



O&P EDUCATION SUMMIT: Forecasting the Future

Findings and Recommendations

April 8-9, 2005 — New Orleans, La.

O&P EDUCATION SUMMIT: FORECASTING THE FUTURE

Findings and Recommendations

April 8-9, 2005 — New Orleans, La.

Summit facilitated by:





Sponsorship of the Education Summit



The National Commission on Orthotic and Prosthetic Education (NCOPE) and the American Academy of Orthotists and Prosthetists (AAOP) partnered to develop and host the Education Summit on April 8-9, 2005 in New Orleans, La. Funding for the Education Summit was provided by AAOP through a grant from the U.S. Department of Education and in part by NCOPE.

“A primary task is to spell out in writing that the professional organizations of P and O have, indeed, accepted responsibility for its educational destiny. If this fails, then it has no right to call itself a profession, either today or in the future.”

J.W. Perry, Ph.D.
Ponte Vedra I (1970)

P r e f a c e

The debate over the entry-level educational requirement is part of every profession's natural evolution and represents a progression in the maturation of that profession. Orthotics and Prosthetics (O&P) is no different in terms of its growth, responsibility to the patient and expanding body of knowledge. There is a public expectation that academic credentials should be commensurate with the level of responsibility for patient care. As our profession grows, self-assessment of our educational future is necessary.

For this purpose, NCOPE and the AAOP convened an Education Summit to critically examine the issue of entry-level degree requirements and educational philosophy. More than 30 experts from all facets of our profession came together to discuss the issues and reach consensus. It has been 14 years since the profession last studied the appropriate direction for orthotic and prosthetic education and the course it should chart to prepare for an uncertain future.

The future will bring us more changes in health care delivery, reimbursement and competition from other health care providers. For the O&P profession to grow and prosper in the coming decade, we must take a proactive stance and further define our profession. It is the profession's prerogative and responsibility to establish its own educational standards and thus affect its own future.

The conclusion from this Summit should set the course for the next decade. Although the task given to reshape our educational future is difficult, we should not shy away from it. The future success of the profession is dependent on the cornerstone of education.

Contents

Executive Summary	1
Overview of Recommendations.....	2
Description of the Education Summit Format	3
Summit Objectives and Assumptions.....	4
The History of O&P Education.....	5
Current and Future State of O&P Education.....	6
Summit Questions and Answers.....	10
Implementation: Stakeholders and Resources.....	19
A Look at the Future Five to 10 Years Out.....	20
Appendices	
Appendix I: Summit Planning Committee	26
Appendix II: Summit Participants	27
Appendix III: Summit Resources	28
Appendix IV: Education Summit Agenda	29
Appendix V: Detailed Summit Questions and Answers.....	30
Appendix VI: Redefining O&P	42

Executive Summary

More than 30 subject matter experts (SMEs) gathered in New Orleans, La., April 8-9, 2005, to study the current state of O&P education and to make recommendations for future directions. The conference was conducted as a collaborative effort between NCOPE and the AAOP. It was underwritten by a grant the AAOP received from the U.S. Department of Education and in part by NCOPE.

It had been nearly 14 years since the last critical assessment of O&P education. Numerous changes within the profession demanded advancements in the quality and consistency of O&P clinical education and training. The attendees envisioned the responsibilities of future practitioners and what would qualify as appropriate, quality, entry-level education that would help them successfully meet the changing demands of O&P care. This panel of experts, from the ranks of educators, researchers and practitioners, gathered to discuss and clarify the issues involved in moving the professional education of orthotists and prosthetists from the current certificate and baccalaureate levels to the master's degree level by 2010.

Broad consensus was reached regarding the current challenges facing the profession and the recommended objectives necessary to meet those challenges. A master's-level education was deemed necessary for the delivery of quality patient care due to the dynamic base of knowledge and rapidly emerging processes and technologies. It was also suggested that the state of O&P education be formally re-evaluated on a three-year cycle.

This report contains a summary of the recommendations of this group of professional leaders, based on their answers to the questions addressed at the Summit. From these **O&P Education Summit Findings and Recommendations**, NCOPE, the AAOP and other key stakeholders will generate a more extensive list of short- and long-term recommendations and plans of action. NCOPE will assess and create standards to guide O&P institutions in the successful development of master's-level programs. Advancing the profession through increased education will achieve the ultimate goal of enhancing the quality of life for the future consumer of O&P services.

Over view of Recommendations

1. A higher-level set of core competencies are needed for O&P in four areas: cognitive, behavioral/affective, traditional hand skills, and technology. These competencies must be achieved through a combination of entry-level education (including clinical hours) and residency.
2. O&P entry-level education should transition to a master's-level education that includes residency in order to deliver the core competencies necessary for the future practitioner. This is essential because of the need for evidence-based practice and changes in the body of knowledge, marketplace forces, consumer expectations, demands for accountability, and the direction of other health professions. Transitioning to an entry master's level education will result in:
 - a) Increased knowledge,
 - b) Enhancement of patient care skills,
 - c) Opportunities for clinical specialization,
 - d) Increased application of scientific research and evidence-based practices, and
 - e) Enhanced collaboration between educational institutions and residency sites.
3. Core education for O&P training should both be combined at the master's level along with the opportunity to focus on areas of specialization such as technical, business, teaching, research and advanced clinical skills practice.
4. As residency becomes an integral part of the master's training, then a residency must be restructured in the following areas:
 - Proper sequencing,
 - Periodic assessment,
 - Outcome measurement of resident performance,
 - Improved academic support and mentoring of resident sites, and
 - Affiliation with academic teaching hospitals and universities.
5. The profession needs to conduct outreach and awareness programs in historically underrepresented populations. The profession also needs to leverage the publicity of the master's-level movement to appeal to traditionally underrepresented students, among others.
6. The group recommended that U.S. standards should be consistent with International Society for Prosthetics and Orthotics (ISPO) Category I standards, which would be useful for collaboration between educational programs around the globe. However, the expectation of the Summit participants was that U.S. master's-level standards would exceed the current ISPO Category I requirements.

Description of the Education Summit Format

The Education Summit was designed to engage **all** participants in answering fundamental questions about the future of O&P education and professional practice. Julie Hayes of AAOP and Robin Seabrook of NCOPE welcomed the participants on behalf of the sponsors of the Summit. Donald Norris of Strategic Initiatives Inc., facilitator for the Summit, briefed participants on the schedule, flow and rhythm of the two-day event. He also stated the expectation that the participants would reach consensus on answers to the six fundamental questions poised by the Planning Committee.

To initiate the program, William Barringer, M.S., CO, FAAOP, spoke on “The History of O&P Education” and Bryan Malas, MHPE, CO, addressed the topic of “Current and Future State of O&P Education.” Following these presentations and discussion, the participants were assigned to breakout groups to address the six questions.

The Summit Planning Committee based the format for the Education Summit on a simple formula: maximize participation by assigning all attendees to three successive sets of small breakout groups. These were used to generate answers to the six questions identified before the Summit. Individuals were carefully assigned to each breakout group based on the Planning Committee’s assessment of their demonstrated or potential interest and expertise on the particular topics. Individual assignments changed with each successive set of breakout sessions. Following each set, the subgroups reported back to the group as a whole, which discussed each question and reached consensus.

Following the discussion and consensus on the six questions, the participants met as a whole to address the following issues:

- Question 7: How can O&P’s move toward a master’s-level program be used to attract underrepresented populations and practitioners to underserved areas?
- Implementation: Who are key stakeholders and resources?
- What are the next steps?
- What will the practice of O&P look like in the future five to 10 years out?

The consensus from these sessions constitutes the content of this report.

Summit Objectives and Assumptions

Objective

To clarify the issues involved in moving the professional education of orthotists and prosthetists from the current certificate and baccalaureate levels to the master's degree level.

Assumptions for the Education Summit

1. The profession, as a whole, takes responsibility for expanding and advancing the level of basic education for entry into the professional ranks to the master's degree level. This move will benefit the profession and the clients who receive O&P services.
2. Current O&P education programs have the ability and desire to transition to a master's curriculum.
3. The body of knowledge and scope of practice on which professional practice is based has changed and expanded in the last 15 years.
4. The core competencies that support professional practice are in need of updating.
5. Mandating a master's degree as the entry-level requirement may help in attracting more students, keeping the profession on a level playing field with fellow allied health professions and increasing the number of qualified practitioners, academicians and researchers.
6. The residency program will need to be revamped if it is to become a formal part of the overall master's degree program.

The History of O&P Education

William Barringer, M.S., CO, FAAOP, of the University of Oklahoma Health Science Center, identified key inflection points in the history of O&P education when the leadership took key decisions and actions to advance the profession.

The Ponte Vedra I (PVI) Meeting in 1970 was the first watershed event. Leadership stepped forward to recognize standardized essentials for all O&P programs and designate the four-year degree (combined O&P) as the gold standard. These actions were extended at Ponte Vedra II (1976), which reviewed the PVI 10-year plan. This led to the American Board for Certification in Orthotics and Prosthetics (ABC) modifying its bachelor's program requirement (1980) and phasing out short-term courses as a requirement for certification. At this time, conversations about the manpower needs of the profession and future needs were also undertaken, but without immediate, rapid impact.

