# Newsletter

## Prosthetics and Orthotics Clinic

Vol. 6, No. 1 1982 Winter (Issued Quarterly)


# Endoskeletal Prostheses; Cause for Reflection


Charles H. Pritham, C.P.O.*


American prosthetists have now accumulated a decade of experience with endoskeletal modular prostheses. In light of this experience, it seems logical to reassess the criteria and priorities that guided the development of this method of providing prosthetic care. If one were to choose two events more than others that marked the beginning of the "new era," they would have to be the introduction in the Fall of 1970[1] of the Otto Bock endoskeletal system and the convening in March 1971 by CPRD of a workshop entitled, "Cosmesis and Modular Limb Prostheses"[2]. Few are unfamiliar with the features of the Otto Bock system and they hardly need to be commented on here. Suffice it to say that the system undoubtedly represents the highest possible physical expression of the modular endoskeletal concept. The second development referred to, the CPRD workshop, is probably less familiar and merits closer attention, especially so since the report from the workshop states the philosophy of the endoskeletal modular approach to limb prosthetics.

That philosophy finds its fullest and most concise exposition in the remarks of D.S. McKenzie, M.D.[2], Table I. As he saw it, components would be produced by a central manufacturer and shipped to outlying fitting centers through the aid of an elaborate and well-developed inventory system. A patient would essentially be issued with a basic complement of components necessary to meet his functional demands and this, with periodic replacements for update and repair, would constitute his prosthesis for the rest of his ambulatory life. Capability for modifying alignment would be built into the prosthesis, all components would be completely interchangeable, and all modifications, minor or major, would be effected while the patient waited. The prosthesis was to be fully cost-competitive with a conventional prosthesis, no heavier, and offer superior cosmesis. The only custom-made or "bespoke" component of the prosthesis was to be the socket, although the possibility of prefabricated and readily adjustable sockets was envisaged. The total delivery system was to be so all-encompassing and versatile that it would be only occasionally necessary to fabricate an "on-off" prosthesis. In addition, he envisaged the development of smaller components for children and of lighter weight components for geriatrics.

In other sections of the report, the CPRD workshop recommended improvements in cosmetic covers and prosthetic skins and development of endoskeletal upper limb prostheses employing center-pull cables and external power. Indeed, so sanguine were the attendees at the workshop about the future of endoskeletal modular limb prostheses that they essentially recommended that all future development be done in this context.

Comparison of expectation with reality is very difficult in this situation as there is very little in the literature that describes field experience with endoskeletal modular prostheses. What information there is[3], is largely anecdotal but it suggests that the problems encountered focus on weight and poorer durability than conventional exoskeletal prostheses. The upshot is that endoskeletal prostheses are fundamentally considered luxury items to be prescribed for light-activity, appearance-conscious wearers. Wider-spread acceptance has primarily occurred with hip disarticulation prostheses due to ease of fabrication and favorable weight competitiveness compared to conventional means of construction.

It seems fair to conclude, therefore, that anyone who subscribed to the criteria developed in the CPRD workshop of 1971 would be disappointed with the rate of acceptance and continued improvements in endoskeletal prosthetic systems during the past decade. It is convenient to ascribe this failure to intransigent con-


*Formerly Director, Prosthetic and Orthotic Laboratory, Rehabilitation Engineering Center, Moss Rehabilitation Hospital, Philadelphia, PA. Presently Manager, Snell's of Louisville, Louisville, KY

servatism on the part of the third-party payers and of individual prosthetists. Perhaps a more proper explanation can be found in the precepts that shaped the development of the prostheses themselves.

Endoskeletal modular prosthetic systems are intended by their very nature to encompass the needs of the vast majority of amputees. In effect, they represent a series of compromises: strong enough for all but the most punishing of patients and yet light enough for all but the most feeble of patients, etc. Anything or anyone who attempts to be all things to all men generally ends up satisfying no one. In this regard a fundamental fact about the nature of the amputee population needs to be acknowledged. The primary cause of amputation in western society is disease and this primarily affects the older age group. Comparison of amputee censuses[4] bears this out. Moreover, with declining birth rates and increased longevity, the age of the population in general is shifting to the higher decades. The one trend reinforces the other and we may confidently expect in the years ahead that even more of our patients will be 65 or over with circulatory disorders and multiple involvement. It is widely admitted that the needs of the geriatric amputee are different from the needs of the younger amputee. Sophisticated knee and ankle function become less important, and light weight, comfort, and ease of donning become more important. In effect, the nature of the amputee population and the precepts guiding development of prostheses have changed, but prosthetists and developers of prostheses have been slow to recognize the change. In part this is due to the fact that the needs of geriatrics are mundane and prosaic as compared to the challenge offered in designing a high performance, sophisticated prosthesis for a young vigorous user who uses a prosthesis maximally and thus offers maximum positive reinforcement to the designer.

