

## Potential for Intensive Volunteering to Promote the Health of Older Adults in Fair Health

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**ABSTRACT** *Volunteer service opportunities for older adults may soon be expanded. Although volunteering is thought to provide health benefits for healthier older adults, it is not known whether older adults in less than very good health are suitable candidates for high-intensity volunteering and can derive health benefits. This manuscript presents a prospective analysis of 174 older adult volunteers serving in Experience Corps Baltimore®, a high-intensity senior volunteer program in Baltimore, Maryland. Volunteers served  $\geq 15$  h per week, for a full school year, in elementary schools helping children with reading and other skills between 1999 and 2002. Volunteers were assessed with standardized questionnaires and performance-based testing including grip strength, walking speed, chair stand speed, and stair-climbing speed prior to school volunteering and at the end of the school year. Results were stratified by health status. Among 174 volunteers, 55% initially reported “good” and 12% “fair” or “poor” health status. At baseline, those in fair health reported higher frequencies of disease and disability than volunteers in excellent or very good health. After volunteering, a majority of volunteers in every baseline health status category described increased strength and energy. Those in fair health were significantly more likely to display improved stair-climbing speed than those in good or excellent/very good health (100.0% vs. 53.4% vs. 37.5%,  $p=0.05$ ), and many showed clinically significant increases in walking speed of  $>0.5$  m/s. Satisfaction and retention rates were high for all health status groups. Clinicians should consider whether their patients in fair or good health, as well as those in better health, might benefit from high-intensity volunteer programs. Productive activity such as volunteering may be an effective community-based approach to health promotion for older adults.*

**KEYWORDS** *Volunteering, Productive aging, Health status*

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### INTRODUCTION

President Obama recently signed the Edward M. Kennedy Serve America Act,<sup>1</sup> which will significantly increase volunteer service opportunities for older adults. Many older adults have a desire to participate in meaningful, productive activities; generative roles that help others can be particularly meaningful in later life. One venue to meet such goals is through volunteer roles to make the community better.<sup>2,3</sup>

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Epidemiological data suggest that, for older adults, volunteering is associated with lower mortality,<sup>4</sup> and improved well-being<sup>5</sup> and life satisfaction,<sup>6</sup> and may decrease functional decline.<sup>7,8</sup> Volunteering has been promoted as a favored option for active aging by the United Nations, World Health Organization, and a number of international studies.<sup>9–11</sup> Work<sup>12</sup> and volunteering<sup>13</sup> have been assumed to be options only for older adults in excellent or very good health. Volunteer cohorts tend to be healthier than their peers,<sup>14,15</sup> while older adults who are ill or disabled are thought to have a variety of barriers to being able to volunteer, including decreased endurance and mobility, limiting medical symptoms and transportation challenges,<sup>16,17</sup> as well as potentially unacceptably high levels of vulnerability to environmental challenges. The health impact of high-intensity volunteering for older adults of only fair or good self-reported health status is unknown because most cohorts of older volunteer are generally healthy. Similarly, the effectiveness and retention of volunteers who describe less than very good health is unknown but presumed to be limited. Epidemiologic studies of volunteering have not specifically explored the effects of volunteering on older adults who report less than very good health with chronic disease and functional difficulties.<sup>18</sup> Some might fear that engagement in volunteering for this population is unrealistic or risky<sup>19</sup> and unlikely to provide health benefits. As a result, many volunteer programs, and even clinicians, may be averse to recommending such engagement for adults with multiple chronic health problems.

The Baltimore Experience Corps® program, a national program offering high-intensity volunteer roles, utilizes the talents of older adults. Volunteers in Experience Corps Baltimore serve in urban public elementary schools, performing important roles such as enhancing literacy and learning success. These roles were designed both for high impact on children's academic success<sup>20</sup> and to increase physical and cognitive activity and social support among volunteers<sup>21</sup>; these are established risk factors for memory loss,<sup>22,23</sup> disability,<sup>24,25</sup> mortality,<sup>26,27</sup> and other adverse health outcomes. Preliminary evidence supports an increase in these health behaviors<sup>21,28</sup> but no analysis, to date, evaluated the potential health benefits of this program in individuals who are not in good health.