“ It becomes imperative that a profession spell out its own standards and objectives. It must claim right to offer direction to its own development. If it neglects this, we can expect outside sources to assume this role. ”

— J.W. Perry, Ph.D. (1970)

The next inflection point occurred in 1990 with the Phoenix Conference, whose goal was to develop a plan to refine the present education programs. Three focus groups were conducted, dealing with funding, research and education. This ferment resulted in the Joint Task Force on the Educational Accreditation Commission (EAC) (1990-91), which addressed the issues of external accreditation and residency. As a result of the Task Force's recommendations, NCOPE was created in 1991, stimulating a surge of activity: recognition by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), establishment of O&P residency programs, development of standards for O&P education, recognition by the American Medical Association in 1992, and the undertaking of more manpower studies.

The development of the profession during this period was also stimulated by activities involving ABC. In 1949, ABC had established an advisory board on educational standards. Moreover, the EAC functioned as an ABC Commission. In 1986, ABC approved the baccalaureate degree as a pre-requisite for sitting for the ABC examination. ABC and NCOPE have worked cooperatively since the early 1990s to advance issues relating to O&P education, certification and advancement.

The Education Summit in New Orleans presents another inflection point. The O&P profession has the opportunity to control its own destiny and set the course for the next decade and beyond. Decisive action is necessary, not just to keep pace with other allied health professionals, but to be proactive on our own behalf. Moreover, O&P must mix vision with a more imperative sense of the need for decisive, rapid action.

Current and Future State of O&P Education

Bryan Malas, MHPE, CO, of Childrens Memorial Hospital provided an overview of the current and future state of O&P training.

Current State of O&P Training

Three levels of O&P Educational Programs currently exist:

- Practitioner Level (CAAHEP Accredited)
 - Master's = 1
 - Baccalaureate = 3
 - Post-Baccalaureate = 5

- Assistant Level (NCOPE Accredited)
 - Associate Degree/Certificate = 1

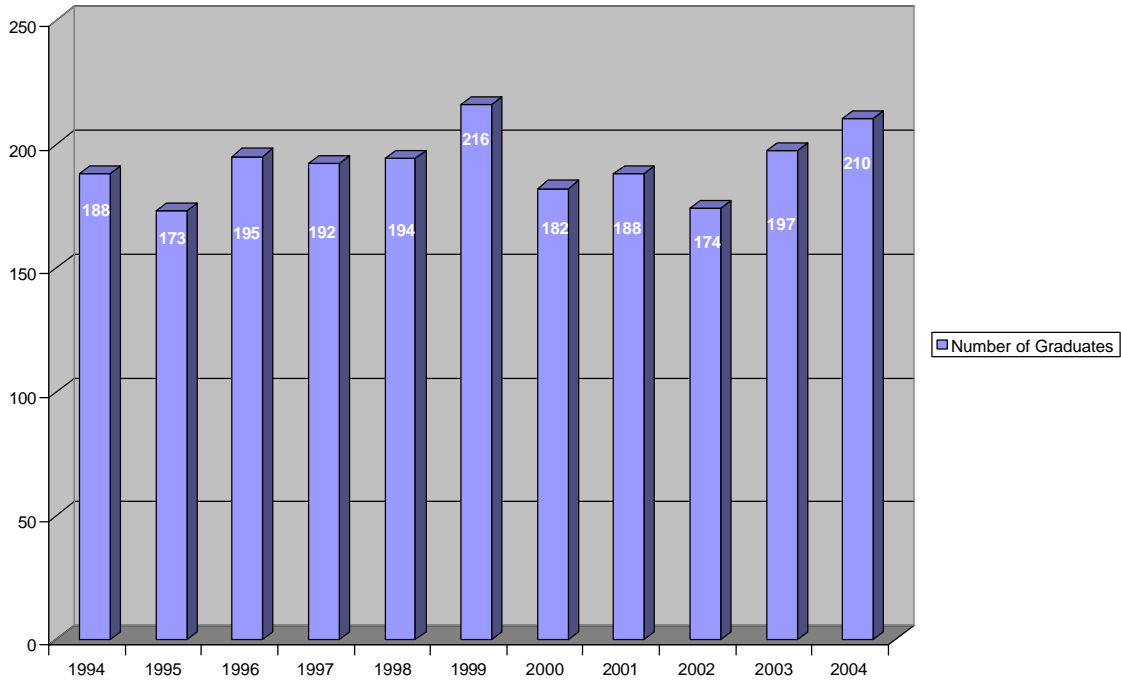
- Technician Level (NCOPE Accredited)
 - Associate Degree/Certificate = 5

The first graphic on the next page portrays the number of O&P graduates over the past 10 years. Following a high water mark of 216 graduates in 1999, the number of O&P graduates declined in the early 2000s to under 200, rebounding in 2004 to 210 graduates.

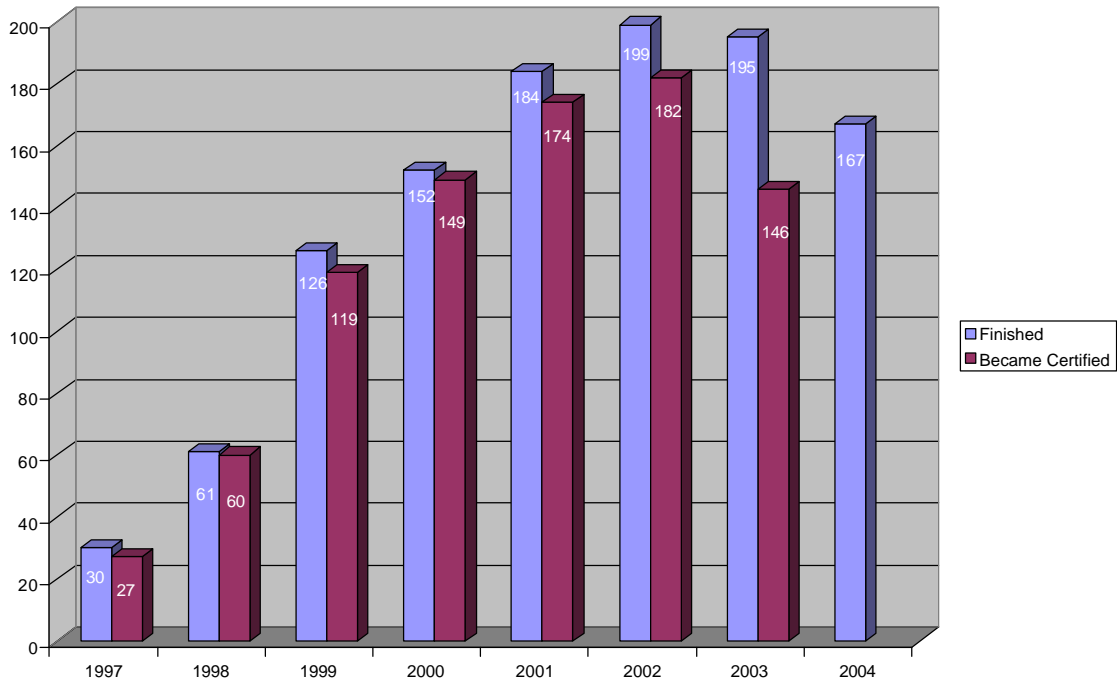
Residency is an essential element in the training of O&P practitioners. Residency became a certification requirement on December 1, 1995. Currently, 306 accredited residency sites exist, providing 220 orthotic positions and 241 prosthetic positions. Since 1996, over 1,100 individuals have completed NCOPE residency.

The second graphic on the next page illustrates the number of NCOPE-recognized residencies and the number of individuals who completed their residencies and who were certified by ABC. The number of these individuals peaked in 2002.

Number of O&P Graduates in the Past 10 Years



Individuals who Completed NCOPE Residencies and were Certified by ABC



NOTE: NCOPE = National Commission on Orthotic and Prosthetic Education. Data on current certified practitioners, education programs, number of graduates and number of residents. Personal Communication with Bryan Malas, April 2005.

The Future of O&P Education

Existential questions confront the O&P profession: What forces will drive the future of O&P education?

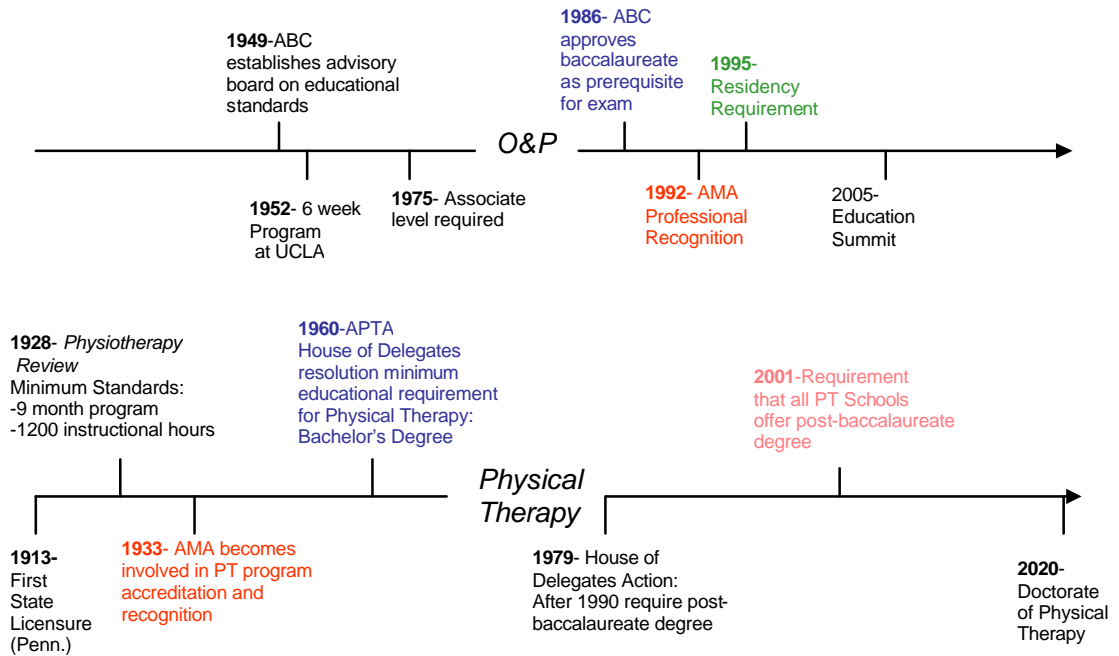
- External pressure from other allied health groups?
- The marketplace?
- The natural evolution of O&P, as shaped by leaders with vision?