Another matter that deserves consideration is the concept that it should be readily possible by changing components or alignment to adapt the prosthesis to the changing needs of the amputee and that the same prosthesis that serves him 24 hours after surgery will still be suitable 24 months after surgery. Reference here is made to Table 1 where the different stages in the experience of an amputee are listed vertically and the various possible features of a prosthesis are listed horizontally. Advocates of the first viewpoint, such as D.S. McKenzie, would have it that at any given moment in the experience of an amputee, all possible features are present. Advocates of the second view would have it that for the sake of expediency, low weight, cost, durability, and other considerations, only those features absolutely necessary at any one stage of development would be present—in effect that form follows function. For example, while quick-disconnect of the pylon and foot from the socket is suitable and even necessary in an immediate post-operative prosthesis (I.P.O.P.), it is unnecessary and a possible source of trouble in a definitive prosthesis. An advocate of this second point of view might fill out the table much as it has been done.

Central to this discussion is the question of what is an acceptable range of alignment adjustability at any one stage. Few would dispute that full range of alignment adustability is necessary in I.P.O.P.s and temporary prostheses. Less unanimity greets the statement that it should be present in definitive prostheses. Some would maintain that it is not necessary in definitive prostheses

| | Features of Prosthesis | | | | | |
|---|---|---|---|---|---|---|
| **Prosthesis to be fit, as a factor of time subsequent to amputation** | **Quick Disconnect** | **Interchange of Components** | **Full Alignment Adjustability** | **Minimum Alignment Adjustability** | **Temporary Cosmesis** | **Durable Cosmesis** |
| **I.P.O.P.** 0 - 6 weeks | X | | X | | | |
| **Short-term temporary** 6 wks. - 3 mo. | | X | X | | | |
| **Long-term temporary** 6 wks. - 6 mo. | | X | X | | X | |
| **Definitive** The first to be fit subsequent to a temporary prosthesis and to have a suitable life-span of 12 - 18 mo. Subsequent definitive prostheses to be changed every 2 - 3 years | | X | | X | | X |

TABLE 1

and that, in any event, some range of adjustability (height, transverse rotation of foot, and in some cases, of the knee) is present and that this is all that is necessary in the vast majority of cases. They would further maintain that any increase in alignment adjustability represents an unacceptable increase in weight and decreases in reliability. Moreover, they would have it that should you have to change any of the other factors of alignment, something is so seriously wrong as to warrant starting over again completely from scratch. This second point of view is exemplified most strikingly in the Adaptive Fixation Prosthesis (A.F.P.) system of Medical Center Prosthetics of Houston, Texas.

There is one final topic that merits discussion and that is the matter of cosmesis. Current techniques of providing cosmetic covers entail the carving of internal and external contours and are expensive and time consuming. Moreover, it is questionable as to whether or not the results merit the effort, as the covers for all levels of amputation are flimsy. For above-knee and higher, the one-piece covers inhibit function. Support hose currently used as prosthetic skins are even less durable, yet attempts to provide stronger skins have been defeated by the need to accommodate the extreme motion of the knee. (It remains to be seen whether it will be possible to devise successful one-piece cosmetic covers for above-knee prostheses with current technology or if we will eventually sacrifice some of the cosmesis of one-piece covers and adopt two-piece covers and improved durability.) Again, the work of Medical Center Prosthetics and their technique for foaming cosmetic covers in place are noted.

In conclusion, it is possible to pose a number of questions:

1. Do available endoskeletal prosthetic systems meet the needs of the majority of amputees as well as do exoskeletal prostheses?

2. If they do, why are they not used with greater frequency than casual impression seems to imply that they are?

3. Is it desirable to use a common family of endoskeletal components at all stages of an amputee's progress post-amputation or can an increase in desirable qualities be achieved by more specifically matching the available components and the individual's progress?

4. Is it desirable and necessary to have full capability for alignment adjustability present in a definitive prosthesis or can some adjustability be sacrificed to decrease weight and heighten reliability?

5. If cosmetic covers were better than they are, would more endoskeletal prostheses be prescribed? Or is it that if more endoskeletal prostheses were prescribed, better cosmetic covers would be developed?

The present group of endoskeletal systems (with one exception) can be considered as first generation systems. Extensive experience has been gained with them and it seems reasonable to assess this experience with an eye towards developing criteria for second generation systems. Further, it seems only just that those personnel who have day-to-day experience be canvassed in developing these criteria.


**References**

1. *Below-Knee and Above-Knee Prostheses*, Committee on Prosthetic Research and Development, National Academy of Sciences, Washington, D.C. 1973, page 21.
2. *Cosmesis and Modular Limb Prostheses*, Committee on Prosthetic Research and Development, National Academy of Sciences, Washington, D.C. 1971.
3. Wilson, A. Bennett, Jr., "Lower Limb Modular Prostheses, A Status Report," *Orthotics and Prosthetics*, Vol. 29, No. 1, pp. 23-32, March 1975.
4. Kay, Hector W. and Newman, June D., "Amputee Survey 1973-74, Preliminary Findings and Comparisons," *Orthotics and Prosthetics*, Vol. 28, No. 2, pp. 27-32, June 1974.


## Meetings and Events

**Please notify the National Office immediately concerning additional meeting dates. It is important to get meeting notices in as early as possible. In the case of Regional Meetings, check with the National Office prior to confirming dates to avoid conflicts in scheduling.**

**1982, February 4—6,** AAOP Annual Meeting and Round-up Seminar, Fairmont Hotel, New Orleans, Louisiana.

**1982, March 2—6,** Boston Scoliosis Brace Course, sponsored by The Children's Hospital Medical Center of Boston. Course site: Cincinnati, Ohio.

