Understanding the Exercise Habits of Residents and Attending Physicians: A Mixed Methodology Study

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BACKGROUND AND OBJECTIVES: Although the benefits of exercise are well known, rates of exercise among residents are much lower than those of attendings or medical students. Little is known about the barriers that prevent residents from exercising regularly. This mixed methodology study identifies and compares these barriers for resident and attending physicians practicing in the same setting.

METHODS: We conducted three focus groups with first-year and senior residents and attending physicians in the University of Missouri Department of Family and Community Medicine from April to August 2013. We also administered a survey inquiring about exercise rates and habits to 110 resident and attending physicians in the same department using both paper and electronic versions.

RESULTS: During both inpatient and non-inpatient rotations, residents reported exercising less than attending physicians. No residents exercised more than 150 minutes/week during inpatient rotations compared to 18.42% of attendings. Only 6.9% of residents exercised more than 150 minutes/week during non-inpatient rotations, compared to 25% of attendings. Residents and attendings reported different barriers to regular exercise. Residents reported lack of time for a traditional structured workout as a major barrier, which leads to an adversarial relationship between work and exercise.

CONCLUSIONS: Residency programs can help residents overcome exercise barriers by reframing exercise expectations to include more frequent but brief periods of exercise during the workday and by developing a supportive exercise culture. Changing work-site environments to support physician exercise may improve physician wellness.

(From the Department of Family and Community Medicine, University of Missouri-Columbia.)
(USDHHS) aerobic exercise guidelines. Unfortunately, these health behaviors deteriorate during residency. Residents are significantly less likely than attending physicians and medical students to meet the USDHHS guidelines for aerobic exercise. Overall exercise rates improve upon graduation from residency as exercise again becomes more frequent among practicing physicians. Decrease in exercise is attributed to the lack of time outside of long work hours. Physicians who work more than 40 hours per week are more likely to have high body mass indexes (BMIs). Independent of changes in exercise training, aerobic fitness as measured by peak oxygen uptake (peak VO2) is worse during rotations with heavy clinical workload. There seems to be something inherently unhealthy about residency training. This study aims to determine what factors contribute to the overall decline in resident exercise habits and aerobic fitness. We seek to determine the barriers that prevent residents from achieving their health and fitness goals and ways to change their work and learning environments to better achieve these goals. Our study is the first step of a participatory action development project to facilitate fitness by increasing exercise among residents to improve their physical and mental well-being.

Methods
We conducted three separate focus groups with first-year residents, senior-level residents, and faculty in the Family and Community Medicine Department at the University of Missouri-Columbia. These 60-minute sessions occurred during scheduled didactics times for residents and during a lecture series for faculty. We obtained informed consent from participants prior to the focus groups. Pedometers were given as incentives for participation.

The principal investigator (ASW) and co-investigator (RJK) moderated the focus groups using a semi-structured script. For each focus group, a third investigator (CDW, NJC) did not participate in the discussion but took field notes. Prior to initiating discussion, participants completed a paper questionnaire that included demographic questions and questions about personal exercise habits and beliefs about the importance of regular exercise. The questionnaire and focus group guides were developed by a group composed of two clinical faculty members who had recently graduated from residency, a residency director, a clinical researcher with experience in focus group dynamics, and a clinical psychologist with experience in resident wellness. Residents and clinical faculty members who did not participate in the focus group were asked to complete the same questionnaire through an online survey.

During the focus groups, moderators began by inquiring about attitudes toward personal fitness, including benefits and priority in everyday life. The discussion then shifted to specific exercise habits and barriers and aids to exercising in the context of their work life. Finally, the moderators asked about incentives and ideas to increase exercise habits among residents. In addition to taking notes during the focus groups, the researchers audiorecorded the focus groups. An experienced qualitative transcriptionist transcribed the audio recordings. The resulting transcripts and field notes were analyzed independently by ASW, RJK, and CDW using thematic analysis, assisted by Dedoose qualitative software. Investigators met to reach consensus on codes and identify themes after each focus group, then shared themes with the larger investigator group. Questionnaire data were analyzed using descriptive statistics, t tests for continuous variables, and chi-squared tests for categorical variables. Cross-tabulations using ordered categories (for example, amount of exercise) were analyzed with the Mantel-Haenszel chi-square statistic. This research was approved by the University of Missouri Health Sciences Institutional Review Board.

