Newsletter...

Prosthetics and Orthotics Clinic

Vol. 1, No. 2 Spring 1977

The American Academy of Orthotists and Prosthetists is pleased to publish its second issue of the Newsletter and we look forward to receiving the full support and participation of all members of the Clinic Teams in the coming year. We truly desire to have this publication an interdisciplinary vehicle which will allow every profession the opportunity to interchange information.

We strongly encourage all readers to respond to the "Newsletter Questionnaire" and give us your viewpoints. We also solicit individual letters and comments outside of the basic Questionnaire pertaining to any subject matter that has bearing on the treatment of prosthetic and orthotic patients. This can include new versus old treatment methods, the basic structure and procedures used in the Clinic Team (interclinical relationships), vocational counseling objectives and results, physical and occupational therapy training, as well as other pertinent subjects.

- **Physicians**
- **Physical Therapists**
- **Occupational Therapists**
- **Vocational Counselors**
- **Nurses**
- **Rehabilitation Engineers**
- **Orthotists**
- **Prosthetists**

Please let us hear from you. This is Your Publication.

Our first Questionnaire dealt with plastics in Lower-Limb Orthotics and was distributed with our first issue of the Newsletter, which was published in October, 1976. We were quite pleased with the results, which ended up with a total of 73 respondents. This was a fairly good response when the limited circulation of the first issue is taken into account.

The Sources of Responses to the Oct. 1976 Orthotics Questionnaire were:

Independent Orthotists	19
Independent Orthotic Facilities	27
Institutions	16
M.D.'s (Private)	3
Unidentified (probably Orthotists)	5
Miscellaneous	3
Total	73

We believe that the results of the technical data that follows shows very clear lines of demarcation with respect to the use of plastics in basic Lower-Limb Orthotics. For this reason, we do not plan to solicit further discussions in this area in our next issue, but would like to develop discussions in the area of plastics in fracture brace procedures. May we have your comments on this proposal and can you suggest any alternative topics concerning the use of plastics in orthotics?

Joseph M. Cestaro
Editorial Board

Plastics in Lower-Limb Orthotics

Fitting the Molded Plastic AFO

Our October 1976 Issue of the Newsletter discussed "Plastics in Lower-Limb Orthotics" and requested information from our readers as to their experiences and preferences. The following is the results of the questionnaire on this subject.

Results of the Questionnaire and a Discussion of the Results

1) Does your clinic use custom made orthoses formed from sheet thermoplastic material?

1. YES - 71
   NO - 2

One of the respondents who an-

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swered "NO" is an institution that treats only amputees. The other "NO" came from an orthotics facility in New England who gave as the reason "We use Ortholene blanks and laminated AFO's."

2a) If the answer is "Yes" please name the materials used and show opposite the types of appliances made from the particular material.

	Type Of Orthosis						
Material	**FO**	**AFO**	**KO**	**KAFO**	**HKAFO**	**ULO**	**SO**
Polypropylene	17	65	2	31	1	13	25
Polyetheylene	3	1				5	9
Orthoplast		6				7	2
Vitrathene		1				2	7
Ortholene		6					1
Acrylic Nylon		1				1	
Kydex					1*	4	1
Subortholene		1					1
Polyurethane					1		1
Polycarbonate		1		1			
Nyloplex		11				1	
Roylan	1	1				1	2
Plexidur		2					
Polyform						2	
Resur							1

*Standing frames

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3. Do you use preformed "off-the-shelf" AFO's?

Thirty-one used preformed or "off-the-shelf" AFO's. Thirty-six who also used molded AFO's did not use "off-the-shelf" AFO's. Most of the respondents who used the preformed AFO's stipulated that the use was limited to initial trials or to those relatively few patients that could be fitted adequately. Those that refused to use the preformed unit felt that the better results obtained by custom molding was worth any extra effort necessary.

4. Please give the reasons for the answer you gave to question "3".

Some typical responses were:

"They (preformed) will work on some patients . . . . ."

"Use (preformed) on easy to fit patients or those not needing the extra support."

"If the doctor specifically prescribes (preformed), or if the patient insists after explaining the advantages and disadvantages."

"I use preformed AFO's for pes equinus only. I use custom made for all other orthotic treatment."

