

**Review of Standardized Testing in Doctoral Health Professions Admission Requirements | 1****Abstract**

*As many graduate programs have started to move away from standardized entrance exams, this study aims to identify the percentage of health professions doctoral programs in the United States that require a standardized entrance exam. Twelve doctoral-level health professions were identified. According to their central application service or school website, 10 professions (83%) had at least one school that required a standardized exam. Of the 890 professional schools included in this study, 679 (76.3%) required a standardized exam. Overall, the use of testing varied among the professions, although the majority had at least one school that required a standardized exam. If individual optometry programs decide to eliminate standardized testing, or to adopt a test-optional admissions policy, the profession would be aligned with seven of the 12 doctoral health professions in this study.*

**Key Words:** *doctoral health profession, standardized exam, entrance exams, admission requirements*

**Background**

The purpose of this study is to assess the current status of the role of standardized testing in the admissions process for graduate health professions in the United States by quantifying the number and percentage of health professions programs that require standardized testing for admissions, and to determine which standardized tests are required by each program. The driving force behind the research question is the growing skepticism in the academic arena regarding the value of standardized exams in predicting success and their potential bias against students of lower socioeconomic status, under-represented minorities and women.<sup>1-3</sup>

In recent years, a significant performance gap on standardized examinations has become obvious between students of different racial and socioeconomic backgrounds. In light of this evidence, standardized examinations are increasingly becoming regarded as barriers to higher education access for students of color and lower socioeconomic status. This observation has caused some undergraduate institutions to either eliminate college entrance examinations or make them optional in order to increase the diversity of their student body.<sup>1</sup>

Additionally, there is evidence of gender bias on the Scholastic Aptitude Test (SAT) as men tend to perform better on the math portion than women, which leads to an underprediction of women's performance in college.<sup>2</sup> Due to these concerns, since 1998 more than 275 undergraduate institutions no longer use the SAT or American College Test (ACT) in their admissions decisions.<sup>3</sup> Many schools that still maintain an SAT score requirement admit to doing so to preserve a reputation of selectivity while the scores contribute minimally to admissions decisions.<sup>2</sup> Most recently, the University of California system decided to suspend its SAT/ACT requirement for admissions until 2024, after which it will either eliminate or introduce a new entrance examination for in-state applicants.<sup>4</sup>

Reputable graduate institutions have started taking a similar approach to standardized exams. In 2018, Harvard University dropped its Graduate Record Examination (GRE) requirement for its English PhD program, and University of Pennsylvania (UPenn) dropped its GRE requirement for its philosophy department.<sup>5,6</sup> The reasoning behind UPenn's decision was multifactorial. The primary reason was that the financial burden of the exam gives an unfair advantage to wealthy applicants, thus limiting the diversity of matriculated students.<sup>5</sup> UPenn also argued that GRE scores do not accurately predict academic performance in graduate school and result in bias against women and under-represented minorities.<sup>6</sup>

In 2019, Cornell University's English doctoral program followed suit. Cornell's decision to eliminate the GRE requirement for admission was based on the observation that the predictive value of the GRE to determine student success was outweighed by the expense of reducing the diversity of their applicant pool due to the exam posing a significant financial burden on historically under-represented student groups.<sup>7</sup> Several months later, Cornell's biomedical engineering department also eliminated its GRE requirement, citing that the GRE is "a poor predictor of success at graduate school."<sup>8</sup>

The move by two Ivy League institutions to remove the GRE requirement for some of their graduate programs behooves those in higher education to take a closer look at their own institutional policies. It is undeniably true that the expense of standardized testing for graduate programs can be a significant financial burden for students from lower socioeconomic backgrounds, thus narrowing the applicant pool and potentially discriminating against minority students. It is particularly paramount for doctoral health professions programs to revisit their admissions criteria as these programs have arguably the greatest need to expand the diversity of their student body in order to effectively serve an increasingly diverse society.