Results
Between April and August 2013, seven first-year residents and five second- and third-year (senior) residents, and 17 faculty members participated in three focus groups. Men and women were equally represented with 15 and 14 participants, respectively. The average age of resident participants was 29, and the average age for faculty members was 45.

The response rate for completed questionnaires was 70% (77/110). More faculty than residents completed the survey (76%) compared to senior residents (68%) and first-year residents (58%). There was no difference between faculty and overall resident response rates (P=1.3). Residents exercised less than attendings during both inpatient and non-inpatient rotations. During inpatient rotations, no (0%) residents exercised more than 150 minutes per week compared to 18.42% of attendings (P=.010); during non-inpatient rotations, only 6.9% of residents exercised more than 150 minutes per week, compared to 25% of attendings (P=.008). Exercise frequency of spouses or partners was also associated with physician exercise frequency. Only 8.3% of physicians with partners who exercised 0–49 minutes/week, exercised more than 150 minutes per week during non-inpatient periods, compared to 36.84% of physicians with partners who exercised more than 150 minutes per week (P=.023). Age and the presence of children living at home was not associated with exercise frequency for physicians (P=.283 and P=.104 respectively). Residents were more likely to participate in team sports than faculty (36.7% versus 4.3%, P=.0002). There was no difference between faculty and residents in the other types of exercise in which they participated (cardio at home or gym, weight training at home or gym P>.5 for all comparisons).
In the qualitative analyses we identified several major themes (see Table 1). Based on field note observations, there was a noticeable difference in content and body language between the focus groups with residents and with faculty. The residents appeared more stressed and frustrated by their lack of exercising whereas the faculty members who also reported low rates of exercise were more optimistic that their barriers could be overcome and more willing to troubleshoot. This was consistent with both first-year and senior focus groups.

Discussion
This mixed methodology study showed that residents exercise significantly less than attending physicians during both inpatient and non-inpatient rotations. In addition to time constraints for both groups, major barriers to regular exercise for residents included lack of easy access to exercise equipment, fatigue, and variable schedules, while attending physicians reported concerns with age-related injuries, sedentary jobs and lifestyles, and concern about maintaining professional appearances. Programs can assist residents in overcoming these barriers by helping them reframe their exercise expectations to include more frequent but brief periods of exercise during the workday and by developing a supportive exercise culture.

Some ideas to make exercise more accessible in physician work environments include creating a gym or walking path in or around the hospital or clinic with showers available so that physicians can exercise before or after work or during breaks. This would also be useful for physicians that choose to run, walk, or bike to work. Another idea is to create an incentive program to promote physical activities such as taking the stairs, wearing pedometers, or participating in events such as 5k runs as an organization. Finally, a walking treadmill desk for physicians to use while completing documentation can greatly increase activity without requiring additional time.

The results of this study have important implications for exercise rates for residents and practicing physicians. For residents who utilize exercise as a means of stress relief, eliminating it from their routine for long periods of time could have significant mental health consequences. Residents and physicians who express frustration about the lack of control of their schedules or inability to prioritize exercise in their daily routine due to time constraints are at higher risk of burnout. However, providing residents this flexibility and work-life balance must also be balanced with providing them with the skills and knowledge they need to become quality physicians.

The difference in exercise rates of residents and faculty members from the questionnaire reflects the barriers and frustration observed and reported during the resident focus groups. The differences in barriers to regular exercise between residents and faculty reflect different stages of their careers. Most faculty members had more time to exercise and more control over their work schedules than residents. With the exception of team sports being utilized more frequently by residents, the type of exercise in which physicians participated did not vary between faculty members and residents. This trend is consistent with data from the Bureau of Labor Statistics, which reported that from 2003–2006, people aged 15 to 24 years were up to six times more likely to participate in team sports than those 25 and older.