This Education Summit provides the profession's leadership with the opportunity to answer the question: What do we want for our future?

- More responsibility?
- More reimbursement for more tasks?
- More researchers? More faculty?
- To protect our profession?
- Sound decision making for and about the profession?

The history of medical practice is a saga of increasing professionalism and greater levels of education for practitioners. The Flexner Report in 1910 set the stage for a century of enhancements in medical education (Flexner A. *Medical Education in the United States and Canada*. New York, NY: Carnegie Foundation for the Advancement of Teaching; 1910). In the 1990s, physician's assistants and physical therapists used advancing educational levels to build the reputation and standing of their respective allied health professions. The following graphic illustrates that even with decisive action at the 2005 Education Summit, O&P is in a race to keep pace with others.

To Keep Pace with Others...



The challenge and opportunity facing the 2005 Education Summit is to confront the future decisively.

Summit Questions and Answers

1. Is the O&P body of knowledge relevant for the future practitioner or does it need to be redefined as we move into the future?

The O&P body of knowledge has changed over the past 10 years. In addition to the evolution of education from a technical model to a clinical model, it is more robust and serves as the basis to define O&P practice, research and education activities. Summit participants noted the most change in the areas of technology, techniques, practice settings, legal and medical documentation, patient demographics, literature availability, reimbursement, and research.

In looking at clinical practice, the subject matter experts (SMEs) noted changes in the past decade. Areas of change include technology, clinical procedures, new patient management techniques, government regulations, and reimbursement as well as professionalism as it relates to facility accreditation and inter-professional relations.

There was agreement that the body of knowledge had not kept pace with the changes in clinical practice. The body of knowledge should always be **ahead** of the clinical practice in order to drive change and knowledge. The key is recognition of the changes that are necessary in the body of knowledge and practice. This demands a mechanism of ongoing evaluation of the body of knowledge and integration of the changes into education and daily practice.

With continued growth of the body of knowledge, there is a clear need for master's-level education as a prerequisite for practice. Moreover, master's-level students will facilitate an expansion of the scope of practice through improved research, methods, practices and publishing, as well as increased analytical and technical research skills.

Given the increased globalization, a core consistency would be useful for collaboration between educational programs around the globe. This could facilitate practicing in other countries, which has not been fostered by other health professions.

The European Community (EC) has agreed that ISPO Category I is the minimum standard for practitioner education and will be phased in over time in all EC countries. Currently, schools in low-income countries are working actively toward Category I entry-level education.

These developments should be monitored by the United States as the NCOPE standards already seem to be consistent with this *de facto* international standard. U.S. standards may exceed the Category I requirements, but should still be consistent with the general guidelines overall. This could increase the credibility of the U.S. practitioner in the rest of the world by demonstrating a consistent standard exists and not simply a confusing “crazy quilt” of entry options.

ISPO's Category I standards seem to parallel the current NCOPE standards. They could be formally incorporated into our structured residency requirements, which would enhance the consistency of preparation of students and increase credibility in the eyes of the world and among allied health peers.

Formal ISPO recognition will be increasingly important in the future. ISPO encourages education in both orthotics and prosthetics. But, in certain countries within unique problems and needs, such as countries fighting a polio epidemic, they will recognize single discipline schools and practitioners. The Category I practitioner incorporates research into patient care and participates in clinical research.

2. Are the current core competencies taught in O&P programs and residency relevant or do they need re-evaluation or updating and expansion?

There are developing events, trends and futures that will elevate demand for O&P and change the nature of our body of knowledge. The profession must be well informed in order to make the right choices.

The following graphic explores the contribution of entry-level education and the residency to the four core competencies required for practice: cognitive, behavioral/affective, traditional hand skills (psychomotor), and technology skills (cognitive). This graphic delineates the roles played by entry-level (plus clinical) education and residency to the skill sets of the O&P professional and his or her personal body of knowledge.

The graphic illustrates that the current core competencies are not adequate for the upcoming decade and demonstrates a need for a new educational model: the master's degree. The fully developed master's-level plus residency combination is needed to deliver the core competencies required for the practice of O&P.

Changing the educational system will better deliver the core competencies and produce qualified caregivers and researchers in the future. The current scheme of core competencies is based on the practitioner level. There is concern that core competencies for each level are not adequately defined for the fitter, technician and assistant. The SMEs support the possible expansion of practitioner core competencies, which currently represents an accumulation of all lower levels of patient care responsibilities.

In the future, updated core competencies will be developed using the following combination of techniques: current and future practice analysis; experts and funded studies; skill assessment studies specific to each level; and use outcomes of these studies to improve educational outcomes. The ISPO Category I standard serves as a good model reflecting adequate standards.

Core Competencies and Challenges				
	Cognitive	Behavioral/Affective	Traditional Hand Skills (Psychomotor)	Technology Skills (Cognitive)
Entry-Level Education (+clinical hours)	Needs to and continues to be updated Increase focus on patient care (not product focus) Distinguish science vs. clinical science Appropriate treatment plan (health economics)	Integrated into entry-level education (internship) Focus on consumer needs Enhance curriculum in area (including the rehabilitation team)	There are two levels of "hand skills" 1. Technical (as applied to lab) and 2. Patient care i.e., physical examination Ties together lecture/ demonstration through lab Should be basic minimum but differentiation between programs We are still defined (unique) by our hand skills Technology won't always be an option in every case	Constant re-evaluation and updating required Key to the future; will draw people to the profession
Residency (1 year per discipline-orthotics and prosthetics)	Current standards are appropriate Practical application Assessment of acquisition of skills needs updating	Constant impact on behavioral/affective skills (patient care) Evaluation process needs updating Interaction with better educated consumers requires different and higher-level skills	Residency is where theory is applied Expand assessment processes Focus on people, not just materials	Application during individual patient care How, when and why?

The ISPO Category I standards would also offer a curriculum that would work for the U.S. health care delivery system and schools. The residency program is an integral part of this total experience. Current residencies would have to be restructured to assure proper application of theory.

3. Educationally, where does the profession want to be in 10 to 15 years?

The SMEs agreed that O&P should transition to a higher-level degree as long as the body of knowledge drives and justifies this transition. This transition is much more likely to succeed with a combined O&P curriculum.

In discussing the possible structure of this higher entry-level degree, it was stressed that the residency must still be an integral part of the master's program. This would require residency to be carefully structured for proper sequencing, periodic assessment, sharing of best practices, and possible in-training exams to measure residency outcomes. The residency should also encourage affiliation with academic teaching hospitals and universities and better academic support and mentoring of residency sites (both residents and directors). Residency is the key factor for the future and what is unique about O&P.

Government issues, such as licensure and competitive bidding, will impact the restructuring of the education process, but they should not drive it. It is important to evaluate these issues during the restructuring process. For example, licensure sets the legal “bare minimums,” but should not set the bar for O&P schools. Some O&P programs will aspire to higher standards of achievement. The resulting diversity will give students options and variety in the programs available to them.

It is imperative that O&P establish higher-level requirements in light of recent external pressures on O&P such as the negotiated rulemaking process, competitive bidding and licensure. In the process, O&P educational programs should strive to enhance and change their place in the health care world, not just maintain a status quo. Licensure and advanced degrees are highly recognizable and make a visible, public statement.

It is important to move ahead to establish master’s-level education as the standard for O&P. In the future, the field will require a minimum of a master’s degree with the door open to raise the bar even higher as the body of knowledge and scope of practice continue expand further.

There is a need to articulate a clear and forward-thinking definition of O&P for the future. In the process, it is acceptable to advance the interests of O&P practitioners. The vision needs to step up and elevate how O&P professionals are perceived by others.

O&P needs to be better positioned in the reimbursement hierarchy. Orthotists and prosthetists are currently considered by the Federal authorities as suppliers (and use L-codes for reimbursement) rather than as health care service providers (who use CPT-codes). Being acknowledged as a provider would reflect a status change that acknowledges a greater level of responsibilities for care of the patient.

The current system of reimbursement is already undergoing significant changes. An expanded scope of practice would likely require a new reimbursement system. O&P has a role in helping change the landscape of reimbursement but to do so effectively, O&P needs to speak with one unified voice. The differences between custom-made and off-the-shelf devices are blurring today, and changes of this sort will become more of an issue in the future.

Technology could play a role in basic education and training, continuing education, refreshment of skills, collaboration of practice, and sharing of best practices. Technology has always impacted O&P and will continue to do so. It will change the delivery of the care model—this is a key practice issue—while patient management will still be the centerpiece of care (another practice issue).

