

**AMERICAN CLINICAL BOARD OF NUTRITION  
(ACBN) Diplomate of the American Clinical  
Board of Nutrition (DACBN) Role Delineation  
Analysis Report**

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## Introduction

This report describes the analysis of data collected from a Role Delineation survey that was developed and administered by the American Clinical Board of Nutrition (ACBN) for the Diplomate of the American Clinical Board of Nutrition (DACBN) Examination Program. The intent of the report is to provide the ACBN with data from the survey for the purpose of updating the content outline and test specifications to reflect current best practice. The report summarizes demographic data of the survey respondents and validity rating scale data associated with the performance domains and tasks of a DACBN. Preliminary test specifications based on the rating data are produced for review and consideration by the ACBN. The Shoreline Psychometric Services, LLC was retained by ACBN to perform these analyses and produce this report.

Shoreline Psychometric Services, LLC. was informed by ACBN that a role delineation study was conducted in 2010, which resulted in identifying six performance domains and 15 tasks distributed among the performance domains. The content outline and test specifications resulting from the study have been used for examination development since 2010. In 2015, ACBN determined that a new role delineation study be performed to ensure that the examination program reflects current best practice in chiropractic nutrition. Therefore, in the fall of 2015, the ACBN administered the role delineation survey to individuals with a DACBN.

## The Role Delineation Survey

The ACBN administered a paper-based survey to collect validity data about the performance domains and associated tasks from the population of individuals who hold a DACBN. The survey included sixteen (16) demographic questions and the following six performance domains with 15 task statements distributed among the performance domains (see Table 1):

**Table 1 - Performance Domains and Number of Tasks**

Performance Domains	Number of Tasks
1. HISTORY	2
2. EXAMINATION	5
3. ASSESSMENT	5
4. DIAGNOSIS	1
5. TREATMENT	1
6. FOLLOW-UP	1
<b>Total Number of Tasks</b>	<b>15</b>

The survey consisted of the following four sections: Section A – Demographic Information, Section B – Definition of Terms Used in the Role Delineation Survey, Section C – Evaluation of the Domains, and Section D – Evaluation of the Task Statements. The questions in Section A were multiple-choice questions and some included “Other” as a response in which survey respondents were given opportunity to indicate “Other.” Sections C and D were designed to collect validity data on the performance domains and task statements. Validity rating scales, which are described later in this report, were used to collect these data. Section D also included open-ended questions that asked whether there were any tasks that were overlooked in each performance domain.

All surveys returned to ACBN by the survey respondents were provided to Shoreline Psychometric Services, LLC. for data entry and analysis.

## Response Rate

Shoreline Psychometric Services, LLC. received 107 surveys from ACBN that were completed by the survey respondents. Shoreline Psychometric Services, LLC. was informed by ACBN that the survey was mailed to 295 individuals, which were the entire population of DACBNs as of fall 2015. Therefore, the response rate was 36.27%. The margin of error, or confidence interval at the 95% confidence level for the total number of survey respondents was +/-7.58. This confidence interval is slightly higher than the acceptable range of +/- 5.00; however, it may be due to the small population of DACBNs.

## Survey Respondents’ Demographic Information

The survey included sixteen (16) demographic questions that were designed to collect data about the survey respondents’ gender, age range, ethnicity, geographical location of their practice, amount of time spent practicing chiropractic medicine and nutrition, credentials, education, continuing education and income. As indicated in Table 2, the majority of survey respondents (67%) are male and 32% are female. One survey respondent selected both male and female. Table 3 shows the age ranges of survey respondents.

Approximately half of those responding to this question (51%) indicated that they are more than 55 years of age. Thirty-nine percent (39%) of the survey respondents indicated that they are 46 to 55 years old. In terms of ethnicity, the majority of survey respondents indicated Caucasian (78.5%), 9.35% indicated Hispanic, and 4.67% indicated Black or African American. Approximately 8% did not respond to this survey question. In terms of geographic location, as shown in Table 4, the survey respondents are located among 25 states, with the highest number of survey respondents from Florida (i.e., 16.82%).

**Table 2 - Gender**

Gender	Count	Percent
Female	34	31.78
Male	72	67.29
Female & Male	1	0.93
Total	107	100.00

**Table 3 - Age**

Age	Count	Percent
Under 25 years	0	0
25 - 35 years	1	0.93
36 - 45 years	8	7.48
46 - 55 years	42	39.25
More than 55 years	54	50.47
Total Number of Respondents to Question	105	98.13
Did not respond	2	1.87
Total Number of Survey Respondents	107	100.00

**Table 4 - Ethnicity**

Ethnicity	Count	Percent
Asian or Pacific Islander	0	0
Black or African American	5	4.67
Caucasian	84	78.50
Hispanic	10	9.35
Native American	0	0
Other (Please specify.)	0	0
Total Number of Responses to Question	99	92.52
Did not respond	8	7.48
Total Number of Survey Respondents	107	100.00

**Table 5 - State**

State	Count	Percent
1. AR	1	0.93
2. CA	10	9.35
3. CO	6	5.61
4. CT	2	1.87
5. DE	1	0.93
6. FL	18	16.82
7. GA	3	2.80
8. IL	9	8.41
9. MA	3	2.80
10. MD	3	2.80
11. MI	1	0.93
12. MN	5	4.67
13. MO	1	0.93
14. NC	1	0.93

