

Measurements Made in the Study of Osteoporotic Fractures

Baseline Clinic Visit (10/86 - 10/88)

<i>Variable</i>	<i>Measurement</i>
RADIOLOGIC MEASUREMENTS	
Single-photon absorptiometry	Siemans/Osteon OsteoAnalyzer
- Proximal radius	
- Ultradistal radius	
- Os Calcis	
Radiographs	
- Hand film	PA hand and wrist
- Pelvic (hip) film	AP pelvis of both hips
- Spine films	Lateral lumbar and thoracic
SPECIMENS	
For selected hormones and markers of bone metabolism	
- 12 cc of serum (3 aliquots)	Stored at -190° C at BRI
EXAMINATIONS	
Anthropometry	
- Weight	Balance beam scale
- Height	Harpender stadiometer
- Maximum adult height (knee height)	Sliding caliper
- Frame size (elbow breadth)	Sliding caliper
- Circumferences: waist and hip	Steel tape
Neuromuscular function and physical performance	
- Grip strength	Hand-grip dynamometer
- Hip abductor strength	Manual muscle testing with hand held isometric dynamometer
Quadriceps strength	
- Triceps strength	
- Gait speed/ stride length	Timed 6 meter walk
- Timed chair stands	Time to stand up five times from chair
- Timed step-ups	Timed rapid step-ups on single step
- Static balance (tandem stand)	Graded sequence of balance tasks
- Dynamic balance (tandem walk)	Timed, measured 2-meter tandem gait
- Rapid foot taps	Timed, repetitive foot tapping
Mental Status	Modified Mini-Mental State Examination
Postural blood pressure	Supine and 1 min standing BP

Variable**Measurement**

Visual Function

- Acuity
- Contrast sensitivity
- Depth perception
(near and far)

Bailey-Lovie acuity targets
Vistech VCTS
Randot stereotests and
Howard Dolman apparatus

QUESTIONNAIRE AND INTERVIEWS

Personal and health history

- Demographic characteristics
- Personal fracture history
- Family history: fractures, kyphosis
- Falls, syncope in past 12 months
- Previous heights and weights
- Cigarette smoking
- Caffeine consumption
- Alcohol consumption

- Reproductive history

- Medical conditions
 - diabetes
 - thyroid disease
 - stroke
 - Parkinson's disease
 - arthritis
 - cataracts
 - stomach surgery
- Medications
 - diuretics (thiazide and nonthiazide)
 - thyroid hormones
 - estrogens and progestins
 - past oral contraceptives
 - vitamin D-containing supplements
 - calcium supplements
 - antacids
 - anticonvulsants
- Use of hypnotics-anxiolytics

- Dietary intake (current)
 - calcium, protein, phosphorus

 - milk

Age, ethnicity, education, marital status
Type of fracture and age at fracture
First degree relatives

Recall for ages 25 and 50
Current, past for self and spouse
Current, past: coffee, tea, cola
Current, past: frequency and
quantity; alcohol problems

Pregnancies, parity, age at
menopause, surgical menopause
breast feeding

Self-report of MD diagnosis

In-clinic review of current, past
medications: current name and
dose (from container), age started,
age stopped, past names and doses

In clinic review of current name,
dose (from container) and frequency

Block food frequency questionnaire,
food models
Consumption over life-cycle

Variable

- Physical activity
 - current exercise
 - past exercise
 - bed rest and inactivity
- Functional status
- Health status and hospitalizations
- Back pain and function
- Hip pain

Measurement

Paffenbarger physical activity scale
Modified Paffenbarger over life-cycle
Past episodes of extended bed rest
1984 NHIS/SOA functional status items

SOF back pain and function scale
NHANES I hip pain questions

Year 2 Clinic Visit (V2: 1/89-12/90)

