Fear of Falling and Related Activity Restriction Among Middle-Aged African Americans

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Background. The prevalence of fear of falling and related activity restriction, and their joint distribution with falls and falls efficacy, have been inadequately addressed in population-based studies of middle-aged and African-American groups.

Methods. The African American Health project is a population-based panel study of 998 African Americans born in 1936–1950 from two areas of metropolitan St. Louis (an impoverished inner-city area and a suburban area). Fear of falling, fear-related activity restriction, and 24 frailty-related covariates were assessed during in-home evaluations in 2000–2001.

Results. We found that 12.6% of participants reported having fear of falling without activity restriction, 13.2% had fear of falling with activity restriction, and 74.2% had no fear of falling. Neither fear of falling nor fear-related activity restriction varied significantly across three birth cohorts (1946–1950, 1941–1945, and 1936–1940). Lack of overlap of these two phenomena with having a fall in the past 2 years and low falls efficacy was considerable. When examined across three groups (no fear, fear without activity restriction, and fear with activity restriction), a consistent pattern of decreasing health status and social, emotional, and physical functioning was demonstrated.

Conclusions. In this population-based sample of 49- to 65-year-old African Americans, fear of falling and fear-related activity restriction were surprisingly common and not well explained by prior falls or low falls efficacy. These phenomena were already evident by age 49–55. Further study is warranted, including detailed qualitative investigations examining the timing, precursors, and consequences of fear of falling and fear-related activity restriction in minority and majority populations.

Worry that one might fall is a serious and common concern among older adults (1,2) regardless of whether it is measured as a general fear that one might fall (denoted “fear of falling” in this article) or a lack of confidence that one can perform activities without falling (denoted “falls efficacy”) (2–4). Reported prevalence in the community of fear of falling or low falls efficacy ranges from 12% to 65% in adults older than 60 years, and fear of falling occurs frequently in the absence of a recent fall (2,4–7). Worry regarding falling is associated with restriction of physical activity, de-conditioning, poorer health-related quality of life, more falls, greater frailty, and increased mortality (5,8–11). Among older persons, there appears to be a continuum of functional status from those with no fear of falling (best), to those with fear of falling without activity restriction (intermediate), to those with fear-related activity restriction (worst) (12).

Although there is considerable evidence that fear of falling is a multifactorial syndrome resulting from a complex and dynamic interplay among physical, psychological, and social factors in older adults (1,7,11,13), much remains unknown about fear of falling and low falls efficacy. Although there are some data about the prevalence of these phenomena at the population level (6,7,14,15), more studies are needed among minority populations—such as African Americans—as available evidence highlights the existence of significant differences, which may have important clinical and therapeutic implications. For example, one recent study (3) demonstrated that the expression of fear of falling and falls efficacy and their relationships to other falls-related factors differ between African-American and white women. Compared to age- and activity-matched white women, older African-American women had higher self-efficacy and comparable balance performance but slower gait speeds. The relationships among the three measures also varied between the two racial groups. Such data underscore the need to investigate these phenomena within different population groups. To our knowledge, there is no published information about the amount of overlap, or lack thereof, between fear of falling and falls efficacy at the population level. The prevalence of fear of falling and low falls efficacy among younger adults also deserves additional investigation. Available data are scanty and limited to selected cohorts with disabling diseases such as rheumatoid arthritis or lower extremity amputations (16,17).

The African American Health (AAH) project is a population-based panel study of community-dwelling middle-aged African Americans living in the St. Louis metropolitan area. In a previous article that focused on the correlates of fear of falling, low falls efficacy, and falls in this cohort, we reported the simple prevalences of these problems but did not examine the overlap among them, their variation by age, or their...
relationships to activity restriction (18). In this report, we examine the overlap among the four problems (including fear-related activity restriction) in this group and attempt to identify when these phenomena first become evident by exploring their prevalences across the available age range. We also inspect the functional status of participants with fear of falling with activity restriction versus the statuses of those with fear of falling alone and those without fear of falling.