State	Count	Percent
15. NJ	8	7.48
16. NM	1	0.93
17. NY	10	9.35
18. OH	2	1.87
19. OR	2	1.87
20. PA	4	3.74
21. SC	1	0.93
22. SD	1	0.93
23. TX	9	8.41
24. VA	2	1.87
25. WI	3	2.80
Total	107	100.00

Survey respondents were asked to indicate the number of hours per week practicing chiropractic medicine. Approximately 24% of the survey respondents practice less than 30 hours per week in chiropractic medicine, 45% indicated that they practice 30 to 39 hours per week, 22.43% of the survey respondents practice 40 to 49 hours per week, and 7.48% of the survey respondents practice 50 to 60 hours per week in chiropractic medicine. See Table 6 for these data. With respect to the number of hours per week practicing chiropractic nutrition, 24.30% of the survey respondents practice less than 15 hours per week, 34.58% of the survey respondent practice 15 to 24 hours per week, 25.23% practice 25 to 32 hours per week, 19.63% practice 33 to 40 hours per week, and 4.67% practice more than 40 hours per week. See Table 7 for these data.

**Table 6 - Hours per Week Practicing Chiropractic Medicine**

Number of Hours Per Week Practicing Chiropractic Medicine		
	Count	Percent
Less than 30 hours	26	24.30
30 – 39 hours	48	44.86
40 – 49 hours	24	22.43
50 – 60 hours	8	7.48
More than 60 hours	0	0.00
Did not respond	1	0.93
Total	107	100.00

**Table 7 - Hours Per Week Practicing Chiropractic Nutrition**

Number of Hours Per Week Practicing Chiropractic Nutrition		
	Count	Percent
Less than 15 hours	17	15.89
15 to 24 hours	37	34.58
25 – 32 hours	27	25.23
33 – 40 hours	21	19.63
More than 40 hours	5	4.67
Total	107	100.00

Table 8 indicates that the majority of survey respondents (97.20%) have a Diplomate in Nutrition. Table 9 shows Diplomate status from other organizations. Approximately 37% indicated “none/does not apply,” and the credentials that had the most responses were DABCI (13%), and DACNB (8.51%). The responses to the option “Other” for this question are presented in Table 10. The most common “Other” response was DABCN, as five (5) respondents indicated this credential. Note that although Table 9 shows 22 respondents indicating “Other,” only 12 respondents provided a response to “Other” (See Table 9).

In terms of how survey respondents obtained post-graduate diplomate status, more than half of the survey respondents (58.88%) indicated that it was obtained through a council, academy, college or association. Approximately 37% of the respondents indicated that they obtained post-graduate diplomate status (or equivalent) through an ACA or ICA specialty board (see Table 11).

**Table 8 - Diplomate in Nutrition**

<b>Diplomate in Nutrition</b>		
	<b>Count</b>	<b>Percent</b>
Yes	104	97.20
No	1	0.93
Total Number of Responses to Question	105	98.13
Did not respond	2	1.87
Total Number of Survey Respondents	107	100.00

**Table 9 - Diplomate from Other Organizations**

<b>Diplomate in any of the following organizations (Multiple responses)</b>		
	<b>Count</b>	<b>Percent</b>
None/does not apply	39	36.45
DABCI	13	12.15
DABCI & DACBSP	2	1.87
DABCO	2	1.87
DACAN	1	0.93
DACBOH	0	0.00
DACBR	1	0.93
DACBSP	1	0.93
DACNB	8	7.48
DACNB & Other	1	0.93
Other	22	20.56
Did not respond	17	15.89
Total	107	100.00

**Table 10 - Diplomate From Other Organizations - Other Responses**

<b>Diplomate in any of the following organizations - Other Responses</b>	
1.	ACBN
2.	ACBN & CBCN
3.	CBCN
4.	CCN
5.	CNN
6.	DABCN
7.	DABCN neurology
8.	DACBN
9.	DACBN & DCBCN
10.	DACBN, DABCN
11.	DCBCN
12.	DIBAK

**Table 11 - How Did You Obtain Post-Graduate Diplomate Status?**

<b>How did you obtain post-graduate diplomate status?</b>		
	<b>Count</b>	<b>Percent</b>
1. Council, academy, college, or association	63	58.88
2. Council, academy, college, or association & Diplomate status (or equivalent) through an ACA or ICA specialty board	2	1.87
3. Diplomate status (or equivalent) through an ACA or ICA specialty board	39	36.45
4. Working toward diplomate status (or equivalent) but not completed	0	0.00
5. Did not respond	3	2.80
<b>Total</b>	<b>107</b>	<b>100.00</b>

With respect to other types of certifications held by the survey respondents, approximately 41% indicated that they have the CCN, and approximately 13% indicated having the CNS. Forty-three percent (43%) of the survey respondents did not respond to this question. See Table 12 for these data. The responses to the option “Other” for this question are presented in Table 13. Note that although Table 12 shows three (3) respondents indicating “Other,” six (6) respondents provided a response to “Other” (See Table 13).