<i>Variable</i>	<i>Measurement method</i>
RADIOLOGIC MEASUREMENTS	
Dual xray absorptiometry (DXA)	Hologic QDR 1000
- Proximal femur	
- AP lumbar spine	
Single-photon absorptiometry (in 500)	Siemens/Osteon OsteoAnalyzer:
- Proximal radius	
- Ultradistal radius	
- Os Calcis	
SPECIMENS	
For selected hormones and markers of bone metabolism	
- 4 cc of serum	Stored at -190° C at BRI
- Buffy coat	From 10 cc whole blood, at -190° C at BRI
- Timed 2 hour fasting urines (in 500)	Stored at -190° C at BRI
EXAMINATIONS	
Anthropometry	
- Body composition	Bioelectrical impedance
- Weight	Balance beam scale
- Height	Harpender stadiometer
- Frame size (wrist circumference)	Steel tape
- Circumferences: waist, abdomen, hip girths	Steel tape
- Thoracic curvature (in 1,000)	Flexicurve tracings
Neuromuscular function and physical performance	
- Reaction time	Response and movement time of hand and foot to light cue (Lafayette Instruments, modified model 63017)
- Lower extremity vibration threshold	Sensortek Vibratron II
- Lower extremity touch sensitivity	Von Frey Esthesiometers
- Grip strength	Hand-grip dynamometer
- Quadriceps strength	Isometric leg extension chair with load cell
- Gait speed/stride length	Timed 6 meter walk
- Timed chair stands	Time to stand up five times from chair
- Static balance (tandem stand)	Graded sequence of balance tasks
- Dynamic balance (tandem walk)	Timed, measured 2-meter tandem gait
Musculoskeletal	
- Leg, back and hand joint pain and range of motion exam	Adaptation of NHANES III joint examination protocol

Variable**Measurement method**

Mental Status

Trail Making B,
Digit-Symbol Substitution

Visual Function

- Acuity
- Contrast sensitivity
- Depth perception (near and distance)

Same methods as Baseline Exam
(in those with cataract surgery since
baseline and a random sample of controls)**QUESTIONNAIRE AND INTERVIEWS**

Contact information

- Change of address
- Change in marital status
- Change in living arrangements
- Change of personal physician

Outcomes

- Falls and injuries (past 12 months)
- Fractures (past 12 months)
- Back pain and back problems (past 12 months)

Update of risk factors

- Use of medications (current)

Same methods as Baseline Exam
Diuretics (thiazide and nonthiazide)
thyroid hormones, vitamin D-
containing supplements, calcium
supplements, corticosteroids,
estrogens and progestins

- Cigarette smoking (current)
- Bed rest (past 12 months)
- Syncopal episodes (past 12 months)
- Current dietary intake (in 1000)
calcium, phosphorus, protein,
complete nutrients
- Current physical activity (in 500)

Block food frequency questionnaire

Paffenbarger activity scale

Other health history

- Brothers' fracture history
- Detailed caffeine intake
- Menstrual history
- Additional medications
NSAIDs
fluoride
Calcitonin

Hip and Colles' fractures
Current, past: coffee, tea,
cola, adjusted for brewing method
and serving size
Age at menarche, menstrual cycle length
and regularity
Current, past
Ever use
Ever use

Variable

- Selected medical conditions
 - osteoporosis (since baseline)
 - stroke (since baseline)
 - COPD
 - kidney stones
 - gallbladder surgery
 - heart disease
 - breast disease
- Hip pain
- Functional status

- Hospital admissions (past 12 months)
- Cataract surgery (past 12 months)
- Depression
- Social Support
- Family history of stroke

Measurement

Same method as Baseline Exam

Same method as Baseline Exam

Health Assessment Questionnaire (HAQ)
and NHIS-SOA battery

Geriatric Depression Scale

Lubben Social Network Scale

Year 3.5 Clinic Visit (V3: 1/91-2/92)

