

A PROPOSED NOMENCLATURE FOR LIMB PROSTHETICS

Hector W. Kay

This report reflects decisions made at two 1974 meetings of the Task Force on Standardization of Prosthetic-Orthotic Terminology, one on February 21 at Rancho Los Amigos Hospital, Inc., in Downey, California, and the other on July 9 at the Rehabilitation Institute of Chicago, Illinois. Jacquelin Perry, M.D., is the General Chairman of the Task Force; Paul R. Meyer, Jr., M.D., and Robert G. Thompson, M.D., were Acting Chairmen, respectively, at the two sessions under discussion, which dealt primarily with prosthetics matters. Present at both meetings were Task Force members; liaison representatives from the prosthetics education institutions; the American Academy of Orthotists and Prosthetists; the American Board for Certification in Orthotics and Prosthetics, Inc.; the American Orthotic and Prosthetic Association; and the Veterans Administration. A list of participants is appended to this report.

The Task Force on Standardization of Prosthetic-Orthotic Terminology, established by the Committee on Prosthetic-Orthotic Education (CPOE), National Academy of Sciences—National Research Council, with Jacquelin Perry as Chairman met on January 21, 1971. At this initial meeting both Herbert W. Warburton, on behalf of the American Orthotic and Prosthetic Association—American Board for Certification (AOPA-ABC), and Anthony Staros for the Veterans Administration presented reasons for the development of a standardized prosthetics

and orthotics nomenclature. Some of the needs advanced were:

- The establishment of bases for prices of devices in connection with Medicare, Medicaid, and similar programs. Proposed computerization of government billing information reinforced the need in this area.
- The elimination of problems resulting from inconsistencies in nomenclature as they affect examinations for certification of prosthetists and orthotists.
- Consistency in the use of orthotics terms in the field, in clinical and educational situations, and in Volume 1 of the *Orthopaedic Appliances Atlas* now being rewritten.
- Development of a glossary of prosthetics and orthotics terms in response to a suggestion made by the International Society for Prosthetics and Orthotics (ISPO). The proposed glossary should lend itself to translation into other languages, make maximum use of Latin and Greek terms, and avoid "Americanisms."
- Completion of a VA project to standardize nomenclature for preparation of contracts, for control of statistical information, and for use in coding, filing, and retrieving numerous documents and other types of literature stored by the Veterans Administration.

The Task Force has met on a continuing basis, usually once or twice a year, and has made major progress in the area of orthotics nomenclature. As a result of the Task Force's efforts a new set of terms—actually acronyms—has been developed, and this language is already being used extensively. The basic principle of the orthotics nomenclature is essentially simple, being that of categorizing orthoses by the joints they encompass. Thus, an "FO" (foot orthosis) is one which pertains to the joints of the foot; an "AFO" (ankle-foot orthosis) encompasses the ankle as

¹Assistant Executive Director, Committees on Prosthetics Research and Development and Prosthetic-Orthotic Education (CPRD-CPOE), National Academy of Sciences, Washington, D.C. 20418.

well as the foot; and a "KAFO" (knee-ankle-foot orthosis) spans the knee as well as the ankle and foot, etc. This new orthotics nomenclature has now been incorporated into technical analysis forms for the upper and lower limbs and the spine; a prescription procedure; and computerized billing procedures. The nomenclature is also being included in the revision of Volume I of the *Orthopaedic Appliances Atlas* now in process, one of its applications being to provide a basis for the description of orthotic components and systems for the upper limb, lower limb, and spine. Cognizance of the new system is also taken

in the revision of descriptors, or key words, for the Winnipeg Information Retrieval System. A comprehensive report covering the applications of the new orthotics nomenclature is in preparation and will be published in the near future.

