Physical Function Assessment in a Community-Dwelling Population of U.S. Chinese Older Adults

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Background. This report describes the levels of physical function in U.S. Chinese older adults utilizing self-reported and performance-based measures, and examines the association between sociodemographic characteristics and physical function.

Methods. The Population Study of Chinese Elderly in Chicago enrolled an epidemiological cohort of 3,159 community-dwelling Chinese older adults aged 60 and older. We collected self-reported physical function using Katz activities of daily living and Lawton instrumental activities of daily living items, the Index of Mobility scale, and the Index of Basic Physical Activities scale. Participants were also asked to perform tasks in chair stand, tandem stand, and timed walk. We computed Pearson and Spearman correlation coefficients to examine the correlation between sociodemographic and physical function variables.

Results. A total of 7.8% of study participants experienced activities of daily living impairment, and 50.2% experienced instrumental activities of daily living impairment. With respect to physical performance testing, 11.4% of the participants were not able to complete chair stand for five times, 8.5% of the participants were unable to do chair stands at all. Older age, female gender, lower education level, being unmarried, living with fewer people in the same household, having fewer children, living fewer years in the United States, living fewer years in the community, and worsening health status were significantly correlated with lower levels of physical function.

Conclusions. Utilizing self-reported and performance-based measures of physical function in a large population-based study of U.S. Chinese older adults, our findings expand current understanding of minority older adults’ functional status.

Key Words: Chinese aging—Physical function—PINE study.

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Physical function is a critical indicator of the current health status of older adults. As gerontological studies suggest, understanding physical function of older adults, especially the assessment of specific activities and tasks in which impairment threatens one’s ability to live independently, is important from many perspectives. First, physical function is a valid predictor of subsequent disability, and is prognostic of future health needs and social care use (1). Second, impairment in physical function has been associated with substantial morbidity and mortality (2,3). Third, the number of older adults is notable and growing, particularly with respect to minority populations. There is growing evidence that the U.S. immigrant population is graying with more physical function impairment and disabilities in comparison with their U.S.-born counterparts (4). The rapidly increasing minority population is of concern to policymakers allocating resources for culturally and linguistically appropriate health care and other services.

There are self-report and performance-based measures designed to assess physical functioning for the purposes of health research. With self-report measures, older adults report their perceived ability to perform a task, whereas performance-based measures directly record their performances. Researchers have examined the association between self-report and performance-based measures of physical function in aging populations, but findings suggest that self-report and performance-based measures are not strongly associated, likely due to various reporting biases and that they may not measure the same construct (5). Rather, self-report measures and performance-based measures may complement each other in providing comprehensive information about the physical function status of older adults (6–8).

U.S. national normative data consistently reported higher prevalence of physical disabilities among minority older adults relative to non-Hispanic white (9,10). In addition,
longitudinal studies of community-dwelling black and white older adults suggested that not only the racial disparities existed in baseline data, but black disadvantage in physical disabilities increased over time with age (11,12). A few regional studies also investigated the physical health status of Asian American older adults and found that Asian American older adults may exhibit poorer physical health than older adults in the general population; furthermore, there existed a high level of heterogeneity of physical health burden among different Asian American subcategories (13,14). Although reducing racial/ethnic disparities in physical disabilities remain a national priority of Health People 2020 program (15), progress toward this goal requires more systematic studies of overall physical function among all subpopulations of older adults.

To our knowledge, relatively little is known regarding physical function status among U.S. Chinese older adults, one of the fastest growing aging populations in the country (16). Owing to obstacles in data collection, subgroup heterogeneity, and recruitment barriers, limited assessments exist of physical function among U.S. Chinese older adults (17). The lack of population-based epidemiological research that utilizes comprehensive measures of physical function in the U.S. Chinese population also makes it difficult to compare functional status across racial/ethnic groups. Furthermore, existing qualitative studies suggest that Chinese older adults often perceived their aging process accompanied by a sense of helplessness, and feeling of no control over the course of life and illnesses. The insecurity about physical function decline may be associated with placing less importance on health-seeking behaviors, delayed treatment, and worsened quality of life (17,18).