This paper aims to evaluate which doctoral health professions currently require a standardized entrance exam for admissions. Though this information is publicly available through individual schools and centralized application systems,

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there is no central source where this information can be compared across health professions. This study collects and presents valuable data in one centralized location for individual admissions committees to review when discussing the role of standardized exams in admissions decisions. The study also discusses potential barriers to higher education that may be applicable to health professions education. In the current climate of movement away from requiring standardized testing for admissions decisions, it is helpful to gain an appreciation of how this trend may also be impacting doctoral-level health professions.

### Methods

A cross-sectional study design was used to capture data to evaluate and enumerate the proportion of doctoral health professions programs that require standardized testing for admissions. A list of doctoral-level health professions was reviewed to determine which professions to include in this study.<sup>9</sup> Inclusion criteria for the professions reviewed included the following: health professional doctoral degree, defined as a degree that prepares someone to work in a particular profession, often, but not always, meeting the academic requirements for licensure or accreditation, recognized in the United States or Canada, and emphasizing clinical practice. Exclusion criteria were the following: an emphasis on biomedical or research careers, PhD or Master's level, no longer recognized, or relatively few practitioners in the profession. The following doctoral degrees were excluded from the review: Doctor of Athletic Training, Doctor of Behavioral Health, Doctor of Professional Counseling, Doctor of Health Science, Doctor of Naturopathy, and Doctor of Social Work.

Twelve health professions meeting the inclusion criteria were identified. The corresponding central application service was used to identify which schools within the doctoral program required a standardized entrance exam. Several of the programs did not have a central application system, or the central application system did not have the information desired. In these cases, each individual school website was accessed to identify standardized testing requirements. Dental, audiology, occupational therapy, chiropractic and acupuncture programs required accessing each individual program's website.

The following list of professions included in the study describes the methods by which the data were collected.

**Optometry** – A list of optometry schools accredited by the Accreditation Council on Optometric Education (ACOE)<sup>10</sup> was accessed via the Optometry Centralized Application System, OptomCAS.<sup>11</sup> OptomCAS provides a table of accredited programs and the required standardized exam for each program.<sup>12</sup> Results were summarized in **Table 1**<sup>13</sup> and categorized as to the number and percentage of programs that required a standardized test for admissions.

**Dentistry** – A list of dental schools was accessed through the American Dental Association (ADA).<sup>14</sup> Only schools accredited by the Commission on Dental Accreditation were included in the study.<sup>15</sup> The websites for each of the programs listed were searched for details regarding the admissions requirements. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

**Medicine (MD)** – A list of allopathic medical schools accredited by the Liaison Committee on Medical Education (LCME)<sup>16</sup> was accessed through the American Medical College Application Service, AMCAS.<sup>17</sup> All schools listed required the Medical College Admission Test (MCAT) for admissions at the time of this review. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

**Medicine (DO)** – A list of osteopathic medical schools accredited by the American Osteopathic Association Commission on Osteopathic College Accreditation (COCA)<sup>18</sup> was accessed through the centralized application system, AACOMAS.<sup>19</sup> All schools listed required the MCAT for admissions at the time of this review. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

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**Podiatry** - A list of podiatry schools was accessed through the American Association of Colleges of Podiatric Medicine.<sup>20</sup> Only schools accredited by the Council on Podiatric Medical Education were included in the study.<sup>21</sup> All schools listed required the MCAT for admissions at the time of this review. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

**Audiology** - A list of schools awarding a Doctorate in Audiology (AuD) and accredited by the Council on Academic Accreditation (CAA) were included in the study.<sup>22</sup> The CAA also provided a list of audiology degree programs.<sup>23</sup> The websites for each of the AuD programs listed were searched for details regarding the admissions requirements. Master's-level degrees in audiology were not included. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