Despite the marked progress made with the standardization of orthotics nomenclature, very little progress was made with regard to the standardization of prosthetics terms. The reasons for the lack of progress in the prosthetics aspect of the Task Force's assignment probably were:

- Prosthetics nomenclature was much less confusing than was the case in orthotics when the

TABLE I. AMPUTATION LEVELS—UPPER LIMB

<i>New Terms (with Abbreviations)</i>	<i>Current Terms</i>
Shoulder (Sh), complete	Forequarter
Arm (Arm), ¹ complete	Shoulder disarticulation
Arm (Arm), ¹ partial ² (upper 1/3)	Short (upper-third) AE
Arm (Arm), ¹ partial ² (middle 1/3)	Medium (mid-third) AE
Arm (Arm), ¹ partial ² (lower 1/3)	Long (lower-third) AE
Forearm (Fo), ¹ complete	Elbow disarticulation
Forearm (Fo), ¹ partial ² (upper 1/3)	Short (upper-third) BE
Forearm (Fo), ¹ partial ² (middle 1/3)	Medium (mid-third) BE
Forearm (Fo), ¹ partial ² (lower 1/3)	Long (lower-third) BE
Carpal (Ca), complete	Wrist disarticulation
Carpal (Ca), partial	WD, with some carpals still present
Metacarpal (MC), complete	} Partial-hand amputations, usually without precise differentiation.
Metacarpal (MC), partial	
Phalangeal (Ph), complete	
Phalangeal (Ph), partial	

(For amputations involving the metacarpals and the phalanges, detail can be provided as desired by use of the standard numbering system, e.g., an amputation at the MCP joints of the ring and little fingers would be designated as "Ph, 4, 5, complete"; an amputation of the same two fingers at the PIP joints would be "Ph, 4, 5, partial.")

¹To identify the level when the amputation was close to a joint, it was agreed that the epiphyseal growth plate or scar would be the reference line, e.g., an amputation at or above the proximal humeral growth plate would be "arm, complete"; one a little lower than this would be "arm, partial (or upper 1/3)."

²"Partial arm" would be the new general term for above-elbow (AE); "partial forearm" for below-elbow (BE).

Task Force began its meetings. Thus, there has been less incentive or urgency to change the current terminology, which many people find quite acceptable.

- Following the success achieved in the revision of the orthotics nomenclature, an attempt was made to follow the same organizational pattern in prosthetics. It took two or three unproductive trials to convince the group that the approach used in orthotics was not applicable to prosthetics.

Conversely, numerous individuals continued to be disturbed by the fact that such terms as

“knee disarticulation,” “knee exarticulation,” “through knee,” “Gritti-Stokes,” and “Stokes-Gritti” were all applied to amputations which were or appeared to be essentially the same from a functional standpoint. Moreover, the needs of the Veterans Administration and other purchasers of prosthetic devices and services for a nomenclature which described components in functional terms rather than brand names continued to exist, and so the search for a standardized prosthetics nomenclature continued.

At the February 1974 meeting of the group a

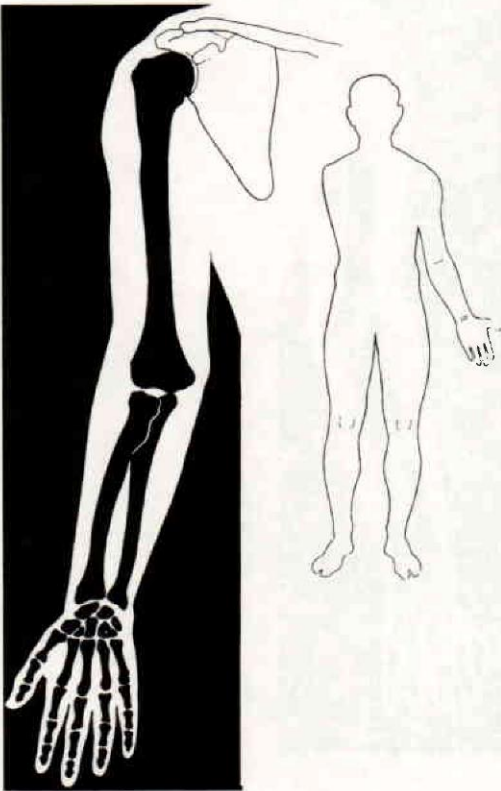


Fig. 1. An Arm, complete amputation (shoulder disarticulation).