**METHODS**

**Participants**

Participants were recruited in their own homes using a two-stage random selection process. Recruitment was conducted from two catchment areas selected to maximize socioeconomic differences: a poor inner city area of St. Louis, Missouri, and higher socioeconomic status suburban communities just northwest of the city. The inner-city area comprised predominantly African-American residents, but the racial composition of the suburban area was quite variable. Therefore, suburban blocks with a population of at least 10% African Americans based on the 1990 Census were selected. Sampling fractions were chosen to facilitate recruitment of approximately equal numbers of participants from both communities to maximize socioeconomic contrast. Because the inner city area had fewer eligible participants than the suburban area, it was oversampled relative to population size. This resulted in higher probabilities of selection in the inner-city area. Thus, when the total sample was weighted by the probability of selection, the inner-city area had a lesser impact on results. Inclusion criteria included: not living in an institution, having a birth date between 1936 and 1950 (inclusive), self-reporting black race or African-American ethnicity, having a standardized Mini-Mental Status Examination score (SMMSE) \( \geq 16 \) (19,20), and willing to provide signed informed consent. In-home assessments were conducted on all recruited participants between September 2000 and July 2001. Recruitment rate was 76%.

**Outcome Variables**

To categorize participants into the three groups (no fear of falling, fear of falling alone, and fear of falling with associated activity restriction), we first asked participants, “Are you afraid of falling?” (2,5,12) Positive responders were asked to grade the severity of that fear as “somewhat” or “very much.” Fear-related activity restriction was ascertained by asking positive responders, “Has fear of falling made you avoid any activities?” Participants who reported no fear of falling constitute the “no fear” group. Those individuals who reported fear of falling but no activity restriction are included in the “fear of falling alone” group. The final group consists of participants who had both fear of falling and fear-related activity restriction.

**Covariates**

For falls history, participants were asked whether they had fallen in the past 2 years, and individuals who reported falling in the past 2 years were asked if they had fallen in the past year. Participants were determined to have suffered an injurious fall in the past year if they had experienced any of the following after one or more falls: need for medical attention, inability to get up on their own without help from someone else, bone fracture, or need to cut down on their usual activities due to the fall. Falls efficacy was measured using Tinetti’s 10-item Falls Efficacy Scale (FES), designed to measure confidence in performing everyday activities without falling, with the response for each item ranging from 0 (no confidence) to 10 (complete confidence) (14). These activities were cleaning house, dressing, preparing simple meals, taking a bath or shower, light shopping, getting in and out of a chair, going up and down stairs, walking around the neighborhood, reaching into cabinets or closets, and rushing to answer the telephone. The FES score ranged from 0 to 100 (mean 93.3, SD 15; Cronbach’s alpha coefficient = 0.93). The FES score distribution was highly skewed with a large ceiling effect (59.3% of participants scored 100). We defined those participants scoring in the lowest quartile (score 0–95) to have low FES scores. This technique is consistent with approaches used in previous studies that also identified highly skewed FES data (10). Demographic variables included sex, years of formal education, and whether the participant lived alone. Participants’ self-reports of physicians’ diagnoses of each of nine chronic conditions (hypertension, diabetes mellitus, cancer other than a minor skin cancer, chronic airway obstruction, coronary artery disease, congestive heart failure, arthritis, stroke, and chronic kidney disease) were obtained by interview, and the number of reported conditions was summed. Fair or poor health was measured using the SF-36’s self-rated health question (21). Visual acuity was measured using a 3-item scale (3 = excellent to 15 = poor, alpha = 0.74) from the 2000 Health and Retirement Survey (HRS) (22) and included subjective ratings for eyesight in general, for seeing things at a distance, and for seeing things up close (with corrective lenses, if applicable). Hearing was assessed using a single-item, subjective rating of hearing (with use of a hearing aid, if applicable) with a five-level response ranging from excellent to poor (22). Interviewers also obtained the SMMSE (19), a 5-item social support scale derived from the MOS instrument (alpha = .85) (23), and depressive symptoms using the Center for Epidemiological Studies Depression symptoms index (CES-D) (24) (alpha = 0.83).

