used by the Rehab Therapies Staff at Cambridge.

2. This course is being sent to you so that you might use it in connection with the P A A training program. It should be especially useful in the institution without P T programs because this course seems to offer a good basis for orienting the Rehab Staff as required in the training program.

3. If you have developed teaching guides and/or program outlines that you would like to share with the other institutions, send them to me for review and I will then send them out to the others.

AMW/jmk

ORIENTATION AND TRAINING COURSE FOR
PHYSICAL THERAPY TECHNICIANS

By George Boswell, Rehabilitation
Therapies Supervisor
Cambridge State School and Hospital

I. Definition of Physical Therapy (A part of Physiatry or Physical Medicine & Rehab.)

Physical Therapy is the art and science dealing with the prevention, correction, and alleviation of disease and injury, by employing manual and other physical means and devices according to the prescription of a Physician. Physical therapy is prescribed by a general practitioner or a specialist in any of the recognized branches of medicine.

II. History and Development of Physical Therapy

A. Introduction

Physical Therapy is one of the oldest and first forms of medical treatment ever given in the world. The history of ancient medicine is completely bound up with the treatments we use today, when we use forms of heat, light and water. Such treatments, we know, were used as long ago as 7000 B.C. Hydrotherapy cam into being when the first man bathed his wounds in a woodland stream; the famous baths of the Greeks and Romans are a part of history and well worthy of further study. Heliotherapy was first introduced by the first man who crawled into the sunshine to receive the sun's warmth while the first man who rubbed a bruised muscl , unconsciously introduced massage. We also know that electrotherapy was known in the time of the Roman Emperor, Hiberius, between 14 and 37 A.D. There is one interesting report identified as occuring about the time Christ was being crucified. This medical report says that Panthers, a freed man, while walking on the seash re, stepped upon a torpedo (an electric fish) and was thus freed from gout.

Occupation is one of the oldest forms of therapy. It was mentioned by Hippocrat s as an important part of the treatment carried on in the early Greek Temples, the first sanitaria of which we have any records. Since baths were important basic treatment of that era, we realize what an old art is hydrotherapy. We can realize also that if the Greeks were smart enough to combine their occupations with their physical therapy, we cannot do less today.

B. Physical Medicine - a New Specialty

How then, if these treatments are so old, do we talk about a new specialty at this time?

It is because the treatment of the ancient, and many of those not so ancient, but those being given in our own time, have been given empirically through the years. By that we mean they were given because they were known to help in certain illneases, but no one actually studied them to know scientifically why they helped, or what occured in the body, or to the various body processes, because they were used. What happened to the circulation that supplied the entire body; what happened to the microscopic blood vessels in the skin, when certain physical agents were applied directly to that area? Similarly, what happened to the nerve endings in the skin, and why, when large nerve drums had been injured, did ertain physical treatments help and others hinder their recovery. The old Greek believe that there were four humors in th body upon which lif depended, and that without these humors one would di .

It has taken numerous investigators many years of careful detailed study to prove scientifically what the Greeks could only guess at with their theory of humors. Now we know that the secretion from various glands in the body must be present or else one dies. For instance, the individual whose pancreas cannot furnish adequate insulin, must have that insulin or else he dies of diabetes mellitus. The individual without a certain substance of the cortical part of the adrenal gland dies, and this substance is entirely different from the substance called adrenalin, that is also found in the adrenal gland, which is, in itself, entirely necessary for the preservation of life. While some of these substances are entirely necessary for the maintenance of life, others are notl less important in that without them the individual could not be a normal in dividual and various illnesses result; various illnesses occur, for instance, when glandular products of the thyroid, the parathyroid and the sex glands are disturbed. The Greeks guessed right, but in addition to glandular secretion (the Greeks humors) the scientists found that certain chemical substances had to be present in the body and had to be balanced in the right ratio, or else illness resulting from these lack of balances were as serious as the presence of too little or too much glandular substance; that the imbalance of these chemicals causes illnesses, which of themselves can result in death. Some of the most necessary of these chemicals are the chlorides, calcium and nitrogen. When you hear of a certain laboratory test being done to determine the chloride or nitrogen balance, or the calcium, potassium ratio, you may realize that an important diagnostic procedure is being done, which can involve the life or death of a patient.

