

Name of rotation: **Metabolic and Cardiovascular Research in the Elderly** **Division: Gerontology**

Course Director: **Leslie Katzel, M.D.** **Site(s): VA**

Duration of rotation: **one month only**
 2 weeks possible
 various

General description of the rotation including educational purpose, rationale or value:

Research in the Division of Gerontology studies the mechanisms by which physical deconditioning (sedentary lifestyle) and obesity affect glucose, lipid, energy and adipose tissue metabolism in the elderly. Clinical investigations focus on evaluation of cardiovascular physiology (exercise capacity, blood flow, endothelial reactivity, heart rate variability), body composition and energy balance in older patients with stroke, peripheral arterial disease, abdominal obesity, diabetes, hyperlipidemia or hypertension. Mechanistic studies evaluate the role of exercise training and nutritional interventions on physiologic function, insulin resistance, glucose metabolism, endocrine-metabolic function, cardiovascular function and daily energy expenditure in older patients at risk for cardiovascular disease and in older individuals with peripheral arterial disease, heart failure or stroke. Residents learn the principles of conduct of clinical investigation, protocol design, research methodology, implementation of interventions, patient testing and statistical analysis of data. The elective allows residents to become involved in active clinical investigation from the bedside to the laboratory, and depending on duration of the elective and intensity of participation, the resident usually has the opportunity to write an abstract or coauthor a manuscript. This research experience is designed to provide the resident with insight into the conduct of clinical investigation in exercise, nutrition and metabolic research in the elderly with exposure to skills required to prepare for a career in academic medicine. Mentoring is with faculty training in metabolism, exercise, nutrition, stroke, thrombosis, cardiovascular and epidemiology research.

Resident responsibilities, including interns and residents:

This research elective is designed to teach the resident clinical investigation. The resident will meet on a regular basis with a faculty research mentor who provides guidance and instruction. The resident participates in the evaluation of the research subjects, learns the pertinent performance and conduct of pertinent research laboratory tests, reviews methods of data analysis and attends research meetings. Residents present their research plan and findings at weekly research conferences and learn to write abstracts and review the medical literature for journal club presentation.

Educational Objectives: An expanded version of the competencies is listed under Core Competencies in Internal Medicine. Those listed here are specific to this rotation. Since residents may choose this elective during any year of training, PGY-1 goals and objectives are distinct for those for upper level residents, and PGY-2 and 3 goals and objectives are similar.

During this rotation, the PGY-1 resident will:

Patient Care – Not applicable

Medical Knowledge – Not applicable

Practice-Based Learning

1. Learn the principles of research design, methodology and conduct of experiments.
2. Learn the principles of exercise physiology, body composition, lipid, glucose and energy metabolism.
3. Gain experience in the management and evaluation of clinical research subjects.
4. Learn the basic laboratory skills pertinent to the resident's project.
5. Learn the principles of data analysis including T-test, ANOVA, ANCOVA, Chi-square analysis, nonparametric rank tests and multiple regression.
6. Learn to write abstracts and manuscripts (dependent on duration of elective).

Interpersonal and Communication Skills – See Core Competencies

Professionalism – See Core Competencies

System-Based Practice – See Core Competencies

During this rotation, the PGY-2 or 3 resident will:

Patient Care – Not applicable

Medical Knowledge – Not applicable

Practice-Based Learning

1. Review and demonstrate understanding of the principles of research design, methodology and conduct of experiments.
2. Learn the principles of exercise physiology, body composition, lipid, glucose and energy metabolism.
3. Enhance experience in the management and evaluation of clinical research subjects.
4. Learn the basic laboratory skills pertinent to the resident's project.
5. Analyze data including T-test, ANOVA, ANCOVA, Chi-square analysis, nonparametric rank tests and multiple regression.
6. Write abstracts and manuscripts (dependent on duration of elective).

