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What Ontario Physiotherapist Data Says about Risks to Competence

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March 14, 2017

Acknowledgements

We would like to thank the following people for their assistance:

Shenda Tanchak, Registrar, College of Physiotherapists; Anita Ashton, Associate Registrar, Professional Conduct & Registration, Shari Hughes previous Associate Registrar, Practice, for their diligence and attention to detail to ensure we were provided with full data sets for analysis and for their feedback on earlier drafts of this report.

Katya Masnyk, Chief Executive Officer, Canadian Alliance of Physiotherapy Regulators of Canada, for her diligence in ensuring we were provided with full data sets for analysis.

Dr. Elizabeth Wenghofer PhD, for her assistance with analysis and interpretation.
Jenny Rizk MAdEd, for her assistance with data coding and collation.

Delon Pereira, Manager of Operations – Examinations, Canadian Alliance of Physiotherapy Regulators, for her diligence and attention to detail in collating examination data for analysis.

Susan James for her editorial support.

How to cite this work:
Nayer, M., Glover Takahashi, S. (March 2017). What Physiotherapist Data Says about Risks to Competence. College of Physiotherapists of Ontario, Toronto, ON.

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Introduction

One of the ways the College of Physiotherapists of Ontario (CPO) carries out its mandate to protect the public interest is by developing, establishing, and maintaining Standards of Professional Practice. CPO embarked on a research initiative aimed at identifying factors that put physiotherapists at risk of not meeting professional expectations. This project consisted of analyzing College data to investigate the relationships among various data sets.

Methodology

CPO provided the following data sets:

1. Full registration database, as of the summer of 2015, of 11,340 current and past registrants
2. Exam data set from the Canadian Alliance of Physiotherapy Regulators (CAPR), with the written and clinical component results for all Ontario registrants who had taken the Physiotherapy Competency Examination from 1994 to 2015
3. Quality Assurance (QA) database of Practice Assessment results for the years 2004 to 2015
4. Practice Enhancement Required letters from the QA assessments for the years 2004 to 2015
5. QA completed with recommendation letters from the QA assessments for the years 2004 to 2015
6. Notice of Intent to Suspend data for the years 2004 to 2015
7. Non-compliance with Jurisprudence data for the years 2005 to 2015
8. Inquiries, Complaints and Reports Committee (ICRC) and Outcome Letters for the years 2009 to 2014 where the outcome was anything other than no further action and subsequently an additional data file with information on those registrants for whom there were complaints during this period and the decision was no further action.

Analysis

Following coding, all data sets were combined into a single database and analyzed. Simple statistics were calculated when appropriate. Cross-tabulations and Chi-Squared statistics were generated to compare the percentages of different categories of registrants with respect to the different assessment tools. Pearson correlation coefficients were calculated to determine relationships between continuous risk factor variables (e.g. exam score and age).

Results

Registration Data

There is nothing particularly surprising in the general demographics. Physiotherapists are primarily female and have an average age of 44. While three-quarters of registrants graduated from Canada, the balance graduated from 32 different countries around the world, with India, USA, England, the Philippines, and Australia being the top five countries represented. The proportion of IEPTs in the registrant population has been increasing over the past 10 years. Over 60% of physiotherapists report performing at least one controlled act. Historically, most physiotherapists work at 9 to 10 employment sites over their career; however, some have worked at over 35 sites. IEPTs work at more worksites over their career than graduates of Canadian programs and men work at more worksites than women.

Physiotherapy Competence Examination (PCE) Data

Data was examined from 6907 Ontario registrants who had taken the PCE between 1994 and 2015. The majority of candidates took each exam only once (90% for the written, 86% for the clinical). Men have lower scores than women on both exams and take the exams more times than women before passing. IEPTs registered in Ontario pass at a lower rate than graduates of Canadian programs registered in Ontario. IEPTs also have lower mean scores than the graduates of Canadian programs and take the exams more times. The IEPT scores tend to have higher standard deviations, indicating greater variation among the candidates from those countries. Candidates who are older at the time they take the PCE have lower scores and also have lower pass rates. Those who take each exam more than once are more likely to work at a higher number of worksites during their career. Physiotherapists who report performing a controlled act are more likely to have passed both the written and clinical components on their first attempt.

Quality Assurance Data

Data from 3339 Practice Assessments that had taken place from 2004 to 2015 were analyzed. After review by the Quality Assurance Committee (QAC), 89% of the assessments were completed successfully, 7.4% were completed with recommendations, and 2% were completed with QAC-directed remediation. IEPTs received ratings that indicated concerns significantly more often than graduates of Canadian programs, and were also significantly more likely to require further action. Those in the higher age groups were significantly less likely to receive a rating of Meets all Criteria and more likely to obtain ratings of Needs Minor Improvements or Needs Major Improvements. Those who had higher scores on the PCE components received better ratings on the Practice Assessment.

Notice of Intent to Suspend (NIS) Analysis

At least one NIS has been sent to 1691 registrants. Individuals who have received a NIS are more likely to also have been non-compliant with jurisprudence and have also worked at a higher number of worksites over their career.

Jurisprudence Analysis

There has been a total of 1,135 incidences of non-compliance with the mandatory jurisprudence requirements. Men are significantly more likely to have at least one incidence of non-compliance with jurisprudence than are women. Those individuals who had at least one incidence of non-compliance with jurisprudence were significantly more likely to also have received at least one Notice of Intent to Suspend.

Investigation Analysis

There was a total of 359 cases included in this analysis. These 359 cases represent 300 registrants, as 38 individuals had between two and seven investigations involving them. Overall, men were significantly more likely to be the subject of an investigation than were women, as were IEPTs.

There was no significant difference between those who had decisions of further action as compared to those who had decisions of No Further Action, other than with the Written Component PCE scores; hence these two groups were combined for further analysis.

Over one-quarter of the investigations involved individuals who were educated in countries without a focus on education that allows the physiotherapists to work autonomously and/or in primary care, as is the practice in the Canadian health context, as compared to just under 20% of all registrants coming from these countries.

Identified Risks to Competence

The key point to note is that findings from this study are consistent with what is reported in the literature, much of which is based on physician studies.
Age is a significant factor in relation to competence. There is a strong negative correlation of age at the time of taking the PCE with the PCE exam scores, indicating that candidates who are older at the time of taking the PCE achieve lower scores, as well as lower pass rates, on the PCE. There was also a relationship between the QA Practice Assessment results and age, with older physiotherapists being more likely to receive a lower rating on the assessment. A higher percentage of investigations/reports occur when the physiotherapist is in their 30s and 40s.

Being male is a risk to competence in a number of areas. Men have lower scores and pass rates on the PCE. Male IEPTs had a higher rate of investigations/reports than female IEPTs.

Lower PCE examination score is a risk to competence in the future. PTs who have been the subject of an investigation where action was taken are more likely to have had lower first-time exam scores and to have failed the exams on the first attempt; this is true for both components. For those who completed the Practice Assessment, there is a correlation between their ratings and their scores on the PCE, with those who had lower scores also achieving lower ratings on the Practice Assessment.

Being the subject of an investigation is a risk for further investigations. An individual who has had one complaint is likely to receive a second complaint. Being non-compliant in one area is linked to being non-compliant in another area. There was a relationship between receiving a Notice of Intent to Suspend (NIS) and non-compliance with PT jurisprudence requirements.

Location of qualifying PT education is a risk to competence. The location of qualifying PT education, specifically being an international graduate, appears in multiple areas, including exam scores, Practice Assessment results, and investigations. IEPTs are more likely to work at more worksites, which in itself is likely a risk factor.

Frequent changes in worksite might be a risk to competence. PTs working at a higher number of worksites over their career is correlated with receiving more than one Notice of Intent to Suspend, a higher number of investigations, lower ratings on the Practice Assessment, and having taken each exam more times.

Summary

The approach taken here to examining factors associated with risk to competence/performance, and the concept of developing a framework for assessing risk and developing methods of mitigating the risks to competence, is also being taken in other professions(Phipps, Noyce et al. 2010). The findings here are consistent with findings published in the literature, which supports the approach. Combining this information with the information on supports to competence, as presented in the paper accompanying this report, provides information to guide potential future activities of CPO.

2 Introduction

The mandate of the College of Physiotherapists of Ontario (CPO) is to protect the public interest by ensuring that members of CPO are qualified, competent, and ethical practitioners. One of the ways CPO does this is by developing, establishing, and maintaining Standards of Professional Practice. Registrants are accountable to meet the professional standards, which include applicable laws, ethics, standards, policies, and other guidelines. CPO measures whether professional expectations are met, primarily through its Quality Assurance and Professional Conduct (investigations and hearings) program areas.

CPO embarked on a research initiative aimed at identifying factors that put physiotherapists at risk of not meeting professional expectations. This project included analysing College data to investigate the relationships among various data sets. The data included registration data, practice assessment data, complaints, reports and ICRC decision data, information on those who received a Notice of Intension to Suspend (NIS), those who were non-compliant with the jurisprudence modules, and exam data from the Canadian Alliance of Physiotherapy Regulators of Canada (CAPR).

This analysis could then be used to inform the work of CPO in creating a risk profile. Risks, as identified in the literature, include various factors that may impact a practitioner's competence in a negative way (e.g. age, work setting, transitions in practice, gender, location of degree). Supports to competence, as identified in the literature, are factors that may impact a practitioner's competence in a positive way (e.g. continuing education, peer review, in-house quality assurance programs). The full list of risks to competence and supports to competence, as well as their definitions, is presented in Appendix 3: Definition of Risks to Competence and Appendix 4: Definition of Supports to Competence, as well as in the literature review conducted as part of this project (Glover Takahashi, Nayer et al. 2016).

This report presents the results of the analysis.

3 Methodology

Research questions:
1. To what extent do those who have incidents/concerns illustrate risks to competence found in the literature, and to what extent are each of the modifiable risks to competence and non-modifiable risks to competence factors in a physiotherapist's competence?
2. Are registrants with an incident or concern about competence in one area more or less likely to have repeats in the same area or another area?
3. Does this physiotherapist (PT) data tell us anything about supports to competence?

3.1 Data sets

CPO provided the following data sets:
1. Full registration database
2. Exam data set from the Canadian Alliance of Physiotherapy Regulators, with the exam results for all Ontario registrants who had taken the Physiotherapy Competency Examination from 1994 to 2015
3. Quality Assurance (QA) database for the years 2004 to 2015
4. Practice Enhancement Required letters from the QA assessments for the years 2004 to 2015
5. QA assessments completed with recommendation letters from the QA assessments for the years 2004 to 2015
6. Notice of Intent to Suspend data for the years 2004 to 2015
7. Non-compliance with Jurisprudence data for the years 2005 to 2015
8. ICRC and Outcome Letters for the years 2009 to 2014 where the outcome was anything other than no further action and subsequently an additional data file with information on those registrants for whom there were complaints during this period and the decision was no further action

3.1.1 Full registration database

The full registration database, as of the summer of 2015, was provided, including demographic data (gender, birth date, country of qualifying PT education, year of graduation, date of registration, primary employment, clinical focus, patient population, and information on controlled acts). This file included all the available electronic data on those who had been registered with CPO, not only those who are currently registered, and comprised 11,340 records.

In some cases, there was no birth date entered and in other cases there was no year of graduation recorded. To estimate either the birth date or the year of graduation, it was assumed that the registrants graduated at 22 years of age and then the appropriate calculations were made; this was required for eight

individuals. In 15 cases the year of registration was missing. In these cases, it was assumed that the year of registration was the same as the year of graduation.

The database included information on which controlled acts each individual reported performing. Controlled acts are defined in the Regulated Health Professions Act as particular clinical activities that are restricted to specific health professions. There are seven controlled acts directly granted to PTs (with one pending): communicating a diagnosis, spinal manipulation, tracheal suctioning, wound care, pelvic health, administering a substance by inhalation and ordering the application of a prescribed form of energy (pending). Acupuncture is one controlled act that PTs are able to perform through an exemption rule in the Controlled Acts Regulation under the *Regulated Health Professions Act* (RHPA).

In order to perform other controlled acts the PT must have the acts delegated to them by a health professional who is authorised to perform those acts; in most cases this is a physician. CPO requires that physiotherapists report which controlled acts they are performing when they re-register each year**,** with the exception of communication a diagnosis. This is a self-report of their activities with that controlled act. PTs are not required to add their name to the roster when they perform a controlled act that has been delegated to them.

3.1.2 CAPR exam data

CPO provided CAPR with the names and identification information of all registrants who had completed the Physiotherapy Competency Examination (PCE) since 1994[1] (registration number, first name, last name, former name (if any), date of birth, year of graduation, and country of qualifying PT education). The total number of registrants in this file was 6907.

There was no common identification information between the CAPR database and the CPO list. CAPR did not capture date of birth information of the PCE candidates until 2009. This provided a challenge, as a number of female candidates have different former names in the CPO list and no recorded date of birth in the CAPR database with which to match cases. Additionally, there were multiple registrants with same first name and last name, same country of education, and year of graduation. It was not possible to reconcile these records to provide the exam data on all individuals. For some exams only pass/fail information was available, not the specific score obtained.

During the first five years of administration, the PCE clinical component consisted of 20 stations. Starting in October 1999, the exam was reduced to 16 stations. This change affects the interpretation of the number of stations passed on an exam. For

[1] Physiotherapists who were registered with CPO prior to 1994 were not required to take the PCE as they were grandfathered when the RHPA was enacted.

the purposes of this analysis only exam scores and pass/fail status were considered.

Ultimately, there was missing information for 408 candidates who took the written component and 568 who took the clinical component. For the balance of registrants CAPR provided details of the exams taken. For written components this included date the candidate took the exam, total exam score, pass/fail status, and whether there had been accommodations. For clinical components this included date the candidate took the exam, total score, number of stations passed, if there were safety issues, if there had been accommodations, and pass/fail status.

In six cases the exam date recorded was incorrectly entered as 10 or more years prior to graduation from the entry-level physiotherapy program. For these six cases the exam date was changed to the year of graduation, which in all cases matched the year of registration.

3.1.3 Quality Assurance full database

The full CPO Quality Assurance (QA) database was provided. This included the selection type (e.g. random selection, self-referral), rating data for all components of the Practice Assessment, and the final outcomes. Data included 3339 Practice Assessments that had taken place from 2004 to 2015.

3.1.4 Quality Assurance practice enhancement required

All letters sent to registrants who had completed the Practice Assessment and were required, by the Quality Assurance (QA) Committee, to complete practice enhancement activities were provided. A research assistant reviewed and coded these letters. This data was then merged with the full QA database.

3.1.5 Quality Assurance Completed with Recommendations letters

Some registrants completed the Practice Assessment successfully but were sent letters from the QA Committee that provided some recommendations regarding practice improvements; these letters were also provided. A research assistant reviewed and coded these letters. This data was then merged with the full QA database.

3.1.6 Notice of Intent to Suspend letters

These files consisted of individuals who had not renewed their registration by the March 31st deadline. Individuals first receive a Notice of Intent to Suspend (NIS), which indicated that their registration would be suspended should they not pay the registration fee or submit their resignation. Data was provided in multiple files for

2004–2015. In some years, information on the registrant's registration category at the time of the Notice of Intent to Suspend was also provided (inactive, independent practice, academic, retired). Effective in 2011, the registration categories were revised and only the Provisional Practice, Independent Practice, and Courtesy category (for those in the province for sporting events or educational purposes) remained.

These files included data on 1382 registrants who had been sent a NIS letter at least once. Files had different formats, some including names and emails, some including registration numbers, some including only names. A research assistant merged the files using the information provided to create a single file for all NIS cases. When multiple incidents were observed, this information was retained, including the year of the incident, the incident count (first, second, etc.), and, if available, the type of certificate held by the registrant at the time of the incident.

3.1.7 Non-compliance with jurisprudence files

These files consisted of individuals who had not completed the mandatory jurisprudence modules by the deadline. For the 2005 year, when completing the jurisprudence module was voluntary, the registration category of the registrant was also provided. Starting in 2006, completing the jurisprudence module(s) was mandatory. The non-compliance files included data on 1065 registrants who had been non-compliant with jurisprudence at least once.

A research assistant merged the files, using the registrant number, to create a single file for all cases of non-compliance with jurisprudence. When multiple incidents were observed, this information was retained, including the year of the incident, the incident count (first, second, etc.), and, for the 2005 incidents, the type of certificate held by the registrant at the time of the incident.

3.1.8 ICRC Dispositions

CPO provided the decisions sent to registrants with the outcomes of their complaint or report between 2009 and 2015. Subsequently CPO sent an additional data file with information on those registrants for whom there were complaints / reports during this period and the decision was no further action.

There were 137 records in the data set of registrants had a decision other than no further action. A research assistant reviewed and coded these decisions. Coding included recording the year of the complaint and the outcome.

3.1.9 Analysis

Following coding, all data sets were combined into a single database and analyzed in SPSS v. 23. Simple statistics (e.g. frequencies, means, and standard deviations) were calculated when appropriate.

Cross-tabulations and Chi-Squared statistics were generated to compare the percentages of different categories of registrants with respect to the different assessment tools. This involved considering the categories (e.g. gender, Internationally Educated Physical Therapists [IEPTs] and Canadian graduates, country of qualifying PT education, and age categories) and the number and percent in each category who met certain criteria (e.g. received one or more Notice of Intent to Suspend, failed to successfully complete Jurisprudence on one or more occasions, pass/fail status on the PCE, concerns about practice or conduct received, or results in the Practice Assessment).

Pearson correlation coefficients were calculated to determine relationships between continuous risk factor variables (e.g. exam score and age).

4 Results

4.1 Registration data

The registration data set was analyzed to determine the demographics of the registrants, both within the full data set and for currently registered physiotherapists. This file included all the available electronic data on those who had been registered with CPO, not only those who are currently registered, and comprised 11,340 records. This data is self-report from registrants, who provide information when they register initially and then re-register each year. Definitions of the various variables can be found in on the CPO web site (College of Physiotherapists of Ontario 2016).

About three-quarters of physiotherapists are female (Table 1)

Table 1 Gender of Registrants

Gender	Full Database		Current Registrants	
	N	%	N	%
Female	8656	76.3	6363	74.4
Male	2684	23.7	2190	25.6
Total	11340	100.0	7785	100.0

The age of the current registrants (N=7,785) ranges from 25 to 87 years old, with a mean of 43.73 years and a standard deviation of 11.0 (Figure 1). For these registrants, the earliest year of registration is 1950 (Figure 2).

