

Practice Analysis Task Force

Steven R. Whiteside, CO, Chairman
James Alaimo, CPO
William J. Barringer, CO
William D. Beiswenger, CPO, FAAOP
Timothy Bulgarelli, CPO
Carol J. Hentges, CO
Robert S. Lin, CPO
Timothy E. Miller, CPO
Rick G. Parr, CPO, FAAOP
John H. Reynolds, CPO
Melvin L. Stills, CO

AMERICAN BOARD FOR CERTIFICATION IN ORTHOTICS AND PROSTHETICS, INC.

Lance O. Hoxie, Executive Director
Catherine A. Carter, Director, Professional Credentialing Programs

PROFESSIONAL EXAMINATION SERVICE

Sandra Greenberg, Ph.D.
Ellen A. Sawtell, B.A.



ACKNOWLEDGMENTS

On behalf of the American Board for Certification in Orthotics and Prosthetics, Inc. (ABC) I am pleased to present this *Practice Analysis of the Disciplines of Orthotics and Prosthetics*. This report describes the contemporary practice of ABC certified practitioners and ABC registered technicians in the United States. It represents the culmination of nearly two years of planning, execution, data analyses, and writing.

A project of this magnitude depends on the hard work and commitment of many professionals, and I am pleased to acknowledge their contributions to the final product. This project represents a substantial investment of ABC's financial resources and personnel as related to ABC's efforts in continuing to develop exemplary examination programs as well as providing information to primary and continuing education programs.

Information included in this report came from the following sources: panel discussions with the Practice Analysis Task Force; in-depth critical incident interviews with ABC-credentialed individuals; independent reviewers; a review of relevant literature and jurisdictional practice acts; a pilot survey; and a survey of 1500 orthotic and prosthetic-credentialed certified practitioners, registered associates, and registered technicians in the United States.

In 1991 ABC published its first Role Delineation study. The current task force was able to draw from that body of work and is pleased that the current study reflects the continuum of ABC's commitment to the credentialing programs.

ABC is indebted to the ABC Practice Analysis Task Force for the wisdom and direction it provided. Its members- James Alaimo, CPO; William D. Beiswenger, CPO, FAAOP; Timothy Bulgarelli, CPO; Carol J. Hentges, CO; Robert S. Lin, CPO; Timothy E. Miller, CPO; Rick G. Parr, CPO, FAAOP; John H. Reynolds, CPO; and Melvin L. Stills, CO-worked throughout the conduct of the study. The chairman of the task force, Steven R. Whiteside, CO, worked tirelessly to provide conceptual guidance regarding the conduct of the study and insight into the profession.

Finally we are grateful to Catherine A. Carter, Director, Professional Credentialing Programs at ABC. Cathy served as the liaison between the task force and the staff at Professional Examination Service; she provided thoughtful and consistent support for the study and developed an effective communications program regarding the conduct of the study.

William J. Barringer, CO
President

TABLE OF CONTENTS

Acknowledgments	i
Table of Tables	iii
Introduction	1
Executive Summary of Study Process	1
SECTION I	
Results Related to Professional Background, Work Setting and Demographic Information	3
SECTION II	
Results Related to Domains	15
Results Related to Tasks	20
Knowledge and Skills Statements	34
SECTION III	
Results Related to Orthotic and Prosthetic Devices	37
Highlights of Demographic, Domain and Device Information	47

TABLE OF TABLES

Table 1	Gender of Respondents	3
Table 2	Age of Respondents	4
Table 3	Racial/Ethnic Background of Respondents	4
Table 4	Educational Degree/Certificate/Diploma Initially Qualifying Respondents in Orthotics	5
Table 5	Years of Experience in Orthotics Practice	6
Table 6	Educational Degree/Certificate/Diploma Initially Qualifying Respondents in Prosthetics	7
Table 7	Years of Experience in Prosthetics Practice	7
Table 8	Mean Percentage of Work Time Devoted to Areas by Respondents in Orthotics Practice	8
Table 9	Mean Percentage of Work Time Devoted to Areas by Respondents in Prosthetics Practice	9
Table 10	Primary Work Setting	10
Table 11	Number of O/P Employees at Primary Work Setting of Respondents	11
Table 12	Direct Patient Care Provided by Respondents in Specific Settings	11
Table 13	Age Range of Respondents' Patients	12
Table 14	Etiological Categories of Respondents' Patients	12
Table 15	Orthotic and Prosthetic Devices which Incorporated the Use of CAD/CAM	13
Table 16	Orthotic Devices Fabricated Onsite and Outsourced	13
Table 17	Prosthetic Devices Fabricated Onsite and Outsourced	13
Table 18	Domains and Tasks in the Practice Analysis Survey of the Disciplines of Orthotics and Prosthetics	15
Table 19	Certified Practitioner – Orthotics & Prosthetics Descriptive Statistics for Domains: Mean for <i>Percentage of Time</i> and Mean for <i>Criticality</i>	17
Table 20	Registered Technician – Orthotics & Prosthetics Descriptive Statistics for Domains: Mean for <i>Percentage of Time</i> and Mean for <i>Criticality</i>	19
Table 21	Certified Practitioner – Orthotics & Prosthetics Descriptive Statistics for Tasks: Mean for <i>Frequency</i> and <i>Criticality</i>	21

Table 22	Registered Technician – Orthotics & Prosthetics Descriptive Statistics for Tasks: Mean for <i>Frequency</i> and <i>Criticality</i>	28
Table 23	Knowledge and Skill Statements	34
Table 24	Orthotic-Credentialed Certified Practitioner & Registered Technician Percentage of Time in Practice Areas and with Regard to Devices	38
Table 25	Orthotic-Credentialed Certified Practitioner & Registered Technician Orthotic Device List: Percentage of Credentialed Individuals Who Participated in Each Category	39
Table 26	Percentage Allocations for Custom Made vs. Custom Fit Orthoses	40
Table 27	Percentage Allocations for Articulated vs. Nonarticulated AFOs	40
Table 28	Percentage Allocations for Scoliosis Wear Schedules	41
Table 29	Percentage Allocations for Diagnostic Categories	41
Table 30	Prosthetic-Credentialed Certified Practitioner & Registered Technician Percentage of Time in Practice Areas and with Regard to Devices, Sockets, and Suspensions	42
Table 31	Prosthetic-Credentialed Certified Practitioner & Registered Technician Prosthetic Device List: Percentage of Credentialed Individuals Who Participated in Each Category	43
Table 32	Transtibial Gait Deviations Most Frequently Seen in Practice	44
Table 33	Transfemoral Gait Deviations Most Frequently Seen in Practice	45
Table 34	Percentage of Cases with Multiple Suspension Systems	46

INTRODUCTION

The American Board for Certification in Orthotics and Prosthetics, Inc. (ABC), contracted with Professional Examination Service (PES) to develop and implement a practice analysis and validation study for professionals in the disciplines of orthotics and prosthetics. To accomplish the objectives of the study, PES worked with ABC's Director of Professional Credentialing Programs and an 11-member Practice Analysis Task Force (PATF) over the course of a 14-month project in 1998 and 1999.

The goal of the practice analysis aspect of the study was to describe the profession; that is, to provide profiles of what professionals do and the knowledge and skills they need. The goal of the validation aspect of the study was to provide priorities, e.g., What highly critical tasks are performed by all practitioners? What subset of knowledge and skills is essential at the time of initial credentialing? Which procedures are most frequently implemented? The results were used to generate credentialing test specifications, designed for entry-level orthotists and prosthetists at each credentialed level. The results were also used to identify targets for in-service and/or continuing education, and to provide guidance for education programs in regard to curriculum review and/or programmatic self-assessment.

The organizing framework of a practice analysis and validation study may be process-based and/or content-based. In the first instance, the focus may be on delineating the provision of services to patients or on the provision of population-based services to classes of patients. In the latter instance, the focus may be on describing the categories of knowledge and skills required in order to perform the services. In either case, public protection is considered as central to the organizing framework of the study. The current ABC practice analysis and validation study used a process-based approach as the primary organizing framework, and supplemented that approach with the delineation of knowledge and skills in the context of domains of practice.

EXECUTIVE SUMMARY of STUDY PROCESS

The specific objectives of the study were to:

- conduct a comprehensive practice analysis of the disciplines of orthotics and prosthetics by delineating and validating the domains of practice, the specific tasks performed, and the associated knowledge and skills required to perform each task;
- identify differences in the disciplines of orthotics and prosthetics with regard to areas of treatment;
- quantify time spent and tasks performed with regard to various orthotic and prosthetic devices;
- describe in terms of age and etiology the patients to whom orthotic and prosthetic-credentialed professionals provide direct patient care; and
- develop credentialing test specifications for the disciplines of orthotics and prosthetics in connection with the multiple-choice, simulation, and/or practical examinations for Certified Practitioners, Registered Associates, and Registered Technicians, as appropriate.

In order to conduct the practice analysis and validation study, the following steps were taken:

- Three meetings of the PATF. At each meeting, the members of the PATF reviewed the work and provided conceptual guidance regarding the implementation of the project.

- 15 critical incident interviews
- Information was collected regarding regulated scopes of practice.
- An independent mail review of the revised delineation
- A draft of the final delineation of practice was drafted for review by the PATF.
- A survey of practice, the Practice Analysis Survey of the Disciplines of Orthotics and Prosthetics, was developed that included the following components:
 - Introduction*, including a description of the purpose of the survey and instructions for completing and returning the survey.
 - Section 1: Background Information*, including questions about the respondent's educational and professional background, work setting, supervisory responsibilities, patient base, and demographic characteristics.
 - Section 2: Tasks*, including 51 tasks delineated in association with six domains of practice.
 - Section 3: Domains*, including six domains of practice.
 - Section 4: Knowledge and Skills*, including 68 knowledge and skills statements delineated in association with six domains of practice.
 - Section 5: Orthotic and Prosthetic Device Lists*, including activities performed in connection with orthotic and prosthetic devices.
 - Section 6: Comments*, including open-ended questions regarding the comprehensiveness of the draft delineation, changes in practice, and the benefits of certification.
- To conduct the survey, PES developed a sampling plan in conjunction with ABC's Director of Professional Credentialing Programs. The sampling plan was designed to randomly select 1500 credentialed professionals, including Certified Practitioners, Registered Associates, and Registered Technicians, in general proportion to their representation in ABC's database.

Prior to the conduct of the large-scale validation survey, a pilot test of the survey was conducted to resolve any gaps and/or inconsistencies in the materials and to refine the rating scales. Based on the results of the pilot test, PES revised the survey document and all related survey procedures. Subsequently, a sequence of mailings was implemented that included an invitation letter to potential respondents; a survey packet containing a copy of the survey, a tracking postcard confirming completion of the survey, and a postage-paid return envelope; and a follow-up postcard thanking the potential respondents reminding them to complete the survey if they had not already done so.