**Table 12 - Other Certifications in Nutrition**

<b>Other Certifications in Nutrition</b>		
	<b>Count</b>	<b>Percent</b>
CCN	42	39.25
CCN & CNS	2	1.87
CCN & RD	1	0.93
CNS	12	11.21
RD	1	0.93
Other	3	2.80
Did not respond	46	42.99
<b>Total</b>	<b>107</b>	<b>100.00</b>

**Table 13 - Other Certifications in Nutrition - Other Responses**

Other Certifications In Nutrition - Other Responses	
1.	CGP
2.	LD/N
3.	M.S.
4.	M.S. BIO/NUTRITION
5.	MS, NUT. SCIENCE
6.	RN

As indicated in Table 14 below, 42% of the survey respondents earn 13 to 20 hours of continuing education hours in nutrition-related topics per year, and 48.6% of the respondents earn more than 20 hours of continuing education hours in nutrition-related topics per year.

**Table 14 - Number of Continuing Education Hours in Nutrition-Related Topics Earned Per Year**

Number of Continuing Education Hours in Nutrition-Related Topics Earned Per Year		
	Count	Percent
0 – 6 hours	0	0.00
7 – 12 hours	9	8.41
7 – 12 hours & 13 – 20 hours	1	0.93
13 – 20 hours	45	42.06
21 – 30 hours	28	26.17
31 – 40 hours	16	14.95
More than 40 hours	8	7.48
Total	107	100.00

With respect to the highest degree earned in non-chiropractic education, the majority of the survey respondents (79%) have earned a bachelor’s or higher degrees in non-chiropractic education, with a bachelor’s degree being the most common degree (44.86%), followed by a master’s degree (17.76%) and a doctorate (13.08%). See Table 15 for these data. The responses to the option “Other” for this question are presented in Table 16. Note that although Table 15 shows one (1) respondent indicating “Other,” two (2) respondents provided a response to “Other” (see Table 16).

**Table 15 - Highest Level of Non-Chiropractic Education**

Highest Level of Non-Chiropractic Education		
	Count	Percent
High School Diploma	11	10.28
Associate Degree	8	7.48
Bachelor’s Degree	48	44.86
Bachelor’s Degree & Master’s Degree	1	0.93
Master’s Degree	19	17.76
Master’s Degree & Doctorate	1	0.93
Doctorate	14	13.08

Highest Level of Non-Chiropractic Education		
	Count	Percent
Doctorate & Other (Please specify.)	1	0.93
Other (Please specify.)	1	0.93
Did not respond	3	2.80
Total	107	100.00

Table 16 - Highest Level of Non-Chiropractic Education - Other Responses

Highest Level of Non-Chiropractic Education – Other Responses
1. 2 Yrs. College
2. MD

Table 17 shows the schools in which survey respondents received their doctor of chiropractic degree. Of the 26 institutions listed, the most common institutions indicated by survey respondents were: National College of Chiropractic (NUHS) (16.82%), New York Chiropractic College (15.89%), and Palmer College of Chiropractic (13.08%).

Table 17 - School

From Which School Did You Receive Your Doctor of Chiropractic Degree?		
	Count	Percent
1. Do not hold the doctor of chiropractic degree.	1	0.93
2. Anglo-European College of Chiropractic	0	0.00
3. Canadian Memorial Chiropractic College	0	0.00
4. Cleveland Chiropractic College, Kansas City	3	2.80
5. Cleveland Chiropractic College, Los Angeles	4	3.74
6. Institute Francais de Chiropractie	0	0.00
7. Life Chiropractic College, West	1	0.93
8. Life University, School of Chiropractic (Life College)	9	8.41
9. Lincoln College of Chiropractic	0	0.00
10. Logan College of Chiropractic	3	2.80
11. Los Angeles College of Chiropractic (SCUHS)	9	8.41
12. National College of Chiropractic (NUHS)	18	16.82
13. National College of Chiropractic (NUHS) & Palmer College of Chiropractic	1	0.93
14. New York Chiropractic College	17	15.89
15. Northwestern College of Chiropractic (NWUHS)	6	5.61
16. Palmer College of Chiropractic	14	13.08
17. Palmer College of Chiropractic, West	4	3.74
18. Parker College of Chiropractic	3	2.80
19. Pennsylvania College of Straight Chiropractic	0	0.00
20. Quantum University (Southern California College of Chiropractic)(Pasadena College)	0	0.00
21. Royal Melbourne Institute of Technology (Philip Institute of Technology)	0	0.00
22. Sherman College of Straight Chiropractic	1	0.93
23. Sydney College of Chiropractic/Maquarie University	0	0.00
24. Texas Chiropractic College	6	5.61
25. University of Bridgeport	1	0.93
26. Western States Chiropractic College	6	5.61
Total	107	100.00

The majority of survey respondents (74.77%) indicated that they do not hold a graduate degree in nutrition from a regionally accredited college or university (see Table 18). For those that hold a graduate degree in nutrition from a regionally accredited college or university, 14.95% have a Master of Science and 9.35% have a doctorate (see Table 19).

**Table 18 - Do You Have A Graduate Degree in Nutrition From a Regionally Accredited College or University?**

<b>Do you have a graduate degree in nutrition from a regionally accredited college or university?</b>	<b>Count</b>	<b>Percent</b>
Yes	26	24.30
No	80	74.77
Total Number of Respondents to this Question	106	99.07
Did not respond	1	0.93
Total Number of Survey Respondents	107	100.00

**Table 19 - Type of Degree in Nutrition from a Regionally Accredited College or University**

<b>If you hold a graduate degree in nutrition from a regionally accredited college or university, which of the following degrees do you hold? (Check all that apply.)</b>	<b>Count</b>	<b>Percent</b>
Master of Arts	0	0.00
Master of Science	16	14.95
Doctorate	10	9.35
Total	26	24.30
Did not respond.	81	75.70
Total	107	100.00

Table 20 shows the income ranges from chiropractic nutrition employment. Approximately 24% of the survey respondents’ income is more than \$100, 000, and approximately 76% earn less than \$100,000 from chiropractic nutrition employment.

