

Summary of the Results of an Analysis of Key Predictors of Occupational Therapist Registered (OTR[®]) and Certified Occupational Therapy Assistant (COTA[®]) Certification Examination Performance

Purpose of the Study

The National Board for Certification in Occupational Therapy, Inc., (NBCOT[®]) conducted a study examining several variables that may predict First Time New Graduate (FTNG) candidate performance on the Occupational Therapist Registered (OTR[®]) and Certified Occupational Therapy Assistant (COTA[®]) certification exams.

Study Sample and Methodology

The educational programs were selected for inclusion in the study based on the following criteria:

- All associate-level occupational therapy assistant (OTA) programs that had more than 15 test-takers between January and August 2017 (n = 114 programs)
- All entry-level Master of Occupational Therapy (MOT) programs with more than 21 and fewer than 60 test-takers between January and August 2017 (n = 90 programs)
- All entry-level Doctor of Occupational Therapy (OTD) programs with more than 10 test-takers in 2017 (n = 12 programs)

These inclusion criteria yielded a sample size of 6,364 test-takers from all selected programs, including:

- 2,867 COTA test-takers
- 3,172 OTR-MOT test-takers
- 325 OTR-OTD test-takers

The study focused on answering several research questions regarding the relationship between performance on the COTA and OTR certification exams and several variables of interest:

- Type of educational institution (private vs. public, research vs. teaching)
- Grades from five key courses
- Grade point average
- Time elapsed between graduation and testing

Educational Institutions included in the study were classified as follows, based on self-reported descriptions obtained from each institution's website. Where applicable, institutions were further classified according to their primary focus (research vs. teaching)¹:

- Public institutions – funded by local and state governments.
- Private institutions – rely primarily on tuition, fees, and private sources of funding.
- For-Profit institutions – businesses that offer a variety of degree programs that typically prepare students for a specific career.

¹ Definitions of institution types were provided by the College Board: <https://collegeboard.org/find-colleges/types-of-colleges-the-basics>

Study Strengths and Limitations

- The study was a large scale cross-sectional design that focused on exam results from a single eight-month testing period in 2017.
- The data were subject to two rounds of quality assurance audits to ensure accuracy.
- Due to the differences in course names/titles across curricula, a level of interpretation was required to categorize key courses for the study. This process was overseen by a subject matter expert in curriculum review.
- Overall GPA and course grades were obtained directly from transcripts; however, the same grade may have a different meaning across different institutions.
- The design of the study does not allow causal inferences to be drawn regarding the link between the predictor variables and performance on the certification examinations.

Results

1. Does the certification exam pass rate vary according to the characteristics of the institution candidates attended?

- **COTA:** The FTNG pass rates for COTA candidates who graduated from public institutions, private non-profit institutions, and private for-profit institutions are displayed in the table below.

Institution Type	N Programs	N Candidates	FTNG Pass Rate
Public	69	1,417	83%
Private Non-Profit	19	628	78%
Private For-Profit	26*	822	65%

* Nine schools are now closed.

- **OTR-MOT:** The FTNG pass rates for OTR-MOT candidates who graduated from public teaching and research institutions and private teaching and research institutions are displayed in the table below.

Institution Type	N Programs	N Candidates	FTNG Pass Rate
Public Teaching	14*	421	85%
Public Research	26*	936	85%
Private Teaching	38	1398	79%
Private Research	12	417	77%

* One school is now closed.

- **OTR-OTD:** The FTNG pass rates for OTR-OTD candidates who graduated from public research institutions and private teaching and research institutions are displayed in the table below.

Institution Type	N Programs	N Candidates	FTNG Pass Rate
Public Research	4	77	94%
Private Teaching	6	210	88%
Private Research	2	38	82%

2. Is performance in certain key courses associated with greater success on the certification exam?

- COTA:** For each of the key courses listed in the table below, students who achieved an A grade in the course had significantly higher COTA scores than those who achieved a grade of B, and those who achieved a grade of B had significantly higher scores than those who achieved a grade of C. Of note is the finding that the average exam score among students who earned a C in several of the key courses (particularly Physical Dysfunction) was very close to the passing score on the exam (450). These mean scores should be interpreted in light of the standard deviation, and a causal relationship between course grades and exam performance should not be inferred.