**1982, April 16—17,** AOPA Region I Meeting, Marriott Hotel, Worcester, Massachusetts.

**1982, April 29—May 2,** AOPA Regions VII, VIII, X and XI Combined Meeting, Alameda Plaza, Kansas City, Missouri.

**1982, May 6—9,** AOPA Region IV Meeting, Radisson Plaza Hotel, Nashville, Tennessee.

**1982, May 10—13,** Advanced Course on Below-Knee and Through-Knee Amputations and Prosthetics, ISPO, Copenhagen, Denmark.

**1982, May 27—29,** AOPA Region V Meeting, Charleston House, Charleston, West Virginia.

**1982, June 4—6,** AOPA Region IX, COPA, AAOP California Chapters Combined Annual Meeting, Harrah's, South Lake Tahoe, Nevada.

**1982, June 10—13,** AOPA Regions II and III Combined Meeting, Claridge Hotel, Atlantic City, New Jersey.

**1982, June 17—20,** AOPA Region VI and AAOP Midwest Chapter Combined Meeting, Indian Lakes Resort, Bloomingdale, Illinois.

**1982, September 8—10,** Second Annual Advanced Course of Lower Extremity Prosthetics, Nassau County Medical Center, East Meadow, New York.

**1982, October 17—24,** AOPA National Assembly, Shamrock Hilton, Houston, Texas.

**1983, May 12—14,** AOPA Regions II and III Combined Meeting, Colonial Williamsburg, Williamsburg, Virginia.

**1983, June 3—5,** AOPA Region IX, COPA, AAOP California Chapters Combined Annual Meeting, Harrah's, South Lake Tahoe, Nevada.

# EDITORIAL

The lead article by Charles Pritham in this issue of the Newsletter obviously has been prepared after a good deal of thought. It certainly should stimulate action by designers and manufacturers.

It may be helpful to point out that the stimulus for the development of presently available endoskeletal prostheses, at least in the United States, came from the immediate postoperative fitting and early fitting programs that were started in the early 1960's, and the idea of using the same hardware in the definitive prosthesis seemed logical, especially in view of the great profusion of plastic foams and coatings that were being introduced about that time.

With respect to immediate postoperative fitting and early fitting, the various endoskeletal designs without the cosmesis portion have served quite well, although some improvements could probably be brought about if designers were more aware of the shortcomings of present designs.

Even though the cosmetic treatment leaves a lot to be desired, present designs have a legitimate place as definitive prostheses for certain patients when fabricated and used correctly. Unfortunately, we have no specific rules for matching patients with the components available. However, certain facts do exist that should be borne in mind during the prescription process:

1. Saving of weight is proportional to the total volume of the prosthesis. For example, the weight saved in a hip-disarticulation prosthesis is far greater, percentage-wise, than is the case in a below-knee prosthesis. For the same reason, a prosthesis for a tall person will be relatively lighter than one for a short person.
2. In even the best designs, the alignment mechanisms have a tendency to loosen when the prostheses are subjected to heavy, arduous duty.
3. For the prosthesis to continue to have a pleasing appearance and to function properly, the patient has to take better care of the prosthesis than is usually the case.
4. Components, especially knee units, can be exchanged readily.
5. In most designs, alignment can be changed without too much difficulty at any point in the life of the prosthesis.

For the hip-disarticulation case, the endoskeletal system is the prosthesis of choice, because it is far lighter than the more conventional designs, and hip-disarticulation patients are not usually heavy-duty users. Some wearers do, however, become heavy-duty users requiring an endoskeletal system.

For the same reasons, but to a slightly lesser degree, endoskeletal designs are excellent choices for definitive prostheses for above-knee amputees with a short residual limb.

For above-knee and long above-knee amputees, extra care must be used when prescribing the definitive prosthesis. The size, weight, vocation, avocation, and intelligence of the patient must all be considered since AK amputees can be quite active. Perhaps the most important reason for prescribing an above-knee endoskeletal prosthesis of the Otto Bock and United States Manufacturing Company (USMC) type is the desire for cosmesis. The USMC-VA Multiplex, of course, has certain functional advantages, and the Orthopedic Hospital of Copenhagen design is about the only desirable prosthesis available for the knee-disarticulation case. In both instances the cosmetic treatment is marginally acceptable.

When prostheses are indicated for a bilateral AK patient, endoskeletal designs should be considered for light-weight features and because the endoskeletal prostheses cause less wear and tear on clothing. Furthermore, bilateral AK patients are not apt to be very active.

In the case of below-knee prostheses, the advantages of present endoskeletal designs for definitive prostheses do not outweigh the disadvantages as much as in the AK case, but when a patient prefers a "soft" exterior, the endoskeletal design can be used. Weight can be reduced materially by replacing the adjustable pylon with an aluminum tube. External film covering the foam can be strong yet sufficiently flexible.

Because the endoskeletal designs presently available for upper-limb amputees do not usually accommodate a harness-operated elbow unit, they are seldom used. However, when cosmesis is the primary goal, an endoskeletal system is the prosthesis of choice, especially for interscapulothoracic and shoulder-disarticulation cases where light weight is mandatory.