The basic activities of daily living (BADL; alpha = 0.84) scale was the simple count of items with reported difficulty performing seven different activities (bathing, dressing, eating, getting in and out of bed or chair, walking across room, getting outside, and using the toilet; range 0–7) using the wording and method of the Second Longitudinal Study on Aging (LSOA II) (25). The instrumental activities of daily living (IADL; alpha = 0.82) scale involved a simple count of eight activities from the LSOA II and from Lawton and Brody (26) (preparing meals, shopping for groceries, managing money, making phone calls, performing light housework, performing heavy housework, getting to places out of walking distance, and managing medications; range 0–8) for which the participant reported difficulty. Six items from the Nagi physical performance scale (27) were used to construct a scale tapping lower body limitations (0 = no difficulties to 6 = difficulties on all activities; alpha = 0.87); these items included difficulties in walking a quarter of a mile, walking
FEAR OF FALLING IN MIDDLE-AGED BLACKS

Table 1. Characteristics of Participants in the African American Health Project by Level of Fear of Falling and Activity Restriction

<table>
<thead>
<tr>
<th>Variable</th>
<th>No Fear (N = 693)</th>
<th>Fear of Falling Alone (N = 149)</th>
<th>Fear, Plus Activity Restriction (N = 155)</th>
<th>p Value^1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>997</td>
<td>56.74 (4.43)</td>
<td>56.53 (4.35)</td>
<td>.102</td>
</tr>
<tr>
<td>Female sex, %</td>
<td>997</td>
<td>54.4</td>
<td>69.7</td>
<td>68.3</td>
</tr>
<tr>
<td>Years of education</td>
<td>995</td>
<td>12.75 (2.79)</td>
<td>11.92 (3.05)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Living alone, %</td>
<td>995</td>
<td>21.0</td>
<td>27.2</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Health status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-rated health (%; fair or poor)</td>
<td>997</td>
<td>27.8</td>
<td>55.0</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>No. of chronic conditions</td>
<td>998</td>
<td>1.50 (1.20)</td>
<td>2.15 (1.50)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Vision scale</td>
<td>982</td>
<td>7.91 (2.41)</td>
<td>9.19 (2.59)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Hearing scale</td>
<td>997</td>
<td>2.25 (1.02)</td>
<td>2.52 (1.07)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Mini-Mental State Examination</td>
<td>998</td>
<td>28.30 (2.18)</td>
<td>27.73 (2.35)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Social and emotional status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social support scale (MOS)</td>
<td>991</td>
<td>20.15 (4.60)</td>
<td>17.99 (4.20)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Depressive symptoms (CES-D)</td>
<td>993</td>
<td>3.96 (4.06)</td>
<td>6.40 (4.47)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Reported physical function</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic activities of daily living</td>
<td>991</td>
<td>0.33 (0.94)</td>
<td>0.97 (1.69)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Instrumental activities of daily living</td>
<td>994</td>
<td>0.39 (0.98)</td>
<td>1.22 (1.70)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Upper body limitations</td>
<td>997</td>
<td>0.24 (0.62)</td>
<td>0.70 (1.00)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Lower body limitations</td>
<td>993</td>
<td>1.08 (1.54)</td>
<td>2.24 (1.82)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Measured physical function</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Handgrip (kg)</td>
<td>908</td>
<td>36.25 (11.91)</td>
<td>30.40 (10.46)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Chair stands</td>
<td>745</td>
<td>11.41 (3.95)</td>
<td>13.14 (3.89)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>One leg stand</td>
<td>792</td>
<td>20.53 (11.08)</td>
<td>18.21 (11.49)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Tandem stand, eyes closed</td>
<td>792</td>
<td>14.39 (11.62)</td>
<td>12.99 (11.10)</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Gait speed (m/s)</td>
<td>485</td>
<td>0.82 (0.24)</td>
<td>0.72 (0.25)</td>
<td>0.69 (0.21)</td>
</tr>
<tr>
<td>Fall related</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noninjurious fall in past year (%)</td>
<td>997</td>
<td>11.7</td>
<td>14.3</td>
<td>=.204</td>
</tr>
<tr>
<td>Injurious fall in past year (%)</td>
<td>997</td>
<td>8.3</td>
<td>13.1</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Falls Efficacy Scale &lt;5% (%)</td>
<td>997</td>
<td>14.9</td>
<td>41.5</td>
<td>=.001</td>
</tr>
</tbody>
</table>

Note: All data are weighted to represented population and represented as mean (SD), except where noted.
^1Chi-Square for trend was computed for dichotomous variables and analysis of variance for linear trend computed for continuous variables.
MOS = Medical Outcomes Study; CES-D = Center for Epidemiological Studies–Depression scale.