In this article, we describe the self-reported health and functional status of participants in Experience Corps Baltimore before starting their volunteer experience and then characterize change after serving in a school through one school year, a 4- to 8-month follow-up, stratified by baseline health status. We hypothesize that older adults, who are not in very good health, experience positive health benefits from high-intensity volunteering and that these benefits are comparable to those who are in better health. We will also examine whether initial health status predicted program satisfaction, retention of program volunteers, or satisfactory performance in the schools. We hypothesize that most volunteers in very good health (or better) and most volunteers in not very good health will report improvements in both self-reported and performance-based measures of health and function, mediated through increased physical activity, increased social engagement and support, and increased well-being.<sup>21</sup> Self-reported health, which reflects both physical and mental health,<sup>29</sup> is a strong predictor of future mortality and functional decline among older adults.<sup>30–32</sup>

## METHODS

### Participants

Volunteers, 60 years and older, were actively recruited<sup>33</sup> to the Experience Corps Baltimore. Eligibility criteria included scoring at least 24 on the Folstein Mini-

Mental State Examination<sup>34</sup> and/or meeting a threshold score on Trails B,<sup>35</sup> and passing the school system's criminal background check.

### **Intervention**

After a standardized training program, a critical mass of volunteers was placed in teams in each school, serving at least 15 h per week through the school year. Volunteers typically serve in a classroom assisting children with one-on-one or small group literacy support, modeling appropriate behavior and providing help with assignments.<sup>20</sup> In a prior national implementation, it was determined that a stipend was required to support this level of high-intensity volunteering, and all volunteers received a small stipend to reimburse program-related expenses.<sup>21,28</sup>

### **Data Collection**

Before beginning the program, volunteers completed standardized, interviewer-administered questionnaires regarding demographic characteristics, health history (including chronic diseases), television watching, usual physical activity,<sup>36</sup> and self-reported energy level (scaled from 0–10, with 10 the highest) and strength. Blocks walked per week were ascertained in standardized manner with the Paffenbarger questionnaire.<sup>36</sup> They also underwent objective performance-based testing, including standardized measurements of maximal grip strength (using a hydraulic Jamar hand dynamometer, model #5030J1) in the dominant hand and times (to 0.1 s) to complete five chair stands, 4-m walk at usual pace, and walking up and down a flight of steps at usual pace.<sup>37</sup> For grip strength, the best of three measurements was used. A standardized follow-up assessment of all measures was conducted soon after the end of the school year, in June or July, 4 to 8 months after beginning service. Volunteers were also asked, after the school year, about their satisfaction with the program and whether they believed that their energy had increased as a result of program participation. Volunteers' retention from one school year to the next school year was also assessed. Finally, a program manager who oversaw the performance of all volunteers during this time period was asked to identify volunteers who performed unsatisfactorily and required extra monitoring. This unsatisfactory rating may have been due to poor classroom performance, unprofessional attitude, or extended absences. All volunteers who participated in this evaluation provided informed consent, as approved by the Johns Hopkins IRB.

### **Statistical Analysis**

Analyses described baseline characteristics of the population, change in self-reported strength, energy, hours per day of television watching, and in performance-based measures, all stratified by initial self-reported health status. Because data were found comparable for individuals reporting initial excellent and very good health status, these two groups were combined in the final analysis. Because only one volunteer was found to report poor health, the poor and fair groups were combined for analysis. Means were compared with analysis of variance tests and chi-square tests, as appropriate, using SAS software, version 9. Predictors of unsatisfactory volunteer performance were assessed using logistic regression in order to derive odds ratios. These predictors include age, baseline health status, sex, race, and MMSE score. We tested the significance of their effects on unsatisfactory volunteer performance and calculated *p* values based on these tests. A *p* value less than or equal to 0.05 was considered significant.