"Because (preformed are) no good; have to reheat and mold to have work properly, so may as well start from scratch and make your own."

"Fitting difficulties — sizes do not fit many patients who are edematous, atrophied, or need support."

"They don't fit."

"Doctors prefer custom-made."

5. If you provide molded plastic orthoses, what type of equipment do you use in fabrication?

The answers given were not always clear but it appears that:

35 used a vacuum machine of one type or another

19 used hand drape with vacuum

14 used hand drape without vacuum

8 used central fabrication

Some facilities used more than one method, thus accounting for a total greater than the number of respondents that use custom formed orthoses. About the only conclusion that can be drawn from these figures is that vacuum machines are probably worth the investment.

6. Please give your opinions about the usefulness of sheet thermoplastics in orthotics.

Nearly every respondent answered this question in some detail. Most cited lightness and cosmetic benefits.

Some typical comments:

"We feel that this is the biggest advance in orthotics in the last few years, providing the patient with a lightweight, hygienic, orthotic system."

"We feel that molded AFO's are far superior to conventional braces in every respect. Most of our orthoses are constructed using the materials and the patients and their physicians are most pleased."

"I am able to obtain excellent fit and control with plastics that would not be possible with a leather-metal orthosis. Also, it is lighter and more cosmetic."

"We find it has great adaptations to orthotics, with unlimited applications."

"It's the only way."

"These orthoses are useful for cosmesis, function, and light weight."

"Unlimited potential, but discretion advised."

"I feel we have uncovered a new dimension to orthotics and look forward to further developments in the future."

"Enables orthotists to apply new ideas toward orthotics."

7. Have you experienced problems with the quality of the sheet plastic material? If the answer is "Yes", please explain.

Twenty five respondents indicated that they had experienced problems with the quality of sheet plastic, while 32 said that they have had no problems.

Alan Finnieston of Miami, Florida, who has had a lot of experience in the use of the sheet plastics offers the following observations:

"In answer to your question #7, we have had many difficulties with the quality of thermoplastic sheet material of various types. For example: Polypropylene, polyethylene, ABS, styrene, and polycarbonate to only mention a few. We have been involved with thermoplastics and the vacuum-forming field for approximately ten years.

Orthotics and prosthetics cannot justify, by virtue of their volume, specific formulations of material to specifications. As an example, most Orthotists or Prosthetists are buying polypropylene on a local level through a distributor. The distributor has no means of controlling what material or formulation of polypropylene he is receiving. Polypropylene is available in homopolymer, copolymer, random or block, plus many variations of grades; extrusion, injection and film, with a multitude of modifiers which can vary specifications of the base material. One then must seek out the reputable extruder with high-quality equipment and technology. This eliminates the problem of the reground materials of unknown formulations plus regulation of the extrusion prices."

8. Are special courses needed to provide orthotists and other members of the clinic team with training in the prescription, fabrication and fitting of molded plastic lower-limb orthoses? Please explain.

Of the 73 respondents, only 2 said that they felt that special courses for orthotists and other members of the clinic team were not needed. One of these provided only "hard corsets" and "arch supports"; the other stated "No, not in lower limb orthotics, because the basic rationale is unchanged as is the function." An institution that provided only "hand splints" said "Registered occupational therapists who are trained in splinting in their academic and clinical education fabricate all splints in the clinic." One clinic and one orthotics facility *both of which provided molded AFO's* answered with a question mark, and another clinic did not respond to this question.

However, the remaining 67 respondents felt quite strongly that special courses are needed if orthotists and other members of the clinic team are to make maximum use of the advantages afforded by sheet thermoplastics. The vast majority felt that all members of the clinic team should be offered training, but a few felt that formal training should be restricted to orthotists.

Some of the responses are:

"Yes, any further education is valuable to the entire team."

"Yes — exchange of ideas would be very useful particularly concerning fabrication. I have been making vacuum formed molded orthoses for 2-½ years and I still find it useful to exchange ideas with others who do it; to get the bugs out."

"Yes. It would be most help to attend a course in KAFO's."

"Definitely. Many problems can be circumvented with previous training."