ABC's Director of Credentialing Programs implemented an extensive information and marketing campaign to increase awareness of the project by the members of the profession and the public. As part of the campaign, information flyers were disseminated, posters were designed and displayed at professional meetings, and articles were published in professional journals and newsletters.

SURVEY RETURN RATE

The overall return rate was 28%-very acceptable when compared with studies of other professions wherein potential respondents were required to respond to a detailed and comprehensive survey such as that used in the present study. The high return rate also reflected the impact of the extensive information and marketing campaign that had been implemented by ABC's Director of Professional Credentialing Programs. The return rate for each credentialed cohort varied, from a low of 0% for Registered Associate in Orthotics and Prosthetics (RAPOs) to a high of 36% for Certified Practitioners in Prosthetics and Orthotics (CPOs). Because few Registered Associates completed and returned the survey, no additional analyses were performed in connection with that group.

Of the 412 survey recipients completing the survey, 99 respondents were Registered Technicians, 6 respondents were Registered Associates, and 307 respondents were Certified Practitioners.

Of the 157 respondents who had indicated they were dually credentialed, slightly more credentialed respondents indicated that they practiced more often in orthotics than in prosthetics. For purposes of the data analyses related to both the delineation and the practice areas, dually credentialed professionals were identified as members of the discipline-specific sample in which they reported spending the most time.

PROFESSIONAL BACKGROUND, WORK SETTING AND DEMOGRAPHIC INFORMATION

The following section provides background information regarding the sample of Registered Technicians and Certified Practitioners. The survey included a questionnaire regarding professional history, the respondent's work environment, educational background, and demographic information.

As shown in Table 1, Table 2, and Table 3, the overall sample responding to the survey was predominantly male, over the age of 35, and Caucasian/White (non-Hispanic). This demographic picture of the sample is consistent with the ABC database.

Table 1
Gender of Respondents

GENDER	ORTHOTICS	PROSTHETICS
Female	12%	7%
Male	88%	93%
Total	100%	100%

Table 2
Age of Respondents

AGE	ORTHOTICS	PROSTHETICS
Under 25	0%	1%
25 - 34	18%	25%
35 - 44	40%	35%
45 - 54	32%	31%
55 - 64	7%	6%
65 or over	3%	2%
Total	100%	100%

Table 3
Racial/Ethnic Background of Respondents

RACE/ETHNICITY	ORTHOTICS	PROSTHETICS
American Indian/Eskimo/Aleut	0%	0%
Asian; Asian-American; Pacific Islander	3%	0%
African-American/Black	2%	1%
Caucasian/White (non-Hispanic)	92%	95%
Hispanic	2%	2%
Multiracial	0%	1%
Other	1%	1%
Total	100%	100%

Approximately 66% of the Registered Technicians in orthotics earned a high school diploma/GED or a high school diploma/GED and an O/P technician certificate to initially qualify for the credential, while about 20% earned an associate's degree. 72% of the Certified Practitioners in orthotics earned a baccalaureate degree in O/P or a baccalaureate degree and an O/P certificate to initially qualify for practice. (See Table 4.)

Other qualifying educational degree/certificate/diploma mechanisms were noted by 13% of the Registered Technicians and 8% of the Certified Practitioners in orthotics. Of the 13%, four Registered Technicians noted an orthotics program and/or courses, twelve noted an associate's degree and an O/P certificate, and seven noted an associate's degree. Of the 8%, six Certified Practitioners in orthotics noted baccalaureate degrees in other areas, eight noted an orthotics program, apprenticeship, and/or short courses, and three noted a master's degree and certificate.

Table 4
Educational Degree/Certificate/Diploma Initially Qualifying Respondents in Orthotics

DEGREE/CERTIFICATE/DIPLOMA	TECHNICIANS	PRACTITIONERS
HS/GED	32%	4%
HS/GED and O/P technician certificate	35%	0%
AA/AS	13%	8%
AA/AS and O/P associate certificate	7%	8%
BS in O/P	0%	20%
BA/BS and O/P certificate	0%	52%
Other	13%	8%
Total	100%	100%

As seen in Table 5, about 70% of the orthotic-credentialed samples of both Registered Technicians and Certified Practitioners had 10 or more years of experience in orthotics.

Table 5
Years of Experience in Orthotics Practice

NUMBER OF YEARS	TECHNICIANS	PRACTITIONERS
5 or less	17%	12%
6 - 9	13%	17%
10 - 19	50%	35%
20 - 29	17%	25%
30 or more	3%	11%
Total	100%	100%

Approximately 81% of the Registered Technicians in prosthetics earned a high school diploma/GED or a high school diploma and an O/P technician certificate to initially qualify for the credential, while about 11% earned an associate's degree. In contrast, 73% of the Certified Practitioners in prosthetics earned a baccalaureate degree in O/P or a baccalaureate degree and an O/P certificate to initially qualify for practice. (See Table 6.)

Other qualifying educational degree/certificate/diploma mechanisms were noted by 7% of the Registered Technicians and 10% of the Certified Practitioners in prosthetics. Of the 7%, two Registered Technicians noted a prosthetics program and/or courses, twelve noted an associate's degree and an O/P certificate, and seven noted an associate's degree. Of the 10%, ten Certified Practitioners noted a variety of prosthetics courses and/or a certificate, six noted baccalaureate degrees in other areas, and four noted a master's degree and certificate.

Table 6

Educational Degree/Certificate/Diploma Initially Qualifying Respondents in Prosthetics

DEGREE/CERTIFICATE/DIPLOMA	TECHNICIANS	PRACTITIONERS
HS/GED	39%	4%
HS/GED and O/P technician certificate	42%	1%
AA/AS	7%	7%
AA/AS and O/P associate certificate	4%	5%
BS in O/P	1%	21%
BA/BS and O/P certificate	0%	52%
Other	7%	10%
Total	100%	100%

As seen in Table 7, about 67% of the prosthetic-credentialed samples of both Registered Technicians and Certified Practitioners had 10 or more years of experience in prosthetics.

Table 7

Years of Experience in Prosthetics Practice

NUMBER OF YEARS	TECHNICIANS	PRACTITIONERS
5 or less	15%	15%
6 - 9	18%	19%
10 - 19	48%	33%
20 - 29	18%	22%
30 or more	1%	11%
Total	100%	100%

In regard to the orthotic-credentialed sample, Registered Technicians devoted 56% of their work time to fabrication and 30% to clinical orthotic patient care, whereas Certified Practitioners devoted 51% of their work time to clinical orthotic patient care and about equal amounts of time to fabrication (15%), administration (14%), and clinical prosthetic patient care (11%). (See Table 8.)

Table 8

Mean Percentage of Work Time Devoted to Areas by Respondents in Orthotics Practice

AREA	TECHNICIANS	PRACTITIONERS
Clinical orthotics patient care	30%	51%
Clinical prosthetics patient care	2%	11%
Fabrication	56%	15%
Education	6%	6%
Administration	4%	14%
Other	2%	3%
Total	100%	100%

Similarly, in regard to the prosthetic-credentialed sample, Registered Technicians devoted 61% of their work time to fabrication and 20% to clinical prosthetic patient care, whereas Certified Practitioners devoted 46% of their work time to clinical prosthetic patient care and about equal amounts of time to fabrication (16%), administration (16%), and clinical orthotic patient care (14%). (See Table 9.)

Table 9

Mean Percentage of Work Time Devoted to Areas by Respondents in Prosthetics Practice

AREA	TECHNICIANS	PRACTITIONERS
Clinical orthotics patient care	7%	14%
Clinical prosthetics patient care	20%	46%
Fabrication	60%	16%
Education	5%	6%
Administration	7%	16%
Other	1%	2%
Total	100%	100%

In describing their primary work setting, 57% of the orthotic-credentialed sample worked in a privately owned (38%) or publicly owned (19%) multifacility orthotic and prosthetic service organization, 21% worked in a single-location facility (privately owned), and 13% worked in a hospital-based practice. In regard to the prosthetic-credentialed sample, a greater proportion of the sample (69%) worked in either a privately owned (42%) or publicly owned (27%) multifacility orthotic and prosthetic service organization, and a smaller proportion worked in either a single-location facility (privately owned) (18%) or a hospital-based practice (8%). (See Table 10.)

Table 10
Primary Work Setting

SETTING	ORTHOTICS	PROSTHETICS
Part of a multifacility orthotics and prosthetics service organization, <i>publicly</i> owned	19%	27%
Part of a multifacility orthotics and prosthetics service organization, <i>privately</i> owned	38%	42%
Single-location facility, <i>privately</i> owned	21%	18%
Central fabrication center, <i>publicly</i> owned	1%	0%
Central fabrication center, <i>privately</i> owned	1%	2%
Hospital-based practice	13%	8%
University-based practice	3%	2%
Other	4%	1%
Total	100%	100%

In regard to the number of orthotics/prosthetics employees at the respondents' primary work setting, about one half of the members of both the orthotic and prosthetic-credentialed samples work with between one and five employees. About one fourth of the members of both samples work with between six and ten employees, and the remaining one fourth of the members of both samples work with more than eleven employees. (See Table 11.)

Table 11

Number of O/P Employees at Primary Work Setting of Respondents

NUMBER OF EMPLOYEES	ORTHOTICS	PROSTHETICS
1 - 5	49%	51%
6 - 10	28%	26%
11 - 15	9%	15%
16 or more	14%	8%
Total	100%	100%

Respondents described the settings wherein they delivered direct patient care. As documented in Table 12, members of the orthotic-credentialed sample were most likely to deliver direct patient care in an office (59%). Approximately 15% of the sample delivered direct patient care in an acute care hospital setting, while 10% delivered direct patient care in a specialty clinic. Members of the prosthetic-credentialed sample were somewhat more likely to deliver direct patient care in an office (74%), and less likely to deliver direct patient care in any of the other specifically delineated locations.

Table 12

Direct Patient Care Provided by Respondents in Specific Settings

SETTING	ORTHOTICS	PROSTHETICS
Office	59%	74%
Specialty clinic (e.g., neuromuscular, cerebral palsy, spina bifida)	10%	3%
Acute care hospital setting	15%	9%
Long-term rehabilitation facility (e.g., nursing home, assisted living facility)	8%	7%
Other facility	8%	7%
Total	100%	100%

Respondents described the patients to whom they delivered direct patient care. As documented in Table 13, slightly more than one third of the patients of the orthotic-credentialed sample were either adult patients (36%) or geriatric patients (35%), while slightly less than one third of the patients were pediatric patients (29%). In contrast, nearly one half of the patients of the prosthetic-credentialed sample were geriatric patients (49%), more than one third were adult patients (39%), and fewer patients were pediatric patients (12%).