Therefore, the purpose of this study was to expand our current understanding of physical function status of aging populations using both self-reported measures and performance-based measures. Specifically, using data drawn from a large population-based study of U.S. Chinese older adults, the current study aimed to: (i) assess physical function, utilizing both self-reported and performance-based measures, (ii) examine the association between self-reported and performance-based measures of physical function, and (iii) explore sociodemographic and health status correlates of physical function in Chinese older adults.

**Methods**

**Population and Settings**

The Population Study of Chinese Elderly in Chicago (PINE) is a community-engaged, population-based epidemiological study of U.S. Chinese older adults aged 60 and older in the Greater Chicago area. The purpose of the PINE study is to collect community-level data of U.S. Chinese older adults to examine the key cultural determinants of health and well-being. The project was initiated by a synergistic community–academic collaboration among the Rush Institute for Healthy Aging, Northwestern University Medical Center, and many community-based social services agencies and organizations throughout the Greater Chicago area. Details of the PINE study have been described elsewhere (19).

The PINE study implemented extensive culturally and linguistically appropriate community recruitment strategies guided by a community-based participatory research approach (17,20). The inclusion criteria included: (i) older adults over the age of 60 years old, (ii) self-identified as Chinese, (iii) resided in the Greater Chicago Area. Out of 3,542 eligible older adults approached in the Greater Chicago area, 3,159 agreed to participate in the study, yielding a response rate of 91.9%. Participants were surveyed by bilingual research assistants in their preferred language and dialects. Based on available data drawn from U.S. Census 2010 and a random block census project conducted in the Chinese community in Chicago, the PINE study is representative of the Chinese aging population in the Greater Chicago area with respect to key sociodemographic characteristics, including age, gender, education, income, marital status, and country of origin (21). The study was approved by the Institutional Review Board of the Rush University Medical Center.

**Measurements**

**Physical function assessment.**—We assessed physical function with four well-established measures of ability to perform common daily activities. The first was the Katz Index of activities of daily living (ADL), which measured physical function impairment in an individual’s ability to perform basic self-care tasks (22). Participants reported the level of help needed in eight ADL. We then created a continuous variable by summing scores from the 8 items; 0 indicated participants required no help in the ADL item, and 1 indicated that help is needed. Therefore, the aggregate scores ranged from 0–8, with higher scores indicating greater levels of impairment. Our analyses of the Katz ADL measure demonstrated excellent reliability with Cronbach’s alpha of 0.92. Our second measure was the Lawton instrumental ADL (IADL), which asked participants to self-report the extent of help needed in 12 different activities (23). A continuous variable with score range 0–12 was created, 0 indicated participants required no help in the ADL item, and 1 indicated that help is needed, with higher scores indicating greater levels of impairment. The IADL measure also demonstrated good reliability with Cronbach’s alpha of 0.90.

The third measure was an index of mobility based on work by Rosow and Breslau (24). Three items measured the help needed to do heavy work around the house, walk up and downstairs, and walk half a mile (Cronbach’s
alpha = 0.80). Adding the individual items yielded a summary score with a range from 0 to 3, with higher scores indicating greater levels of impairment. The fourth measure used was an index of basic physical activities measuring five activities of upper and lower extremity function, based on work by Nagi (25). Each item was scored according to degree of difficulty. A summary score with a range from 0 to 5 was created, with higher scores indicating greater levels of impairment. The Cronbach’s alpha of this measure was 0.80 in our study sample.

In addition to the self-reported measures, we also assessed physical function with physical performance testing. Associations between measures of reported disability and physical performance tests are usually strong (26). The tests of walking performance captured the number of seconds needed to complete the task. Other tests assessed the number of actions (eg, standing) completed within a specified time period. The performance test consisted of (i) chair stand—the ability to rise to a standing position from a chair, (ii) tandem stand—assessed through a lead-in performance tests (semi-tandem) which then changes into either full tandem, or side-by-side, depending on the performance on semi-tandem, (iii) an 8-foot timed walk.