It takes years of study then to prove what happens to the body and why. Such studies are called research. When such studies are delayed in being started, then a specialty such as Physical Medicine including physical therapy is delayed in being recognized as a specialty. As many thousand years old as is hydrotherapy, true scientific research, even in this field, is so little as to be almost negligible even today.

Why are such studies delayed? First, it is easier to accept the empirical and delay the research. The Greeks knew that baths helped so it was just accepted as fact, and too often today, is still so simply accepted. For example, the study of what happens to the physiological processes of the body when baths are given at various temperatures, still deserves even a more detailed study.

Secondly, the charlatans, the quacks of the old, old world, as well as those still with us today, being the type of personality and good salesmen they always are, were quick to pick up the use of physical treatments of all types and bally-hoo them for all they were worth.

The necessarily cautious medical profession can never accept or endorse anything that research has not conclusively proven. When the bath house around the corner put larger signs in the front yard advertising "Sulphur Electric Cabinet Baths" with the sulphur merely heated outside the bath so the victim could smell it, necessarily conservative medicine delays its own research. When much research has been done upon the chemical changes in the blood that occur with the use of ultra-violet, which can be either very helpful or very dangerous if used wrongly, conservative medicine is hesitant to recognize one group of medical specialists who

use ultra-violet. When inferior and mediocre machines are advertised to be bought cheaply, even from chain drug stores for home use or are advertised for use in bath houses, massage parlors and beauty shops to give health treatments.

Thus it has taken many years to overcome the lethargy of simply accepting a treatment as good without making the scientific investigation of why it does good, and in what manner the good is accomplished. It has taken as many years, and will continue to take still more to take the bad taste left by the charlatans, the quacks and the steam parlors out of every doctors mind.

A completely small handfull of doctors and physical therapists have struggled and patiently worked along to demonstrate the good of these treatments. Little by little, painstaking research has been done by these individuals. Much, much more research must be done and volumes of scientific data must be collected before we can give all the answers, even at this time, to the value and exact scientific use of every physical and mechanical treatment. We are well on our way, and that is why physical medicine is now recognized as a specialty today. Each of you have a part in this research. Each of you must realize that every treatment you give can contribute to this study, not only for the benefit of the individual patient you are treating, but also for the treatment of all patients in the future. You must continually ask yourself - why is this good? and try to find the answer, instead of merely learning how to give a hydrotherapy, or other physical therapy treatment. The technique might be simple in many instances, the medical result to be gained may be of the very greatest importance.

No matter how conservative medicine is, how slow, or how much research has been done, there are certain basic medical and scientific facts that must be studied first before an individual is qualified to administer acceptable medical treatment. This can only be done with formal or didactic training. Experience may teach how, but it cannot teach why. When formal training, founded upon necessary basic or fundamental facts are taught, followed by specialized subjects necessary to give one type of medical treatment, those are the individuals whose basic training is recognized by the medical profession, can be considered professional people. Then can those people be considered to have a profession.

Physical therapy as a profession, was recognized in England before it was in America, even before World War I. This program was based, upon medical gymnastics, following the studies and work of the great physical educators of the day. Thus, the history of the development of physical education has gone hand in hand with the history of physical medicine. Physical therapists have been registered in England for years, as a chartered society of medical gymnastics. In recent years the title has been changed to the chartered society of physical therapy. Certainly the use of the physical forms of heat, light, and water, have been used by these individuals as assistive treatment during all this time. The emphasis has been placed upon functional anatomy and exercise.

Shortly before World War I started, an English physical therapist, Miss Mary MacMillan, had occasion to move to this country and live in the vicinity of Boston. There have always been doctors pioneering in this country in regard to physical medicine and physical therapy. Mostly they were orthopedic surgeons, who early recognized the need for physical treatment to hasten the recovery of their orthopedic cases. The majority of these were about Boston and New York City. When war broke out these men realized that our soldiers must have this sort of treatment. Mary MacMillan was approached, and it was she who instituted the first formal training at the request of the Surgeon General. The first group of women so trained in this country were alled reconstruction aides. You will be interested to know that over 200 of th se women served overseas in World War I, and were in front line hospitals giving their treatments during the wa.