<i>Variable</i>	<i>Measurement method</i>
RADIOLOGIC MEASUREMENT	
Dual xray absorptiometry (DXA) (in 800) <ul style="list-style-type: none"> - Lateral spine - AP spine - Hip 	Hologic QDR 1000 Lateral decubitus position
Radiographs <ul style="list-style-type: none"> - Spine films 	Lateral lumbar, thoracic spine
EXAMINATIONS	
Anthropometry <ul style="list-style-type: none"> - Weight - Height 	Balance beam scale Harpenden stadiometer
Neuromuscular function and physical performance <ul style="list-style-type: none"> - Grip strength - Gait speed/stride length 	Hand-grip dynamometer Timed 6 meter walk
QUESTIONNAIRE AND INTERVIEWS	
Contact information <ul style="list-style-type: none"> - Change of address - Change in marital status - Change in living arrangements - Change of personal physician 	
Outcomes <ul style="list-style-type: none"> - Falls and injuries (past 12 months) - Fractures (past 12 months) - Back pain and back problems (past 12 months) 	Same method as Year 2 questionnaire
Update of risk factors <ul style="list-style-type: none"> - Use of medications (current) 	Same method as baseline Diuretics (thiazide and nonthiazide) thyroid hormones, vitamin D- containing supplements, calcium supplements, corticosteroids, estrogens and progestins, fluoride, calcitonin, hypnotic-anxiolytics
<ul style="list-style-type: none"> - Syncopal episodes (past 12 months) 	
Other health history <ul style="list-style-type: none"> - Functional status 	Health Assessment Questionnaire (HAQ) and NHIS-SOA battery

Variable

- Additional medications
 - Didronel, etidronate
 - antidepressants
- Selected medical conditions (since last contact)
- Reasons for estrogen use/nonuse

Measurement

Ever use
Current use
Osteoporosis, stroke, kidney stones
Symptoms, side effects, MD advice

Year 5 Clinic Visit (V4: 9/92 - 6/94)

<i>Variable</i>	<i>Measurement method</i>
RADIOLOGIC MEASUREMENT	
Dual xray absorptiometry (DXA)	Hologic QDR 1000
- AP spine (in approx. 350)	
- Hip	
Single photon absorptiometry	Siemens/Osteon Osteoanalyzer
- Calcaneus	
- Proximal and distal radius (in approx 350)	
Ultrasound	Walker Sonix
- bone velocity	
- speed of sound (in approx. 2363)	
SPECIMENS	
For selected hormones and markers of bone metabolism	
- 4 mL of serum (1 aliquots)	Stored at -190° C at BRI
For calcium absorption determination	Ca45 protocol as developed by
- 6 mL of serum	Dr. Bob Heaney, Creighton Univ.
Urine (fasting in 5000)	Stored at -190° C at BRI
- 4 mL	
EXAMINATIONS	
Anthropometry	
- Weight	Balance beam scale
- Height	Harpenden stadiometer
Neuromuscular function and physical performance	
- Grip strength	Hand-grip dynamometer
- Quadriceps strength	Isometric leg extension chair with load cell
- Gait speed/stride length	Timed 6 meter walk, usual and rapid
- Timed chair stands	Time to stand up five times from chair
- Functional reach	Equipment and protocol as developed Duncan, Weiner, and Studenski at Duke University
- Peak expiratory flow	Mini-Wright peak flow meter
- Hearing	Welch-Allyn Audioscope 3
Mental Status	Trail Making B, Digit-Symbol Substitution Modified Mini-Mental Status test
Examiner assessed frailty	

Variable**Measurement method****Specialized cohorts:** - additional examination measurementsPerformance cohort (N=2000)

Visual Function

- Acuity
- Depth perception (near and distance)

Same methods as Baseline Exam

Reaction Time

Static balance (tandem stand)

Triceps extensor strength

Timed manual performance

Same methods as Year 2 exam

Hand-held dynamometer
Williams' 3 door Timed Manual
Performance board

Body composition cohort (N=200)

Whole body composition

Bioelectric impedance assessment

Circumferences: waist, abdomen, hip girths

Hologic 2000
ValHalla 1990B Bioresistance analyzer
Steel tape

QUESTIONNAIRE AND INTERVIEWS

Contact information

- Change of address
- Change in marital status
- Change in living arrangements
- Change of personal physician

Outcomes

- Falls and injuries (past 12 months)
- Fractures (past 12 months)
- Hip pain (past 12 months)

Same method as Year 2 questionnaire

Update of risk factors

- Use of medications (current)

Diuretics (thiazide and nonthiazide)
thyroid hormones, vitamin D-containing
supplements, calcium supplements,
corticosteroids, estrogens and progestins,
fluoride, calcitonin, hypnotic-anxiolytics, all
prescription and non-prescription drugs
Currency, amount
Currency, amount
Hours obtained, hours needed

