Staff Meeting Bulletin Hospitals of the » » » University of Minnesota

Physical Therapy in Pediatrics

Volume XVI | May 11, 1945 | Number 26

STAFF MEETING BULLETIN
HOSPITALS OF THE . . .
UNIVERSITY OF MINNESOTA

Volume XVI · Friday, May 11, 1945 · Number 26

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Published for the General Staff Meeting each
week during the school year, October to May.

Financed by the Citizens Aid Society,
Alumni and Friends.

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UNIVERSITY OF MINNESOTA MEDICAL SCHOOL
CALENDAR OF EVENTS
May 14 - 19, 1945

No. 71

Monday, May 14

9:00 - 10:00 Roentgenology-Medicine Conference; L. G. Rigler, C. J. Watson and Staff; Todd Amphitheater, U. H.

9:00 - 11:00 Obstetrics and Gynecology Conference; J. L. McKelvey and Staff; Interns Quarters, U. H.

12:30 - 1:30 Pathology Seminar; Tuberculosis of Bone Marrow Organ; E. M. Schleicher, 104 I. A.

Tuesday, May 15

9:00 - 10:00 Roentgenology-Pediatrics Conference; L. G. Rigler, I. McQuarrie and Staff; Eustis Amphitheater, U. H.

11:00 - 12:00 Urology Conference; C. D. Creevy and Staff; Main 515 U. H.

12:30 - 1:30 Pathology Conference; Autopsies; Pathology Staff; 104 I.A.

12:30 - 1:30 Physiology-Pharmacology Seminar; Mechanism of Action of Parathormone; Wallace Armstrong; 214 M. H.

4:00 - 5:00 Physiological Pathology of Surgical Diseases; Physiology and Surgery Staffs; Todd Amphitheater, U. H.

4:00 - 5:00 Obstetrics and Gynecology Conference; J. L. McKelvey and Staff; Station 54, U. H.

4:00 - 5:30 Pediatrics Grand Rounds; I. McQuarrie and Staff; W-205 U. H.

4:30 - 5:30 Ophthalmology Ward Rounds; Erling Hansen and Staff; E-534, U. H.

5:00 - 6:00 Roentgen Diagnosis Conference; Annette Stenstrom, T. B. Merner, 515 U. H.

Wednesday, May 16

9:00 - 11:00 Neuropsychiatry Seminar; J. C. McKinley and Staff; Station 60; Lounge, U. H.

11:00 - 12:00 Pathology-Medicine-Surgery Conference; Carcinoma of Head of Pancreas; E. T. Bell, C. J. Watson, O. H. Wangensteen and Staff; Todd Amphitheater, U. H.

12:30 - 1:30 Pediatrics Seminar; How Should Penicillin Be Employed in the Treatment of Meningitis; Dr. Ramsdell; W-205 U. H.

12:30 - 1:30 Physiological Chemistry Literature Review; Staff; 116 M. H.

4:30 - 5:30 Neurophysiology Seminar; Physiology of the Acoustic Area; Mrs. Carmen Buso de Casas; 214 M. H.

Thursday, May 17

9:00 - 10:00 Medicine Case Presentation; C. J. Watson and Staff; Todd Amphitheater, U. H.

12:30 - 1:30 Physiological Chemistry; Intermediary Metabolism of Carbohydrates; M. F. Utter; 116 M. H.

4:00 - 5:00 Pediatric Journal Club; Review of Current Literature; Staff; W-205 U.H.

4:30 - 5:30 Ophthalmology Ward Rounds; Erling Hansen and Staff; E-534, U. H.

4:30 - 5:30 Roentgenology Seminar; Some Tumors of the Lung; Thomas Kinsella; M-515 U. H.

8:00 - George Chase Christian Lecture; The Infection of Foreign Species by Viruses of Chicken Tumors; Francisco Dwan Reynals; Medical Science Amphitheater.

Friday, May 18

9:00 - 10:00 Medicine Grand Rounds; C. J. Watson and Staff; Todd Amphitheater, U.H.

10:00 - 12:00 Medicine Ward Rounds; C. J. Watson and Staff; E-214 U. H.

10:30 - 12:30 Otolaryngology Case Studies; L. R. Boies and Staff; Out-Patient Otolaryngology Department, U. H.