Analyses
Unweighted data were used to report number of participants. Proportions, means, standard deviations, and statistical differences between groups were determined using data weighted to the total population or the catchment area (as required by the specific analysis) using the SPSS weight cases function (SPSS, Chicago, IL). Falls history, fear of falling, and fear-related activity restriction were evaluated across three progressively older age groups separately for men and women using chi-square for trend, and by sex and catchment area using chi-square for independence. FES scores across the age groups by sex were evaluated by ANOVA for linear trend. Amount of overlap among those persons who experienced one or more falls in the past 2 years, those with an FES score ≤ 95, those with either moderate or severe fear of falling, and those with fear-related activity restriction was calculated using cross-tabulations. Information for falls and fear of falling was available for all participants, but one participant was missing an FES score. The relationship between the covariates and the three levels of fear of falling and activity restriction was examined using analysis of variance for linear trend for continuous variables and chi-square for trend for dichotomous measures (12).

RESULTS
Nine hundred ninety-eight participants participated in the study; these comprised 627 (62.8% unweighted; 58.8%
weighted) women and 371 (37.2% unweighted; 42.2% weighted) men. Mean age was 56.8 (±4.4 SD; range 49–65 years), 23.7% lived alone, average educational attainment was 12.4 years (range 0–25), and average number of chronic conditions was 2.10. In the entire cohort, 35.8% of the participants had a fall in the past 2 years, 24.0% had a fall in the past year, 11.5% had an injurious fall in the past year, 11.5% had a fall in the past year, fear of falling, and activity restriction; and analysis of variance for linear trend was computed for Falls Efficacy Scale.

### Table 2. Fall in the Past 2 Years, Fall in Past Year, Harmful Fall in Past Year, Falls Efficacy Scale, Fear of Falling, and Activity Restriction Due to Fear of Falling Among Participants in the African American Health Project by Sex, Date of Birth, and Catchment Area

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Unweighted n</td>
<td></td>
<td></td>
<td>Women</td>
<td>627</td>
<td>371</td>
<td>257</td>
<td>196</td>
<td>174</td>
<td>168</td>
<td>121</td>
<td>82</td>
<td>463</td>
<td>535</td>
</tr>
<tr>
<td>Mean age (SD)</td>
<td></td>
<td></td>
<td>Women</td>
<td>56.9 (4.5)</td>
<td>56.6 (4.4)</td>
<td>52.1 (1.5)</td>
<td>57.3 (1.4)</td>
<td>62.3 (1.6)</td>
<td>52.0 (1.6)</td>
<td>57.3 (1.6)</td>
<td>61.9 (1.5)</td>
<td>57.3 (4.8)</td>
<td>56.6 (4.3)</td>
</tr>
<tr>
<td>Fall in past 2 years</td>
<td></td>
<td></td>
<td>Women</td>
<td>37.0</td>
<td>34.1</td>
<td>33.4</td>
<td>39.9</td>
<td>38.5</td>
<td>33.8</td>
<td>36.4</td>
<td>32.0</td>
<td>38.6</td>
<td>35.0</td>
</tr>
<tr>
<td>Fall in past year</td>
<td></td>
<td></td>
<td>Men</td>
<td>22.3</td>
<td>26.3</td>
<td>18.4</td>
<td>24.8</td>
<td>24.5</td>
<td>27.2</td>
<td>29.8</td>
<td>21.4</td>
<td>27.0</td>
<td>23.2</td>
</tr>
<tr>
<td>Injurious fall in past year</td>
<td></td>
<td></td>
<td>Women</td>
<td>12.0</td>
<td>10.8</td>
<td>9.0</td>
<td>12.1</td>
<td>15.3</td>
<td>9.4</td>
<td>15.9</td>
<td>6.8</td>
<td>14.0</td>
<td>10.8</td>
</tr>
<tr>
<td>Falls Efficacy Scale, mean (SD)</td>
<td></td>
<td></td>
<td>Women</td>
<td>92.9 (15.2)</td>
<td>93.3 (15.3)</td>
<td>94.9 (15.0)</td>
<td>92.6 (15.2)</td>
<td>90.9 (15.4)</td>
<td>94.2 (14.3)</td>
<td>93.1 (13.5)</td>
<td>92.4 (18.3)</td>
<td>91.1 (17.5)</td>
<td>93.6 (14.5)</td>
</tr>
<tr>
<td>Fear of falling</td>
<td></td>
<td></td>
<td>Men</td>
<td>No fear</td>
<td>69.4</td>
<td>80.9</td>
<td>72.9</td>
<td>66.1</td>
<td>68.4</td>
<td>78.4</td>
<td>79.9</td>
<td>85.2</td>
<td>65.7</td>
</tr>
<tr>
<td></td>
<td>Somewhat fearful</td>
<td></td>
<td>Men</td>
<td>15.0</td>
<td>12.1</td>
<td>12.3</td>
<td>15.6</td>
<td>17.6</td>
<td>15.2</td>
<td>13.2</td>
<td>6.8</td>
<td>17.5</td>
<td>12.8</td>
</tr>
<tr>
<td></td>
<td>Very fearful</td>
<td></td>
<td>Men</td>
<td>15.6</td>
<td>7.0</td>
<td>14.8</td>
<td>18.3</td>
<td>14.0</td>
<td>6.3</td>
<td>6.9</td>
<td>8.0</td>
<td>16.8</td>
<td>10.7</td>
</tr>
<tr>
<td>Activity restriction due to fear of falling</td>
<td></td>
<td></td>
<td>Women</td>
<td>50.6</td>
<td>52.3</td>
<td>41.9</td>
<td>57.3</td>
<td>52.7</td>
<td>58.6</td>
<td>40.2</td>
<td>59.0</td>
<td>52.7</td>
<td>50.6</td>
</tr>
</tbody>
</table>

