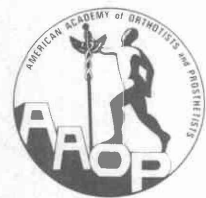




Clinical Prosthetics & Orthotics



Vol. 7, No. 1 1983

Winter (Issued Quarterly)

Ankle Foot Orthoses— Metal vs. Plastic

Joanne A. Klope Shamp, CPO*

Since the late 1960's, when Yates (1) and Lehneis (2,3) wrote the first articles pertaining to the use of plastics in orthotics, the debate has continued comparing conventional metal to thermoformed orthoses. But debate is no longer necessary as the well-informed clinic team finds that plastic orthotic systems have come of age and should be prescribed on a routine basis.

The advantages of thermoformed orthoses are numerous, extending far beyond the obvious factors of improved cosmetic and weight considerations. These, however, have significant merit in themselves. American society is appearance-conscious and highly competitive, an atmosphere in which individuals with disabilities are finding their rightful place among the non-disabled. The influence that the appearance of a device has on the effective interrelationships at home and in the workplace cannot be ignored. Thermoplastic devices are form-fitting, fleshtone, hygienic, and noise-free, unlike the metal devices of yesterday, and assist the individual in breaking the stereotypes of disability set by society. Of particular importance to the patient is the ability to interchange shoes, as long as the heel height remains consistent.

The devices' light weight means a decrease in energy expenditure and, in many cases, makes a marked difference in the patient's ability to perform hip and knee flexion adequate for a full day's activities. This also allows the patient to life the involved extremity for climbing stairs, getting into an automobile and other actions requiring flexibility. A recent study by Smith, Quigley, and Waters (4) concluded that the "lighter" polypropylene Ankle Foot Orthosis promotes more efficient advancement of the involved limb, allowing a greater percentage of the gait cycle to be devoted to the stance phase of gait." This accounted for the "more normal pattern of foot-floor contact at initial contact and at terminal stance" (4, p. 54).

Hygienic concerns are easily met with plastic orthoses that may be cleaned daily with soap and water, rubbing alcohol, or chemicals such as acetone. To incontinent children and adults this means an increased life for the orthosis, as well as cleanliness and an improved self-image.

In the same manner that prosthetic practice was revolutionized by the concept of total contact, so too has orthotics experienced a renaissance. With the total contact features of thermoformed orthoses, increased force may be applied to the skeleton without discomfort and skin breakdown as the area receiving the force is multiplied. Prevention and correction of deformity is greatly enhanced as compared to the metal bands of conventional double upright orthoses with their small surface areas.

The force-distributing properties of plastic orthoses are of particular benefit in the case of insensitive feet where decubitus ulcers must be aggressively prevented. The use of well-formed total contact orthoses may preclude the need for expensive custom shoes in these cases and allow healthy feet in affordable and attractive footwear.

Although cosmesis, weight, hygiene, and total contact features are important assets of thermoformed orthotic systems, versatility is the major advantage to the prescribing physician and clinic team. Design potentials are unlimited and allow the customizing of the orthosis to the exact biomechanical needs of the patient, without excess bulk or "over-bracing." As von Werssowet stated ". . . a brace should be selected with the most simple design that will accomplish the purpose and mission" (5, p. 364).

At the knee and ankle joints, free motion and some degrees of limited motion are easily obtained with a total plastic orthotic system. When a specialized assist or stop is required, a hybrid system (6) utilizing metal

*Shamp Prosthetic Center, Inc.
Norton, OH



The controversy illustrated—metal double upright ankle-foot orthosis vs. plastic ankle foot orthosis.

joints within the plastic design may be more satisfactory in meeting the patient's needs. Where total immobilization is indicated, plastic orthoses may be fabricated with corrugations or carbon composite inserts (7) that afford rigidity. Ankle position may be altered to provide a stabilizing effect to the knee joint at midstance or to prevent recurvatum when posterior structures are compromised.

A striking advantage of plastic orthotic systems is their superior control at the ankle in the frontal plane. A result of both the total contact nature of the device, as well as the individuality of possible designs, this provides excellent control in cases presenting equinovarus (hemiplegia secondary to CVA), clubfoot deformities, and other mediolateral instabilities. Varying the thickness of the plastic and the configuration of the trimlines creates an appropriate three point pressure system that will not require force application over bony prominences, as the ankle strap of a conventional double upright orthosis requires over the lateral malleolus.

