

Amputee Training in a Rehabilitation Center*

By VIVIAN SHEPHERD

Director, The Rehabilitation Institute, Kansas City.

The rehabilitation of the amputee is an intensely important part of any program of rehabilitation for the disabled and is of major interest to the prosthetist and, also, of great interest to the rehabilitation center. The rehabilitation process includes such a multiplicity of services that no one discipline or facility can provide all that is required in the total rehabilitation of the amputee and other disabled. It is necessary, then, to develop cooperatively a team, not only of individuals, but of facilities providing rehabilitation service in order to meet the overall needs of the disabled.

For example, the prosthetist with all his skill cannot always effect the rehabilitation of the amputee simply by fabricating an excellent prosthesis, important as that is to the total rehabilitation. Many other factors, outside the prosthetist's control, enter into successful prosthesis wearing—the proper psychological preparation of the patient before surgery, adequate surgery, after care of the stump, and training in the use of the prosthesis. The first two are provided by the physician before the prosthetist or the rehabilitation center sees the patient, while the others can be provided by the rehabilitation center. The use of the center with its coordinated program can be of inestimable value to the physician, the prosthetist, and, most important, to the patient himself.

The ideal in amputee rehabilitation would be a team evaluation for

every patient following surgery with the team composed of the physician, prosthetist, physical therapist, occupational therapist, psychologist, social worker, and vocational rehabilitation counselor. The first consideration of this evaluation would be to decide if the patient is potentially a candidate for a prosthesis, and if so, to recommend the services needed to prepare him for successful wearing and use of a prosthesis.

The evaluation of the patient would include these areas:

Physical factors—Range of motion, strength of musculature, condition of stump, etc., and for the arteriosclerotic, diabetic, and Burger's, the condition of the contra-lateral limb—strength, circulation, excoriations of the skin.

Psychological factors—the intellectual and emotional factors present that will mitigate for or against the patient being able to wear a prosthesis successfully. This evaluation is especially important in the older age group where the psychological factors may be even more significant than the physical factors in recommending a limb.

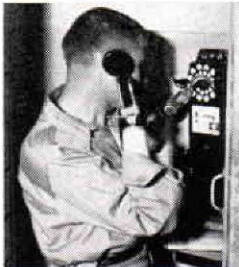
Social and vocational factors—The social and vocational factors that must be considered such as family and vocational needs. What use will be made of the limb, socially and vocationally; in the home, on the job—heavy or light use—and many others.

The above simply suggests some of the factors to be considered before

* Presented before the Regional Conference, 7th Region, Orthopedic Appliance and Limb Manufacturers Association, April 16, in Kansas City, Missouri.



Unretouched photographs of a bilateral amputee, who has become self-sufficient to a remarkable degree.



a decision should be made as to whether or not an individual can become a successful limb wearer and is intended only to point out areas that should be explored before fitting is recommended. When decision has been made that a prosthesis is indicated, the prescription for the limb should be made with consideration for the intended use and the type best suited to the particular individual's needs.

It is often necessary to have a program of physical therapy to prepare the stump for prescription and fitting. This program is designed to increase shrinkage, toughening, strength, range of motion, and correction of contractures, if present. Only after sufficient preparation of the stump should the actual prescription be made. When this program is followed, the prosthetist's work is much simpler for some of the problems that make his task difficult have been overcome and he has an adequately prepared stump for fitting.

Radcliffe (1) states that, "In the fitting of any artificial limb, the goal of the prosthetist is simple to restore to the amputee the ability to perform everyday activities in an easy, natural, and comfortable manner. The basic requirements are therefore three in number—comfort, function, and appearance, the latter embracing both cosmetic appearance and appearance in use. Unless a prosthesis is reasonably comfortable, the amputee will be unable to wear it. Unless it performs the necessary functions with reasonable ease and dexterity, the amputee is not apt to find the device very useful. Unless it is reasonably acceptable cosmetically, and unless it can be operated in a natural manner, the limb is likely to be disagreeable both to the wearer and to his friends and associates."

To achieve such goals, the amputee needs besides a skillfully fabricated limb, adequate training in the use of his prosthesis. Too many times we have seen a limb not being worn, not

because of improper fitting, but because of the lack of sufficient training in its use. Therefore after fitting, intensive prosthesis-use training should be initiated. With the lower extremity amputee, training is usually given by the physical therapist under medical supervision. The training begins by helping the amputee achieve proper balance using parallel bars, from there proceeding to walking bars where training is given in walking forward, backward, sideward—with instructions in proper hip, knee, and foot motions. Postural instructions are emphasized all through the various steps because without proper stance and positioning, the amputee may not be able to use the limb properly and may even develop secondary disabilities.