Distance education and collaborative learning require technology and are potentially important to O&P's future. The issue of having enough people to teach appropriate areas is a major short-term challenge. Distance education can assist by sharing access to key experts. Most people join a practice profession to be care-givers, not teachers or researchers, so there will always be a strong need for effective clinical education.

4. Why should the profession move toward a master's degree as an entry-level education in the next decade?

The group was able to review and discuss its belief that evidence supports this move. Highlighted areas discussed and referenced throughout the conference included:

- The marketplace (supported by Alicia Davis and Mark Edwards studies);
- Expanded body of knowledge and technical advances;
- O&P's need to move toward evidence-based medicine which is grounded in research;
- External pressures;
- Consumer expectations, demands and accountability;
- Readiness of current programs to upgrade to the master's-level which includes additional research skills, advanced science and patient management.

The group agreed that transition to a higher level of education could attract an increased number of applications to the programs by appealing to current PT/OT students or those individuals who may have not considered O&P as a profession. Concern was expressed that moving to a higher entry-level standard may not necessarily produce more clinicians, but would prepare clinicians to deliver higher-quality service. Moreover, better-trained clinicians can be expected to increase teaching and research capacity.

The group discussed three tracks as possible options*:

1. A practitioner master's and clinical residency track
2. An academic master's track with a thesis requirement during the residency
3. Combinations of the two tracks

**NOTE (Excerpt taken from the Advanced Education & Research Training Initiative [AERTI] report):*
There are many different levels of advanced education, and degree nomenclature is often inconsistent, leading to confusion as to the nature of a specific designation. This is of particular concern in fields with both practice and academic degrees, because the former provide vocational training while the latter focus on research training.

The Council of Graduate Schools (CGS) has attempted to define and standardize degree nomenclature. These guidelines help to minimize confusion as to whether a degree is academic (research) or practice based. For example, the field of education, in keeping with these guidelines, has developed well-defined nomenclature that clearly distinguishes between academic and practice degrees:

- Master of Education (M.Ed.) is a practice degree.
- Doctor of Education (Ed.D.) is a practice degree, generally pursued by school principals, curriculum designers, school superintendents.
- Master of Science (M.S.) in Education or a Master of Art (M.A.) in Education are academic degrees.
- Doctor of Philosophy (Ph.D.) in Education is an academic degree.

To avoid misunderstanding, it is strongly recommended that O&P programs follow the nomenclature suggested by the Council of Graduate Schools.

There are two differing educational pathways within O&P. Please note that some of the following pathways are not currently available within the United States:

1. Professional/clinically based vocational education, including entry-level practice degrees.

Examples would include:

- Non-baccalaureate education
 - o Technical training, such as technician courses
 - o Experiential training
- Baccalaureate degrees
- Post-Baccalaureate Certificates
- Post-Baccalaureate Master's that is a practice degree. Following the CGS guidelines, such a degree would be designated an MPO.
- Post-Baccalaureate Doctorate that is a practice degree. Following the CGS guidelines, such a degree would be designated a DPO.

2. Academic/research based degrees pursued subsequent to baccalaureate education:

- Master of Science (M.S.)
- Doctor of Philosophy (Ph.D.)
- Doctor of Science (Sc.D.)

The Summit participants believed that a transition to a higher entry-level requirement will assist the O&P profession in retaining as well as expanding the scope of practice. As O&P expands, so does the profession's credibility as a member of the health care team. In addition, this transition will provide more evidence-based outcomes, which are necessary to improve government relations and enhance reimbursement. The judgment of the participants was that a master's-level degree would improve the state of practice through enhancement of skills, opportunities for specialization and increased availability of research and research-based practice.

A transition of this level will not be easy. Current practicing orthotists and prosthetists who are not educated at the same level could exert pressure to resist such a move. Implementation could present several challenges, which could include: funding the new program requirements, coordination of the residency if it is the responsibility of the schools, increased length of education and its impact on students, and finally, faculty development to enable them to provide advanced degree programming.

In addition, staffing issues associated with increasing length and depth of the curriculum were also discussed. For instance, a longer timeframe to achieve the master's-level of training would extend the practitioner training period as well as the development of faculty to teach master's-level programs.

5. If the profession transitions to a master's degree through the next decade, what issues must be considered?

Discussion and debate occurred during the Summit on the many facets of what O&P's education could look like in the future and the impact it would have on the professions patients and practice. Consensus was reached that orthotics and prosthetics should both be integrated into a master's program rather than offering the disciplines independently. The core education would be in both disciplines, with specialization in areas such as technical, business, teaching, research or advanced clinical practice. Variations on this approach could permit a range of structures and paths to achieve a master's and could foster additional specialization and competency building.

If an institution decides to develop a master's-level program with a specialization in advanced clinical practice, then it was agreed that academic residencies become even more important. In this instance, the residency program would need to be integrated into the master's degree. The profession, via NCOPE, must investigate, discuss and compare the advantages and disadvantages of the different models for integrating a residency into the master's degree program.

O&P is not alone in considering movement to a higher-level of education. The participants had many resources available for consideration during their deliberations. Health care professions that have transitioned to a master's level degree or higher and could be used as models for O&P are:

- Nurse Practitioners
- Physician's Assistants (PA)
- Physical Therapists (PT), who have moved beyond the bachelor's and master's to the doctorate
- Occupational Therapists (OT)

Concern was expressed on how the movement to a master's requirement could impact staffing as well as the other levels of care within O&P. Consensus was that a more comprehensive study would be needed in the future using data from ABC and BOC-credentialed practitioners. Key will be the career pathways available for individuals to pursue a credential or license. The group agreed that movement to a higher level for the practitioner would not have a negative impact on the fitters, technicians and assistants. It was agreed that the assistant and fitter levels may need to be reviewed and redefined in the future.

6. Will the current programs be able to justify this transition to their university administrations?

All participants—including the many educators present—agreed that the O&P programs could move toward a master’s-level if mandated by the profession. The programs would need adequate time to work with their administrations, develop curriculum and upgrade the credentials of their existing teaching staffs. Implementation will be different for programs migrating from the current baccalaureate level vs. those currently offering a post-baccalaureate certificate program. The group did identify the following hurdles that must be addressed in the future:

- Financial requirements
- Necessary curriculum additions
- Research expansion
- Requirement for more faculty
- Requisite time to achieve approval through university channels
- Sequence of courses and experiences
- Number of credit hours required
- Residency interface
- Politics (within the profession and on individual campuses)

The group agreed that the profession has viable prototypes to use as models, since O&P currently has an institution already offering a master's program, which would make the transition for the other programs easier and hopefully accomplished in a shorter time frame. The transition will include the need for advanced degrees for faculty and the acquisition of new faculty, which will take time and concerted efforts.

The participants worked from the assumption that schools would want to move their current programs to the higher level. But all believed a transition to a master’s program would benefit the university, due to the added value and marketability of program offerings. Moving to this level could allow for crossover of people from other professions. The universities would need to achieve external and internal “buy-in” to have a successful, smooth transition. The group discussed ways to make this transition successful and accepted at the university level. They included:

- A structured and clear foundation of set courses
- A demonstrated academic rigor necessary for a master’s-level program
- The provision of unique course work
- Identification and hiring of qualified instructors

- Identification of and access to potential students
- A fiscally sound, self-supportive program
- Access to adequate facilities
- Effective and articulate local champions at each university

The Summit participants discussed the impact of the movement to higher-level requirements on student enrollment. The group agreed that student enrollment could increase if the O&P program is on par with other allied health and graduate programs and if it is not limited by a lack of facilities and staff. Interest will not likely increase if the resource demands for program establishment are too great.

7. How can O&P's move toward a master's-level program be used to attract underrepresented populations and practitioners to underserved areas?

The profession needs to conduct awareness and outreach programs in historically underrepresented populations. The Academy is working with NCOPE residents and O&P practitioners to conduct outreach programs. These efforts should be redoubled. The profession also needs to leverage the publicity of the master's-level movement to appeal to traditional underrepresented students, among others.

Scholarships and internships can be critical. A number of institutions currently use scholarships and internships effectively and have developed a pipeline to attract historically underrepresented students.

Entry-level master's programs may interfere with the career ladder—the existing ability for one to “climb the O&P professional ladder” by incrementally advancing one's education from an associate degree technician to a baccalaureate level practitioner. This concern could be addressed by structuring the entry-level master's curriculum to encourage entry by individuals who have earned a bachelor's degree previously, particularly if they also have prior clinical experience in the field.

Implementation: Stakeholders and Resources

The participants in the Education Summit identified the following **stakeholders** that would be impacted by implementation of a higher entry-level requirement:

- Educational Institutions
 - Six have baccalaureate or certificate programs, and one more is developing a program
 - Two have master's-level offerings
 - Other non-O&P educational institutions (allied health offerings)
- Applicant Pool/Students
- Residency Sites
- Practitioners (all credentials)
- Sister Organizations
 - NCOPE, ABC, CAAHEP, AAOP, the American Orthotic and Prosthetic Association (AOPA), the National Association for Advancement of Orthotics and Prosthetics (NAAOP), the National Association of Prosthetic-Orthotic Educators (NAPOE)
- Veterans Affairs (especially related to research; implementing residency grants)
- Patient Community
 - Amputee Coalition of America (ACA), Muscular Dystrophy Association (MDA), Paralyzed Veterans of America (PVA), United Cerebral Palsy (UCP), Disabled Veterans, etc.