Plastic orthoses are beginning to play a role in work regarding inhibitive casting and the effect upon spasticity. Eberle, Jeffries, and Zachazewski (8) recently reported success with an inhibitive AFO, a concept that was not feasible with metal orthotics. Their report stated that "the technique of fabrication used for construction of a molded polypropylene AFO allows for all of the tone-inhibiting characteristics of casting...to be built into the AFO... (including) hyperextension of the toes, pressure under the metatarsal heads, a stable ankle position, and deep tendon pressure along the tendo calcaneus" (8, p.454). The molded footplate offers excellent control as compared to conventional metal orthoses where "modification must be made to the shank of the shoe in cases of severe spasticity, lest it break at the anterior edge of the tongue and thus allow the foot to adopt a position of equinus" (9, p.1).

Clinical Prosthetics and Orthotics

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The hydrostatic features of plastic fracture orthoses have, in many regions, radically changed the orthopaedic approach to fracture management. Their effective application has been well documented by Sarmiento (10) and others. Their light weight (6–10 oz.), excellent hygiene, and wear with street shoes (11), allows the patient a safe and speedy return to a near-normal lifestyle that often includes employment, even in cases of delayed healing.

Hybrid and total plastic systems are easily adjusted for volume change and progressive positional correction through the use of heat forming techniques. Longitudinal growth in children can be predicted and the appropriate length adjustability feature can be an integral part of the orthotic design.

Some unique and exceptionally biomechanical designs have been made possible through the use of thermoplastics. The spiral and hemispiral AFO designs (3) employ the physical characteristics of the coiled configuration of plastic to store energy and serve as a functional assist to weakened dorsi- and plantar-flexor musculature, with little effect on knee stability.

The prescription and use of thermoplastic orthotic systems is no longer confined to regions with specialized clinic teams. Although their use originated in the research of large medical centers in major cities, the private practice sector nationwide now has ten years experience in these management concepts. The professional literature of the prosthetic and orthotic profession abounds with information on all aspects of design rationale and fabrication techniques utilizing today's total plastic and hybrid systems.

I challenge each of you to break through the stereotypes of your conventional metal orthotic prescription and management practices. The potentials of current thermoformed based orthotic design are limitless, and will provide the patient with an immeasurably improved functional outlook and self-image.

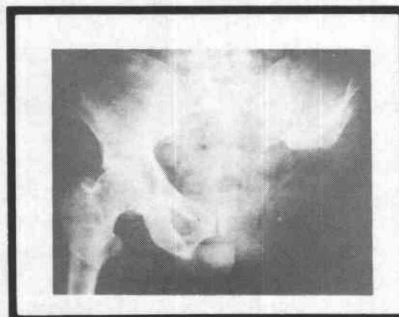
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AAOP Brochure

Introduces Orthotics, Prosthetics To The General Public



What are orthotics and prosthetics? Surprisingly or not so surprisingly many people do not know what these words mean or what is involved in the orthotic/prosthetic profession. To help inform the general public, the American Academy of Orthotists and Prosthetists has published a brochure which defines the terms and offers a description of the profession. The description includes a discussion of professional responsibilities of orthotists and prosthetists; educational and professional standards; and research in orthotics and prosthetics. The Brochure is available from the National Office for \$1.25 plus 75¢ handling for a total of \$2.00. Canada add an additional 75¢ and Foreign add an additional \$1.75. Please make your checks payable to AAOP.

Canada
Add Additional \$.75

Foreign
Add Additional \$1.75

Metal vs. Plastic AFO— A Therapist's View

Ankle foot orthoses are generally prescribed for patients who are able to ambulate without an orthosis, but for whom an orthosis allows a safer, and often more cosmetic, gait. Traditional "bracing" in these cases calls for a combination of metal and leather, often a spring-assisted ankle joint, and a so-called posterior stop, which simulates the motion of ankle dorsiflexion and prevents toe drag during swing phase.

More recently, molded plastic ankle foot orthoses have become available. These lighter weight orthoses provide a nearly invisible option to the conventional metal, riveted to the shoe devices. Presently, little agreement exists as to the indications, the timing of the application, or the overall outcome anticipated with the use of plastic AFOs.

The physical therapist plays an important function in the team approach to the care of patients with orthotic needs. Because the physical therapist spends considerable time working with these patients, he or she has an opportunity to continuously evaluate the patient's progress. This constancy is critical to the orthotic decision-making process as changes in patient symptoms may well alter orthotic needs. For this reason, it is often the responsibility of the physical therapist to recommend an appropriate orthotic device. In order to do this, the therapist must not only use the current physical findings, but must accurately predict future changes in these data. He/she must choose a device which will not only facilitate early ambulation, but will also meet the patient's future needs. Thus arise the dilemmas of when to fit which device, and whether to use temporary or longer-lasting orthotic devices.

