

SDAMPP Position Statement

On the Match System for Admissions to Medical Physics Residencies

11 September, 2019

Position Statement

Be it resolved that the Society of Directors of Academic Medical Physics Programs continues to fully support and encourage the broadest possible participation in a national match system for placing applicants into medical physics residency training programs.

Background

Of late there have been some rumors of the potential demise of the MedPhys Match (MPM). A couple of notable programs decided not to participate in the MPM this year, and others are wondering if there will be more. Will their program be the only one left? SDAMPP has supported the MPM since its inception, and we encourage all residency programs to participate if their recruitment needs are compatible with the MPM. At this time, we are aware of only two programs that participated last year that have chosen to not participate this year. In the first year of the MPM, there were 77 programs participating, and this has been steadily increasing each year up to 90 programs in the last year. The number of positions offered has increased at the same time, from 112 in 2015 to 138 in 2019. These numbers represent the majority of residency positions being offered each year.

One possible source of the rumors may have been data presented by the CAMPEP residency committee indicating that 37 of 125 programs are not participating in the match program (CAMPEP 2019). However, subsequently it was noted that the survey instruments used to gather this information did not probe the reason for non-participation. For example, in any given year, programs participate only if they have slots available to fill. Thus, it appears that the data presented by CAMPEP (2019) does not attempt to answer the question, of the programs that are recruiting, what fraction of them are participating in the match? Thus, the CAMPEP data should only be interpreted with this limitation in mind. SDAMPP is communicating with groups within CAMPEP and AAPM to attempt to improve our understanding of true participation rates.

The Case for the MedPhys Match

There is a body of evidence that supports the premise that the match system is good for both residency applicants and good for residency programs. National Matching Services, the company that computes the matching results for the MedPhys Match, also computes the matching results for the National Resident Matching Program (NRMP), matching thousands of medical students into internship and residency positions each year. The algorithm is robust and has been rigorously analyzed to show that it reliably produces *stable* match results. A stable

match results when no programs/applicants receive an unacceptable match (where anything on the rank list is deemed acceptable) and there is no applicant/program pairing in the match result that was less highly preferred by *both*. Anecdotally, we are aware that some of the programs decided to drop out of the MPM because, in previous years, their highest-ranked applicants matched to other programs. However, that outcome cannot be attributed solely to the match system; the applicants might have simply preferred to match to another program, *e.g.*, for family reasons. Although it can be disappointing for a program to fail to recruit its top-ranked applicant, if an applicant would rather be in another program, then in the long run it's probably better for the program to recruit an applicant whom it ranked lower but who really wants to join their program.

A brief digression is necessary to explain key aspects of how the match algorithm works. Roth [1982] showed that for this type of problem, there is always at least one stable solution. In the case where two stable solutions exist, then one would be applicant-optimal and another would be program-optimal. Additional stable solutions may also exist, which are not optimal for either the applicant or the program, but these still result in the same applicants being matched (or not matched) and the same program positions being filled (or not filled). When two or more stable solutions exist, the algorithm picks one; usually the NRMP and MPM algorithm favors applicant preferences over program preferences (see Roth and Peranson 1997 for details). For a relatively small match cohort like the MPM, it is quite likely that there is only one stable solution and that is both applicant-optimal and program-optimal. Thus, in the vast majority of cases, we believe the match system is good for both individual residents and individual programs. That said, it must be acknowledged that the algorithm's relatively higher weighting of the applicant's preferences over the program's preferences can potentially impact a program's recruiting result. Specifically, it means that a program may match to an applicant that is lower on their ranked list of applicants than would be the case if program preferences were the primary consideration.

SDAMPP recognizes that some programs may be facing recruiting goals that appear unduly difficult, or perhaps even impossible, to achieve within the match system. In light of this situation, SDAMPP wishes to explicitly reaffirm its position that it is the prerogative of the program directors to decide if, when, and how to participate in the MedPhys Match. However, for most programs, advantages of the match system outweigh the disadvantages.

The match system may be customized by residency programs to suit their particular requirements and recruiting goals, *e.g.*, with consideration of diversity, hybrid matching of internal and external applicants, etc. It appears that many program directors are not fully aware of the high degree to which the MPM can accommodate program-specific needs. Therefore we provide a brief description here. More specifically, the MPM has several optional features, such as multiple lists and reversion. For example, a program recruiting for two positions could try to recruit one male and one female applicant, but if that leaves a position unfilled, the system opens up both unfilled positions for male and female applicants. For programs recruiting residents with a certain expertise (*e.g.*, for a combined research project and clinical training within a 3-year residency), they can have a separate list for that position. Residency programs can also use these features to express a preference for an associated graduate program. One possibility is to offer

the residency program as a backup option for their own graduates if that student doesn't match to another, more preferred program. Another possibility might be to try to match to at least one student from that graduate program, but revert the position to all applicants on the program's rank list if the alternative would be an unfilled position. Programs are encouraged to go to the [MPM website](#) or contact National Matching Services to find out how their special needs can be met. Additional opportunities to learn more about this are being explored at this time (e.g., an SDAMPP webinar on "Making the MPM Work for Your Program").

Conclusions

The SDAMPP Board has investigated and thoroughly discussed this issue and concludes that the MedPhys Match is, on the whole, beneficial to prospective residents and residency programs. We are not aware of any reliable data to support recent rumors of the possible demise of the match system. SDAMPP encourages prospective residents and residency programs to continue to utilize the match program, but it also recognizes that some programs may have valid reasons for not participating in it. The objectives of SDAMPP with regard to this issue are to provide program directors with the best available information and data to inform their decision making and to stimulate and facilitate communication leading to improvements in medical physics education.

References

1. CAMPEP 2019. <https://www.campep.org/2018AnnualResidencyReport.pdf>
2. Roth, Alvin E. 1982. "The Economics of Matching: Stability and Incentives." *Mathematics of Operations Research* 7 (4): 617–28. <https://doi.org/10.1287/moor.7.4.617>.
3. Roth, Alvin E., and Elliott Peranson. 1997. "The Effects of the Change in the NRMP Matching Algorithm." *Journal of the American Medical Association* 278 (9): 729–32. <https://doi.org/10.1001/jama.1997.03550090053032>.