



Special Communication

Physical Medicine and Rehabilitation Residency Applicants: A Decade of Change



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Abstract Physical medicine and rehabilitation (PM&R) has been an expanding specialty in medicine since its induction into the American Medical Association in 1947. This article quantifies the growth of PM&R by analyzing the number of residency positions and applicants as well as the characteristics of the applicants. Review of the United States (US) National Residency Matching Program (NRMP) data from 2010-2020 shows that the number of PM&R residency positions has grown by 26%, while the number of applicants has grown by 37% with a decreasing ratio of allopathic to osteopathic matched applicants. Matched applicants have had increasing Step 1 and 2 scores, abstracts, presentations, publications, and volunteer experiences. In the last decade there has been a growing interest in PM&R that outpaces residency positions and with increasingly qualified applicants. This analysis can guide residency administration and future applicants on the trends in the PM&R residency selection process.

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Physical medicine and rehabilitation (PM&R) is a growing field. Identified by the American Medical Association as a distinct specialty in 1947, PM&R remains a relatively young medical specialty.¹ However, the need for PM&R physicians is rapidly increasing as health care embraces and encourages rehabilitation and medical management of debilitating or

chronic diseases. While analyzing the expansion of the field can be difficult to quantify, it is possible to estimate the interest in PM&R by analyzing trends of PM&R residency programs and residency applicants. The purpose of this article is to analyze the National Residency Matching Program (NRMP) match data reports from 2010-2020 to determine if

List of abbreviations: NRMP, National Residency Matching Program; PGY, postgraduate year; PM&R, physical medicine and rehabilitation; US, United States.

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Table 1 PM&R applicant NRMP match data from 2010-2020.²

Variables	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PM&R (n)											
Programs	89	89	86	97	90	91	93	94	96	102	105
Positions	367	373	367	397	383	389	402	413	414	446	467
Unfilled positions	16	13	4	1	0	3	9	1	0	3	4
Total PM&R applicants (n)	859	877	905	1037	1061	1042	1039	1158	1139	1131	1178
Applicant-to-position ratio	2.34	2.35	2.47	2.61	2.77	2.68	2.58	2.80	2.75	2.54	2.52
Applicants who ranked PM&R as their only or preferred specialty, n	491	484	483	558	569	556	538	621	579	550	558
(% of all PM&R applications)	(57)	(55)	(53)	(54)	(54)	(53)	(52)	(54)	(51)	(49)	(47)
Matched applicants (n)											
Graduating US senior	175	180	193	204	208	192	222	255	242	220	245
US graduate	14	15	11	11	15	15	8	7	14	14	7
Osteopathic graduate	95	107	95	118	111	137	114	116	123	173	182
Canadian	0	0	1	0	0	0	0	0	0	0	0
US IMG	45	42	43	41	32	28	37	22	20	26	20
Non-US IMG	21	16	20	22	17	14	12	12	15	10	9
Total	351	360	363	396	383	386	393	412	414	443	463
Matched graduating US senior to osteopathic graduate	1.84	1.68	2.03	1.73	1.87	1.40	1.95	2.20	1.97	1.27	1.35
Unmatched US seniors who ranked PM&R as their only specialty, n	18	15	13	16	14	9	8	11	13	10	8
(% unmatched)	(10.2)	(8.2)	(8.4)	(10.5)	(10.4)	(7.4)	(6.1)	(7.1)	(8.6)	(6.6)	(5.7)
Average no. of ranked applicants needed to fill position, PGY 1	3.8	5.4	3.9	3.4	4.7	3.8	4.5	4.8	4.3	5.3	5.0
Average no. of ranked applicants needed to fill position, PGY 2	6.0	5.4	5.5	4.7	5.9	5.6	5.8	5.1	5.4	6.8	6.1

Abbreviation: IMG, international medical graduate.

such trends exist and if they are appreciable in the last decade.