Table 13
Age Range of Respondents' Patients

AGE RANGE	ORTHOTICS	PROSTHETICS
Pediatric	29%	12%
Adult	36%	39%
Geriatric	35%	49%
Total	100%	100%

As documented in Table 14, nearly one half of the patients of the orthotic-credentialed sample present with conditions which reflect disease-based etiologies (46%), and about one fourth of the patients present with conditions which reflect trauma-based (28%) or congenital-based (26%) etiologies. In contrast, more than two thirds of the patients of the prosthetic-credentialed sample present with conditions which reflect disease-based etiologies (67%), and fewer present with conditions which reflect trauma-based (23%) or congenital-based (10%) etiologies. (See Table 14.)

Table 14
Etiological Categories of Respondents' Patients

ETIOLOGICAL CATEGORY	ORTHOTICS	PROSTHETICS
Disease	46%	67%
Trauma	28%	23%
Congenital	26%	10%
Total	100%	100%

Respondents were asked to indicate the percentage of orthotic and prosthetic devices they provide to their patients that incorporate the use of computer-aided design and manufacturing (CAD/CAM). Members of the orthotic-credentialed sample indicated that only about 14% of the devices they provide incorporate the use of CAD/CAM, whereas members of the prosthetic-credentialed sample indicated that 29% of the devices they provide incorporate the use of CAD/CAM. (See Table 15).

Table 15

Orthotic and Prosthetic Devices which Incorporated the Use of CAD/CAM

SAMPLE	% OF ORTHOTIC AND PROSTHETIC DEVICES
Orthotic	14%
Prosthetic	29%

As can be seen in Table 16, members of both the orthotic and prosthetic-credentialed samples report that about three fourths of all orthotic devices they provide to their patients are fabricated onsite and about one fourth are outsourced. Prosthetic devices are somewhat more likely to be fabricated onsite by members of the prosthetic-credentialed sample. (See Table 17.)

Table 16

Orthotic Devices Fabricated Onsite and Outsourced

FABRICATED	ORTHOTIC	PROSTHETIC
Onsite	74%	73%
Outsourced	26%	27%
Total	100%	100%

Table 17

Prosthetic Devices Fabricated Onsite and Outsourced

FABRICATED	ORTHOTIC	PROSTHETIC
Onsite	75%	81%
Outsourced	25%	19%
Total	100%	100%

DOMAINS, TASKS, AND KNOWLEDGE AND SKILL STATEMENTS

Domains are global areas of responsibility performed by credentialed professionals; in the current delineation, the domains were defined as Patient Assessment, Formulation of the Treatment Plan, Implementation of the Treatment Plan, Follow-up Treatment Plan, Practice Management, and Promotion of Competency and Enhancement of Professional Practice.

Tasks are the activities performed within a domain in the course of practice; for example, review the patient's prescription/referral is a task performed within the domain of Patient Assessment.

Knowledge and skills statements describe the organized body of information and the physical or mental manipulation of information or things required to perform the tasks associated with each domain; for example, knowledge of musculoskeletal anatomy including upper limb, lower limb, spinal is knowledge required in association with the domain of Patient Assessment.

DOMAINS

A layout of the final structure of the delineation specifying the domains, and the number of task statements associated with each domain is contained in Table 18.

Table 18

Domains and Tasks in the Practice Analysis Survey of the Disciplines of Orthotics and Prosthetics

DOMAIN	NUMBER OF TASKS
Patient Assessment	7
Formulation of the Treatment Plan	7
Implementation of the Treatment Plan	17
Follow-up Treatment Plan	10
Practice Management	5
Promotion of Competency and Enhancement of Professional Practice	5
Total	51

68 knowledge and skills statements were developed for the current practice analysis

Table 19 presents the results of the *Percentage of Time and Criticality* rating scales for Certified Practitioners in both disciplines. Respondents to the survey rated each of the domains on two ratings scales:

- *Percentage of Time*: Overall, what percentage of your work time did you spend performing the tasks related to each domain during the past year?
- *Criticality*: How critical is this domain to optimizing outcomes for patients, caregivers, and healthcare providers?

The *Percentage of Time and Criticality* ratings were analyzed separately for Certified Practitioners and Registered Technicians in the disciplines of orthotics and prosthetics.

As can be seen, Certified Practitioners in both disciplines indicated that they spend the most time performing tasks associated with *Implementation of the Treatment Plan* (about one third of their time) and the least time performing tasks associated with *Promotion of Competency and Enhancement of Professional Practice* (about 7%). They spend between 10% and 20% of their time performing tasks associated with each of the remaining four specifically delineated domains (*Patient Assessment* and *Follow-up Treatment Plan*, followed by *Formulation of the Treatment Plan* and *Practice Management*).

The mean Criticality ratings for the four domains related to direct patient care indicate that these domains are all rated at the upper end of the scale between moderately critical and highly critical (i.e., 3.4 to 3.8). The mean Criticality ratings for the two non-direct patient care domains indicate that these two domains are moderately critical (2.8 to 3.2). Accordingly, all six domains appropriately focus on activities that are critical to optimizing outcomes for patients, caregivers, and healthcare providers

Table 19
Certified Practitioners – Orthotics & Prosthetics
 Descriptive Statistics for Domains:
 Mean for *Percentage of Time* and Mean for *Criticality*

DOMAIN	% OF TIME ¹		CRITICALITY ²	
	O	P	O	P
Patient Assessment Perform a comprehensive assessment of the patient to obtain an understanding of patient's orthotic/prosthetic needs.	19.2%	14.7%	3.8	3.7
Formulation of the Treatment Plan Create a comprehensive orthotic/prosthetic treatment plan to meet the needs and goals of the patient.	14.3%	11.3%	3.7	3.6
Implementation of the Treatment Plan Perform the necessary procedures to deliver the appropriate orthotic/prosthetic services, including fabrication.	32.4%	34.5%	3.8	3.8
Follow-up Treatment Plan Provide continuing patient care and periodic evaluation to assure/maintain/document optimal fit and function of the orthosis/prosthesis.	15.6%	18%	3.5	3.4
Practice Management Develop, implement, and/or monitor policies and procedures regarding human resource management, physical environment management, business/financial management, and organizational management.	9.7%	12.0%	2.9	2.8
Promotion of Competency and Enhancement of Professional Practice Participate in personal and professional development through continuing education, training, research, and organizational affiliations.	7.0%	7.5%	3.2	3.0
Other	1.8%	2.0%	NA	NA

¹ Overall, what percentage of your work time did you spend performing the tasks related to each domain during the past year?

² How critical is this domain to optimizing outcomes for patients, caregivers, and healthcare providers?

1 = Not critical, 2 = Minimally critical, 3 = Moderately critical, 4 = Highly critical.

Table 20 presents the results of the *Percentage of Time and Criticality* rating scales for Registered Technicians in both disciplines. As can be seen, Registered Technicians in both orthotics and prosthetics indicated that they spend the most time performing tasks associated with *Implementation of the Treatment Plan* (more than one half of their time) and the least time performing tasks associated with *Practice Management* (about 4% to 6%). They spend between 7% and 12% of their time performing tasks associated with each of the remaining four specifically delineated domains (*Patient Assessment, Formulation of the Treatment Plan, Follow-up Treatment Plan, Promotion of Competency and Enhancement of Professional Practice*).

The mean *Criticality* ratings for the four domains related to direct patient care indicate that these domains are all rated at the upper end of the rating scale between moderately critical and highly critical (i.e., 3.3 to 3.8). The mean *Criticality* ratings for the two non-direct patient care domains indicate that these two domains are moderately critical (2.9 to 3.2). As was the case with the Certified Practitioners, the ratings of the Registered Technicians indicated that all six domains are critical to optimizing outcomes for patients, caregivers, and healthcare providers.

Table 20
Registered Technician – Orthotics & Prosthetics
 Descriptive Statistics for Domains:
 Mean for *Percentage of Time* and Mean for *Criticality*

DOMAIN	% OF TIME ¹		CRITICALITY ²	
	O	P	O	P
Patient Assessment Perform a comprehensive assessment of the patient to obtain an understanding of patient's orthotic/prosthetic needs.	11.6%	7.6%	3.5	3.5
Formulation of the Treatment Plan Create a comprehensive orthotic/prosthetic treatment plan to meet the needs and goals of the patient.	7.8%	7.9%	3.5	3.6
Implementation of the Treatment Plan Perform the necessary procedures to deliver the appropriate orthotic/prosthetic services, including fabrication.	54.7%	58.5%	3.7	3.8
Follow-up Treatment Plan Provide continuing patient care and periodic evaluation to assure/maintain/document optimal fit and function of the orthosis/prosthesis.	10.3%	9.9%	3.3	3.4
Practice Management Develop, implement, and/or monitor policies and procedures regarding human resource management, physical environment management, business/financial management, and organizational management.	4.3%	6.5%	2.9	2.9
Promotion of Competency and Enhancement of Professional Practice Participate in personal and professional development through continuing education, training, research, and organizational affiliations.	10.6%	8.1%	3.0	3.2
Other	0.7%	1.5%	NA	NA

¹ Overall, what percentage of your work time did you spend performing the tasks related to each domain during the past year?

² How critical is this domain to optimizing outcomes for patients, caregivers, and healthcare providers?

1 = Not critical, 2 = Minimally critical, 3 = Moderately critical, 4 = Highly critical.

As can be seen by comparing Tables 19 and 20, the means for *Percentage of Time* for Certified Practitioners and for Registered Technicians are similar in key aspects. Both Certified Practitioners and Registered Technicians ranked *Implementation of the Treatment Plan* as the domain in which they spend most of their time. Both Certified Practitioners and Registered Technicians report spending little time in *Practice Management*. A very small percentage of respondents noted spending time in *Other*. *Other* responses included the following activities: marketing, business development, research and development, consultations with allied professionals, new product development, reimbursement and third-party payer issues, business issues, and human resources.

Finally, the overall patterns of *Criticality* ratings for both Certified Practitioners and Registered Technicians are virtually identical. Both groups of respondents rated the four direct patient care domains as moderately-to-highly critical and the remaining two non-direct patient care domains as moderately critical.

TASKS

Survey respondents rated the 51 tasks on two rating scales:

- * *Frequency*: How frequently did you perform the task during the past year?
- * *Criticality*: How critical is the task to optimizing outcomes for patients, caregivers, and healthcare providers?

The *Frequency* and *Criticality* ratings were analyzed separately for Certified Practitioners and Registered Technicians in the disciplines of orthotics and prosthetics.