11:45 - 1:15 University of Minnesota Hospitals General Staff Meeting; Calcium Phosphorus, Phosphatase, Diagnostic Implications; Powell Hall, Recreation Room.

1:00 - 2:30 Dermatology and Syphilology; Presentation of Selected Cases of the Week; Henry Michelson and Staff; W-206, U. H.

1:30 - 3:00 Roentgenology-Neurosurgery Conference; H. O. Peterson, W. T. Peyton and Staff; Todd Amphitheater, U. H.

Saturday, May 19

8:00 - 9:00 Surgery Journal Club; O. H. Wangensteen and Staff; M-515 U. H.

9:00 - 10:00 Pediatrics Grand Rounds; I. McQuarrie and Staff; Eustis Amphitheater, U. H.

9:15 - 10:30 Surgery Roentgenology Conference; O. H. Wangensteen, L. G. Rigler and Staff; Todd Amphitheater, U. H.

9:00 - 10:00 Medicine Case Presentation; C. J. Watson and Staff; M-515 U. H.

10:00 - 12:00 Medicine Ward Rounds; C. J. Watson and Staff; E-221 U. H.

11:30 - 12:30 Anatomy Seminar; The Organization of the Motor Cortex; E. Gellhorn; 226 I. A.

II. THE NEED OF PHYSICAL THERAPY IN PEDIATRICS

Alice K. Brill
Miland E. Knapp

Physical medicine is a part of the practice of medicine and may be defined as diagnosis and treatment of disease and injury with the aid of physical agents.

Physical medicine at the present time is considered to consist of diagnosis followed by a two-part program of treatment under the same supervision. The first part is physical therapy which involves the use of physical agents in the treatment of disease or injury in conjunction with the usual medical or surgical methods. The second part is occupational therapy which involves the use of work as an aid to recovery as well as the re-training of the patient to take his place in society.

Physical medicine is neither a casual nor a specific therapy in the majority of conditions. It serves in acute disease conditions to relieve symptoms and speed recovery. In local infections, ultraviolet radiation, short wave diathermy, hot foments and infra-red are of considerable importance. In certain acute systemic infections such as gonorrhea and its complications artificial fever therapy has an almost specific effect. In acute traumatism, the efficient application of physical measures is essential for early recovery. The most important field for physical medicine lies, however, in the treatment of chronic disease conditions. Among the many conditions in which physical measures prove of definite value are both acute and chronic traumatism, the various forms of arthritis and the rheumatic states, many kinds of paralysis and other organic and functional affections of the nervous system, chronic digestive disturbances, chronic diseases of the heart and blood vessels, acute and chronic inflammatory conditions of the nose and throat, and many skin lesions.

The purpose of physical medicine, therefore, can be stated to include (1) achievement and maintenance of physical fitness, (2) diagnosis and treatment, both preventive and curative, of disease and disability of the locomotor system, (3) physical selection, training and reinstatement of personnel in industry and the armed forces, and (4) psychological benefit. This last point is many times most important and it is not unusual to have a patient come to the department primarily for this purpose.

World War I brought about for the first time a moderately widespread appreciation by the medical profession of the United States of the value of well-planned and well-applied treatment by physical agents. Again attention, and this time to include many scientific investigations, has been drawn forcibly to the desirability of the early use of all modern methods of physical medicine for three reasons: (1) the enormous amount and variety of casualties and sickness in the wake of the present war, (2) injuries in industrial activity, and (3) the number of military disqualified because of physical disability. Selective Service published statistics on rejections in the summer of 1941, emphasizing the fact that 50 per cent of the registrants examined failed to qualify by reason of physical and/or mental defects and educational deficiencies.[1] The size and composition of the 4F pool on October 1, 1944 is shown on Table I.