Over the past decade, the NRMP match data² shows not only a growth in residency positions but also an even greater growth in the number of residency applicants (table 1). The total number of PM&R entry positions increased by 26% from 370 to 467 positions, while the number of applicants increased by 37% from 859 to 1178 applicants. This resulted in an increase of the applicant-to-position ratio from 2.34 in 2010 to 2.52 in 2020. While the total number of PM&R applicants has grown, the percentage of the applicants who ranked PM&R as their preferred or only specialty decreased over the last decade from 57% to 47% (fig 1). This suggests that although increasing numbers of applicants are applying, an increasing percentage of these applicants do not have PM&R listed as their preferred or only specialty posing an additional challenge for programs to discern interest in the field. Additionally, the ratio of United States (US) allopathic seniors applying to PM&R programs compared with all other applicants, which consist of US osteopathic graduates and US and non-US international medical graduates, was 0.77 in 2010. This ratio has trended upward, reaching its maximum of 1.08 in 2017 and is currently at 0.88 in 2020. This trend in the ratio of US allopathic seniors to all other PM&R applicants shows an increasing proportion of US allopathic seniors are applying to PM&R programs.

The top 2 contributors to total matched applicants are US allopathic and osteopathic graduates. In the last 2 years, the ratio of matched graduating US allopathic seniors to

matched osteopathic graduates has been at a decade low of 1.27 and 1.35, indicating a recent integration of osteopathic graduates into the field of PM&R contrasting the previously noted trend of an increasing proportion of US allopathic seniors applying to PM&R programs. Of note for future applicants, US allopathic seniors who ranked PM&R as their only specialty had an overall decrease in the number of applicants who went unmatched from 10.2% in 2010 to 5.7% in 2020. In 2020 the average number of ranked applicants needed to fill a postgraduate year (PGY)-1 and PGY-2 position was 5.0 and 6.2, respectively.

The NRMP Charting Outcomes,³ which are reported every 2-3 years were also analyzed for the last decade (table 2). For both US allopathic and osteopathic seniors, the average number of contiguous ranked programs has consistently stayed above the average of all matched applicants regardless of specialty. While PM&R has emphasized matching applicants with leadership qualities, interpersonal skills, and other characteristics beyond their standardized test score, over the last decade applicants matching into PM&R have generally seen an increase in scores.⁴ United States Medical Licensing Examination Step 1 and Step 2 scores for US allopathic seniors increased from 2009-2020 by 14 and 21 points, respectively. The Step 1 scores of US allopathic seniors who matched into PM&R programs increased at a rate of 1.49 points per year compared with the 0.97 points per year of all matched US allopathic senior Step 1 scores regardless of specialty. Additionally, PM&R-matched US allopathic seniors had an increase in the Step 2 scores of