Table 21 displays the mean *Frequency* and *Criticality* ratings for Certified Practitioners in both disciplines. As can be seen, with only one exception, the *Frequency* ratings for Certified Practitioners in both orthotics and prosthetics are similar; they do not vary by more than 0.3 of a rating scale point. The ratings indicate that Certified Practitioners perform 35 of the 41 tasks associated with the four direct patient care domains frequently to routinely. They perform the remaining six tasks in those same domains occasionally to frequently. Certified Practitioners perform the tasks associated with the two non-direct patient care domains somewhat less frequently. Certified Practitioners perform the tasks associated with *Practice Management* and some of the tasks associated with *Promotion of Competency and Enhancement of Professional Practice* occasionally to frequently, and they perform three of the five tasks associated with the latter domain never or rarely to occasionally. A review of those three tasks indicates that they do not readily lend themselves to frequent performance (e.g., *Conduct or participate in product development research, clinical trials, and outcome evaluation studies*).

In only one instance did the *Frequency* ratings of the Certified Practitioners in the disciplines of orthotics and prosthetics vary by more than 0.3 of a rating scale point. As might be anticipated, Certified Practitioners in prosthetics were more likely than Certified Practitioners in orthotics to *Provide patient with preparatory care for orthotic/prosthetic treatment* (e.g., *diagnostic splint, stump shrinker*).

As was the case in regard to the *Frequency* ratings, the *Criticality* ratings for Certified Practitioners in both disciplines are similar; that is, within 0.3 of a rating scale point. Certified Practitioners rated all 41 tasks in the four direct patient care domains as moderately-to-very critical, and they rated seven of the ten tasks in the two non-direct patient care domains as moderately-to-very critical. They rated the remaining three tasks in *Promotion of Competency and Enhancement of Professional Practice* as minimally-to-moderately critical.

In summary, the overall pattern of the *Frequency* and *Criticality* ratings on the 51 tasks indicates that the practice analysis delineation included critical tasks performed by Certified Practitioners in both disciplines. The pattern of *Frequency* and *Criticality* ratings for the Certified Practitioners in both disciplines validates the use of these tasks in initiatives related to the development of primary education curriculum, continuing education programming, and credentialing examinations.

Table 21
Certified Practitioner – Orthotics & Prosthetics
 Descriptive Statistics for Tasks
 Mean for *Frequency* and *Criticality*

TASK	FREQUENCY ¹		CRITICALITY ²	
	O	P	O	P
Patient Assessment				
Review patient's prescription/referral	3.9	3.7	3.8	3.8
Take a comprehensive patient history, including demographic characteristics, family dynamics, previous use of an orthosis/prosthesis, diagnosis, work history, avocational activities, signs and symptoms, medical history (including allergies to materials), reimbursement status, patient expectations, results of diagnostic evaluations	3.5	3.4	3.6	3.7
Assist in formulating the treatment plan by performing a diagnosis-specific functional clinical examination that includes manual muscle testing, gait analysis, and evaluation of sensory function, cognitive ability, range of motion, joint stability, skin integrity, and compliance	3.5	3.2	3.6	3.6
Consult with other healthcare professionals and caregivers about patient's condition to assist in formulating a treatment plan	3.1	3.1	3.4	3.4
Communicate to patient and/or caregiver about the recommended treatment plan and any optional plans, include disclosure of potential risks/benefits in order to involve them in orthotic or prosthetic care	3.8	3.6	3.8	3.7
Verify patient care by documenting history, ongoing care, and follow-up, using established record-keeping techniques	3.7	3.8	3.7	3.7
Refer patient, if appropriate, to other healthcare professionals (e.g., psychologist, therapist, physician) for intervention beyond orthotic/prosthetic scope of practice	2.6	2.6	3.2	3.3

¹ How frequently did you perform the task during the past year?

1 = Never or rarely (quarterly), 2 = Occasionally (monthly), 3 = Frequently (weekly), 4 = Routinely (daily).

² How critical is this task to optimizing outcomes for patients, caregivers, and healthcare providers?

1 = Not critical, 2 = Minimally critical, 3 = Moderately critical, 4 = Highly critical.

Table 21/Certified Practitioner – Orthotics & Prosthetics/Descriptive Statistics for Tasks/Mean for Frequency and Criticality

TASK	FREQUENCY ¹		CRITICALITY ²	
	O	P	O	P
Formulation of the Treatment Plan				
Evaluate the findings to determine an orthotic/prosthetic recommendation	3.7	3.6	3.7	3.8
Formulate treatment goals and expected orthotic/prosthetic outcomes to reduce pain/increase comfort, enhance function and independence, provide stability, prevent deformity, address cosmesis, and/or promote healing	3.7	3.5	3.7	3.7
Consult with physician/referral source to modify, if necessary, the original prescription and/or treatment plan	2.9	2.7	3.6	3.6
Identify material, design, and components to support anticipated outcome	3.7	3.6	3.7	3.7
Develop a plan for patient needs, including patient education and follow-up	3.4	3.4	3.4	3.5
Document treatment plan using established record-keeping techniques to verify patient care	3.6	3.6	3.6	3.5
Inform patient or responsible parties of their financial responsibilities as they pertain to proposed treatment plan	3.1	3.0	3.3	3.3
Implementation of the Treatment Plan				
Inform patient, family, and/or caregiver of the orthotic/prosthetic procedure, possible risks, and time involved in the procedure	3.8	3.6	3.6	3.5
Select appropriate material/techniques in order to implement treatment plan	3.8	3.7	3.7	3.6
Provide patient with preparatory care for orthotic/prosthetic treatment (e.g., diagnostic splint, stump shrinker)	2.8	3.3	3.3	3.7
Prepare patient for procedure required to initiate treatment plan (e.g., take impression, digitize, delineate, scan)	3.9	3.6	3.7	3.7

Table 21/Certified Practitioner – Orthotics & Prosthetics/Descriptive Statistics for Tasks/Mean for Frequency and Criticality

TASK	FREQUENCY ¹		CRITICALITY ²	
	O	P	O	P
Implement procedure (e.g., take impression, digitize, delineate, scan)	3.9	3.6	3.9	3.8
Select appropriate materials, components, and specifications for orthosis/prosthesis based on patient criteria to ensure optimum strength, durability, and function as required (e.g., choose ankle or knee joints, feet, knee units; choose material of components, lamination layups)	3.8	3.6	3.9	3.8
Consult technical component/material resources as required	2.9	3.0	3.3	3.4
Prepare delineation/impression/template for modification/fabrication (e.g., prepare impression/reverse delineation, seal and fill impression/pour cast, digitize, strip model, download shape to carver or modification software)	3.0	2.9	3.3	3.2
Modify and prepare patient model for fabrication	3.2	3.4	3.7	3.7
Fabricate/assemble prescribed device by assembling selected materials/components in order to prepare for fitting and/or delivery (e.g., laminate/vacuum-form, remove socket/orthosis from model, smooth and finish orthosis/prosthesis, contour side bars to model/delineation, smooth and finish side bars, bench align components to socket, strap orthosis/prosthesis as necessary, perform final assembly of orthosis/prosthesis for patient fitting/delivery)	2.7	2.8	3.5	3.5
Assess device for structural safety and ensure that manufacturers' guidelines have been followed prior to patient fitting/delivery (e.g., torque values, patient weight limits)	3.4	3.3	3.7	3.7
Assess/align orthosis/prosthesis for accuracy in sagittal, transverse, and coronal planes in order to provide maximum function/comfort	3.6	3.6	3.8	3.8

Table 21/Certified Practitioner – Orthotics & Prosthetics/Descriptive Statistics for Tasks/Mean for Frequency and Criticality

TASK	FREQUENCY ¹		CRITICALITY ²	
	O	P	O	P
Ensure that materials, design, and components are fit/delivered as prescribed	3.9	3.7	3.9	3.8
Complete fabrication process after achieving optimal fit of orthosis/prosthesis (e.g., convert test socket to definitive orthosis/prosthesis)	2.9	2.8	3.5	3.5
Educate/counsel patient and/or caregiver about the use and maintenance of the orthosis/prosthesis (e.g., wearing schedules, therapy, other instructions)	3.9	3.6	3.8	3.8
Reassess orthosis/prosthesis for structural safety prior to patient delivery (e.g., screws tightened, cover attached)	3.6	3.5	3.7	3.7
Document treatment using established record-keeping techniques to verify implementation of treatment plan	3.7	3.7	3.7	3.6
Follow-up Treatment Plan				
Solicit subjective feedback from patient and/or caregiver to determine status (e.g., wear schedule/tolerance, comfort, perceived benefits, perceived detriments, ability to don and doff, proper usage and function, overall patient satisfaction)	3.5	3.5	3.6	3.6
Assess patient's: Functional level	3.6	3.4	3.7	3.5
Skin condition (e.g., integrity, color, temperature, and volume)	3.6	3.6	3.8	3.8
General health, height, and weight, and note any changes	3.2	3.4	3.3	3.4
Psychosocial status, and note any changes (in family status, job, or caregiver)	2.8	2.9	2.9	3.1

Table 21/Certified Practitioner – Orthotics & Prosthetics/Descriptive Statistics for Tasks/Mean for Frequency and Criticality

TASK	FREQUENCY ¹		CRITICALITY ²	
	O	P	O	P
To determine need for changes relative to initial treatment goals, assess fit of orthosis/prosthesis with regard to:				
Strategic contact (e.g., 3-point force systems, total contact)	3.4	3.5	3.7	3.7
Anatomical relationships to orthosis/prosthesis (e.g., trimlines, static/dynamic alignment)	3.5	3.5	3.7	3.7
Formulate plan to modify orthosis/prosthesis based on findings and inform patient and/or care-giver of plan to modify orthosis/prosthesis	3.3	3.4	3.6	3.6
Make or delegate modifications to orthosis/prosthesis (e.g., relieve pressure, change range of motion, change alignment, change components, add pressure-sensitive pad)	3.5	3.4	3.7	3.7
Assess modified device for structural safety and ensure that manufacturers' guidelines (e.g., torque values, patient weight limits) have been followed	3.4	3.4	3.6	3.6
Evaluate modifications to orthosis/prosthesis, including static and dynamic assessment, in order to confirm that goals and objectives of modifications have been met	3.6	3.5	3.7	3.7
Reassess patient knowledge and understanding of goals and objectives to ensure proper use of orthosis/prosthesis relative to modifications	3.4	3.3	3.5	3.5
Document all findings and actions and communicate with appropriate healthcare professionals (e.g., referral sources, colleagues, supervisor) to ensure patient status is updated	3.4	3.4	3.5	3.4
Develop long-term follow-up plan relative to diagnosis/prognosis	3.0	3.0	3.3	3.3

Table 21/Certified Practitioner – Orthotics & Prosthetics/Descriptive Statistics for Tasks/Mean for Frequency and Criticality

