

RESULTS OF A SURVEY OF GRADUATES OF LONG-TERM PREPARATORY ORTHORTICS-PROSTHETICS EDUCATION PROGRAMS

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A survey of the graduates of three schools that offer long-term courses was initiated in October of 1973 in order to help determine the results of these programs. The Committee on Prosthetics Research and Development (CPRD) of the National Research Council (NRC) sent out 180 questionnaires to graduates of the Chicago City College-Northwestern University (NU) program², New York University (NYU), and the University of California, Los Angeles Campus (UCLA). After two follow-up mailings, 162 graduates (90%) responded to the two-page questionnaire.

The major goals of the survey were to determine:

- The number of graduates still in practice
- The number of graduates needing financial assistance
- The number of graduates certified
- Areas of work responsibility of the graduates
- Manpower needs.

A breakdown of the survey results provided an abundance of additional information about how the graduates of each school fared, their average ages, number of laboratories worked in, etc. A number of interesting comparisons arose, indicating that the graduate's alma mater may be a deciding factor on his future.

PRESENTATION OF RESULTS

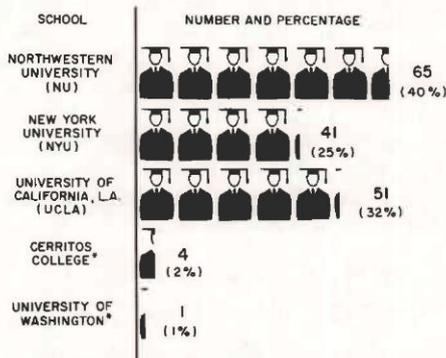
The comparisons are given in order to demonstrate tendencies rather than to imply that one

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²Degree awarded by Chicago City College, actual laboratory courses given by Northwestern University, and graduates consider themselves Northwestern alumni.

school is superior to another. In fact, schools that appeared to lack in one area usually more than compensated in another area.

Number of Respondents & Percentage of Total Respondents by School



*Due to the small number of respondents, these schools are not included in the categorized breakdowns and total percentages are generally derived from 158 respondents.

Total Number of Respondents	
Number of Graduates Surveyed	180
Number of Responses	162
Percentage of Responses to Total	90%

The imbalance of responses for the first three schools is due to the different number of graduates actually contacted in the survey and the actual number of graduates from each school, which were nearly proportional to the responses. Neither Cerritos College nor the University of

Washington was intentionally surveyed. If they had been, obviously a higher number of responses would have resulted.

YEAR OF GRADUATION

The graduating classes of the respondents ranged from 1961 to 1973, with an average of 1969.

AVERAGE AGE

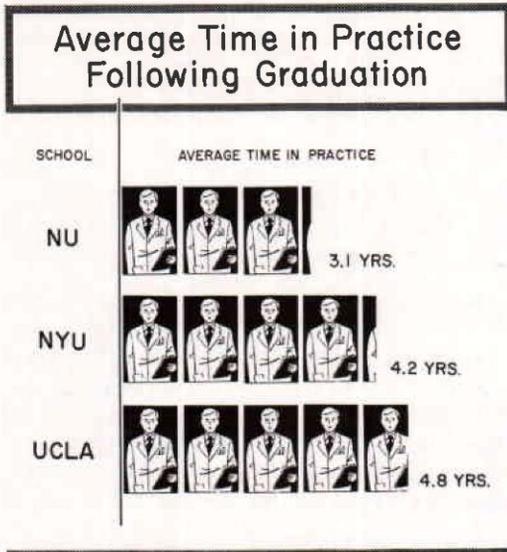
The average age of the respondents at the time of the survey was 29.1 years. By schools, the average ages were:

School	Average Age
NU	25.1 years
NYU	30.6
UCLA	33.1

Graduates from the Northwestern program could begin the course immediately following high school graduation and graduate with an Associate of Applied Science degree in two years. New York University students attend a four-year program and earn a Bachelor of Science degree upon successful completion. Students at UCLA generally have a degree *prior* to beginning the one-year certificate course.

AVERAGE TIME IN PRACTICE FOLLOWING GRADUATION

The average time in practice is given as the time

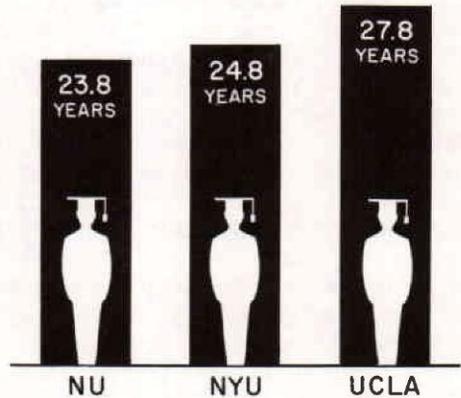


following graduation. Many of the respondents had practiced before entering school, but that time was not included. This average for all respondents was 3.9 years.