- Cigarette smoking (current)
- Alcohol consumption (current)
- Sleep and nap habits
- Bed rest (past 12 months)
- Syncopal episodes (past 12 months)
- Current dietary intake (in 1000)
calcium, phosphorus, protein,
complete nutrients
- Current physical activity

Block food frequency questionnaire

Paffenbarger activity scale

Variable**Measurement method**

Other health history

- Health insurance
- Weight loss
- Urine control
- Dizziness
- Dental history
- Hip replacement
- Sister's fracture history
- Caffeine intake
- Hip pain
- Hospital admissions (past 12 months)
- Depression
- Social Support
- Key Life Events

Type, medicare #
 Planned vs unplanned
 Ever problems, frequency, amount
 Ever, type
 # teeth lost/pulled (since study began)
 Ever, reason why
 Hip fractures update
 Current, past: coffee, tea, cola,
 Same method as Baseline Exam

Geriatric Depression Scale
 Lubben Social Network Scale
 Modified from Cardiovascular Health
 Study stressful life events quest.

- Functional status

Health Assessment Questionnaire (HAQ)
 and NHIS-SOA battery

- Additional medications

Didronel, etidronate
 antidepressants
 fluoride
 Calcitonin

Ever use
 Current use
 Ever use
 Ever use

Extended medical history (ever diagnosed)

osteoporosis
 pneumonia
 stroke
 diabetes
 COPD
 seizures
 kidney stones
 glaucoma
 gallbladder surgery
 cataracts
 heart disease
 dementia/Alzheimer's
 thyroid disease
 Parkinson's
 liver disease
 kidney disease
 lung disease
 ulcer
 arthritis
 osteoarthritis
 rheumatoid arthritis
 anemia
 cancer

Presence of, current treatment (Y/N)

Variable

Measurement

Extended symptom history

Occurrence in past week, # days

Fatigue

headache

chest pains

edema

constant cough

joint stiffness

pain/discomfort

weakness/paralysis

muscle pain

poor vision

poor hearing

poor memory

Year 8 Clinic Visit (V5: 1/95 - 6/96)

<i>Variable</i>	<i>Measurement method</i>
RADIOLOGIC MEASUREMENT	
Dual xray absorptiometry (DXA) - Hip	Hologic QDR 1000
Single photon absorptiometry - Calcaneus	Siemens/Osteon Osteoanalyzer
Ultrasound Calcaneal - bone velocity - speed of sound	Walker Sonix UBA 575+
Tibial - speed of sound	Myriad Soundscan 2000
EXAMINATIONS	
Anthropometry - Weight - Height	Balance beam scale Harpenden stadiometer
Neuromuscular function and physical performance - Grip strength - Hip abductor strength - Gait speed/stride length - Timed chair stands - Timed step-ups - Static balance (tandem stand)	Hand-grip dynamometer Manual muscle testing w/hand held isometric dynamometer Timed 6 meter walk, usual and rapid Time to stand up five times from chair Timed rapid step-ups on single step graded sequence of balance tasks
Musculoskeletal - Hip and knee pain and range of motion exam	Adaptation of NHANES III joint examination protocol
Mental Status	Modified Mini-Mental Status test
Examiner assessed frailty	

Variable**Measurement method****QUESTIONNAIRE AND INTERVIEWS**

Contact information

- Change of address
- Change in living arrangements
- Change of personal physician
- Update two personal contacts

Outcomes

- Falls and injuries (past 12 months)
- Fractures (past 12 months)
- Hip, knee, feet pain (last 2 years)

Update of risk factors

- Use of medications (current)
- Cigarette smoking (current)
- Alcohol consumption (current)
- Bed rest (past 12 months)
- Current physical activity
- Caffeine intake
- Past work and occupation

Other health history

- Urine control
- Dizziness
- Hip and knee replacement
- Reproductive health history
 - # and type of births
 - Type and reason for hysterectomy
- Functional status
- Additional medications
 - Didronel, etidronate
 - Fluoride
 - Calcitonin
 - Vitamin D
 - Tums
 - Calcium supplements
 - Multi-vitamins/iron
 - Meds for arthritis or joint pain