TASK	FREQUENCY ¹		CRITICALITY ²	
	O	P	O	P
Practice Management				
Plan, implement, evaluate, and document policies and procedures in compliance with all applicable federal and state laws and regulations and professional and ethical guidelines (e.g., FDA, ADA, OSHA, MSDS, ABC Canon of Ethics)	2.5	2.5	3.4	3.1
Develop and implement personnel policies and procedures (e.g., benefits, training, incentives, staff recognition, regular performance appraisals)	1.9	2.0	3.2	2.9
Establish procedures for patient care that comply with accepted medical/legal requirements by maintaining current education in those areas	2.4	2.4	3.4	3.3
Demonstrate proper documentation of patient history and financial records by using established record-taking techniques in order to verify patient care and other pertinent information	3.3	3.4	3.6	3.5
Communicate roles and expectations of employer or employees by providing documentation in order to create a professional, cooperative working environment and improve patient care	2.4	2.4	3.3	3.1
Promotion of Competency and Enhancement of Professional Practice				
Participate in continuing education and/or provide such education for other healthcare professionals, orthotic and prosthetic practitioners, associates, technicians, and office staff (e.g., publications, seminars, case studies)	2.5	2.4	3.5	3.4
Participate in education for residents, students, and trainees	2.4	2.2	3.2	3.1
Conduct or participate in product development research, clinical trials, and outcome evaluation studies	1.5	1.5	2.7	2.5

Table 21/Certified Practitioner – Orthotics & Prosthetics/Descriptive Statistics for Tasks/Mean for Frequency and Criticality

TASK	FREQUENCY ¹		CRITICALITY ²	
	O	P	O	P
Participate in the development, implementation, and monitoring of public policy regarding orthotics/prosthetics (e.g., provide testimony/information to legislative/ regulatory bodies, serve on professional committees and regulatory agencies)	1.3	1.3	2.8	2.6
Participate in/with consumer organizations and nongovernmental organizations in order to promote competency and enhancement of orthotic/prosthetic profession	1.5	1.5	2.8	2.7

Table 22 displays the mean *Frequency* and *Criticality* task ratings for Registered Technicians in both disciplines. As can be seen, the *Frequency* ratings for Registered Technicians in orthotics and prosthetics are generally similar; that is, the ratings of only four tasks vary by more than 0.3 of a rating scale point. The overall pattern of ratings indicates that Registered Technicians perform the tasks associated with *Implementation of the Treatment Plan* frequently to routinely, the tasks associated with the other three direct patient care domains occasionally to frequently, and the tasks associated with the two non-direct patient care domains never or rarely to occasionally.

In four instances, the *Frequency* task ratings of the Registered Technicians in the disciplines of orthotics and prosthetics varied by more than 0.3 of a rating point. Registered Technicians in orthotics were more likely than Registered Technicians in prosthetics to *Inform patient, family, and/or caregiver of the orthotic/prosthetic procedure, possible risks, and time involved in the procedure; Implement procedure; Select appropriate materials, components, and specifications for orthosis/prosthesis based on patient criteria to ensure optimum strength, durability, and function as required; and Modify and prepare patient model for fabrication.*

The *Criticality* ratings for tasks for Registered Technicians in both disciplines are similar; that is, with only one exception, within 0.3 of a rating scale point. Registered Technicians rated all 41 tasks in the four direct patient care domains as moderately-to-highly critical, and they rated eight of the ten tasks in the two non-direct patient care domains as moderately-to-highly critical. They rated two tasks in *Promotion of Competency and Enhancement of Professional Practice* as minimally-to-moderately critical.

In summary, the overall pattern of the *Frequency* and *Criticality* ratings on the 51 tasks indicates that the practice analysis delineation included critical tasks performed by Registered Technicians in both disciplines. The pattern of *Frequency* and *Criticality* ratings for the Registered Technicians in both disciplines validates the use of these tasks in initiatives related to the development of primary education curriculum, continuing education programming, and credentialing examinations.

Table 22
Registered Technician – Orthotics & Prosthetics
 Descriptive Statistics for Tasks
 Mean for *Frequency* and *Criticality*

TASK	FREQUENCY ¹		CRITICALITY ²	
	O	P	O	P
Patient Assessment				
Review patient's prescription/referral	2.9	2.6	3.7	3.6
Take a comprehensive patient history, including demographic characteristics, family dynamics, previous use of an orthosis/prosthesis, diagnosis, work history, avocational activities, signs and symptoms, medical history (including allergies to materials), reimbursement status, patient expectations, results of diagnostic evaluations	2.2	2.4	3.3	3.4
Assist in formulating the treatment plan by performing a diagnosis-specific functional clinical examination that includes manual muscle testing, gait analysis, and evaluation of sensory function, cognitive ability, range of motion, joint stability, skin integrity, and compliance	2.3	2.3	3.5	3.5
Consult with other healthcare professionals and caregivers about patient's condition to assist in formulating a treatment plan	2.3	2.3	3.4	3.3
Communicate to patient and/or caregiver about the recommended treatment plan and any optional plans, include disclosure of potential risks/benefits in order to involve them in orthotic or prosthetic care	2.8	2.6	3.5	3.5
Verify patient care by documenting history, ongoing care, and follow-up, using established record-keeping techniques	2.9	2.7	3.6	3.5
Refer patient, if appropriate, to other healthcare professionals (e.g., psychologist, therapist, physician) for intervention beyond orthotic/prosthetic scope of practice	1.9	2.0	3.2	3.2

¹ How frequently did you perform the task during the past year?
 1 = Never or rarely (quarterly), 2 = Occasionally (monthly), 3 = Frequently (weekly), 4 = Routinely (daily).

² How critical is this task to optimizing outcomes for patients, caregivers, and healthcare providers?
 1 = Not critical, 2 = Minimally critical, 3 = Moderately critical, 4 = Highly critical.

Table 22/Registered Technician – Orthotics & Prosthetics/Descriptive Statistics for Tasks/Mean for Frequency and Criticality

TASK	FREQUENCY ¹		CRITICALITY ²	
	O	P	O	P
Formulation of the Treatment Plan Evaluate the findings to determine an orthotic/prosthetic recommendation	2.7	2.5	3.6	3.5
Formulate treatment goals and expected orthotic/prosthetic outcomes to reduce pain/increase comfort, enhance function and independence, provide stability, prevent deformity, address cosmesis, and/or promote healing	2.6	2.9	3.6	3.7
Consult with physician/referral source to modify, if necessary, the original prescription and/or treatment plan	2.2	1.9	3.5	3.5
Identify material, design, and components to support anticipated outcome	3.2	3.4	3.6	3.7
Develop a plan for patient needs, including patient education and follow-up	2.4	2.4	3.5	3.4
Document treatment plan using established record-keeping techniques to verify patient care	2.9	2.7	3.6	3.5
Inform patient or responsible parties of their financial responsibilities as they pertain to proposed treatment plan	2.0	1.9	3.4	3.1
Implementation of the Treatment Plan Inform patient, family, and/or caregiver of the orthotic/prosthetic procedure, possible risks, and time involved in the procedure	2.8	2.4	3.6	3.4
Select appropriate material/techniques in order to implement treatment plan	3.2	3.2	3.7	3.5
Provide patient with preparatory care for orthotic/prosthetic treatment (e.g., diagnostic splint, stump shrinker)	2.1	2.3	3.2	3.5
Prepare patient for procedure required to initiate treatment plan (e.g., take impression, digitize, delineate, scan)	2.8	2.5	3.6	3.5

Table 22/Registered Technician – Orthotics & Prosthetics/Descriptive Statistics for Tasks/Mean for Frequency and Criticality

TASK	FREQUENCY ¹		CRITICALITY ²	
	O	P	O	P
Implement procedure (e.g., take impression, digitize, delineate, scan)	2.9	2.5	3.7	3.6
Select appropriate materials, components, and specifications for orthosis/prosthesis based on patient criteria to ensure optimum strength, durability, and function as required (e.g., choose ankle or knee joints, feet, knee units; choose material of components, lamination layups)	3.1	3.5	3.8	3.9
Consult technical component/material resources as required	2.8	3.2	3.3	3.6
Prepare delineation/impression/template for modification/fabrication (e.g., prepare impression/reverse delineation, seal and fill impression/pour cast, digitize, strip model, download shape to carver or modification software)	3.3	3.3	3.7	3.4
Modify and prepare patient model for fabrication	3.2	2.8	3.8	3.7
Fabricate/assemble prescribed device by assembling selected materials/components in order to prepare for fitting and/or delivery (e.g., laminate/vacuum-form, remove socket/orthosis from model, smooth and finish orthosis/prosthesis, contour side bars to model/delineation, smooth and finish side bars, bench align components to socket, strap orthosis/prosthesis as necessary, perform final assembly of orthosis/prosthesis for patient fitting/delivery)	3.6	3.7	3.7	3.9
Assess device for structural safety and ensure that manufacturers' guidelines have been followed prior to patient fitting/delivery (e.g., torque values, patient weight limits)	3.4	3.8	3.7	3.9
Assess/align orthosis/prosthesis for accuracy in sagittal, transverse, and coronal planes in order to provide maximum function/comfort	3.4	3.4	3.7	3.9

Table 22/Registered Technician – Orthotics & Prosthetics/Descriptive Statistics for Tasks/Mean for Frequency and Criticality

TASK	FREQUENCY ¹		CRITICALITY ²	
	O	P	O	P
Ensure that materials, design, and components are fit/delivered as prescribed	3.5	3.4	3.8	3.9
Complete fabrication process after achieving optimal fit of orthosis/prosthesis (e.g., convert test socket to definitive orthosis/prosthesis)	3.2	3.6	3.7	3.8
Educate/counsel patient and/or caregiver about the use and maintenance of the orthosis/prosthesis (e.g., wearing schedules, therapy, other instructions)	3.0	2.7	3.7	3.6
Reassess orthosis/prosthesis for structural safety prior to patient delivery (e.g., screws tightened, cover attached)	3.5	3.6	3.8	3.9
Document treatment using established record-keeping techniques to verify implementation of treatment plan	2.9	2.9	3.6	3.6
Follow-up Treatment Plan				
Solicit subjective feedback from patient and/or caregiver to determine status (e.g., wear schedule/tolerance, comfort, perceived benefits, perceived detriments, ability to don and doff, proper usage and function, overall patient satisfaction)	2.7	2.5	3.6	3.7
Assess patient's:				
Functional Level	2.6	2.4	3.7	3.7
Skin condition (e.g., integrity, color, temperature, and volume)	2.6	2.3	3.7	3.7
General health, height, and weight, and note any changes	2.3	2.4	3.4	3.6
Psychosocial status, and note any changes (in family status, job, or caregiver)	2.0	2.1	3.0	3.3

Table 22/Registered Technician – Orthotics & Prosthetics/Descriptive Statistics for Tasks/Mean for Frequency and Criticality