## RESULTS

One hundred seventy-four adults age 60 or older served  $\geq 15$  h/week for 4–8 months as EC school volunteers and participated in both baseline and follow-up evaluations, from 1999 to 2002. The age range was 60 to 86, with a mean age of 69 and SD of 8.3. Before beginning the program, only one volunteer described poor health status, while 10% ( $n=20$ ) reported fair, 55% ( $n=95$ ) good, and 33% ( $n=58$ ) excellent or very good health status (Table 1). Eighty-seven percent of volunteers were African-American women; 6% African American men, and 4% and 3% Caucasian women and men, respectively. Age, race, and gender were not associated with initial health status in this population. Only 30% of those with fair or poor health had volunteered in the prior year, compared with 37–47% of those in better health. Persons reporting fair or poor health status had a twofold greater burden of chronic disease (3.3 diseases, on average) compared with those in excellent or very good health (1.7 diseases), with an intermediate number, 2.3, among those with good health ( $p<0.001$ ). There were significant differences in the proportion reporting diabetes, visual, and hearing problems ( $p<.05$  for each); similar stepwise increases were seen for the frequency of arthritis and angina for those with excellent/very good, good, and fair/poor health, although not statistically different. The three health status groups showed similar patterns of stepwise increases in baseline rates of mobility difficulty in walking several blocks (22%, 42%, and 45%, respectively) and climbing stairs (14%, 18%, and 42%, respectively). Similar patterns were seen for difficulty rising from a chair, using a calculator and preparing a hot meal, although not statistically significant. Self-reported “very good” strength and energy level declined significantly with worse health status, providing further face validity to self-reported health status.

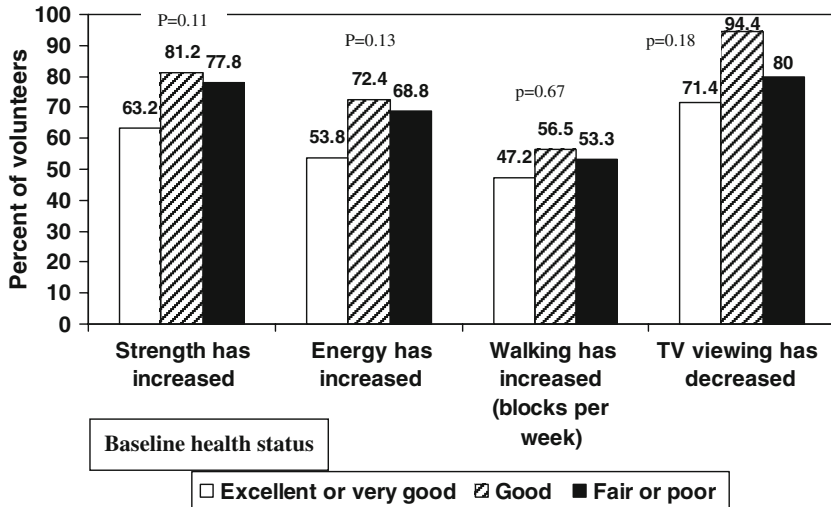
After 4 to 8 months, a majority of volunteers in every baseline health status category described increases in strength and energy, and decreased time spent on television watching (Figure 1). While there were no statistically significant differences in the amount of change reported between groups ( $p>0.05$ ), it is notable that those in good health at baseline consistently reported the greatest frequency of improvements (for example, 81% reported increased strength) and that this was consistently followed by those in fair or poor health (for example, 78% reported increased strength), with the lowest rates of improvement reported by those in excellent or very good health (for example, 63% reported increased strength). The latter was likely a result of higher starting levels. Similar percentages of participants in each initial health stratum reported increases in number of blocks walked per week (Figure 1). Specifically, 57% of volunteers initially describing good health status increased the number of blocks that they walked per week after program participation, compared to 53% of those in fair or poor health. The mean percentage increase of blocks walked per week of volunteers in each health stratum varied from 47% to 97% (data not shown).