In the past, metal AFOs were considered more adjustable and more temporary. These devices were to act as the precursor to the more definitive, more cosmetic, lighter, and therefore "better" plastic AFOs. However, experience with plastic AFOs revealed problems with lack of adjustability, thus necessitating multiple fittings in order to accommodate the patient's changing clinical picture.

The therapist must decide how to most effectively provide devices which not only meet the adjustability requirements demanded for early ambulation, but also provide a more cosmetically appealing, definitive device. Questions that need answering are: can an adjustable orthosis be fitted to allow for early ambulation? When should we recommend the more definitive (presumably plastic) devices? How can this be done with a minimum of dollars spent?

In 1971, Lehneis and Sarno made the following statement: "It is clear in the function of our clinic that there is no longer any indication for prescription of the conventional double bar BKO." It would be interesting to know if the authors still feel this way

despite evidence to indicate that the double bar device is still routinely being fit.

The reason for the continued popularity of the bichannel, double upright AFO in our clinic is its adjustability. This allows for medial-lateral control in both swing and stance phase, as well as knee control during stance. The extension moment generated by an anterior pin stop and long foot plate allows good control of knee flexion. Similarly, knee hyperextension can be controlled by adjusting the posterior pin.

The timing for the fitting of such a device should allow a sufficient training period so that the patient can be discharged with skills in the proper and safe use of the orthosis. Frequent return visits or home care sessions are necessary to continue to evaluate progress and provide necessary orthotic changes.

In many situations, the cost of the orthotic care for the patient is the smallest total dollar amount spent during the rehabilitation phase, yet it seems to receive a disproportionate amount of discussion. In those cases where early ambulation is indicated and expected changes in condition dictate an adjustable orthosis, the device of choice would seem to be the conventional, double adjustable, double upright, metal AFO. Later, as the condition stabilizes and the need for adjustability subsides, a plastic, more cosmetically acceptable AFO may be fitted. Even with the fitting of two devices, the total dollars spent for orthotic care will remain a small part of the overall cost of rehabilitation.

This discussion would be incomplete without specific mention of the polypropylene AFO. Since the arrival of the custom-made poly AFO, manufacturers have saturated the market with standard sized, stamped poly AFOs. Many therapists use such devices and compare them with other types of custom-fitted metal and plastic AFOs. If one inspects these devices, it is apparent that they fit very few patients. They do not provide the necessary dorsiflexion assist without a considerable amount of modification, and often never produce the desired effect. Additionally, they provide little knee extension assistance, which is often necessary for many early ambulators.

The choice of plastic vs. metal AFOs should be considered with all aspects of the patient's present and expected future condition in mind. The type of orthotic device prescribed should meet all the needs of the patient, with cosmetics being only one element. Multiple plastic or a combination of metal and plastic orthotic fittings can be justified in order to attain early, safe, and independent ambulation.

Donald G. Shurr, LPT, MA

Director of Physical Therapy
University of Iowa Hospitals and Clinics
Iowa City, IA

Questionnaire

C.P.O. encourages all Academicians to debate topics of interest to the Academy. In its role as a forum for discussion, C.P.O. urges all Academicians to answer the questionnaire below, and send the completed forms to Charles H. Pritham, CPO, Durr-Fillauer Medical, Inc., Orthopedic Division, 2710 Ammicola Highway, Chattanooga, Tennessee 37406.

1. What percentage of plastic orthoses do you presently prescribe/provide for your patient population?
_____ 100% plastic
_____ 75% plastic, 50% metal
_____ 25% plastic, 75% metal
_____ 100% metal
2. What percentage of your orthotic staff is experienced in thermoforming design rationale and techniques?
_____ 25%
_____ 50%
_____ 75%
_____ 100%
3. What do you consider to be the most significant *advantage* of plastic orthoses?
_____ Cosmesis
_____ lightweight
_____ total contact
_____ correction increased
_____ versatility of design
_____ other: _____
4. What do you consider to be the most significant *disadvantage* of plastic orthoses?
5. In your experience what has the durability of plastic and hybrid orthotic systems been?
_____ more durable, less maintenance than metal.
_____ equal durability and maintenance.
_____ less durable and more maintenance than metal systems.
6. Do you agree with Mr. Shurr's arguments for the use of traditional metal upright orthoses? _____ yes
_____ no
7. Do you share Mr. Shurr's skepticism regarding prefabricated plastic AFOs? _____ yes _____ no
8. What is your specialty?
_____ MD
_____ CO, CP, CPO
_____ Physical Therapist
_____ Occupational Therapist
_____ Other
9. Additional comments:

President Lehneis Responds to Damaging Article

AAOP President Richard Lehneis, PhD, CPO, sent the following letter in protest to an article which appeared in the Archives of Physical Medicine and Rehabilitation. The article was derogatory to the orthotics/prosthetics profession, particularly in the areas of training and education. Academicians are encouraged to speak up for their profession.