AVERAGE AGE UPON GRADUATION

The average age of all respondents at the time of graduation was 25 years.

AVERAGE AGE UPON GRADUATION



GRADUATES NOT IN PRACTICE

Nine graduates no longer practice either prosthetics or orthotics, which means 94 percent of the graduates remain in the field. This high figure directly relates to the large percentage of males in the profession. Other professions with a larger female populus find that marriages and families cause many female practitioners to stop practicing or to practice only part time.

Of the nine graduates not in practice, four are in the medical and rehabilitation fields. One is working for a vacuum-forming company related to orthotics, one is in nursing school, one is teaching physical therapy, and one is a rehabilitation counselor. None of them is certified. The remaining five are in jobs ranging from a truck driver to a used-car salesman. Some of the reasons given for leaving the field were: (1) could not find an interesting or satisfactory job in the field (most common reason); (2) reverted to

former occupation; (3) prejudice against females; and (4) allergy to plastics.

GRADUATES HOLDING ADDITIONAL DEGREES

Additional degrees, generally not in prosthetics or orthotics, were held by 49 graduates (31%). Degrees ranged from a Bachelor of Science in Zoology to a Masters degree in Divinity, but generally centered around business, education, and therapy. As might be expected, UCLA graduates held the greatest number of additional degrees as students with previous degrees are preferred for acceptance.

Number of Graduates with Additional Degrees, By School

Northwestern University—8 respondents (12%) held additional degrees—all 8 were Bachelors degrees, 2 of them from NYU.

New York University—14 respondents (34%) held additional degrees—3 A.A. degrees (2 from Northwestern, 1 from Cerritos College), 10 B.S. degrees (1 in occupational therapy, 1 in physical therapy).

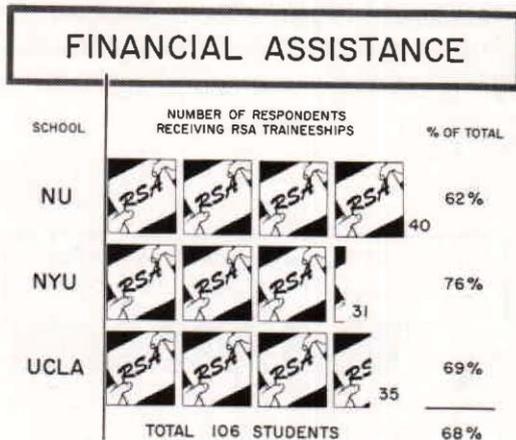
University of California, Los Angeles—17 respondents (34%) stated they held additional degrees:

- 7 A.A. Degrees (6 from Cerritos College)
- 2 B.S. Degrees (1 in occupational therapy, 1 in therapy)
- 4 B.S. and M.A. Degrees
- 3 M.A. Degrees (1 in rehabilitation counseling)
- 1 M.A. and Ph.D. Degrees

FINANCIAL ASSISTANCE

The major source of financial assistance previous to 1974 has been traineeship grants from the Rehabilitation Services Administration (RSA) of the Department of Health, Education, and Welfare. The other sources, in order of frequency were (1) tuition remissions—usually for students also working at the school; (2) G.I. Bill; and (3) state vocational rehabilitation agencies.

Forty-two graduates indicated that they did not need financial assistance, although 27 of them received it. These 42 graduates that did not need assistance represent 26 percent of the total number of graduates. Of those that did receive assistance, 25 percent did not feel they needed it. This

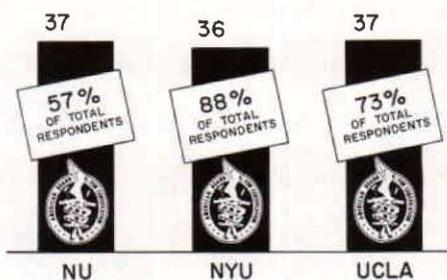


indicates that students should probably be screened more carefully before financial assistance is awarded.

CERTIFICATION

Certification was attained by 110 graduates, or 69 percent of the respondents. This is a high percentage considering that the average time in practice since graduation is only 3.9 years and 20 of the respondents graduated in 1973. Approximately 80 percent of respondents who had graduated prior to 1972 attained certification.

Number of Respondents Certified



The certification status varied greatly by school, mainly because some schools stress one area excessively and because long-term orthotic education has become generally available only in the last few years.