**Physical therapy** - A complete list of physical therapy schools accredited by the Commission on Accreditation in Physical Therapy (CAPTE)<sup>24</sup> was accessed via the Physical Therapist Centralized Application System, PTCAS.<sup>25</sup> PTCAS provided a complete table of programs that required a standardized exam. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

**Veterinary medicine** - A list of veterinary schools accredited by the American Veterinary Medical Association Council on Education (AVMA COE)<sup>26</sup> was accessed through the Association of American Veterinary Medical Colleges.<sup>27</sup> A complete list of U.S. schools with standardized testing requirements was used in this study.<sup>28</sup> Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

**Occupational therapy** - A list of occupational therapy doctoral programs accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) was obtained from the American Occupational Therapy Association website.<sup>29</sup> The websites for each of the programs listed were searched for details regarding the admissions requirements. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions, in this case the GRE.

**Pharmacy** - A list of pharmacy schools accredited by Accreditation Council for Pharmacy Education (ACPE)<sup>30</sup> was accessed using the American Association of Colleges of Pharmacy.<sup>31</sup> A PDF listing of required entrance exams for each program was utilized in this study. The centralized Pharmacy College Application Service, PharmCAS, was not used for reference as several PharmD programs did not participate in this service at the time of data collection. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

**Chiropractic** - A list of chiropractic doctoral programs accredited by the Council on Chiropractic Education (CCE) Directory of Doctor of Chiropractic (DC) Degree Programs was obtained from the CCE.<sup>32</sup> The websites for each of the programs listed were searched for details regarding the admissions requirements. Additional information was accessed from the Chiropractic College Application Service, ChiroCAS.<sup>33</sup> Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

**Acupuncture** - A list of doctoral-level acupuncture programs accredited by the Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM) was obtained from the Acupuncture Today website.<sup>34</sup> The websites for each of the programs listed were searched for details regarding the admissions requirements. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

Table 1 summarizes the data collected. Limitations to the data collection include changes in standardized exam requirements over the span of the search as well as possible accreditation status changes since the time of the search. The data collection was done prior to the COVID-19 pandemic, which began in the United States in March 2020. Since then, some schools have made exceptions or changes to their standardized testing requirements, which is another limitation to the methods and results of this study.

**Results**

**TABLE 1**  
List of Doctoral Degree Programs Requiring a Standardized Exam<sup>35</sup>

Doctoral Health Profession	Total Number of Schools	Total Requiring Standardized Testing	% of Schools Requiring Standardized Testing	Exam Required
Optometry (OD)	23	23	100.0%	OAT (some accept others)
Dentistry (DMD, DDS)	99	99	100.0%	OAT
Medicine (MD)	147	147	100.0%	MCAT
Medicine (DO)	35	35	100.0%	MCAT
Podiatry (DPM)	9	9	100.0%	MCAT
Audiology (AuD)	74	71	95.9%	GRE (some accept others)
Physical Therapy (DPT)	242	214	88.4%	GRE
Veterinary (DVM)	30	22	73.3%	GRE (some accept MCAT)
Occupational Therapy (DOT)	30	19	62.9%	GRE
Pharmacy (PharmD)	154	73	47.4%	PCAT
Chiropractor (DC)	18	0	0.0%	None
Acupuncture (D.AcM)	36	0	0.0%	None
<b>Total Schools</b>	<b>688</b>	<b>579</b>	<b>76.3%</b>	
<b>Total Professions</b>	<b>12</b>	<b>19</b>	<b>83.3%</b>	

**Table 1.** [Click to enlarge](#)

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A total of 12 health professions doctoral degree programs and 890 schools were identified and evaluated. Of the 12 professions, 10 (83%) had at least one school that required a standardized exam. Acupuncture and chiropractic programs did not require any standardized examinations. In optometry, dental, medicine (MD and DO) and podiatry programs, all schools required a standardized entrance exam. Several other programs varied on the number of schools requiring a standardized exam (audiology [95.9%], physical therapy [88.4%], veterinary [73.3%], occupational therapy [52.8%], and pharmacy [47.4%]).