The participants also highlighted the following **resources**:

- Funding
 - Grants, scholarships, loans and assistantships
- Existing Precedents (PT/OT examples)
- Faculty/Facilities
- Shared Vision
- Industry Support
 - Suppliers/practitioners/manufacturers/endowments
- College Fund – established to fund doctoral programs

A Look at the Future Five to 10 Years Out

Summit participants examined what the future could look like in 10 years, through the following perspectives:

- The practitioner
- Academic programs
- Residency programs
- O&P manufacturers and suppliers
- Relations with the O&P organizations
- Professional development and continuing education
- Positioning of O&P in the health care industry

This section is a result of that exercise and is written as if it were 2010 or 2015 rather than 2005. This scenario is meant to be provocative, not predictive. But it demonstrates how the future of O&P can be dramatically transformed by leveraging the opportunities that accompany the elevation of the profession to a master's-level of practice.

It has taken the O&P profession nearly ten years to fully implement and realize the recommendations that emerged from the 2005 Education Summit. Over this time, the coordinated efforts of the leadership of the profession supported both the transition to a master's-level requirement for entry into professional practice and a host of related developments that were enabled by this aggressive initiative.

The Practitioner

The past decade has witnessed a significant shift in the patterns and cadences of professional practice for most O&P practitioners. The introduction of master's-level training has progressively raised the capacity of practitioners to engage in evidence-based practice. Leading-edge practitioners are regularly using outcomes-based research in their daily practices. This has become a valuable differentiator from practitioners who have been slow to elevate their practices. As a result, the standards for care have risen, and many internet-educated patients are demanding that their orthotists and prosthetists demonstrate the research/evidence basis that supports a specific program of care.

It took several years for the growing number of faculty and trained researchers in O&P to have an impact, but the past few years has witnessed a steady rise in the amount of research available to support standards of practice. As a result, today's practitioner has developed much closer working relations with the rehab team, and is routinely included in consultation before or at the start of care.

Many practitioners are focusing on new processes and techniques, frequently using advanced technology. Leading-edge orthotists and prosthetists are participating in surgery and rehab teams involved in osseointegration and regeneration. They are also using robotics and bionics, virtual gait analysis and related training and evaluation. Orthotists and prosthetists are also involved in improving the “able” body through the use of performance-enhancing O&P devices.

The use of technology has also transformed office and practice management for many O&P practitioners. The paperless office and use of electronic medical records is widespread, reflecting the need for health care providers to demonstrate commitment to cost control and patient safety as well as evidence-based care.

The year 2015 also finds the orthotist and prosthetist facing changes in patient issues brought on by greater patient awareness and expectations, decrease in the incidence of previously common problems such as spina bifida, new treatments for diabetes, and greater interest in performance-enhancing O&P devices of all kinds. Most orthotists and prosthetists have become experts in prevention of patient deterioration, developing competencies in supporting patient wellness. Compared with the practitioner of 2005, the O&P professional of 2015 is both higher tech and higher touch in dealing with the full range of patient needs. Efforts to have this recognized in reimbursement negotiations have experienced significant success, in spite of the efforts of competing professional groups and ongoing cost containment pressures.

Academic Programs

Academic O&P programs have been fully transformed by the implementation of the recommendations of the 2005 Education Summit. The past 10 years have witnessed many changes as programs have shifted to a master’s-level, and current teaching faculty have earned advanced degrees and developed the academic skills required to assume these new roles. The total number of full-time O&P faculty has doubled, and the number of adjuncts has grown even more. Growth has occurred both in the practitioner-oriented track and in a more academically-oriented track for the preparation of faculty.

In order to achieve this metamorphosis, academic O&P programs carefully deconstructed and reinvented their clinical and residency programs. The delivery of O&P education at all levels has relied on technology to enhance, enrich and extend the learning experience: e-learning. This has increased accessibility for entry-level students and practitioners seeking continuing education units. Virtual classrooms, simulations, video assessments and virtual demonstrations of competency have become validated and commonplace.

This transformation has led to significant changes in the way O&P is taught. The mentoring of students has become a key ingredient in the student development process. The learning process has become more clinically driven, and the linkage between residency and the academic/clinical experience is more integrated and important. Moreover, the issue of student failure has become important, since the master's-level program is more demanding and requires that some students who "made it" under 2005 standards be directed into other O&P-related options, if they are unable to demonstrate the competencies necessary for the master's-level credential.

Faculty members have also changed their practices in order to reach the "Gen Y" group effectively. These individuals are technology savvy or may challenge authority, although this differs across cultures.

To foster the use of research in practice, faculty collaborates with practitioners in ongoing research projects and in the translation of research findings into understandable, practitioner-oriented products. Corporate and foundation support enabled this development. An internet-based portal contains the body of knowledge from O&P research and examples of case studies from evidence-based practice provided by practitioners. This focus on practitioner-friendly research has accelerated the creation of an evidence-based culture among clinicians.

Academic programs have also been instrumental in working with manufacturers to create an engineering/manufacturing collaborative for testing new devices. This has provided independent validation of product capability and is a steady source of resources for the schools hosting this activity.

By 2015, the success of the master's-level programs in O&P has led to the development of prototype doctoral programs at several institutions, focusing on key O&P specializations.

The Residency Programs

In addition to deconstructing and reinventing the academic programs, residency programs have been reinvented and streamlined over the past 10 years. School-based programs have undergone substantial changes.

Residency programs routinely rely on distance casework and "at home" summative exams. Residencies consistently have more structure and monitoring, administered through residency review boards. They deploy the more stringent standards to elevate performance and, when necessary, redirect students into other fields or other branches of O&P work.

In 2015, a much closer, more comprehensive matching process between schools and residency sites places students in superior residency experiences that match their competency development needs.

Not only do institutions and residencies expect more of students, but student expectations have risen even more. Students expect excellent choices, effective matching and flexibility. Successful programs provide these and thrive; less successful programs do not compete effectively for the best students.

NCOPE has played a major role in the reinvention of residencies and the tight linkage between residencies and academic programs. NCOPE-accredited teaching residencies have been critical in the enhanced professionalism of residency programs.

Funding for residents has become an even more important issue over the years, as the total cost of an entry-level O&P education and residency has increased. The industry has worked out a variety of creative mechanisms for addressing this issue through collaboration between institutions, manufacturers and other stakeholders in the industry.

O&P Manufacturers and Suppliers

The manufacturers and suppliers to the O&P industry are important stakeholders in the increased professionalization of the industry. In 2015, O&P devices follow a combination of three tracks: 1) more technological and complicated components and devices, 2) off-the-shelf rather than customized devices and 3) mass-customized devices that can be quickly and cost-effectively fabricated to meet individual needs. In this manufacturing/fabrication environment, patients need evidence-based care that is rooted in sound evaluation of alternatives, not manufacturers' promotional materials.

With the elevation of O&P's status, practitioners play a major role in leading, guiding and shaping the R&D of manufacturers though reimbursements sometimes still remain a hurdle.

In 2015, practitioners are demanding evidence-based support data on what works in particular clinical applications.

Manufacturers and suppliers recognized the need and increased their support to academic and residency programs, and fund applied research and evaluation carried on by the schools. This was vital in helping the profession achieve these goals.

Relations with the O&P Organizations

Over the past decade, the O&P profession has resolved to attain its full potential, as memorialized in the recommendations from the 2005 Education Summit. The O&P profession adopted an elevated vision of the future and now projects a unified front to the health care industry. This required several important actions:

- 1) The industry realized it needed to portray a unified, forward-looking picture of the industry and its professionals.
- 2) Industry groups redoubled their efforts to pursue licensure in additional states and to leverage licensure relationships. Over time, these groups have become substantially more agile in achieving these goals.
- 3) AAOP has responded to this vision for the profession by taking even greater leadership for the advancement of the status of the O&P professional. This has led to even closer collaboration between ABC and NCOPE.
- 4) NCOPE has risen to the challenge of the 2005 Education Summit by taking an aggressive stance in promoting the new vision for the master's-level educational requirement. This leadership has proven essential to accelerating the development of the new academic capabilities necessary to achieve this vision.

Professional Development/Continuing Education

Following the 2005 Education Summit, the elevation of O&P to a master's-level professional discipline created substantial requirements in continuing education for both current practitioners and new practitioners who came into the profession with strong expectations for conducting evidence-based O&P practice.

Specialized online education courses were the only practical vehicle for meeting these requirements in a timely and affordable manner. A number of early on-line learning providers in the profession worked collaboratively in the years after the Education Summit to create flexible e-learning programs that could be offered across the industry. This solution included courses to meet the needs for continuing education and recertification.

To elevate its level of practice, the O&P profession discovered the need to become more reflective in recognizing and addressing its own strengths and weaknesses. The development of this self-critical capacity has been a major advancement following the 2005 Education Summit.

Positioning of O&P in the Health Care Industry

The health care industry is highly complex, dynamic and competitive. The efforts of a profession like O&P to elevate its standing do not occur in a vacuum; they both provoke reactions by other health care professions and are shaped by the ongoing, aggressive campaigns of other professionals to advance their competitive standing in the professional pantheon.

The efforts of O&P to elevate its standing have been successful in raising the visibility and standing of the profession, but progress has been difficult and erratic. Tangible results are evident in reimbursement and governmental recognition. Even more progress will occur as more and more practitioners display the evidence-based practice habits that demonstrate the higher standard of care that derives from the master's-level requirement.