**Table 20 - Income from Chiropractic Nutrition Employment**

<b>What is your income from chiropractic nutrition employment?</b>	<b>Count</b>	<b>Percent</b>
Less than \$10,00	6	5.61
\$10,000 to \$19,999	4	3.74
\$20,000 to \$29,999	9	8.41
\$30,000 to \$39,999	9	8.41
\$40,000 to \$49,999	5	4.67
\$50,000 to \$59,999	7	6.54
\$60,000 to \$69,999	11	10.28
\$70,000 to \$79,999	8	7.48
\$80,000 to \$89,999	11	10.28
\$90,000 to \$100,000	11	10.28
More than \$100,000	26	24.30
Total	107	100.00

## Validity Rating Scales for the Performance Domains and Task Statements

The importance and criticality rating scales as shown in Table 21 and a question to obtain frequency data as shown in Table 22 were used to collect validity evidence for the performance domains. The importance, criticality and frequency rating scales to collect validity evidence for the task statements are shown in Table 23. Prior to rating the domains, the survey presented the following definitions of importance and criticality and instructions for applying the ratings:

### Importance:

*“Importance is defined as the degree to which knowledge in the domain is essential to the job performance of a minimally competent diplomate in nutrition. Indicate how important each domain is to the performance of a minimally competent diplomate in nutrition. Rate each of the six domains by using the scale below. Please assign each domain using only one rating. DO NOT RANK THE DOMAINS. Select the number of the description below that best exemplifies your rating for each domain and write that number in the space provided next to each domain.”*

### Criticality:

*“Criticality is defined as the degree to which adverse effects could result if the diplomate in nutrition is not knowledgeable in the domain. Indicate the degree to which the inability to perform tasks in each domain would be seen as causing harm to a client, a co-worker, the public, etc. Harm may be physical, emotional, financial, etc. Rate each of the six domains by using the scale below. Please assign each domain only one rating. DO NOT RANK THE DOMAINS. Select the number of the description below that best exemplifies your rating for each domain and write that number in the space provided next to each domain.”*

**Table 21 - Validity Rating Scales for the Performance Domains**

Validity Rating Scales for Performance Domains	
Importance	Criticality
<b>1 = Not Important.</b> Performance of tasks in this domain is not essential to the job performance of the minimally competent diplomate in nutrition.	<b>1 = No Harm.</b> Inability to perform tasks in this domain would have no adverse consequences.
<b>2 = Somewhat Important.</b> Performance of tasks in this domain is minimally essential to the job performance of the minimally competent diplomate in nutrition.	<b>2 = Minimal Harm.</b> Inability to perform tasks in this domain would lead to error with minimal adverse consequences.
<b>3 = Important.</b> Performance of tasks in this domain is moderately essential to the job performance of the minimally competent diplomate in nutrition.	<b>3 = Moderate Harm.</b> Inability to perform tasks in this domain would lead to error with moderate adverse consequences.

Validity Rating Scales for Performance Domains	
Importance	Criticality
<b>4 = Very Important.</b> Performance of tasks in this domain is clearly essential to the job performance of the minimally competent diplomate in nutrition.	<b>4 = Significant Harm.</b> Inability to perform tasks in this domain would lead to error with major adverse consequences.
<b>5 = Extremely Important.</b> Performance of tasks in this domain is absolutely essential to the job performance of the minimally competent diplomate in nutrition.	<b>5 = Extreme Harm.</b> Inability to perform tasks in this domain would definitely lead to error with catastrophic consequences.

Table 22 - Frequency Question for the Performance Domains

Frequency Question for the Performance Domains
<i>What percentage of time does the diplomate in nutrition spend performing duties or using the principles associated with each domain?</i>

Table 23 - Validity Rating Scales for the Task Statements

Validity Rating Scales for the Task Statements		
Importance	Criticality	Frequency
1 – Not Important	1 – Causing no harm	1 – Never
2 – Somewhat Important	2 – Causing minimal harm	2 – Rarely
3 – Important	3 – Causing moderate harm	3 – Infrequently
4 – Very Important	4 – Causing significant harm	4 – Frequently
5 – Extremely Important	5 – Causing extreme harm	5 – Repetitively

## Analysis of the Validity Rating Scale Data

### Performance Domains

The survey respondents were asked to rate the importance and criticality of the six (6) performance domains. The number of respondents for each performance domain, the minimum (Min) and maximum (Max) ratings, the mean rating (M), the standard error of the mean, (SE) and the standard deviation (SD) of the importance and criticality ratings are shown in Table 22. The SE is a statistic indicating the standard deviation of the sample means. The SD is a statistic that indicates the range or dispersion of raw scores around the mean.

