

## Fitness habits and barriers to exercise during residency training

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### Abstract

While physicians advise patients on healthy lifestyle habits, physicians may struggle to abide by their own recommendations. We sought to characterize resident physician participation in exercise, their barriers to exercise, and the effect of exercise on their overall wellness. We hypothesized that residents who exercised would have less depression and greater well-being. Trainees at a university-based institution were surveyed. Data regarding exercise habits, hours worked, barriers to exercise, and mental health were acquired. Mental health was assessed via the Patient Health Questionnaire-2. Inter-group differences were analyzed using chi-squared testing; statistical significance was set at  $P < 0.05$ . 129 trainees responded to the survey. 84 trainees reported exercising while 45 denied. 63 exercisers reported “living a healthy lifestyle” compared to 18 non-exercisers ( $P < 0.001$ ). Exercisers were more likely to report “Time” as their greatest barrier to exercise ( $P < 0.001$ ). Fifty-five exercisers answered “Not at all” when asked about how often they experience anhedonia compared to 23 non-exercisers. Trainees who exercise are more likely to report living a healthy lifestyle and less likely to experience anhedonia than non-exercisers, demonstrating the importance of exercise during residency.

### Introduction

The benefits of fitness are well documented with respect to overall health.<sup>1-3</sup> Patients are often advised that regular exercise promotes cardiovascular and mental health.<sup>1-3</sup> Furthermore, exercise has been shown to be important for the prevention and management of chronic diseases, such as obesity, type 2 diabetes mellitus, and some types of cancer.<sup>4</sup> Studies have also found that physicians who exercise regularly were more likely to counsel their patients on fitness habits.<sup>5-8</sup> However, while physicians advise

their patients on healthy lifestyle habits, it can be difficult for physicians to abide by their own recommendations. The United States Department of Health and Human Services recommends at least 150 minutes of moderate physical activity per week.<sup>9</sup> It is also noted that both aerobic and muscle-strengthening exercise are beneficial to one’s health.<sup>9</sup> One study reported that only 31% of physicians in training (residents and fellows) met the United States Department of Health and Human Services recommendations for physical activity.<sup>10</sup>

While medical trainees have been reported to have higher career satisfaction and more emotional stability after work hours limitations were imposed by the Accreditation Council for Graduate Medical Education (ACGME), residents and fellows continue to suffer from depression and burnout.<sup>11,12</sup> Studies examining resident mental health results in widely varying prevalence rates of depression and burnout.<sup>2,13,14</sup> In one study, 29% of medical trainees reported weekly symptoms of burnout, while another study characterized 50% of residents as meeting burnout criteria.<sup>10,14</sup> Similar to its effects in the general population, exercise is a therapeutic strategy to improve mental health in physicians.<sup>10</sup> Exercising physicians-in-training have been shown to experience higher quality of life and less burnout symptoms than those who do not exercise.<sup>3,10</sup> In an attempt to quell the mental health problems that residents may experience, some institutions have implemented institutional residency wellness programs to help medical trainees cope with stress.<sup>15</sup>

While little is known about the barriers to exercise in medical trainees, one study cites a lack of time as the prevailing factor in physical inactivity among residents.<sup>16</sup> However, this study examined a small cohort of Family Medicine residents at one institution and may not be representative of the medical trainee population as a whole.<sup>16</sup> Given the importance of physical fitness and wellness, as well as the high rates of physician burnout and depression, the present study was conducted to determine the exercise habits, barriers to exercise, and mental health of physician trainees. We also sought to determine if there was any relationship between resident fitness habits and depression. We hypothesized that time constraints would be a major barrier to resident exercise. We also hypothesized that residents likely consider themselves to live a healthy lifestyle, regardless of exercise habits.

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Key words: Medical education & training; exercise; depression; physician well-being.

Contributions: The authors contributed equally.

Conflict of interest: The authors declare no potential conflict of interest.