Alfred J. Szumski, Ph.D., PT
Chairperson, Editorial Board
Archives of Physical Medicine & Rehabilitation
30 N. Michigan Avenue
Chicago, Illinois 60602

Dear Mr. Szumski:

Mr. Wipple's commentary, *Prosthetics: A Profession in Crisis* (Vol. 63., Aug. 1982) is disturbing, to me and the profession of prosthetics, inaccurate, antiquated, and damaging to the public and self image of the prosthetist. What expertise does Mr. Wipple possess to have his commentary printed in the Archives? Is he a prosthetist, physician, or a consumer? Probably none of the above, judging from his statements.

Exactly one quarter of the paper discusses the poor training of other health care professionals, including physicians, and poorly performed amputations. Clearly, this has nothing to do with the profession of prosthetics.

Mr. Wipple claims that since 1970, upgrading of education and training of prosthetists has been continually delayed. The fact is that the requirement for certification in 1970 was a high school diploma or passing of a GED test. Today, the basic requirement is a baccalaureate plus additional specialized training. Approximately 70% of all applicants for certification possess at least a bachelor's degree, and many hold graduate, including doctoral degrees. Although an associate's degree with additional long term academic and laboratory training is still an acceptable route to certification, it is the exception rather than the rule. The reason for this is not to exclude those individuals who are otherwise highly skilled and talented but who have not had the opportunity to complete a baccalaureate. To deny such uniquely talented individuals the practice of prosthetics would certainly deny the amputee population the benefit of their talents.

Admittedly, a manpower shortage in prosthetics still exists, however, not at the magnitude portrayed by Mr. Wipple. Between 1976 and 1982 the number of certifees increased by 70%, despite a passing rate of 55-60%. For the past 2 years, the average rate of increase in the number of certified practitioners has been 9%—considerable and significant in this time of professional stagnation and high unemployment. Furthermore, based on the most recent statistics, only 1 to 2% of the practitioners are leaving the field each year due to either retirement or death, rather than the large numbers quoted by Mr. Wipple. Likewise, the median age of a practitioners is between 35 to 40 years, rather than the high percentage of over 55 quoted by Mr. Wipple.



One might question Mr. Wipple's motive. It seems that his commentary attempts to put the profession back into the stone age of prosthetics. Too many people both in the prosthetics and medical fields have worked hard and diligently to elevate the image of the prosthetist. This has resulted in rapid changes in the status and professional respect accorded the prosthetist. For example, a position paper between the American Academy of Physical Medicine and Rehabilitation (AAPM&R) and the American Academy of Orthotists and Prosthetists (AAOP), was recently adopted by both the Board of Governors and Board of Directors, respectively, of the two organizations. It resolved, amongst other areas of agreement, to eliminate the term "check-out" for prostheses and that prostheses are to be prescribed in consultation with a certified prosthetist. This certainly shows that the AAPM&R recognizes the skills, education, training and competency of the prosthetist as a mutual partner in the rehabilitation of amputees.

Even though Mr. Wipple thinks of a prosthetist as having a poor public and self image—the facts are quite different. Certainly, the position paper between the AAPM&R and the AAOP proves that prosthetists are respected as co-equals. Some of the most prominent physicians in amputation surgery have expressed their desires and have applied for associate membership in the AAOP, recognizing the expertise of the prosthetist and the mutual benefit derived from such close association. All this simply shows how antiquated Mr. Wipple's information is in presenting a false and damaging image of the profession of the prosthetist. Or could it be that the author conveniently ignored and omitted that facts in the technological and educational achievements of the prosthetist? If so, one might seriously question his motives.

I would appreciate your printing this letter in the next issue of the Archives.

Sincerely,

H. R. Lehneis, Ph.D., CPO
President
American Academy of
Orthotists and Prosthetists

Publications Office

It is a goal of Academy President H. Richard Lehneis, Ph.D., CPO that AAOP establish a Publications Office. Among other things it is envisaged that this organ of the Academy would serve as a source of brochures that practitioners could use in their practice for patient education. Individual pamphlets on such topics as socket hygiene, sock washing, maintenance, and repair would be available.

If you already have such materials prepared, or if you would like to prepare such an item, you are requested to submit your ideas or contact:

Charles H. Pritham, CPO
Chairman, Publications Committee
Durr-Fillauer Medical, Inc.
2710 Amnicola Highway
Chattanooga, Tennessee 37406

Letters to the Editor, Suggestions Encouraged

In the past year *Clinical Prosthetics and Orthotics* has been increased in size to 12 pages. This means that we are in a better position than ever before to print contributions from you, our readers.