Course	A Grade			B Grade			C Grade		
	N	M	SD	N	M	SD	N	M	SD
Anatomy	930	486.27	33.89	775	471.62	31.73	327	465.91	31.71
Foundations	1,632	488.00	31.68	1,015	468.71	32.74	176	456.29	31.42
Therapeutic Media	1,791	485.42	32.33	839	467.22	32.42	91	455.38	30.55
Psychosocial Dysf.	1,313	490.65	31.41	1,090	470.06	31.75	241	456.98	32.98
Physical Dysf.	1,242	491.06	31.45	1,250	471.81	31.90	210	451.73	29.47

- OTR-MOT:** For each of the key MOT courses listed in the table below, students who achieved an A grade in the course had significantly higher OTR scores than those who achieved a grade of B. For every MOT course except Applied Research, those who achieved a grade of B also had significantly higher scores than those who achieved a grade of C. Of note is the finding that the average OTR exam score among students who earned a C in Foundations, Psychosocial Dysfunction, and Physical Dysfunction was below the score required to pass the exam (450). These mean scores should be interpreted in light of the standard deviation, and a causal relationship between course grades and exam performance should not be inferred.

Course	A Grade			B Grade			C Grade		
	N	M	SD	N	M	SD	N	M	SD
Anatomy	1,192	487.13	29.12	894	475.76	29.42	252	462.61	29.96
Foundations	2,427	482.41	29.69	576	467.68	28.01	27	447.85	27.63
Applied Research	2,453	480.92	29.64	447	468.98	30.44	19	457.58	28.63
Psychosocial Dysf.	2,204	482.75	29.70	573	466.18	28.04	15	437.27	29.53
Physical Dysf.	1,868	483.63	29.74	884	469.87	28.58	50	446.00	29.19

- OTR-OTD:** The key OTD courses are listed in the table below. For every OTD course apart from Anatomy, only A and B grades were assigned with sufficient frequency for analysis. Students who achieved an A grade in Anatomy had significantly higher OTR overall exam scores than those who achieved a grade of B, but there was no statistically significant difference between the OTR scores of those who earned a B versus a C in Anatomy. For all of the other courses except Applied Research, those who achieved a grade of A had statistically significantly higher OTR scores than those who achieved a grade of B.

Course	A Grade			B Grade			C Grade		
	N	M	SD	N	M	SD	N	M	SD
Anatomy	133	492.82	29.69	117	483.64	27.22	45	474.53	30.95
Foundations	202	491.90	29.36	96	474.06	27.04	--	--	--
Applied Research	301	487.18	29.39	21	476.52	37.61	--	--	--
Psychosocial Dysf.	214	491.41	29.60	104	476.52	28.74	--	--	--
Physical Dysf.	239	490.17	29.78	55	471.35	28.38	--	--	--

3. Is a candidate's overall GPA associated with his or her performance on the certification exam?

- **COTA:** A moderately strong positive correlation was found between overall GPA and COTA overall scores, suggesting that candidates with higher GPAs tended to score higher on the COTA exam than those with lower GPAs. Likewise, overall GPA was moderately correlated with scores in each domain.

Predictor	N	Overall Score	Domain 1 Score	Domain 2 Score	Domain 3 Score
Overall GPA	2,853	0.44*	0.37*	0.41*	0.30*

* $p < .001$

- **OTR-MOT:** A moderately strong positive correlation was found between overall GPA and overall OTR scores, suggesting that candidates with high GPAs tended to score higher on the OTR exam than those with lower GPAs. Likewise, overall GPA demonstrated small to moderate positive correlations with the domain-level scores.