We then created summary score for each of the tasks, each ranged 0–5. For chair stand, 0 indicated that participants cannot do a chair stand without using arms, not attempt for safety, or tried but unable; 1 indicated 1–4 chair stands, but not 5 repeated; 2–5 represented quartiles of time for five repeated chair stands. For tandem stand, 0 indicated unable to do side-by-side stand, or not attempted; 1 indicated the ability to hold side-by-side stand less than 10 seconds; 2 indicated the ability to hold side-by-side for 10 seconds, but unable or refused to do semi-tandem; 3 indicated the ability to hold side-by-side for 10 seconds, and able to do semi-tandem, but less than 10 seconds; 4 referred to the ability to hold semi-tandem for full 10 seconds; and 5 indicated the ability to hold full tandem for 10 seconds. For measured walk, 0 indicated participants were unable to do the walk. For the rest, we divided walking time into quintiles, with lowest quintile (shortest time) getting a score of 5, whereas the highest quintile (longest time) getting a score of 1. Summary scores of these physical performance tests were then created (range 0–15, higher score indicating better function) (12,27).

These performance tests and analytical procedures have been used in large-scale population studies, including the Established Populations for the Epidemiological Studies of the Elderly project (5) and the Chicago Health and Aging Project (28,29). These tests demonstrated good internal consistency and reliability in our study, with a Cronbach’s alpha of 0.69.

Sociodemographic characteristics.—Sociodemographic profile characteristics included age, education, annual income, marital status, number of children, living arrangement, language preference, country of origin, years in the United States, and years in the community. Overall health status was measured by asking participants, “In general, how would you rate your health?” on a four-point scale. Quality of life was assessed by asking, “In general, how would you rate your quality of life?” on a four-point scale. Health changes over the last year was measured by the question, “Compared to one year ago, how would you rate your health now?” on a three-point scale.

Data analysis.—Descriptive statistics were used to summarize sociodemographic characteristics, family composition, health related, and quality of life of our sample of U.S. Chinese older adults. The psychometric properties of the aforementioned measures were examined to test their adequacy and use among U.S. Chinese older adults. Pearson and Spearman correlation coefficients were calculated to determine the relationships between sociodemographic and health-related variables and composite score of each physical function test. Missing data for the ADL, IADL, index of mobility, Nagi, chair stand, tandem stand, walking test were: 0.13%, 3%, 0.5%, 0.6%, 1.5%, 1.4%, and 0.04%, respectively. If participants had missing data, they would be removed from the analysis of that individual measure. We used SAS, Version 9.2 for all statistical analyses (SAS Institute Inc., Cary, NC).

Results

Participants

Of the 3,159 participants, 58.9% were female. Participants had a mean age of 72.8 (SD ± 8.3), with age ranging from 60 to 105 years old. The mean number of years of completed education was 8.7 (SD ± 5.1). The majority of participants (85.1%) received less than $10,000 in annual income. Most participants were married (71.3%), 24.5% were widowed, 2.4% were divorced, and 1.8% were separated. Participants’ mean years of residing in the United States was 20.0 (SD ± 13.2). The majority emigrated from Mainland China (92.8%).

Self-Reported Physical Function Impairments

A total of 7.8% of study participants reported some level of ADL impairment and 50.2% experienced IADL impairment. In sum, 50.4% of study participants experienced some level of ADL or IADL physical function impairment. The most prevalent ADL impairment was walking; needing help with shopping was the most prevalent IADL impairment (Table 1). Participants had a mean ADL impairment composite score of 0.2 (SD ± 0.9), with scores range from 0–8. The median ADL impairment was 0. With respect to IADL, the mean IADL impairment composite score of 1.8 (SD ± 2.6) and median score was 1. The mean combined ADL and IADL impairment score was 2.0 (SD ± 3.6) and median score was 1.
When mobility was assessed using the Index of Mobility scale, 35.7% reported that they cannot do heavy work around the house (Table 2). The mean summary score of impairment was 0.7 (SD ± 1.1), and median was 0. With respect to the level of difficulty in basic physical activities assessed with NAGI test, 41.9% of the participants reported having difficulty with stooping, crouching, and kneeling. The mean summary score of NAGI impairment was 1.5 (SD ± 1.6) and median was 2.0.