Of the 890 professional schools included in this study, 679 (76.3%) required a standardized exam. Of the professions where at least one program required a standardized exam (10 of the 12 professions), 83.2% of individual schools (679 of 816) required an entrance exam.

The results for each profession are summarized below and presented in Table 1.<sup>13</sup>

**Optometry** - There were 23 optometry (OD) programs accredited by the ACOE. At the time of this study, all 23 programs (100%) required a standardized exam for admissions. All programs required the Optometry Admission Test (OAT) and 19 programs (82.6%) varied on other standardized exams, including the GRE, Pharmacy College Admission Test (PCAT), MCAT or Dental Admission Test (DAT), that could be submitted in lieu of the OAT.

**Dentistry** - There were 66 dental (DMD, DDS) programs accredited by the ADA. At the time of this study, all 66 programs (100%) required the DAT as the standardized exam for admissions.

**Medicine (MD)** - There were 147 Doctor of Medicine programs accredited by the LCME at the time of this study. All 147 programs (100%) required the MCAT for admissions.

**Medicine (DO)** - There were 35 Doctor of Osteopathic Medicine programs accredited by COCA. At the time of this study, all 35 programs (100%) required the MCAT for admissions.

**Podiatry** - There were nine podiatry (DPM) programs identified. At the time of this study, all nine schools (100%) required the MCAT as the standardized exam for admissions.

**Audiology** - There were 74 audiology (AuD) programs accredited by the CAA. Of these, 71 (95.9%) required a standardized exam. All programs that required an exam accepted the GRE. Several programs accepted various other standardized exams in lieu of the GRE.

**Physical therapy** - There were 242 physical therapy programs (DPT) accredited by CAPTE. Of these, 214 (88.4%) required a standardized exam. The GRE was the required exam for these schools.

**Veterinary medicine** - There were 30 veterinary (DVM) programs accredited by the AVMA COE. Of these, 22 (73.3%) required a standardized exam. The GRE was the most common exam required in those programs, though some accepted the MCAT instead of the GRE.

**Occupational therapy** - There were 36 occupational therapy (DOT) programs identified as accredited by ACOTE. Of these, 19 (52.8%) required the GRE. One of these 19 programs did not require the GRE but noted that if scores were submitted they would be considered as part of the admissions process; 13 (36.1%) did not require the GRE. For one program it could not be determined whether the GRE was required based on information provided on the website. If a school offered programs at multiple campus locations, each campus was counted as an individual program.

**Pharmacy** - There were 154 PharmD programs accredited by the ACPE. Of these, 73 (47.40%) of the programs required the PCAT. Aside from the doctoral professions in this study that do not require any standardized exam, pharmacy had the lowest percentage of programs requiring a standardized exam for admissions.

**Chiropractic** - There were 18 chiropractic (DC) programs identified as accredited by the CCE. None of the programs was found to require standardized testing as part of the admissions process, but one program noted that GRE scores could be submitted if they were available.

**Acupuncture** - There were 56 acupuncture (DACM) programs identified as accredited by ACAOM. One of the programs listed had subsequently closed. There were five programs for which it could not be clearly determined whether any standardized test was required for admission based on information provided on the website. The remaining 50 programs did not require any standardized testing for admission.

### Discussion

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Required standardized entrance exams have been a topic of discussion among undergraduate and graduate programs in the past several years. Many schools have been moving away from this requirement as it may pose a barrier for many potential applicants. The goal of this study was to determine which U.S. doctoral health professions programs currently require a standardized exam. The results of this study showed that the use of standardized testing in admissions varied among the doctoral health professions, though most (83%) had at least one school that required a standardized exam. As seen in Table 1, 41.7% of professions required standardized testing of all schools, and 41.7% of professions required standardized testing of some schools. Furthermore, 58.4% (seven of 12 professions) either did not require any standardized testing or required testing of some schools. This study indicated that if optometry programs were to move away from required standardized testing, the programs would not be outliers when considered in the broader context of doctoral-level health professions education institutions that were included in this assessment.