Interpersonal and Communication Skills – See Core Competencies

Professionalism – See Core Competencies

System-Based Practice – See Core Competencies

Check all principle teaching methods used during this rotation:

<input checked="" type="checkbox"/>	Attending teaching rounds	<input checked="" type="checkbox"/>	Interdisciplinary rounds
<input checked="" type="checkbox"/>	Patient management discussions	<input checked="" type="checkbox"/>	Small group discussions
<input checked="" type="checkbox"/>	Conferences specific to rotation	<input checked="" type="checkbox"/>	Bedside clinical rounds
<input checked="" type="checkbox"/>	Individual instruction of procedures	<input checked="" type="checkbox"/>	Review of diagnostic studies, including radiology
<input checked="" type="checkbox"/>	Other: Research conferences		
	Laboratory training, statistics		
	Review of biomedical research literature		

Describe the most important educational content, including the mix of diseases, patient characteristics, types of clinical encounters, procedures and services:

The resident is assigned to work with a faculty investigator with the research skills and project that fits the resident's interest. Mentoring is 1:1 in techniques for the conduct of clinical investigation and training in formulation of hypotheses and specific aims, study design, research methods and laboratory testing. Studies may involve healthy older subjects, or research on patients with diabetes, dyslipidemia, hypertension, congestive heart failure, peripheral arterial disease or frailty. Residents learn to study mechanisms of 1) disease; 2) metabolic risk factors for cardiovascular disease; 3) energy metabolism in frailty and obesity; and 4) nutrition and exercise interventions in diabetes, obesity and vascular disease. Depending on duration of elective and progress, residents may have the opportunity to analyze data, write an abstract for presentation at a meeting or even write a manuscript for publication.

Check the principal ancillary education materials used:

<input checked="" type="checkbox"/>	Reading lists	<input type="checkbox"/>	Pathologic material
<input type="checkbox"/>	Radiologic studies	<input checked="" type="checkbox"/>	Other noninvasive studies
<input checked="" type="checkbox"/>	Handouts on relevant topics	<input checked="" type="checkbox"/>	Articles from the literature
<input checked="" type="checkbox"/>	Other: 1:1 mentoring by senior faculty investigators	<input checked="" type="checkbox"/>	Case studies
<input checked="" type="checkbox"/>	Other: Syllabus and compendium of articles and book chapters		

Methods used to evaluate the resident and the rotation:

<input checked="" type="checkbox"/>	Evaluation of residency performance and professionalism
<input checked="" type="checkbox"/>	Evaluation of attending teaching skills and other attributes
<input checked="" type="checkbox"/>	Rotation assessment by resident
<input checked="" type="checkbox"/>	Observation of resident's clinical competency
<input checked="" type="checkbox"/>	Observation of resident's leadership and teaching skills
<input type="checkbox"/>	Review of the resident's history/physical exam, progress notes and documentation of procedures in the chart
<input checked="" type="checkbox"/>	Resident's attendance of rounds and conferences monitored
<input checked="" type="checkbox"/>	Other: Research productivity

Identify strengths and limitations specific to the resources of the sponsoring institution:

The Division of Gerontology has the research resources of the Geriatric Research, Education, and Clinical Center, and Claude D. Pepper Older Americans Independence Center and resources of numerous NIH and VA funded research grants. All faculty members of the division have independent NIH funding in clinical investigation, and have mentored residents and students in research projects. There are a multitude of clinical research projects for the interested, ambitious resident to participate. Collaborative research projects can also be arranged with investigators in other divisions in the Department of Medicine, School of Medicine, as well as at other institutions including the Gerontology Research Center, National Institutes on Aging/National Institutes of Health.

Conferences or Attending/Patient Care Rounds: (Journal club, division rounds, etc.)

<u>Name</u>	<u>Location</u>	<u>Day</u>	<u>Time</u>
Research Conference	VA	Thursday	3:00-4:00 pm
Research/Clinical Conference	Howard Hall	1 st Thursday	3:00-4:00 pm
Journal Club	VA	2 nd Thursday	3:00-4:00 pm
Formal Research Seminar (Visiting Professor)	VA	4 th Thursday	2:00 pm
Research Clinics	VA	Thursday	8:30 am - 12:00 noon
Investigator Patient Review	VA	Thursday	12:00 noon
Research Conference/Center for Genetics of Complex Disease		1 st Wednesday	3:00-4:00 pm

Other information: Residents should contact Dr. Katzel (5-7185) to discuss research options prior to enrollment in this elective.

The resident and faculty members of the Postgraduate Education Committee reviewed and edited the content of this curriculum at its meeting on 7/18/07.