**Newsletter**
**Prosthetics and Orthotics Clinic**

**Editor:** H. Richard Lehneis, Ph.D., C.P.O.
**Editorial Board:** Charles Epps, Jr., M.D.
Charles Pritham, C.P.O.
Tamara Sowell, R.P.T.

**Managing Editor:** Barbara Muller
**Assistant Editor:** Helene M. Murphy
**Layout and Design:** Christopher R. Colligan

**Prepared by the American Academy of Orthotists and Prosthetists, 717 Pendleton St., Alexandria, VA 22314. Second class postage paid at Alexandria, VA and additional mailing offices. Subscriptions: Domestic: $10 per year. Foreign: $11 per year.**

No doubt many clinicians have been disappointed with results obtained with definitive endoskeletal prostheses because of early experiences with amputees unsuited for this type of artificial limb. Perhaps another reason for not prescribing as many endoskeletal prostheses as might be the case, is the use of inadequate fabrication and maintenance procedures. It is of the utmost importance that the attachment of the prosthesis to the socket be done in such a manner as to preclude failure at this point; extreme care must be taken in most designs in tightening the alignment components in order to preserve structural integrity under even relatively light use. Care must be taken in shaping the interior of the foam cover for above-knee and hip-disarticulation prostheses so that it will not interfere with function of the knee, yet retain its shape when not stressed. Apparently some patients are not aware that small tears in the cosmetic covering can be repaired without too much difficulty, thus prolonging the life of the covers and reducing overall expenses.

As Mr. Pritham states, the endoskeletal approach is no panacea for prosthetics. However, when careful attention is paid to patient selection, patient education, fabrication technique, workmanship, and follow-up, some of the endoskeletal designs provide advantages not to be found in more conventional prostheses, and therefore should not be considered as "luxury" items. Designers and manufacturers, without a doubt, should be encouraged to develop and produce improved or new models. A carefully conducted survey of AAOP members should certainly prove to be useful in guiding the designers and stimulating the manufacturers to support the designers.

In closing, I would like to point out that regardless of how well the designers succeed in providing components, the most critical part in the provision of prostheses still is achieving a comfortable functional socket and maintaining that fit. Research in this area is needed if we are to continue to improve our services to amputees.

Alvin L. Muilenburg, C.P.O.
Muilenburg Prosthetics, Inc.
Houston, Texas

# Management and Construction Procedure of Bilateral Split-Bucket Type Hip Disarticulation Prosthesis[1]

Peter A. Ockenfels, C.P.O.*

The patient, a 37-year-old white male, received traumatic injuries while involved in an auto accident in October 1965. Both limbs were severely crushed, and very high amputations were necessary. The physical appearance of the patient resembled that of a bilateral hip disarticulation amputee; however, closer examination and X-rays of the patient revealed that femoral neck and head were present bilaterally. The remaining skeletal structures of the femurs are approximately 3" on the left and 4" on the right side (Figure 1).

The patient was first hospitalized at the Allentown Hospital in Allentown, Pennsylvania, and then became a patient at the St. Vincent's Rehabilitation Center in Erie, Pa. There he received initial rehabilitation training and became ADL independent.

On September 29, 1967 a prosthetic prescription for a definitive prosthetic unit was written.

> "Modified bilateral hip disarticulation prosthesis with modified plastic split hip disarticulation buckets for bilateral use, Northwestern stride control hip joints, single axis knee units with positive locks and SACH feet."

The split bilateral hip disarticulation socket was prescribed with the hope that the patient would be able to advance one foot in front of the other and, consequently, walk with a semi-normal gait (taking full advantage of the remaining femurs). The stride control hip locks and positive knee locks were to give him stability during walking and stance.

### Taking of the Cast

The negative mold of the patient's body was obtained by utilizing the Northwestern Type Four Point Suspension Technique. The patient was freely suspended approximately 3 feet off the floor in a double layer of 10" nylon stockinette and the body stocking conformed snugly to the patient's body (Figure 2).

The outlines of the prosthetic socket and all bony protuberances, such as the remaining femurs, the anterior superior iliac spines, the iliac crests, and the ischial tuberosities, were carefully marked with indelible pencil. Four inch fast setting plaster-of-Paris bandages were used for the cast. A rope of plaster-of-Paris bandage was pulled in deeply proximal to the iliac crests to supply suspension of the socket.

After the plaster bandage was applied, the patient was lowered onto a stool until the ischial tuberosities were bearing moderate pressure and the patient's position was stable. Plumb lines on the anterior, posterior, and lateral midlines were drawn. The cast was then split anteriorly and posteriorly and removed from the patient's body (Figure 3).

[1] Abstracted from an article that originally appeared in the June, 1968 issue of *Orthotics and Prosthetics*.

* American Orthotic & Prosthetic Laboratory, Inc., Columbus, OH

### Filling of the Negative

The anterior and posterior openings were sealed and the negative was positioned on a table and all four vertical reference lines were aligned with a level. A ¾" pipe was positioned and aligned with the four reference lines using a special holding device. The filling of the negative proceeded in the usual manner.

After hardening of the plaster, the reference lines were punctured with an awl and marked on the top surface of the cast. The lateral reference lines were used to establish fictitious trochanters bilaterally.