Ethics approval and consent to participate: Institutional review board approval and informed consent were obtained.

Availability of data and materials: Data and materials are available within text.

Received for publication: 18 February 2020.  
Accepted for publication: 17 April 2020.

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Licensee PAGEPress, Italy  
Orthopedic Reviews 2020;12:8507  
doi:10.4081/or.2020.8507

### Materials and Methods

Institutional review board approval was obtained and a cross-sectional survey was sent to all physicians-in-training (interns, residents, and fellows) in Brown University affiliated residency programs. The survey was conducted in REDCap (University of Vanderbilt, Nashville, Tennessee) to allow for anonymous data collection. Data regarding exercise habits, hours worked, barriers to exercise, mental health, and dietary habits were acquired. Mental health was assessed via the Patient Health Questionnaire-2 (PHQ-2), a validated depression-screening tool. Chi-squared testing was performed to analyze inter-group differences and determine significance.

### Results

Of 575 trainees at our institution, 129 (22.4%) responded to the survey (Table 1).

Eighty-four (65%) trainees reported participating in regular exercise while 45 denied exercising regularly. Additionally, 63 (75%) exercisers subjectively reported “living a healthy lifestyle” compared to 18 (40%) non-exercisers ( $P < 0.001$ ). While both exercisers and non-exercisers reported

similar hours worked per week ( $P=0.74$ ) (Table 2), exercisers ( $n=63$ , 76%) were significantly more likely to report “time” as their greatest barrier to exercise ( $P<0.001$ ) (Table 3).

Fifty-five (65%) exercisers answered “Not at all” when asked about how often they experience anhedonia compared to 23 (51%) non-exercisers; this difference was not statistically significant ( $P=0.11$ ). Additionally, 55 (65%) exercisers answered “Not at all” when asked how often they feel depressed or hopeless compared to 28 (62%) non-exercisers; this difference was not statistically significant ( $P=0.71$ ). Exerciser and non-exerciser scores on the PHQ-2 demonstrated no significant difference ( $P=0.95$ ).

## Discussion

Our single institution study showed that the greatest barrier to resident exercise and wellness is “time” despite mandatory restrictions on work hours. We found, however, that residents who did regularly exercise were more likely to subjectively report that they “lived a healthy lifestyle” compared to those who did not exercise regularly. Exercise has been reported to have positive health benefits, and given the importance of physical activity to overall health, physicians should not only counsel their patients on fitness habits but also be encouraged to participate in regular exercise themselves.<sup>4</sup> In the present study, 84/129 (65%) trainees reported regular exercise while 45 (35%) trainees denied exercising regularly. Significantly more exercisers reported living a healthy lifestyle compared to non-exercisers (75% vs. 40%, respectively;  $P<0.001$ ). We hypothesized that trainees would consider themselves to live a healthy lifestyle, regardless of exercise habits; however, these results suggest that exercisers are more likely to perceive their lifestyle as healthy, even amongst physicians-in-training. Since exercise may be a therapeutic strategy to improve health and wellness, it is plausible that in our study there was a relationship between perception of a healthy lifestyle and physical activity.

Exercising physicians-in-training have been reported to experience higher quality of life and less burnout than their non-exercising peers.<sup>3,10</sup> In our survey, 55 (65%) exercisers answered “Not at all” when asked how often they experience anhedonia compared to 23 (51%) non-exercisers. Additionally, 55 (65%) exercisers answered “Not at all” when asked about how often they feel depressed or hopeless compared to

28 (62%) non-exercisers. While these results do not suggest differing levels of depression in our sample, our exercisers were less likely to experience anhedonia, although this comparison did not achieve significance ( $P=0.11$ ). It is possible that our small sample size limited the power of this comparison, and with more responses we may have achieved a significant result. As reported in previous studies, our results may suggest a beneficial effect of exercise on mental health.<sup>3,10</sup> These results may justify the effort made by many medical education departments to institute residency wellness programs in order to quell mental health problems that residents may experience.<sup>15</sup> As burnout becomes more prevalent in the medical field, obtaining and maintaining a healthy lifestyle during residency may be crucial to forming good habits, which can prolong career longevity and overall health.