For the importance rating scale, the average mean rating ranged from 4.18 for #4 - Diagnosis to 4.74 for #5 - Treatment. The SE ranged from 0.05 for #5 - Treatment to 0.09 for #4 – Diagnosis. The SD ranged from 0.46 for #5 - Treatment to 0.93 for #4 – Diagnosis. The internal consistency estimate of the reliability of the ratings (i.e., Cronbach’s coefficient alpha) is 0.77 (N of Items = 6). This value of coefficient alpha suggests a moderate, acceptable degree of internal consistency of the ratings.

For the criticality rating scale, the average mean rating ranged from 3.44 for #6 - Follow-up to 4.17 for #5 - Treatment. The SE ranged from 0.08 for two of the performance domains (i.e., #3 and #5) to 0.10 for #4 – Diagnosis. The SD ranged from 0.82 for #5 - Treatment to 0.99 for #4 – Diagnosis. The internal consistency estimate of the reliability of the ratings (i.e., Cronbach’s coefficient alpha) is 0.81 (N of Items = 6). This value of coefficient alpha suggests a moderate, acceptable degree of internal consistency of the ratings.

**Table 24 - Performance Domains Descriptive Statistics - Importance and Criticality Ratings**

Performance Domain	Importance						Criticality					
	N	Min	Max	M	SE	SD	N	Min	Max	M	SE	SD
1. HISTORY	107	3	5	4.69	0.06	0.62	106	1	5	3.93	0.09	0.93
2. EXAMINATION	106	2	5	4.30	0.08	0.82	106	1	5	3.89	0.09	0.91
3. ASSESSMENT	106	2	5	4.28	0.08	0.78	106	1	5	3.87	0.08	0.85
4. DIAGNOSIS	106	1	5	4.18	0.09	0.93	106	1	5	3.88	0.10	0.99
5. TREATMENT	106	3	5	4.74	0.05	0.46	106	1	5	4.17	0.08	0.82
6. FOLLOW-UP	106	2	5	4.25	0.08	0.83	106	1	5	3.44	0.09	0.92

In terms of the percentage of time spent performing duties or using the principles associated with the performance domains, as shown in Table 24, approximately 20.50% of the time is spent in #1 – History, 19.42% of the time is spent in #5 – Treatment, 18.30% of the time is spent in #2 – Examination, 14.66% of the time is spent in #3- Assessment, 13.46% of the time is spent in #4 – Diagnosis, and 12.56% is spent in #6 - Follow-up. The SE ranged from 0.65 for #6 - Follow-up to 1.23 for #1 - History. The SD ranged from 6.67 for #6 - Follow-up to 12.65 for #1 - History.

**Table 25 - Percent of Time Spent in Performance Domain**

Performance Domain	Percent of Time Spent						
	M	Median	Mode	SE	SD	Minimum	Maximum
1. HISTORY	20.50	20.00	20.00	1.23	12.65	4	70
2. EXAMINATION	18.30	20.00	20.00	0.81	8.38	2	60
3. ASSESSMENT	14.66	10.00	10.00	0.70	7.23	4	40
4. DIAGNOSIS	13.46	10.00	10.00	0.70	7.22	2	45
5. TREATMENT	19.42	20.00	20.00	0.89	9.12	2	70
6. FOLLOW-UP	12.56	10.00	10.00	0.65	6.67	1	50
Total <sup>1</sup>	98.90						

N = 106

<sup>1</sup>The total does not sum to 100 due to rounding error.

These mean ratings are more than sufficient to justify retention of all of the Performance Domains in the draft test specifications.

## Task Statements

For the importance rating scale, the average mean rating ranged from 2.90 for Task 3.4 to 4.62 for Task 1.2. The SE ranged from 0.05 for Task 5.1 to 0.11 for Task 3.5. The SD ranged from 0.08 for Task 5.1 to 1.08 for Task 2.1. The internal consistency estimate of the reliability of the importance ratings (i.e., Cronbach's coefficient alpha) is 0.84 (N of Items = 15). This value of coefficient alpha suggests an acceptable degree of internal consistency of the ratings. The majority of the respondents rated the task statements as important, very important or extremely important.

For the criticality rating scale, the average mean rating ranged from 2.71 for Task 3.1 to 4.22 for Task 5.1. The SE ranged from 0.05 for Task 5.1 to 0.11 for Task 2.1, 3.1, and 3.5. The SD ranged from 0.87 for Tasks 3.3 and 5.1 to 1.10 for Task 3.5. The internal consistency estimate of the reliability of the criticality ratings (i.e., Cronbach's coefficient alpha) is 0.92 (N of Items = 15). This value of coefficient alpha is high, suggesting a high degree of internal consistency of the ratings. The majority of the respondents rated the task statements as causing moderate, significant, or extreme harm.

For the frequency rating scale, the average mean rating ranged from 3.18 for Task 3.2 to 4.60 for Task 5.1. The SE ranged from 0.06 for Task 5.1 to 0.11 for Tasks 2.1 and 3.4. The SD ranged from 0.60 for Task 5.1 to 1.14 for Task 3.4. The internal consistency estimate of the reliability of the frequency ratings (i.e., Cronbach's coefficient alpha) is 0.85 (N of Items = 15). This value of coefficient alpha suggests an acceptable degree of internal consistency of the ratings. The majority of the respondents rated more than half of the task statements as frequently performed. No task statement received a mean rating indicating that it is never or rarely performed. It should be noted that Section D of the survey included open-ended questions that asked whether there were any tasks that were overlooked in each performance domain. There were no responses to the open-ended questions.