**Notes:** All data are weighted to the represented population, except as noted. Percentages are presented, unless otherwise noted.

1. Statistical contrasts are computed separately for each of four groups: 1) sex, 2) catchment area, 3) birth year for women only, and 4) birth year for men only. For groups 1 and 2, chi-square for independence was computed for fall in past 2 years, fall in past year, harmful fall in past year, fear of falling, and activity restriction; and chi-square for trend was computed for fall in past 2 years, fall in past year, harmful fall in past year, fear of falling, and activity restriction; and analysis of variance for linear trend was computed for Falls Efficacy Scale.

2. p < .05 by t test.

3. p < .05 by analysis of variance for linear trend.

4. p < .001 by chi-square for independence.

5. Activity restriction is among those who reported moderate or severe fear of falling.

**DISCUSSION**

The results of this study have several themes worth highlighting. To our knowledge, the AAH project is the first population-based study of fear of falling in a large sample of African Americans and exclusively in middle-aged individuals (18). Because fear of falling manifests itself differently in African Americans than in whites (3), race/ethnicity-specific studies such as this are essential. Previous studies among older adults (2,4,5,7) report a prevalence of fear of falling that ranged from 40% to 73% among fallers and from 20% to 46% among non-fallers. Additionally, Vellas and colleagues (11) identified fear-of-falling–related activity restriction in 41% of fallers and 23% of non-fallers. Earlier studies (11,14,15) show that adults with fear of falling are significantly older than adults without this fear. However, fear of falling and fear-related activity restriction were not quite as prevalent in the total AAH project population as was reported in previous population-based studies of older persons. Nevertheless, both phenomena were surprisingly high for this younger group, especially in the inner city, where the prevalence of fear of falling was one in three and was similar to that reported for older persons (6,7,14,15). No change in the prevalence of either fear of falling or fear-related activity restriction was demonstrated across the available age range. Thus, we were unable to identify an age at which these problems appear to become common in this population, except to note that they were already evident in
the 49- to 55-year age group. In addition, the pattern of fear of falling and numbers of falls across age among men is unusual and deserves additional research with in-depth qualitative and longitudinal studies to investigate whether this finding is due either to denial in the older age group or to some other factor. Our results confirm the findings of Murphy and colleagues (12) that the functional status of persons with fear of falling alone is intermediate between those with no fear and those with fear and activity restriction in a younger and different race than in their study.