Another important exercise facilitator discussed frequently in the focus groups was having an accountability partner, which agrees with other exercise literature that shows that exercising with other people can improve exercise adherence. This was also consistent with our survey results that showed that having a partner or spouse who exercised more frequently was associated with increased physician exercise rates both during inpatient and non-inpatient rotations. One method to influence physician exercise habits may be to involve their partners or spouses. There were several factors that were not found to have an association with exercise rates of physicians, including gender and having children living at home. A 2011 study of 1,500 young adult mothers and fathers suggested an association between being parents and lower exercise rates. It is possible that the exercise rates of physician parents are higher than those of the general population because they are more health conscious and desire to be good role models for their patients; however, it is more likely that the sample size of this study was inadequate to capture this difference in exercise rates between physicians that had children living at home and those who did not.

Physicians who are physically active are more likely to counsel their patients about ways to exercise, and their patients are also more likely to follow these recommendations. This is likely because physicians who exercise regularly have a more personal and experiential knowledge of exercising strategies, as well as exercise benefits and barriers. Therefore, the physical fitness of physicians may affect their ability to promote exercise. In addition, secondary benefits of regular exercise, including improved job satisfaction and decreased rates of depression and burnout for physicians, would also likely have implications for improved patient care. Perhaps most importantly, regular exercise allows physicians to avoid the disconnect associated with not living the healthy lifestyle that is being promoted in their medical practices. This was a major concern for several focus group members.

The concept of shaping a culture of exercise was an interesting solution generated by the focus groups and is consistent with the ecological model for physical activity. Public health scientists use this model to evaluate programs that aim to increase physical activity
Table 1: Themes, Definitions, and Support Quotes

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<th>Theme and Definition</th>
<th>Supporting Quote</th>
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<td>Residents and attendings have different barriers to exercising.</td>
<td>“I think that the accessibility issue is really, I mean, our town is not that big but it takes that 20 extra minutes to go to the gym or go to the rec center, find parking, go in. I mean, I feel like our minutes are so precious.” (Senior resident)</td>
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<td>“And then one of the reasons that I haven’t exercised in probably months, honestly, is cause I just, I’m so physically exhausted, …it takes all the energy to walk up the stairs in the garage cause I’m just so tired.” (First-year resident)</td>
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<td>“I have a very high professional sweat index and so I’m leery if I were to sit here and pedal underneath the table that within 5 minutes I would have sweat dripping down my face no matter what the tension was. … We’re too important to exercise. We don’t think any of our patients are too important to exercise. … I shifted to a bicycle about a year ago because my knee decided that running was no longer a good thing to do, actually it insisted running was no longer a good thing to do.” (Faculty member)</td>
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<td>physician guilt with inconsistency between counseling patient about exercise and their own exercise habits.</td>
<td>“I mean, I, I think it’s partly, partially ‘cause I feel hypocritical ‘cause I’m like I don’t really do it. I mean, I can advise them to do it but I just like, makes me feel like really guilty…. …” (First-year resident)</td>
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<td>“I sort of felt guilty telling people to get off their butts and so I decided I had to do more than I was doing partly because if I couldn’t do it how could I tell a patient to do it…. …” (Faculty member)</td>
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<td>residents who are frustrated by their inability to exercise are at risk for developing an adversarial relationship with exercise.</td>
<td>“… I feel like I’m so out of shape that I can’t even exercise appropriately. And that’s frustrating cause I used to play sports in high school and, and now it’s like it’s almost, like you’re almost ashamed to exercise….” (First-year resident)</td>
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<td>“I feel like for me a lot of this is like a mental block I have where I feel like I need to set aside like 60 or 90 minutes to work out….. ” (Senior resident)</td>
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<td>reframing the concept of exercise to make it fit into a physician’s daily routine.</td>
<td>“… I know that just doing 20 minutes would be helpful and so I had thought about that … I did a rotation on a military base and the culture was those physicians on their lunch break would go and do 30 minutes of weights, eat their lunch, come back. And I thought that was like a fantastic culture that they had to [do] PT.” (Senior resident)</td>
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<td>“… when you are in a rotation and feel like I’m not doing anything right now at this moment but I can’t be doing something that I want to be doing, like exercising…… knowing I have to be here and I, I do feel like if there was something onsite you could easily be covered by someone else on the team on a rotating schedule to go do some kind of quick workout.” (First-year resident)</td>
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the recruitment email encouraged focus groups volunteered. Although members who participated in the bias because the residents and faculty will enable larger, multiple-site qualitative and quantitative examinations regarding time and schedule constraints. While occurring in a single location, this in-depth qualitative examination will enable larger, multiple-site studies. There is a risk of selection bias because the residents and faculty members who participated in the focus groups volunteered. Although the recruitment email encouraged participation by physicians of all fitness levels including those that did not exercise, and 22 participants reported 0–50 minutes of exercise per week, it is possible that more physicians with low rates of exercise chose not to participate. Although physicians who had participated in the focus groups were asked to not duplicate the survey by completing it again online, there is no way to guarantee this did not happen as the surveys were anonymous.