**Table 26 - Task Statements - Descriptive Statistics of Importance, Criticality and Frequency Ratings**

Task	Importance						Criticality						Frequency					
	N	Min	Max	M	SE	SD	N	Min	Max	M	SE	SD	N	Min	Max	M	SE	SD
1.1	107	2	5	4.52	0.07	0.73	107	1	5	3.85	0.10	1.05	106	2	5	4.42	0.08	0.78
1.2	105	2	5	4.62	0.07	0.76	105	1	5	4.15	0.09	0.96	105	2	5	4.28	0.09	0.89
2.1	107	1	5	3.53	0.10	1.08	107	1	5	3.17	0.10	1.03	107	1	5	3.73	0.11	1.09
2.2	105	2	5	4.10	0.08	0.78	105	1	5	3.69	0.10	1.01	105	2	5	4.10	0.08	0.85
2.3	106	2	5	3.99	0.08	0.81	106	1	5	3.54	0.10	1.03	106	2	5	4.11	0.08	0.85
2.4	106	2	5	4.25	0.08	0.78	106	1	5	3.90	0.10	0.98	106	2	5	4.19	0.07	0.77
2.5	106	1	5	3.58	0.09	0.95	106	1	5	3.27	0.10	1.00	106	1	5	3.35	0.09	0.93
3.1	107	1	5	3.26	0.10	1.02	106	1	5	2.71	0.10	1.06	107	1	5	3.39	0.10	1.07
3.2	107	1	5	3.36	0.09	0.88	107	1	5	3.16	0.09	0.88	107	1	5	3.18	0.09	0.93

Task	Importance						Criticality						Frequency					
	N	Min	Max	M	SE	SD	N	Min	Max	M	SE	SD	N	Min	Max	M	SE	SD
3.3	106	2	5	4.35	0.08	0.81	106	1	5	3.84	0.08	0.87	107	3	5	4.23	0.07	0.68
3.4	106	1	5	2.90	0.09	0.97	106	1	5	2.84	0.10	1.02	107	1	5	2.78	0.11	1.14
3.5	106	1	5	3.97	0.10	0.98	107	1	5	3.29	0.11	1.10	107	1	5	3.99	0.09	0.96
4.1	107	1	5	4.19	0.09	0.89	107	1	5	3.80	0.10	1.07	107	1	5	4.14	0.08	0.86
5.1	107	3	5	4.73	0.05	0.47	107	1	5	4.22	0.08	0.87	107	2	5	4.60	0.06	0.60
6.1	107	2	5	4.19	0.08	0.80	107	1	5	3.68	0.10	1.05	107	2	5	4.26	0.07	0.73

Table 27 shows the number and percentage of respondents replying to each point of the importance, criticality and frequency rating scales.

Table 27 - Task Statements - Number and Percentage of Importance, Criticality, and Frequency Ratings

Task Statements - Number and Percentage of Importance, Criticality and Frequency Ratings													
Task	Rating	1		2		3		4		5		N	Total %
		N	%	N	%	N	%	N	%	N	%		
1.1	Importance	0	0%	1	1%	12	11%	24	22%	70	65%	107	100%
	Criticality	3	3%	8	7%	26	24%	35	33%	35	33%	107	100%
	Frequency	0	0%	3	3%	10	9%	32	30%	61	58%	106	100%
1.2	Importance	0	0%	4	4%	6	6%	16	15%	79	75%	105	100%
	Criticality	2	2%	5	5%	14	13%	38	36%	46	44%	105	100%
	Frequency	0	0%	4	4%	19	18%	26	25%	56	53%	105	100%
2.1	Importance	2	2%	17	16%	36	34%	26	24%	26	24%	107	100%
	Criticality	5	5%	20	19%	48	45%	20	19%	14	13%	107	100%
	Frequency	3	3%	13	12%	24	22%	37	35%	30	28%	107	100%
2.2	Importance	0	0%	2	2%	21	20%	47	45%	35	33%	105	100%
	Criticality	3	3%	8	8%	33	31%	36	34%	25	24%	105	100%
	Frequency	0	0%	3	3%	24	23%	38	36%	40	38%	105	100%
2.3	Importance	0	0%	2	2%	29	27%	43	41%	32	30%	106	100%
	Criticality	3	3%	11	10%	40	38%	30	28%	22	21%	106	100%
	Frequency	0	0%	2	2%	27	25%	34	32%	43	41%	106	100%
2.4	Importance	0	0%	2	2%	16	15%	42	40%	46	43%	106	100%
	Criticality	3	3%	5	5%	24	23%	42	40%	32	30%	106	100%
	Frequency	0	0%	2	2%	17	16%	46	43%	41	39%	106	100%
2.5	Importance	1	1%	11	10%	40	38%	33	31%	21	20%	106	100%
	Criticality	5	5%	15	14%	44	42%	30	28%	12	11%	106	100%
	Frequency	2	2%	15	14%	45	42%	32	30%	12	11%	106	100%
3.1	Importance	4	4%	18	17%	46	43%	24	22%	15	14%	107	100%
	Criticality	10	9%	42	40%	30	28%	17	16%	7	7%	106	100%
	Frequency	5	5%	16	15%	35	33%	34	32%	17	16%	107	100%
3.2	Importance	1	1%	12	11%	56	52%	24	22%	14	13%	107	100%
	Criticality	2	2%	20	19%	52	49%	25	23%	8	7%	107	100%
	Frequency	4	4%	19	18%	45	42%	32	30%	7	7%	107	100%