Figure 1 Age of Current Registrants

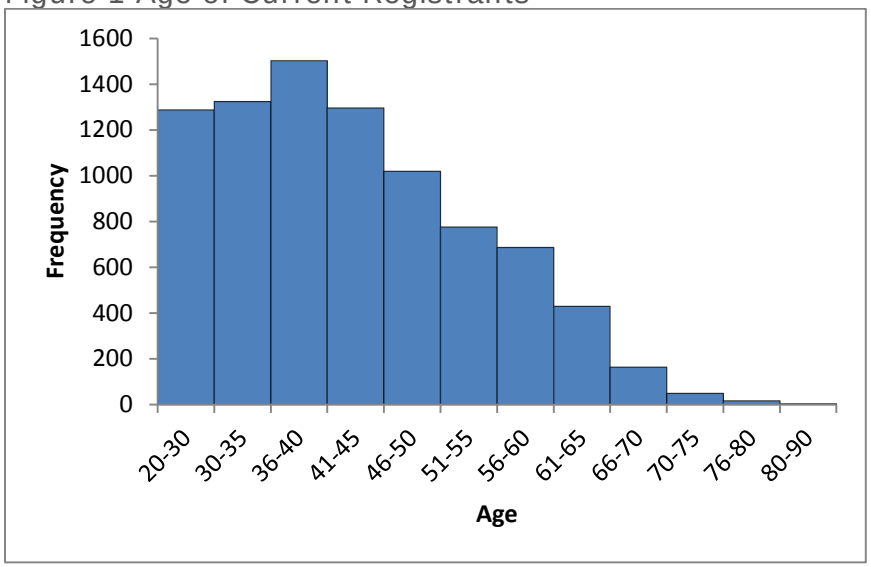
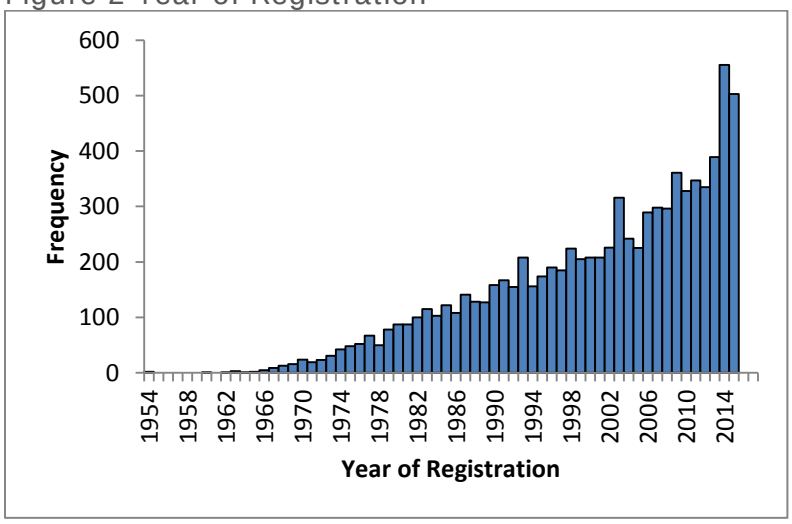


Figure 2 Year of Registration



IEPTs represent 51 different countries. (The full list is provided in Appendix 1: Country of Graduation of Full Registration Database.) Three-quarters of the physiotherapists in the full database graduated from Canada (Table 2). The top five countries of graduation for IEPTs, each of which was represented by over 100 physiotherapists, are presented in Table 3.

Table 2 Country of Qualifying PT Education

Location of Degree	Full Database		Current Registrants	
	N	%	N	%
Canada	8590	75.7	6504	76.0
IEPT	2744	24.2	2044	23.9
System Missing	6	0.1	5	0.1
Total	11340	100%	8553	100%

Table 3 Top 5 Countries for IEPTs

Location of Degree	N	%
India	825	7.3
USA	333	2.9
England	321	2.8
Philippines	185	1.6
Australia	128	1.1
Total Database	11340	100

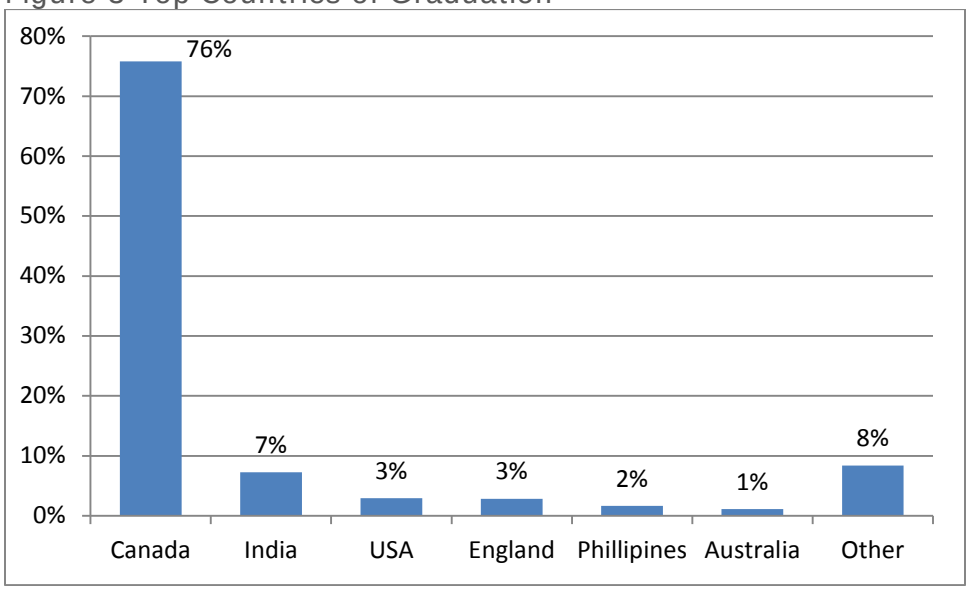
While IEPTs are far more likely to be female than male (Table 4) ($p<.000$), the percentage is in fact less than that for Canadian graduates, who are also far more likely to be female than male.

Table 4 Gender of Registrants by Country of Education

Country of PT Qualifying Education		Gender		Total
		Female	Male	
Canada	N	6886	1704	8590
	%	80.2%	19.8%	100%
IEPT	N	1766	978	2744
	%	64.4%	35.6%	100%
Total	N	8652	2682	11334
	%	76.3%	23.7%	100%

Canada and the five top countries for IEPTs account for 92% of all registrants in the database (Figure 3).

Figure 3 Top Countries of Graduation



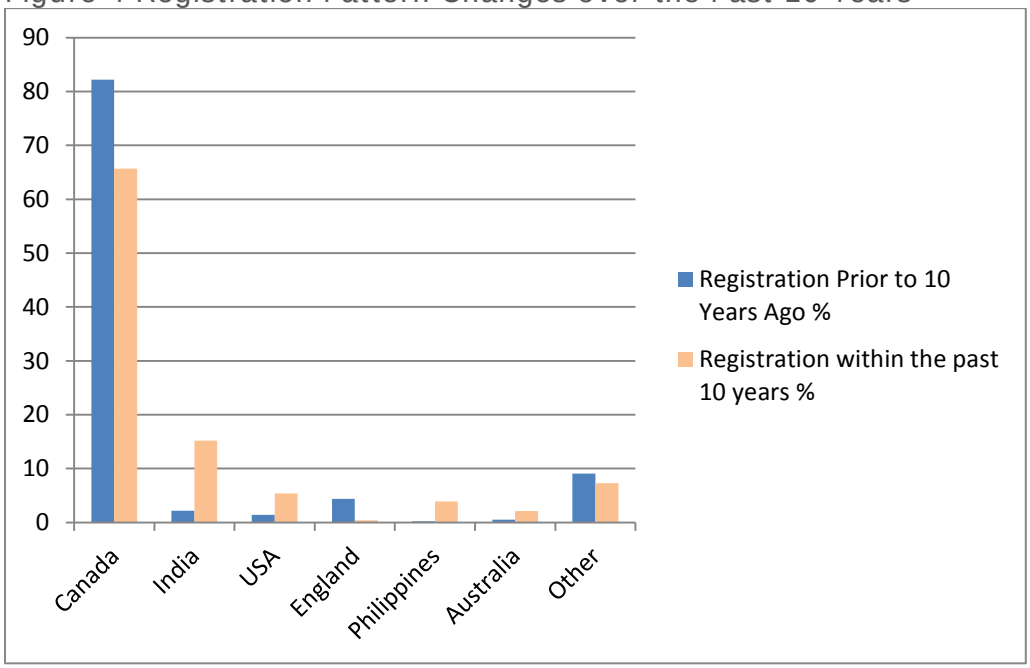
Over the past 10 years the registration pattern has changed. Prior to 10 years ago 82% of the registrants in the full database were Canadian graduates; however, those who have registered over the last 10 years are only 66% Canadian graduates. There has been an increase in registrants whose countries of graduation are India, USA, Australia, and the Philippines, and a decrease from England and other countries (Table 5 and Figure 4).

Overall the percent of new registrants who are IEPTs has increased significantly, from just fewer than 18% over 10 years ago to just fewer than 35% during the past 10 years.

Table 5 Registration Pattern over the Past 10 Years

Country	Registration Prior to 10 Years Ago		Registration within the past 10 years	
	N	%	N	%
Canada	5674	82.2	2916	65.7
India	151	2.2	674	15.2
USA	95	1.4	238	5.4
England	305	4.4	16	0.4
Philippines	12	0.2	173	3.9
Australia	36	0.5	92	2.1
Other	628	9.1	324	7.3
Total	6901	100	4433	99.9
System Missing	1	0	5	0.1
Total	6902	100	4438	100

Figure 4 Registration Pattern Changes over the Past 10 Years



4.2 Practice profile

Over 92% of current registrants provide patient care; 61% work full time, 33% part time, and under 1% are casual. As per the Registration Renewal Guide (College of Physiotherapists of Ontario 2016), full time is defined as equal to or over 30 hours per week, part time is under 30 hours per week, and casual is not characterised by a guaranteed or fixed number of hours or work on a regular basis.

While half of physiotherapists are employees, almost one-third are self-employed, and a smaller percentage are casual or temporary employees. Physiotherapists mostly work in the public sector (46%) or in the private sector (40%), with about 11% working in both sectors. As would be expected, almost half have a musculoskeletal (MSK) clinical focus, and almost 40% work with more than one system. A small percentage have a clinical focus on the cardiovascular-respiratory system, neurological system, or other system. Over 60% of physiotherapists work with all ages of patients, almost one-quarter work only with adults, and a small percentage work in paediatrics (under 5%) or geriatrics (under 10%).

Almost one-third of registrants reported working at more than one employment site at their last renewal. While about 95% of registrants have worked at 9 to 10 employment sites over their career, some have worked at up to 36 different sites. The mean number of historical worksites is 4.23, with a standard deviation of 3.09. It is possible that contract workers or those who take on locums drive this number up.

The majority of PTs (62.2%) report performing at least one controlled act, with one-quarter reporting one or two, and the remaining 12% reporting from three to nine controlled acts (Table 6)

Table 6 Number of Controlled Acts Performed by Individuals

# Controlled Acts	N	%
0	4,281	37.8
1	2,831	25.0
2	2,874	25.3
3	981	8.7
4	265	2.3
5	81	0.7
6	13	0.1
7	11	0.1
8	2	0
9	1	0
Total	11340	100

Of the controlled acts, the one performed by far the most is acupuncture/needling (Table 7 and Figure 5). The next three are not surprising: administering a substance by inhalation, tracheal suctioning, and then spinal manipulation. There is no difference between the percent of women (62.3%) or men (62%) who report performing at least one controlled act.

There is a significant difference between graduates of Canada and IEPT graduates regarding controlled acts, with those graduating in Canada being far more likely to report performing at least one controlled act (69% vs. 41%) ($p<.000$) (Table 8).

Table 7 Registrants Performing Controlled Acts

Controlled Act	N	%
Acupuncture/Needling	4,226	37.3
Administer Substance by Inhalation	2,598	22.9
Tracheal Suctioning	2,376	21.0
Spinal Manipulation	2,062	18.2
Order application of a form of energy	653	5.8
Perform procedure on tissue below the dermis	512	4.5
Put an instrument, hand, or finger beyond opening of urethra, labia majora, anal verge	425	3.7
Prescribe, dispense, sell, or compound a drug	156	1.4
Total Registrants	11340	

Figure 5 Registrants Performing Controlled Acts

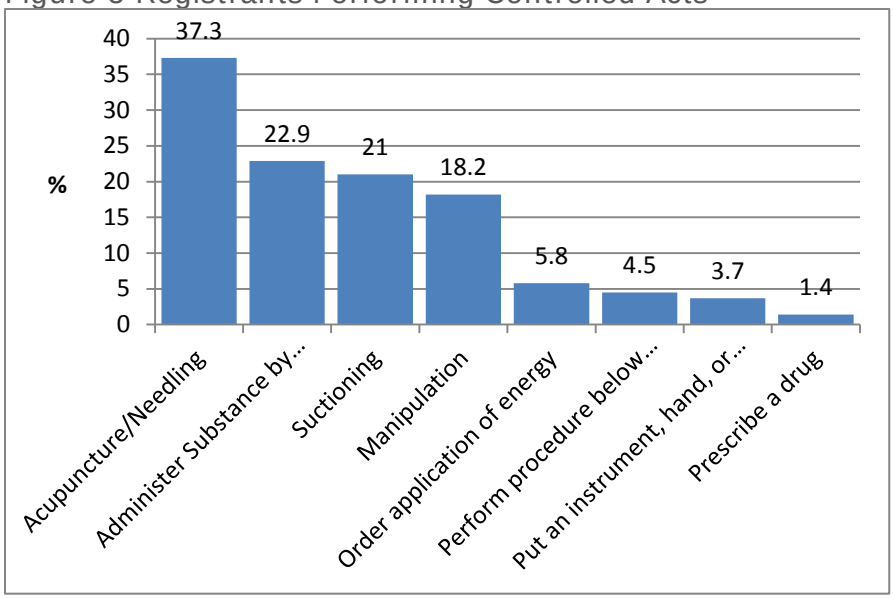


Table 8 Graduates of Canada More Likely to Report Performing a Controlled Act

Controlled Act		Country of Education	
		Canada (N=8590)	IEPT (N=2744)
None	N	2660	1617
	%	31.0%	58.9%
One or More Controlled Acts	N	5930	1127
	%	69.0%	41.1%
Total	N	8590	2744
	%	75.8%	24.2%

There is a significant correlation between being an IEPT and working at a higher number of worksites over one's career (correlation 0.141, p<.000). There is also a significant correlation between gender and historical number of worksites, with men working at a significantly higher number of worksites than women (correlation 0.054, p<.000). The full demographic details are provided in Appendix 2: Practice Profile of Current Registrants.

4.2.1 Summary: Registration data and practice profile analysis

There is nothing particularly surprising in the general demographics.

Physiotherapists are primarily female and have an average age of 44. While three-quarters of registrants graduated from Canada, the balance graduated from 32 different countries around the world, with India, USA, England, the Philippines, and Australia being the top five countries represented.

The proportion of IEPTs in the registrant population has been increasing over the past 10 years.

Over 90% of current registrants provide patient care, with over 60% of them working full time. Half are employees and almost one-third are self-employed. Almost half work in the public sector (46%), and almost as many in the private sector (40%).

The clinical focus for almost 40% is musculoskeletal (MSK), and almost 40% work with multiple systems. Most physiotherapists work either with all ages or adults, and only a small percentage work in geriatrics (under 10%) or paediatrics (under 5%).

Over 60% of physiotherapists report performing at least one controlled act. Acupuncture/needling is used by over 40% of physiotherapists, followed by suctioning, administration of a substance by inhalation, and spinal manipulation. Graduates of Canadian programs are more likely to report performing controlled acts than IEPTs.

Historically, most physiotherapists work at 9 to 10 employment sites over their career; however, some have worked at over 35 sites.

IEPTs work at more worksites over their career than graduates of Canadian programs and men work at more worksites than women.

4.3 Exam data

From 1994, when the *Regulated Health Professions Act* came into force, in order to become registered with CPO it has been necessary for each applicant to successfully complete the Canadian Alliance of Physiotherapy Regulators (CAPR) Physiotherapy Competency Examination (PCE). The exam has two components: a written component consisting of multiple choice questions and a clinical component that is an Objective Structured Clinical Exam (OSCE) format.

Data was obtained from CAPR for 6907 Ontario registrants who had taken the PCE between 1994 and 2015. For the written component, 90% only took the exam once (Table 9 and Figure 6). Of those who took the clinical component, 86% took it only once (Table 10 and Figure 7). While this data indicates that some candidates took the exams four or five times, in 2013 the policy was changed to only allow three attempts at each part of the exam.