In evaluations by objective measures of function, 100% of those with fair health at baseline showed increases in speed on the stairs, compared to 38% and 53% improved among those with excellent/very good or good health, respectively ( $p=0.05$ ; Figure 2). Similarly, 75% of those with fair health at baseline showed an improvement in grip strength, compared to 43% and 55% in those with excellent/very good health or good health; for these, the rate of improvement did not significantly vary by baseline health status. Note that a higher percentage of volunteers initially in fair health were unable to do the chair stand test at the follow-

**TABLE 1 Baseline characteristics of experience corps volunteers by self-reported health status before program participation**

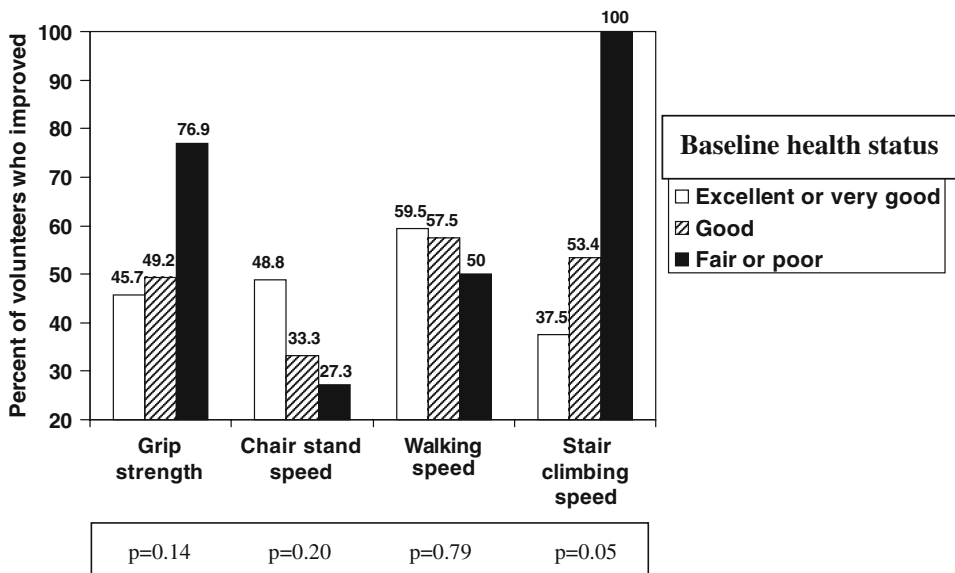
	Self-reported health status			P value
	Excellent or very good; n = 58 (33.3%)	Good; n = 95(54.6%)	Fair or poor; n = 21(12.1%)	
Age: mean (SD)	68.1 (6.5)	69.2 (6.4)	70.0 (8.0)	0.84
Women n (%)	51 (87.9%)	88 (92.6%)	19 (90.5%)	0.62
Black n (%)	53 (91.4%)	90 (94.7%)	19 (90.5%)	0.64
Married n (%)	14 (24.1%)	22 (23.2%)	7 (33.3%)	0.61
Volunteered in prior year n (%)	21 (36.7%)	45 (47.0%)	6 (30.0%)	0.28
Currently doing paid work n (%)	12 (20.8%)	22 (23.5%)	7 (36.1%)	0.70
Chronic diseases				
Hypertension	31 (53.4%)	62 (65.3%)	15 (71.4%)	0.22
Diabetes	6 (10.3%)	28 (29.5%)	11 (52.4%)	<0.001
Visual problems	13 (22.4%)	29 (30.5%)	11 (52.4%)	0.04
Arthritis	24 (41.4%)	49 (51.6%)	14 (66.7%)	0.13
Lung disease	5 (8.6%)	10 (10.5%)	1 (4.8%)	0.70
Hearing problems	5 (8.6%)	5 (5.3%)	5 (23.8%)	0.02
Angina	3 (5.2%)	9 (9.5%)	3 (14.3%)	0.40
Mean number of chronic diseases (SD)	1.7 (1.3)	2.3 (1.4)	3.3 (1.6)	<0.001
Mean MMSE score (SD)	25.7 (2.6)	25.9 (2.8)	25.5 (3.1)	0.84
Low MMSE score (<25)	32.4%	31.9%	30.8%	0.99
Self-reported functional difficulties				
Difficulty walking several blocks	13 (22.4%)	39 (41.5%)	9 (45.0%)	0.04
Difficulty climbing stairs	8 (14.0%)	17 (18.5%)	8 (42.1%)	0.03
Difficulty getting up from chair	18 (31.0%)	25 (26.6%)	10 (50.0%)	0.12
Difficulty sitting for 2 h	6 (10.5%)	18(19.4%)	6 (31.6%)	0.10
Difficulty using calculator	10 (17.2%)	25 (26.4%)	8 (40.0%)	0.11
Difficulty preparing a hot meal	0%	1 (1.1%)	2 (10.0%)	0.05
Very good self-reported strength	41 (71.2%)	38 (40.4%)	3 (14.3%)	<0.001
Self-reported energy level (0–10) (SD)	8.3 (1.2)	7.5 (1.5)	6.4 (2.0)	<0.001
Doctor visits in prior 6 months: mean (SD)	2.2(1.7)	2.8(2.0)	3.1(1.5)	0.13