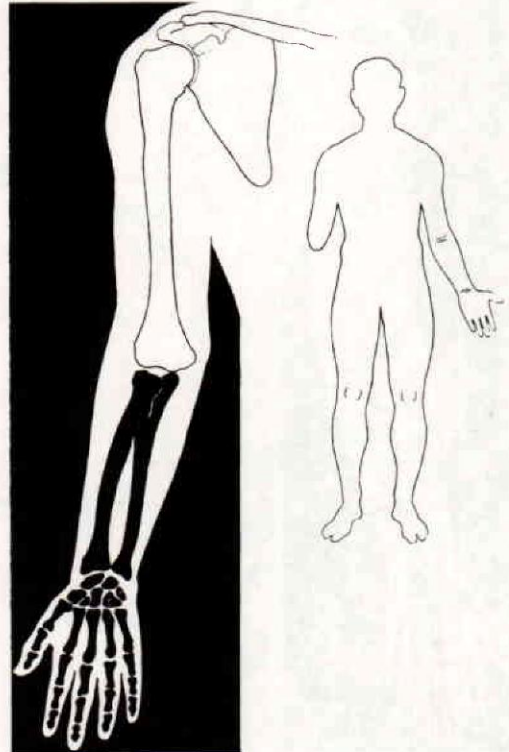


Fig. 2. An Fo, complete amputation (elbow disarticulation).

fresh approach to the problem was made along two lines:

- Amputation Levels and Prosthesis Types

Here the incentive was a report on a new terminology for the classification of congenital limb deficiencies developed at an international workshop held in Dundee, Scotland, in June 1973. It appeared likely that this new terminology would be accepted internationally. In the new system for the classification of limb deficiencies, all defects were classified under one or two major

categories—transverse or longitudinal. The transverse deficiencies present as amputation-like stumps, and prosthetics management is essentially the same as with surgical amputations deriving from trauma or disease. After extensive consideration and discussion, therefore, the Task Force decided to adopt the nomenclature for transverse congenital defects in designating amputation levels for non-congenital amputations. The present report describes this proposed new nomenclature. It has been designated as Part I of the Task Force's recommendations on prosthetics nomenclature.

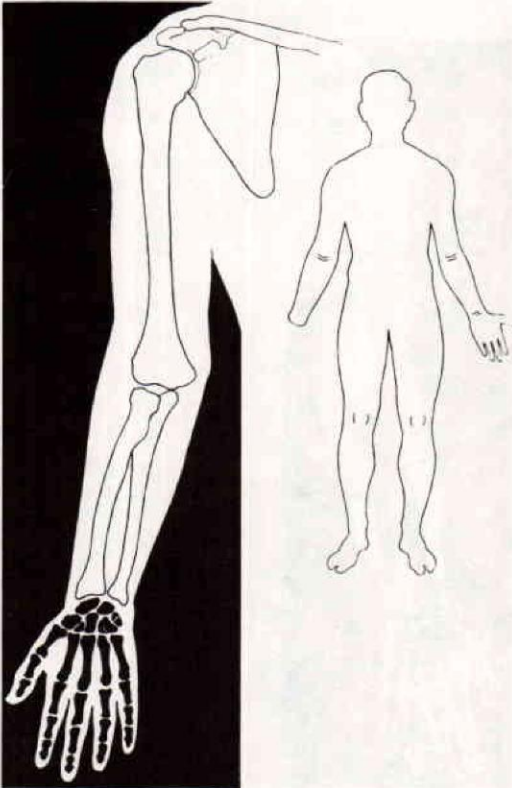


Fig. 3. A Ca, complete amputation (wrist disarticulation).