Usually with practice, the amputee moves from the walking bars to walking with crutches or canes, and for the unilateral BK or AK, to walking without any support. For the bilateral and tilt-table amputee, a cane or crutches may continue to be necessary.

The amputee is given instructions and practice in walking on the level, or inclines, on rough ground, climbing stairs, curbs, walking with traffic lights, use of public conveyances. Also, important to the amputee is training in how to fall with the least danger to himself, and how to get up after a fall. The therapist emphasizes as does the prosthetist, the care and cleanliness of the prosthesis and stump socks as important to the continued care of the stump and future comfort and successful wearing. All through the training period, the prosthetist and the center staff work together on any problems that arise.

The Rehabilitation Institute at Kansas City is participating in the Upper Extremity Field Study being conducted by the National Research Council, and has had a clinic team in operation for about two years. The team received training in special courses held at the University of Cali-

Mrs. Vivian Shepherd has been Executive Director of the Rehabilitation Institute, Kansas City, Missouri, from its beginning in 1947. Under her direction the Institute has expanded from a small beginning until now it has a staff of twenty-two. This includes therapists, psychologists, and clerical staff. Last year the Institute served 1128 patients.

Mrs. Shepherd served as a field counselor with the Missouri Department of Vocational Rehabilitation for five years prior to 1947. She is a member of the Executive Committees of the National Rehabilitation Association, and the Conference of Rehabilitation Centers. She has drawn on this wealth of experience for the material in this article.

fornia, Los Angeles, and has been applying the techniques and procedures taught there for the prosthetic rehabilitation of the amputee. The team is composed of the physician, occupational therapist, physical therapist, the prosthetist, the representative of the Field Study, and often the psychologist and vocational rehabilitation counselor.

The procedure is for the clinic team to see the amputee for evaluation, prescription, initial check-out of prosthesis, and final check-out after prosthesis use training. Check-out tests and training are based on procedures prepared by the National Research Council.

Training of the upper extremity amputee is usually carried out by the occupational therapist and begins with practice of gross motions, such as flexion and extension of the forearm, locking and unlocking the elbow, etc. During this phase the amputee concentrates on body movements necessary for proper operation. When adequate control is achieved, training in the use of the terminal device is begun. Emphasis is placed

on holding and grasping which are the most frequently used movements. The amputee is then ready for practical application of what has been learned.

Instruction in the performance of daily living activities, including occupational needs and social situations is given. He is helped to coordinate the functions of his device into a pattern of operation most natural and satisfying to him, rather than being forced into a predetermined activity program. He is encouraged to develop his own techniques and refinements, as well as to explore a wide variety of activities.

Final Training

In the final stage of training, instructions in attaching and removing the prosthesis, changing from one terminal device to another and general care of the appliance are carried out, working closely with the prosthetist on any problems encountered.

Throughout prosthesis training for the unilateral amputee, the remaining limb is trained to become the dominant hand as almost all activities will be performed with the remaining hand with the prosthesis being used in an assistive manner. For the bilateral amputee, adaptive techniques and the utilization of many gadgets must be taught to compensate.

Often during the process of treatment, fitting, and training, psychological problems arise, and the center's counseling psychologist can be of great assistance in helping the patient adjust to his disability and to his rehabilitation program. Also, family situations may be present or develop during the program, necessitating the help of the social worker with the patient and his family. This can be highly important, for the rehabilitation program can often break down completely if family problems are not resolved.

During this time, if vocational adjustment is a part of the rehabilitation plan, the vocational rehabilitation

counselor will be counseling with the amputee toward training and placement after, or concurrently with, physical restoration.

This paper has not been given to present a technical description of amputee training, but rather to point out the many factors that must be considered in successful amputee rehabilitation, and to show the worth of cooperative effort on the part of the physician, the prosthetist, the rehabilitation center, state vocational rehabilitation services, and other agencies, to achieve what all are working toward—the most satisfactory and complete rehabilitation of the amputee.

1. Radcliffe, Charles W., "Functional Considerations in the Fitting of Above-knee Prostheses." *Artificial Limbs*, Advisory Committee on Artificial Limbs, National Research Council, January 1955, p. 35.

"What's New(s)"

- *The American Limb & Orthopedic Company* of Chicago, has appointed Sheldon Brown to the post of President and General Manager. Mr. Brown took over the new office May 31. Wally Baskovich, former owner, has sold control of the firm to Mr. Brown.

- The New England Council of OALMA (Region I) has named *Howard Mooney* as Librarian for the Region. He and *John Buckley* of Providence are a two-man committee on Education. They will review books and other articles and make them available to apprentices and members of the Region.

- *The J. E. Hanger Company of Pittsburgh*, broke ground for its new building May 1. Karl Barghausen reports that they will have 4700 square feet of space and ample parking space. The new building which is located at 34th and Liberty streets, will be ready in September.