SD standard deviation

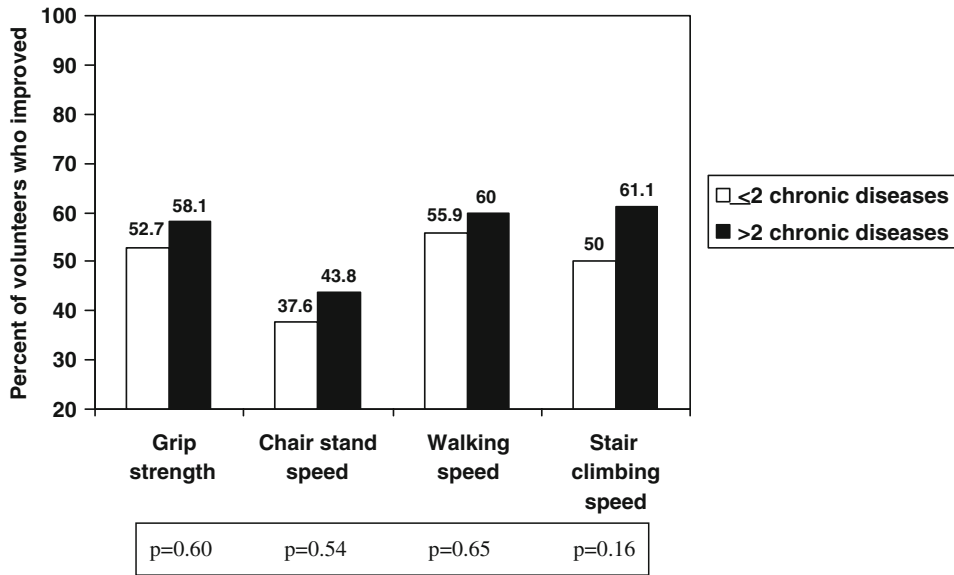


**FIGURE 1.** Percent reporting improvement in activity after volunteering, by baseline self-rated health status. Improvement is defined as any positive change from baseline report.

up visit than volunteers initially in better health; however, there was no significant difference in completion of performance tasks, by health status, for the other performance measures (data not shown). Fifty percent of participants with initial poor walking speed ( $\leq 0.6$  m/s;  $n=18$ ) had normal ( $>0.6$  m/s) walking speed at follow-up. The correction of poor walking speed was not significantly associated with initial health status. Of people in less than very good health who demonstrated improvements in walking speed, the mean amount of improvement was 0.54 m/s (data not shown).