Same method as Year 2 questionnaire

NHANES I questionnaire
Womac Osteoarthritis IndexMedication Inventory Form (MIF)
collects all prescription drugs taken &
certain non-prescription (vitamins, etc).
Currency, amount
Currency, amountPaffenbarger activity scale
Hours on feet, vigorous activity
Current, past: coffee, tea, cola
Hours sitting, bending, twisting,
squatting, liftingEver problems, frequency, amount
Ever, type
ever, reason whyHealth Assessment Questionnaire (HAQ)
and NHIS-SOA batteryLast two years
Last two years
Last two years
Last 30 days
Last 30 days
last 30 days
Last 30 days
last 30 days

Variable

Measurement

Extended medical history (ever diagnosed)

Presence of, current treatment (Y/N)

- osteoporosis
- dementia/Alzheimer's
- stroke
- diabetes
- COPD
- arthritis
- kidney stones
- osteoarthritis
- heart disease
- rheumatoid arthritis
- Parkinson's
- cancer

Year 10 Clinic Visit (V6: 1/97- 9/98)

<i>Variable</i>	<i>Measurement method</i>
RADIOLOGIC MEASUREMENT	
Single-photon absorptiometry - Calcaneus (subset)	Siemens/Osteon Osteoanalyzer
Dual xray absorptiometry (DXA) - Hip - Total body (year 12 cohort, AA cohort)	Hologic QDR 1000 Hologic QDR 2000
Ultrasound Calcaneal - bone velocity - speed of sound	Sahara Unit
EXAMINATIONS	
Anthropometry - Weight - Height	Balance beam scale Harpenden stadiometer
Neuromuscular function and physical performance - Quadriceps Strength - Grip strength - Gait speed/stride length - Timed chair stands - Pulse	Bodymaster Isometric dynamometer Timed 6 meter walk, usual and rapid Time to stand up five times from chair
Biological Specimens (after overnight fast) - Arterialized venous blood sample (1 cc) - Urine (2 x 3.5 cc, 2 hour collection, regular SOF cohort) (2 x 3.5 cc. 24 hour collection, year 12, AA cohort) - Net Acid excretion (45 cc, year 12, AA cohort) - Serum (3 x 3 cc, year 12) (2 x 3 cc, all other ppts)	Stored at -70° at BRI Stored at -190° at BRI
Mental Status	Trail Making B Modified Mini-Mental Status test
Examiner assessed frailty	

Variable**Measurement method****QUESTIONNAIRE AND INTERVIEWS**

Contact information

- Change of address
- Update two personal contacts
- Next of kin

Outcomes

- Falls and injuries (past 12 months)
- Fractures (past 2 years)

Same method as Year 2 questionnaire

Update of risk factors

- Use of medications (current)
- Vision
- Cigarette smoking (current)
- Alcohol consumption (current)
- Current physical activity
- Caffeine intake
- Sleep patterns
- Naps
- Depression

Medication Inventory Form (MIF)
collects all prescription drugs taken &
certain non-prescription (vitamins, etc).
difficulties in daily activities
Frequency, amount
frequency, amount
Paffenbarger activity scale
distance, hours sitting
Current: coffee, tea, cola
Minutes until asleep, time wake
up/fall asleep, hours per night,
problems associated with, frequency
Y/N, how often, how long
Geriatric Depression Scale

Other health history

- Functional status
- Additional medications
 - Didronel, etidronate
 - Fluoride
 - Calcitonin
 - Alendronate
- Self-reported Health Status

Health Assessment Questionnaire (HAQ)
and NHIS-SOA battery

Last two years

Last two years

Last two years

Last two years

Extended medical history (ever diagnosed)

osteoporosis
dementia/Alzheimer's
stroke
diabetes
COPD
arthritis
hyperthyroidism
osteoarthritis
heart disease
rheumatoid arthritis
Parkinson's

Presence of, current treatment (Y/N)

Variable***Measurement***

Extended medical history (cont.)
 high blood pressure
 breast cancer

Presence of, current treatment (Y/N)
 (if Y, SOF Breast Cancer Questionnaire)
 -breast cancer presence in natural
 mother/sisters (age), last mammogram:
 where, result, recommendation

