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Canadian Examiners in Optometry



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Examineurs Canadiens en Optométrie

Summary Report

Canadian Assessment of Competence in Optometry (CACO)

Fall 2011 - Spring 2012 Administrations

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Summary Report for the Fall 2011 – Spring 2012 CACO Administrations



Purpose

This report provides aggregate candidate performance and psychometric analysis of the assessment tools related to the Canadian Assessment of Competence in Optometry (CACO). The report includes data for the October 2011, April 2012 and May 2012 administrations.

Structure of the CACO Components

The CACO examination is comprised of 6 components. The 2 written components include Synthesis made up of 62 cases with 4 multiple-choice questions each, Ocular Therapeutics (120 items) and 4 Clinical Skills Stations.

Cases for the Synthesis component focus on:

- Refractive conditions of the eye and their management
- Accommodative conditions of the eye and vision system, treatment and management
- Oculomotor conditions of the eye and vision system, treatment and management
- Sensory-integrative conditions of the eye and vision system, treatment and management
- Ocular disease and trauma, treatment and management
- Systemic disease and its treatment.

The Ocular Therapeutics exam includes the following areas:

- General microbiology
- General immunology
- General pharmacology
- Ocular pharmacology
- Ocular disease/trauma: treatment, management and progress.

Skills and Techniques Stations (45 minutes each) assess the following 4 areas:

- Interviewing and Assessing Refractive and Accommodative Conditions

- Assessing Oculomotor and Sensory-Integrative Functions
- Assessing Oculomotor and Systemic Disease
- Assessing Ophthalmic Appliances


Overview

For the three 2011-2012 CACO administrations, a total of 282 candidates participated. Of this number, 214 (75.9%) were new candidates, 16 (5.7%) represented reassessment candidates and 52 (18.4%) candidates selected the option to write the written exams only, returning to sit the four clinical sessions at a later administration.

Table 1 reports the new candidate pool (n=214) by Professional School for the 2011-12 administrations. A breakdown of candidates across the categories Canadian, USA and International schools results in a total of 108 (50.5%) Canadian educated, 73 (34.1%) American educated and 33 (15.4%) International educated candidates.

Table 1: Distribution of New Candidates Across Schools

SCHOOL	# CANDIDATES	PERCENT
U.of Waterloo	82	38.3
U.of Montreal/Université de Montréal	26	12.1
Illinois College	24	11.2
New England College	13	6.1
Nova Southeastern University	9	4.2
Pennsylvania College	7	3.3
SUNY	5	2.3
Pacific University	4	1.9
Indiana University	4	1.9
Michigan College	3	1.4
Int. American Puerto Rico	3	1.4
Universityof Aston-England	2	.9
City University (London)	2	.9
University of Auckland	2	.9
Central University of Venezuela	2	.9
U.of Manchester	1	.5
Cairo University Egypt	1	.5
La Salle University	1	.5
Shahid Beheshti (Iran)	1	.5
Baghdad Medical School	1	.5



Ain Shams University Egypt	1	.5
University of Missouri	1	.5
Glasgow University, Scotland	1	.5
College of Physicians Karachi Pakistan	1	.5
Abia State University (Nigeria)	1	.5
University of Johannesburg (South Africa)	1	.5
Tianjin Medical University Hospital, China	1	.5
Calicut Medical College	1	.5
Iran University of Medical Sciences	1	.5
Kasturba Medical College India	1	.5
Labafinejad Medical Center	1	.5
R.N.T. Medical College, India	1	.5
Rand Academic University of Johannesburg	1	.5
Sarojini Naidu Medical College	1	.5
Sun Yat-Sen University	1	.5
UFA Bashkirian State Medical University	1	.5
University of Zulia, Venezuela	1	.5
Rand Afrikaans University South Africa	1	.5
Dow U of Health Sciences Pakistan	1	.5
I.G. Medical College Shimla India	1	.5
University of Nairobi	1	.5
Total	214	100.0

Summary of Candidate Performance

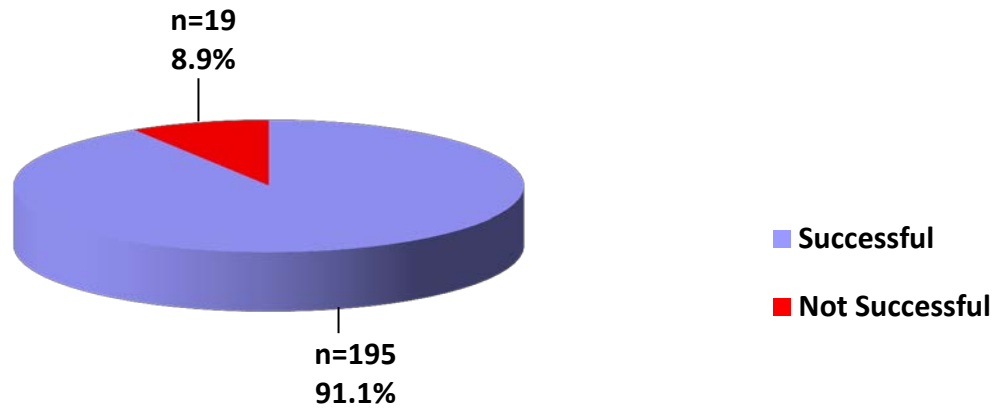
Figure 1 represents the overall pass rate for all new 214, Fall 2011-Spring 2012 candidates. In order for a performance to be deemed a “Pass” the candidate is required to be successful in all assessment components. The 2011 - 2012 pass rate of 91.1% is comparable to previous pass rates. In comparison to the CACO pass rate, the NBEO National Pass Rate at Graduation for 2012 was 92.7%.