Appendix I

Summit Planning Committee

NCOPE and AAOP started collaborative planning for the Education Summit in the fall of 2004, once funding from AAOP's from the Department of Education grant was confirmed. The planning committee met via conference call every month leading up to the Summit in April 2005.

The goals for the committee were:

1. Identify invited participants
2. Select location, date and meeting site
3. Identify and hire facilitator
4. Develop agenda and meeting format
5. Work with the Academy and grant representatives throughout the process
6. Produce a final report from the meeting
7. Develop recommendations for implementing of final report
8. Work within the budgets of the AAOP grant and NCOPE

PLANNING COMMITTEE MEMBERS

William J. Barringer, M.S., CO, FAAOP, chairman of the Planning Committee

Bryan S. Malas, MHPE, CO, NCOPE chairman

Julie G. Hayes, director of development and communications for AAOP and grant representative

Robin C. Seabrook, executive director, NCOPE

Donald M. Norris, Ph.D., facilitator (*joined the committee in February 2005*)

Appendix II

Summit Participants

William J. Barringer, M.S., CO, FAAOP - *At large*
William D. Beiswenger, CPO, FAAOP - *NCOPE*
Gary M. Berke, M.S., CP, FAAOP - *AAOP*
Dan Blocka, B.Sc., CO(c) - *ISPO*
Michael D. Brncick, M.Ed., CPO - *At large*
Catherine A. Carter, *interim executive director* - *ABC*
Denise Chapman-Winn, Ph.D., PT - *NCOPE*
Alicia J. Davis, MPA, CPO, FAAOP - *NCOPE*
Jonathan D. Day, CPO - *NCOPE*
Beth Durham, *BOCPO – Board for Orthotist/Prosthetist Certification (BOC)*
Mark L. Edwards, MHPE, CP - *NAPOE*
Stephen B. Fletcher, CPO - *ABC*
Gene Gary-Williams, Ph.D., PT - *At large*
Edward N. Haddon, M.Ed., CO - *NAPOE*
Julie G. Hayes, *director of development and communications* - *AAOP/Grant representative*
Scott Hornbeak, CPO, FAAOP - *NAPOE*
Christopher F. Hovorka, M.S., CPO - *NCOPE*
Sharon M. Hubbard, M.S. - *Grant representative*
Susan L. Kapp, CPO - *NAPOE*
Robert S. Lin, CPO, FAAOP - *NAPOE*
Bryan S. Malas, MHPE, CO - *NCOPE*
John W. Michael, CPO, M.Ed., FAAOP, FISPO - *co-principal investigator/Grant representative*
Donald M. Norris, Ph.D. - *facilitator*
Michael H. Oros, CPO - *NCOPE*
Walter L. Racette, CPO - *AOPA*
Ira Schoenwald, Ph.D. - *At large*
C. Michael Schuch, CPO, FAAOP - *NCOPE*
Robin C. Seabrook, *executive director*, *NCOPE*
Donald G. Shurr, CPO, PT - *NAPOE*
Douglas G. Smith, MD - *principal investigator/Grant representative*
Steven R. Whiteside, CO, FAAOP - *NCOPE*
Clayton R. Wright, CP - *NAPOE*
Ann Yamane, CO - *NCOPE*

Appendix III

Summit Resources

The NCOPE Web site (www.ncope.org) contains a section dedicated to the Education Summit (password:05 summit), which includes the following list of definitions, body of knowledge materials and seminal reports and white papers relating to the O&P profession:

General Resources

Conflict of Interest Form
Glossary of Terms
The Master's Degree

O&P Reports/Information

Phoenix Report
Scope of Practice
¹ Strategic Plan (AERTI) | Appendices (I, II) | Footnotes (1, 2, 3, 4)
2002 POEM Report (reference pages 29, 67 and 70)
WHO Guidelines Report (reference pages: Tasks of Personnel, pp. 12-13;
Professional Profile Category I, pp. 21-23; Guidelines for Training Category I
Personnel, pp. 24-31)

Other Professions

NAACLS Master's Rationale
Physician Assistant Taskforce Report
Physical Therapist Time Line

Statistics/Studies

ABC Credentialed Numbers
BOC Credentialed Numbers
2004 Accredited Educational Program Listing and Faculty Numbers
Alicia Davis Study (reference pages 22-38)
Bureau of Labor Statistics (reference pages 17 and 18)
Caroline Nielsen Study
Edwards Survey
O&P School Student Profiles
Practice Analysis

¹ The Council of Graduate Schools in the United States. "The Master's Degree Program, A Policy Statement." Washington, D.C.: CGS, April 1981.

Appendix IV

Education Summit Agenda

April 8, 2005

8:00-9:00 a.m.	Introductions and Opening Session Welcome and Introduction of Facilitator -Julie Hayes and Robin Seabrook Facilitator Remarks and Instructions -Donald Norris O&P Education History -William Barringer, M.S., CO, FAAOP Current and Future State of O&P Education -Bryan Malas, MHPE, CO Discussion
9:00-10:30 a.m.	Four Breakout Groups on Issues from Questions 1 and 2
10:30-10:45 a.m.	Break
10:45 a.m. - noon	Report from Breakout Groups and Discussion
noon - 1:00 p.m.	Lunch
1:00-1:30 p.m.	Group of the Whole, Consensus Building on Questions 1 and 2
1:30-3:00 p.m.	Four Breakout Groups on Issues from Questions 3 and 4
3:00-3:15 p.m.	Break
3:15-4:30 p.m.	Report from Breakout Groups and Discussion
4:30-5:00 p.m.	Group of the Whole, Consensus Building on Questions 3 and 4

April 9, 2005

8:00-9:00 a.m.	Report on Consensus on Issues from Preceding Day (Norris), followed by Discussion
9:00-10:30 a.m.	Four Breakout Groups on Issues from Questions 5 and 6
10:30-10:45 a.m.	Break
10:45 a.m.-noon	Report from Breakout Groups and Discussion
noon - 1:00 p.m.	Lunch
1:00-1:30 p.m.	Group of the Whole, Consensus Building on Questions 5 and 6
1:30-3:00 p.m.	Consensus Building
3:00-3:15 p.m.	Break
3:15-5:00 p.m.	Other Issues and Factors, Actions, Next Steps

Detailed summit questions and answers

1. Is the O&P body of knowledge relevant for the future practitioner or does it need to be redefined as we move into the future?

1a. Has the body of knowledge changed in the past 10 years? If yes, how?

Today, a more robust definition for the body of knowledge has emerged. The body of knowledge is the basis for O&P practice, research and education. It defines our practice, research and education activities.

Yes, the body of knowledge has changed in the areas of:

- Technology
- Reimbursement
- Techniques
- Practice settings
- Documentation, both medical and legal
- Patient demographics
- Access to literature
- Research (change in the culture related to research, i.e. education and residency)
- Evolution of education to a clinical model from a technical model

1b. Has clinical practice changed in the last 10 years? If yes, has the body of knowledge kept pace with this change?

Yes, clinical practice has changed in the last 10 years, especially in the areas of:

- Technology
- Clinical procedures and new patient management techniques
- Professionalism (facility accreditation, inter-professional relations), government regulation and reimbursement

No, the body of knowledge will always be and should always be **ahead** of the clinical practice in order to drive change and knowledge. The key is recognition of the changes that are necessary in the body of knowledge and practice. This demands a mechanism of ongoing evaluation of the body of knowledge and integration of the changes into education and practice.

1c. Will a growing body of knowledge expand our scope of practice and move us to consider a new educational model based on a master's degree?

Yes, the growing body of knowledge is driving the need for master's-level education as a prerequisite for practice. Moreover, master's-level students will bring forth:

- An expansion of scope of practice with improved research;
- Increased analytical and technical research skills; and
- Improved methods, practices and publishing.

1d. Given increasing globalization, do we need to be consistent with other countries?

Yes, a core consistency would be useful for collaboration between educational programs around the globe. This could facilitate practicing in other countries, which has not been fostered by other health professions.

The European Community (EC) has agreed that ISPO Category I is the minimum standard for practitioner education and will be phased in over time in all EC countries. Currently, schools in low-income countries are working actively toward Category I entry-level education.

These developments should be monitored by the United States as the NCOPE standards already seem to be consistent with this *de facto* international standard. U.S. standards may exceed the Category I requirements, but should still be consistent with the general guidelines overall. This could increase the credibility of the U.S. practitioner in the rest of the world by demonstrating a consistent standard and not a “crazy quilt” of entry options.

1e. Does ISPO's Category I standard identify competencies and materials that should be part of O&P's body of knowledge?

Yes, ISPO's Category I standards seem to parallel the current NCOPE standards. They could be formally incorporated into our structured residency requirements, which would enhance the consistency of preparation of students and increase credibility in the eyes of the world and among allied health peers.

Formal ISPO recognition will be increasingly important in the future. ISPO encourages education in both orthotics and prosthetics. But, in certain countries, with unique problems and needs such as those dealing with polio epidemic, ISPO will recognize single discipline schools and practitioners (see question 5a). The Category I practitioner incorporates research into patient care and participates in clinical research.

2. Are the current core competencies that are taught in O&P programs and in the residency relevant or do they need re-evaluation or updating and expansion?

2a. Are there developing events, trends or futures that will elevate demand for O&P or change the nature of our body of knowledge?

Yes, future events will elevate demand for O&P and change the nature of our body of knowledge, but only if the profession makes the right decisions.