**Physical Performance Testing**

A total of 11.4% of the participants were not able to complete chair stand for five times, and 8.5% of the participants were unable to do chair stands at all (Table 3). The mean score was 2.9 (SD ± 1.5), and median was 3.0. With respect to the tandem stand, 4.5% of participants were unable to complete a side-by-side stand; 11.4% of participants were unable to complete a semi-tandem stand, and 26.2% were unable to complete a tandem stand. The mean score for tandem stand was 4.4 (SD ± 1.2) and median score was 5.0. With respect to the timed walk, participants spent a mean of 5.7 seconds to complete the 8-foot walk (SD ± 4.5), with time ranging from 1.5 to 75.9 seconds. The median time was 4.4 seconds. The mean score for three tests combined was 10.4 (SD ± 3.3).

**Correlation Between Self-Reported Measures and Physical Performance Testing**

All four self-reported physical function tests were significantly correlated with the three physical performance testing scores (Table 4). We found that the relationship between self-reported physical impairment measures and physical performance tests ranged from weak to moderate, with correlation coefficients ranging from −.32 to −.47. Correlations

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**Table 1. Katz Index of Activities of Daily Living (ADL) and Lawton Instrumental Activities of Daily Living (IADL)**

<table>
<thead>
<tr>
<th>Level of Help Needed</th>
<th>None, N (%)</th>
<th>Any Help, N (%)</th>
<th>Sometimes, N (%)</th>
<th>A Lot, N (%)</th>
<th>Most of the Time, N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eat</td>
<td>3,135 (99.3)</td>
<td>21 (0.7)</td>
<td>7 (0.2)</td>
<td>3 (0.1)</td>
<td>11 (0.4)</td>
</tr>
<tr>
<td>Dressing</td>
<td>3,068 (97.2)</td>
<td>49 (1.6)</td>
<td>49 (1.6)</td>
<td>23 (0.4)</td>
<td>26 (0.8)</td>
</tr>
<tr>
<td>Bathing</td>
<td>3,041 (96.4)</td>
<td>115 (3.6)</td>
<td>33 (1.1)</td>
<td>29 (0.9)</td>
<td>53 (1.7)</td>
</tr>
<tr>
<td>Walking</td>
<td>2,985 (94.6)</td>
<td>171 (5.4)</td>
<td>82 (2.6)</td>
<td>41 (1.3)</td>
<td>48 (1.5)</td>
</tr>
<tr>
<td>Transferring</td>