Table 9 Number of Times the Written Component Was Taken

Times Written Component Was Taken	N	%
1	6,248	90.5
2	463	6.7
3	136	2.0
4	43	0.6
5	13	0.2
Total	6,903	99.9
System Missing	4	0.1
Total	6,907	100

Figure 6 Number of Times the Written Component Was Taken

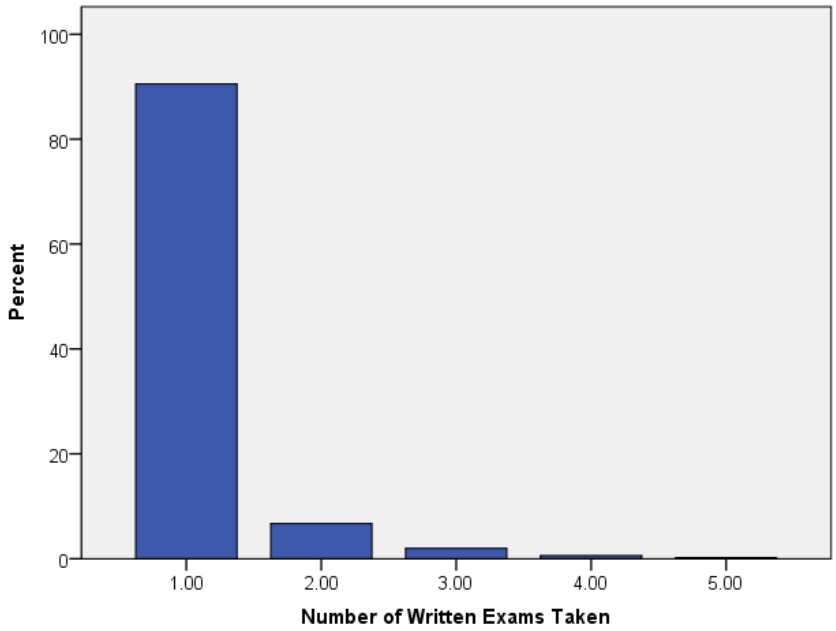


Figure 7 Number of Times the Clinical Component Was Taken

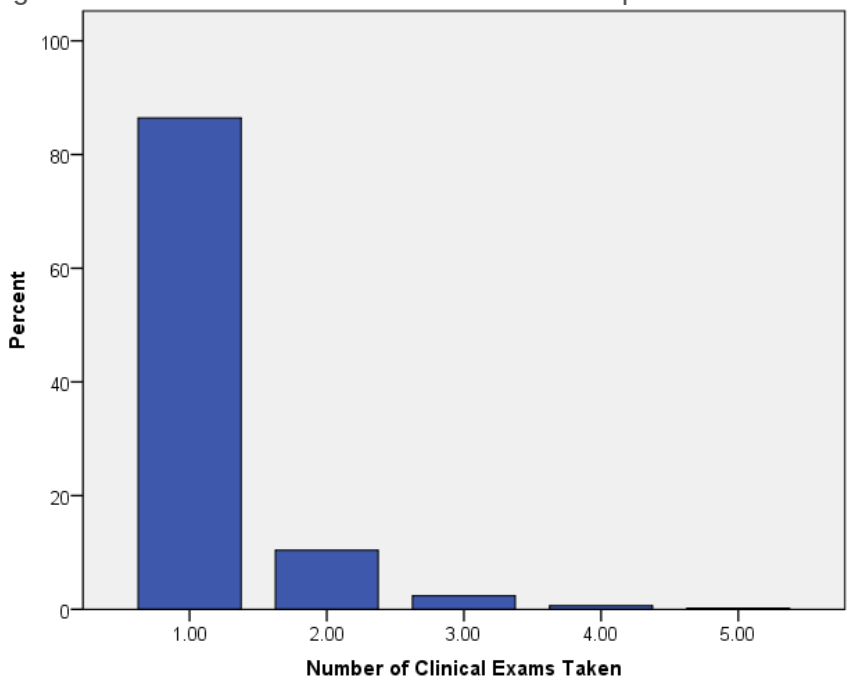


Table 10 Number of Times the Clinical Component Was Taken

Times Clinical Component Was Taken	N	%
1	5,970	86.4
2	717	10.4
3	164	2.4
4	44	0.6
5	12	0.2
Total	6,907	100

The first attempt scores for men and women are presented in Table 11. The PCE uses a scoring scale that has a mean of 500 and a standard deviation of 100. For the written component, at the lower boundary CAPR sets a minimum score of 100, so that anyone who achieves a very low score still is given a score of 100.

The average score for the men is significantly lower than the average score for the women on both exams ($p < .000$) (Figure 8). Similarly, the average number of times the exams were taken by men and women were significantly different, with men taking the exam more times than women ($p < .000$) (Table 12).

There is a significant negative correlation between being a man and exam score (written component correlation -0.117, $p < .01$ and clinical component correlation -.164, $p < .01$), indicating that men have lower scores than women.

Table 11 First Attempt Scores for Men and Women

Exam	Gender	N	Minimum	Maximum	Mean	SD
Written Score First Attempt	Female	4281	100	852	476.58	119.45
	Male	1861	100	785	445.49	125.56
Clinical Score First Attempt	Female	4102	35	785	489.07	111.54
	Male	1781	47	775	447.84	118.55

Figure 8 First Attempt Mean Scores for Men and Women

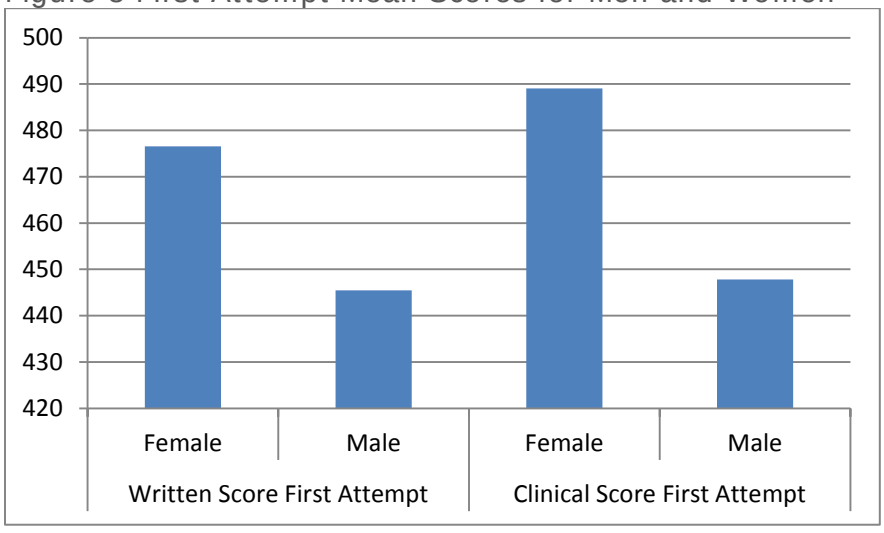


Table 12 Average Number of Times Exam Taken by Men and Women

Gender	Written component Mean	Clinical Component Mean
Female	1.09	1.12
Male	1.13	1.23

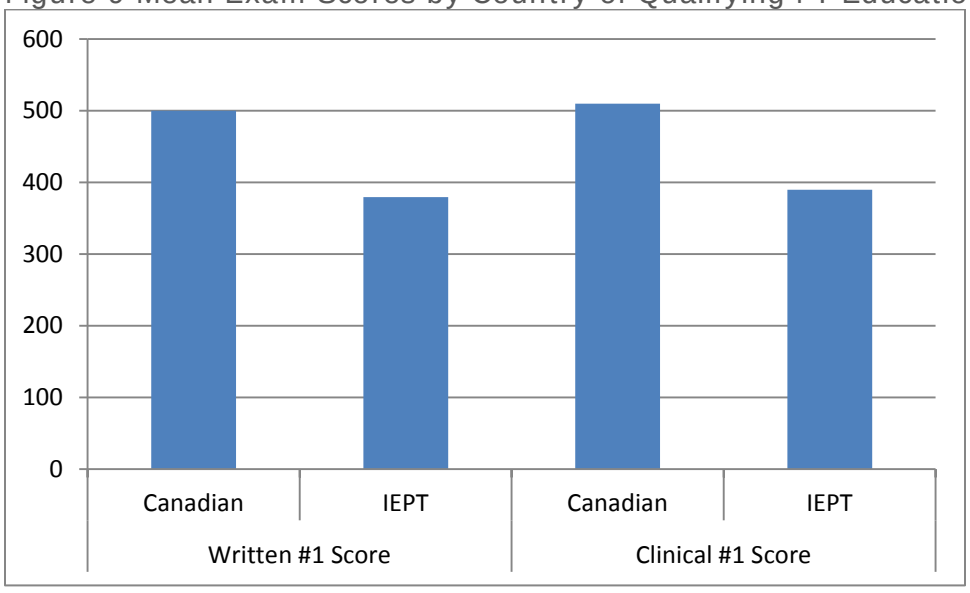
The mean scores for IEPTs are notably lower than those for the graduates of Canadian programs (p<.000) (Table 13 and Figure 9).

There is a significant negative correlation between being an IEPT and exam score (written component correlation -0.438, p<.01 and clinical component correlation -.464, p<.01), also indicating that IEPTs have lower scores than graduates of Canadian programs.

Table 13 First Exam Score Statistics by Country of Qualifying PT Education

Exam	Location of Degree	N	Minimum	Maximum	Mean	SD
Written #1 Score	Canada	4477	100	785	499.79	97.211
	IEPT	1660	100	852	379.39	138.163
Clinical #1 Score	Canada	4266	43	785	509.49	90.261
	IEPT	1612	35	721	389.48	128.292

Figure 9 Mean Exam Scores by Country of Qualifying PT Education



IEPTs are more likely to fail both the written and clinical components than graduates of Canadian programs (p<.000) (Table 14 and Table 15). This results in a significant difference in how many times the exams were taken by IEPTs and graduates of Canadian programs (p<.000), with IEPTs, on average, taking them more times than those graduating from Canadian programs (Table 16).

Table 14 Pass Rate on Written component by Country of Qualifying PT Education

Location of Degree		Written #1 Pass/Fail		Total
		Pass	Fail	
Canada	N	4662	153	4815
	%	96.8%	3.2%	100.0%
IEPT	N	1176	503	1679
	%	70.0%	30.0%	100.0%
Total	N	5838	656	6494
	%	89.9%	10.1%	100.0%

Table 15 Pass Rate on Clinical Component by Country of Qualifying PT Education

Location of Degree		Clinical #1 Pass/Fail		Total
		Pass	Fail	
Canada	N	4332	310	4642
	%	93.3%	6.7%	100%
IEPT	N	981	676	1657
	%	59.2%	40.8%	100%
Total	N	5313	986	6299
	%	84.3%	15.7%	100%

Table 16 Average Number of Exam Attempts by Country of PT Education

Location of Degree	Written component Mean	Clinical Component Mean
Canada	1.03	1.07
IEPT	1.30	1.41

Similarly, there are notable differences in the mean scores across the top five countries of IEPTs (Table 17, Figure 10, Figure 11), with India and the Philippines having the lowest mean scores for both exams and also tending to have higher standard deviations, indicating a wider degree of variation among the candidates from those countries.

Table 17 Scores on First Attempt by the Top Source Countries

Top Countries of Degree		N	Minimum	Maximum	Mean	SD
Written Component First Attempt	Canada	4,477	100	785	499.8	97.2
	India	698	100	744	367.3	141.3
	USA	253	100	765	445.7	116.6
	Philippines	170	100	638	339.2	118.4
	Australia	95	157	630	447.4	95.1
	England	32	140	730	419.4	120.3
Clinical Component First Attempt	Canada	4,266	43	785	509.5	90.3
	India	686	51	646	374.4	122.2
	USA	247	100	721	428.2	112.9
	Philippines	167	47	657	331.7	134.8
	Australia	90	157	659	477.0	107.4
	England	29	279	636	465.1	109.1

Figure 10 Mean Written Component Scores for Top Source Countries

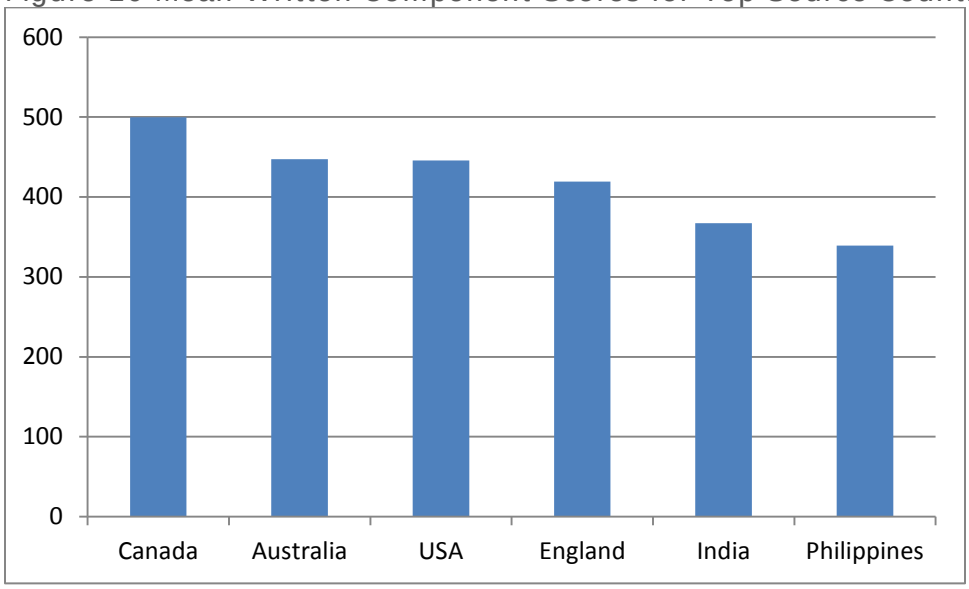
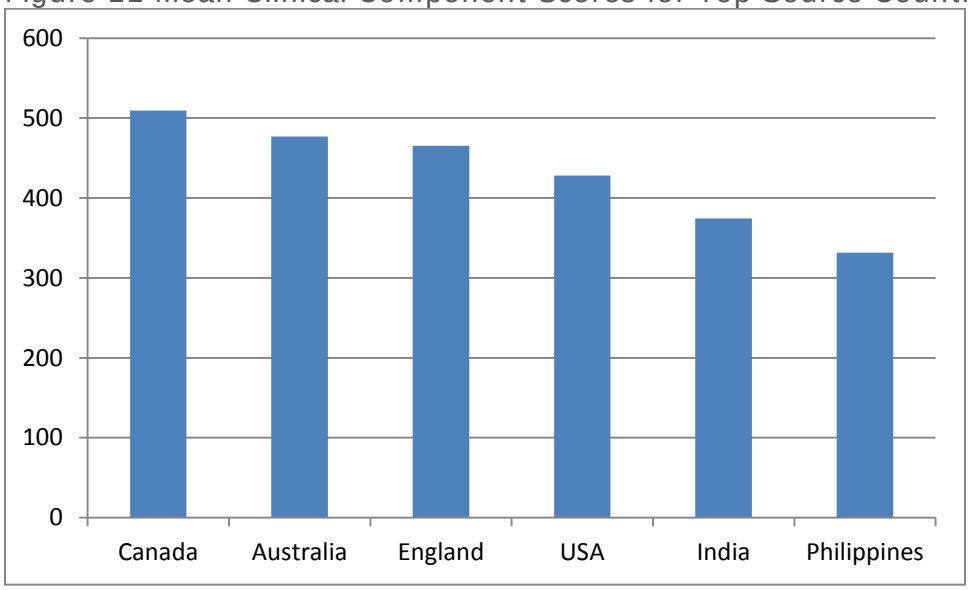


Figure 11 Mean Clinical Component Scores for Top Source Countries



When considering the top five countries for IEPTs, there is also a significant difference in their pass/fail status for each exam by country ($p<.000$) (Table 18 and Table 19). These results were compared to those posted on the CAPR web site.[2] Two of the numbers are notably different; however, the data is different in a number of respects, the dates of collection, the source of the information, and the individuals included in the data sets.

The Credential Source Country information on the CAPR web site is reporting on results from 2010 to 2015 while the results generated here are from 1994 to 2015. Additionally, CAPR reports on data from both candidates who are residing and registered across Canada as well as individuals who never passed the exams and therefore are not eligible for registration, while this report includes only those who are registered in Ontario and therefore have passed the exams. For the USA and Australia there is very little difference in the results.

It is not surprising to see a lower pass rate for India and the Philippines in the CAPR data, as this includes candidates who failed every attempt at the exams while the College data does not include these candidates. In addition, it is possible that there is a significant degree of variability among the candidates from India and the Philippines, over the different data collection periods, that might account for some of the observed differences. Without further exploration, the cause of these differences cannot be confirmed.

[2] http://www.alliancept.org/credential_source_country_profiles.php

Table 18 Pass Rates for First Written component for Top 5 IEPT Source Countries

Country of PT Education		First Written Pass/Fail		Total	% Passing listed on CAPR Info re: Source Country
		Fail	Pass		
Canada	N	153	4662	4815	
	%	3.2%	96.8%	100%	
India	N	240	458	698	
	%	34.4%	65.6%	100%	44%
USA	N	31	224	255	
	%	12.2%	87.8%	100%	87%
England*	N	3	30	33	
	%	9.1%	90.9%	100%	
Philippines	N	68	102	170	
	%	40.0%	60.0%	100%	33%
Australia	N	11	87	98	
	%	11.2%	88.8%	100%	85%
Other	N	150	275	425	
	%	35.3%	64.7%	100%	
Total	N	656	5838	6494	
	%	10.1%	89.9%	100%	
*CAPR data is for the UK while the CPO data is for England, so there is no comparator for this row					

Table 19 Pass Rates on First Clinical Component for Top 5 IEPT Source Countries

Country of PT Education		First Clinical Component Pass/Fail		Total	% Passing listed on Alliance Source Country
		Fail	Pass		
Canada	N	310	4332	4642	
	%	6.7%	93.3%	100%	
India	N	327	360	687	
	%	47.6%	52.4%	100%	49%
USA	N	70	185	255	
	%	27.5%	72.5%	100%	70%
England*	N	8	24	32	
	%	25.0%	75.0%	100%	
Philippines	N	94	73	167	
	%	56.3%	43.7%	100%	36%
Australia	N	14	82	96	
	%	14.6%	85.4%	100%	88%
Other	N	163	257	420	
	%	38.8%	61.2%	100%	
Total	N	986	5313	6299	
	%	15.7%	84.3%	100%	

*CAPR data is for the UK while the CPO data is for England, so there is no comparator for this row

Age correlates significantly with both the written and clinical component scores, as well as the pass/fail status, with higher ages having lower exam scores and lower pass rates (Table 20).

Table 20 Correlations of Age with Written and Clinical Component Scores

Categories	Correlation	Significance	N
Age with 1st Written component Score	-.269	P <.000	6142
Age with Pass/Fail Status 1st Written component	-.252	P <.000	6449
Age with 1st Clinical Component Score	-.385	P <.000	5883
Age with Pass/Fail Status 1st Clinical Component	-.343	P <.000	6304

With respect to other data sets (further described below) those who took the exams more than once were less likely to also receive a Notice of Intent to Suspend (p=.001 written component, p<.000 clinical component) (Table 21 and Table 22) than those who took the exams only once.