TASK	FREQUENCY ¹		CRITICALITY ²	
	O	P	O	P
To determine need for changes relative to initial treatment goals, assess fit of orthosis/prosthesis with regard to:				
Strategic contact (e.g., 3-point force systems, total contact)	2.7	2.5	3.7	3.6
Anatomical relationships to orthosis/prosthesis (e.g., trimlines, static/dynamic alignment)	2.9	2.8	3.7	3.7
Formulate plan to modify orthosis/prosthesis based on findings and inform patient and/or caregiver of plan to modify orthosis/prosthesis	2.6	2.6	3.6	3.6
Make or delegate modifications to orthosis/prosthesis (e.g., relieve pressure, change range of motion, change alignment, change components, add pressure-sensitive pad)	3.1	2.9	3.6	3.7
Assess modified device for structural safety and ensure that manufacturers' guidelines (e.g., torque values, patient weight limits) have been followed	3.0	3.2	3.6	3.8
Evaluate modifications to orthosis/prosthesis, including static and dynamic assessment, in order to confirm that goals and objectives of modifications have been met	2.8	2.8	3.6	3.6
Reassess patient knowledge and understanding of goals and objectives to ensure proper use of orthosis/prosthesis relative to modifications	2.6	2.5	3.5	3.5
Document all findings and actions and communicate with appropriate healthcare professionals (e.g., referral sources, colleagues, supervisor) to ensure patient status is updated	2.7	2.5	3.7	3.5
Develop long-term follow-up plan relative to diagnosis/prognosis	2.2	2.1	3.3	3.3

Table 22/Registered Technician – Orthotics & Prosthetics/Descriptive Statistics for Tasks/Mean for Frequency and Criticality

TASK	FREQUENCY ¹		CRITICALITY ²	
	O	P	O	P
Practice Management				
Plan, implement, evaluate, and document policies and procedures in compliance with all applicable federal and state laws and regulations and professional and ethical guidelines (e.g., FDA, ADA, OSHA, MSDS, ABC Canon of Ethics)	2.2	2.3	3.4	3.4
Develop and implement personnel policies and procedures (e.g., benefits, training, incentives, staff recognition, regular performance appraisals)	1.7	2.0	3.2	3.4
Establish procedures for patient care that comply with accepted medical/legal requirements by maintaining current education in those areas	1.9	2.0	3.3	3.5
Demonstrate proper documentation of patient history and financial records by using established record-taking techniques in order to verify patient care and other pertinent information	2.4	2.5	3.5	3.5
Communicate roles and expectations of employer or employees by providing documentation in order to create a professional, cooperative working environment and improve patient care	2.0	2.4	3.2	3.6
Promotion of Competency and Enhancement of Professional Practice				
Participate in continuing education and/or provide such education for other healthcare professionals, orthotic and prosthetic practitioners, associates, technicians, and office staff (e.g., publications, seminars, case studies)	2.0	2.1	3.4	3.5
Participate in education for residents, students, and trainees	2.2	2.2	3.2	3.5
Conduct or participate in product development research, clinical trials, and outcome evaluation studies	1.7	1.6	2.7	2.9

Table 22/Registered Technician – Orthotics & Prosthetics/Descriptive Statistics for Tasks/Mean for Frequency and Criticality

TASK	FREQUENCY ¹		CRITICALITY ²	
	O	P	O	P
Participate in the development, implementation, and monitoring of public policy regarding orthotics/prosthetics (e.g., provide testimony/information to legislative/ regulatory bodies, serve on professional committees and regulatory agencies)	1.2	1.3	2.7	2.8
Participate in/with consumer organizations and nongovernmental organizations in order to promote competency and enhancement of orthotic/prosthetic profession	1.3	1.4	2.7	2.9

KNOWLEDGE AND SKILLS STATEMENTS

The practice analysis developed 68 knowledge and skills statements. Knowledge and skills statements describe the organized body of information and the physical or mental manipulation of information or things required to perform the tasks associated with each domain. Table 23 lists the statements.

Table 23
Knowledge and Skills

Knowledge of musculoskeletal anatomy, including upper limb, lower limb, spinal
Knowledge of neuroanatomy
Knowledge of anatomical landmarks
Knowledge of kinesiology, including upper limb, lower limb, spinal
Knowledge of normal human locomotion
Knowledge of normal and pathological gait
Knowledge of tissue characteristics/management
Knowledge of volumetric control
Knowledge of planes of motion
Knowledge of biomechanics
Knowledge of pathologies (e.g., neurologic, muscular, orthopedic)

Table 23/Knowledge and Skills

Knowledge of medical terminology
Knowledge of referral documents
Knowledge of procedures to record data
Knowledge of policies and procedures regarding privileged information
Knowledge of roles and responsibilities associated with other professions
Knowledge of reimbursement protocols (e.g., DMERC, HCFA)
Knowledge of material safety procedures and standards (e.g., OSHA, MSDS)
Knowledge of universal precautions, including sterile techniques and infection control
Knowledge of ethical standards regarding proper patient management
Knowledge of scope of practice related to orthotic/prosthetic credentials
Knowledge of when to refer the patient to other healthcare providers/caregivers
Knowledge of orthotic/prosthetic design
Knowledge of orthotic/prosthetic fitting criteria
Knowledge of trimlines
Knowledge of examination techniques, including range of motion (ROM) and manual muscle tests
Knowledge of impression-taking techniques, materials, devices, and equipment
Knowledge of rectification/modification procedures as they relate to specific orthotic/prosthetic designs
Knowledge of measurement tools and techniques
Knowledge of orthotic/prosthetic forms (e.g., assessment, orthometry, measurement, evaluation, outcomes)
Knowledge of materials science
Knowledge of componentry
Knowledge of alignment devices and techniques
Knowledge of hand and power tools
Knowledge of mechanics (e.g., levers and force systems)
Knowledge of care and maintenance of orthoses/prostheses
Knowledge of computer-aided design and manufacturing (CAD/CAM)
Knowledge of item warranty and warranty limitations
Knowledge of loss control (e.g., risk management, inventory control)
Knowledge of research methodology and literature
Knowledge of human development and aging, ranging from pediatric to geriatric, as they relate to orthotic and prosthetic treatment
Knowledge of available educational materials
Knowledge of federal and state rules, regulations, and guidelines (e.g., FDA, ADA)

Table 23/Knowledge and Skills

Skill in interpreting referral documents (including X-rays)
Skill in interviewing patients and referral sources
Skill in taking histories and performing physical examinations
Skill in gross surface anatomy (e.g., identification of anatomical landmarks)
Skill in patient examination techniques (e.g., measuring range of motion [ROM], measuring muscle strength, positioning body segments)
Skill in interpretation of physical findings (e.g., recognizing skin pressures, dermatological conditions)
Skill in normal and pathological gait/motion analysis
Skill in orthotic/prosthetic gait/motion analysis
Skill in managing patients relative to their condition
Skill in impression-taking/measuring for orthoses/prostheses, including upper limb, lower limb, spinal
Skill in using mechanical measuring devices
Skill in using electrical measuring devices
Skill in using computer-based measuring devices
Skill in patient delineation rectification and/or patient model modification
Skill in orthotic/prosthetic fabrication
Skill in use of safety equipment
Skill in using hand and power tools
Skill in use of materials and components
Skill in use of alignment devices
Skill in cosmetic finishing
Skill in evaluating fit and function of an orthosis/prosthesis
Skill in maintaining and repairing components
Skill in restoring optimal fit and function of orthoses/prostheses
Skill in solving patient's problems related to ADLs (e.g., dressing, driving)
Skill in documentation

ORTHOTIC AND PROSTHETIC DEVICES

All survey respondents were asked to characterize the nature of their work in regard to an extensive list of orthotic or prosthetic devices, as appropriate. Dually certified respondents were asked to complete the task for the one discipline in which they spend the most time.

Orthotic-credentialed Certified Practitioners and Registered Technicians completed five time allocation tasks and indicated for which of 24 orthotics devices associated with lower extremity, spinal, scoliosis, and upper extremity they performed the following tasks: perform initial assessment; measure/mold/digitize/scan; modify; fabricate; fit; perform follow-up/evaluation.

Prosthetic-credentialed Certified Practitioners and Registered Technicians completed two time allocation tasks and two ranking tasks, and indicated for which of 13 types of prosthetics devices they performed the following tasks: perform initial assessment; measure/mold; modify; fabricate; initial align/fit; delivery; perform follow-up.

Table 24 documents the time allocations of the orthotic-credentialed Certified Practitioners and Registered Technicians. As can be seen, both Certified Practitioners and Registered Technicians spend nearly two thirds of their time performing tasks in connection with lower extremity orthoses. Of that time, they spend nearly one half (about 30%) performing tasks in connection with AFOs, somewhat less time performing tasks in connection with FOs or KAFOs, and the least time performing tasks in connection with KOs, HOs, HKAFOS, and custom shoes. Both Certified Practitioners and Registered Technicians spend about 21% of their time performing tasks in connection with spinal orthoses, most typically either LSOs or TLSOs. Certified Practitioners and Registered Technicians each spend generally equal amounts of time performing tasks in connection with either scoliosis related orthoses (10% and 7%, respectively) or upper extremity orthoses (9% and 8%, respectively). Time spent in regard to scoliosis related orthoses is most likely to be spent with TLSOs, and time spent in regard to upper extremity orthoses is most likely to be spent with WHOs.

Table 24**Orthotics**

Certified Practitioner & Registered Technician
 Percentage of Time in Practice Areas and with Regard to Devices

PRACTICE AREA	AREA		DEVICES	
	P	T	P	T
Lower Extremity	60%	64%		
1.1 Custom shoes			4%	3%
1.2 FO			9%	12%
1.3 AFO			28%	29%
1.4 KO			6%	4%
1.5 KAFO			7%	11%
1.6 HO			3%	2%
1.7 HKAFO			3%	3%
Spinal	21%	21%		
2.1 LSO			8%	5%
2.2 TLSO			8%	10%
2.3 TLO			1%	1%
2.4 CTLSO			1%	1%
2.5 CTO			1%	1%
2.6 CO			2%	2%
2.7 Halo			1%	1%
Scoliosis	10%	7%		
3.1 LSO			1%	1%
3.2 TLSO			8%	5%
3.3 CTLSO (Milwaukee)			1%	1%
Upper Extremity	9%	8%		
4.1 HO			1%	1%
4.2 WHO			3%	4%
4.3 WO			1%	1%
4.5 EO			1%	1%
4.4 EWHO			1%	1%
4.6 SEWHO			1%	0%
4.7 SO			1%	0%

Certified Practitioners and Registered Technicians indicate that they perform all six types of tasks in connection with lower extremity, spinal, scoliosis, and upper extremity orthoses. As might be expected, they are most likely to indicate performing these tasks in connection with the classes of orthoses to which they allocate the most time. Accordingly, few Certified Practitioners indicated they fabricate spinal orthoses such as CTOs or Halos and few Registered Technicians indicated they perform any of the tasks with regard to either Halo orthoses or upper extremity orthoses such as SEWHOs or SOs.