<td>3,075 (97.4)</td>
<td>81 (2.6)</td>
<td>35 (1.1)</td>
<td>12 (0.4)</td>
<td>34 (1.1)</td>
</tr>
<tr>
<td>Grooming</td>
<td>3,106 (98.4)</td>
<td>50 (1.6)</td>
<td>17 (0.5)</td>
<td>9 (0.3)</td>
<td>24 (0.8)</td>
</tr>
<tr>
<td>Incontinence</td>
<td>3,100 (98.2)</td>
<td>56 (1.8)</td>
<td>22 (0.7)</td>
<td>11 (0.4)</td>
<td>23 (0.7)</td>
</tr>
<tr>
<td>Toileting</td>
<td>3,099 (98.2)</td>
<td>57 (1.8)</td>
<td>19 (0.6)</td>
<td>11 (0.4)</td>
<td>27 (0.9)</td>
</tr>
<tr>
<td>IADL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managing money</td>
<td>2,635 (83.5)</td>
<td>520 (16.5)</td>
<td>173 (5.5)</td>
<td>133 (4.2)</td>
<td>214 (6.8)</td>
</tr>
<tr>
<td>Telephone</td>
<td>2,955 (93.6)</td>
<td>201 (6.4)</td>
<td>97 (3.1)</td>
<td>39 (1.2)</td>
<td>65 (2.1)</td>
</tr>
<tr>
<td>Prepare meals</td>
<td>2,600 (82.4)</td>
<td>555 (17.6)</td>
<td>206 (6.5)</td>
<td>126 (4.0)</td>
<td>223 (7.1)</td>
</tr>
<tr>
<td>Laundry</td>
<td>2,467 (78.2)</td>
<td>688 (21.8)</td>
<td>214 (6.8)</td>
<td>153 (4.9)</td>
<td>321 (10.2)</td>
</tr>
<tr>
<td>Taking medication</td>
<td>3,016 (95.6)</td>
<td>138 (4.4)</td>
<td>65 (2.1)</td>
<td>20 (0.6)</td>
<td>53 (1.7)</td>
</tr>
<tr>
<td>Housework</td>
<td>2,358 (74.7)</td>
<td>798 (25.3)</td>
<td>252 (8.0)</td>
<td>178 (5.6)</td>
<td>368 (11.7)</td>
</tr>
<tr>
<td>Routine health</td>
<td>2,957 (94.2)</td>
<td>182 (5.8)</td>
<td>66 (2.1)</td>
<td>33 (1.1)</td>
<td>83 (2.6)</td>
</tr>
<tr>
<td>Special health</td>
<td>2,752 (89.0)</td>
<td>340 (11.0)</td>
<td>33 (1.1)</td>
<td>49 (1.6)</td>
<td>258 (8.3)</td>
</tr>
<tr>
<td>Shopping</td>
<td>2,130 (67.6)</td>
<td>1,023 (32.4)</td>
<td>376 (11.9)</td>
<td>223 (7.1)</td>
<td>424 (13.5)</td>
</tr>
<tr>
<td>Traveling, commuting</td>
<td>2,405 (76.6)</td>
<td>734 (23.4)</td>
<td>253 (8.1)</td>
<td>122 (3.9)</td>
<td>359 (11.4)</td>
</tr>
<tr>
<td>Get outside home</td>
<td>2,857 (90.1)</td>
<td>297 (9.9)</td>
<td>82 (2.6)</td>
<td>61 (1.9)</td>
<td>154 (4.9)</td>
</tr>
<tr>
<td>Be alone</td>
<td>2,991 (94.8)</td>
<td>164 (5.2)</td>
<td>66 (2.1)</td>
<td>45 (1.4)</td>
<td>53 (1.7)</td>
</tr>
</tbody>
</table>