Table 21 Written component and Notice of Intent to Suspend Relationship

NIS Status		Written once or more than once	
		Written Component More Than Once	Written Component Once
Never had a NIS	N	609	5477
	%	93.8%	89.5%
NIS at least once	N	40	641
	%	6.2%	10.5%
Total	N	649	6118
	%	9.6%	90.4%

Table 22 Clinical Component and NIS Relationship

NIS Status		Clinical Component	
		More Than Once	Once
Never had a NIS	N	862	5227
	%	93.4%	89.4%
NIS at least once	N	61	621
	%	6.6%	10.6%
Total	N	923	5848
	%	13.6%	86.4%

With respect to the jurisprudence module requirements (described further below), there was no relationship between taking an exam more than once and being compliant with the jurisprudence module expectations ($p=.798$ written component and $p=0.392$ clinical component) (Table 23 and Table 24).

However, there was a significant correlation between the number of times each exam was taken and the number of worksites worked at over the career (correlation 0.299, $p<.000$ for the written and correlation 0.128, $p<.000$ for the clinical). This indicates that those who take the exams more times are more likely to work at more worksites, over their career, than those who take the exam fewer times.

Table 23 Written component and Jurisprudence Relationship

Jurisprudence Compliance		Written component	
		More Than Once	Once
Always Compliant	N	577	5225
	%	88.1%	88.4%
At least one Jurisprudence Non-compliance	N	78	723
	%	11.9%	11.7%
Total	N	655	6248
	%	9.5%	90.5%

Table 24 Clinical Component and NIS Relationship

Jurisprudence Compliance		Clinical Component	
		More Than Once	Once
Always Compliant	N	862	5269
	%	89.2%	88.3%
At least one Jurisprudence Non-compliance	N	101	701
	%	10.8%	11.7%
Total	N	937	5970
	%	13.6%	86.4%

In examining those who report performing one or more controlled acts, those who pass either the written or clinical components on the first attempt are more likely to report performing one or more controlled acts. Of those who pass the written component the first time, 71.3% report performing a controlled act, while only 38.5% of those who fail the written component the first-time report performing a controlled act ($p<.000$) (Table 25).

Similarly, of those who pass the clinical component the first time, 72.9% report performing a controlled act, while only 41.5% of those who fail the exam the first time report performing a controlled act ($p<.000$) (Table 26).

Table 25 Written component and Performing a Controlled Act

Controlled Acts		Written #1 Pass/Fail	
		Fail	Pass
None	N	404	1674
	%	61.5%	28.7%
One or more Controlled Acts	N	253	4168
	%	38.5%	71.3%
Total	N	657	5842

Table 26 Clinical Component and Performing a Controlled Act

Controlled Acts		Clinical #1 Pass/Fail	
		Fail	Pass
None	N	577	1439
	%	58.5%	27.1%
One or more Controlled Acts	N	409	3879
	%	41.5%	72.9%
Total	N	986	5318

4.3.1 Summary: Exam data analysis

Data was examined from 6907 Ontario registrants who had taken the PCE between 1994 and 2015. The majority of candidates took each exam only once (90% for the written, 86% for the clinical).

Men have lower scores than women on both exams and take the exams more times than the women before passing.

IEPTs registered in Ontario pass at a lower rate than graduates of Canadian programs registered in Ontario. IEPTs also have lower mean scores than the graduates of Canadian programs and take the exams more times.

The mean scores of the top five source countries of IEPTs are also lower than those of the graduates of Canadian programs, and also tend to have higher standard deviations, indicating greater variation among the candidates from those countries. India and the Philippines have the lowest mean scores on both exams and also higher failure rates. The “Other” countries (i.e. not one of the top five countries for IEPTs) also have a high failure rate.

Candidates who are older at the time they take the PCE have lower scores and also have lower pass rates. In many cases the older candidates would be IEPTs.
Those who take the exam more than once are significantly *less* likely to receive a Notice of Intent to Suspend and there is no relationship between compliance with jurisprudence and the number of times taking the exam.

Those who take each exam more than once are more likely to work at a higher number of worksites during their career. Physiotherapists who report performing a controlled act are more likely to have passed both the written and clinical components on their first attempt.

4.4 Quality Assurance data

CPO, along with all other regulators of health care providers in the province, is required by the *Regulated Health Professions Act* to have a Quality Assurance Committee (QAC) and to complete a competence assessment of practitioners. A Practice Assessment is one method of assuring the competency of physiotherapists. The current process is a peer interview, where an assessor visits a physiotherapist's practice setting to collect information and discuss the physiotherapist's practice.[3]

The intent is to ensure that the physiotherapist is meeting the professional practice standards of the profession. The resulting report is submitted to the QAC for review.

Data from 3339 Practice Assessments that had taken place from 2004 to 2015 was analyzed. The majority of participants in the Practice Assessments were selected through the random selection process (Table 27). Some of the selection types are no longer options (e.g. complaint referral, executive referral, jurisprudence referral and registrar's referral).Seven Second Onsite Assessments were required by the QA Committee; CPO has published another paper that examined those individuals who were randomly selected for a second assessment(Norman, O'Donovan et al. 2015).

That data is not included in this report. Re-assessments are those that are conducted after a period of remediation.

[3] http://www.collegept.org/Physiotherapists/PreparingforaPracticeAssessment

Table 27 Type of Selection for Practice Assessment

Type of Selection	N	%
Random	2992	90
Self-Referral	269	8
College Review Program Referral	28	1
Jurisprudence Referral	6	0
Complaint Referral	7	0
Executive Referral	3	0
Reassessment	24	1
Registrar's Referral	3	0
Second On-site Assessment	7	0
Total	3339	100

The age range of those undergoing a Practice Assessment was from 25 to 77 years, with a mean of 42.6 years (Figure 12). This reflects the full database, which ranges from 25 to 87 years and has a mean age of 43.8 years.

The initial descriptors used in the program were “Satisfactory Practices,” “Needs Minor Improvement,” “Needs Major Improvement,” and “Unacceptable Practice.” In 2011 the descriptors were changed to Ratings 1 through 4, with a clearer descriptor for the ratings. For the purposes of this analysis the ratings were merged, since the intent of the old and new ratings was similar and it was the descriptors that had been modified slightly. The ratings and descriptors, as well as the percent of individuals receiving each rating, are shown in Table 28.

Very few individuals, fewer than 2%, received ratings of 3 or 4, i.e. requiring major improvement or having unacceptable practices.

Figure 12 Age at Practice Assessment

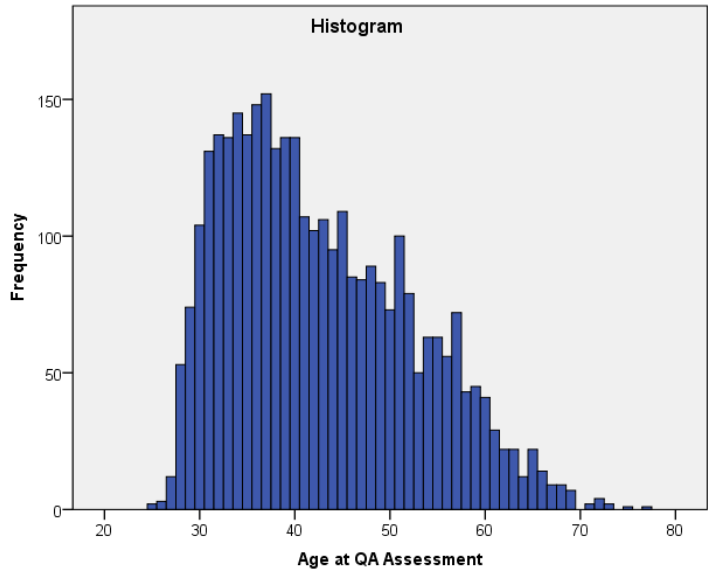


Table 28 Overall Rating for QA Assessments

Overall Rating	Descriptor for Rating	N	%
Rating 1 or Satisfactory Practices	Meets all criteria.	2694	90.
Rating 2 or Needs Minor Improvement	Registrant displays knowledge of all relevant professional standards, no safety concerns noted; however, one area of practice was identified where a standard was consistently not applied.	238	8.0
Rating 3 or Needs Major Improvement	Two or more professional standards were identified where the expectations were not applied to practice and/or One or more areas were identified as a risk or a safety/quality concern for patients, requiring ongoing learning and improvement activity.	42	1.4
Rating 4 or Unacceptable Practice	Caution is needed; issues or risky patterns were identified that impact safety and welfare of the public.	2	0.1
Total		2978	99.5
System Missing		14	0.5
Not Applicable		2	0.1
		2922	100

After the assessor reports are submitted, they are reviewed by the QAC for a final decision. Following the QAC review the majority of the assessments (89%) were completed successfully (Table 29).

Completed with recommendations indicates that the QAC identified some improvement opportunities and mentioned these in the completion letter. A common recommendation was to improve certain aspects of record keeping and/or review the College record keeping standards and guide. Some of the other suggestions included clarifying consent for inclusion of physiotherapist assistants in treatment programs, providing appropriate supervision to support personnel, or increasing the frequency of reassessments.

Self-directed remediation might include creation of a remediation contract/learning plan, to be submitted to CPO, that outlines the plans for addressing the QAC concerns, and subsequent confirmation that the plan has been completed. Concerns might include documentation of consent, monitoring billings, completing documentation in a timely manner, improving completeness of documentation, or clarity of which aspects of treatment were provided by the support personnel.

A QAC directed remediation is when the concerns are sufficient that the QAC believes additional assistance is needed to achieve standards of practice. These types of plans included working with a Practice Enhancement coach to create a

remediation plan/learning contract. Other parts of the direction might include chart reviews, chart stimulated recall activities, discussion of patient care, observation of treatments, creating appropriate systems for disposal of sharps, or completion of the portfolio and discussion with the coach.

Table 29 Specific Outcome of QA Assessment

Outcome	N	%
Completed successfully	2983	89.1
Completed with recommendations	248	7.4
QAC-directed remediation required	66	2.0
Self-directed remediation required	29	0.9
Second on-site assessment	3	0.1
Exemption	3	0.1
Referral to Executive	2	0.1
Voluntary remediation	2	0.1
Second period of remediation	1	0.0
Remediation – PISA submission	1	0.0
Completed the terms of remediation	1	0.0
Total	3339	100

For the purposes of analysis, those who completed successfully and completed with recommendations were grouped as needing no further action, while the others (e.g. QAC-directed remediation, second on-site assessment) were grouped as needing further action. There is no significant difference between men and women in terms of ratings (p=.057) (Table 30) or needing further action following the assessment (p=.055) (Table 31).

Table 30 Relationship of Ratings and Gender to Practice Assessment

Overall Rating		Gender		Total
		Female	Male	
Not Applicable	N	1	1	2
	%	0.0%	0.1%	0.1%
Rating 1	N	2386	618	3004
	%	91.1%	87.5%	90.4%
Rating 2	N	194	75	269
	%	7.4%	10.6%	8.1%
Rating 3	N	34	11	45
	%	1.3%	1.6%	1.4%
Rating 4	N	3	1	4
	%	0.1%	0.1%	0.1%
Total	N	2618	706	3324
	%	100%	100%	100%

Table 31 Gender Differences in Practice Assessment Results

Action Needed		Gender	
		Female	Male
Further action	N	77	31
	%	2.9%	4.4%
No further action	N	2552	679
	%	97.1%	95.6%
Total	N	2629	710
	%	100%	100%

IEPTs received ratings that were indicative of concerns more often than Canadian - educated physiotherapists registered in Ontario (p=.038) (Table 32) and were significantly more likely to require further action than graduates of Canadian programs registered in Ontario (p=.002) (Table 33).

Table 32 Country of PT Education and Practice Assessment Overall Ratings

Overall Rating		Location of Degree		Total
		Canada	IEPT	
Not Applicable	N	2	0	2
	%	0.1%	0.0%	0.1%
Rating 1	N	2501	503	3004
	%	91.0%	87.2%	90.4%
Rating 2	N	209	60	269
	%	7.6%	10.4%	8.1%
Rating 3	N	32	13	45
	%	1.2%	2.3%	1.4%
Rating 4	N	3	1	4
	%	0.1%	0.2%	0.1%
Total	N	2747	577	3324
	%	100%	100%	100%

Table 33 Country of PT Education and Practice Assessment Outcomes

QA Decision		Location of Degree	
		Canada	IEPT
Further action	N	77	31
	%	2.8%	5.3%
No further action	N	2681	550
	%	97.2%	94.7%
Total	N	2758	581
	%	100%	100%

While there was no significant difference in the ratings of registrants in the top five countries of education (p=.834) (Table 34), there was a significant difference in those requiring further action (p=.007), with those from the Philippines, the USA, and the other countries having higher incidences of needing further action (Table 35).

Table 34 Ratings of Registrants in the Top Five Countries of Education

Top Countries of PT Education		Ratings				
		Not Applicable	Rating 1	Rating 2	Rating 3	Rating 4
Canada	N	2	2501	209	32	3
	%	0.1%	91.0%	7.6%	1.2%	0.1%
India	N	0	80	12	2	0
	%	0.0%	85.1%	12.8%	2.1%	0.0%
USA	N	0	56	5	1	0
	%	0.0%	90.3%	8.1%	1.6%	0.0%
England	N	0	91	11	2	0
	%	0.0%	87.5%	10.6%	1.9%	0.0%
Philippines	N	0	18	2	1	0
	%	0.0%	85.7%	9.5%	4.8%	0.0%
Australia	N	0	16	0	0	0
	%	0.0%	100.0%	0.0%	0.0%	0.0%
Other	N	0	242	30	7	1
	%	0.0%	86.4%	10.7%	2.5%	0.4%
Total	N	2	3004	269	45	4
	%	0.1%	90.4%	8.1%	1.4%	0.1%

Table 35 Top Five Countries and Differences in Practice Assessment Outcomes

Top Countries of PT Education		Further Action	No Further Action	Total
Canada	N	77	2681	2758
	%	2.8%	97.2%	100%
India	N	5	89	94
	%	5.3%	94.7%	100%
USA	N	4	58	62
	%	6.5%	93.5%	100%
England	N	2	102	104
	%	1.9%	98.1%	100%

Top Countries of PT Education		Further Action	No Further Action	Total
Philippines	N	2	19	21
	%	9.5%	90.5%	100.0%
Australia	N	0	16	16
	%	0.0%	100.0%	100.0%
Other	N	18	266	284
	%	6.3%	93.7%	100.0%
Total	N	108	3231	3339
	%	3.2%	96.8%	100%

Those in the older age groups were less likely to obtain a rating of 1 (no concerns) and more likely to obtain ratings of 2 or 3 (needs minor or major improvement) ($p<.001$) (Table 36); however, there was no significant difference among the ages in terms of needing further action ($p=.125$) (Table 37).

Table 36 Relationship of Age to Overall Rating on Practice Assessment

Overall Rating		Age Categories				
		20-29	30-39	40-49	50-59	60+
Not Applicable	N	0	0	0	1	1
	%	0.0%	0.0%	0.0%	0.2%	0.5%
Rating 1	N	135	1243	900	566	160
	%	93.8%	91.9%	90.9%	88.3%	81.6%
Rating 2	N	7	99	74	60	29
	%	4.9%	7.3%	7.5%	9.4%	14.8%
Rating 3	N	2	10	14	14	5
	%	1.4%	0.7%	1.4%	2.2%	2.6%
Rating 4	N	0	1	2	0	1
	%	0.0%	0.1%	0.2%	0.0%	0.5%
Total	N	144	1353	990	641	196
	%	100%	100%	100%	100%	100%

Table 37 Relationship of Age to Further Action on Practice Assessment

Further Action		Age Categories				
		20-29	30-39	40-49	50-59	60+
Further Action	N	4	36	32	24	12
	%	2.8%	2.7%	3.2%	3.7%	6.1%
No Further Action	N	140	1322	964	620	185
	%	97.2%	97.3%	96.8%	96.3%	93.9%
Total	N	144	1358	996	644	197
	%	100%	100%	100%	100%	100%

The Practice Assessment Rating was negatively correlated with the PCE scores on both the first written and clinical components (correlation of -.095, p=.01 and correlation of -.061, p=.05). This indicates that those who had higher scores on the exam received better ratings on the Practice Assessment (i.e. lower numbers such as 1 for Satisfactory or 2 for Needs Minor Improvement, vs. the higher numbers of 3 for Needs Major Improvement or 4 for Unacceptable).

There was a significant relationship between Practice Assessment Rating and the pass/fail status on the first written component (p<.029) (Table 38) and also a significant relationship between needing further action and the pass/fail status (p=.002) (Table 39). Those who failed the written component the first time were significantly less likely to receive a rating of Meets all Criteria on the Practice Assessment and were also significantly more likely to need further action following their Practice Assessment.

Table 38 Written component and Rating Relationship

Overall Rating		Written component Result		
		Fail	Pass	Total
Rating 1	N	79	1369	1448
	%	86.8%	91.0%	90.8%
Rating 2	N	9	119	128
	%	9.9%	7.9%	8.0%
Rating 3	N	2	15	17
	%	2.2%	1.0%	1.1%
Rating 4	N	1	1	2
	%	1.1%	0.1%	0.1%
Total	N	91	1504	1595
	%	100%	100%	100%

Table 39 Written component and QA Further Actions

Overall Rating		Written component Result		
		Fail	Pass	Total
Further Action	N	8	44	52
	%	8.8%	2.9%	3.3%
No Further Action	N	83	1464	1547
	%	91.2%	97.1%	96.7%
	%	8	44	52
Total	N	91	1508	1599
	%	100%	100%	100%

While there was no significant relationship between the Practice Assessment Rating and the pass/fail status on the first clinical component (p=.068) (Table 40), there

was a significant relationship between the pass/fail status and needing further action following the Practice Assessment (p=.005) (Table 41). Those who failed their first clinical component were significantly more likely to require further action following their Practice Assessment.

Table 40 Clinical Component and Rating Relationship

Overall Rating		Clinical Component Result		
		Fail	Pass	Total
Rating 1	N	152	1220	1372
	%	86.4%	91.4%	90.8%
Rating 2	N	21	100	121
	%	11.9%	7.5%	8.0%
Rating 3	N	2	14	16
	%	1.1%	1.0%	1.1%
Rating 4	N	1	1	2
	%	0.6%	0.1%	0.1%
Total	N	176	1335	1511
	%	100%	100%	100%

Table 41 Clinical Component and QA Further Actions

Overall Rating		Clinical Component Result		
		Fail	Pass	Total
Further Action	N	12	38	50
	%	6.8%	2.8%	3.3%
No Further Action	N	164	1300	1464
	%	93.2%	97.2%	96.7%
Total	N	176	1338	1514

There was a significant correlation between the QA Overall Rating and the number of worksites the physiotherapists had worked at over their career (correlation 0.039, p<.026), indicating that that those who had worse ratings on the Practice Assessment (i.e. higher numbers of 3 for Needs Major Improvement or 4 for Unacceptable vs. the lower numbers 1 for Satisfactory or 2 for Needs Minor Improvement, vs.) were more likely to work at a higher number of worksites over their career.