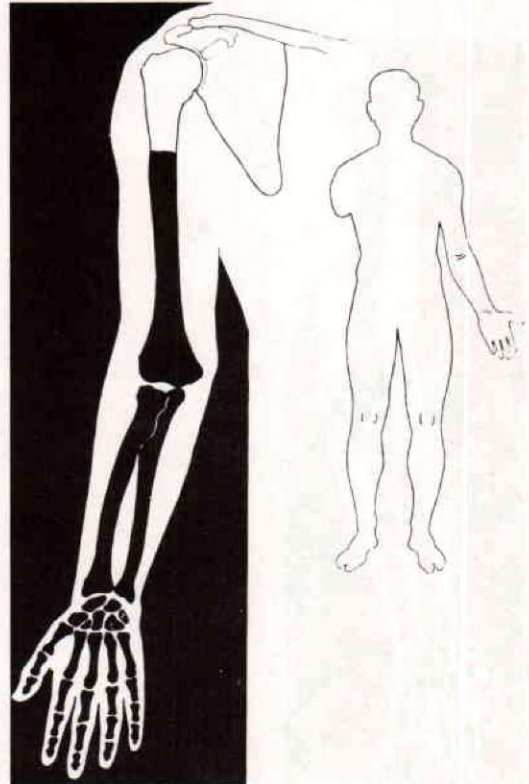


Fig. 4. An Arm, partial or upper 1/3 amputation (short above-elbow).

- Terminology of Prosthetic Components Based on Function

Here the Task Force simply took each component of a prosthesis—socket, knee joint, ankle joint, etc.—and attempted to classify each in functional yet relatively simple terms. The outcome of this work is being written up as Part II of the Task Force's prosthetics report.

The essence of the new system for naming transverse congenital deficiencies or surgical amputations is that the name designates the level at which the limb terminates (or the most proximal

segment that is missing). It is understood that all elements distal to the level named are also absent. For example, a short below-elbow amputation would be identified as a "forearm, upper 1/3." An elbow disarticulation or through-elbow amputation would be named "forearm, complete," thus indicating the most proximal missing portion (Table I and Figs. 1-5).

The new terminology for lower-limb amputations (with abbreviations) and the equivalent levels in current terms as shown in Table II and illustrated in Figures 6-10 are in conformity with the format previously presented for upper limbs.

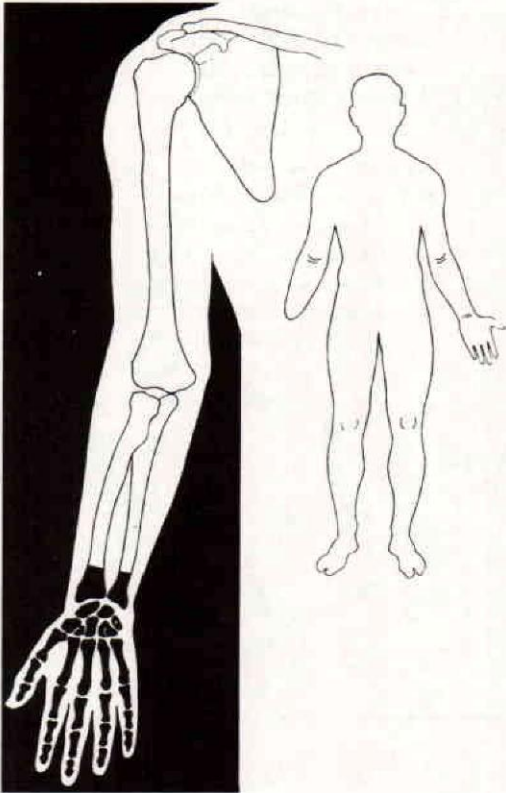


Fig. 5. An Fo, partial or lower 1/3 amputation (long below-elbow).