The following graphic explores the contribution of entry-level education and residence to the four core competencies required for practice: cognitive, behavioral/affective, traditional hand skills (psychomotor), and technology skills (cognitive). This graphic parcels out the roles played by entry-level (plus clinical) education and residency to the skill sets of the O&P professional and his or her personal body of knowledge.

Core Competencies				
	Cognitive	Behavioral/Affective	Traditional Hand Skills (Psychomotor)	Technology Skills (Cognitive)
Entry-Level Education (+clinical hours)	Needs to and continues to be updated Increase focus on patient care (not product focus) Distinguish science vs. clinical science Appropriate treatment plan (health economics)	Integrated into entry-level education (internship) Focus on consumer needs Enhance curriculum in area (including the rehabilitation team)	There are two levels of "hand skills" 1. Technical (as applied to lab) and 2. Patient care i.e., physical examination Ties together lecture/ demonstration through lab Should be basic minimum but differentiation between programs We are still defined (unique) by our hand skills Technology won't always be an option in every case	Constant re-evaluation and updating required Key to the future; will draw people to the profession
Residency (1-year per discipline-orthotics and prosthetics)	Current standards are appropriate Practical application Assessment of acquisition of skills needs updating	Constant impact on behavioral/affective skills (patient care) Evaluation process needs updating Interaction with better educated consumers requires different and higher-level skills	Residency is where theory hits the road Expand assessment processes Focus on people, not just materials	Application during individual patient care How, when and why?

2b. If our core competencies are not adequate for the upcoming decade, does this demonstrate the need for a new educational model—master’s degree—or just re-evaluation of the current core competencies?

The master’s-level degree plus residency is needed to deliver the core competencies required for the practice of O&P. The core competencies graphic demonstrates this point.

2c. Will changing the educational system to deliver the core competencies better and produce a qualified caregiver and researcher in the future?

Yes, the quality of care and research will improve, as reinforced by the core competencies graphic.

2d. If our core competencies are inadequate to meet the needs of the future, what will we have to add in order to make them relevant to the future practice of O&P?

The core competencies graphic expresses the contention that a fully developed master’s-level plus residency combination is needed to deliver the core competencies necessary for the future practitioner.

2e. How do the levels of O&P care (practitioner, technician, assistant, fitter) fit into the current scheme of core competencies? Are the core competencies specific to each level?

The current scheme is based on the practitioner level. We are concerned that core competencies for each level are not adequately defined and should be for fitter, technician and assistant. We support the possible expansion of practitioner core competencies.

2f. Is the practitioner level of competencies an accumulation of all levels?

Yes, definitely.

2g. How will we determine core competencies for the future?

The following combination of techniques will be needed:

- Current and future practice analysis,
- Experts and funded studies,
- Skill assessment studies specific to each level, and
- Outcomes of these studies used to improve educational outcomes.

2h. Is the ISPO Category I standard high enough?

Yes, the “Professional Profile for Category I” standard is high enough.

2i. Would that curriculum work for our health care delivery system and schools?

Yes, though it will be difficult to attain this in a four-year or master’s degree program without the residency component. The residency program is an integral part of this total experience. Current residencies would have to be restructured to assure proper application of theory.

3. Educationally, where does the profession want to be in 10 to 15 years?

3a. Should we transition to a higher-level degree?

Yes, as long as the body of knowledge drives and justifies this transition. This transition is much more likely to succeed with a combined O&P curriculum.

Further discussion is required to decide whether master’s-level should be the *only* pathway for entry-level at some point in the future. (This point is discussed later in the findings).

3b. If we move to a higher-level degree, can we link this with our residency program?

Residency could be an integral part of the master’s program. This would require the residency to be carefully structured:

- Proper sequencing,
- Periodic assessment,

- Outcomes measured through an in-training exam,
- Better academic support and mentoring of residency sites (residents and directors) as well as sharing of best practices, and
- Encourage affiliation with academic teaching hospitals and universities.

3c. How do governmental issues, such as licensure and competitive bidding, affect the restructuring of education?

Government issues impact the education process, but they should not drive the process. We need to think through the impact of education on governmental issues: How will the changes of future entry-level education impact governmental issues such as licensure and competitive bidding?

Licensure sets the legal “bare minimums.” Some programs will aspire to higher standards of achievement. This will allow choice and variety in the programs available to students.

3d. In light of the recent development of external pressures on O&P (the negotiated rulemaking process, physical therapists infringement, competitive bidding, licensure, impacts of technology), is it imperative that we move to the higher-level to maintain our place in the health care world?

Yes, it is imperative that O&P establish higher-level requirements. In the process, we should strive to enhance and change our place in the health care world, not just maintain a status quo. Licensure and degrees are highly recognizable and make a visible, public statement.

Residency is the key factor for the future and what is unique about O&P (i.e., residency tie to licensure as a requirement).

Yes, it is important to move ahead to establish master’s-level education as the standard for O&P. In the future, the field will require a minimum of a master’s degree with the potential open to raise the bar relative to the body of knowledge even higher.

We must articulate a clear and forward-looking definition for O&P for the future. In the process, it is acceptable to advance the interests of O&P practitioners. We need to step up and elevate how we are perceived by others. Currently, O&P practitioners are simply seen as suppliers of durable medical equipment. We need to move to the next level, being known as health care providers.

3e. What role could technology play in basic education and training, continuing education, refreshment of skills, collaboration in practice and sharing of best practices?

Technology has impacted O&P and will continue to do so. Distance education and collaborative learning require technology and are potentially important to O&P’s future.

The issue of having enough people to teach appropriate areas is vexing. Distance education can assist by sharing access to key experts. Most people join a practice profession to be clinicians, not educators.

O&P should embrace technology. This will change the delivery of care model—this is a key practice issue. Patient management is still the centerpiece of care (another practice issue).

3f. Would reimbursement be affected? How?

O&P needs to be better positioned in the reimbursement hierarchy. Orthotists and prosthetists currently are treated as suppliers, billing through L-codes rather than service providers, who use CPT-codes. Being treated as a provider reflects a status change that mirrors a greater level of responsibilities for the practitioner.

The current system of reimbursement may not last. It is already experiencing changes. An expanded scope of practice will require a new reimbursement system. O&P has a role in helping change the landscape of reimbursement. This is hard to represent, however; O&P needs to speak with a unified voice.

The differences between custom-made and off-the-shelf devices are blurring today, and this will become more of an issue in the future. The level of industry pay for technicians is also a concern.

4. Why should the profession move toward a master's degree as an entry-level requirement in the next decade?

4a. What evidence supports this transition?

This transition is strongly supported by the following evidence:

- The marketplace (supported within the profession by Davis and Edwards studies),
- Expanded body of knowledge and technical advances,
- Need for evidence-based medicine grounded in research,
- Current curricula are poised for an upgrade to master's, with the addition of research skills, advanced science, patient management, and other related courses,
- Direction of other health professions,
- External pressures,
- Perception of O&P's lack of education as was illustrated during negotiated rulemaking, and
- Consumer expectations, demands and accountability.

4b. Will this transition produce more teachers, researchers and better clinicians?

Yes, this transition will likely attract an increased number of applications from those who might have applied to master's in physical or occupational therapy programs. Also, it will attract applicants who may not have considered the profession in the past.

Over time, this may not produce more clinicians, but, more importantly, will prepare clinicians to deliver higher-quality service. Moreover, better-trained clinicians will ultimately increase teaching and research capacity.

It may be ideal for the profession to have two sets of requirements: 1) a practitioner master's and clinical residency track, and 2) an academic master's track.

4c. Will this transition help us compete with external pressures, such as PT infringement, government relations and lack of reimbursement?

This transition will enable the O&P profession to retain and expand our scope of practice. In the process, we will become a more credible member of the health care team. This transition will provide more evidence-based outcomes in our field, which are necessary to improve government relations and enhance reimbursement.

4d. How does a master's-level degree impact our clinical training program?

Our basic assumption is that a master's-level degree must include both O&P education and a residency. This approach will provide standardization of minimum entry-level requirements. It will also offer a foundation of combined O&P education and the opportunity for additional specialization. Optimally, variety in educational models at the master's level will provide students with a range of choices.

A master's-level degree requirement would also bring increased research-based activity to the profession at both the practitioner level and the educational level. It would also increase clinical skills education and provide a variety of clinical experiences. These could be integrated with the program, at the end of the educational program, or a mixture of the two. This approach would present the opportunity to create coordination between education programs and residency sites with NCOPE oversight.

In our judgment, the master's-level degree would improve the state of practice through enhancement of skills, opportunities for specialization and increasing availability of research and research-based practice.

4e. Are there any negatives associated with this type of transition?

This transition will not be easy. Implementation will present several significant challenges:

- Funding the new program requirements;
- Coordination of the residency if it is the responsibility of the school;
- The increased length of education and its impact on students; and
- Faculty development to enable schools to teach advanced degree programs.

In addition, standards have an unclear identity in the eyes of the public, so there may be mixed reaction to O&P's transition. Moreover, some existing practitioners who do not have the proposed level of training will exert pressure to resist this move. There would also be staffing issues associated with the increasing length and depth of the curriculum. For instance, a longer time frame to achieve the master's-level of training could keep practitioners in training longer. Also, the development of faculty to teach master's-level programs would require significant time and resources.

4f. Is there an international system of accreditation for education?

ISPO is an international organization that recognizes Category I & II practitioners. Currently, accreditation of the process began in 2004 and is reviewed voluntarily on a five-year term.

4g. Is there an international system for certification? Do they mix the concepts of certification/criteria with education?

There is no international system and no reciprocity at this time.