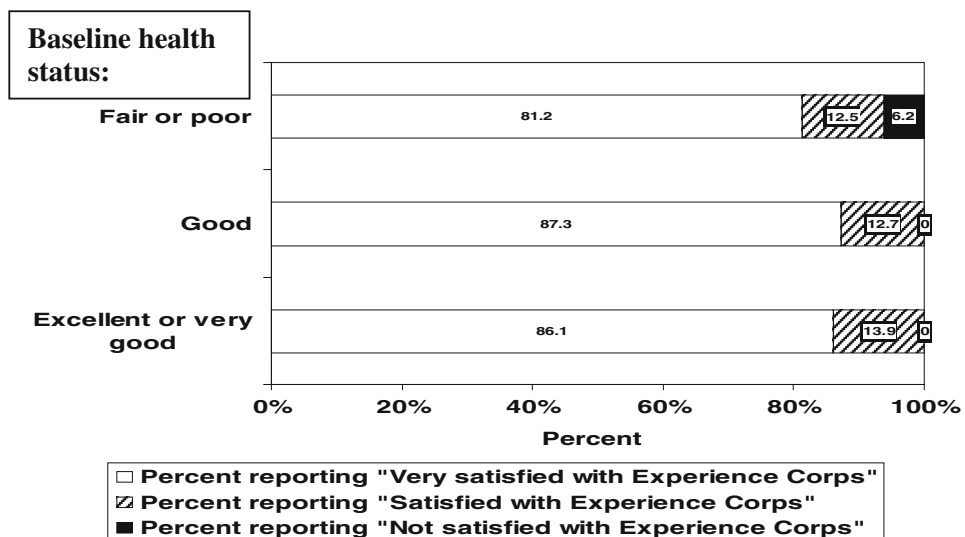


**FIGURE 2.** Improvement in physical performance measures after volunteering for 4–8 months, by baseline self-rated health status. Improvement is defined as any positive change from baseline report.

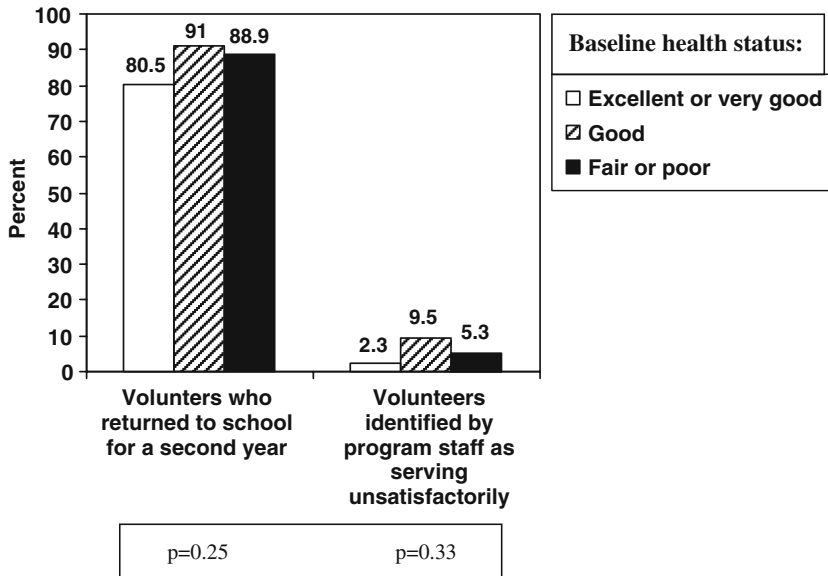


**FIGURE 3.** Improvement in physical performance measures after volunteering for 4–8 months, by multimorbidity status. Improvement is defined as any positive change from baseline report. Chronic diseases included here are hypertension, arthritis, visual problems, hearing problems, lung disease, diabetes, and angina.