There was no relationship between Practice Assessment results and the performance of controlled acts.

4.4.1 Summary: Quality Assurance data analysis

Data from 3339 Practice Assessments that had taken place from 2004 to 2015 were analyzed.

Over 90% of the assessments were conducted on physiotherapists who were randomly selected, and 8% from self-referral.

The age range of those completing the Practice Assessment reflects the full registrant population.

After review by the QAC, 89% of the assessments were completed successfully, 7.4% were completed with recommendations, and 2% with QAC-directed remediation. For the purposes of this analysis, those who completed successfully and completed with recommendations were grouped as needing no further action, while the others (e.g. QAC-directed remediation, second on-site assessment) were grouped as needing further action.

There is no significant difference between men and women in terms of ratings or needing further action following the assessment.

IEPTs received ratings that were indicative of concerns significantly more often than graduates of Canadian programs who are registered in Ontario and were also significantly more likely to require further action.

There was no significant difference in the ratings received for registrants in the top five source countries of education; however, there was a significant difference in those requiring further action. Those from the Philippines, the USA, and the Other countries had higher incidences of needing further action following the assessment. With respect to age, those in the higher age groups were significantly less likely to receive a rating of Meets all Criteria and more likely to obtain ratings of Needs Minor or Needs Major Improvements. Despite this difference, there was no significant difference among the age groups in terms of needing further action as directed by the QAC.

Practice Assessment ratings were negatively correlated with the PCE scores status for both the first written and first clinical components, indicating that those with higher scores on the exams received better ratings on the Practice Assessment (i.e. Satisfactory or Needs Minor Improvement vs. Needs Major Improvement or Unacceptable).

There was a significant relationship between the Practice Assessment Rating and the pass/fail status on the first written component, and also between pass/fail status and those needing further action. Those who failed the written component the first time were significantly less likely to receive a rating of Meets all Criteria and were also significantly more likely to need further action following their assessment.

While there was no significant relationship between the Practice Assessment Rating and the pass/fail status on the first clinical component, there was a significant relationship between pass/fail status and needing further action. Those who failed their first clinical component were significantly more likely to require further action following their Practice Assessment.

Those who receive better ratings on the Practice Assessment tended to work at a lower number of worksites over their career. There was no relationship between Practice Assessment results and the performance of controlled acts.

4.5 Notice of Intent to Suspend (NIS)

A notice of intent to suspend is sent to physiotherapists if they have not re-registered by the March 31st deadline. This notice indicates that if they do not re-register or resign they will be suspended, which means they will not be able to work as a physiotherapist in the province.

There were 2150 NIS issued from 2004 through 2015. The majority of these incidents were registrants who received only one NIS (N=1691, 79%) (Table 42). The balance of the NISs were related to 328 individuals who received from two to seven NIS notices.

Table 42 Total Notices of Intent to Suspend

Number of NIS	N	%
1	1691	79%
2	328	15%
3	87	4%
4	25	1%
5	13	1%
6	5	0%
7	1	0%
Total	2150	100%

A registration category was recorded at the time of the NIS for 526 registrants. Registration categories included Independent Practice, Academic, and Inactive. While the majority of the registrants were in independent practice or academic practice, almost one-quarter of them were inactive (Table 43).

In 2011, the categories of registration changed such that there was only Provisional Practice, Independent Practice and Courtesy categories of registration. While there was not an immediate decrease in NISs following the change, 2014 and 2015 have seen smaller numbers of registrants receiving a NIS (Table 44).

Table 43 Registration Category at the Time of Notice of Intent to Suspend

Registration Category	N	%
Independent	389	74%
Academic	12	2%
Inactive	125	24%
Total	526	100%

Table 44 Year of Notice of Intent to Suspend

Year of NIS	N	%
2004	389	18.1%
2005	428	19.9%
2006	128	6.0%
2007	135	6.3%
2008	132	6.1%
2009	185	8.6%
2010	101	4.7%
2011	120	5.6%
2012	149	6.9%
2013	159	7.4%
2014	125	5.8%
2015	99	4.6%
Total	2150	100%

Of those who have received at least one NIS, just over 55% of them are currently registered; this leaves 44% who are no longer registered, for a number of reasons (Table 45). Almost one-quarter of those who received one NIS resigned the same year (N=405, 24%).

Table 45 Current Certificate Status for those who had at least 1 NIS

Current Certificate Type	N	%
Registered	940	55.6%
Expired	71	4.2%
Resigned	452	26.7%
Deceased	18	1.1%
Suspended - Non-Payment	208	12.3%
Suspended – Discipline	1	0.1%
Total	1690	99.9%
System Missing	1	0.1%
Total	1691	100%

While 24% of all registrants are IEPTs (Table 2), just under 20% of those who had a NIS were IEPTs ($p<.001$) (Table 46), indicating that IEPTs are more consistent about re-registering at the time of renewal.

Table 46 Country of PT Education for those who had a NIS

Location of Degree	N	%
Canada	1359	80.4%
IEPT	332	19.6%
Total	1691	100%

The age of those who received a NIS range from a low of 23 years to a high of 87 years, with the averages being in the 40s for each incident (Table 47). There was no significant difference between the ages of men and women who received a NIS. There was no significant difference between men and women in the number of NISs received.

Table 47 Age at the Time of NIS

	N	Minimum	Maximum	Mean	Std. Deviation
Age at NIS 1	1691	23	82	42.9	12.15
Age at NIS 2	328	24	86	46.3	12.25
Age at NIS 3	87	27	87	47.7	12.34
Age at NIS 4	25	35	60	46.6	9.08
Age at NIS 5	13	36	68	48.2	9.91
Age at NIS 6	5	38	44	41.6	2.30
Age at NIS 7	1	42	42	42.0	

Those who had at least one NIS were significantly more likely to also be non-compliant with jurisprudence than those who had never received a NIS (23.6% compared to only 15.4%), which was significant (p<.000) (Table 48).

Table 48 Relationship between NIS and Jurisprudence

NIS		Jurisprudence	
		Always compliant	Non-compliant at least once
No NIS	N	1169	213
	%	84.6%	15.4%
NIS at least once	N	236	73
	%	76.4%	23.6%
Total	N	1405	286

There was a significant relationship between having received a NIS and performing one of the controlled acts. Those who received at least one NIS were more likely to report performing a controlled act than those who had not received a NIS (p<.000) (Table 49).

Table 49 Relationship between NIS and Controlled Acts

NIS		Controlled Acts	
		None	One or more Controlled Acts
No NIS	N	3707	5942
	%	38.4%	61.6%
NIS at least once	N	574	1117
	%	33.9%	66.1%
Total	N	4281	7059

There is a positive correlation between having more than one NIS and the total number of worksites over one's career. Those who had received more than one NIS had higher numbers of worksites in their history (correlation 0.066, $p<.006$).

4.5.1 Summary: Notice of Intent to Suspend data analysis

While 1691 registrants have received at least one NIS, only 328 individuals have received two or more.

For the years when the registration category was recorded, one-quarter of those who received a NIS were in the Inactive registration category. Almost one-quarter of those who received one NIS resigned the same year. Of all those who have received at least one NIS, 44% are no longer registered. This highly suggests that many of these NIS were the triggered by lack of notice to CPO of planned resignations.

The age range of those receiving a NIS spans the age range of registrants (from 23 years to 87 years).

There is no significant difference in the percentage of women or men who have received a NIS.

Interestingly, those who have received a NIS are more likely to report performing at least one controlled act.

Graduates of Canadian programs are significantly more likely to receive a NIS than IEPTs.

Individuals who have received a NIS are more likely to also have been non-compliant with jurisprudence and have also worked at a higher number of worksites over their career.

Those who have received more than one NIS have worked at a higher number of worksites than those who have received one or none.

4.6 Non-compliance with jurisprudence

Since 2005 all registrants holding an independent practice certificate of registration have been required to complete an online Jurisprudence Education Program every five years. New registrants must also complete the current program shortly after being granted an independent practice certificate of registration. The purpose of this module, which is an online multiple-choice type assessment, is to assess the physiotherapist's understanding of legislation and College standards. The program is designed to ensure that physiotherapists keep up to date in their knowledge of legislative or standards changes throughout their career.

There have been a total 1065 physiotherapists being non-compliant with the jurisprudence requirements since 2005, representing under 10% of all registrants. As some of them were non-compliant once this has resulted in a total of 1135 (Table 50). Almost 94% of those who have been non-compliant have only been non-compliant once. Under 6% were non-compliant twice and just a few individuals more than this.

Table 50 Non-compliant with Jurisprudence

Number of Incidents	N	%
Once	1065	93.8
Twice	62	5.5
Three times	6	0.5
Four times	2	0.2
Total	1135	100

All registrants holding an independent practice certificate of registration were required to complete the module in 2011, and almost half of the cases of non-compliance with jurisprudence occurred in 2012 (Table 51). This would have been the follow-up period for those who did not complete the module in the stipulated timeframe.

Table 51 Year of Non-compliance with Jurisprudence

Year of Jurisprudence	N	%
2005	193	15.9
2007	22	1.8
2008	95	7.8
2009	38	3.1
2010	86	7.1
2012	564	46.4
2014	183	15.0
2015	35	2.9
Total	1216	100

Men were significantly more likely to have at least one incidence of non-compliance with jurisprudence than were women (p<.034) (Table 52). There was no difference in the proportion of IEPT and graduates of Canadian programs practising in Ontario in terms of non-compliance with jurisprudence (p=0.53) (Table 53).

Table 52 Gender of Registrants and Compliance with Jurisprudence

Gender		Compliance with Jurisprudence		Total
		Non-compliant with Jurisprudence at least once	Always Compliant with Jurisprudence	
Female	N	838	7818	8656
	%	9.7%	90.3%	100%
Male	N	297	2387	2684
	%	11.1%	88.9%	100%
Total	N	1135	10205	11340

Table 53 Country of Education of Registrants with Jurisprudence Incidents

Country of Education		Jurisprudence Compliance		Total
		At least one Jurisprudence Incident	Always Compliant with Jurisprudence	
Canada	N	868	7722	8,590
	%	10.1%	89.9%	100%
IEPT	N	266	2478	2744
	%	9.7%	90.3%	100%
Total	N	1134	10200	11334

The age of registrants at the time they were non-compliant with jurisprudence ranged from 23 years to 78 years (Table 54). There appears to be a trend such that the mean age for physiotherapists who have repeat incidences of non-compliance increases with each incidence, such that the mean age for those who had three or four incidences was 50 years old.

Table 54 Age at the Time of Non-Compliance with Jurisprudence

	N	Minimum	Maximum	Mean	Std. Deviation
Age at Jurisprudence 1	1135	23	78	38.2	11.1
Age at Jurisprudence 2	71	28	74	43.8	11.4
Age at Jurisprudence 3	8	37	72	49.9	12.4
Age at Jurisprudence 4	2	40	61	50.5	14.9

While the majority of registrants, over 88%, are compliant with jurisprudence requirements and also register on time, so never receive a NIS, there is a group of registrants who have one or more of both of these occurrences. Of those who had at least one jurisprudence issue, 20% also had at least one NIS, as compared to only 11.7% of those who were always compliant with jurisprudence (Table 55), which was a significant relationship ($p<.000$).

Table 55 Relationship between NIS and Jurisprudence Issues

Jurisprudence		NIS		
		No NIS	NIS at least once	
Always compliant with Jurisprudence	N	8800	1169	
	%	88.3%	11.7%	
Non-compliant at least once with Jurisprudence	N	849	213	
	%	79.9%	20.1%	
Total	N	9649	1382	11031
	%	87.5%	12.5%	100%

There was no relationship between the number of times a physiotherapist was non-compliant with jurisprudence and the number of worksites a physiotherapist had worked at over their career ($p=.754$).

Those who reported performing one or more controlled acts were also more likely to be non-compliant with jurisprudence requirements at least once ($p<.000$) (Table 56).

Table 56 Jurisprudence and Controlled Acts

Jurisprudence		Controlled Acts		
		None	One or more	Total
Always compliant with Jurisprudence	N	3952	6253	10205
	%	92.3%	88.6%	90.0%
Non-compliant at least once with Jurisprudence	N	329	806	1135
	%	7.7%	11.4%	10.0%
Totals	N	4281	7059	11340

4.6.1 Summary: Jurisprudence data analysis

There has been a total of 1,135 incidences of non-compliance with the mandatory jurisprudence requirements.

Just fewer than 10% of all registrants have ever been non-compliant with the jurisprudence requirements, with almost 94% of those only being non-compliant once.

Registrants of all ages have been non-compliant, from 23 years to 78 years.
Men are significantly more likely to have at least one incidence of non-compliance with jurisprudence.

There is no difference between Canadian graduates practising in Ontario and International graduates in terms of non-compliance.

Those who reported performing one or more controlled acts were also more likely to be non-compliant with jurisprudence requirements at least once.

Of note is that those individuals who had at least one incident of non-compliance with jurisprudence were significantly more likely to also have received at least one Notice of Intent to Suspend.

There was no relationship between the number of times a physiotherapist was non-compliant with jurisprudence and the number of worksites physiotherapists had worked at over their careers.

4.7 Complaints, Reports and ICRC dispositions

Complaints may be made to CPO by members of the public, other health practitioners, or other organizations, regarding various aspects of professional practice that might be a concern. These might include care concerns, billing concerns, inappropriate remarks of a sexual nature, or communication issues, among others. These are reviewed by the Inquiries, Complaints and Reports Committee (ICRC). Referrals to the ICRC may also be made by the Registrar of

CPO, who may have been made aware of information that suggests a breach of professional practice standards. In all cases an investigation is carried out. The cases were reviewed by the ICRC between 2009 and 2014. These included complaints from the public as well as referrals to ICRC from the Registrar.

In total, there were 359 investigations included in the analysis. There were 300 registrants having a minimum of one investigation (Table 57). Thirty-eight individuals had more than one investigation, accounting for an additional 97 investigations (Table 58).

Table 57 Total Investigations per Person

Number of Investigations	N	%
1 investigation	262	87.3
2 investigations	27	9.0
3 investigations	6	2.0
4 investigations	2	0.7
5 investigations	2	0.7
6 investigations	0	0
7 investigations	1	0.3
Total	300	100

Table 58 Registrants with Multiple Investigations

	N Individuals	SubTotal Investigations
2 investigations	27	54
3 investigations	6	18
4 investigations	2	8
5 investigations	2	10
6 investigations	0	0
7 investigations	1	7
Total	38	97

A comparison was made between those who had a decision of No Further Action and those who had some type of further action. In cases where individuals had multiple complaints/reports they may have had one or more cases with No Further Action and one or more cases with some type of further action; these individuals were categorized as further action.

In comparing these two groups there were no differences found in their age categories at the time of a complaint, their gender, whether they had two or more complaints, the total number of complaints, the proportion who utilized authorized acts (any acts, the number of acts or three or more acts), the proportion who were IEPTs, the proportion from the top five source countries, the proportion who came from countries where physiotherapists practice autonomously and/or in primary care, as is practice in Canadian health context or their scores or pass/fail status on the Clinical Component of the PCE.

There was a significant correlation between the Written Component scores and the decision of the investigation (correlation 0.209, p=0.01), indicating that those who had decisions of further action were more likely to score higher on the written exam and they were also more likely to pass the written exam on the first attempt (p=.01) (Table 59). Based on these results the two groups were combined and examined together.

Table 59 Relationship Between Written Exam Results and Investigation Decision

Written Exam Result		Further Action or No Further Action	
		Further Action	No Further Action
Fail	N	7	22
	%	8.2%	22.0%
Pass	N	78	78
	%	91.8%	78.0%
Total	N	85	100
	%	100%	100%

In five cases personal wellness issues were identified. For this study personal wellness refers to personal physical or mental health related issues that could impact competence or performance. These cases were identified through mention of issues in the decision letter. These may be a low estimate of personal wellness issues, as this was not tracked prospectively.

Overall, men were significantly more likely to be the subject of an investigation than women (p<.000) (Table 60)Table 60. However, when looking at those who had multiple complaints there was no significant difference between men and women, though the trend was still that men were more likely to have multiple complaints than were women (Table 61).

Table 60 Relationship of Gender with a Complaint/Report

Gender		Any Complaints		Total
		No	Yes	
Female	N	8,495	161	8,656
	%	98.1%	1.9%	100%
Male	N	2,545	139	2,684
	%	94.8%	5.2%	100%
Total	N	11,040	300	11,340
	%	97.4%	2.6%	100%

Table 61 Relationship of Gender with Multiple Complaints

Gender		Complaints	
		One	More than One
Female	N	145	16
	%	55.3%	42.1%
Male	N	117	22
	%	44.7%	57.9%
Total	N	262	38
	%	87.3%	12.7%

Over one-third of the investigations involved IEPTs (Table 62) and IEPTs were about twice as likely to be the subject of an investigation than graduates of Canadian programs (p<.000) (Table 63).

There was a correlation between the total number of investigations per physiotherapist and the total number of worksites a physiotherapist had worked in over their career, with those working at more sites more likely to be the subject of an investigation (correlation 0.088, p<.01).

Table 62 Country of PT Education for those Involved in an Investigation

Location of Education	N	%
Canada	191	63.7
IEPT	109	36.3
Total	300	100

Table 63 Relationship of Country of PT Education with Investigations

Country of PT Education		Any Investigations		Total
		No	Yes	
Canada	N	8399	191	8590
	%	97.8%	2.2%	100%
IEPT	N	2365	109	2744
	%	96.0%	4.0%	100%
Total	N	11034	300	11334
	%	97.4%	2.6%	100%

When exploring the country of PT education in more detail, the USA, Australia, and the "Other" countries (i.e. not the top five countries of IEPTs) have proportionally more incidents of investigations than suggested by their proportions in the database, while Canada, England, and the Philippines have lower proportions; investigations of those from India are representative of their percentage in the full registrant population (Table 64). These differences were significant (p<.000).