After the war was over, this nucleus of women encouraged and assisted by a few doctors, established formal training courses which have persisted and expanded continuously since those early days. The trained group organized officially as the American Physiotherapy Association in 1921. It is a strong national organisation today, with several hundred becoming eligibl to join its ranks every year as they graduate from the schools which the American Medical Association approves.

III. Role and Function of Individual Members of the Physical Therapy Department

A. Physical Therapists *Under physicians direction*

A Physical Therapist may be defined as a professional person who has acquired special skills and ~~judgement~~ through an extended period of general and specialized study and experience which enable him to devote himself to the practice of physical therapy. He serves with other members of the rehabilitation team to aid the ill and handicapped achieve maximum restoration of physical function. Some of the most common procedures and treatments used by the physical therapist are as follows: Diathermy and Infra Red Heat; Ultraviolet light; manual testing of individual and group muscle performance; special exercises for conditions such as weak muscles, stiff joints, incoordination, posture, post-operative care, etc; hot and cold baths; packs and full treatments; massage; special electrical currents for determining muscle and nerve responses. These and many others, are the media used by physical therapists.

B. What Training Is Required for a Physical Therapist

There are two avenues of study leading to registry as a physical therapist. One is for high school graduates to enroll in a school of physical therapy, leading to a Bachelors Degree in physical therapy. This is a four year program. The other avenue is for those people who have graduated from a colleg with a Bachelors Degree in certain specialized fields, to enroll in a 6 to 12 months concentrated physical therapy course. These people are then given a certificate in physical therapy. Recipients of a degree, or certificate, have equal professional recognition and status.

C. Physical Therapy Technician or Aide

Th physical therapy technician or aide is a sub-prof ssional person who has completed a course f instruction d signed to mak him a skilled sub-professional member of th physical therapy department. This course f instruction has a minimum of 500 hours. Subjects covered in this course consist of the following: Orientation to the hospital team; ri ntation to

the rehabilitation therapy department; formal didactic instruction in such areas as physiology, anatomy, health, principles of psychiatric care; and basic courses and demonstration periods in the use of such media as heat, light, massage, water in the physical therapy setting. Whil this course is not designed to make physical therapists out of the students, it can give them, and has been designed to give them, a certain amount of formal training in order that they may also give scientific, purposeful medical treatment as one portion of the various treatment programs in physical therapy. The physical therapy technician or aide, always works under th direction and guidance of a registered physical therapist, or qualified medical personnel.

IV. Skills Training for Physical Therapy Aides or Technicians

The following will be a topical outline of the didactic training given physical therapy technicians or aides. Each hospital or facility utilizing this training program will provide its own basic text in these areas. This outline should be used as a guide in setting up the training program in the skills area.

Physiology

I. Physiology
   A. The Body as a Unit
   B. Systems of the Body
      1. Integumentary
      2. Respiratory
      3. Circulatory
      4. Digestive
      5. Excretory
      6. Endocrine
      7. Reproductive
      8. Nervous
      9. Skeletal
      10. Muscular

II. Properties of Life
   A. Metabolism
   B. Growth
   C. Reproduction
   D. Environmental organization
   E. Organization

III. Cell Structure and Organization in the Human Body
   A. Cell structure
      1. Cell membrane
      2. Cytoplasm
      3. Nuclear membrane
      4. Nucleoplasm
      5. Chromatin
   B. Cellular Organization
      1. Epithelio
      2. Muscle
         a. Smooth
         b. Striated
         c. Cardiac
      3. Nerv s
      4. Connectiv

C. Physical Organization of Protoplasm
1. Colloids
2. State of Protoplasm
D. Movement of Material from Cell to Cell
1. Diffusion
2. Osmosis
3. Filtration

IV. Chemical Organization and Properties of the Human Body
A. H_2O
B. Carbohydrate
C. Inorganic Salt
D. Fats
E. Proteins
F. Enzymes

V. Integumentary System
A. Functions of Integument
B. Structure of Integument
C. Skin
D. Derivatives of Skin

VI. Respiratory System
A. Respiratory Organs
B. Mechanics of Respiration
C. Voice Production

VII. Circulatory System and Blood
A. Heart
B. Arteries
C. Capillary
D. Veins
E. Blood
1. Function
2. Red Blood Cells
3. White Blood Cells
4. Plasma