So, if you have an opinion, a suggestion, or a question you would like to see discussed by the readership, send it to the National Office. All letters will be printed as soon as possible and any responses will be printed in subsequent issues. All letters should be clearly labeled for use in C.P.O.

The Editor

Meetings and Events

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

1983, January 26-30, AAOP Annual Meeting, Hyatt Islandia, San Diego, California.

1983, February 7-8, Louisiana State University Department of Prosthetics and Orthotics Seminar, New Orleans, Louisiana.

1983, February 17-19, "Seating the Handicapped Child," International Seating Symposium, Instructional Resources Centre, University of British Columbia, Vancouver, British Columbia, Canada.

1983, March 12, Northern California AAOP Chapter Seminar, location to be announced.

1983, March 23-26, UCLA Advanced Orthotics Seminar, Los Angeles, California.

1983, April 6-8, First European Conference on Research in Rehabilitation, Edinburgh, Scotland, United Kingdom.

1983, April 14-16, AOPA Region I and the AAOP New England Chapter Combined Meeting, Boston Marriott, Newton, Massachusetts.

1983, April 22-23, University of Texas and AAOP Joint Seminar, Orthotic Management of Fractures, University of Texas Health Science Center, Dallas, Texas.

1983, May 5-7, AOPA Region IV Annual Meeting, Downtown Holiday Inn, Jackson, Mississippi.

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

1983, May 19-22, AOPA Region V Annual Meeting, Stouffers Dublin Hotel, Columbus, Ohio.

1983, May 25-28, AOPA Regions VII, VIII, X and XI Combined Meeting, Four Seasons, San Antonio, Texas.

1983, June 3-5, AOPA Region IX, COPA, and the California Chapters of the AAOP Combined Annual Meeting, Harrah's, South Lake Tahoe, Nevada.

1983, June 7-10, UCLA Advanced Upper Extremity Prosthetics Seminar, Los Angeles, California.

1983, June 12-16, 6th Annual Conference on Rehabilitation Engineering, Town and Country Hotel, San Diego, California.

1983, June 16-19, AOPA Region VI and AAOP Midwest Chapter Combined Annual Meeting, Olympia Resort and Spa, Oconomowoc, Wisconsin.

1983, June 19-23, American Medical Association's Annual Meeting of the House of Delegates, Chicago Marriott Hotel, Chicago, Illinois.

1983, September 5-9, The IV World Congress of the International Society for Prosthetics and Orthotics and General Assembly of INTERBOR, Imperial College of Science and Technology, London, England.

1983, October 25-30, AOPA National Assembly, Hyatt Regency, Phoenix, Arizona.

1984, April 19-22, AOPA Regions V and VI Combined Annual Meeting, Amway Grand Plaza Hotel, Grand Rapids, Michigan.

1984, May 3-4, AOPA Regions II and III Combined Annual Meeting, Concord Hotel, Kramesha Lake, New York.

1984, June 1-3, AOPA Region IX Meeting, Harrah's, South Lake Tahoe, Nevada.

1984, June 28-30, AOPA Regions VII, VIII, X, and XI Combined Meeting, North Shore Convention Center, Lake Coeur d'Alene, Idaho.

1984, October 17-22, AOPA-INTERBOR Combined General Assembly and International Congress, Fontainebleau Hotel, Miami Beach, Florida.

Analysis of Responses to the Questionnaire on Continuing Education

As of November 1st, 1982, we have received 26 responses. While it is difficult to draw any definitive conclusions from this small number of returned forms, some general trends can be identified.

Respondents were fairly equivocal as to question number one. 54% said yes, they agreed with Mr. Dankmeyer that standards should be set for measuring competency, while 42% said no. A number of people indicated that they did not understand the difference between the two, and this confusion may account for the lack of a clear cut trend.

65% of all respondents said they believe that any such program (competency or education) should be mandatory, while 88% of the individuals concerned indicated that they participate in the present voluntary program. This positive response to these two questions would seem to suggest popular support for some program of continuing education or competency.

When asked if they considered the current program of educational offerings adequate, 65% of the respondents said no. In answering question number five (which asked what the Academy could do to meet continuing ed. or competency requirements), most respondents indicated more than one preference. The two most popular were: Narrower focus seminars (fewer topics, greater depth per lecture—73%) and exploratory seminars (69%). 38% requested review seminars while only 19% checked more of the same type of seminars given today. This is probably a fair reflection of the relative merit attached to these four general categories of educational programs.