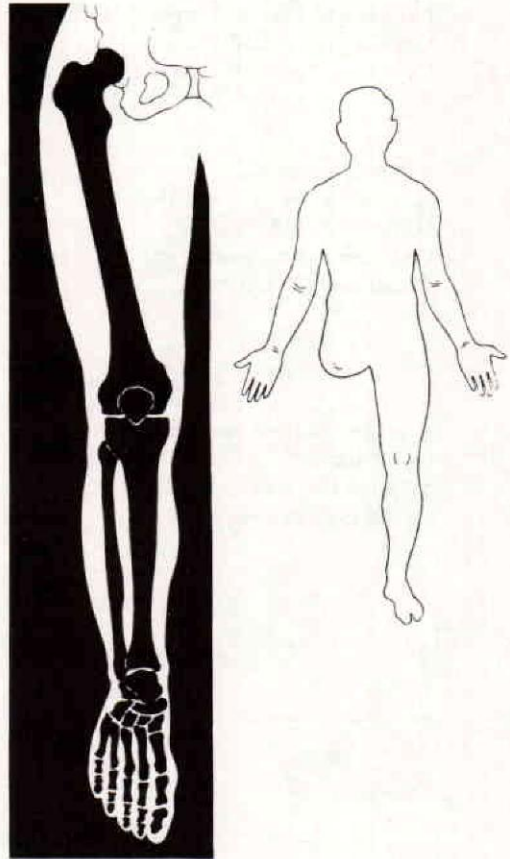


Fig. 6. A Th, complete amputation (hip disarticulation).

TABLE II. AMPUTATION LEVELS—LOWER LIMB

<i>New Terms (with Abbreviations)</i>	<i>Current Terms</i>
Pelvic (Pel), complete	Hemicorporectomy
Hip (Hip), complete	Hemipelvectomy
Thigh (Th), ¹ complete	Hip disarticulation
Thigh (Th), ¹ partial ² (upper 1/3)	Short (upper-third) AK
Thigh (Th), ¹ partial ² (middle 1/3)	Medium (mid-third) AK
Thigh (Th), ¹ partial ² (lower 1/3)	Long (lower-third) AK
Leg (Leg), ¹ complete	Knee disarticulation
Leg (Leg), ¹ partial ² (upper 1/3)	Short (upper-third) BK
Leg (Leg), ¹ partial ² (middle 1/3)	Medium (mid-third) BK
Leg (Leg), ¹ partial ² (lower 1/3)	Long (lower-third) BK
Tarsal (Ta), complete	Ankle disarticulation or Syme's amputation
Tarsal (Ta), partial	Known collectively as partial foot amputations, some specifics being:
Metatarsal (MT), complete	
Metatarsal (MT), partial	
Phalangeal (Ph), complete	
Phalangeal (Ph), partial	
	Chopart's amputation
	Forbe's amputation
	Hancock's amputation
	Hey's amputation
	Lisfranc's amputation
	Pirogoff's amputation

(For amputations involving the metatarsals and the phalanges, additional detail can be provided by using the standard numbering system for the elements of the individual rays.)

¹When the amputation was close to a joint, the epiphyseal growth plate or scar would be the reference line, e.g., an amputation just above the level of the distal femoral growth scar would be "Th, partial (or lower 1/3)"; one at the scar or between the scar and joint would be "leg, complete."

²"Partial thigh" would be the new general term for above-knee (AK); and "partial leg" for below knee (BK).

PROSTHETICS TYPES

During the course of the discussion on nomenclature to describe amputation levels, it became apparent that the same nomenclature should be used to identify the prostheses which would be fitted to these levels. For example, a complete leg prosthesis would be fitted to a "leg, complete" (or knee disarticulation) amputation (Figs. 11-13).