These trochanters were located 1½" proximal from the distal end of the cast. A 45° triangle was cut from 1" thick plywood. The lines for positioning of the hip joints were marked by locating the plywood triangle exactly on the previously marked trochanters with the lower point anterior. The plaster-of-Paris bandage was then removed from the male mold.

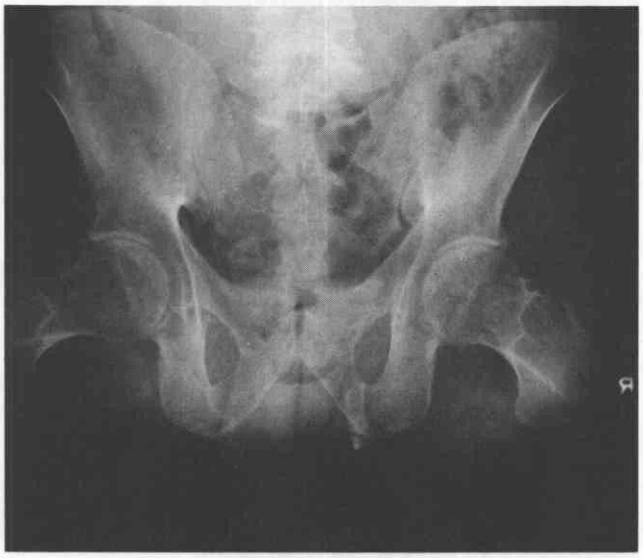

Fig 1

### Modification of the Male Mold

All reference lines punched with the awl were connected and retained. All marked bony protuberances were built up with plaster of Paris to approximately 3/8" to 1/2". Trimlines of the socket were drawn. These consisted of a proximal brim approximately ¾" below the rib cage and anterior and posterior teardrop openings, 4" by 5", connected to each other distally by a channel 1 inch wide. The cast was then smoothed and the trimlines built up and molded to a flare of approximately ¾" radius. This was for the patient's comfort.

The mold was then allowed to dry in an oven for 24 hours at a temperature of 115°F. Then it was positioned in a vise exactly 45°, using a specially milled 45° steel positioning block so that the trochanteric reference lines were vertical. The alignment of both lines was checked with a plumb line. Two cardboard cylinders, 4" in circumference and 3" high, were taped to the cast, keeping the hip joint reference lines exactly centered. Both cylinders were covered on top, and only a hole the size