It is noteworthy that within most of these professions, the use of standardized testing was variable from program to program. The professions that were most uniform in their use of standardized testing were chiropractic and acupuncture, in which no programs were found to use standardized testing, and medicine (MD and DO), podiatry, dentistry and optometry, in which all programs were found to use standardized testing at the time of this study. The professions that demonstrated the most variability in the use of standardized testing for admissions were audiology, physical therapy, veterinary medicine, occupational therapy and pharmacy.

Our study adds to the current knowledge base for admissions committees and provides summarized information in a central location. The relevant information about more than 200 of the schools included in this study had to be individually accessed through school websites. One program required emailing the admissions liaison because the information was not easily found on its public web page. To the knowledge of the authors, no other cross-sectional study that presents the status of standardized testing in admissions for all doctoral health professional programs in the United States has been published.

The literature suggests that graduate programs outside of the health professions have identified standardized testing as a potential barrier due to its bias against under-represented minorities, female students and students of lower socioeconomic status.<sup>1-3</sup> While there is a plethora of published literature on the ability of standardized exams to predict student success in undergraduate education, research in this area for doctoral health professions education is limited. Of the studies that do exist, some cite standardized testing as a good predictor of success in doctoral health professions education, while others conclude that standardized exams are not reliable predictors of success.<sup>35-39</sup>

As for optometry-specific literature on predictors of success, there are a few studies though most are dated. An article by Bailey in 2000 looked at undergraduate grade point average (GPA), OAT scores and optometry school GPA in correlation to performance on National Board of Examiners in Optometry (NBEO) Part I at Southern California College of Optometry. The study found that optometry school GPA after 2 years was most predictive of NBEO performance. However, the OAT academic average along with optometry school GPA after 2 years showed slightly better predictions of success while undergraduate GPA was not a good predictor.<sup>40</sup> An article by Buckingham and Bush in 2013 looked at the OAT and undergraduate courses taken by 322 students at Michigan College of Optometry. They concluded that OAT reading comprehension and OAT academic average scores as well as undergraduate GPA predicted success in their optometry program.<sup>41</sup> Several other optometry-specific studies agreed that undergraduate GPA and certain OAT scores are predictive of success. Wingert, Goodwin and Kramer showed that undergraduate GPA and certain OAT scores are predictive of first- and second-year optometry GPA. These studies varied on which OAT subject tests were most predictive of success, and several also varied on the predictability of the personal interview for admissions.<sup>42-44</sup>

Because optometry is a relatively small health profession and there is limited literature on this topic, it can benefit from looking at what other health professions are doing at this time. As our profession becomes more medically focused, and we work more interprofessionally within the healthcare system, it is important to look at the admissions processes of other professions.

One concern optometry programs may have when deciding to keep or eliminate admissions requirements is the potential threat to professional scope of practice because removing standardized entrance exams may seem like a watering down of the admissions process. However, this study shows that less than 50% of pharmacy programs require the PCAT, yet their professional scope of practice has been growing to include the continued expansion of prescribing ability (including hormonal contraception in most states) and the ability to administer vaccines.<sup>45-47</sup> Similarly, physical therapy has also expanded its scope to include the ordering of imaging and lab work despite only 88.4% of its programs requiring a standardized exam.<sup>48,49</sup> These two professions are sound examples of successful expansion of scope of practice regardless of standardized examination requirements for admission.