The "Other" 24 investigations involved individuals from the following countries: Bulgaria, Czech Republic, Egypt, Iran, Ireland, Israel, New Zealand, Northern

Ireland, Pakistan, Poland, Romania, South Africa, Sri Lanka, Sweden, and Switzerland.

Table 64 Top Source International Countries and Investigations

Country of Education	N Investigations	% Investigations	% of registrant database
Canada	191	63.8	75.7
India	22	7.3	7.3
USA	21	7	2.9
England	4	1.3	2.8
Philippines	2	0.7	1.6
Australia	7	2.3	1.1
Other	53	17.7	8.0
Total	300	100	

Countries have different health care systems and different education systems. A report from the Canadian Alliance of Physiotherapy Regulators (Glover Takahashi, Millette et al. 2003) explored, among other factors, the intent of physiotherapy education by country. It identified (Appendix 2, Table E of the report) those countries where the intent was that the physiotherapist would be prepared to work autonomously and/or in primary care, much as physiotherapists practice in the Canadian health context. Besides Canada, five countries were identified as having this intent: Australia, Brazil, Jamaica, Norway, and South Africa. The authors of the current report are aware that the USA and the United Kingdom also have this educational intent. A group was created consisting of these eight countries and a comparison was made between the investigations involving physiotherapists from this group and those from countries where autonomous practice and/or working in primary care, as is the practice in the Canadian health context, are not goals of education (or this goal is not known).

One-quarter of the investigations involved those educated in countries where physiotherapists do not practice autonomously and/or in primary care (Table 65), as compared to just under 20% of all registrants coming from these countries. This was a significant difference ($p=.004$); however, this data may not be a true reflection of the relationship, as not all countries were included in the 2003 report. Based on the data available, investigations are overrepresented for those physiotherapists coming from countries where physiotherapists do not practice autonomously and/or in primary care.

Table 65 Type of Practice in the Country of Education and Complaints/Reports

Type of Practice		Any Investigation No	Any Investigation Yes
Autonomously and/or in primary care as is practice in Canadian health context	N	9007	225
	%	81.6%	75.0%
Not Autonomously and/or in primary care as is practice in Canadian health context	N	2027	75
	%	18.4%	25.0%
Total		11034	300

When exploring the interaction of gender with the country of education, it is clear that male IEPTs are more likely to be the subject of an investigation than female IEPTs, while the reverse is true for the graduates of Canadian programs working in Ontario (Table 66). These differences are significant ($p<.022$).

Table 66 Country of Education, Gender and Investigations

Country of Education	Gender						
	Female			Male			
	With complaint		Full Database	With complaint		Full Database	
	N	%	% in full database	N	%	% in full database	Total
Canada	112	58.6	79.6	79	41.4	63.5	191
IEPT	49	45.0	20.4	60	55.0	36.5	109
Totals	161	100	100	139	100	100	300

The age of the registrants at the time of the first investigation went from a low of 23 to a high of 75 (Figure 13), with a mean of 42.1 and standard deviation of 10.4. These statistics are similar to that of the entire population of registrants. The highest volume of investigations occurred during the 30s and 40s (Table 67).

Figure 13 Age at Time of First Investigation

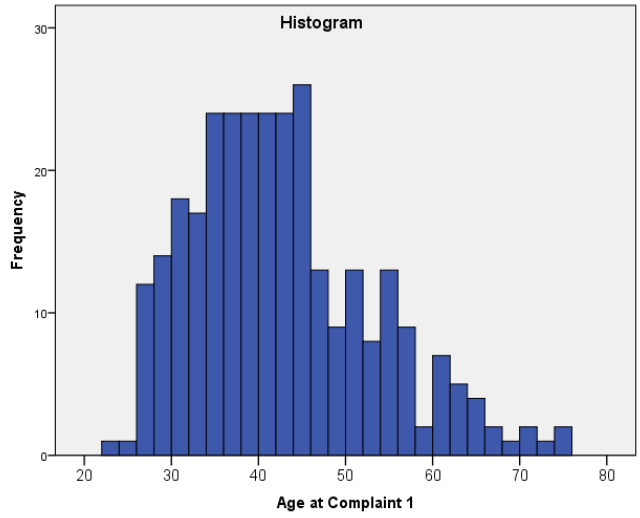


Table 67 Age at Time of Investigation

Age at time of complaint	Responses	
	N	%
20-29	29	8.1
30-39	135	37.6
40-49	110	30.6
50-59	57	15.9
60+	28	7.8
Total Number of Investigations	359	100

These 300 individuals accounted for 359 cases of complaints or reports. Two cases were not yet completed so a decision had not been made, leaving 357 cases for investigation of the outcome. Multiple outcomes were possible for each case. The most common outcome of cases reviewed by the ICRC by far was No Further Action, at over 48% of the decisions (Table 68).

The next most common decision at 30% of the cases, was advice and recommendations (formerly known as a written caution). Only 3% of the decisions were referrals to discipline. While there were some cases that involved Acknowledgement and Undertaking (A&U), Specified Continuing Education and Remediation Program (SCERP), mediation or oral cautions, the majority of other decisions combined various activities, as relevant to the specific case.

Table 68 Outcome of ICRC Decisions

Outcome of Investigation/Complaint Report	Responses	
	N	%
No further action	171	48%
Written caution / Advice and Recommendations	108	30%
Acknowledgement & Undertaking (A&U)	24	7%
Specified Continuing Education and Remediation Program (SCERP)	13	4%
Referral to discipline	12	3%
Oral caution, SCERP	11	3%
Mediation; resolution acceptable to panel	7	2%
A&U; written caution	4	1%
Oral caution	3	1%
SCERP; written caution	3	1%
A&U; resign from profession	1	0%
Total	357	100
Not yet completed so no decision available	2	

Those who have been involved in an investigation also have worked at a higher number of worksites over their career (correlation 0.088, $p<.01$).

While a small number of individuals have been involved in an investigation, the percentage of those who have been involved in an investigation and who report

performing at least one controlled act is 74.3%, as compared to only 62.1% of those with no investigations who report performance of a controlled act, which is a significant difference (p=.000) (Table 69). There is no significant correlation for those reporting performing more than one controlled act with an increase in investigations over those who perform only one controlled act.

Table 69 Relationship between Investigations and Controlled Acts

Investigations		Controlled Acts	
		None	One or more Controlled Acts
No	N	4204	6836
	%	38.1%	61.9
Yes	N	77	223
	%	25.7%	74.3%
Total	N	4281	7059
	%	37.8%	62.2%

Finally, in considering the relationship between investigations and exam scores, there is a significant negative correlation between being involved in an investigation and the number of investigations with both written and clinical scores as well as pass/fail status for the Physiotherapy Competency Exam (Table 70). The negative correlations indicate that those who have been the subject of an investigation (positive number) are more likely to have lower first-time exam scores and to fail the exams on the first attempt.

Table 70 Relationship between Investigations and Exam Scores

Exam		Any Investigations	Number of Investigation
Written #1 Score	Pearson Correlation	-.058**	-.047**
	Sig. (2-tailed)	.000	.000
	N	6142	6142
Written #1 Pass/Fail	Pearson Correlation	-.032*	-.026*
	Sig. (2-tailed)	.011	.034
	N	6499	6449
Clinical #1 Score	Pearson Correlation	-.054**	-.039**
	Sig. (2-tailed)	.000	.003
	N	5883	5883
Clinical #1 Pass/Fail	Pearson Correlation	-.048**	-.032*
	Sig. (2-tailed)	.000	.010
	N	6304	6304
** Correlation is significant at the 0.01 level (2-tailed).			
* Correlation is significant at the 0.05 level (2-tailed).			

4.7.1 Summary: Investigation data analysis

There were a total of 359 cases reviewed by the ICRC between 2009 and 2014.

It is noteworthy that the time period for this data set is much shorter than for the other data sets.

These 359 cases represent 300 registrants, as 38 individuals had between two and seven investigations involving them. Four of the individuals had previous disciplinary referrals, prior to the currently listed complaint. Personal wellness was noted in five cases; however, this was not tracked systematically so it is likely an underrepresentation of personal wellness issues.

Those who had decisions of further action were more likely to score higher on the written exam and to pass the written exam on the first attempt that were those who had decisions of no further action.

Overall, men were significantly more likely to be the subject of an investigation than women, as were IEPTs.

While male IEPTs were more likely to be the subject of an investigation than female IEPTs, interestingly female Canadian graduates working in Ontario were more likely to have been the subject of an investigation than male Canadian graduates working in Ontario.

The age of registrants at the time of their first investigation ranged from 23 to 75 years of age, with a standard deviation of 10.7. The highest volume of investigations occurred during the period from 30 to 49 years of age.

Individuals who are the subject of investigations are overrepresented by the USA, Australia, and “Other” countries (i.e. not the top five source countries of IEPTs), while Canada, England, and the Philippines had significantly lower proportions, i.e. were underrepresented.

One-quarter of the investigations involved individuals who were educated in countries without practice that allows the physiotherapists to work autonomously and/or in primary care, as is the practice in the Canadian health context, as compared to just under 20% of all registrants coming from these countries. This was a significant difference. It is worth noting that differences in practice regarding level of PT work done autonomously and/or in primary care may be an area to explore.

The most common outcome of an investigation was ‘No Further Action’. When this was not the outcome the most likely outcomes of the investigations process for the files examined were Advice and Recommendations (formerly known as a written caution), an Acknowledgement and Undertaking, or a Specified Continuing Education and Remediation Program.

Those who have been involved in an investigation have worked at a higher number of worksites over their career and are also more likely to report performing one or more controlled acts than those who have not been involved in an investigation. Individuals who have been involved in an investigation are significantly more likely to have lower first-time PCE exam scores on both exams and to have a history of a past failure of one of the exams on the first attempt.

5 Analyzing risks to competence

The literature includes a great deal of information that defines or describes the elements or features of the competence of health professionals (Epstein and Hundert 2002, Frank, Mungroo et al. 2010, Frank, Snell et al. 2010). There is also a large amount of work that defines or describes efforts to develop, maintain, or support the competence of health professionals (Leape and Fromson 2006, Williams 2006, Wenghofer, Klass et al. 2009).

More recently, the literature has included reports of additional research into the factors associated with professionals who are underperforming or would appear to be less than fully competent (dyscompetent[4], incompetent) (Tamblyn, Abrahamowicz et al. 1998, Papadakis, Hodgson et al. 2004, Zbieranowski, Glover Takahashi et al. 2013). As part of this project, the authors provided to CPO a report on a scoping review of risks and supports to competence.

They used the model of "epidemiology" of competence to explore this body of literature (Glover Takahashi, Herold et al. 2014).

Of specific interest to the current report and analysis of data are the risks to competence. How do the risks to competence identified in the analysis show similarities to or differences from those described in the literature? The risks to competence identified in the scoping review included:

1. Adequacy of practice or education
2. Age
3. Area of specialty
4. Gender
5. International graduate
6. Lack of experience or competence
7. No certification
8. Practice features (i.e. location of practice, professional isolation, size of practice)
9. Previous disciplinary action
10. Resources (i.e. people, money, time)
11. Transitions (i.e. change in status, change in focus of practice, new graduate, other transitions)
12. Personal wellness
13. Other (e.g. race/ethnicity, language, time since graduation).

Each risk will be discussed in turn.

[4] Dyscompetent means *less than fully competent* and may reflect a temporary situation (e.g. dyscompetence due to severe fatigue or anxiety) or a new status due to decline of knowledge, skills or abilities. This term is more accurate than "incompetent".

Adequacy of practice or education

The part of the analysis that relates to adequacy of practice or education is the consideration of the intent of the education in the country of attending entry level physiotherapy education. In some countries, working autonomously and/or in primary care, as is practiced in the Canadian health context, is not a goal of education. It was observed that investigations are overrepresented among this group (Table 65). As noted above (page 51), this was not significant; however, the data on whether the physiotherapists work autonomously and/or in primary care was not available for all countries, so this analysis may not reflect the current situation accurately. This information overlaps with findings related to IEPTs, which will be discussed below. It is of note that research has demonstrated that the impact of the quality of education has far-reaching impacts on care throughout a practitioner's career (Asch, Nicholson et al. 2009).

Age

Age was a risk factor in a number of areas: investigations, Practice Assessment, and PCE results.

For investigations, the highest volume of investigations occurred during the 30s and 40s (Table 67).

And personal wellness issues, while a small number (N=5), were all related to registrants in their 40s or 50s.

Those in higher age groups were significantly less likely to obtain the rating of "no concerns" on their Practice Assessment and significantly more likely to obtain a rating of needs minor or major improvement (Table 36). Despite these differences there was no significant difference in the percentage of different ages requiring further action following the Practice Assessment (Table 37).

Age correlated significantly with both the written and clinical component scores and pass/ fail status, with older candidates having lower scores and lower pass rates (Table 20). With respect to the PCE results, the age is highly correlated with being an IEPT, as they tend to be older. Without further analysis that controls for country, it is not possible to be clear as to which is most relevant.

There is significant evidence in the literature that age is a risk factor to competence and performance (McAuley, Paul et al. 1990, O'Neill, Lanska et al. 2000, Grace, Korinek et al. 2011) as well as complaint rates, legal claim rates, disciplinary actions, governance concerns, and referrals to regulators for concerns (Taragin, Wilczek et al. 1992, Wickersham and Morrison 1998, Ross, Fox et al. 2004, Harms, Heise et al. 2005, Khaliq, Dimassi et al. 2005, Bismark, Spittal et al. 2011, Wenghofer, Campbell et al. 2015). Some studies reported that physicians over 55 were more likely to have clinical and governance/safety concerns and also had more referrals for concerns related to competence and performance (Donaldson, Panesar et al. 2014).

Personal wellness issues also tend to increase with age and can have an impact on performance/competence. These are the same as for anyone in that particular age group (Kataria, Brown et al. 2014) and may be physical changes (Wallace, Ashman et al. 1994, Perry and Crean 2005, Bieliauskas, Langenecker et al. 2008, Boom-Saad, Langenecker et al. 2008, Blasier 2009, Drag, Bieliauskas et al. 2010, Katlic and Coleman 2014), or neurocognitive performance (Drag, Bieliauskas et al. 2010, Baxter, Boet et al. 2014), including being slower to learn (Peisah, Gautam et al. 2009), which leads to challenges incorporating new modalities of diagNISis or treatment, a decline in the capacity to think adaptively and apply critical reason (Peisah and Wilhelm 2002), a decline in processing speed and decline in episodic memory (the laying down of personally experienced events or episodes) (Peisah and Wilhelm 2002) or challenges with memory (Lee, Drag et al. 2009, Peisah, Gautam et al. 2009, Goldberg, Thomas et al. 2011).

A few articles (McAuley and Henderson 1984, Krizek 2002, Blasier 2009) pointed out that there is not a direct relationship between age and performance, as some practitioners perform well even into their 80s; however, there is a trend towards decreasing performance, often associated with cognitive changes that are common with aging.

Area of specialty

In the literature, area of specialty refers to medical specialty areas (e.g. surgery, family practice). While physiotherapists do work in different clinical areas, they are not as distinct as in medicine and in some categories the numbers are quite small. The current data was not explored at the level that would allow for any statements related to different clinical areas.

Candidates who pass the written and clinical components the first time are significantly more likely to become report performing a controlled act than those who fail the exam the first time. This is consistent with the literature that demonstrates that higher licensure exam scores result in improved care further on in one's career (Tamblyn, Abrahamowicz et al. 2007).

Gender

Gender was a factor in a number of areas. Men were significantly more likely to be involved in an investigation than women (Table 60). T There are multiple studies that demonstrate that men have higher referral rates to regulators than women (Clay and Conatser 2003, Ross, Fox et al. 2004, Alam, Kurdyak et al. 2012, Bismark, Spittal et al. 2013, Donaldson, Panesar et al. 2014).

There is no significant difference between men and women in terms of ratings or needing further action following the assessment (Table 30), though there is a trend observed that men are less likely to achieve the top rating on their Practice Assessment and are slightly more likely to require further action.

There are clear differences between men and women on the PCE. The mean scores for the men are significantly lower than the mean scores for the women on both written and clinical components (Table 11). Men are also significantly more likely to

take the exams more times than women (Table 12). There is ample evidence in the literature that men tend to score lower on examinations than women (Weinberg and Rooney 1973, Stillman, Regan et al. 1990, Case, Becker et al. 1993, Shen 1994) so this finding is not surprising.

International graduate

Being an international graduate was a factor in many areas. IEPTs were significantly less likely to receive a notice of intent to suspend (NIS) than Canadian graduates registered in Ontario (Table 46); however, there was no significant difference between IEPTs and Canadian graduates registered in Ontario with respect to non-compliance with jurisprudence requirements (Table 53).

Over one-third of the investigations where action was taken involved IEPTs (Table 62), and IEPTs were significantly more likely to be the subject of an investigation than graduates of Canadian programs (Table 63). Other studies have also found that international graduates (i.e. those who were educated in a different country than the one where they are working) have a higher incidence of disciplinary actions (Khaliq, Dimassi et al. 2005, Elkin, Spittal et al. 2012)

Further, countries where the goals of physiotherapy education do not include preparing the graduates to work autonomously and/or in primary care, as is the practice in the Canadian health context, are proportionately more likely to become involved in an investigation where action was taken, though this was not a significant difference (Table 65). As noted above, this data may not be a true reflection of educational goals, as the information was only available for a small number of countries.

IEPTs' ratings on the Practice Assessment were significantly more indicative of concerns than those for the Canadian graduates working in Ontario (Table 32) and they were also significantly more likely to require further action (Table 33). While there was no significant difference in the ratings of registrants in the top five countries of education (Table 34), those from the Philippines, the USA, and the Other countries had significantly higher incidences of needing further action (Table 35).

With respect to the PCE, the mean score for IEPTs was significantly lower than that for the graduates of Canadian programs on both exams (Table 13 and Figure 9). The mean number of times the exams were taken was significantly higher for the IEPTs than for the graduates of Canadian programs (Table 16). Other studies have also demonstrated that internationally educated practitioners have lower scores on examinations (Watmough and Bowhay 2011, Glover Takahashi, Rothman et al. 2012, Nayer and Rothman 2013).