In July, 1937, of the 1,000,000 children under 21 years of age in the state of Minnesota there were 8,300 crippled children.[2] This does not include children with eye or ear defects alone but does include a small proportion of non-orthopedic crippling conditions. Hilleboe[2] analyzed these cases and found the disabling conditions distributed in arbitrarily classified groups as follows: accidents 11%, poliomyelitis 20%, arthritis 2%, cerebral

Table I

Estimated Principal Causes for Rejection of Registrants from 18-37 Years of Age in Class IVF and Classes with "F" Designations*[1]

October 1, 1944

Principal Cause for Rejection	Number	Per Cent
Manifestly Disqualifying Defects	459,100	10.5
Mental Disease	737,400	16.8
Mental Deficiency#	605,000	13.9
Physical Defects	2,498,900	57.3
Musculoskeletal	329,600	7.6
Cardiovascular	286,100	6.6
Syphilis	274,800	6.3
Hernia	245,400	5.6
Neurological	221,000	5.1
Eyes	218,800	5.0
Ears	169,100	3.9
Tuberculosis	118,100	2.7
Lungs	76,100	1.7
Underweight and overweight	63,700	1.5
Abdominal viscera	56,800	1.3
Feet	56,800	1.3
Kidney and urinary	46,300	1.1
Varicose veins	44,800	1.0
Genitalia	43,800	1.0
Endocrine	41,400	0.9
Teeth	36,200	0.8
Skin	27,300	0.6
Neoplasms	27,300	0.6
Nose	26,200	0.6
Gonorrhea and other venereal	18,400	0.4
Hemorrhoids	17,900	0.4
Mouth and gums	11,300	0.3
Infectious and parasitic	4,800	0.1
Throat	4,300	0.1
Blood and blood forming	4,100	0.1
Other medical	28,500	0.7
Nonmedical	65,600	1.5
Totals	4,366,000	100.0

* Includes registrants in Classes IIA, B, and C with "F" designations.

\# Includes (1) registrants with more than one disqualifying defect who were rejected for educational deficiency prior to June 1, 1943; (2) registrants rejected for failure to meet minimum intelligence standards beginning June 1, 1943; (3) morons, imbeciles, and idiots rejected November, 1940-September, 1944.

palsies 14%, congenital deformities 25%, muscular dystrophy 1%, osteomyelitis 4%, tuberculosis of bones and joints 3%, and a miscellaneous group 14%.

Because of facts such as these the late President created the National Committee on Physical Fitness under the administrative control of the Federal Security Agency which resulted in the creation of the Joint Committee on Physical Fitness with equal representation for medicine and the Committee on Physical Fitness of the Federal Security Agency. The Joint Committee has set up a platform of seven objectives[1]:

1. Help each American to learn physical fitness needs.
2. Protect against preventable defects.
3. Attend to correctible habits.
4. Know how to live healthfully.
5. Act to acquire physical fitness.
6. Set American standards of physical fitness at high levels.
7. Provide adequate means for physical development.

The Joint Committee has determined the scope of its function and the proceedings and measures to be employed. The program includes the following:

1. The fullest use of every means of promotion and education.
2. The increased assumption of responsibility on the part of schools and colleges.
3. The development of responsibility by national organizations and agencies. This would include such groups as management and labor, social and religious agencies, patriotic organizations, civic groups, and youth and sports organizations.
4. The increased assumption of responsibility on the part of federal, state, and local governments as a public necessity to take their proper place in providing easily accessible opportunities for the improvement of physical health.
5. The enlistment of the active support of organizations of professional workers interested in the development and maintenance of physical fitness.
6. The utilization of the resources of industries applicable to the field of physical fitness.

The following factors are all considered important in physical fitness:

1. Adequate health inventories and services for the correction of remediable defects.
2. Proper nutrition.
3. The practice of personal hygiene, particularly cleanliness, adequate daily recreation, exercise, rest and sleep.
4. Healthful living conditions.
5. Programs designed to develop strength, agility, skill, and endurance.

It remains to be seen whether such a program as outlined above is carried out, but it is readily apparent that physical medicine should have a part in such a program of physical fitness not only for the armed forces but for the youth of the country. Many children treated by physical methods would not be acceptable to the military need, but with medical and surgical care and physical therapy they would achieve the best physical fitness possible. Occupational therapy should be used hand in hand with physical therapy to reach this goal. At the present, occupational therapy is a much neglected field at the University of Minnesota Hospitals, but the need for such a service is recognized by many. Although many of the patients referred to the physical medicine department cannot go back to their old jobs, they are still capable of constructive,

satisfying and economically sufficient work if well directed and trained.