Table 25
Orthotics
Certified Practitioner & Registered Technician
Orthotics Device List
Percentage of Credentialed Individuals Who Participated in Each Category

ORTHOTIC DEVICE	Perform Initial Assessment		Measure/ Mold/ Digitize/ Scan		Modify		Fabricate		Fit		Perform Follow-up/ Evaluation	
	P	T	P	T	P	T	P	T	P	T	P	T
Lower Extremity												
1.1 Custom shoes	78	40	77	47	16	24	<1	22	82	53	75	38
1.2 FO	95	53	95	60	73	73	50	82	97	64	90	56
1.3 AFO	97	49	97	56	83	73	50	84	97	62	95	51
1.4 KO	95	53	96	47	47	60	29	73	97	62	92	49
1.5 KAFO	93	47	94	53	74	67	43	80	93	58	90	47
1.6 HO	86	47	86	42	41	44	21	56	86	62	82	42
1.7 HKAFO	76	36	78	38	50	49	28	51	78	44	77	31
Spinal												
2.1 LSO	88	51	92	53	41	49	24	56	95	60	90	47
2.2 TLSO	90	49	95	49	50	58	28	67	96	58	93	44
2.3 TLO	56	31	61	27	25	27	13	31	60	33	56	24
2.4 CTLSO	56	33	58	27	31	29	19	33	59	38	59	29
2.5 CTO	53	27	54	24	20	22	<1	22	54	33	53	20
2.6 CO	82	44	82	40	25	20	12	24	86	51	78	40
2.7 Halo	33	<1	33	24	10	2	<1	<1	35	24	35	18
Scoliosis												
3.1 LSO	56	27	59	24	31	20	16	36	58	29	56	22
3.2 TLSO	79	36	83	36	43	38	22	51	83	36	88	31
3.3 CTLSO (Milwaukee)	39	20	38	18	22	20	12	29	37	22	37	18
Upper Extremity												
4.1 HO	71	38	71	33	39	38	28	44	71	53	66	29
4.2 WHO	89	42	92	33	53	47	31	56	92	56	84	33
4.3 WO	48	29	51	22	24	24	18	29	51	38	45	24
4.5 EO	59	29	62	24	33	27	18	36	61	29	56	24
4.4 EWHO	71	36	72	29	32	33	19	36	71	33	63	27
4.6 SEWHO	37	<1	38	13	12	7	<1	<1	38	20	33	13
4.7 SO	52	<1	54	22	14	7	<1	<1	52	27	46	20

As documented in Table 26, orthotic-credentialed Certified Practitioners and Registered Technicians indicated that almost two thirds of their patients' orthoses were custom made to patient model (64%), while 20% were custom fit to patient measurements and only 16% were custom fit (premanufactured devices).

Table 26
Percentage Allocations for Custom Made vs. Custom Fit Orthoses

TYPE	%
Custom made to patient model	64%
Custom fit to patient measurements	20%
Custom Fit (premanufactured devices)	16%
Total	100%

In terms of lower extremity orthoses, somewhat more orthoses were non-articulated AFOs than were articulated AFOs. (See Table 27.)

Table 27
Percentage Allocations for Articulated vs. Non-articulated AFOs

TYPE	%
Articulated AFOs	47%
Non-articulated AFOs	53%
Total	100%

In terms of scoliosis patients, orthotic-credentialed respondents indicated that nearly two thirds of their patients implemented a full-time wear schedule (62%), while 24% implemented a part-time wear schedule, and 14% implemented a nighttime wear only schedule.

Table 28
Percentage Allocations for Scoliosis Wear Schedules

SCHEDULE	%
Full-time wear	62%
Part-time wear	24%
Nighttime wear only	14%
Total	100%

Finally, in terms of scoliosis patients, orthotic-credentialed respondents indicated that more than two thirds of their patients manifest idiopathic diagnostic pathologies (70%), while only 14% manifest congenital pathologies, and 16% manifest neuromuscular pathologies.

Table 29
Percentage Allocations for Scoliosis Diagnostic Categories

DIAGNOSTIC CATEGORY	%
Idiopathic	70%
Congenital	14%
Neuromuscular	16%
Total	100%

As documented in Table 30, both prosthetic-credentialed Certified Practitioners and Registered Technicians spend nearly two thirds of their time performing tasks associated with transtibial prostheses (62% and 59%, respectively), with most prostheses typically incorporating patella tendon-bearing or total surface-bearing sockets and silicone suction suspension. Certified Practitioners and Registered Technicians spend slightly less than 30% of their work time performing tasks associated with transfemoral prostheses (27% and 28%, respectively), with most typically incorporating ischial containment sockets and suction/volumetric suspension. Certified Practitioners and Registered Technicians spend no more than a total of 8% and 12% of their time, respectively, in connection with transradial and transhumeral prostheses. In regard to the transradial prostheses, they are equally likely to incorporate myoelectric or body-powered sockets and harness suspensions. In regard to transhumeral prostheses, they are most likely to incorporate body-powered sockets and harness suspensions.

Table 30

Prosthetics

Certified Practitioner & Registered Technician

Percentage of Time in Practice Areas and with Regard to Devices, Sockets, and Suspensions

PRACTICE AREA	% OF PRACTICE					
	DEVICES		SOCKETS		SUSPENSIONS	
	P	T	P	T	P	T
Transtibial	62%	59%				
1B Patella tendon bearing			27%	33%		
1B Total surface bearing			28%	22%		
1B Hydrostatic			7%	4%		
1C Silicone suction					32%	28%
1C Sleeve					15%	19%
1C Waist belt					4%	4%
1C Supracondylar					11%	8%
Transfemoral	27%	28%				
2B Quadrilateral			6%	9%		
2B Ischial containment			21%	19%		
2C Silicone suction					7%	8%
2C Suction/volumetric					14%	14%
2C Hip joint/pelvic band/waist belt					6%	6%
Transradial	5%	8%				
3B Myoelectric			2%	3%		
3B Body-powered			3%	5%		
3C Self					2%	2%
3C Silicone					1%	1%
3C Harness					2%	5%
Transhumeral	3%	4%				
4B Myoelectric			1%	1%		
4B Body-powered			2%	3%		
4B Hybrid (e.g., body-powered elbow and myoelectric hand)			0%	0%		
4C Silicone					1%	1%
4C Harness					2%	3%
Other	3%	1%	3%	1%	3%	1%

As documented in Table 31, Certified Practitioners and Registered Technicians indicated that they perform nearly all tasks in connection with the thirteen specifically delineated types of prosthetic devices. As described previously in regard to the pattern of ratings for orthotic-credentialed respondents, the respondents were most likely to indicate performing these tasks in connection with the classes of prostheses to which they allocate the most time. Accordingly, many Certified Practitioners and Registered Technicians indicated that they perform all seven types of tasks associated with transtibial and transfemoral prostheses, and few Certified Practitioners and Registered Technicians indicated that they perform tasks associated with elbow or shoulder disarticulation.

Table 31
Prosthetics
Certified Practitioner & Registered Technician
 Prosthetics Device List
 Percentage of Credentialed Individuals Who Participated in Each Category

PROSTHETIC DEVICE	Perform Initial Assessment		Measure/Mold		Modify		Fabricate		Initial Fit/Align		Delivery		Perform Follow-up	
	P	T	P	T	P	T	P	T	P	T	P	T	P	T
Partial Foot	82	43	81	43	77	55	45	76	80	51	83	47	82	51
Symes	86	37	85	39	84	43	40	86	86	47	84	41	84	45
Transtibial	99	47	97	51	96	61	56	98	98	55	98	57	97	59
Knee disarticulation	71	37	69	37	69	45	34	82	69	43	69	45	71	47
Transfemoral	97	47	96	51	95	61	51	96	96	53	96	53	95	57
Hip disarticulation	50	22	46	25	42	27	16	51	46	27	47	27	49	27
Hemi-pelvectomy	21	<1	14	<1	14	<1	<1	12	14	<1	15	<1	19	<1
Partial hand	41	20	39	24	30	20	14	31	38	25	39	25	39	25
Wrist disarticulation	47	22	45	24	44	31	22	49	45	25	46	29	47	29
Transradial	77	35	75	37	73	41	34	71	75	39	75	41	76	39
Elbow disarticulation	20	12	20	14	20	20	<1	39	19	16	20	14	21	16
Transhumeral	56	31	56	29	55	35	26	65	54	33	55	33	56	29
Shoulder disarticulation	25	<1	23	<1	22	<1	14	27	23	<1	23	<1	25	<1

The prosthetic-credentialed Certified Practitioners and Registered Technicians were asked to rank-order the transtibial and transfemoral gait deviations they see most frequently. As documented in Table 32 and Table 33, four transtibial gait deviations (prosthesis too short, uneven stride length, prosthesis too long, excessive varus thrust) and two transfemoral gait deviations (uneven stride and lateral trunk lean) were identified as those most frequently seen in practice. The remaining gait deviations were seen less frequently.

Table 32
Transtibial Gait Deviations Most Frequently Seen in Practice

GAIT DEVIATION	Most LIKELY	Likely	Least Likely
Prosthesis too short	✓		
Uneven stride length	✓		
Prosthesis too long	✓		
Excessive varus thrust	✓		
Excessive toe out		✓	
Walking on lateral border of foot		✓	
Excessive pistoning in swing phase		✓	
Excessive toe in			✓
Excessive valgus thrust			✓
Excessive knee flexion in early stance			✓
Insufficient knee flexion in early stance			✓
Walking on medial border of foot			✓
Hyperextension of knee in late stance			✓
Premature loss of anterior support			✓

Table 33

Transfemoral Gait Deviations Most Frequently Seen in Practice

GAIT DEVIATION	Most LIKELY	Likely	Least Likely
Lateral trunk lean	✓		
Long prosthetic step	✓		
Abducted gait		✓	
Circumducted gait		✓	
Vaulting		✓	
Knee instability		✓	
Lateral whip			✓
Medial whip			✓
Excessive toe out			✓
Excessive toe in			✓
External rotation of foot in early stance			✓
Terminal impact			✓
Excessive lumbar lordosis			✓
Excessive heel rise			✓
Loss of anterior support			✓

Finally, the prosthetic-credentialed respondents were asked to provide estimates of the cases they see incorporating multiple suspension systems. As seen in Table 34, transfemoral and transhumeral cases were most likely to incorporate a multiple suspension system (31%), and transtibial (25%) and transradial (21%) were somewhat less likely to incorporate a multiple suspension system. (See Table 34.)