**Table 2. Index of Mobility scale (Rosow and Breslau) and Index of Basic Physical Activities scale (NAGI)**

<table>
<thead>
<tr>
<th>Abilities to Perform Physical Tasks</th>
<th>Yes, N (%)</th>
<th>No, N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do heavy work around the house</td>
<td>2,026 (64.3)</td>
<td>1,123 (35.7)</td>
</tr>
<tr>
<td>Walk up and downstairs to the second floor without help</td>
<td>2,671 (84.7)</td>
<td>483 (15.3)</td>
</tr>
<tr>
<td>Walk a half mile without help</td>
<td>2,493 (79.2)</td>
<td>656 (20.8)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NAGI</th>
<th>Level of Difficulty</th>
<th>No (%)</th>
<th>A little (%)</th>
<th>Some (%)</th>
<th>A Lot (%)</th>
<th>Unable to Do (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulling or pushing large objects</td>
<td>2,364 (75.0)</td>
<td>275 (8.7)</td>
<td>264 (8.4)</td>
<td>180 (5.7)</td>
<td>68 (2.2)</td>
<td></td>
</tr>
<tr>
<td>Stooping, crouching, or kneeling</td>
<td>1,831 (58.1)</td>
<td>313 (9.9)</td>
<td>435 (13.8)</td>
<td>416 (13.2)</td>
<td>157 (5.0)</td>
<td></td>
</tr>
<tr>
<td>Lifting or carrying weights more than 10 pounds</td>
<td>1,993 (63.3)</td>
<td>288 (9.2)</td>
<td>328 (10.4)</td>
<td>402 (12.8)</td>
<td>137 (4.4)</td>
<td></td>
</tr>
<tr>
<td>Reaching or extending arms above shoulder</td>
<td>2,785 (88.4)</td>
<td>142 (4.5)</td>
<td>122 (3.9)</td>
<td>60 (1.9)</td>
<td>43 (1.4)</td>
<td></td>
</tr>
<tr>
<td>Writing or handling or fingering small objects</td>
<td>2,056 (65.4)</td>
<td>495 (15.7)</td>
<td>331 (10.5)</td>
<td>194 (6.2)</td>
<td>69 (2.2)</td>
<td></td>
</tr>
</tbody>
</table>
Asian immigrants may face a greater likelihood of having a disability than U.S.-born non-Hispanic whites. Specifically, Asian immigrants were more likely than U.S.-born elderly to have difficulty going out shopping alone, going to a medical appointment, and have problems performing personal care such as dressing, bathing, and getting around the house (31). In comparison with these previous findings of U.S. general aging population, our data reveal a higher prevalence of functional impairment, a total of 50.4% of U.S. Chinese older adults experience some levels of impairment in ADL and IADL, with the most pronounced impairments in shopping, housework, and traveling.

There is also a growing body of literature that addresses the prevalence of physical function impairments among Chinese older adults in Asia. A population-based study of community-dwelling Chinese older adults in Beijing aged 60 and older found that the prevalence of functional disability was 6.5% for ADL and 7.9% for IADL (32). Another population-based study found that the prevalence of impairment in ADL was 8.3% among urban Shanghai Chinese older adults 65 years and older (33). In comparison, our study shows a higher prevalence of physical function impairment, in which 7.8% of older adults experienced impairment in ADL and 50.2% had impairment in IADL. These differences may be a result of different items used, so more unified functional tasks need to be devised and implemented for future valid comparisons across diverse Chinese populations.

With respect to performance-based measures, we found that Chinese older adults experienced higher levels of physical function impairment in comparison with their Caucasian counterparts. Findings from population studies of older adults aged 65 and older in the Chicago Health and Aging Project that utilized the same measure reported a mean score of 10.2 in its community-dwelling study sample, in which white older adults reported the score of 10.9, whereas black older adults reported the mean score of 9.8 (12,27). The summary score for was 10.4 (score ranged from 27 to 33). The summary score for was 10.4 (score ranged from 27 to 33). The summary score for was 10.4 (score ranged from 27 to 33). The summary score for was 10.4 (score ranged from 27 to 33). The summary score for was 10.4 (score ranged from 27 to 33). The summary score for was 10.4 (score ranged from 27 to 33). The summary score for was 10.4 (score ranged from 27 to 33). The summary score for was 10.4 (score ranged from 27 to 33). The summary score for was 10.4 (score ranged from 27 to 33).
Our report is also among the first to examine physical function using both self-reported physical function assessments and physical performance testing in a large population of Chinese older adults. Statistically significant correlations were found between performance measures and self-reported assessments in this study. However, the levels of correlation were weak to moderate, suggesting that the performance measures may not be adequately assessing the same tasks assessed by the self-report measures. We suspect the lack of correlation may also be largely due to reporting bias prescribed by the traditional Chinese culture value of “saving face.” That is, despite older adults may not be able to physically carry out an ADL/IADL task, they may still report that they do not need any help in order to save face and provide socially desirable answers.