In the last twelve years at the University of Minnesota Hospitals approximately 1,000 children have been treated in the Physical Therapy Department. Many patients receive treatment with physical agents on the pediatric floors and of course these are not included in the following tables.

An attempt has been made to divide the orthopedic cases from the straight pediatric cases only because at one time physical therapy was used almost exclusively by the orthopedic department.

Table II

University of Minnesota Hospitals

Fever Therapy in Pediatrics
To 1945

	Cases	Satisfactory	Unsatisfactory	No Report
Chorea	26	24	1	1
Atrophic Arthritis	13	8	2	3
Asthma and Eczema	12			12
Diphtheria Carrier	1	1		
Meningococcic Septicemia	1	1		
Interstitial Keratitis	4	4		
Post Encephalitis	2		1	1
Juvenile Paresis	1		1	
Undulant Fever	1		1	
Gonococcal Urethritis	3	3		
Pelvic Inflammatory Disease	1	1		
Nephrosis	1		1	
Bronchiectasis	1			1

Table III

University of Minnesota Hospitals

Ultraviolet Light
1932 - 1944

		Cases
Erysipelas		23
Acne vulgaris		12
Pityriasis rosea		8
Alopecia		3
Psoriasis		7
Fungus		5
Impetigo		7
Eczema		18
Pyoderma		10
Skin grafting		19
Tuberculosis:		
Brodie's abscess	(1)	
Kidney	(1)	
Peritonitis	(2)	
Pulmonary	(7)	
Cervical gland	(2)	
Bone	(5)	
Lupus vulgaris	(2)	
Choroid	(1)	
Cornea	(1)	
Uveitis	(1)	
Cold Quartz to mouth and throat:		4
Thrush	(2)	
Diphtheria	(1)	
Meningococci	(1)	
General well being		98
Decubitus ulcer		9
Total		246

Table IV

University of Minnesota Hospitals
Children Treated in Physical Therapy
1932 - 1944

	Number of Cases	Diathermy	Heat (Infra-red, whirlpool, hot packs)	Massage (Includes stretching)	Electrical stimulation	Exercise	Muscle Re-education (Includes stretching)
Orthopedics	(365)						
Club foot	51		x	x			x
Congenital dislocation of hip	19		x	x			x
Congenital anomalies	6		x	x			x
*Poliomyelitis	101		x	x			x
Fractures	109		x	x			x
Scoliosis, lordosis, kyphosis	29		x			x	
Posture	33		x			x	
Torticollis	17		x	x			x
Pediatrics	(360)						
Guillain-Barre	10		x				x
Erb's Palsy	5		x	x	x		x
Burns	16		x	x			
Osteomyelitis	20		x				x
Gunshot wounds	8		x	x	x		x
Spastic paralysis	91		x				x
Infections (hands, joints, etc.)	13		x	x			x
Facial paralysis	4		x		x		
Nerve injury	6		x		x		
Obesity	3					x	
Infectious atrophic arthritis	13		x	x			x
Tumors and abscesses	9		x	x			x
Encephalitis	9		x	x			x
Diabetes	5					x	
Muscular dystrophy	12		x	x			x
To prevent adhesions	6	x					
Pelvic abscess	3	x					
Pressure cuff	2						
Miscellaneous	106						
Ulcerative colitis							
Hemophilia							
Coliac disease							
Congenital megacolon							
Undulant fever							
Empyema							
Neuritis							
Hysteria							
Frozen feet							
Neurofibromatosis							
Trauma							
Muscle training and testing							
Typhoid fever							

From the cases treated in this hospital one can see that the exclusive use of physical medicine by orthopedics should not be true, and in a program of physical fitness, physical medicine and occupational therapy would apply to many non-orthopedic groups.

One such group which deserves special mention is the cardiac group, because between the ages of 5 and 24 it is the leading cause of death,[3] and in the group 20 to 24 it is exceeded only by tuberculosis. During peacetime, the results of a sampling survey indicate that 7 cases of acute rheumatic fever and 355 cases of rheumatic heart disease were recorded in every 100,000 registrants examined.[1] Cardiovascular defects accounted for 10.0% of all rejections in the Armed Forces for the period of November, 1940 through September, 1941. And a further survey of these rejections show that approximately 50% of them could be classified as rheumatic heart disease. Any program outlined for those with cardiovascular defects should include physical medicine and particularly occupational therapy.