The following figures present the number and percentage of respondents in each certification specialty, by school:

Number, Percentage of Certified Respondents and Average Age by School and Discipline									
SCHOOL	CERTIFIED ORTHOTIST (C.O.)			CERTIFIED PROSTHETIST (C.P.)			CERTIFIED PROSTHETIST ORTHOTIST (C.P.O.)		
	# of RESP.	% of RESP.	AVG AGE	# of RESP.	% of RESP.	AVG AGE	# of RESP.	% of RESP.	AVG AGE
NU	3	5	26	26	40	29.5	8	12	26
NYU	6	15	28	14	34	29.8	17	41	28
UCLA	1	2	52	30	59	30	6	12	33

As can be seen from the figures, certified orthotists make up less than 5 percent of certified graduates. The three C.O.s from NU all graduated from that school's first orthotic program in 1972 and six of the remaining seven C.O.s are from NYU, where both prosthetics and orthotics are taught equally. Both prosthetics and orthotics have been taught at UCLA for years but prosthetics has been heavily stressed over orthotics, resulting in the imbalance from that school. Another interesting note is that at NU, A.A. degree students are taught either prosthetics or orthotics, not both, but this school still has the same percentage of C.P.O.s as UCLA, according to this survey.

The average age of certified graduates at the time of the survey, *not* at the time when they were certified, was 27.2 years for a C.O., 29.8 years for a C.P., and 28.2 years for a C.P.O. Note that the average age for a C.P.O. graduate is younger than that for the C.P. graduate. This can probably be attributed to the age difference between NYU and UCLA graduates upon graduation. Graduates from NYU are an average of three years younger than UCLA graduates.

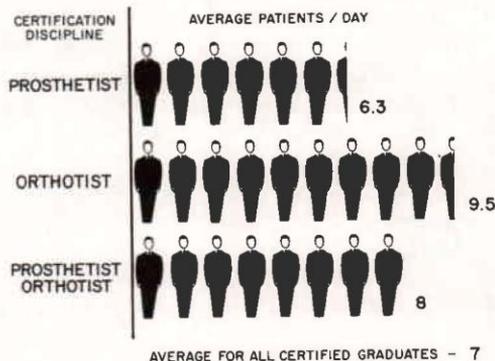
Another interpretation of the figures could

be that the vast majority of graduates attain certification in prosthetics first and then add on orthotic certification at a later date. It may be that prosthetics is stressed more in the schools, it is a more attractive field, or it is easier to learn.

PATIENTS TREATED PER DAY

Graduates were asked to estimate how many patients per day they were responsible for treating. The range of patients per day treated was from 0 to 25. The average for all respondents who actually treated patients (excluding those that did not respond or stated they treated none) was 4.9 patients per day. Certified practitioners had a higher average.

Patients Treated per Day by Certified Graduates



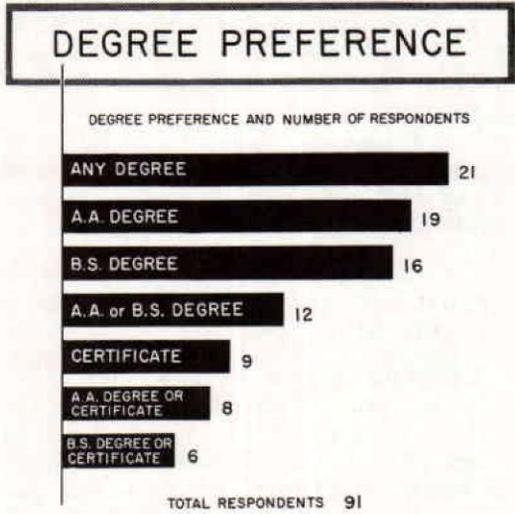
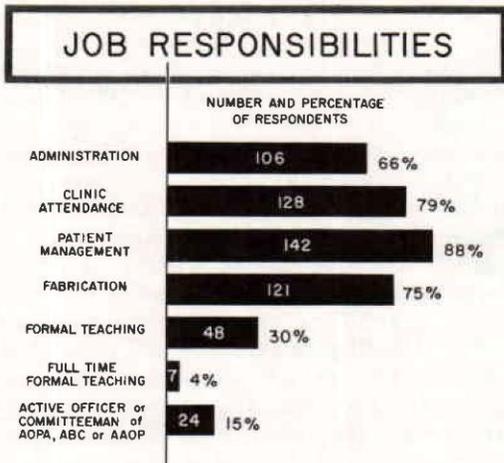
JOB RESPONSIBILITIES

Graduates were asked to check their job responsibilities from eight categories in the questionnaire. Two categories, research and informal teaching, were so vague that nearly all respondents indicated they were involved in both, therefore they are not shown. A surprising number of respondents indicated that they were involved in formal teaching in a school, although, upon further investigation, it was determined that only seven respondents were full-time instructors at prosthetics-orthotics schools. The remainder teach either part time or lecture occasionally at these schools or teach different subjects elsewhere.