While little is known about the barriers to exercise in residents, previous studies have cited a lack of time as the primary factor in lack of physical activity among medical students and residents.<sup>16</sup> While both exercisers and non-exercisers in our study reported similar hours worked per week ( $P=0.74$ ) (Table 2), exercisers were significantly more likely to report “time” as their greatest barrier to exercise ( $P<0.001$ ) (Table 3). Interestingly, a larger proportion of non-exercisers (44%) reported “Fatigue” as a barrier, suggesting that there may be other factors in addition to time that limit physical activity. Of note, medical trainees have been reported to have higher career satisfaction and more emotional stability after work hours limitations were imposed by the ACGME.<sup>11,12</sup> This finding may result

from less time constraints on trainees’ ability to engage in activities of interest, such as exercise. Given the high prevalence of mental health issues among medical trainees, it is imperative that efforts, such as the ACGME work hours limitations and institutional resident wellness programs, continue to support physicians-in-training as they attempt to balance their professional and educational obligations with their need for wellness and self-care.<sup>13</sup> Previous studies report that physicians who exercise are more likely to counsel their patients on fitness habits.<sup>5-8</sup> Therefore, a physician’s lack of physical activity may impact their ability or willingness to counsel their patients on the benefits of exercise. Thus, a physician’s wellness may not only impact their own health, but also their patients’ health.

This study has several limitations. First, our survey received a 22.4% response rate, with the majority of the responses being from internal medicine residents and a

**Table 1. Respondents by specialty.**

Specialty	Respondents
Internal medicine	53
Pediatrics	15
General surgery	12
Emergency medicine	9
Psychiatry	5
Neurology	4
Orthopedic surgery	3
Plastic surgery	2
Urology	1
Did not specify	25

**Table 2. Distribution of exerciser and non-exerciser reported hours worked.**

Hours worked <sup>a</sup>	Exercisers	Non-exercisers
>80 hours	2	2
60-80 hours	50	29
40-60 hours	31	13
20-40 hours	1	1

<sup>a</sup>Comparison did not achieve significance;  $P > 0.05$ .

**Table 3. Distribution of exerciser and non-exerciser barriers to exercise.**

Barrier to exercise	Exercisers	Non-exercisers
Time <sup>a</sup>	63	20
Fatigue	15	20
Family	2	3
Work	3	1
Cost	0	1
Not specified	1	0

<sup>a</sup>Comparison achieved significance;  $P < 0.001$ .

smaller fraction from surgical trainees. This may have resulted in selection bias and perhaps those who had more time to answer the survey, also had more time in general and utilized this time to exercise. Additionally, we only polled residents at a single institution, once again limiting the study's generalizability. However, surveying residents at a single institution may have better standardized the group with respect to institution specific factors that may have influenced exercise habits, such as enforcement of work hour guidelines, weather/climate, established wellness programs, and institutional culture. Third, as a survey study, our results were completely dependent on subjects self-reporting their exercise frequency and their subjective assessment of their health. We did attempt to mitigate this limitation by including the PHQ-2, which is a validated depression-screening instrument, however this also relies on self-reported data. Subjects may have found it difficult to admit to feelings of depression and lack of interest in work, especially in an institutional survey study such as this. Despite these limitations, this study does offer additional insight into the exercise habits of resident physicians, as well as their barriers to exercise and general feelings regarding exercise and overall wellness.

## Conclusions

The present study demonstrated that time is the greatest barrier to exercise for resident physicians. However, medical trainees who exercise regularly were more likely to report living a healthy lifestyle, and possibly less likely to experience anhedonia than trainees who do not exercise. Given

these findings, efforts should be made to promote wellness throughout medical training.

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