VIII. Digestive System
A. Anatomy of digestive system
1. Organs
2. Structure
B. Function of Digestive System
1. Mouth
2. Stomach
3. Liver
4. Pancreas
5. Small Intestines
a. Duodenum
b. Remainder of small intestines
6. Large Intestines

IX. Excretory System
A. Anatomy of Urinary System
B. Formation of Urine
C. Control of Urine
D. Function of Urine
E. Abormal Kidney Function

X. Endocrine System
A. Hormon s
B. Pituitary Glands
C. Thyroid Glands
D. Parathyroid
E. Adrenal
F. Pancreas
G. Duodenum

H. Gonad
I. Plac nta
J. Disfunction of Endocrine System

XI. Reproduction System and Fetal Development
A. Evolutionary development of reproductive System
B. Male reproductive system
C. Female reproductive system
D. Cellular basis of human reproduction
E. Development of the Embryo
F. Fetal Development
1. Normal development
2. Fetal anomalies

XII. Nervous System
A. The physiology of nerves
B. The physiology of the spinal cord
C. The brain stem
D. The cerebellum
E. Cerebral hemispheres
F. Autonomic nervous sytem
G. The senses

XIII. Skeletal System
A. The skeleton
B. Skeletal function
C. Bone structure

XIV. Muscular System
A. Types of muscles
B. Function of skeletal muscles

DISEASES

I. Disease
A. Disease Agent
B. Rservoir of disease agent
C. Escape of disease agent
D. Transmission of disease agent
E. Entry of disease agent
F. Resistance or susceptibility to disease

II. Control of Disease
A. Control of reservoir
B. Increase resistance
C. Minimize the illness
D. Destruction of disease causing organisms
1. Disinfection
2. Sterilization

III. Diseases and Types of Immunity
IV. Diseases and their Sources
V. Environmental Sanitation

ANATOMY

Rath r than a topical outline of the course in anatomy, it is suggested that each facility purchase for their students, a good basic work book in anatomy, which can be used with any standard anatomy text. This coupled with lectures from the staff should provid the anatomy section f this ourse. Anatomy worksbooks are available from college book stores, r medical book stores from about $1.50 and up. The student may wish to puchase his own textbook for anatomy and physiology. There are good basic t xts in anatomy and physiology published in paper back volumes. One such text comes in two volumes and is titled "Physiology and Anatomy", and th two volumes may be purchased for a total cost of approximately $5.00. I would ncourage each student to use, and to purchase his own text for future reference.

The following media should be covered in the section on use of physical therapy media:

1. Heat: Use of infra-red; short wave diathermy; paraffin baths; packs and compresses.
2. Radiation: Infra-red and Ultra-violet
3. Massage: Sedative or Stimulative
4. Water: Whirlpool baths; Hubbard tanks; therapeutic pool; contrast baths; cold and hot packs; sprays, showers and douches
5. Electricity: Low and high frequency currents.
6. Therapeutic Exercise: Relaxation; passive, active, and resistive exercises; posture and scoliosis exercise; muscle re-education; coordination; gait training, with or without use of crutches, braces, and prosthesis; exercise with the use of mechanical device and apparatus, such as should r wheels, pulleys, parallel bars, and the like.
7. Diagnostic Tests and Measurements: Use of manual and electrical muscle testings; joint range of motions measurements; girth, length and expansion measurements; and testing of activities inherent in daily living.
8. Miscellaneous: Compression; bandaging of stumps of amputee patients preparatory to use of a prosthesis; application of accepted techniques, where indicated and necessary;

Aft r completion of the section - Roman Numeral IV - the student should then omplete a section of on the job training consisting of a minimum of 160 hours of supervised experience. The application of the skills and knowledge developed in Unit IV should be used and developed at this time.

The methods and procedures may be employed as precribed in a wide range of patient diagnosis, including arthritis, bursitis, fractures, infantile paralysis, peripheral vascular disease, peripheral nerve injury; cardiacs; hemiplegia; periplegia; amputees; cerebral palsy; pre and post-operative tuberculous and non-tuberculous chest conditions, psychiatric conditions and many more.

* * * * * * *