(<http://optometry.berkeley.edu/admissions/nbeo-pass-rates>)

Figure 1



CACO 2011 - 2012 New Candidates Overall Success Rate

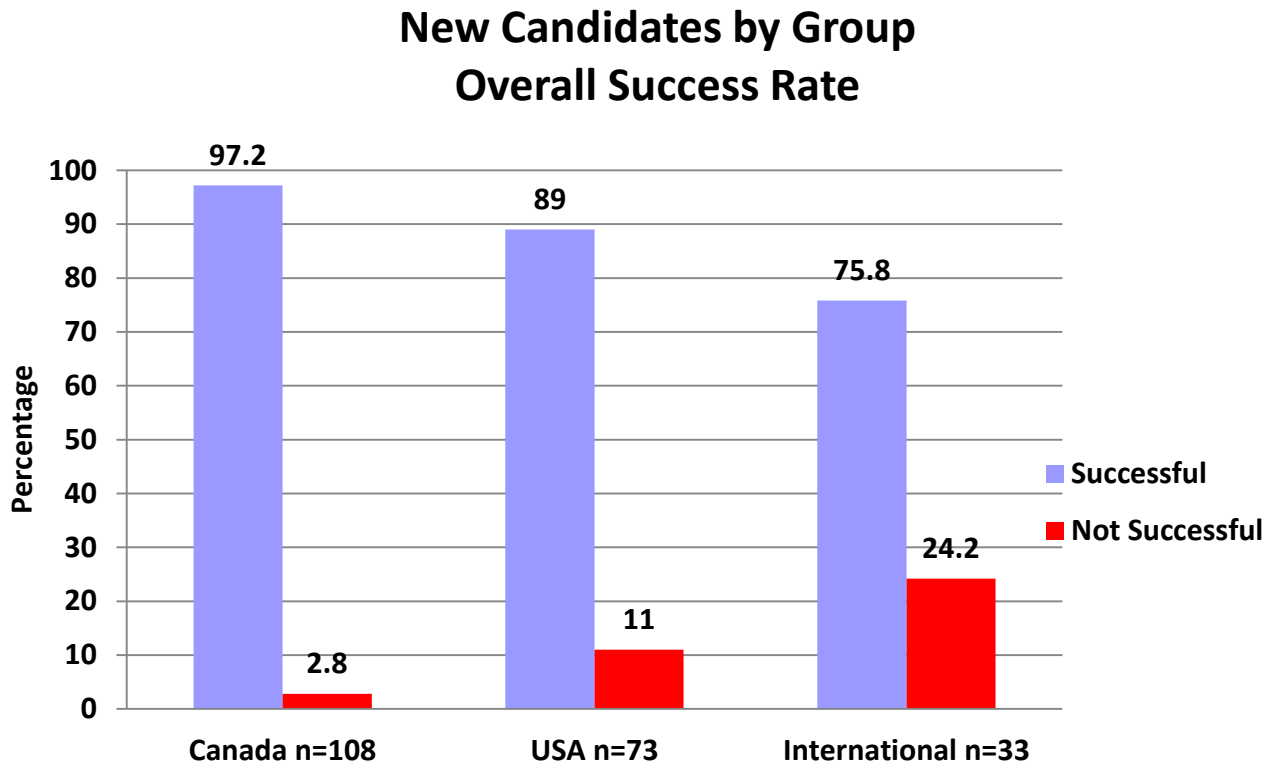


Overall Performance by Group

Figure 2 below, breaks down the overall pass rate for 214 new candidates by the following groupings: Canada (n=108), USA (n=73), and International (n=33) educated. Results for the three groups were consistent with previous administrations with Canadian candidates having overall the strongest performance.