Lack of experience or competence

In the literature, lack of experience or competence related to differences in performance was associated with insufficient volume of patients in a particular area to attain or maintain competence. A proxy for this might be considering issues within the first five years of practice. This type of analysis was not conducted on the

current data sets, and the other types of information are not available for the current sample.

It is of note, though, that the impact of initial education can carry on throughout one's career (Asch 2009) and that lower scores on licensure examinations also predict future concerns related to quality of care (Wenghofer, Klass et al. 2009). This is perhaps consistent with the finding in this study that those physiotherapists who were educated in countries where practicing autonomously/in primary care, as is the practice in Canada, was not a goal of education have a higher incidence of complaints.

No certification

The literature on certification, or lack of certification, generally relates to the presence/absence of specific specialty qualifications (e.g. completion of certification examinations as compared to being a generalist without specific certification). This particular concept might be generalised, in physiotherapy, to being a Clinical Specialist, as certified through the Canadian Physiotherapy Association, or having specific credentials through the manual therapy education and assessment process, or report performing controlled acts. The numbers would be very small, which would make this type of analysis difficult. The information on certification was not available in the current data set; however, using controlled acts as a proxy for specialization was possible. It is of note that those who perform controlled acts were more likely to be the subject of an investigation. As controlled acts could be considered higher risk activities, this finding is not surprising.

This is consistent with the literature that certain specialties are higher risk and more prone to complaints or malpractice issues (McAuley, Paul et al. 1990, Khaliq, Dimassi et al. 2005, Bismark, Spittal et al. 2013).

Practice features

Practice features relate to working in professional isolation, the size of the practice, or the location of the practice (e.g. urban vs. rural). There is limited information in the current data sets that would translate to this type of coding. The literature indicates that practice features can have an impact on competence/performance. For example, those who work in solo practice were more likely to have performance issues than those who worked in groups (Norcini, Fletcher et al. 1985, McAuley, Paul et al. 1990, Chauvel, Le Vaillant et al. 2013, Grace, Wenghofer et al. 2014) or to be less involved with activities to maintain competence (Xierali, Rinaldo et al. 2011). Those who work more directly with patients, rather than in more administrative roles, are more at risk of complaints (Phipps, Noyce et al. 2010).

Previous disciplinary action

The number of cases where action was taken analyzed was relatively small: 143 cases. There were four individuals identified who had previous disciplinary actions (i.e. a previous investigation or discipline matter by CPO). This number is too small to allow any interpretation of this data. It is of note that physicians who are named in multiple complaints have an increased risk of being named in yet another complaint (Bismark, Spittal et al. 2013). Additionally, those who have been

involved in regulatory actions (e.g. suspension, revocation, limitation, stipulation) are more likely to be deemed unsafe to practice than those without a previous action (Grace, Wenghofer et al. 2014). It is also of note that professionalism issues at one point in a career (in this case medical school) have a tendency to repeat themselves in terms of future regulatory actions (Papadakis, Hodgson et al. 2004).

Resources

In the literature, the term resources means to having sufficient staffing, equipment, money, and time to provide the most appropriate treatments. This type of information is not available in the current data sets. Some studies have demonstrated that a lack resources can impact care. The cost of equipment (Cook, Duffett et al. 2014) is one factor. Time to provide adequate care may be a challenge (Clarridge, Betancourt et al. 2005), and lack of time may be a barrier to appropriate training (Sorrentino, Monroe et al. 2003), the implementation of quality improvement efforts (Bush-Knapp, Brinsley-Rainisch et al. 2007), the implementation of knowledge gained through continuing competence programs (Ertem, Pekcici et al. 2009), or may result in errors (Dean, Schachter et al. 2002, Rosser, Dovey et al. 2005).

Transitions

Transitions relates to dyscompetence or poor performance associated with change(s) in work or professional status, change in focus of practice, and/or the usual changes experienced by new graduates. These might include being at risk earlier in practice (Hesketh, Allan et al. 2003, Benstead 2006, Brown, Chapman et al. 2007, Cave, Woolf et al. 2009, Westerman, Teunissen et al. 2010), or experiencing challenges when changing jobs or when roles are modified due to changes in the healthcare system.

The current data did not allow this type of analysis. In particular, transitions are not noted in the data sets, other than the number of worksites over a career. What was noted was that physiotherapists who reported a higher number of worksites over their career were the subject of a higher percentage of investigations, had taken the PCE more times before passing, and had worse ratings on the QA Practice Assessment (i.e. more ratings or needs major improvement or unacceptable). The relationship between the worksite transitions and the other factors is not possible to discern from the available data.

Personal wellness

Personal wellness issues relate to dyscompetence or differences in performance associated with physical or mental health-related issues. These could be the effects of fatigue, stress, burnout, substance abuse, physical health issues, and/or other mental health issues (Turnbull, Carbotte et al. 2000, Harms, Heise et al. 2005). This type of data was not reported in these data sets.

Other

There were some other topics that came up occasionally in the risks to competence literature, including race/ethnicity, language, or time since graduation. Time since

graduation is closely linked with age, which has been discussed above. The other categories were not part of the current data sets.

5.1 Interconnectedness of risk factors

The relationships between the various risk factors examined in this study were considered and some of these relationships were noted to be significant (Table 71). Seventeen of the correlations were significant at the 0.01 level and nine were significant at the 0.05 level.

Of particular note is that being an IEPT is correlated to all areas except the completion of jurisprudence modules. Both being male and having an increased number of worksites over one's career are correlated to all areas except completion of jurisprudence modules and receiving an Notice of Intent to Suspend (NIS). The number of written and clinical components taken before passing are also correlated with most of the other variables, and those who have been the subject of an investigation were also more likely to have taken the written component more times, to have been non-compliant with jurisprudence, and also to have received at least one Notice of Intent to Suspend.

It is important to keep in mind that correlation is not the same as causation; while the relationships exist, the reason for the relationship is not necessarily clear from the current data analysis.

Table 71 Correlations of Risk Factors

Variables		Number Written compo-nents Taken	Number Clinical Compo-nents Taken	Jurispru-dence Total	NIS Total	Investi-gation Total	QA Over-all Rating	IEPT	Gender	# Work Sites
Number of Written compo-nents Taken	Pearson Corre-lation	1	.299**	.001	-.044**	.023	.053*	.370**	.072**	.153**
	Sig. (2-tailed)		.000	.948	.000	.061	.025	.000	.000	.000
	N	6903	6903	6903	6903	6903	1763	6898	6903	6860
Number of Clinical Compo-nents Taken	Pearson Corre-lation		1	.011	-.036**	.029*	.055*	.384**	.130**	.128**
	Sig. (2-tailed)			.383	.003	.017	.022	.000	.000	.000
	N		6907	6907	6907	6907	1764	6902	6907	6864
Juris-pru-dence Total	Pearson Corre-lation			1	.146**	.079**	.077**	-.002	.024*	.039**
	Sig. (2-tailed)				.000	.000	.000	.798	.011	.000
	N			11340	11340	11340	3324	11334	11340	11123
NIS Total	Pearson Corre-lation				1	.074**	.108**	-.043**	-.014	-.001
	Sig. (2-tailed)					.000	.000	.000	.127	.957
	N				11340	11340	3324	11334	11340	11123
Investiga-tions Total	Pearson Corre-lation					1	.025	.041**	.085**	.065**
	Sig. (2-tailed)						.155	.000	.000	.000
	N					11340	3324	11334	11340	11123
QA Overall Rating	Pearson Corre-lation						1	.054**	.041*	.039*
	Sig. (2-tailed)							.002	.017	.026
	N						3324	3324	3324	3324
IEPT	Pearson Corre-lation							1	.159**	.141**
	Sig. (2-tailed)								.000	.000
	N							11334	11334	11118

Variables		Number Written compo-nents Taken	Number Clinical Compo-nents Taken	Jurispru-dence Total	NIS Total	Investi-gation Total	QA Over-all Rating	IEPT	Gender	# Work Sites
Gender	Pearson Corre-lation								1	.054**
	Sig. (2-tailed)									.000
	N								11340	11123
Total Work Sites	Pearson Corre-lation								.054**	1
	Sig. (2-tailed)									
	N									11123
**** Correlation is significant at the 0.01 level (2-tailed).**										
*** Correlation is significant at the 0.05 level (2-tailed).**										

5.2 Summary: Analyzing risks to competence

Risks to competence were considered with respect to what the literature indicates may be factors that are related to dyscompetence. This was considered with respect to risks to competence identified in a paper by the authors on the epidemiology of competence. Some of the identified risks to competence could not be explored in this study as the data sets did not provide the appropriate information or suitable numbers in various categories to allow analysis.

The risks to competence identified in the literature are generally also demonstrated in the data that was analyzed related to physiotherapists registered with CPO.

Adequacy of practice or education

The adequacy of practice or education may be a factor in that some countries do not have as a goal of education that the graduates will be autonomous or work in primary care, as is the practice in the Canadian health context. This could have an impact on the IEPTs and on identifying those who might be at greater risk, based on their particular context of education.

Age

With respect to age, this was a prominent factor in CPO complaints/reports, Practice Assessment, and PCE results. Complaints/reports peaked in the 30s and 40s. Those in older age groups were more likely to obtain a rating of needs minor or major improvements in their Practice Assessment, though there was no difference among the ages in requiring further action following the Practice Assessment. These findings are consistent with the literature on age and competence/performance assessments as well as complaints/reports to regulators.

Age at the time of taking the PCE correlated significantly with both PCE Written and Clinical Component exam scores and pass/fail status, with candidates who are older at the time of taking the exam having lower scores and lower pass rates. In this context age is confounded with being an IEPT, who are generally older. As such, it is not clear that age is a factor on its own in exam results.

Area of specialty

Certification is a newer area for physiotherapists, with the Canadian Physiotherapy Clinical Specialist Program and other organizational specialty programs, as well as the provincial controlled acts. This study demonstrates that performance of controlled acts is a risk factor related to complaints.

Gender

In looking at gender, men were significantly more likely to be the subject of an investigation.

While there was no significant difference between men and women in terms of ratings or needing further action following the Practice Assessment, there was a trend that men were less likely to achieve the top rating and were slightly more likely to require further action.

The results here are consistent with the literature on differences between men and women on various types of assessments and also on frequency of complaints/reports to regulators.

Finally, there were clear differences between men and women on the PCE, with men achieving lower mean scores on both exams and taking the exams more times than women. This is consistent with the literature on gender and performance on examinations.

International graduate

When considering international graduates, this was a factor in many areas. IEPTs were significantly more likely to be the subject of an investigation. Within this group there were differences among the countries of origin, with some countries having higher incidence of complaints than others. Countries where the goals of education do not include preparation for practicing autonomously and/or in primary care, as is practiced in the Canadian health context, are more likely to be the subject of an investigation.

In looking at the Practice Assessment, IEPT ratings were significantly more indicative of concerns than those of the graduates registered in Ontario who graduated from Canadian programs, and they were also significantly more likely to require further action.

With respect to the PCE, the mean score for IEPTs was significantly lower than that for the graduates of Canadian programs on both exams, and the mean number of times the exams were taken was significantly higher. Again, these findings are consistent with the literature on internationally educated practitioners. It should be remembered that an internationally educated practitioner is one who was educated in a different country from the one where they work; literature from the UK, USA, and Australia, as well as other countries, finds differences in professionals educated outside of the country where the study is occurring.

Lack of experience or competence

Lack of experience or competence was not explored in this study. This frequently refers to new graduates or taking on new roles. It has also been noted that the impact of initial education can carry on throughout a career, so the lack of content or experiences in training in entry-level programs may be a factor in future competence. In particular, this may relate to the IEPTs who were educated in countries where practicing autonomously/in primary care, as is the practice in Canada, was not a goal of education.

No certification

The literature identifies a lack of experience or competence as a potential risk factor and also indicates that the impact of the initial education can carry on throughout one's career. This primarily impacts on IEPTs, as noted above.

Practice features

The impact of practice features was not explored here. This frequently refers to working in professional isolation as being a risk factor. The current data set did not allow for exploration of this feature.

Previous disciplinary action

There were some individuals who were the subject of multiple investigations. The literature would concur that those who have one complaint are at a higher risk of having future complaints.

Resources

Resources relate to having sufficient staffing, equipment, money, and time, in order to provide the most appropriate treatments. This type of information was not available here.

Transitions

While the data did not allow an in-depth look at transitions, it was noted that those who work at a higher number of worksites over their career are more at risk for complaints and more concerning ratings on the Practice Assessment. As these individuals also tended to take the PCE more times before passing, it is not clear, without further analysis, whether it is the transitions that put them at risk or whether the lower initial knowledge is the primary factor in the future concerns.

Personal wellness

This factor found in the literature was not studied here.

Interconnectedness of risk factors

The top areas for analysis were examined for correlations. Many were significant at either the 0.05 or 0.01 levels.

The significant correlations included the following pairs of data:

- number of PCE Written Components taken was correlated significantly with the number of Clinical Components taken, total number of Notice of Intent to Suspend, Practice Assessment rating, being an IEPT, being male and the number of historical worksites.
- The number of PCE Clinical Components taken was significantly correlated with the total of NIS, total number of investigations, the Practice Assessment rating, being an IEPT, being male and the total number of historical worksites.
- The total number of jurisprudence incidents correlated significantly with the total number of Notices of Intent to Suspend, the total number of investigations, and the Practice Assessment ratings. The Notice of Intent to Suspend total was significantly correlated with the number of investigations, the Practice Assessment ratings, and being an IEPT.
- The investigations total was correlated with the Practice Assessment ratings, with being an IEPT and being male.
- Being an IEPT was correlated with both gender and number of historical worksites.

6 Discussion

A key point to note is that findings from this study are consistent with what is reported in the literature, much of which is based on physician studies.

6.1 Age is a significant factor in relation to competence

There is a strong negative correlation of age at the time of taking the PCE with the PCE exam scores, indicating that candidates who are older at the time of taking the PCE achieve lower scores, as well as lower pass rates, on the PCE. This type of pattern of older practitioners achieving lower scores on various types of tests is well demonstrated in the literature (Meskauskas and Webster 1975, Charap, Levin et al. 1985, Norcini, Fletcher et al. 1985, Lewis, Freeman et al. 1986, Hofman, Tambor et al. 1993, Schroen 2000, Epstein and Gonzales 2001, Sample, Laduca et al. 2001, Acton, Barton et al. 2002, Frost-Pineda, VanSusteren et al. 2004, Haque, Zubairi et al. 2007, Al-Maniri, Al-Rawas et al. 2008, Zakroyeva, Goldberg et al. 2008, Pentzek, Abholz et al. 2009, Grace, Korinek et al. 2011, Lipner, Song et al. 2011, Xierali, Rinaldo et al. 2011, Chauvel, Le Vaillant et al. 2013, Mujtaba, Ashraf et al. 2013, Grace, Wenghofer et al. 2014). And others have demonstrated that age and clinical performance are negatively correlated (Beam, Conant et al. 2003, Chauvel, Le Vaillant et al. 2013).

There was also a relationship between the PT Practice Assessment results and age, with physiotherapists being more likely to receive a lower rating on the assessment. Other studies have also shown that physician practice assessments have identified competence concerns with older practitioners (McAuley, Paul et al. 1990, Norman, Davis et al. 1993, Caulford, Lamb et al. 1994, Norton, Dunn et al. 1997, Norman, Wenghofer et al. 2008, Wenghofer, Klass et al. 2009, Grace, Wenghofer et al. 2014).

The current analysis indicates that a higher percentage of investigations occur when the physiotherapist is in their 30s and 40s. Other studies, primarily related to medicine, indicate that complaints, disciplinary actions, and malpractice claims increase with age, though in these cases the age is generally older than the 40s (Taragin, Wilczek et al. 1992, Norman, Davis et al. 1993, Wickersham and Morrison 1998, Ross, Fox et al. 2004, Harms, Heise et al. 2005, Khaliq, Dimassi et al. 2005, Bismark, Spittal et al. 2011, Baxter, Boet et al. 2014, Donaldson, Panesar et al. 2014, Katlic and Coleman 2014, Wenghofer, Campbell et al. 2015).

6.2 Being male is a risk to competence in a number of areas

Men have lower scores and pass rates on the PCE. Similar findings regarding exam results has been shown in the literature in both written components, where men achieved lower scores than women (Weinberg and Rooney 1973, Dawson-Saunders, Iwamoto et al. 1990 as quoted in, Stillman, Regan et al. 1990, Case, Becker et al. 1993, Shen 1994) or on clinical components (Stillman, Regan et al. 1990, Rothman, Cohen et al. 1995, McClintock and Gravlee 2010).

While some studies have shown that men provide a lower quality of clinical care (Cook, Wiesenfeld et al. 2001, Epstein and Gonzales 2001, Jonassen and Mazor 2003, Cyrus, Moghimi et al. 2014, Learman, Ellis et al. 2014), the PT data showed that the results for men and women in the Practice Assessment were similar.

Another area of difference was related to investigations, where male IEPTs had a higher rate of investigations than female IEPTs, while the reverse is true for the graduates of Canadian programs who are registered in Ontario, where the women had a higher rate of investigations than the men.

This is also supported in the literature, where many different studies have demonstrated higher rates of referrals to regulators regarding care concerns or other issues (Taragin, Wilczek et al. 1992, Wickersham and Morrison 1998, Morrison and Morrison 2001, Clay and Conatser 2003, Ross, Fox et al. 2004, Bismark, Spittal et al. 2011, Alam, Kurdyak et al. 2012, Bismark, Spittal et al. 2013, Donaldson, Panesar et al. 2014).

6.3 Lower PCE examination score is a risk to competence in the future

The PT data shows that physiotherapists who have been the subject of an investigation are more likely to have lower first-time exam scores and to fail the exams on the first attempt; this is true for both components. This is consistent with another study which demonstrated that physicians with complaints against them achieved lower communication and clinical decision making skills scores on the Medical Council of Canada clinical component (Tamblyn, Abrahamowicz et al. 2007).

For those who completed the Practice Assessment, there is a correlation between their ratings and their scores on the PCE, with those with lower scores achieving lower ratings on the Practice Assessment. This relationship between exam scores and future clinical performance has been demonstrated elsewhere (Tamblyn, Abrahamowicz et al. 1998, Tamblyn, Abrahamowicz et al. 2002).