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When balancing considerations between scope of practice and decision-making authority, some potential differences may emerge among the health professions, perhaps causing the profession of optometry to pursue greater alignment with trends in some health professions as compared with others. The professions of human medicine (MD and DO), podiatric medicine and dental medicine are currently aligned with 100% of programs utilizing standardized testing as part of the admissions process. It is uncertain whether this status is likely to persist, particularly as society emerges from the recent experiences of the global pandemic. Alternatively, two professions with advanced levels of scope of practice and decision-making authority, veterinary medicine and pharmacy, show greater variation in their use of standardized testing across professional programs.

As health professions programs continue to need qualified applicants of various backgrounds to fuel the growing healthcare system, it is important for schools to look at ways to reduce admissions barriers. Options may be to eliminate standardized testing altogether, or to evaluate ways to reduce the cost of the exam and increase accessibility. Currently, many of the standardized tests are taken in-person at testing centers, with exams only offered during certain times of the year and in certain locations (some offered only in the United States). If standardized tests continue to be required in the admissions process, moving to an online platform, as the GRE has done in the past year, may increase accessibility for applicants. Due to the COVID-19 pandemic, the GRE now provides the option for test-takers to take the exam online in their own home. It is proctored by a human through ProctorU, and applicants are able to take the exam 24 hours a day, 7 days a week.<sup>50</sup>

Though moving to an online platform may increase accessibility, an underlying bias against under-represented minorities and genders remains. Although this study concluded that the majority (83%) of health professions doctoral programs had at least one school that required a standardized exam and that overall 76.3% of the individual programs required a standardized exam, this may change in the near future. With the need for a more robust and diverse applicant pool and the questionable utility and predictability of standardized exams, the hope is that doctoral health professions programs will look into evaluating applicants using different means. Many studies have looked into a more holistic approach to admissions decisions, including various undergraduate GPA calculations, essays, behavioral interviews and multiple mini interviews.<sup>51,52</sup>

One limitation to this study is the possible change in admissions requirements for each program listed. For example, after collecting the data and analyzing the results, the authors became aware that in July 2020, Indiana University School of Optometry made the GRE and OAT exams optional for admissions.<sup>53</sup> This test-optional model is becoming a trend among many undergraduate and graduate institutions including the University of California system, Harvard University, Cornell University and the University of Pennsylvania. In our study, one occupational therapy and one chiropractic program allowed for optional submission of exams scores. The authors believe this will likely be the trend among optometry programs in the near future. Some undergraduate institutions have also begun to implement test-flexible or test-optional models. The test-optional model removes standardized test requirements for all applicants, while the test-flexible model allows students who meet certain criteria to apply without submitting a standardized exam score. Examples of qualifying criteria include achieving a certain GPA and/or involvement in extracurricular activities. Though the test-flexible model may sound appealing, it likely does not actually increase applicant diversity due to the difficulty accessing extracurricular activities and academic support by under-represented minorities.<sup>54</sup> The test-optional model also has its limitations. A study by Cahn in 2015 looked at 30 graduate health professions schools and concluded that the test-optional model did not increase program diversity unless other recruitment strategies were implemented as well. These strategies included diversifying the faculty, giving extra weight to under-represented applicants, increasing high school and undergraduate presentations, and increasing outreach to minority populations in the community.<sup>55</sup>

With the knowledge gained from this study, further research needs to be conducted looking at trends of institutions changing standardized testing requirements for admissions, especially as new studies evaluating the validity and predictability of standardized exams are published. Though the decision to make any changes to standardized testing in admissions is up to individual optometry programs, this study may help admissions committees in their discussions on this topic.

### Conclusion

This study provides a centralized location for optometry admissions committees to access valuable information on the current use of standardized testing in doctoral health professions in order to make informed admissions decisions and to track changes over time. Though the majority of individual health professions programs still require standardized exams, there is variation among several professions. If optometry programs were to eliminate standardized testing requirements, they would not be outliers and, in fact, would still be aligned with some of the other doctoral-level health professions. As

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more research is published regarding potential barriers to higher education and the predictive value of standardized exams, optometry programs may decide to make changes to their admissions requirements.

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