Researchers have also found discordance between self-report and performance-based tests in previous studies designed specifically to compare older adults’ ability to complete standardized tasks representing ADL/IADLs with their self-reported disability in these tasks (34,35). Our study supports the suggestions of prior studies that combining both measures may decrease the potential biases associated with the self-reported functional measure, and provide more objective and uniform testing of physical performance abilities. In addition, our findings may permit cross-cultural comparisons between Chinese older adults and different racial/ethnic groups on the level of physical function, especially in longitudinal studies and descriptive epidemiology research. Additional studies are needed to systematically examine how the associations between self-reported and performance-based measures may have differed between Chinese older adults and other ethnic/racial groups.

Female gender and lower level of education were correlated with lower physical function scores. Consistent with observations in prior population-based studies of Chinese older adults in the United States and in China (7,33), our study suggests that there are gender differences in both self-reported physical function and performance measures, that is, older women reported higher levels of physical function impairment. However, we have limited information regarding whether older women’s higher prevalence of reported functional impairment may be a true reflection of disability. Longitudinal studies are needed to investigate risk and protective factors associated with physical function impairment. In addition, our study suggests that being married is correlated with lower levels of self-reported physical function impairments and higher levels of performance-based physical function, which is consistent with previous studies (32). Whereas higher levels of physical function was negatively correlated with the number of people living in the same household, older adults who live alone may be exposed to greater vulnerabilities for elder self-neglect (28). Given the Chinese cultural significance of traditional multigenerational living arrangements and larger family compositions,
the impact of family dynamics on functional status changes among older adults warrants further investigation.

The findings of this study should be interpreted with limitations. First, participants in this study all reside in the Greater Chicago area, so the findings may not be generalizable to Chinese populations in other regions of United States or in other countries. Future studies are needed to explore potential geographical variations. In addition, in line with previous research (36), our data reveal that all physical function test scores were correlated with self-reported health variables. However, due to the cross-sectional nature of our data, we were not able to postulate on the potential temporal relationships. Prospective studies are needed to explore changes in the association between physical function decline and health trajectories over time (37).

It is also critical to collect additional information on dismobilization and medical condition (38). Future hypotheses testing research is needed to provide an in-depth understanding of the risk/protective factors associated with physical function impairment in Chinese older adults. Last, we did not have information regarding older adults’ medical comorbidities, chronic conditions, nutrition, or lifestyle habits, which would likely affect physical function. In addition, our sample pertains to community-dwelling older adults and impairment levels are likely greater among institutionalized older adults. Nevertheless, this study provides new insights into assessment of physical function among a rapidly growing U.S. minority population and lays the groundwork for future studies on these issues.

This study has important practical and policy implications. For caring family members, it is important to encourage older adults to enhance physical fitness with adequate exercise. In Chinese culture, adult children may often ask frail older adults to lay down and rest, instead of involving in physical exercise, which may likely further exacerbate disability. Balancing filial piety obligations and parents’ physical needs of exercise is the key to maintain older adults’ health and well-being. For social services agencies, most programs require physical function screening to determine the degree of vulnerability and unmet needs. More concerted public health effort must be paid to those older adults who are of older age, female gender, lower education level, being unmarried, living with fewer people in the same household, and worsening health status. This subpopulation of older adults may be more likely to experience higher levels of physical function impairment. In addition, it may be of critical importance to administer both self-reported and performance-based measures to accurately report levels of functional impairment. Community-based intervention programs may improve functional outcomes and reduce nursing home admissions in older people. Strategies for disability prevention must be developed further at the policy level and with culturally and linguistically appropriate measures to serve our diverse aging populations.

Conclusions

Our study utilized comprehensive measures of physical function to assess the physical function of community-dwelling U.S. Chinese older adults. Our findings suggest U.S. Chinese older adults are vulnerable to physical function impairments, especially among those who are of older age, female gender, lower education level, being unmarried, living with fewer people in the same household, having fewer children, living fewer years in the United States, living fewer years in the community, and worsening health status. Using both self-report and performance measures adds to our understanding of Chinese older adults’ functional status and may be a valuable addition to the assessment of physical function among aging populations.

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