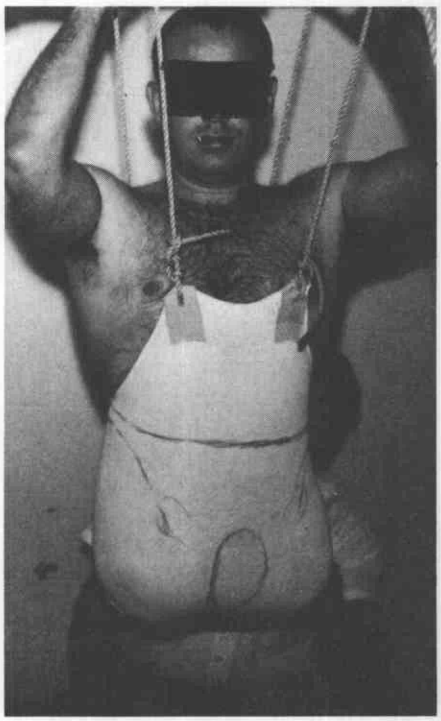

Fig 2

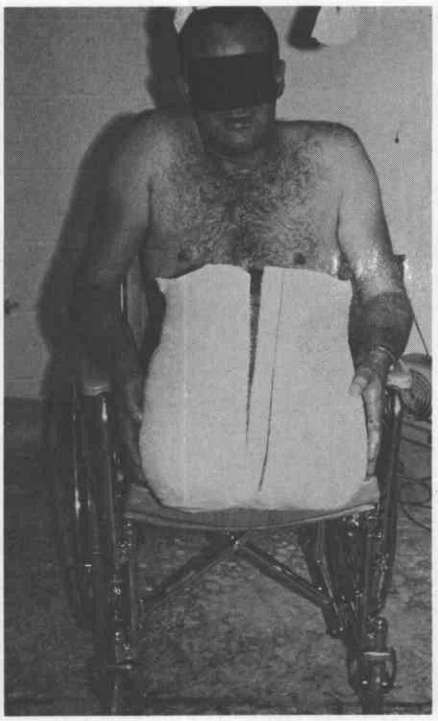

Fig 3

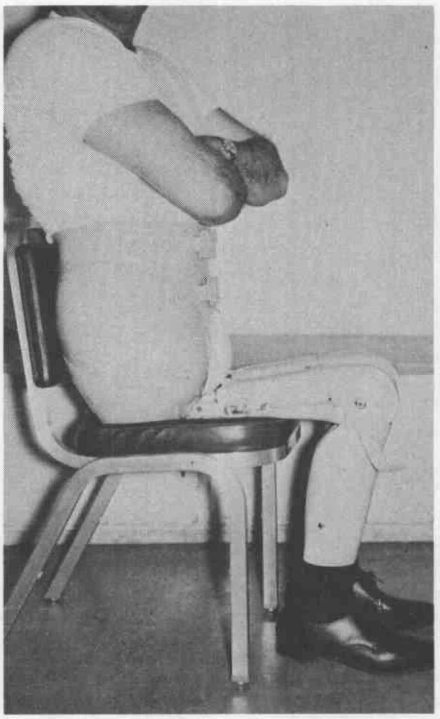

Fig 4

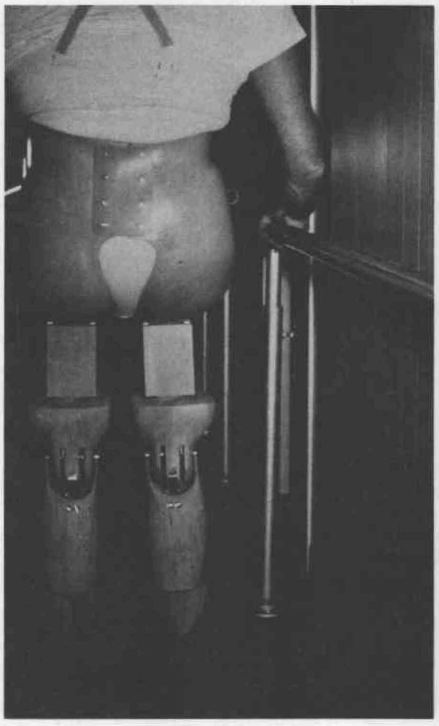

Fig 5

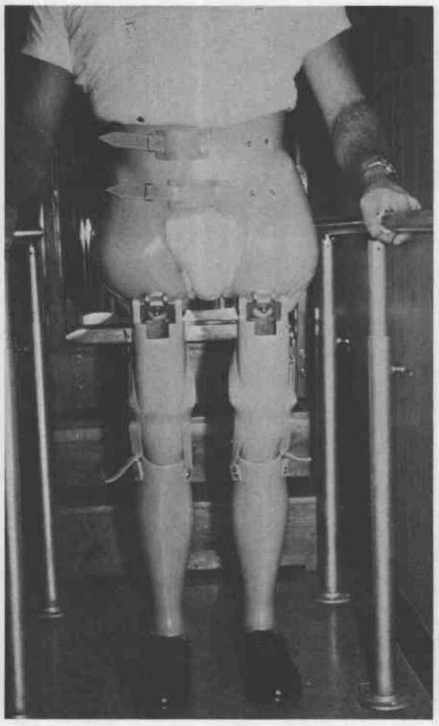

Fig 6

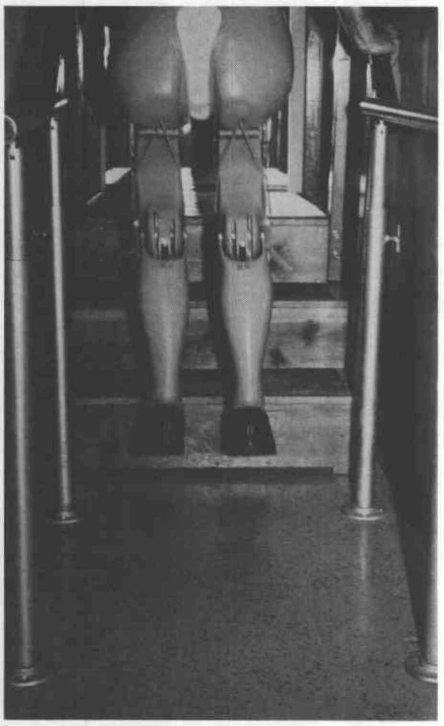

Fig 7

of a quarter was left open on each cylinder through which the liquid foam was poured.

### Hip Joint Mounting

The top of each block was cut square and level with the ground and as close to the mold as possible. The hip joint mounting reference lines were marked on the blocks, and both hip joints positioned. The outline of the base plates was marked, and the foam blocks were shaped to blend in with the entire cast. The base plates were attached with plaster of Paris, and the entire foam build-ups sealed with plaster of Paris. An extra build-up of plaster of Paris of approximately ¾" thickness was provided over the entire seat area, which would later give space for a foam (silastic) seat pad. The cast was now air dried.

### Fabrication of the Socket

The model was prepared for vacuum lamination, smoothed, lacquered, and a PVA sleeve applied. The first lamination consisted of four layers of 8" nylon stockinette and polyester resin (90% 4110 - 10% 4134). After this lamination was completed, the entire surface was roughened with coarse sandpaper and a reinforcement of nine feathered layers of fiber glass cloth and epoxy resin (C-8) applied over each hip joint attachment area. A final layer of three layers of stockinette and polyester resin completed the lamination process.

The completed socket was removed from the model, cut to the trimlines, and all edges were smoothed. The foam blocks and plaster of Paris build-ups were carefully removed, and the entire cast smoothed, lacquered, and greased. The interior hip joint mounting plates were attached with two screws, leaving one screw hole and a 3/8" center hole open for injection of the silastic. The two half sockets were repositioned on the model and the silastic, 25% 385 and 75% 386, was injected into each side. After curing of the silastic the two halves were removed and the hip joints and thigh block installed.

### Alignment and Fitting

The prosthetic feet were set up so that a reference line from the hip joints through the knee bolts would fall 2½" posterior to the heel of the shoes. Subsequently during dynamic alignment this was increased to 3 inches.