NEXT STEPS

AMPUTATION LEVELS

Following adoption of the new nomenclature to designate amputation levels and types of prostheses, the Task Force made three additional recommendations:

- That an article describing the new nomenclature be developed for possible publication in *Orthotics and Prosthetics* and other journals.³

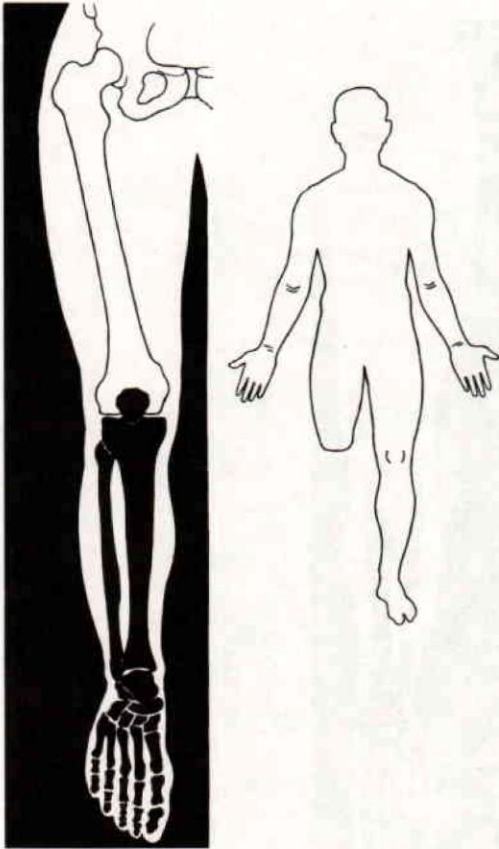


Fig. 7. A Leg, complete amputation (knee disarticulation).

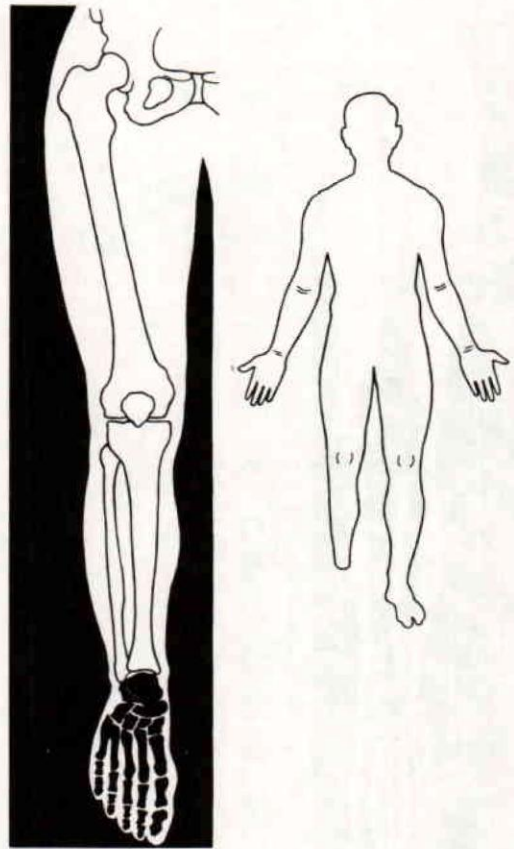


Fig. 8. A Ta, complete amputation (ankle disarticulation).

³This document was prepared in response to this request.

- That from six to ten prosthetics facilities with large case loads be asked to field-test the new prosthetics nomenclature. (This recommendation is now being implemented and the results will be reported at a later date.)

- That the article describing the new nomenclature for amputation levels and prosthesis types (and the results of the field study when available) be transmitted to the International Society for Prosthetics and Orthotics for consideration by that body's Subcommittee on Orthotics and Prosthetics Nomenclature at its meeting in October 1974.

FUNCTIONAL DESCRIPTIONS

Similarly it was recommended that the Task Force's work on the functional description of prosthetic components be written for publication, field-tested, and referred to the ISPO Subcommittee on Orthotics and Prosthetics Nomenclature. Implementation of these recommendations is now under way (see the following article by E. E. Harris).