Since IEPTs are older than graduates of Canadian programs, this raises the question of interaction of age with country of education. If the analysis is repeated while controlling for age, would the same findings be evident? This would help tease out whether it is the age or the country of education that is most relevant to the relative risk for competence.

6.4 Being the subject of an investigation is a risk for further investigations

The five years' of PT investigation analysis reflect those all cases which were brought to the ICRC. The trend noted, both here and in the literature, indicates that an individual who has one complaint is more likely than others who have never had a complaint to receive a complaint in the future.

Further analysis of this data to compare those with a single complaint versus those with a complaint that led to a further action, versus those that resulted in No Further Action, may turn up additional trends. This might be helpful in identifying the future risk of more serious concerns and make it possible to address these situations at an earlier stage.

6.5 Non-compliant in one area is linked to non-compliant in another area

There was a relationship between receiving a Notice of Intent to Suspend (NIS) and non-compliance with PT jurisprudence requirements. These two infractions are both professionalism issues. Professionalism issues, even in medical school, are predictive of complaints later in the career (Papadakis, Hodgson et al. 2004). Considering the roles under which complaints could be classified, as per the Essential Competencies for Physiotherapists in Canada (Accreditation Council for Canadian Physiotherapy Academic Programs, Canadian Alliance of Physiotherapy Regulators et al. 2009) document, may provide further insight into areas of greater concern.

The decrease in NIS in more recent years could relate to the change in registration categories, such that to remain registered requires paying full fee, so instead of changing to an "inactive" or "retired" status those individuals are resigning. It appears that for many, receiving a NIS is one indication that they are leaving the practice of physiotherapy and they do not realize that a formal notice to CPO to indicate they are resigning is required. CPO has become more aggressive in communication strategies and reaching out to registrants to ensure that PTs understand the need to formally resign.

6.6 Location of qualifying PT education is a risk to competence

The location of qualifying PT education, specifically being an international graduate, appears in multiple areas, including exam scores, Practice Assessment results, and investigations. IEPTs are more likely to work at more worksites, which in itself is likely a risk factor.

Similar findings have been demonstrated in the literature, with international medical graduates (IMGs) demonstrating lower exam scores or competence assessment scores (Norman, Davis et al. 1993, McClintock and Gravlee 2010, Shiroma and Alarcon 2010, Nayer and Rothman 2013, Donaldson, Panesar et al. 2014). IMGs have been shown to have lower pass rates on high stakes exams (Benson, Meskauskas et al. 1981, Peitzman, McKinley et al. 2000, Andrew 2010,

van Zanten and Boulet 2011, Glover Takahashi, Rothman et al. 2012, Go, Klaassen et al. 2012, Esmail and Roberts 2013, Falcone and Middleton 2013), weaker performance in residency (Blonski and Rahm 2003), and demonstrate weaker clinical skills (Montgomery and Lewis 1991, Kales, DiNardo et al. 2006).

Additionally, internationally educated physicians are more likely to have a complaint against them (Grant 1995, Ross, Fox et al. 2004, Khaliq, Dimassi et al. 2005, Alam, Kurdyak et al. 2012, Elkin, Spittal et al. 2012) and to participate in fewer continuing professional development activities (Xierali, Rinaldo et al. 2011).

6.7 Frequent changes in worksite might be a risk to competence

Physiotherapists working at a higher number of worksites over their career is correlated with receiving more than one Notice of Intent to Suspend, a higher number of investigations, lower ratings on the Practice Assessment, and having taken each exam more times. The literature identifies transitions as a risk to competence. While in most cases this refers to new graduates beginning work (Hesketh, Allan et al. 2003, Prince, Van de Wiel et al. 2004, Cave, Woolf et al. 2009, Kilminster, Zukas et al. 2010, Kilminster, Zukas et al. 2011, Ryan, Ross et al. 2013), some studies also refer to short-term educational rotations (Bernabeo, Holtman et al. 2011), or to practitioners returning to work (Edwards, MacDonald et al. 2007, Grace, Korinek et al. 2011).

It is not clear whether the individuals are working at a higher number of sites because they are dyscompetent or whether they are showing indicators of dyscompetence because they move around more often and therefore work at a higher number of worksites.

6.8 Personal wellness could impact PT competence/performance

Certain factors, such as personal wellness or participation in Continuing Professional Development (CPD), are additional contextual factors that can influence risk (Phipps, Noyce et al. 2010).

6.9 Examination of risks to PT competence and supports to PT competence

The approach taken here to examine factors associated with risk to competence/performance and the concept of developing a framework for assessing risk and developing methods of mitigating the risks to competence is also being taken in other professions (Phipps, Noyce et al. 2010). The findings here are consistent with findings published in the literature, which supports the approach. Combining this information with the information on supports to competence, as presented in the accompanying paper to this report, provides information to guide potential future activities of CPO.

7 Summary

Risks to competence identified in this study of PT data are congruent with the literature on risks to competence, which is predominantly written about physicians. The risks to competence for PTs that stand out the most strongly are: being an IEPT, increasing age, being male, and working at a higher number of worksites over one's career. There are correlations among the variables studied, which provides support for the conclusions presented.

It may be helpful to consider coding the complaints/reports decision letters with respect to category/topic(s) of complaint as well as role(s) of complaint, to explore interactions of various categories of registrants with the types of concerns noted. Attempting to determine the reasons for some of the results might also be of benefit (e.g. what are the reasons for not registering on time or not completing the jurisprudence modules?). This information could inform future communications from CPO to registrants.

The current analysis does not offer solutions, though it does present the current situation. There may be some implications for registration practices (e.g. assisting registrants to identify their own risks to competence; identifying high risk individuals in advance of concerns) or to continuing competence programs (e.g. providing information on beneficial activities to support competence).

There are other health professions regulators engaged in understanding risks to competence. Collaboration and synergy across partners/organizations with a mutual or shared interest could be helpful.

This study presents the results of current CPO data. This study is similar to a census, which provides a snapshot in time. It may be beneficial to review evolution of risks over time.

While this study focuses on some of the known risks to competence, not all could be analyzed using the available CPO data. Additionally, the other important aspect of competence are the supports to competence – what are the factors that can moderate or mitigate the risks to competence?

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9 Appendices

9.1 Appendix 1: Country of Graduation of Full Registration Database

Table 72 Country of Graduation

Country	N	%
Algeria	1	0
Argentina	8	0.1
Australia	128	1.1
Austria	1	0
Bangladesh	1	0
Belgium	11	0.1
Bolivia	1	0
Brazil	19	0.2
Bulgaria	10	0.1
Canada	8590	75.7
Chile	3	0
China	82	0.7
Columbia	21	0.2
Croatia	2	0
Czech Republic	5	0
Denmark	1	0
Egypt	28	0.2
England	321	2.8
Finland	6	0.1
France	4	0
Germany	18	0.2
Greece	2	0
Hong Kong	26	0.2
Hungary	7	0.1
India	825	7.3
Iran	90	0.8
Ireland	57	0.5
Israel	14	0.1
Jamaica	18	0.2
Japan	1	0
Jordan	2	0
Kenya	2	0
Kuwait	1	0
Lebanon	3	0
Malta	2	0
Netherlands	32	0.3
New Zealand	11	0.1
Nigeria	5	0
Northern Ireland	15	0.1
Norway	1	0
Pakistan	39	0.3

Country	N	%
Panama	1	0
Peru	2	0
Philippines	185	1.6
Poland	89	0.8
Portugal	2	0
Republic of Ireland	1	0
Romania	9	0.1
Russia	1	0
Saudi Arabia	3	0
Scotland	91	0.8
Serbia	3	0
Serbia and Montenegro	8	0.1
Slovenia	2	0
South Africa	50	0.4
South Korea	1	0
Sri Lanka	20	0.2
Sweden	3	0
Switzerland	5	0
Taiwan	3	0
Turkey	4	0
Ukraine	4	0
United Kingdom	93	0.8
Uruguay	1	0
USA	333	2.9
Venezuela	1	0
Wales	2	0
Yugoslavia	3	0
Total	11334	99.9
System Missing	6	0.1
Total	11340	100

9.2 Appendix 2: Practice Profile of Current Registrants

Table 73 Clinical Focus of Current Registrants

Clinical Focus	N	%	Valid Percent
Cardiovascular Respiratory	157	1.8	2.0
More Than One System	3171	37.1	39.8
Musculoskeletal	3782	44.2	47.5
Neurological	422	4.9	5.3
Skin and Related Structures	6	0.1	0.1
Non-Clinical Focus	428	5.0	5.4
Total	7966	93.1	100
System Missing	587	6.9	
Total	8553	100	

Table 74 Patient Population Seen

Patient Population	N	%	Valid Percent
All ages	4908	57.4	61.7
Adult	1805	21.1	22.7
Paediatrics	386	4.5	4.8
Geriatrics	666	7.8	8.4
Not Applicable	196	2.3	2.5
Total	7961	93.1	100
System Missing	592	6.9	
Total	8553	100	

Table 75 Employment Sector

	N	%	Valid Percent
Public	3682	43.0	46.2
Private	3197	37.4	40.1
Combination	847	9.9	10.6
Unknown	237	2.8	3.0
Total	7963	93.1	100
System Missing	590	6.9	
Total	8553	100	

Table 76 Employment Category

Employment Category	N	%	Valid Percent
Permanent Employee	4023	47.0	50.4
Self-Employed	2493	29.1	31.3
Temporary (Contract) Employee	667	7.8	8.4
Employee (Other)	439	5.1	5.5
Casual Employee	353	4.1	4.4
Total	7975	93.2	100
System Missing	578	6.8	
Total	8553	100	

Table 77 Full Time vs. Part Time Employment

Employment	N	%	Valid Percent
Full time	4851	56.7	60.8
Part time	2646	30.9	33.2
Casual	479	5.6	6.0
Total	7976	93.3	100
System Missing	577	6.7	
Total	8553	100	

Table 78 Provision of Patient Care

Patient Care	N	%	Valid Percent
Yes	7379	86.3	92.6
No	588	6.9	7.4
Total	7967	93.1	100
System Missing	586	6.9	
Total	8553	100	

Table 79 Area of Practice

Area of Practice	N	%	Valid Percent
Administration	220	2.6	2.8
Client Service Management/Case Management	115	1.3	1.4
Consultation	114	1.3	1.4
Other Areas of Practice (Non-patient care)	51	.6	.6
Other Emergency	4	.0	.1
Other Teaching	39	.5	.5
Patient Care – Amputations	25	.3	.3
Patient Care – Burns and Wound	5	.1	.1

Area of Practice	N	%	Valid Percent
Management			
Patient Care – Cancer Care	47	.5	.6
Patient Care – Cardiology/Cardiovascular	76	.9	1.0
Patient Care – Chronic Disease Prevention and Management	36	.4	.5
Patient Care – Continuing Care/Long-Term Care	136	1.6	1.7
Patient Care – Critical Care/ICU	92	1.1	1.2
Patient Care – Ergonomics	7	.1	.1
Patient Care – General Practice	2462	28.8	30.9
Patient Care – Geriatric Care	467	5.5	5.9
Patient Care – Health Promotion and Wellness	45	.5	.6
Patient Care – Mental Health and Addiction	2	.0	.0
Patient Care – Neurology Neuroscience	517	6.0	6.5
Patient Care – Orthopaedics	2655	31.0	33.3
Patient Care – Other Areas	233	2.7	2.9
Patient Care – Palliative Care	6	.1	.1
Patient Care – Paediatrics	1	.0	.0
Patient Care – Plastics	21	.2	.3
Patient Care – Public Health	16	.2	.2
Patient Care – Respirology/Cardio-respiratory	71	.8	.9
Patient Care – Return to Work Rehabilitation	40	.5	.5
Patient Care – Rheumatology	33	.4	.4
Patient Care – Sports Medicine	221	2.6	2.8
Patient Care – Vestibular Rehabilitation	14	.2	.2
Patient Care – Women's Health/Uro-genital	41	.5	.5
Quality Management	39	.5	.5
Research	65	.8	.8
Sales	8	.1	.1
Teaching (Physiotherapy Continuing Education)	4	.0	.1
Teaching (Physiotherapy Entry-Level)	39	.5	.5
Total	7967	93.1	100
System Missing	586	6.9	

Area of Practice	N	%	Valid Percent
Total	8553	100	

Table 80 Currently Working at More Than One Employment Site

	N	%	Valid Percent
Yes	2686	31.4	32.8
No	5502	64.3	67.2
Total	8188	95.7	100.0
System Missing	365	4.3	
Total	8553	100	

Table 81 Number of Historical Employment Sites

# Employment sites	N	%
1	1254	14.7
2	1520	17.8
3	1420	16.6
4	1247	14.6
5	957	11.2
6	637	7.4
7	494	5.8
8	293	3.4
9	214	2.5
10	154	1.8
11	90	1.1
12	59	.7
13	47	.5
14	34	.4
15	23	.3
16	14	.2
17	13	.2
18	6	.1
19	5	.1
20	4	.0
21	6	.1
22	6	.1
23	2	.0
24	1	.0
25	2	.0
26	3	.0
27	4	.0
28	2	.0
29	2	.0
36	2	.0
Total	8515	99.6
System Missing	38	.4
Total	8553	100

9.3 Appendix 3: Definition of Risks to Competence

Risk to Competence	Description, definition, examples
1. Adequacy of practice or education	E.g. Discussions about how the education program did not prepare them for particular skills or with specific knowledge; how rotations were too short; and how a topic was not covered at all or insufficiently
2. Age	E.g. Older practitioners close to retirement or younger practitioners with little experience
3. Area of specialty	E.g. Comparing the skills and abilities of one specialty with another; sometimes overlapped with certification
4. Gender	Articles that mentioned and/or specifically discussed differences in competencies between males and females
5. International graduate	Includes discussions on any graduate who was from a different country than where the study took place (e.g. for a UK study, an IMG would refer to anyone not trained in the UK; whereas if it were an Australian study, an IMG would refer to anyone not trained in Australia) E.g. Comparing the risk of disciplinary action between US medical graduates and non-US medical graduates or exam scores or certification results between locally trained and internationally trained practitioners
6. Lack of experience or competence	E.g. Articles discussing new graduates or those who were new to an area, thus did not have much experience or competence; were not familiar with the patient population; and/or lacked a sufficient volume of the patient population
7. No certification	Refers to specialty certification E.g. Comparing the risk of disciplinary action between board-certified and non-board-certified health professionals; examining the predictors of certification; results on quality assurance programs of those certified compared with those not certified
8. Practice features	E.g. Includes articles that discuss how the location of practice (e.g. rural versus urban practice), professional isolation, and size of practice affects competence
9. Previous disciplinary activity	E.g. Previous complaint or discipline matter
10. Resources	E.g. The impact of resources on health professionals' competence, including people, money, and time E.g. Administrative support; access to library; workload (relates to lack of time); and lack of infrastructure (equipment, OR, medications)
11. Transitions	E.g. Change in status (e.g. from active to inactive), change in focus of practice (e.g. changing specialty/discipline area), new graduate (e.g. moving straight into unsupported practice)
12. Personal wellness	E.g. Includes physical or mental health-related issues E.g. Fatigue, stress, burnout and substance abuse
13. Other	E.g. Language, race, or ethnic identity

9.4 Appendix 4: Definition of Supports to Competence

Supports to Competence	Description, definition, examples
Continuing education participation	Involvement in an educational activity such as a course, workshop, or conference during practice. Included any form of continuing education participation.
Educational information / program features	Actions or interventions included in a pre-existing educational program, designed to improve the learning, knowledge translation, and application of the material. Any activity that was designed to enhance the learning and application of material, such as quizzes with feedback, readings, online modules, interactive activities, small group work with follow-up.
Personal support and feedback	Mentorship and feedback provided or available to individuals to inform or improve clinical skills and/or knowledge. Includes mentoring, teaching and coaching others (e.g. students or colleagues) to improve their performance.
Clinical Exposure / experience	Time spent in specific rotations or at specific clinical sites, with a particular patient/client population. Sufficient experience (e.g. with specific patient population) and/or volume of patients with a certain condition, to support their competence in this area.
Quality assurance of organization participation	Formal activities within a structured organizational quality program in the workplace. This might include the positive impact of participation in chart audits on competence; programs identifying the reasons behind a lack of adherence to guidelines.
Support through structure or organization	Employer- or site-specific structures or processes to develop or maintain individual or group competence. This could include reporting on the practice support needs of health professionals through some type of needs assessment (including community health promotion, federal regulation updates, and technical assistance); providing time off, compensation, and/or other institutional supports (such as online library access) to health professionals for CE/CPD.
Professional organization participation / systems	Mandatory participation in formal personal activities to develop or maintain competence as established through regulatory, association, or specialization requirements. These were generally maintenance of competence programs from certification bodies, e.g. Royal College of Physicians and Surgeons of Canada Maintenance of Competence Program (MOCOMP), Canadian Family Physician College Mainpro and/or American Board of Internal Medicine Maintenance of Competence (MOC) exam.
Technology	Mechanical or electronic means to develop or maintain competence via simulation, eLearning opportunities, and electronic decision support rules. These might

Supports to Competence	Description, definition, examples
	examine whether simulation training results in short-term and/or long-term improvement in the management of clinical events; how well online learning activities enhance learning in comparison to other educational activities.
Other	Approaches to developing or maintaining competence not included in other high-volume defined topics. These might include geographical location of education, institution and/or patient care; accreditation standards for educational programs; having core competencies defined; self-directed learning activities.
Reflection and self-assessment	Approaches to developing or maintaining competence that include introspection, personal analysis, and consideration of adequacy of competence or demonstration of competence. This might include discussing the use of portfolios and the overall utility of reflective activities.
Assessment and feedback through tools	Approaches that employed a specific tool to measure professional competencies, to determine the adequacy of performance and/or to provide information and motivation for improvement. These could include exploring the value of an information management system to collect data on competencies and provide feedback to residents (e.g. chart entries for preventive health measures); multi-source feedback with reports back to the practitioner; knowledge tests associated with an education module that provided feedback to the learner.
Performance review	A formal or structured work-based process where a practitioner is provided with information on the adequacy of performance and/or provided with information and motivation for improvement. This is generally meant to be formative, to assist the employee in improving their performance. Annual on-the-job evaluation of performance is included here.