Predictor	N	Overall Score	Domain 1 Score	Domain 2 Score	Domain 3 Score	Domain 4 Score
Overall GPA	3,111	0.38*	0.21*	0.28*	0.34*	0.24*

* $p < .001$

- **OTR-OTD:** A moderately strong positive correlation was found between overall GPA and overall OTR scores, suggesting that candidates with high GPAs tended to score statistically significantly higher on the OTR exam than those with lower GPAs. Likewise, overall GPA and domain-level scores produced a statistically significant low to moderate positive correlation in every domain.

Predictor	N	Overall Score	Domain 1 Score	Domain 2 Score	Domain 3 Score	Domain 4 Score
Overall GPA	323	0.42*	0.17**	0.26*	0.44*	0.26*

* $p < .001$, ** $p < .01$

4. Is the length of time between graduation and testing associated with performance on the certification exam?

- **COTA:** Small negative correlations were observed between the time elapsed and COTA scores, suggesting that candidates who tested closer to their graduation date performed slightly better on the exam, both overall and at the domain level.

Time Elapsed	N	Overall Score	Domain 1 Score	Domain 2 Score	Domain 3 Score
Number of Days	2,867	-0.13*	-0.14*	-0.11*	-0.07*

* $p < .001$

- **OTR-MOT:** Small negative correlations were observed between the time elapsed and OTR scores, suggesting that candidates who tested closer to their graduation date performed slightly better on the OTR exam, both overall and at the domain level.

Time Elapsed	N	Overall Score	Domain 1 Score	Domain 2 Score	Domain 3 Score	Domain 4 Score
Number of Days	3,172	-0.23*	-0.13*	-0.18*	-0.20*	-0.13*

* $p < .001$

- **OTR-OTD:** No statistically significant relationship was found between time elapsed after graduation and candidate OTR scores.

Time Elapsed	N	Overall Score	Domain 1 Score	Domain 2 Score	Domain 3 Score	Domain 4 Score
Number of Days	325	-0.04	-0.01	-0.02	-0.05	-0.07

5. Overall, which variables are the best predictors of performance on the certification exam?

- **COTA:** All variables studied (grades in key courses, overall GPA, number of days elapsed between graduation and testing) were statistically significant predictors of overall COTA scores, with the exception of grades in Therapeutic Media. The results of the multiple regression indicated that the combination of the predictors explained 25% of the variance in COTA scores. The variables with the strongest relationship with COTA scores were overall GPA and grades in Physical Dysfunction.
- **OTR-MOT:** Overall GPA, number of days elapsed between graduation and testing, and grades in Anatomy, Foundations, and Psychosocial Dysfunction were statistically significant predictors of overall OTR scores. The variables with the strongest relationship with OTR scores were overall GPA and number of days elapsed between graduation and testing. The results of the multiple regression indicated that the combination of the predictors explained 21% of the variance in OTR scores.
- **OTR-OTD:** Overall GPA and grades in the Foundations course were statistically significant predictors of overall OTR scores for the OTD candidates. The results of the multiple regression indicated that the combination of the predictors explained 22% of the variance in OTR scores.

Conclusions

Several trends were apparent across the COTA and OTR programs. Perhaps most importantly, key course grades and overall GPA were both associated with performance on the COTA and OTR exams, suggesting that students who have lower grades in the key courses also tend to perform worse on the certification exams. For COTA candidates, students who obtained a grade of C in Foundations, Therapeutic Media, Psychosocial Dysfunction, and Physical Dysfunction as a group had mean certification exam scores that were just above the passing point for the COTA certification exam. For OTR candidates, grades attained in key courses had a significant relationship with certification exam performance, especially for MOT test takers, who had more variability in their course grades. Notably, among MOT graduates who earned a C grade in the Foundations, Psychosocial Dysfunction, and Physical Dysfunction courses, the mean OTR certification exam score for each group was below the passing point. Finally, the statistically significant relationship between exam scores and time elapsed since graduation for COTA and OTR-MOT candidates suggests that those who test closer to their graduation date tend to perform slightly better on the certification examination.