There were no significant differences in rates of improvement in performance measures such as walking speed between volunteers with less than or equal to two chronic diseases at baseline and volunteers with more than two chronic diseases at baseline (Figure 3). There was a consistent nonsignificant trend that the older adults with multiple chronic diseases displayed greater rates of benefit than those with few or no chronic disease. Similarly, volunteers reporting mobility difficulty at baseline



**FIGURE 4.** Satisfaction of volunteers with Experience Corps Baltimore®, by baseline health status. Differences between groups were not statistically significant,  $p=0.18$ .



**FIGURE 5.** Volunteer effectiveness. Percent of volunteers who were retained or returned to the program for a second school year and percent of volunteers identified by program staff as serving unsatisfactorily, by baseline health status.

were not significantly more likely than those without mobility difficulty to display better results on physical performance measures or on self-reported energy and strength (data not shown).

We then sought to understand whether program satisfaction, and rates of retention and satisfactory performance varied by health status. Two thirds to three quarters of volunteers in each group described high satisfaction with the program, with no significant differences between groups (Figure 4). Perhaps related to this, overall retention in the program, meaning the proportion who returned for a second year, was 87.6%; there was no significant variation by baseline health status (Figure 5), although there was a suggestion of lowest retention among individuals initially reporting excellent or very good health status. In terms of performance, few volunteers in any of the health status groups were considered unsatisfactory because they needed extra monitoring (Figure 5). A total of ten of the 174 volunteers in our set were defined as these “problem volunteers” who needed extra monitoring. By logistic regression, less than very good health status was not a significant predictor of needing additional help or monitoring by program staff (data not shown). Age, race, MMSE score, number of chronic diseases, energy level, and sex of volunteers were also not significant predictors of needing this sort of support. *P* values ranged from 0.48 for age to 0.92 for baseline health status.

## DISCUSSION

Older adults along a broad range of health status were able to participate successfully in high-intensity (15 h/week over 4–8 months) volunteering in Experience Corps. Notably, this report shows that improvements in health and functional status, for those initially in less than very good health were comparable to, or greater than, the changes seen in those who were in better health. Of

particular note, the volunteers in fair health improved their stair-climbing speed proportionately more than volunteers in better health. Stair-climbing is a relatively demanding test of lower extremity power, and stair-climbing difficulty is associated with ADL limitations<sup>38</sup> and poor standing balance.<sup>39</sup> At least half of participants in each health stratum improved their 4-m walking speed. Poor walking speed is associated with mortality and disability.<sup>40–42</sup> Improved 4-m walking speed is a better predictor of survival than a variety of other objective and self-reported health measures, according to one recent study.<sup>43</sup> The improvements in walking speed reported here observed in volunteers in less than very good health were clinically significant according to that study.<sup>43</sup> Poor strength and energy, which seemed to be modified by this intervention, are components of the frailty syndrome and associated with mortality and disability.<sup>44</sup>

Consistent with the increase in engagement, majorities of volunteers in each health status decreased their television viewing. Such a change is potentially important for both physical and cognitive health, as TV viewing is not cognitively stimulating and potentially replaces activities that provide such stimulation as well as being associated with a sedentary lifestyle and obesity.<sup>45</sup> In this population of mainly African-American older women, findings indicate that older adults in fair or poor health who are desirous of social engagement might also benefit from it in terms of health status.