Again, on the basis of this small sample, it is meaningless to draw strong conclusions or set policy; however, it would seem that fairly strong support exists for some type of continuing education or competency program. Seemingly, the greatest interest lies in programs that explore one or two topics in greater depth or from several points of view, and in programs that extend the prosthetists/orthotists' knowledge into areas other than those that pertain solely to the everyday aspects of the profession. These general trends might provide some measure of guidance to program chairmen.

Some Typical Comments

A. "Competency is best judged by another practitioner as the patient is unknowing initially. Without a mandatory program a few practitioners would provide a disservice to their patients, which would become evident later, but too late for patients already serviced."

B. "It is my belief that the Academy should not have education as a requirement for membership but should be an organization that represents the individual practitioner. The individual is the basis of competent service . . . neither AOPA or ABC puts the individual ahead of the facility. I would like to see the Academy publish a listing of certified individuals who meet continuing education requirements similar to that published for accredited facilities by the ABC."

Robert B. Reid, CPO

C. "We need to be masters in our profession (medicine) not merely our trade. We need far greater depth within our seminars and we also need to be in the forefront of our profession (medicine)."

D. "It is very hard for practitioners in rural areas to go to seminars."

E. "AAOP locally has no purpose or incentive for belonging if individuals do not have to do something."

Norman Smith, CP

F. "Mr. Dankmeyer has confused me somewhat. I do not understand how to achieve competency without education. We may not be able to force a practitioner to use what he has learned, but at least the practitioner would be exposed to a new way or idea.

What concerns me more than the competency of our Academicians is the level of competency at our colleges."

William Lewis, CP

G. "Some forms of mandatory continuing education could be started soon. Continuing competency would be like setting up a new ABC for certifies; to be effective it would take years to install.

Michael J. Quigley, CPO

H. "I believe that standards for continuing education and competency should be established."

I. "There should be a technique to calculate competency. Do not make it mandatory but check on us all through some questionnaire form (to local clinics, physicians, and colleagues). Continuing competency leads to education!

Joseph Martino, CPO

J. "Change the location of the seminar to a less costly location, closer to home."

K. "If we are not to be controlled by the Federal Government, we had better police ourselves carefully."

Islandia Hyatt Hosts 1983 Annual Meeting and Scientific Seminar—January 26–30

PROGRAM

WEDNESDAY, 26 JANUARY

- 9:00 a.m. – AAOP Board of Directors
- 5:00 p.m. – Meeting Regency Room
- 2:00 p.m. – Registration
- 5:00 p.m. – Regency Foyer
- 6:30 p.m. – Early Bird Cocktail Party
- 7:30 p.m. – Island Room

THURSDAY, 27 JANUARY

- 7:30 a.m. – Registration
- 3:30 p.m. – Regency Foyer
- 8:15 a.m. – Welcome Address
- 8:30 a.m. – **H. Richard Lehneis, PhD,
CPO, President**
Regency A
- 9:00 a.m. – ISPO Board of Director's
- 12:00 noon – Meeting
Seagull Room

CONCURRENT INSTRUCTIONAL COURSES PROSTHETICS— Regency A Room

Moderator: Mark J. Yanke, CPO

- 8:30 a.m. – "Myoelectric Overview"
- 10:00 a.m. – **J.R. "Jack" Hendrickson, CP**
- 10:00 a.m. – Coffee Break
- 10:15 a.m.
- 10:15 a.m. – "Utah Elbow Prosthesis"
- 12:00 noon – **Stephen C. Jacobsen, PhD**
- 12:00 noon – Lunch
- 1:00 p.m.

Moderator: Karl D. Fillauer, CPO

- 1:00 p.m. – "Endoskeletal Systems and
Clear Test Sockets"
- 2:30 p.m. – **Alvin C. Pike, CP**
- 2:30 p.m. – "Adaptive Fixation Prosthetic
Systems/Fixed Parts"
- 3:00 p.m. – **Thomas P. Haslam, II, CP**
- 3:00 p.m. – Coffee Break
- 3:15 p.m.
- 3:15 p.m. – "Adaptive Fixation Prosthetic
Systems/Fixed Parts"
- 3:30 p.m. – **Thomas P. Haslam, II, CP**
- 3:30 p.m. – "Endoskeletal Prostheses in
Patient Management"
- 5:00 p.m. – **Alvin L. Muilenburg, CPO**

THURSDAY, 27 JANUARY

ORTHOTICS—Regency B Room

- Moderator:** Glenn H. Ham-Rosebrock, CO
- 8:30 a.m. – "Boston Modular Orthoses"
- 10:00 a.m. – **M.E. "Bill" Miller, CO**
- 10:00 a.m. – Coffee Break
- 10:15 a.m.
- 10:15 a.m. – "Boston Modular Orthoses"
- 12:00 noon – **M.E. "Bill" Miller, CO**
- 12:00 noon – Lunch
- 1:00 p.m.