The height of the knee centers was set so that the patient would be able to sit in a normal chair with both feet flat on the floor (Figure 4). Two cork seat blocks had to be added to the seat of the sockets to bring the patient up to a normal and level sitting position.

A prelaminated flexible plastic tongue provided a closure of the anterior opening of the socket. Buckles and Dacron-reinforced leather straps were used instead of Velcro straps as the Velcro straps would be too inconsistent. The posterior opening of the socket was closed with a 4" by 6" by 1/8" Ortholene flexible hinge, so that the patient could walk with his semi-normal gait (Figure 5).

From the knee units, cables complete with housing and retainers were brought up laterally within easy reach of the patient's hands. For unlocking they hook onto small stainless steel hooks. The stride control hip locks were to lock automatically when the patient stood up. The patient is indeed able to ambulate, advancing consecutively one foot after the other. Ascending and descending stairs is accomplished by the patient hoisting himself on the banisters (Figures 6, 7). After the patient

became more skilled in ambulating, and due to the extreme stability, the hip stride control locks were removed and stride length control straps substituted, giving the patient a somewhat longer step.

The patient was followed by the author for approximately two years, during which time he was wearing his prosthesis extensively.

After one year he was fitted with a bucket-type prosthesis which was distally closed and not used as a split socket prosthesis. A platform was attached to this socket, and carpet rollers were used so that the patient could perform some mechanic's activities closer to the floor. He propelled himself with his hands, and used padded leather gloves for that purpose.

New Date!

New Place!

# Academicians Please Note

The dates and headquarters for the 1982 Academy Roundup Seminar

*HAVE BEEN CHANGED*

The Roundup is now scheduled for February 4-6, 1982 at the Fairmont Hotel

New Orleans, Louisiana

The changes will have no effect on the superior program already developed, which includes presentations on these topics:

Sports Medicine and Orthotics

String Casting Technique for B/E Prosthetics

Development of the Utah Artificial Arm

New Concepts in Scoliosis Orthotics including Bio Feedback

Pediatric Orthopedics

Criteria for Hydraulic Unit Selection

Amputation Surgery Techniques in Lower Extremities

Limbs for Extra-Curricular Activities

Problems with Central Fabrication

Management of the Paraplegic

Foot Disorders Commonly Treated Orthotically

Electrically Powered Upper Extremity Prostheses

Classification and Management of Congenital Amputees

Update on Upper Extremity Orthotics

Management of the Mylomeningocele

Orthotic Management of Cervical Spine Fractures

VA Clinical Applications of External Powered Upper Limb Prostheses

Orthotic Management for Cerebral Palsy Patients

Update on the Boston Elbow

MAKE PLANS TO ATTEND NOW!
USE THE FORMS PROVIDED FOR REGISTRATIONS

## 1982 ANNUAL MEETING AND ROUNDUP SEMINAR

American Academy of Orthotists and Prosthetists
New Orleans, Louisiana

**Registration Form**

Last Name _____ First _____ MI _____ Title _____

Street Address _____ City _____ State _____ Zip _____

_____ $150.00 AAOP Members Registrations postmarked prior to Jan 16, 1982
_____ $165.00 AAOP Members Registrations postmarked Jan 16, 1982 and later
_____ $175.00 Non-Members Registrations postmarked prior to Jan 16, 1982
_____ $190.00 Non-Members Registrations postmarked Jan 16, 1982 and later
_____ $ 12.00 Annual Meeting Luncheon
_____ $ 35.00 Concluding Dinner Dance

Make check payable to "AAOP" and mail to:

717 Pendleton Street
Alexandria, VA 22314

---

## HOTEL REGISTRATION FORM

Arrival Date _____ Departure Date _____

Last Name _____ First _____ MI _____ Title _____

Street Address _____ City _____ State _____ Zip _____

Please reserve _____ room(s) for _____ person(s).

Single $80.00 Double $90.00

Attending: American Academy of Orthotists and Prosthetists
Annual Meeting and Roundup Seminar——February 4-6, 1982

MAIL THIS FORM TO: Fairmont Hotel
University Place
New Orleans, LA 70140

# PROFESSIONALISM OR WHAT?

Are you a professional? If so, how do you know? Our field is struggling with this question. There must be more to being a professional than wearing a white lab coat!

Let's start with us, the Prosthetist or Orthotist. Sometimes the words that come out of our own mouths are the greatest obstacles to being fully recognized as professionals. We are engaged in advertising and are placed next to store ads in many publications that medical personnel read. We call our patients "customers," our lab and office a "shop" or "store"; our fee schedules are called "price lists." We go to hospitals to "sell our wares" without even charging a consultation fee! Prostheses and orthoses are called "appliances." (Does this sound professional, or like a washing machine and dryer?) We are called "low bidder" on contracts in which we need not even be involved. Maybe we would be happy to move up one more notch to a "vendor"! I hope we shudder at the term!