Summary

It has been the purpose of this report to show the need and uses of physical medicine in pediatrics by (1) pointing out the number of physically unfit young people found in the United States, (2) listing and reviewing the pediatric cases treated in the Physical Therapy Department at the University of Minnesota Hospitals in the last 12 years, and (3) stressing the need of occupational therapy in conjunction with other physical therapy treatment.

* * *

References

1. Rowntree, L. G.
Rheumatic Heart Disease and the Physical Fitness of the Nation as Seen by Selective Service.
J. of Ped., 26:220-229 (Marh.) '45.

2. Hilleboe, H. E.
Preventive Aspects of Crippling Disease.
Am.J.Pub.Health, 28:451-457, '38.

3. Wheatley, G. M.
Mobilization against Rheumatic Fever.
J. of Ped., 26:237-244 (Mar.) '45.

III. GOSSIP

The long awaited day has arrived with the cessation of hostilities in Europe. Although the number of physicians who will be released may not be great at first, there will be an increasing number coming back before fall. For a long time we have discussed in an abstract way, post war plans as if it would start on a particular day after which everything would be different. With the return of more people to their homes, there will be a change in the character of medical practice. More physicians on the job, will mean less work for each one. There will be better opportunities for physicians to get away and to resume their studies, therefore, we must plan to serve not only those who have been away, but those who have stayed home. Educational programs for physicians who have been attached to hospital services will differ from those which will be provided for men who have spent several years in the field. Some physicians who have been away are sincerely desirous of reviewing medicine so they may go back to their own practices and serve their people with greater ability. Other physicians in service and at home will seize upon this opportunity as a time for re-training in new skills, of a specialized nature. It may well be that after our programs are established we will have to change the direction completely. In any event, the men will soon start coming back and we must be prepared to take care of them. Preliminary plans include offering review courses in medicine at the Center for Continuation Study for 2 full University quarters. Physicians would register at the Center for Continuation Study under the G.I. bill. Courses would consist of one week offerings in various sub-divisions of medical, surgical and specialty practice. Time would be spent at the Center on lectures, conferences and discussions and in the hospitals on ward walks, clinics, and demonstrations. The proportion would vary with the different courses. Tendency will be to spend too much time in lectures, and not enough in the hospitals or in study, if we do not watch ourselves. In many respects, the methods of teaching will represent an overlap between graduate and senior year instruction. After the 6 months at the Center, certain students will be eligible for hospital externships, and others will go into graduate training or into practice. Although practically every recent graduate wants to do graduate work, many of them will not satisfy their ambitions, because of financial difficulties. The average medical student and medical officer of today, has developed a certain living standard, and some of them do not see how they can make any change. Hence, certain worthwhile men will be lost who have a short-sighted policy toward their own future. The same condition prevailed at the end of World War I, and many young men, because of high cost of living and accumulated debts, did not go on into graduate work because we didn't pay enuf. Graduate training is a good investment. I believe attention should be directed to providing a living wage for graduate students, but to assume that all the responsibilities of every individual should be met by graduate funds, does not seem proper. Perhaps student loans in this field may be the answer. In the undergraduate years, student loans are paid back when the student graduates and goes out into practice. These are good investments because they are limited in amount and given only to students with promise of reasonable success. These financial questions do not apply with equal force to all graduate students, for special consideration must be given to the physician who plans to pursue an academic career, and for those who will go into the pre-clinical sciences, as their future earnings will not be on a par with those who go into practice. It will be good to see the men come home. With their release, our teaching staff will go back to pre-war levels and we hope beyond. Much of their experience will be helpful to us. They will bring into medicine a fresh viewpoint, from contact with physicians in different part of the world. Research in medicine has been slowed down during the war. If the last war is a guide, there will be a period during which many physicians will find it difficult to adjust to social change. It is a time for all of us to be patient, to help one another bring medicine back to the high plane it occupied before the present conflict. Even before such wishes can be realized, the important matter of this war with Japan must be settled, and it may well be that we will go on a war economy for some time.