Figure 2

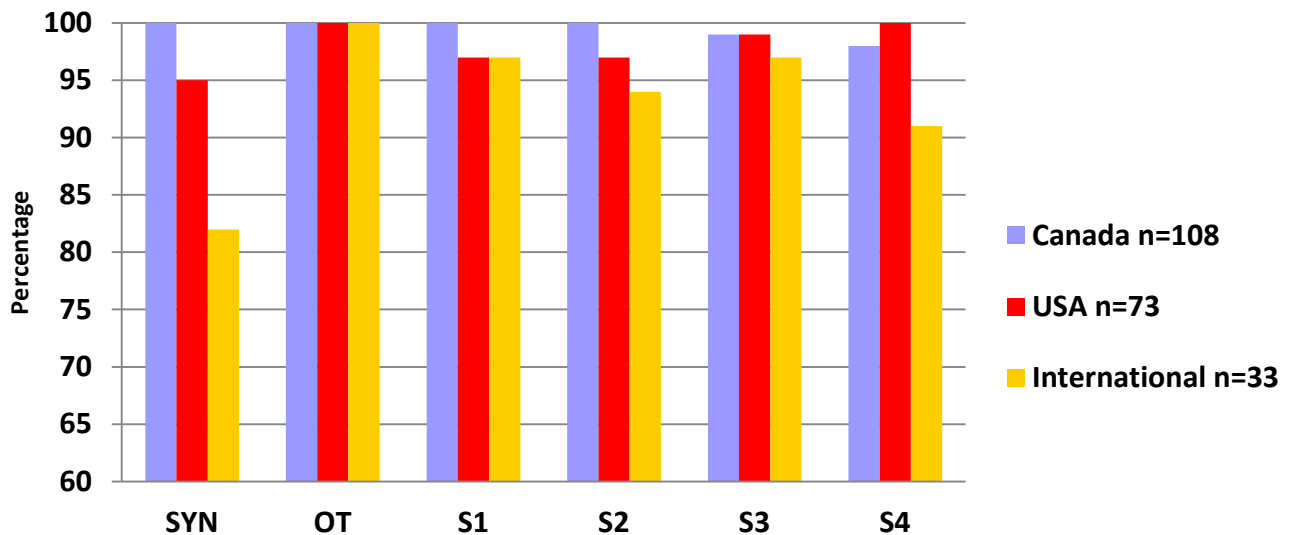


Group Pass Rate by Component

Figure 3 compares the performance of the Canadian, American and International candidates for each of the CACO components across the three 2011 – 2012 administrations. As the data indicates, the overall performance of the Canadian educated candidates is stronger, however, both Canadian and American educated candidates performed well across all components. International candidates encountered relative difficulties in Synthesis, Skills Two: Skills and Techniques in Assessing Oculomotor and Sensory-Integrative Functions and Skills Four: Skills and Techniques in Assessing Ophthalmic Appliances.

Figure 3

Pass Rates by Component by Group



Item Analysis and Psychometric Properties of the Examination Components

A complete item analysis was undertaken for the Fall 2011 administration. For the Synthesis exam, a total of 9 of the 248 items were deleted from scoring while 5 of the Ocular Therapeutics were deleted from scoring. Overall, the percentage of the items deleted from scoring across the two written components was modest (3.6% and 4.2% respectively).

Similarly, a complete item analysis was undertaken for the Spring 2012 administration. For the April 2012 Synthesis exam, 11 of the 248 items were deleted from scoring while 4 of the 120 Ocular Therapeutics items were deleted from scoring. For the May 2012 Synthesis exam, 9 of the 248 items were deleted from scoring while 2 of the 120 Ocular Therapeutics items were deleted from scoring.

No items were deleted for all candidates for any of the 4 Clinical Sessions across any of the 3 administrations.

Table 2 reports reliability coefficients for each CACO component for the three




2011 - 2012 administrations. The traditional Cronbach's alpha is reported but given that the CACO examinations are better characterized as criterion-referenced tests, the Livingston's reliability coefficient is also provided. A closer examination of the Livingston's coefficients across all components for the three administrations indicates that they are strong and contribute to establishing the validity of these measures.

Table 2: Reliability coefficients for each component for all three 2011 - 2012 CACO administrations.

October 2011	Alpha	k² (Livingston's Coefficient Kappa)
Ocular Therapeutics	.78	.97
Synthesis	.84	.96
Skills 1	.72	.83
Skills 2	.78	.90
Skills 3	.86	.87
Skills 4	.83	.86

April 2012	Alpha	k² (Livingston's Coefficient Kappa)
Ocular Therapeutics	.67	.97
Synthesis	.77	.95
Skills 1	.51	.91
Skills 2	.68	.96
Skills 3	.74	.95
Skills 4	.58	.96

May 2012	Alpha	k² (Livingston's Coefficient Kappa)



Ocular Therapeutics	.70	.98
Synthesis	.85	.94
Skills 1	.64	.90
Skills 2	.77	.95
Skills 3	.79	.96
Skills 4	.78	.94

Skills and Techniques Stations:

Skills 1: Interviewing and Assessing Refractive and Accommodative Conditions

Skills 2: Assessing Oculomotor and Sensory-Integrative Functions

Skills 3: Assessing Oculomotor and Systemic Disease

Skills 4: Assessing Ophthalmic Appliances

Performance of Reassessment Candidates

In total, 16 candidates returned for reassessment in the Fall 2011 – Spring 2012 administrations. 7 candidates were returning for a second attempt, and 9 candidates for a third attempt. All 7 second attempters were successful and 7 of 9 (77.8%) of the third attempters successfully completed the CACO.