Moderator: Bonnie S. Tokaruk, CP

- 1:00 p.m. – "Halo Application and
Complications"
- 3:00 p.m. – **Richard R. Young, CO**
- 3:00 p.m. – Coffee Break
- 3:15 p.m.
- 3:15 p.m. – "Halo Application and
Complications"
- 4:00 p.m. – **Richard R. Young, CO**
- 4:00 p.m. – "Halo Application"—Video
Presentation
- 4:30 p.m. – **David W. Vaughn, CPO**
- 6:30 p.m. – ISPO—Pre-Assembly
Refreshments
- 7:00 p.m. – **Regency A. Room**
- 7:00 p.m. – ISPO General Assembly—
Regency A Room
- 9:00 p.m.

FRIDAY, 28 JANUARY

Regency A Room

Moderator: Thomas Beall, CPO

- 8:00 a.m. – Seminar Registration & Voter
- 12:00 noon – Registration for Annual
Meeting
Regency Foyer
- 8:30 a.m. – "Alternative Approach to
Cosmetic Covers, Leather
and Latex"
- 8:45 a.m. – **Rodney D. Henson, CP**
- 8:45 a.m. – "Plastics, The Monterey
Experience"
- 9:00 a.m. – **Edgar E. Doerschler, CO**
- 9:00 a.m. – ***Upper Limb Patient
Management"
- 9:40 a.m. – **Arthur W. Guilford, CO**
Cynthia M. Burt, OTR
Daniel W. Monzingo, Attorney
(Former Patient)

** Key points on how the Occupational Therapists and Orthotists inter-relationship will influence a patients rehabilitation potential. This discussion will focus on a high level quadriplegic patient.

9:40 a.m.- "A Thermoplastic Endoskeletal
10:00 a.m. Prosthesis"
Drew A. Hittenberger, CP

10:00 a.m.- Coffee Break
10:15 a.m.

10:15 a.m.- "Epoxy Material for
10:30 a.m. Orthotic Uprights"
Robert E. Doran, CPO

10:30 a.m.- "Modifications for Success
11:00 a.m. in Pediatric Orthotics"
Gretchen E. Hecht, CO
James P. Kim, CPO

11:00 a.m.- "The Orthotic Management
11:30 a.m. of Fractures—An Orthotists'
Perspective"
Melvin L. Stills, CO

11:30 a.m.- "A/K Casting Technique"
11:45 a.m. **James C. Baird, CPO**

11:45 a.m.- "Clinical Experience with an
12:00 noon Extension Control
Knee Orthosis"
Gary W. Prout, CO

12:00 noon- Lunch
1:00 p.m.

1:00 p.m.- AAOP Annual Business Meeting—
4:00 p.m. **Regency A**

6:00 p.m.- President's Reception—
7:00 p.m. **Island Room**

7:00 p.m.- Banquet—
9:00 p.m. **Island Room**

SATURDAY, 29 JANUARY

Moderator: Peter A. Ockenfels, CPO

8:30 a.m.- "TRIO-Knee Orthosis"
9:00 a.m. **Karl D. Fillauer, CPO**

9:00 a.m.- "Modified Minerva Orthosis
9:30 a.m. for Acute Cervical Fractures"
Walter L. Racette, CPO
George P. Boyer, CO

9:30 a.m.- Coffee Break
9:45 a.m.

9:45 a.m.- "Exploration and Evaluation
10:15 a.m. of Interface Materials for
Insensitive Feet"
Roy W. Wirta, Research Engineer

10:15 a.m.- "Preparation and Delivery of
10:45 a.m. Audio-Visual Presentations in
Orthotics and Prosthetics"
Tina-Laura Hittenberger, CO
Charles H. Pritham, CPO

10:45 a.m.- "Myoelectrics as an Immediate
11:45 a.m. Post-Operative Procedure"
Joseph M. Leal, CP

11:45 a.m.- Lunch
1:00 p.m.

Moderator: David W. Vaughn, CPO

1:00 p.m.- "Surgeon-Prosthetists Roles"
2:00 p.m. **James M. Malone, MD**

2:00 p.m.- "Biomechanics in
2:45 p.m. Orthotics/Prosthetics"
Walter Kuehnegger, PhD, CO

2:45 p.m.- Coffee Break
3:00 p.m.