"Yes, I believe this would be very helpful. I think this could be done in the curriculum of the schools already teaching Orthotics and Prosthetics. Seminars are helpful but only touch upon the surface. I think this area has already been covered in the last 5 years and needs more advance hands-on courses and experiences by physicians, therapists, orthotists and prosthetists."

"Yes. So many doctors still want to use old methods."

"Orthotists only should have courses, and then show the latest uses and methods. I feel that he should be the one to explain the advantages to the other team members."

"I think courses stressing cast modification, preparation, hand layup, and fitting problems would be helpful to the whole team. Personally, I have seen all the vacuum layup films I can stand."

OVERALL CONCLUSIONS

Thus, it seems obvious that sheet thermoplastics have a great potential in all aspects of orthotics and that appropriate education programs are needed and wanted.

Alan Finnieston included in his reply an announcement that his firm intends to offer "a series of instructional programs on the correct use of plastics in contemporary orthotic practice" and suggests that those interested in attending contact him at 1901 N.W. 17th Avenue, Miami, Fla. 33125.

The *results of this survey have been forwarded to the* formal education programs in this country and abroad with the hope that the faculties will be stimulated to initiate programs in this area.

The Geriatric Amputee[1]

Florence T. Leist, P.T.

Florence T. Leist, R.P.T.

The purpose of this presentation is to challenge each of you to become an advocate for the geriatric amputee, and to evaluate his potential on factors other than his age.

To dispel the theory of a person being too old to use a prosthesis I would like to share a couple of real situations.

We had a dear 77-year-old man receive his prosthesis at our clinic at Deer's Head in the spring. Last summer I met his grandson, and when I asked him how his grandfather was, he replied, "oh, he's fine now that he has his new leg. He's even courting a girl friend." Then there is the 85-year-old woman who received a new prosthesis and yet another new one at the age of 87 to enable her to continue caring for and babysitting her great grandchildren.

This afternoon I would like to talk *first* about factors to be considered in the management of the geriatric lower-limb amputee, and then present some statistics gathered from a review of the amputees who received their prostheses through the clinic at Deer's Head Center during its first two years of operation.

The management of the amputee can be divided into three phases:

1. Post amputation and/or preprosthetic training.
2. Prescription.
3. Post prosthetic training.

One of the problems we had in the management of the geriatric amputee was the scarcity of information provided by the referring physician. We sometimes got little more information than that the patient had had an amputation — not even a mention of whether it was an AK or BK, or whether it was on the right or the left.

To help overcome this situation we developed a questionnaire to develop not only the necessary basic history, but, more importantly, information such as cardiac status and the condition of the remaining lower limb. We also included the question "is he able to increase exertion 50 per cent more than is required for normal walking or wheelchair use."

We used the reference "On energy requirements for prosthesis use of geriatric amputee" to establish that question (2).

Depression

In the pre-prosthetic period there are many apsects to consider. From our first contact with the geriatric amputee we usually get a definite feeling about his general mental status. We often find that he is depressed: his self-image has been shattered; he is suddenly unable to walk, work, or even get out of the house; he is faced with a great fear of the future. "What," he asks, "is going to happen to me and my family?"

To help him cope with these many frightening problems, the social worker, who we feel is an important member of the team, can be of value from the beginning by helping him face reality, helping solve some of his problems, and by giving him added encouragement.

Range of Joint Motion

Loss of range of motion is more rapid in the geriatric patient because of loss of tissue elasticity. Management is to institute bed positioning and range of motion exercises and encourage freedom of movement as soon as possible. Our goal to have not more than 10 deg. of flexion contracture in hip and knee. Stretching exercises must be carried out if contractures have developed, but one must remember that the older patient tolerates stretching poorly.

Muscle Strength

There is a generalized decrease in strength with age which is compounded by the effects of surgery and forced inactivity. Management is through general strengthening exercise, but the cardiac status and other systems must be considered in planning the exercise program. Usually we must accept less than what is considered as ideal strength. The goal is that the patient be able to support himself by a walkerette or crutches.

[1]Presented at the Annual Meeting of the American Physical Therapy Association of Md., Inc., November 13, 1976.

[2]Peizer, E. *On the energy requirements for prosthesis use by geriatric amputees,* in "The Geriatric Amputee," Committee on Prosthetics, Research and Development, National Academy of Sciences, 1961.