SUMMARY

In the course of two meetings held in 1974, the Task Force on Standardization of Prosthetic-Orthotic Terminology of CPRD-CPOE endorsed a new prosthetics nomenclature to designate 1)

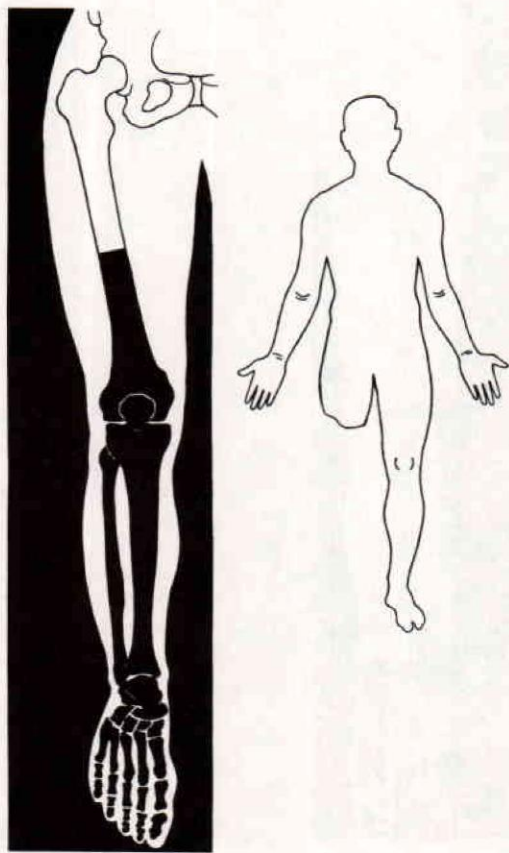


Fig. 9. A Th, partial or middle 1/3 amputation (medium above-knee).

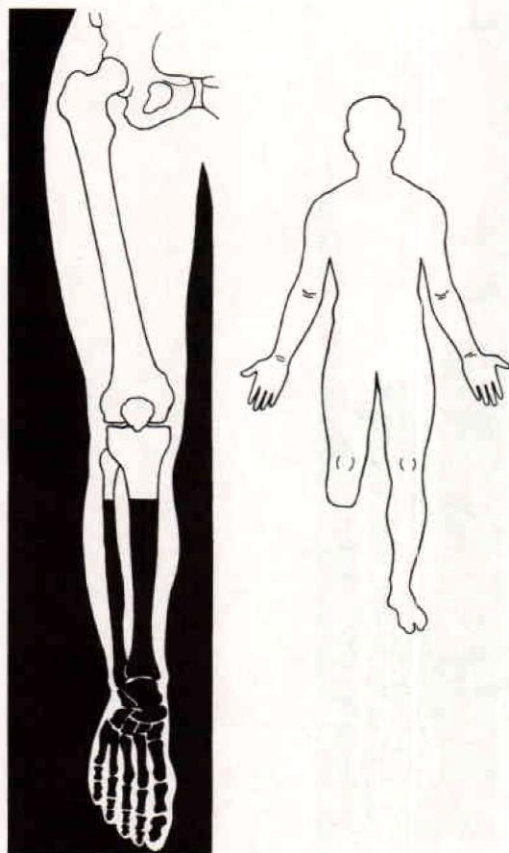


Fig. 10. A Leg, partial or upper 1/3 amputation (short below-knee).

amputation levels, 2) prosthesis types, and 3) the functional description of components.

In the first two categories the new nomenclature (as described in this report) is essentially identical with the terminology developed by the ISPO Subcommittee on Nomenclature and Classification in Congenital Limb Deficiency for the classification of children's transverse congenital deficiencies. The recommended new nomenclature is being field-tested in selected facilities in North America.

A detailed report on the Task Force's recommendations concerning the functional description of prosthetic components has been prepared and is published in this issue of *Orthotics and Prosthetics*.

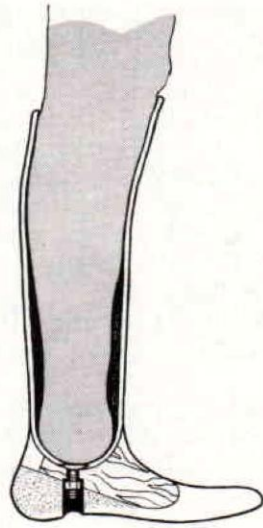


Fig. 12. A Tarsal, complete, prosthesis for a complete tarsal amputation.



