1.a. Full Title: Race, Socioeconomic Status, and Mobility: the ARIC Study

b. Abbreviated Title (Length 26 characters): Race, SES, and mobility

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I, the first author, confirm that all the coauthors have given their approval for this manuscript proposal. _RJT___ [please confirm with your initials electronically or in writing]

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3. Timeline: This is an analysis of existing data only. We anticipate the completion of the manuscript <1 year after approval.
4. Rationale:

Over the last two decades declines in disability have been observed among community dwelling older adults. Although improvements in medical care and treatment, and health promoting strategies have contributed to these declines, black older adults still consistently report higher rates of disability than their white counterparts. There is much less evidence regarding race differences at earlier stages in the disablement process; however, previous research has found that blacks have poorer mobility at baseline but similar rates of mobility decline relative to whites.1,2 These findings indicate that race-related disparities in mobility and functional decline in older adults largely reflect worse health and functional status, and limited socioeconomic resources at study inception. Furthermore focusing on older adults has raised questions about whether the observed race differences are actually underestimates because black adults experience disability at younger ages and lower life expectancies than whites. A better understanding of race-related differences in mobility requires examining this relationship in younger age groups and circumstances earlier in the disablement process (i.e., functional limitations and impairments) where the potential for interventions are amenable. The overall goal of this project is to evaluate inter-relationship(s) among and between race, socioeconomic status (SES), and mobility in black and white adults aged 45 to 64 years with no discernible mobility limitation at baseline. We will apply the weathering hypothesis which contends that the health status of blacks begins to decline prematurely in early adulthood and as a consequence of long-term and compound exposure to unfavorable social-environmental, psychosocial and economic conditions, disparities in health status/indicators increase with age.3

5. Main Hypothesis/Study Questions:

We hypothesize that blacks will have a higher incidence of mobility limitation than whites over 9 years of observation and that the average age of blacks with mobility limitation will be younger than the average age for whites. Within age groups, blacks will also have higher incidence of mobility limitation than whites and poorer lower extremity function relative to whites. All of these observed race differences will be largely explained by SES, demographic and health-related characteristics.

To test these hypotheses, we propose to conduct analyses to answer the following questions:

1. Do blacks have higher incidence of mobility limitation than whites?
2. Are blacks with mobility limitation on average younger than whites?
3. Do blacks have poorer lower extremity function than whites within age groups?
4. To what extent do SES differences explain race differences in incident mobility limitation and severity of lower extremity functioning independent of demographic and health-related characteristics?

Results from this study will enhance the understanding of race and SES differences in mobility in a middle-aged biracial cohort. These findings will inform future research to clarify the mechanisms that contribute to racial disparities in mobility.
6. **Design and analysis (study design, inclusion/exclusion, outcome and other variables of interest with specific reference to the time of their collection, summary of data analysis, and any anticipated methodologic limitations or challenges if present).**

**Exposure**
Participants self reported their race at baseline as: white, African American, American Indian or Alaskan Indian, or Asian or Pacific Islander. For this study only African Americans and whites will be included.

**Outcome**
Mobility limitation and severity of lower extremity functioning, which were assessed at visit 4, will be the two outcome measures. Mobility limitation will be defined as self-report of any difficulty or inability of walking a quarter mile or walking up ten steps without resting. We will construct a scale to quantify the severity of lower extremity functioning which will be based on reported levels of difficulty from walking a quarter mile, walking from one room to another on the same level, walking up ten steps, and stooping, crouching and kneeling. Participants with no difficulty walking from one room to another on the same level will be assigned scores ranging from zero to four based on their reported difficulty walking ¼ mile. Those reporting some difficulty walking from one room to another on the same level will be assigned a score of five, and participants reporting much difficulty or inability to walk from one room to another on the same level will be assigned a score of six. Scores for difficulty walking up ten steps without resting will be assigned as 0=no difficulty, 1=some, and 2=much difficulty or unable to do. Difficulty stooping, crouching or kneeling will be dichotomized as able to do (with or without difficulty) or unable with scores of zero and one, respectively. Scores will be summed to create a ten point summary scale with a higher score indicating poorer lower extremity function.5

**Covariates**
Key variables include those obtained at baseline: income, education, and occupation, age, sex, race, chronic conditions, smoking and drinking history, pulmonary function, medical history, BMI, self-reported health, marital status, and health insurance.

**Exclusions**
Because measures of mobility were not collected at baseline, we will exclude participants who reported using a wheelchair, crutches, walker, or cane; those with prevalent coronary artery disease, stroke, cancer, or chronic lung disease; and those who reported poor self-rated health at baseline to eliminate individuals who are likely to have mobility problems. This approach to identify and exclude participants with possible mobility deficits has been used previously in the ARIC study.4 We will exclude African Americans in Maryland and Minnesota because of the small sample size (n=55)4 and individuals who report their race as other than African American or white.

**Statistical Methods**
Chi-square and ANOVA tests will be used to evaluate the proportional and mean differences between race and mobility. Regression analyses will be performed to examine the independent associations between race and mobility. When examining
within distinct age groups, we will stratify by age in 5-year intervals (i.e., 54-59, 60-64, 65-69, 70-73).

Limitations
Mobility measures were not obtained at baseline but we will use proxy measures to exclude participants who are likely to have mobility problems. As noted above, these measures have been used previously with these data. Similar to Houston et al.,\(^4\) we intend to mention this in our discussion section of the manuscript. We will also conduct a sensitivity analyses to determine whether excluding these individuals will influence our results.

References

7.a. Will the data be used for non-CVD analysis in this manuscript? ____ Yes ____ No

b. If Yes, is the author aware that the file ICTDER03 must be used to exclude persons with a value RES_OTH = “CVD Research” for non-DNA analysis, and for DNA analysis RES_DNA = “CVD Research” would be used? ____ Yes ____ No

(This file ICTDER03 has been distributed to ARIC PIs, and contains the responses to consent updates related to stored sample use for research.)

8.a. Will the DNA data be used in this manuscript? ____ Yes ____ No
8.b. If yes, is the author aware that either DNA data distributed by the Coordinating Center must be used, or the file ICTDER03 must be used to exclude those with value RES_DNA = “No use/storage DNA”?
   ____ Yes    ____ No

9. The lead author of this manuscript proposal has reviewed the list of existing ARIC Study manuscript proposals and has found no overlap between this proposal and previously approved manuscript proposals either published or still in active status. ARIC Investigators have access to the publications lists under the Study Members Area of the web site at:  http://www.cscc.unc.edu/ARIC/search.php
   ____x__ Yes     _______ No

10. What are the most related manuscript proposals in ARIC (authors are encouraged to contact lead authors of these proposals for comments on the new proposal or collaboration)?
    MS#  1022, 1015, 1261, 1325, 830,874, 825, 829

11. a. Is this manuscript proposal associated with any ARIC ancillary studies or use any ancillary study data?
    ____ Yes    __x__ No

11.b. If yes, is the proposal
   ____   A. primarily the result of an ancillary study (list number* _________)
   ____   B. primarily based on ARIC data with ancillary data playing a minor role (usually control variables; list number(s)* __________  __________

*ancillary studies are listed by number at http://www.cscc.unc.edu/aric/forms/

12. Manuscript preparation is expected to be completed in one to three years. If a manuscript is not submitted for ARIC review at the end of the 3-years from the date of the approval, the manuscript proposal will expire.