5. If the profession transitions to a master's degree through the next decade:

5a. Should O&P be combined into one discipline for master's-level training, thereby expanding the body of knowledge and producing clinicians who can practice both?

Yes, practitioners need **both** orthotics and prosthetics to be integrated at the master's-level. This could be achieved through a core education in both, then specialization in areas such as technical, business, teaching, research, or advanced clinical. Variations on this approach will permit a range of structures and paths to achieve a master's and could foster additional specialization and competency building. Outcomes measurements should be developed to demonstrate the core competencies needed to be a successful practitioner.

5b. Should O&P expand each discipline for master's-level training and grow each, thereby producing highly trained specialists for each?

No, it is best if the master's student is trained in both orthotics and prosthetics. Specialization should be encouraged after the core education is achieved.

5c. How should it be designed: technical/professional, research or a combination of the two?

As previously stated, the best approach is a clinical O&P core plus specialization in areas such as: technical, business, teaching, research, and advanced clinical.

5d. How will this affect the residency program, since we recognize that clinical training is necessary, and is it possible to make the residency part of the master's degree?

With specialization, academic residencies are even more important. It should be possible to integrate the residency program into a master's degree. The profession needs to investigate, discuss and compare the advantages and disadvantages of different models for integrating the residency into the master's degree experience.

5e. Has any other health care profession transitioned to a master's degree and are there models that we can evaluate?

Yes, several other health care professions have transitioned to a master's-level degree (or more) and should be evaluated and compared:

- Nurse practitioners
- Physician's assistants (PA)
- Physical therapists, who have actually gone beyond the master's to the doctorate
- Occupational therapists (OT)

Footnote: O&P has its own master's degree prototypes—Georgia Institute of Technology and Eastern Michigan University (under development)— which can also be included in the comparison.

5f. Are we sure there is a manpower shortage?

The study conducted by Caroline Nielsen, Ph.D. (Updated 2002 by NCOPE) suggested a staffing shortage, but it looked at the ABC credential only. A more comprehensive study is needed covering both ABC- and BOC-credentialed practitioners. Government issues like licensure and competitive bidding will also affect the personnel shortage.

Question: Will there be *career pathways* available other than the master's degree? O&P has always embraced the career ladder concept for fitters, technicians and assistants, who could conceivably move up the ladder and become practitioners. In reality, relatively few professionals have actually followed such routes.

Another key question: What are the *career pathway options* for *practitioner-level O&P professionals* – practicing O&P, business owner, working for suppliers/vendors, government/professional societies?

Public relations and marketing will affect the attraction of people to the profession. A master's degree requirement may attract even more people, including people who would not have considered O&P as it currently exists.

5g. What faculty would be available to teach at this level?

The current faculty would be available. However, the university will likely require that the faculty have the equivalent level degree or higher to that which the program is offering. (Reference AERTI report on this subject.)

Adjunct faculty would need to be used. Also, distance learning is an option, both for basic, entry-level education and for refresher training and continuing education.

Attraction of clinicians to be full-time faculty is an issue. Faculty-practice plans could be used to attract clinicians to assume faculty roles.

5h. Does the transitioning of the practitioner program to an entry-level master's degree affect the education of our technicians, assistants or fitters?

No. However, if the assistant and fitter levels are redefined or combined, the education of this new level would also need to be redefined.

5i. Will this program be attractive to potential students?

Yes. Current post-baccalaureate programs have many of the elements of a master's-level program. Marketing and public relations and recruitment will be the key. These efforts include the NCOPE residency requirement of an O&P awareness presentation and the AAOP O&P awareness program. Accessibility of programs for practitioners who want to complete the master's degree will be important and will include online, condensed programs and perhaps even a transition degree.

A master's-level degree may be less confusing to potential students than the mix of currently available baccalaureate and post-baccalaureate certificate programs.

The value to the consumer may also be raised by this program.

6. Will the current programs be able to justify this transition to their university administrations?

6a. Will current bachelor's/certificate programs be able to move toward master's-level training if mandated by NCOPE?

Yes, given new standards and adequate time to implement. Implementation will be different for programs migrating from a current baccalaureate program vs. those migrating from a post-baccalaureate certificate program.

There are several possible hurdles that must be addressed:

- Financial requirements,
- Necessary curriculum additions,
- Research,
- Inability of some current students to complete a master's-level program,
- Requirements for more faculty,
- Requisite time to achieve approval through the university council and university governance,
- Sequencing courses and experiences,
- Number of credit hours required,
- increased student fees, and
- residency interface.

There may be an opportunity to create a pre-admission curriculum. Course work and hours now being taught can lead to a master's in some universities. Post-baccalaureate entry eliminates many challenges institutions face in dealing with undergraduates. The migration to the master's-level will require special attention to clinical practice, science-based courses and research.

6b. How long will it take? The profession will need to take aggressive action on the major vectors of change. This transition needs to be accomplished by the end of 10 years.

Current institutions with master's-level degrees will have a viable prototype within the next two to three years. This will be useful in the transition.

The transition will include the need for advanced degrees for faculty and acquisition of new faculty. This will take time and concerted efforts.

Time will be required to develop the paperwork to transition to a master's-level degree. If done carefully, the move to O&P combination could reduce current redundancy that exists in core courses and therefore reduce the total hours required for master's in O&P. The challenge will include how to refine and reinvent 60-92 hours into an integrated O&P master's program.

Specialization in orthotics or prosthetics will only be possible on top of an integrated O&P base.

Question: Will the length of the residency be shortened for O&P to honor the overlap in patient care. Will it be integrated within the master's program?

6c. Will this transition benefit the university?

The participants in the Education Summit assumed that the institutional administrations of all present programs want to retain these programs.

This transition is a benefit to the university, but one needs to be concerned about a potential glut of master's-level degrees in higher education. The majority of master's offerings are clinical or professional.

There is added value and marketability for the university to include a master's-level degree in O&P. This may allow for crossover of people from other professional lives. The level of resources available for individual graduate student loans is higher than those available for individual undergraduates.

6d. What are the obstacles in the university system preventing this transition?

Achieving external and internal "buy-in" is always an issue for this sort of transition. Politics within the profession and politics at individual campuses will potentially be serious obstacles.

To succeed and be accepted at the university level, the master's-level O&P degree must:

- Include a structured and clear foundation set of courses;
- Demonstrate the academic rigor necessary for a master's-level program;
- Provide unique coursework;
- Identify and secure qualified instructors;
- Identify potential students and access to them;
- Be fiscally viable;
- Have access to adequate facilities; and
- Mobilize effective and articulate local champions at each university.

6e. Will this increase student enrollment?

The Summit participants answered this question conditionally:

- Yes, on par with other allied health and other graduate programs.
- Maybe, if not limited by current facilities and staff.
- No, if the resource demands are too great.

6f. Can O&P get crossover students from physical and occupational therapy?

Yes, it is happening now and can happen from many other fields as well. Some students may choose to have multiple degrees to achieve a broader scope of practice.

7. How can O&P's move toward a master's-level program be used to attract underrepresented populations and practitioners to underserved areas?

The profession needs to conduct awareness and outreach programs in historically underrepresented populations. AAOP is working with NCOPE residents and O&P practitioners to conduct outreach programs. These efforts should be redoubled.

The profession also needs to leverage the publicity of the master's-level movement to appeal to traditional underrepresented students, among others.

Scholarships and internships can be critical. A number of institutions currently use scholarships and internships effectively and have developed a pipeline with historically underrepresented students.

Entry-level master's programs may interfere with the career ladder. Does the entry-level master's create a gap between the technician or assistant and the practitioner? How important is the concept of the career ladder for the future of O&P?

Appendix VI

Redefining O&P

O&P is a profession that is redefining itself.

Traditionally, the mission of O&P has been to prepare and dispense orthoses and prostheses. In the performance of these roles, orthotists/prosthetists have had close interactions with patients and other health care providers.

Nonetheless, O&P, much more so than most other health-related professions, has been based on a product-oriented ethos. Over the last decade, a new mission has been emerging for the orthotics and prosthetics profession.

In this patient-centered ethos, the orthotist/prosthetist takes responsibility for patient outcomes related to O&P patient management. The orthotist's or prosthetist's "social object" is no longer a product but a patient. This new mission intensifies the fiduciary responsibilities that a professional has for the people he or she serves. Orthotists and prosthetists still must be firmly grounded in anatomy, physiology and biomechanics, but increasingly important are their abilities to think critically, solve problems, communicate, and resolve ethical dilemmas.

This new mission of O&P practice necessitates a corresponding new mission for O&P education: to prepare practitioners to provide orthotic and prosthetic care.

The challenge of O&P education today is to design, implement and assess curricula that integrate the general and professional abilities that will enable practitioners to be responsible for O&P outcomes and the well-being of patients.

*Footnote: This passage has been adapted from a description of pharmacists that appeared in *Assessing Student Competence in Accredited Disciplines*; edited by: Catherine Palomba and Trudy Banta, published by: Stylus Publishing, LLC, 22883 Quicksilver Dr., Sterling Va. in 2001.*



National Commission on
Orthotic & Prosthetic Education

330 John Carlyle St., Ste. 200
Alexandria, VA 22314
Tel: 703-836-7114
Fax: 703-836-0838
www.ncope.org



American Academy of
Orthotists & Prosthetists

526 King Street, Ste. 201
Alexandria, VA 22314
Tel: 703-836-0788
Fax: 703-836-0737
www.oandp.org