There was considerable lack of overlap between the measure of low falls efficacy and both fear of falling and fear-related activity restriction. In addition, falls efficacy increased significantly across the available age range in women, whereas fear of falling did not. Thus, these variables appear to measure different constructs. This finding is supported by other literature (2,11,31) and has several implications. Investigators should not treat falls efficacy and fear of falling as synonymous; they should use both of them or the one that best meets the needs of their study. In addition, although fear of falling and related activity restriction appear common, firm understanding of why people become fearful or restrict their activities is lacking. Therefore, more detailed qualitative and quantitative studies of the age of onset, precursors, clinical course, and consequences of fear of falling and fear-related activity restrictions are warranted. In particular, additional longitudinal studies and detailed focus group investigations fully exploring the origins and consequences of these phenomena are essential, with the recognition that the answers may vary by age, sex, race-ethnicity, and social circumstances. For example, fear of falling was more frequent in the inner-city group, as expected, due to earlier reports of an association between low socioeconomic status and low self-efficacy (32–35). Although the exact reasons for this finding require additional exploration, it is possible that the increased risk of environmental hazards, inadequate resources, and socioeconomic disadvantage in inner-city neighborhoods increase the perception of fall risk among resident elders.

This study has limitations as well as strengths. Its confinement to middle-aged African Americans living in one geographic area limits its generalizability to other ages, race-ethnicities, and locales. In contrast, its results are consistent with the prior literature, and we suspect that its major findings will be replicated in future studies. In addition, we used only one of several measures of falls efficacy. It is possible that we would have found more overlap between fear of falling and other measures of falls efficacy, although the extant literature would argue against this (3,4).

Conclusion
Fear of falling and fear-related activity restriction were both surprisingly high in this population of middle-aged African Americans, particularly in the inner city, and were not well explained by prior falls or low falls efficacy. These phenomena were already evident by age 50 in a substantial proportion of participants. Participants with fear of falling alone have functional status between those without fear and those with fear and activity restriction. Fear of falling and fear-related activity restriction deserve more study, including detailed qualitative investigations examining the timing, precursors, and consequences of these phenomena in minority as well as majority populations. In the meantime, clinicians should be aware that fear of falling is common even in middle-aged patients and that the associated activity restrictions can have numerous adverse consequences, including premature death (36–38). Further research is needed to support the extrapolation of our findings to other ethnic populations.

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References


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**34th Annual Meeting of the American Aging Association**

**AGING: MECHANISMS AND PREVENTION**

with pre-conference symposium: "Nutrition and Aging" (Chair: James Joseph, PhD)

June 3-6, 2005 • Oakland, California • Organizer: Andrzej Bartke, PhD

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**OBJECTIVES**

- Review recent developments in the studies of molecular and cellular mechanisms of aging in various organisms with special emphasis on mammals;
- Present research results that have a potential for leading to novel therapies;
- Review several novel studies which are now in progress and have little or no exposure at other gerontological meetings;
- Focus on human longevity with two papers on the ongoing experimental studies of caloric restriction in the human, a paper on diet vs. health and longevity in the exceptionally long-lived Okarians, and a special lecture on physiological and genetic studies in centenarians;
- Discuss applications of state-of-the-art methodologies to the study of aging;
- Discuss nutritional and life style factors that influence aging.

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**TOPICS**

- genetic and cellular mechanisms of aging;
- role of IGF-1 signaling;
- caloric restriction in the human;
- genetics of human longevity;
- brain aging and novel therapies for neurodegenerative disease;
- use of genomics and proteomics in gerontological research.

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**CALL FOR ABSTRACTS**

Abstracts for AGE must be submitted by mail, fax or online at www.americanaging.org. Please note that there is a limited number of 15-minute podium time slots available on a competitive basis, while there will be an unlimited number of poster presentations. Travel stipends will be awarded to a limited number of students, minorities and new junior faculty. All awardees will present their work in either oral or poster format.

**Abstract deadline is March 15, 2005**

**STUDENT PROGRAM**

The American Aging Association’s Student Committee announces a Student-Only Program at the 34th AGE Annual Meeting, on Saturday, the 4th of June, at 8 pm. The Program – open only to undergraduate graduate and first year post-doctoral students – will include a Data Blitz, a Round-Table Discussion, and a Student Social.

All those registered for the Student Program will be entered in a draw for a one-year Student Membership with the American Aging Association - see conditions and details at the meeting website.