Fig. 11. A Leg, complete, prosthesis for a complete leg amputation.



Fig. 13. A Thigh, middle 1/3, prosthesis for a middle 1/3 thigh amputation.

ACKNOWLEDGMENTS

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PARTICIPANTS

(In one or both of the 1974 Meetings of the Task Force on Standardization of Prosthetic-Orthotic Terminology.)

Perry, Jacquelin, M.D. (Chairman), Chief, Research and Development Group, Kinesiology Service, Rancho Los Amigos Hospital, Inc., Downey, California.

Meyer, Paul R., Jr. M.D., (Acting Chairman), Assistant Professor of Orthopaedic Surgery, Northwestern University Medical School, Chicago, Illinois.

Thompson, Robert G., M.D. (Acting Chairman), Associate Professor of Orthopaedic Surgery, Northwestern University Medical School, Chicago, Illinois.

Billock, John N., Research Prosthetist, Prosthetic Research Laboratory, Northwestern University Prosthetic-Orthotic Center, Chicago, Illinois.

Bray, John J., Director, Training Program in Prosthetics-Orthotics Education, University of California at Los Angeles Rehabilitation Center, Los Angeles, California.

Compere, Clinton L., M.D., Program Chairman, Northwestern University Prosthetic-Orthotic Center, and Professor of Orthopaedic Surgery, Northwestern University Medical School, Chicago, Illinois.

Cortright, Everett S., Staff Assistant, Prosthetics Research and Development, Department of Medicine and Surgery, Veterans Administration, Washington, D. C.

Fannin, Robert E., Columbus Orthopaedic Appliance Co., Columbus, Ohio.

Fryer, Charles M., Director, Prosthetic-Orthotic Center, Northwestern University Medical School, Chicago, Illinois.

Harris, E. E., M.R.C.S., Staff Surgeon, Committees on Prosthetics Research and Development and Prosthetic-Orthotic Education (CPRD-CPOE), National Research Council, Washington, D. C.

Hayes, Robert F., President, Starkey Artificial Limb Co., Inc., West Springfield, Massachusetts.

Kay, Hector W., Assistant Executive Director, Committees on Prosthetics Research and Development and Prosthetic-Orthotic Education (CPRD-CPOE), National Research Council, Washington, D. C.

Kolanowski, Stanley J., Technical Information Specialist, Research Center for Prosthetics, Veterans Administration, New York, New York.

Lewis, Earl A., Assistant Director, Research Center for Prosthetics, Veterans Administration, New York, New York.

McCollough, Newton C., III, M.D., Director of Rehabilitation, Department of Orthopaedics and Rehabilitation, University of Miami School of Medicine, Miami, Florida.

Murphy, Eugene F., Ph. D., Director, Research Center for Prosthetics, Veterans Administration, New York, New York.

Nelson, Peter J., Project Engineer, Library, Prosthetic-Orthotic Research and Development Unit, Health Sciences Centre, Winnipeg, Canada.

Peizer, Edward, Ph. D., Assistant Director, Veterans Administration Prosthetics Center, New York, New York.

Pellicore, Raymond, M.D., Clinical Assistant Professor of Orthopaedic Surgery, Abraham Lincoln School of Medicine, University of Illinois, Chicago, Illinois.

Simons, Bernard C., Director, Prosthetics and Orthotics Division, Rehabilitation Medicine, University Hospital, University of Washington, Seattle, Washington.

Snell, Ralph R., Snell's Limbs and Braces, Memphis, Tennessee.

Springer, Warren, Assistant Coordinator, Prosthetics and Orthotics, New York University Post-Graduate Medical School, New York, New York.

Staros, Anthony, Director, Veterans Administration Prosthetics Center, New York, New York.

Storrs, Ralph A., General Manager, Pope Brace Company, Kankakee, Illinois.

Zettl, Joseph H., Director, Prosthetics Research Study, University of Washington, Seattle, Washington.