

MEDICINE

Hospital Gymnastics

Exercise may be classed as required medicine for the sick. Leg-stretcher, chest lifter, lung conditioner are only a few of the forms now used.

By LT. H. N. GARDNER, USNR

► "HEY! What is this? A hospital or a gymnasium?"

Civilians may soon be echoing the surprised reaction of many ill or wounded servicemen as returning physicians introduce into civilian hospitals methods of physical rehabilitation they have learned during the war.

For exercise is good medicine. The dramatic saving of lives by sulfa drugs, penicillin, plasma, and whole blood have captured the popular imagination; but, to the average patient, and particularly to those who are bedridden or crippled, the advances of physical rehabilitation may be the most important development to come out of this war.

Up to the present, civilian hospitals have been overworked and understaffed. They have had more than they could do to take care of their patients, and have had neither the time nor the personnel to try new ideas. But as the doctors come back from the armed forces, authorities believe that physical rehabilitation for the average patient may come to be standard treatment in all hospitals.

For Civilians Too

There will be differences, of course, between civilian and military methods. The very young and the very old cannot be given the same treatment as those of military age. And, more important, the civilian leaves the hospital sooner, and does his convalescing at home, while the soldier or sailor stays until he is ready for duty. Thus the civilian would get supervised exercise for a shorter time, and most doctors agree that few patients would keep it up at home. Some visualize a sort of "out-patient gymnasium," where patients would come back for prescribed exercises after they have left the hospital.

Particularly active in this direction is the Baruch Committee on Physical Medicine, which has recently outlined plans for community rehabilitation centers to integrate the medical, social and educational services of the community. Included in their proposal is a physical medicine center which would offer phys-

ical rehabilitation as well as the more familiar physical and occupational therapy.

Whatever happens, few medical officers think that those who have seen how even bedfast patients can keep up their strength and morale through exercise will be content to return to the old methods of "bed and boredom."

Remedial exercise, physical therapy, and occupational therapy, as methods of restoring function to injured nerves, damaged muscles, and stiffened joints, came into widespread use partly as a result of experience in the first World War. But it was not until this war that doctors came to realize the importance of physical conditioning for all types of patients.

Never before had physical training been taken so seriously by the armed forces. Soldiers and sailors were brought into top condition in training camp, and kept that way; even the brass hats left their desks for daily periods of calisthenics in the corridor.

When a man was hospitalized even for a short time, he came back cured of his disease, but far behind his buddies in physical condition. After two or three weeks in bed, arches sometimes weakened until marching, even without a heavy combat pack, was out of the question. Men had to be taken out of outfits bound for combat, or put on light duty where their intensive training for their regular jobs was wasted. So the medical officers decided to see whether physical reconditioning could safely be started during convalescence, before discharge from the hospital.

The results were surprising. The men not only went back to duty in better condition; they got well faster. Men who were literally "bored stiff" took a new interest in life as their aches and weakness faded away, and were "rarin' to go" at a time when they would otherwise have been sitting listlessly around the convalescent wards.

Encouraged by this success, medical officers began giving exercise earlier and earlier in the course of treatment, until today a majority of military patients find themselves doing sit-ups or up-side-down bicycling even before they are allowed out of bed. A man with part of his body

in a cast, or with a leg paralyzed, puts the rest of his muscles through their paces every day; even if he can only wiggle his fingers and toes, he does that regularly, and takes more and more exercise as his condition improves. Only if he is critically ill, or has a fever, will he be excused. Even if he has just been operated on, he can still do some exercises safely, and his recovery will be faster because of it.

"But isn't it dangerous?" many people ask, remembering that bed rest and quiet have always been standard treatment for most ailments.

The answer is "No"—not if it is properly supervised. Unrestricted exercise might cause trouble, it is true, but the Army or Navy doctor today prescribes exercises just as he prescribes medicines.

In the Navy's hospitals, for example, each new patient is promptly classified by his doctor in one of five groups, depending on the amount of activity he should have. The doctor checks over a list of standard exercises for that group, and crosses out any which he thinks should not be used. Then the physical training specialist takes over, holding regular exercise periods on the wards. When the patient can get out of bed, he joins a new group for more vigorous calisthenics; later on, if he is well enough, he can go in for outdoor sports, graded from horseshoe pitching and shuffleboard up to softball and touch football.