Task Statements - Number and Percentage of Importance, Criticality and Frequency Ratings													
Task	Rating	1		2		3		4		5		N	Total %
		N	%	N	%	N	%	N	%	N	%		
3.3	Importance	0	0%	3	3%	13	12%	34	32%	56	53%	106	100%
	Criticality	1	1%	6	6%	26	25%	49	46%	24	23%	106	100%
	Frequency	0	0%	0	0%	15	14%	52	49%	40	37%	107	100%
3.4	Importance	7	7%	29	27%	43	41%	22	21%	5	5%	106	100%
	Criticality	10	9%	29	27%	40	38%	22	21%	5	5%	106	100%
	Frequency	16	15%	26	24%	40	37%	16	15%	9	8%	107	100%
3.5	Importance	2	2%	4	4%	28	26%	33	31%	39	37%	106	100%
	Criticality	5	5%	20	19%	39	36%	25	23%	18	17%	107	100%
	Frequency	2	2%	6	6%	19	18%	44	41%	36	34%	107	100%
4.1	Importance	1	1%	3	3%	19	18%	36	34%	48	45%	107	100%
	Criticality	3	3%	10	9%	25	23%	36	34%	33	31%	107	100%
	Frequency	1	1%	2	2%	21	20%	40	37%	43	40%	107	100%
5.1	Importance	0	0%	0	0%	1	1%	27	25%	79	74%	107	100%
	Criticality	1	1%	3	3%	16	15%	38	36%	49	46%	107	100%
	Frequency	0	0%	1	1%	3	3%	34	32%	69	64%	107	100%
6.1	Importance	0	0%	1	1%	23	21%	38	36%	45	42%	107	100%
	Criticality	4	4%	9	8%	30	28%	38	36%	26	24%	107	100%
	Frequency	0	0%	1	1%	15	14%	46	43%	45	42%	107	100%

## Preliminary Test Specifications

Table 28 shows preliminary test weights by domain and task statement. To derive preliminary weights, the importance and criticality ratings, and time spent estimates were combined to produce weights for the domains. The sums of each of these data were totaled, and dividing the sum of the domain by the total, derived the weight for each domain. To derive the preliminary number of test questions by domain, the total number of test questions on the current examination (i.e., 150) was multiplied by the domain weight.

To derive the preliminary number of test questions by task statement within a domain, the importance, criticality, and frequency ratings were combined to produce weights for the task statements. The task weights were summed within the domain, and then each task weight was divided by the sum, and then multiplied by the domain weight. To derive the preliminary number of test questions by task statement, the total number of test questions on the current examination (i.e., 150) was multiplied by the task statement weight.

**Table 28 - Preliminary Test Specifications**

<b>Preliminary Test Specifications</b>		
<b>Domains and Task Statements</b>	<b>Preliminary Weights</b>	<b>Preliminary Number of Test Questions</b>
<b>Domain I: History</b>	<b>19.61%</b>	<b>29.41</b>
Task 1.1: Obtain the patient’s reason for seeking consultation to determine why he/she is seeking care/advice using written and verbal intakes.	9.70%	14.56
Task 1.2: Obtain the patient’s past history (e.g., medical, surgical, social, family) to evaluate the patient’s problems using written and verbal intake data.	9.90%	14.85
<b>Domain II: Examination</b>	<b>17.84%</b>	<b>26.75</b>
Task 2.1: Evaluate patient to determine health status using anthropometric methods.	3.29%	4.94
Task 2.2: Evaluate patient to determine health status using physical methods.	3.75%	5.63
Task 2.3: Evaluate patient to determine health status using observational methods.	3.67%	5.51
Task 2.4: Evaluate patient to determine health status using biochemical methods.	3.90%	5.84
Task 2.5: Evaluate patient to determine health status using neuropsychological methods.	3.22%	4.83
<b>Domain III: Assessment</b>	<b>15.36%</b>	<b>23.04</b>
Task 3.1: Assess health status using anthropometrics to evaluate body composition.	2.80%	4.21
Task 3.2: Assess health status using imaging to evaluate structural components (e.g., neuromuscular, visceral, functional).	2.91%	4.36
Task 3.3: Assess health status using laboratory methods to evaluate physiological homeodynamics (e.g., blood, hair, tissue, urine, fecal, salivary).	3.72%	5.58
Task 3.4: Assess health status using electro diagnostic methods to evaluate neurodynamics (e.g., NCV, EMG, SEP, BAER, EEG).	2.55%	3.83
Task 3.5: Assess health status using questionnaires to evaluate patient’s perception of current condition(s).	3.37%	5.06
<b>Domain IV: Diagnosis</b>	<b>14.49%</b>	<b>21.73</b>
Task 4.1: Describe the patient’s clinical status using appropriate diagnostic or other descriptive terminology to classify conditions and to determine treatment or referral.		
<b>Domain V: Treatment</b>	<b>19.07%</b>	<b>28.61</b>
Task 5.1: Recommend and/or apply a therapeutic protocol to address the patient’s diagnosed condition, using appropriate methodology (e.g., altering lifestyle, nutritional intervention, stress reduction).		
<b>Domain VI: Follow-up</b>	<b>13.63%</b>	<b>20.45</b>
Task 6.1: Document and evaluate response to treatment using serial testing (e.g., anthropometrics, imaging, physiological homeodynamics, neurodynamics, and questionnaires) to determine effectiveness of treatment and attainment of patient’s expectations.		
<b>Total</b>	<b>99.99%</b>	<b>149.99</b>

## Summary and Recommendations

The demographic data resulting from this role delineation study should be reviewed by ACBN to assess the representativeness of the survey respondent group to the population of DACBNs. A comparison of the respondents’ demographic/background data to the population of DACBNs could be not made because the demographic/background data on Shoreline Psychometric Services, LLC.

the population were unavailable. Therefore, it is recommended that the ACBN conduct this comparison to assess the representativeness of the respondent group.