Diet

Current, '95 Block FFQ
 Frequency and amount

VISION TESTING

Ocular History

Vision Testing

Contrast Sensitivity

Visual Acuity

Humphrey Autolensometer

Humphrey Autorefractor

Humphrey 76-Point Automated Visual Field

Tonopen/Intraocular Pressure Measurement

SOF-ES Eye Photography

- Fundus Photos (Canon CR-45UAF)
- Slit Lamp Lens Photos (Topcon SL-7E)
- Marcher Retro-Illumination Lens Photos

Year 12 Clinic Visit (V7: 4/99- 12/99)
(African American cohort and year-12 subset)

<i>Variable</i>	<i>Measurement method</i>
RADIOLOGIC MEASUREMENT	
Dual xray absorptiometry (DXA)	
- Hip	Hologic QDR 1000
- Total body	Hologic QDR 2000
Radiographs	
- Spine films (AA cohort)	Lateral lumbar, thoracic spine
Ultrasound	
Calcaneal	Sahara Unit
- bone velocity	
- speed of sound	
EXAMINATIONS	
Anthropometry	
- Weight	Balance beam scale
- Height	Harpenden stadiometer
Neuromuscular function and physical performance	
- Quadriceps Strength	Bodymaster
- Grip strength	Isometric dynamometer
- Gait speed/stride length	Timed 6 meter walk, usual and rapid
- Timed chair stands	Time to stand up five times from chair
Biological Specimens (after overnight fast)	
- Urine (2 x 3.5 cc, 24 hour collection)	Stored at -70° at BRI
- Buffy coat (AA cohort)	Stored at -190° at BRI
- Serum (4 x 1 cc)	Stored at -190° at BRI
Examiner assessed frailty	

Variable**Measurement method****QUESTIONNAIRE AND INTERVIEWS**

Contact information

- Change of address
- Update two personal contacts
- Next of kin

Outcomes

- Falls and injuries (past 12 months)
- Fractures (past 2 years)

Same method as Year 2 questionnaire

Update of risk factors

- Use of medications (current)
- Current physical activity

Calcium, estrogen, bone medications, statins,
and others
Walk for exercise

Other health history

- Functional status (AA cohort)
- Self-reported Health Status
- Back pain / back function (AA cohort)

Health Assessment Questionnaire (HAQ)
and NHIS-SOA battery

Extended medical history (ever diagnosed)

osteoporosis
dementia/Alzheimer's
stroke
diabetes
COPD
arthritis
hyperthyroidism
osteoarthritis
heart disease
rheumatoid arthritis
Parkinson's
high blood pressure
breast cancer

Presence of, current treatment (Y/N)

VISION TESTING

Ocular History

SOF-ES Eye Photography

- Fundus Photos (Canon CR-45UAF)

Year 16 Clinic Visit (V8: 01/02- 04/04)

<i>Variable</i>	<i>Measurement method</i>
RADIOLOGIC MEASUREMENT	
Dual xray absorptiometry (DXA)	
- Hip	Hologic QDR 1000, 2000
Radiographs	
- Spine films	Lateral lumbar, thoracic spine
EXAMINATIONS	
Anthropometry	
- Weight	Balance beam scale
- Height	Harpenden stadiometer
- Hip, neck, waist circumference (PSG subset)	
- Blood Pressure (PSG subset)	
Neuromuscular function and physical performance	
- Grip strength	Isometric dynamometer
- Gait speed/stride length	Timed 6 meter walk, usual and rapid
- Timed chair stands	Time to stand up five times from chair
- Pulse	
Sleep	
Wrist Actigraphy	
- Average 4 nights/5 days actigraphy data	Ambulatory Monitoring Inc. Sleep-Watch® O
Polysomnography (in-home, subset of 500)	Siesta® by Compumedics
Biological Specimens	
- Whole blood (2x5 ml)	Stored at -190° at BRI
- Blood blotters (2)	
- Serum (4 x 1 ml, Polysomnography subset)	
Mental Status	
	Trail Making B
	Modified Mini-Mental Status test
Vision	
	Functional Vision, Contrast Sensitivity, Autorefractor, Eye Photo, Intraocular Pressure

QUESTIONNAIRE AND INTERVIEWS

Contact information

- Change of address
- Update two personal contacts
- Next of kin

Outcomes

- Falls and injuries (past 12 months)
- Fractures (past 2 years)

Same method as Year 2 questionnaire

Update of risk factors

- Use of medications (current)

Medication Inventory Form (MIF) collects all prescription and non-rx drugs (vitamins, etc).

