Appendix

Phase 1 – Screening, recruitment, and household interview. Based on the sampling design, we produce household listings for identifying the residential dwellings in each neighborhood. Field interviewers perform doorstep interviews, identify eligible persons in each household, select at random one to two eligible persons per household, and invite eligible candidates to participate in HANDLS. Once recruited successfully and consented, participants complete the household survey and 24-hour dietary recall questionnaire concluding with appointments for examinations on the Medical Research Vehicles.

Household survey. The household survey inquires about background and demographic information, racial and cultural identification, educational experience, occupational history, family income, total leisure time physical activity, and a wide range of other information broadly conceived as physiological and psychological chronic exposure. Although, the primary purpose of the household survey is to characterize the demographic composition of the sample, it also provides important confounding factors for use in subsequent analyses. It will serve as baseline selection criteria for analyses of subsequent waves of data (Supplement Table 2, *http://handls.nih.gov/supp/09AJPH/tbl1.pdf*).

Dietary recall. We administer the dietary recall battery twice, first in the household and again during the MRV examination using the U.S. Department of Agriculture's (USDA) Automated Multiple Pass Method (AMPM) dietary recall survey. The survey is supplemented by measurement aids and illustrations to assist in estimating accurate quantities of foods and beverages consumed. The USDA 5-step multiple-pass method[1, 2] has been validated as an accurate methodology for assessing intake of protein, carbohydrate, fat and energy in obese and non-obese men and women. The AMPM provides an automated, standardized methodology to collect two 24-hour dietary recalls that engages the participants, maintains their interest through use of the Food Model Booklet, and prompts more complete recollection of consumed food and beverage. The interview is a 5-step process and highlights the memory clues imbedded in the process to improve reporting of actual dietary intake by participants.

Phase 2–Medical Research Vehicle examination. For the second phase of the participant examination, we perform the following procedures on the MRVs after obtaining informed consent (Supplement Table 2, *http://handls.nih.gov/supp/09AJPH/tbl2.pdf*).

Informed consent procedures. Each phase has a separate consent. For phase 1, we provide participants with a booklet describing the entire study protocol (*http://handls.nih.gov/supp-/09AJPH/consent.pdf)*. Household interviewers review the protocol, reading the material to participants when necessary. The household interviewers insure that participants understand what is involved, the risks and benefits, and the time commitment required to complete the baseline assessment. For phase 2, participants begin their examination visits by viewing a consent video and reviewing the protocol with MRV staff. MRV staff obtains informed consent, and they ensure that participants can recall what will happen during the examination and participants understand the time commitment to complete the examination.

Medical history and physical examination. The medical history and physical examination provide the fundamental data upon which the documentation of diagnosable conditions is based as well as a structured method to record medications, and their frequencies and dosages (Supplement Table 3, *http://handls.nih.gov/supp/09AJPH/tbl3.pdf*).

Buccal mucosa smears. As part of the medical evaluation, we collect buccal mucosa smears from each consenting participant using the Whatman FTA collection system. The extracted DNA from the buccal smears provides an important additional source of genomic DNA.

Dietary recall. The USDA AMPM measure is re-administered during the MRV examination.

Cognitive testing. Extensively trained psychometricians administer a baseline battery of cognitive and neuropsychological[3] tests assessing memory, executive function, verbal fluency and knowledge, and spatial ability. In addition to mental status screening using the Mini-Mental State Examination[4], we administer the Benton Visual Retention Test (BVRT),[5] California Verbal Learning Test,[6] Card Rotations and Identical Pictures from the ETS Kit of Factor-referenced Cognitive Tests,[7] a 2-item prospective memory task, Wechsler Adult Intelligence Scale Digit Span Forward and Backward,[8] Clock Drawing, Brief Test of Attention,[9] Wide Range Achievement Test,[10] Trail Making A and B,[11] and animal fluency. We assess baseline symptoms of depression using the Center for Epidemiological Studies Depression inventory (CES-D).

Audio-assisted computer administered inventory (ACASI). Problems with reading comprehension may compromise valid data collection from minority and low SES populations. ACASI technology has been deployed successfully to collect sensitive information that participants were unwilling to report during an in-person interview.[12] Using this tool, our participants use headphones connected to a computer to listen and respond to questions that we recorded digitally. Participants enter their responses by pressing a touch screen. Each response option is illuminated as it is read to avoid confusion introduced by reading difficulties. In addition to providing privacy for responding to sensitive questions, this methodology insures that questionnaires are administered consistently without a significant burden of staff time. We have deployed ACASI in HANDLS to administer a variety of self-report inventories and questionnaires including a section of the medical history, psychiatric symptom screening, and demographic information (Supplement Table 4, *http://handls.nih.gov/supp/09AJPH/tbl4.pdf*).

Autonomic regulation in aging adults. We perform non-invasive heart period and blood pressure recordings using the Portapres ambulatory heart rate and blood pressure monitor. We collect continuous beat-to-beat heart rate and blood pressure data using a finger cuff placed on the participants' non-dominant hands. Participants complete both 3-minute anger recall and happy recall tasks. These tasks ask participants to recall events that made them angry and events that made them happy. Before each task, we record a 5-minute baseline. After each task, participants rest for 10 minutes. Participants then stand for 5 minutes (orthostasis) to examine the effects of a mild physical challenge. Participants complete momentary mood scales at different points in the protocol to assess the underlying role of mood on cardiovascular responses.[13] In addition, we collect typical exercise habits using an activity questionnaire.[14]

Intimal-medial thickness (IMT). We perform high-resolution B-mode ultrasonography on the left carotid artery for the evaluation of systolic and diastolic common carotid arterial diameters,

carotid arterial flow, intimal-medial thickness, and plaques. We also evaluate the right carotid artery for the presence of plaques.

Pulse wave velocity (PWV). We non-invasively assess arterial stiffness by measuring central arterial pulse wave velocity. This validated technique involves positioning of Doppler flow probes over the carotid, brachial and femoral pulses, simultaneously recording the waveforms, and gating them to the EKG. We measure the distance between the recording sites externally with a tape measure. We calculate pulse wave velocity between two arterial segments by dividing the distance between the two sites by the time delay for the flow waves between these two sampling sites.

Bone density and body composition. We perform dual energy X-ray absorptiometry (DXA) on total body, lumbar spine, and the hip using a Lunar DPX-IQ (Lunar Corp., Madison, WI). The protocol includes site-specific scans of the lumbar spine, right proximal femur, bone area, and bone mineral density. The total body scan measures both body composition and bone mineral density, including bone mineral content, bone area, bone mineral density, total body tissue, fat mass, lean mass, lean mass plus bone mineral content, and percent total fat. Results of the total body scan are presented for the body as a whole as well as for the arms, legs, trunk, head, pelvis, and spine.

Physical performance assessment. We perform three physical function assessments, grip strength, chair stand (sit-to-stand test), and single leg stand to measure overall strength, functional capacity and balance. In the grip strength test, we measure strength in both hands with an adjustable, hand-held, hydraulic grip strength dynamometer. In the sit-to-stand test, we assess lower body strength and functional capacity by measuring the time required to perform 5 and 10 repeated chair stands. In the single leg stand test, we measure ability to balance on one leg. The single leg stand is a sensitive test of standing balance for middle age and older adults.

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