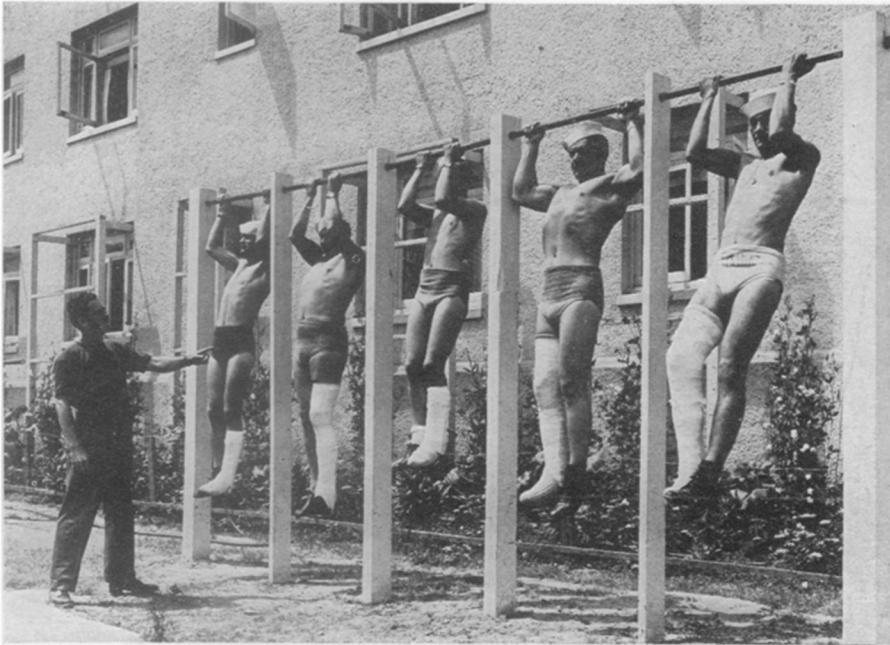
Exercise Routine

Suppose, for example, that you were a sailor or a leatherneck and had just had your appendix removed. At first you would just take it easy, getting over the effects of the operation and the ether. But after a day or two, when you were feeling better, your doctor would start you on a few simple exercises like these:

Waker-Upper: Lie on back, fists clenched beside shoulders. 1. Press head and elbows down against mattress. 2. Press harder. 3. Press still harder. 4. Relax.

Leg-Stretcher: Lie on back, with pillow folded double under knees. 1. Straighten legs forcibly, pointing toes down hard. 2. Relax. 3. Straighten legs forcibly, pointing toes up toward head. 4. Relax.

Chest Lifter: Lie on back, arms folded on bed across top of head. 1. Press head and shoulders against bed, arching upper



GOOD MEDICINE—Men with a leg in a cast exercise on chin bars. Even bed patients are expected to use special apparatus to keep them fit while getting well.

back, raising chest toward head. Keep hips on bed. 2 Relax. 3. Repeat. 4. Relax.

Lung Conditioner: Lie on back, hands on hips. 1. Inhale (chest breathing) in four counts, taking a deeper breath each count. 2. Exhale in four counts. Try to empty lungs on last count, and tighten buttocks.

Every morning and afternoon the physical training specialist would come to the ward and put you through this series twice. At first you would do each one only two or three times; later you would work up to ten or fifteen repetitions. In four or five days you would add a few exercises which take a bit more effort, but still without putting a strain on the abdominal muscles. And after two weeks, you would be using these muscles, avoiding sudden strains, but giving them a good workout in easy stages.

It is not only weakened muscles that benefit from physical training; there are other mental and physical results which can be just as important. Physical condition has a lot to do with mental health, and the outlook of both normal and neuropsychiatric patients is much improved by this program.

More unexpected are the effects in transverse myelitis cases, paralyzed from the waist down; the Navy reports that, in addition to strengthening the arm and trunk muscles to the point where these patients can get around without help, regular exercise prevents two conditions which had always troubled them—the formation of bladder or kidney stones, and decalcification of the bones of the legs and feet.

Science News Letter, November 10, 1945

AERONAUTICS

Travels 400 Miles an Hour

► LATEST in Grumman's line of fighting "cats," the newly developed Bearcat, sister ship to the Wildcat, Hellcat and Tigercat, is said to be superior to either the Wildcat or Hellcat in both speed and maneuverability.

Although lighter by about a ton and a half than the Hellcat, the Bearcat, designated as the F8F, has the typical Grum-

man clipped wing tips, stubby fuselage and low-winged outward appearance of the Hellcat. Powered by a single-stage Pratt-Whitney radial engine, developing more than 2800 horsepower with water injection, the F8F is armed with four .50-caliber machine guns and is equipped with racks to carry rockets and bombs.

Manufactured by the Grumman Aircraft Engineering Corporation at Bethpage, Long Island, N. Y., the Bearcat is believed to be the fastest carrier-based, propeller-driven fighter in the world at sea level, making over 400 miles an hour in level flight. Extreme range of 1,500 miles under ferry conditions and a rate of climb of nearly a mile a minute are claimed.

While Grumman was concentrating on carrier-based fighters, the Republic Aviation Corporation at Farmingdale, Long Island, had an experimental Army fighter flying at speeds in excess of 500 miles an hour as early as August, 1944. Of a long line of P-47 Thunderbolts, the XP-47J dispelled the fallacy that propeller-driver, reciprocating-engined aircraft could not reach a level flight speed of 500 miles an hour.

The Pratt-Whitney radial engine was equipped with a propeller-driven cooling fan in the motor cowling, in addition to the air intake ports. The exhaust of the turbo-supercharger, jetting into the air beneath the plane, just forward of the tail assembly, is said to have added 400 horsepower to the normal thrust of the engine.

Production of the XP-47J series would have required complete retooling of the Republic plant, so only one 47J was constructed, but certain features and engineering improvements of the experimental plane were incorporated into later models of the Thunderbolt.

Science News Letter, November 10, 1945

The *myrtle warbler* receives its name from its favorite foods; the wax berries of the myrtle.

The succulent stalk by which the popular *cashew nuts* are attached to the cashew tree yields flesh and juices used in the manufacture of preserves, wines, liquors and ice cream.

by
W. H. GEORGE

THE SCIENTIST IN ACTION

A SCIENTIFIC STUDY OF HIS METHODS

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