By better understanding the barriers that prevent residents and practicing physicians from achieving their exercise goals, residency administrators and faculty can assess and seek to improve their working environment to be more supportive of physical activity. Increasing physician exercise rates, especially those of residents who are known to have significantly lower exercise rates than practicing physicians, has the potential to improve physician well-being, prevent burnout and depression, and improve patient education and adherence to exercise counseling. This may require a cognitive reframing of the concept of what constitutes exercise to include shorter workouts during the workday. It will also require a change in work time priorities and the flow between work and personal time. Programs that wish to improve physician exercise rates should allow exercise routines to adapt to rather than compete with residents’ time. Additional research is needed to evaluate the effectiveness of various programs to improve physician exercise rates. Emerging research in this area has the potential to significantly benefit the physical and mental well-being of resident and practicing physicians.

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**References**


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<td>Presence of a workplace “exercise culture” would help enable physicians to exercise more regularly.</td>
<td>“I know that some residencies . . . are crazy fitness people, too, and you’ll see them running up and down the stairs in the parking garage at 4:30 in the morning, or doing other things together. And so I think that that community that gets your buddies to do it with you is a really helpful motivating factor for a lot of people . . . ” (First-year resident)</td>
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<td>Another possible solution, the concept of exercise culture, was a major theme that emerged independently in all three focus groups. Although it is somewhat of a nebulous term, all three groups used it to define external community forces that affect their exercise attitudes and behavior. Some ideas generated in the focus groups to promote exercise culture at the interpersonal and community level include participation in team sports, increasing access to exercise equipment at the work-site, having a departmental policy encouraging workers to exercise during their lunch break or during the work day, and incentive programs for healthy decisions. Residents also supported the creation of exercise norms such as the expectation that all residents and faculty take the stairs when making rounds in the hospital. Faculty members were less enthusiastic about this proposition.</td>
<td>“Well, one thing that the behavioral economists have learned is that doing things like promoting ecological awareness by saying why it’s a good idea or trying to induce guilt doesn’t work so well, but if you say ‘Here's what your neighbors are doing successfully,’ that works. So sort of creating this sort of social role expectation in your cultural group is a tool.” (Faculty member)</td>
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2. Social norms about exercise can greatly influence community physical activity. Interventions to increase residency exercise rates should examine current exercise culture and strive to become more supportive of physical activity.


determine if exercise is a routine part of your day. If not, make a plan to incorporate physical activity into your daily routine. Find a buddy or a group of colleagues who share your interests and can help keep you motivated. It's also important to make sure your workplace offers resources for physical activity, such as gym memberships or wellness programs. By creating a supportive environment, you can help encourage your colleagues to prioritize their health and well-being.


7. Stanford FC, Durkin MW, Blair SN, Powell CK, Poston MB, Stallworth JR. Determining levels of physical activity in attending physicians, resident and fellow physicians, and medical students in the USA. BJSM online 2012;46(5):360-4.