That satisfaction with volunteering does not vary with health and that the least healthy volunteers tended to be most likely to continue volunteering over time provides additional support for experienced benefits. The improvements seen in such variables as energy, objectively measured strength, and stair-climbing speed are likely due to increased physical activity and associated increased social engagement. Many of the older adults in this population, particularly those who are initially in fair health, were highly sedentary at baseline. The decline in TV watching seen here likely reflects more time off of the sofa and out of the house, which should provide a variety of physical benefits. Volunteering may also improve well-being by replacing meaningful roles and/or social networks that have been lost<sup>46</sup> due to poor health and disability, as well as retirement. Many older adults are thought to want new types of generative roles after retirement, often ones to which they did not have previous access, in order to meet life-stage appropriate goals of “giving back” through generative activities.<sup>47,48</sup> Although some have found a threshold of benefit from volunteering below this high-intensity level<sup>3</sup> in terms of mortality, these findings argue that even older adults in fair health may derive important benefits from frequent volunteering.

The high long-term retention rates in this program, even for those in fair health, suggest that generative roles may provide a successful vehicle for a high and sustained “dose” of health promotion. This analysis suggests that Experience Corps could serve as a public health intervention for older adults who have disability and/or poor health, as well as for those in better health. If opportunities to participate in such programs are expanded to older adults with traditionally lower access to civic volunteering opportunities and health promotion, this could potentially bring health promotion to such communities. Urban African-American women and men, a vulnerable minority population,<sup>49</sup> comprise the vast majority of these volunteers in Experience Corps in Baltimore City, Maryland. While older African-Americans are underrepresented in civic engagement programs, they are also less likely to be asked to volunteer.<sup>50</sup> Less than one third of Experience Corps volunteers in fair health had volunteered in any capacity in the prior year. It appears that at least some of these older adults are drawn to opportunities to make a difference—despite their health

status. A range of meaningful roles that make a difference may provide further opportunity to stay active and give back,<sup>51</sup> while addressing traditional health disparities by improving energy, strength and function through increased activity.

This pre–post-evaluation has several limitations. That the healthiest volunteers demonstrated no greater or even less benefit from this program over this follow-up period may be a “ceiling effect,” given less room for improvement. Individuals who choose to volunteer for this program likely have a belief that it does good things, and they may anticipate some health benefits. It should be noted that the objective physical performance-based measures in this analysis support the findings of self-reported improvements in strength, particularly for those in the worst initial health. This study was not powered to identify differences between functional outcomes based on health status and was intended to generate hypotheses for further research. Participants in this study were primarily African-American women, and these results may need to be replicated in other groups. We have found that women are easier to recruit for this kindergarten through third-grade role than men, probably due both to the generally lower rates of volunteering among men compounded by the perceived social appropriateness of this role for women. The high proportion of African-American volunteers mirrors the ethnic makeup of Baltimore City and its school students. African Americans who volunteer are more likely to engage in youth mentoring.<sup>52</sup> Some of the participants in this study were doing other work or volunteering during the time of their school service, while others were not. The effects of work and retirement on health are complex,<sup>53</sup> and the effects of combinations of different types of productive activity are certainly unknown. There were interesting trends in this study, such as improved grip strength among those in less than very good health, which may become statistically significant in a larger trial. One major limitation was the lack of a control group; there is currently such a formal randomized, controlled trial underway of Experience Corps in Baltimore.

High-intensity volunteering for older adults with a diverse range of health status may have the potential to improve the health of both older adults and communities. Opportunities to serve may be increasing, and volunteer program recruiters should not discourage older adults in only fair health from seeking these volunteer roles. Civic engagement should not be imposed on all older adults given that some older adults are content not to do generative activities in later life.<sup>9</sup> We instead propose increased access to volunteer programs for older adults who might not have good or excellent health given that health disparities are likely to continue or worsen unless new public health interventions specifically target individuals at highest risk.<sup>54</sup> Meaningful, health behavior-enhancing roles for older adults may offer a valued biopsychosocial approach to successful aging<sup>55</sup> in America.

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*Author Contributions.* The study concept and design, interpretation of data, and preparation of manuscript were done by Jeremy Barron and Erwin Tan. Data

analysis and review of manuscript was by Qilu Yu. Data analysis was also done by Meilin Song. Sylvia McGill did the acquisition and interpretation of data. Linda Fried did the study concept and design, preparation and review of manuscript.

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