- Exercise

Blocks walked, household chores, regular Activity, time sitting/watching TV, weight loss

- Cigarette smoking (current)
- Alcohol consumption (current)
- Current physical activity

Frequency, amount
frequency, amount

- Caffeine intake

Paffenbarger activity scale
distance, hours sitting

Sleep patterns

Current: coffee, tea, cola

- Naps
- Depression
- Anxiety

Pittsburgh Sleep Quality Index, Epworth Sleepiness Scale, Functional Outcomes of Sleep Questionnaire, minutes until asleep, time wake up/fall asleep, hours per night, problems associated with, frequency

Y/N, how often, how long

Geriatric Depression Scale

Goldberg Anxiety Scale

Other health history

- Functional status

Health Assessment Questionnaire (HAQ) and NHIS-SOA battery

- Self-reported Health Status
- Hip and Knee Health (replacements)

Extended medical history (ever diagnosed)

osteoporosis
dementia/Alzheimer's
stroke
diabetes
depression
COPD
arthritis
hyperthyroidism
osteoarthritis
heart disease
rheumatoid arthritis

Presence of, current treatment (Y/N)

Parkinson's
Neurological disease
high blood pressure
sleep disorders
colon cancer
lung cancer
breast cancer

(if Y, SOF Breast Cancer Questionnaire)
-breast cancer presence in natural
mother/sisters (age), last mammogram:
where, result, recommendation

Other information
Marital Status
Type of Residence/Living Situation

Year 20 Clinic Visit (V9: 01/07-6/08)

<i>Variable</i>	<i>Measurement method</i>
RADIOLOGIC MEASUREMENT	
Dual xray absorptiometry (DXA)	Hologic QDR 4500
- Whole body	
- Hip	
EXAMINATIONS	
Anthropometry	
- Weight	Balance beam scale
- Height	Harpenden stadiometer
- Blood Pressure	
- Pulse	
Neuromuscular function and physical performance	
- Reaction time	Response time of hand to light cue (PVT-192, Ambulatory Monitoring, Inc.)
- Grip strength	Isometric dynamometer
- Gait speed/stride length	Timed 6 meter walk, usual and rapid
- Timed chair stands	Time to stand up five times from chair
- Static balance (tandem stand)	Graded sequence of balance tasks
Biological Specimens	
- Whole blood (2x4.5 ml)	Stored at -190° at study sites
- Serum (8x0.5 ml)	
Mental Status/Cognitive Function	Trail Making B Modified Mini-Mental Status Test California Verbal Learning Test Digit Span Category and Verbal Fluency Exam
QUESTIONNAIRE AND INTERVIEWS	
Contact information	
- Change of address	
- Update two personal contacts	
- Next of kin	
Outcomes	Same method as Year 2 questionnaire
- Falls and injuries (past 12 months)	
- Fractures (past 2 years)	
Update of risk factors	
- Use of medications (current)	Medication Inventory Form (MIF) collects all prescription drugs.

<ul style="list-style-type: none"> - Exercise - Cigarette smoking (current) - Alcohol consumption (current) - Caffeine intake (current) 	<p>Medication Use Form collects information on non-rx drugs Weight loss, blocks walked, time sitting/watching TV Y/N Frequency, amount Coffee, tea, cola</p>
Mobility	Life Space Questionnaire
Sleep patterns	<p>Pittsburgh Sleep Quality Index, Epworth Sleepiness Scale, minutes until asleep, time wake up/fall asleep, hours per night, problems associated with, frequency Y/N, how often, how long Geriatric Depression Scale Goldberg Anxiety Scale</p>
<ul style="list-style-type: none"> - Naps - Depression - Anxiety 	
Other health history	Health Assessment Questionnaire (HAQ)
<ul style="list-style-type: none"> - Functional status 	
<ul style="list-style-type: none"> - Self-reported Health Status - Bodily Pain - Back Pain 	
Extended medical history (ever diagnosed)	Presence of, current treatment (Y/N)
<ul style="list-style-type: none"> osteoporosis dementia/Alzheimer's stroke diabetes COPD arthritis osteoarthritis rheumatoid arthritis Parkinson's disease high blood pressure heart attack angioplasty congestive heart failure peripheral vascular disease 	
Functional Assessment	Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE)
Other information	
<ul style="list-style-type: none"> - Marital Status - Type of Residence/Living Situation 	