Using role delineation data as a basis for updating a content outline and test specifications will contribute to the validity of the examination. As described in this report, the role delineation data were used to provide validity evidence for the content outline and produce preliminary test specifications by performance domain and task statement. It is recommended that the validity rating data presented in this report be reviewed by a committee of subject matter experts (i.e., the role delineation study committee) to finalize the content outline and test specifications. Besides reviewing the data to finalize the content outline and test specifications, the committee should also take into consideration the practical aspect of test development. For instance, the scope and depth of the subject matter should be taken into consideration when finalizing the test weights. For example, some tasks, although rated high on the importance and/or criticality rating scales, may be limited in scope and therefore, the number of test questions may be limited.

## **Review of Survey Results and Finalization of Test Specifications**

On Thursday, March 24, 2016, a meeting was held via web conference with a committee of subject matter experts to review the results of the role delineation study and to finalize the test specifications for the examination. The committee was provided with a draft copy of this report for their review in advance of the meeting. The committee was first oriented to the survey structure, the response rate, and the data describing the survey respondents' background and demographics. When reviewing the background and demographic data, the committee indicated that the survey respondent group was representative of the population in terms of gender, age ranges, ethnicity/race, location (i.e., state), highest level of non-chiropractic education, highest level of chiropractic education, and other credentials. The committee decided that the next role delineation survey will include questions that will elicit additional information about DACBN's role as related to nutrition.

The committee was oriented to the validity data for the domains and task statements. They decided to retain the performance domains because the mean validity ratings were more than sufficient to justify retention of all of the performance domains in the test specifications. Likewise, they decided to retain all task statements because the mean validity ratings were more than sufficient to justify retention of all of the task statements in the test specifications. The committee reviewed the preliminary test specifications and decided to make minor adjustments to the test weights for rounding purposes. Table 29 presents the final test specifications.

**Table 29 - Final Test Specifications**

<b>Final Test Specifications</b>		
<b>Domains and Task Statements</b>	<b>Final Weights</b>	<b>Final Number of Test Questions</b>
<b>Domain I: History</b>	19.00%	28.50
Task 1.1: Obtain the patient’s reason for seeking consultation to determine why he/she is seeking care/advice using written and verbal intakes.	9.00%	13.50
Task 1.2: Obtain the patient’s past history (e.g., medical, surgical, social, family) to evaluate the patient’s problems using written and verbal intake data.	10.00%	15.00
<b>Domain II: Examination</b>	19.00%	28.50
Task 2.1: Evaluate patient to determine health status using anthropometric methods.	3.50%	5.25
Task 2.2: Evaluate patient to determine health status using physical methods.	4.00%	6.00
Task 2.3: Evaluate patient to determine health status using observational methods.	4.00%	6.00
Task 2.4: Evaluate patient to determine health status using biochemical methods.	4.00%	6.00
Task 2.5: Evaluate patient to determine health status using neuropsychological methods.	3.50%	5.25
<b>Domain III: Assessment</b>	15.00%	22.50
Task 3.1: Assess health status using anthropometrics to evaluate body composition.	3.00%	4.50
Task 3.2: Assess health status using imaging to evaluate structural components (e.g., neuromuscular, visceral, functional).	3.00%	4.50
Task 3.3: Assess health status using laboratory methods to evaluate physiological homeodynamics (e.g., blood, hair, tissue, urine, fecal, salivary).	3.00%	4.50
Task 3.4: Assess health status using electro diagnostic methods to evaluate neurodynamics (e.g., NCV, EMG, SEP, BAER, EEG).	3.00%	4.50
Task 3.5: Assess health status using questionnaires to evaluate patient’s perception of current condition(s).	3.00%	4.50
<b>Domain IV: Diagnosis</b>	15.00%	22.50
Task 4.1: Describe the patient’s clinical status using appropriate diagnostic or other descriptive terminology to classify conditions and to determine treatment or referral.		
<b>Domain V: Treatment</b>	19.00%	28.50
Task 5.1: Recommend and/or apply a therapeutic protocol to address the patient’s diagnosed condition, using appropriate methodology (e.g., altering lifestyle, nutritional intervention, stress reduction).		
<b>Domain VI: Follow-up</b>	13.00%	19.50

<b>Final Test Specifications</b>		
<b>Domains and Task Statements</b>	<b>Final Weights</b>	<b>Final Number of Test Questions</b>
Task 6.1: Document and evaluate response to treatment using serial testing (e.g., anthropometrics, imaging, physiological homeodynamics, neurodynamics, and questionnaires) to determine effectiveness of treatment and attainment of patient’s expectations.		
<b>Total</b>	100.00%	150.00