There were 121 graduates involved in fabrication, or 75 percent of the total. This fact, coupled

with the recurring statement that technicians were needed, implies that the majority of job openings could be filled by technicians or assistants, rather than practitioners. Practitioners, by definition, generally are not actively involved in the fabrication process. Many areas have a surplus of practitioners but need technicians. When an abundance of technicians and assistants become available, a problem arises similar to that in other fields, wherein the job market is tight for professionals or journeymen because employers prefer to hire assistants or technicians who generally only lack judgmental experience, will do the necessary work, and are willing to accept a lower wage.

they themselves had graduated. The small number of respondents that preferred the certificate graduates was probably due to general ignorance of what the certificate actually is. The certificate (from UCLA) is awarded to students successfully completing a 9-12 month course in prosthetics and orthotics and the general entrance requirement for the program is a prior degree (not necessarily in a related field) and other entrance examinations.



JOB MOBILITY

Graduates were requested to list the number of laboratories in which they had worked since graduation in order to determine their job mobility. Whether the mobility was upward or lateral was not determined. The 162 respondents held 280 jobs in laboratories since graduation, or an average of 1.75 jobs in 3.9 years. The number of jobs per graduate ranged from 0 to 4.

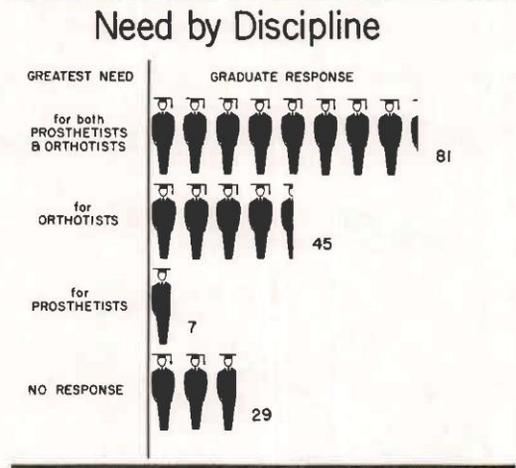
MANPOWER NEED

Graduates were asked if they would hire another graduate if they were responsible for employing new practitioners. Although 113 respondents indicated they would hire a graduate, only 91 responded to further questions regarding starting salaries and degree preference.

The general tendency of respondents was to prefer to hire graduates from schools from which

NEED BY DISCIPLINE

Graduates were asked whether they felt the greatest need for practitioners was in prosthetics, orthotics, or both fields.



The results shown definitely relate to the present needs of the field. One might think that prosthetists would indicate a need for prosthetists or for both prosthetists and orthotists, but the fact that 45 respondents indicated they felt the greater need was for orthotists in the field means that the manpower shortage in orthotics must be very obvious. A recent article³ states that there are approximately 476 prosthetics patients to one prosthetist but the ratio of potential orthotics patients to orthotists is 4,000/1. A greater manpower shortage in orthotics is apparent despite the fact that most orthotics patients are not permanently disabled, as are prosthetics patients.

This situation does not appear to be changing. As stated previously, the vast majority of graduates prefer to be certified in prosthetics even though eight of the nine educational outlets in this field include orthotics in their programs.

ADDITIONAL SHORT-TERM COURSE ATTENDANCE

Sixty of the graduates attended a total of 142 short-term orthotics and prosthetics courses in addition to their long-term courses. The most common short-term courses taken were "Immediate Postoperative Fitting Techniques" and "Advanced Below-Knee Prosthetics." These two courses were so well attended that there are very few prosthetists in the field presently who have

not attended them but want to. The next most common course attended was "Fracture Orthotics." Graduates from Northwestern University, who were educated in either prosthetics or orthotics but not both, very often attended short-term courses in the second discipline following graduation. Graduates averaged taking less than one short-term course (.9) per person following graduation, although of the graduates that took any short-term courses, the average was 2.4 courses per person. The range of short-term courses taken was from one to seven. A mounting interest in courses on powered orthoses and prostheses was also apparent.

SUMMARY

A survey of the graduates of long-term programs from Northwestern University (degree awarded by Chicago City College), New York University, and the University of California, Los Angeles Campus, was made. Responses to the survey were made by 162 graduates. Results indicated an average age upon graduation of 25 years, and an average age at the time of the survey of 29 years. Seventy percent of the graduates were certified, although they had only been out of school for an average of 3.9 years. Only 10 of the 110 certified graduates were certified orthotists. Additional degrees were held by 31 percent of the graduates and 30 percent indicated they were involved in teaching some type of formal education. Most graduates treated about five patients per day. Graduates felt there is a greater shortage of manpower in orthotics than in prosthetics.

³ LeBlanc, M.A., *Patient Population and Other Estimates of Prosthetics and Orthotics in the U.S.A.*, Orth. and Pros., 27:3:38-44, September 1973.