ADDITIONAL MEASURES FOR SLEEP/COGNITION VISIT

Wrist Actigraphy

Average 4 nights/5 days actigraphy data

Octagonal Motionlogger SleepWatch
(catalog no. 26.100)

Oximetry

Masimo Rad8 Signal Extraction Pulse
Oximeter

Sleep Patterns

Functional Outcomes of Sleep Questionnaire

Restless Legs Syndrome

Questionnaire

Visual Acuity

Bailey-Lovie Exam

Follow-Up

<i>Variable</i>	<i>Measurement</i>
	FIRST (1987-1989) AND THIRD (1990) ANNUAL QUESTIONNAIRE AND TELEPHONE INTERVIEW (for analysis purposes, first annual data are included in the baseline (V1) dataset and third annual data are included in the visit 3 (V3) dataset)
Contact information	
<ul style="list-style-type: none"> - Change of address - Change in marital status - Change in living arrangements - Change of personal physician 	
Endpoints	
<ul style="list-style-type: none"> - Falls and injuries (past 12 months) - Fractures (past 12 months) - Back pain and back problems (past 12 months) 	<p>Same questions as Baseline</p> <p style="text-align: center;">“</p> <p style="text-align: center;">“</p>
Update of risk factors	
<ul style="list-style-type: none"> - Medications (current) - Selected medical conditions (since last contact) - Medical condition checklist - Functional status (current) - Bed rest (past 12 months) - Syncopal episodes (past 12 months) 	<p>Diuretics (thiazide and nonthiazide) thyroid hormones, seizure, vitamin D- containing supplements, calcium supplements, antacids, corticosteroids, estrogens and progestins, fluoride calcitonin, hypnotic-anxiolytics) Osteoporosis, stroke, kidney stones</p> <p>Health Assessment Questionnaire (HAQ) and NHIS-SOA battery</p> <p>Same questions as Baseline</p> <p style="text-align: center;">“</p>
Other	
<ul style="list-style-type: none"> - Hip pain - Family history of breast cancer - Breast examinations - Cataract surgery (past 12 months) - Hospital and nursing home admissions (past 12 months) 	Same questions as Baseline
	QUARTERLY POSTCARD (1986 – 2009)
<ul style="list-style-type: none"> - Falls in past four months - Fractures in past four months - Change of address 	

BI-ANNUAL PHONE QUESTIONNAIRE (2009 – PRESENT)

<i>Variable</i>	<i>Measurement</i>
Outcomes	
- Falls	
- Fractures	
Health history	
- Hospitalizations	
- Stroke	
Other health history	
- Functional status	Health Assessment Questionnaire (HAQ)
- Self-reported health status	
- Walk for exercise	
Mental Status/Cognitive Function	
- Cognitive impairment	Three word recall (MMSE) Category and Verbal Fluency Exam
- Memory	
- Positive affect / optimism	
Other information	
- Marital status	
- Type of residence/living situation	
- Social network	

Outcomes / Endpoints

FRACTURES

- | | |
|---|---|
| - Nonspine fractures | Radiologist's report for all fractures,
Hip fracture: copy of xray |
| - Vertebral fractures | Repeat lateral lumbar and thoracic
spine xrays at Year 3.5 visit |
| - Type of trauma and
circumstances of fracture | Post-fracture telephone interview |

INCIDENT BREAST CANCER

Incident breast cancer cases (comparison of First annual and questionnaires at following visits)
Hospitalization information
Biopsy
Diagnosis and procedure information
Tumor behavior
Diagnostic confirmation status
Staging of tumor
Estrogen and Progesterone receptor assay status

OTHER OUTCOMES

Incident hip osteoarthritis (radiographic evidence comparing Visit 1 and Visit 5 hip xrays)
Incident stroke cases (validated from medical records through Visit 5)