There are other areas in which we could improve our professional status in the community, such as what we call our facilities. The words "artificial limb," "brace" or "shop" are not conducive to our professional status. We refer to a patient's leg or residual leg as a "stump," prosthetic socks are called "stump socks." Patients feel rushed in clinical or office situations. Interoffice conduct, such as loud talk in patient care areas, the manner in which we answer our phones, or allowing patients in the lab, all reflect on our professionalism. Seemingly insignificant things are important, such as parking areas that say "customer parking" instead of "patient parking." Yes, we present ourselves to the patient in many ways. One of the most important is the appearance of our front offices, reception areas and examination rooms. Many times there are items for sale or on display, even prostheses and orthoses. This does not make us look professional to the patient but rather gives our office a store front appearance and lends to uncomfortable and impersonal feelings.

A professional practitioner should be opposed to anything or anyone who blocks patient care. We avoid calling the doctor if we disagree with prescription rationale, when the patient is the ultimate beneficiary. All medical as well as paramedical people must realize they are not the most important person in a clinical situation. It must be made clear, the patient reigns supreme!

The patient and medical community could view us as paramedical professionals. In this setting, it can be better understood that payment is not being made for a "piece of plastic" but for expert knowledge, ability and education. The device itself only represents a contributing factor in designing and implementing an efficient and successful prosthetic and orthotic program. A prosthesis or orthosis is the only tangible thing the patient sees, therefore patients tend to equate the fee charged with the plastic object provided for him. When a doctor operates, does he charge $5000.00 for the $1.50 worth of cat gut? Again, this is the only thing the patient can actually see and feel.

The public at large is not familiar with the terms "Prosthetics" or "Orthotics". It would force them to become educated to these more professional terms if, under Artificial Limbs and Braces, the telephone books across the country referred the public to Prosthetics or Orthotics in a cross reference. Suppose you are John Doe looking up artificial limbs in the yellow pages. You simply would not find it because you would be referred to the word Prosthetic. Think how far that would go on a national scale to educate people to these important terms. In Oklahoma we were able to accomplish this goal. The practitioners in this state all agreed to be moved to the more professional title and even reduce their listings to only three lines. We will all feel more professional this year!

We must strive to increase our credibility by being more precise in our practices, turning away from the empirical and moving toward the scientific and quantitative approaches by increasing our support dramatically which can effectively increase our knowledge and technology. Our educational criteria must remain high. Board certification exams should remain comprehensive with lower level technical schools to supply the manpower.

I realize that I am also guilty; yet if we care enough, we must attempt to correct these problems for ourselves, our profession and, most importantly, for the patients who seek our help. My fellow practitioners, I suggest to you, this problem lies with us; our attitudes, what we say, what we do.

John Sabolich, C.P.O.
Sabolich Inc.
Artificial Limb and Orthopedic Appliance Co.
Oklahoma City, Oklahoma

Acknowledgements:

I express my sincere appreciation to these people for directly influencing the contents of this article.

Steven D. Prock, C.P.O.
Michael T. Wilson, C.P.O.
Henry L. Schufletowski, C.O.
William J. Barringer, C.O.
Thomas Haslam, C.O.
Alvin C. Pike, C.P.
Charles Pritham, C.P.O.
Lester Sabolich, C.P.O.
Melvin Stills, C.O.
Lorene Sabolich
Lee Sabolich
Karen Mondie
Tina Prince

**Editor's note: This article originally appeared in the September, 1981 issue of the AOPA Almanac. Mr. Sabolich has kindly given his permission to reprint the article so that it may be shared with a larger audience.**

**Autumn Honorarium**

*Charles H. Pritham, CPO has been awarded the $100 honorarium for his article,* "Knee Orthoses: Biomechanics."

# QUESTIONNAIRE

Please return completed forms to Dr. H. Richard Lehneis, CPO, New York University Medical Center, Institute of Rehabilitation Medicine, 400 East 34th Street, New York, NY 10016.

1. Approximately how many definitive endoskeletal prostheses does your facility fit a year? _____

2. Indicate below approximate percentages.

| | Exoskeletal | Endoskeletal |
|---|---|---|
| Below-Knee | _____ | _____ |
| Above-Knee | _____ | _____ |
| Hip Disarticulation/ Hemipelvectomy | _____ | _____ |

3. Indicate which Endoskeletal Prosthetic System you use most frequently.

_____AFP (Medical Center Prosthetics)
_____IPOS
_____Otto Bock
_____USMC
_____Other (Specify)

Considering the fact that the average amputee has a below-knee or above-knee amputation (Hip Disarticulation aside):

4. Do you consider currently available endoskeletal prosthetic systems light enough?
yes no

5. Do you consider them reliable enough?
yes no

6. Do you consider currently available cosmetic covers and prosthetic skins adequate?
yes no

7. Do you consider it desirable to have full capability for altering alignment present in a definitive endoskeletal prosthesis?
yes no

8. How often do you make changes in alignment (other than rotation and height) in a definitive endoskeletal prosthesis after delivery?
Never Occasionally Frequently

9. If a reduction in alignment flexibility were to lead to a reduction in weight and increased reliability would you consider it a satisfactory trade-off?
yes no

10. What changes would you like to see in endoskeletal prosthetic systems?

11. Other comments or thoughts.

*Newsletter . . . Prosthetics and Orthotics Clinic*

**American Academy of Orthotists and Prosthetists**
717 Pendleton St., Alexandria, VA 22314

SECOND CLASS
POSTAGE PAID AT
ALEXANDRIA, VA

**ADDRESS CORRECTION REQUESTED**