3:00 p.m.- "Amputation Level Selection in
Patients with Peripheral
Vascular Disease"
Frank L. Golbranson, MD

3:30 p.m.- "Prosthetics and Orthotics
4:00 p.m. in Burn Management"
Richard L. Feldman, CO

4:00 p.m.- "Modifications for Partial
4:15 p.m. Foot & Symes Prostheses"
Thomas Guth, CP

4:15 p.m.- "Educational Issues in the
5:00 p.m. Future of Prosthetics
and Orthotics"
Ira Schoenwald, PhD
University of California
at Dominguez Hills

Keith E. Vinnecour, CPO
University of California
at Los Angeles

Alan J. Dralle, CPO
University of Washington
at Seattle

B.P. "Mac" McClellan, CPO
University of Texas Health
Sciences Center at Dallas

Sidney Fishman, PhD
New York University, New York

Robert W. Hinchberger, CPO
Cerritos College
Norwalk, California

Kenneth L. Chagnon, CPO
Area Vo. Technical Institute
White Lake, Minnesota

Robert C. Manfredi, CPO
ABC Board Liaison to Educational
Accreditation Commission

SCHEDULE OF EVENTS FOR THE LADIES

THURSDAY, 27 JANUARY

9:00 a.m. Narrated tour of the city
of San Diego
(Fare \$8.15)

FRIDAY, 28 JANUARY

9:00 a.m. Fascinating two hours of
shopping in Tijuana, Mexico
(Fare \$12.00)

SATURDAY, 29 JANUARY

9:00 a.m. A visit to the world
famous San Diego Zoo
(Fare \$14.65)

A Modified Hemipelvectomy Socket

Peter A. Ockenfels*, CPO

This paper is to demonstrate a modified design for a hemipelvectomy type of prosthetic socket, which was designed for an endoskeletal system prosthesis.

The patient, a 28-year old white male, while involved in the operation of heavy equipment in May of 1978, experienced severe crushing type injuries. The injuries required a hemipelvectomy amputation on the right side, and due to peroneal nerve injuries, the function of the left lower limb was limited. For the purpose of this paper, however, only the hemipelvectomy socket design, which is different and special due to the presence of a colostomy, which needed to be fitted into the prosthetic receptacle, will be discussed.

The patient's first prosthesis was designed in the usual fashion with the colostomy inside the prosthetic socket. This restricted drainage into the colostomy device. The patient needed to remove his prosthetic socket during the day in order to relieve pressure and dispose of the accumulated waste.

In considering the design of a new prosthesis, it was felt that an anterior or a lateral opening on the opposite side was inadequate and non-functional since the colostomy opening could not be maintained in one particular area at all times. Thus, a lateral opening was provided on the amputated side. A flexible tongue allows the socket to expand as the patient dons his prosthesis (Fig. 1). A single Velcro strap (Fig. 2) secures the prosthesis, and the colostomy opening is maintained in a permanent position while standing (Fig. 3), as well as sitting (Fig. 4).



Figure 1

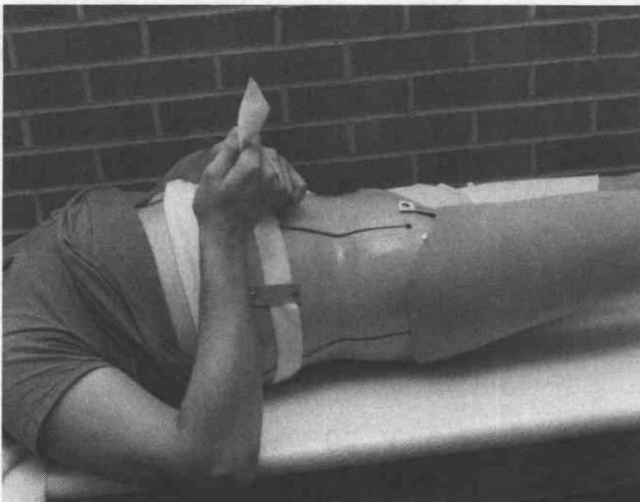


Figure 2



Figure 3

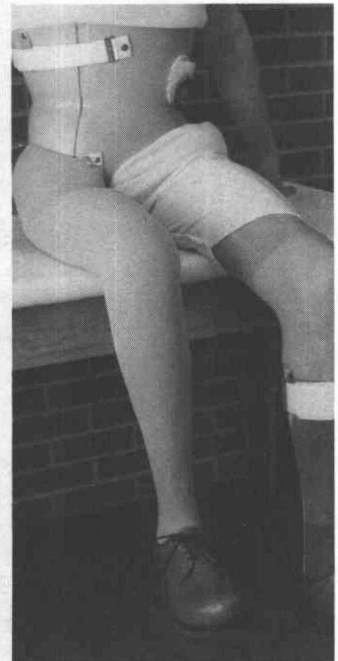


Figure 4

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

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