Table 34
Percentage of Cases with Multiple Suspension Systems

Transtibial	25%
Transfemoral	31%
Transradial	21%
Transhumeral	31%

HIGHLIGHTS RELATED TO BACKGROUND, WORK SETTING AND DEMOGRAPHIC INFORMATION

- Approximately 66% of the Registered Technicians in orthotics earned a high school diploma/GED or a high school diploma/GED and an O/P technician certificate to initially qualify for the credential, while about 20% earned an associate's degree. 72% of the Certified Practitioners in orthotics earned a baccalaureate degree in O/P or a baccalaureate degree and an O/P certificate to initially qualify for practice. Approximately 81% of the Registered Technicians in prosthetics earned a high school diploma/GED or a high school diploma and an O/P technician certificate to initially qualify for the credential, while about 11% earned an associate's degree. 73% of the Certified Practitioners in prosthetics earned a baccalaureate degree in O/P or a baccalaureate degree and an O/P certificate to initially qualify for practice.
- About 70% of the orthotic-credentialed sample of Registered Technicians and Certified Practitioners had 10 or more years of experience in orthotics. About 67% of the prosthetic-credentialed sample of Registered Technicians and Certified Practitioners had 10 or more years of experience in prosthetics. Both groups of respondents gained years of experience before they were certified or registered.
- In regard to the orthotic-credentialed sample, Registered Technicians devoted 56% of their work time to fabrication and 30% to clinical orthotic patient care, whereas Certified Practitioners devoted 51% of their work time to clinical orthotic patient care and about equal amounts of time to fabrication (15%), administration (14%), and clinical prosthetic patient care (11%). Similarly, in regard to the prosthetic-credentialed sample, Registered Technicians devoted 61% of their work time to fabrication and 20% to clinical prosthetic patient care, whereas Certified Practitioners devoted 46% of their work time to clinical prosthetic patient care and about equal amounts of time to fabrication (16%), administration (16%), and clinical orthotic patient care (14%).
- In describing their primary work setting, 57% of the orthotic-credentialed sample worked in a privately owned (38%) or publicly owned (19%) multifacility orthotic and prosthetic service organization, 21% worked in a single-location facility (privately owned), and 13% worked in a hospital-based practice. In regard to the prosthetic-credentialed sample, a greater proportion of the sample (69%) worked in either a privately owned (42%) or publicly owned (27%) multifacility orthotic and prosthetic service organization, and a smaller proportion worked in either a single-location facility (privately owned) (18%) or a hospital-based practice (8%).
- Respondents described the patients to whom they delivered direct patient care. Slightly more than one third of the patients of the orthotic-credentialed sample were either adult patients (36%) or geriatric patients (35%), while slightly less than one third of the patients were pediatric patients (29%). In contrast, nearly one half of the patients of the prosthetic-credentialed sample were geriatric patients (49%), more than one third were adult patients (39%), and few patients were pediatric patients (12%).

- Nearly one half of the patients of the orthotic-credentialed sample present with conditions which reflect disease-based etiologies (46%), and about one fourth of the patients present with conditions which reflect trauma-based (28%) or congenital-based (26%) etiologies. In contrast, more than two thirds of the patients of the prosthetic-credentialed sample present with conditions which reflect disease-based etiologies (67%), and few present with conditions which reflect trauma-based (23%) or congenital-based (10%) etiologies.
- Respondents were asked to indicate the percentage of orthotic and prosthetic devices they provide to their patients that incorporate the use of computer-aided design and manufacturing (CAD/CAM). Members of the orthotic-credentialed sample indicated that only about 14% of the devices they provide incorporate the use of CAD/CAM, whereas members of the prosthetic-credentialed sample indicated that 29% of the devices they provide incorporate the use of CAD/CAM.
- Members of both the orthotic and prosthetic-credentialed samples report that about three fourths of all orthotic devices they provide to their patients are fabricated onsite and about one fourth are outsourced. Prosthetic devices are somewhat more likely to be fabricated onsite by members of the prosthetic-credentialed sample.
- The overall sample responding to the survey was predominantly male, over the age of 35, and Caucasian/White (non-Hispanic). This demographic picture of the sample is quite consistent with the ABC database.

HIGHLIGHTS RELATED TO DOMAINS, TASKS, KNOWLEDGE AND SKILLS

- Certified Practitioners in both disciplines indicated that they spend the most time performing tasks associated with Implementation of the Treatment Plan (about one third of their time) and the least time performing tasks associated with Promotion of Competency and Enhancement of Professional Practice (about 7%). They spend between 10% and 20% of their time performing tasks associated with each of the remaining four specifically delineated domains (Patient Assessment and Follow-up Treatment Plan, followed by Formulation of the Treatment Plan and Practice Management).

- The mean Criticality ratings for Certified Practitioners in both disciplines for the four domains related to direct patient care indicate that these domains are all rated at the upper end of the scale between moderately critical and highly critical (i.e., 3.4 to 3.8). The mean Criticality ratings for the two non-direct patient care domains indicate that these two domains are moderately critical (2.8 to 3.2). Accordingly, all six domains appropriately focus on activities that are critical to optimizing outcomes for patients, caregivers, and healthcare providers.
- The Frequency ratings for tasks for Certified Practitioners in both orthotics and prosthetics are similar; they do not vary by more than 0.3 of a rating scale point. The ratings indicate that Certified Practitioners perform 35 of the 41 tasks associated with the four direct patient care domains frequently to routinely. They perform the remaining six tasks in those same domains occasionally to frequently. Certified Practitioners perform the tasks associated with the two non-direct patient care domains somewhat less frequently. Certified Practitioners perform the tasks associated with Practice Management and some of the tasks associated with Promotion of Competency and Enhancement of Professional Practice occasionally to frequently and they perform three of the five tasks associated with the latter domain never or rarely to occasionally.
- As was the case in regard to the Frequency ratings, the Criticality ratings for tasks for Certified Practitioners in both disciplines are similar; that is, within 0.3 of a rating scale point. Certified Practitioners rated all 41 tasks in the four direct patient care domains as moderately-to-very critical, and they rated seven of the ten tasks in the two non-direct patient care domains as moderately-to-very critical. They rated the remaining three tasks in Promotion of Competency and Enhancement of Professional Practice as minimally critical to moderately critical.
- The overall pattern of the Frequency and Criticality ratings on the 51 tasks indicates that the practice analysis delineation included critical tasks performed by Certified Practitioners in both disciplines. The pattern of Frequency and Criticality ratings for the Certified Practitioners in both disciplines validates the use of these tasks in initiatives related to the development of primary education curriculum, continuing education programming and credentialing examinations.
- Registered Technicians in both orthotics and prosthetics indicated that they spend the most time performing tasks associated with Implementation of the Treatment Plan (more than one half of their time) and the least time performing tasks associated with Practice Management (about 4% to 6%). They spend between 7% and 12% of their time performing tasks associated with each of the remaining four specifically delineated domains (Patient Assessment, Formulation of the Treatment Plan, Follow-up Treatment Plan, Promotion of Competency and Enhancement of Professional Practice).

- The mean Criticality ratings for Registered Technicians for the four domains related to direct patient care indicate that these domains are all rated at the upper end of the rating scale between moderately critical and highly critical (i.e., 3.3 to 3.8). The mean Criticality ratings for the two non-direct patient care domains indicate that these two domains are moderately critical (2.9 to 3.2). As was the case with the Certified Practitioners, the ratings of the Registered Technicians indicated that all six domains are critical to optimizing outcomes for patients, caregivers, and healthcare providers.
- The Frequency ratings for tasks are generally similar for Registered Technicians in both orthotics and prosthetics; that is, the ratings of only four tasks vary by more than 0.3 of a rating scale point. The overall pattern of ratings indicates that Registered Technicians perform the tasks associated with Implementation of the Treatment Plan frequently to routinely, the tasks associated with the other three direct patient care domains occasionally to frequently, and the tasks associated with the two non-direct patient care domains never or rarely to occasionally.
- The Criticality ratings for tasks for Registered Technicians in both disciplines are similar; that is, with only one exception, within 0.3 of a rating scale point. Registered Technicians rated all 41 tasks in the four direct patient care domains as moderately-to-highly critical, and they rated eight of the ten tasks in the two non-direct patient care domains as moderately-to-highly critical. They rated two tasks in Promotion of Competency and Enhancement of Professional Practice as minimally-to-moderately critical.
- The overall pattern of the Frequency and Criticality ratings on the 51 tasks indicates that the practice analysis delineation included critical tasks performed by Registered Technicians in both disciplines. The pattern of Frequency and Criticality ratings for the Registered Technicians in both disciplines validates the use of these tasks in initiatives related to the development of primary education curriculum, continuing education programming and credentialing examinations.
- The Criticality ratings of almost every knowledge and skills statement indicated that the knowledge and these skills are moderately-to-highly critical in regard to optimizing outcomes for patients, caregivers, and healthcare providers. The ratings for only five statements indicated that those bodies of knowledge or skills are minimally-to-moderately critical.

HIGHLIGHTS RELATED TO ORTHOTICS AND PROSTHETICS DEVICES

- Orthotic-credentialed Certified Practitioners and Registered Technicians spend nearly two thirds of their time performing tasks in connection with lower extremity orthoses. Of that time, they spend nearly one half (about 30%), performing tasks in connection with AFOs, somewhat less time performing tasks in connection with FOs or KAFOs, and the least time performing tasks in connection with KOs, HOs, HKAFOs, and custom shoes. Both Certified Practitioners and Registered Technicians spend about 21% of their time performing tasks in connection with spinal orthoses, most typically either LSOs or TLSOs. Certified Practitioners and Registered Technicians each spend generally equal amounts of time performing tasks in connection with either scoliosis related orthoses (10% and 7%, respectively) or upper extremity orthoses (9% and 8%, respectively). Time spent in regard to scoliosis related orthoses is most likely to be spent with TLSOs, and time spent in regard to upper extremity orthoses is most likely to be spent with WHOs.

- Prosthetic-credentialed Certified Practitioners and Registered Technicians spend nearly two thirds of their time performing tasks associated with transtibial prostheses (62% and 59%, respectively), with most prostheses typically incorporating patella tendon bearing or total surface-bearing sockets and silicone suction suspension. Certified Practitioners and Registered Technicians spend slightly less than 30% of their work time performing tasks associated with transfemoral prostheses (27% and 28%, respectively), with most typically incorporating ischial containment sockets and suction/volumetric suspension. Certified Practitioners and Registered Technicians spend no more than a total of 8% and 12% of their time, respectively, in connection with transradial and transhumeral prostheses. In regard to the transradial prostheses, they are equally likely to incorporate myoelectric or body-powered sockets and harness suspensions. In regard to transhumeral prostheses, they are most likely to incorporate body-powered sockets and harness suspensions.