1.a. Full Title:
Physical Activity and Biomarkers of Inflammation and Oxidative Stress: A Cross-Sectional Analysis in the ARIC Study

b. Abbreviated Title (Length 26 characters):
Exercise & Inflammation

2. Writing Group:
Writing group members:
Bruce Johnson
Mark Pereira
James Pankow
Christie Ballantyne
Bruce Duncan
Woody Chambless

I, the first author, confirm that all the coauthors have given their approval for this manuscript proposal. -- BMJ

3. First author
Bruce M. Johnson
1870 Walsh Lane
Mendota Heights, MN 55118
Phone: 651-454-1170 Fax: 651-293-8138
E-mail: john5751@umn.edu

Corresponding/senior author (if different from first author correspondence will be sent to both the first author & the corresponding author):

Mark Pereira
Address: Division of Epidemiology and Community Health
1300 South 2nd St., Suite 300
Minneapolis, MN 55454

Phone: 612-624-4173 Fax: 612-624-0315
E-mail: pereira@epi.umn.edu

3. Timeline: Analysis to begin July 2006
First draft November 2006

4. Rationale:
Habitual physical activity has numerous health benefits, such as reducing the risk of diabetes (3) and cardiovascular disease (1,5), as well as lowering total and intra-abdominal body fat (2). Although physical activity may reduce disease risk through known traditional mechanisms, such as improving insulin sensitivity and blood lipids, whether physical activity may have independent effects on oxidative stress and inflammatory mediators is less clear. Previous studies with the marker C-reactive protein have suggested an inverse relation between physical activity and CRP.(6) The ARIC baseline visit population provides a rare opportunity to examine this question in middle aged and older Caucasian and African American men and women. Therefore, analyses will be conducted to examine the associations of self-reported PA with a number of biomarkers of inflammation, adjusted for race, gender, education, study center, smoking, alcohol and dietary habits. Of additional interest, we will explore whether these associations are explained or modified by gender, race, anthropometry (BMI and WHR), and insulin sensitivity (HOMA).

**5. Main Hypothesis/Study Questions:**
The main hypothesis is that physical activity level will be inversely associated with levels of markers of inflammation.

**6. Data (variables, time window, source, inclusions/exclusions):**
Analysis will be restricted to visit 1 data. Cohort participants with diabetes or established CVD will be excluded. Data will include measurements on the baseline (visit 1) population with the validated Baecke Questionnaire of Habitual Physical Activity (sport, leisure, and work indexes),(4) BMI, WHR, and waist girth as well as key covariates or risk factors (age, gender, center, race, smoking, alcohol, diet, fasting glucose and insulin, use of hormones in women). The dependent variables -- acute phase / inflammatory measurements (fibrinogen, white blood count, sialic acid, orosomucoid, CRP, ferritin, C3, GGT, ALT), endothelial function (ICAM-1), as well as measures related to adiposity and oxidative stress (oxidized LDL, leptin, adiponectin, free fatty acids) -- are available from visit 1. Some of these measures are available on a subset of subjects in the ancillary study 1995.09. We will use general linear multivariable regression, PROC GLM in SAS. Dependent variables will be long-transformed or square root transformed to reduce skewness when necessary. As the diabetes ancillary study over sampled blacks, we will weight the estimates using SUDANN software.

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

b. If Yes, is the author aware that the file ICTDER02 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    __X_ No
(This file ICTDER02 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    __X_ No

8.b. If yes, is the author aware that either DNA data distributed by the Coordinating Center must be used, or the file ICTDER02 must be used to exclude those with value RES_DNA = “No use/storage DNA”? _____ X_ 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)? -- None were identified.

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

11.b. If yes, is the proposal

____X___ A. primarily the result of an ancillary study (list number* 1995.09)

____ 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.

References