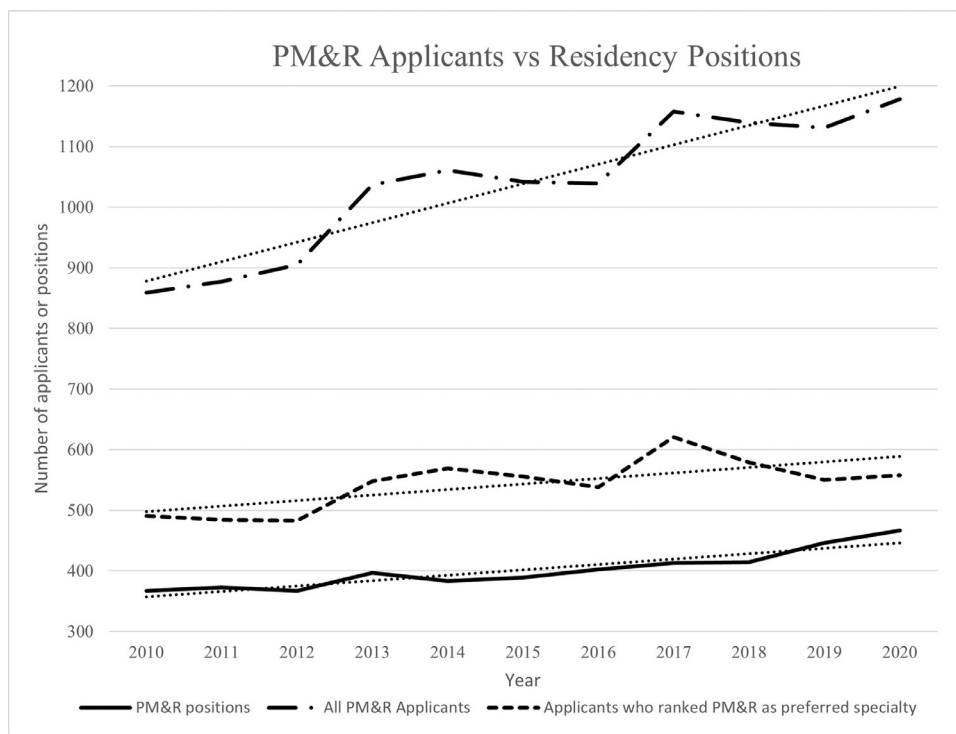


Fig 1 Available PM&R residency positions compared with applicants who ranked PM&R as their preferred specialty and all applicants who ranked PM&R. All 3 categories trend upward but at differing rates.

2.16 points per year compared with the total matched US allopathic senior increase of 1.64 points per year. This shows that while average Step 1 and 2 scores increased for all US allopathic seniors regardless of specialty, PM&R-

matched US allopathic seniors' scores increased at greater increments per year. On the other hand, Comlex-USA Level 1 and 2 scores for US osteopathic seniors decreased from 2016-2020 by 6 and 4 points, respectively. In comparison

Table 2 Summary of matched PM&R applicants compared with all specialties.³

Matched US Seniors	2009	2011	2014	2016	2018	2020	2016	2018	2020
	MD Seniors					DO Seniors			
Contiguous ranked programs, mean									
PM&R	9.6	10.9	12.7	14.2	13.1	13.5	11.8	11.2	11.5
All	9.4	10.4	11.5	11.8	12.3	12.5	9.5	9.6	10.6
USMLE Step 1 score, mean									
PM&R	214	214	220	226	225	228	-	223	224
All applicants	225	226	230	233	233	234	-	227	228
USMLE Step 2 score, mean									
PM&R	220	224	234	238	239	241	-	235	236
All	231	235	243	245	246	247	-	240	240
Comlex-USA Level 1 score, mean									
PM&R	-	-	-	-	-	-	551	535	545
All	-	-	-	-	-	-	566	547	542
Comlex-USA Level 2 Score, mean									
PM&R	-	-	-	-	-	-	563	568	569
All	-	-	-	-	-	-	579	584	575
Abstracts, presentations, and publications, mean									
PM&R	2.3	2.1	3.3	3.9	4.2	5.5	2.4	3.1	2.2
All	2.8	3.2	4.2	4.7	5.7	6.9	2.3	2.3	2.9
Volunteer experiences, mean									
PM&R	6.4	6.2	7.1	8	7.8	8.3	7	7.2	7.7
All	6.2	6.4	7.1	6.9	7.3	7.9	6.7	6.7	7

Abbreviation: USMLE, United States Medical Licensing Examination.

with US allopathic seniors, osteopathic seniors had 4 and 5 points lower of United States Medical Licensing Examination Step 1 and 2 scores. The number of abstracts, presentations, and publications increased over the decade from 2.3 to 5.5 for US allopathic seniors, while osteopathic seniors ranged from 2-3 since 2016. The average number of volunteer experiences has been trending upward for both US allopathic and osteopathic seniors, with 2020 reporting the highest average values of 7.7 and 8.3, respectively. For most reported years this decade, matched PM&R seniors had higher average volunteer experiences than the average for all matched seniors regardless of specialty, highlighting the importance of a well-rounded and diverse application to match into PM&R.

The growth of positions and applicants detailed in this article help quantify and confirm the development of PM&R over the last decade. For upcoming applicants and student mentors, PM&R is a specialty that requires complex multidisciplinary and team-based interactions, and as such, applicant personality and interpersonal qualities are important criteria for resident selection. Nonetheless, careful analysis of available data provides valuable insight into ongoing trends.

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