

Vigorous Physical Activity and the Length of Telomeres Across Levels of BMI in 4,458 U.S. Adults

CHRISTINA M. BLACKMON, & LARRY A. TUCKER, FACSM

Department of Exercise Sciences; Brigham Young University; Provo, UT

Category: Graduate

Advisor / Mentor: Tucker, Larry (tucker@byu.edu)

ABSTRACT

Telomere length is an index of cellular aging. Longer telomeres are predictive of longer life. Healthy lifestyles are associated with longer telomeres. **PURPOSE:** This study focused on the relationship between time spent in vigorous physical activity (PA) and leukocyte telomere length (LTL) in 4,458 randomly selected U.S. adults, 20-69 years old. **METHODS:** The association was studied using data collected as part of the National Health and Nutrition Examination Survey (NHANES) and a cross-sectional design. Vigorous physical activity was indexed by calculating total time spent jogging or running per week (Jog/Run/Wk). Weekly jog/run time was calculated by multiplying days of jog/run per week by minutes per session. From the total, 3 categories were formed: None, Some, and Met Guidelines. Adults who jogged or ran more than 10 min/wk but less than 75 min/wk fit into the Some category. Adults who jog/ran 75 min/wk or more, and therefore met or exceeded the U.S. PA guidelines, were labeled, Met Guidelines. Participation in 47 other forms of PA was also calculated based on time spent in other PAs. Data were analyzed using one-way ANOVA. Partial correlation was used to adjust for differences in potential mediating factors, including demographic (age, sex, race, and economic status) and lifestyle factors (smoking pack years, BMI, participation in PA other than jog/run/wk, diabetes status, and cardiovascular disease status). **RESULTS:** In the total sample, after adjusting for all the potential covariates, mean LTL differed across the 3 jog/run/wk categories ($F=4.1$, $P=0.0272$). Specifically, adults who met the guidelines via jogging or running had longer telomeres than those who did not perform regular PA (None). With the sample delimited to normal weight adults only, there was no relationship between jog/run/wk and LTL ($F=1.0$, $P=0.3774$). However, focusing on adults with overweight only, the association was significant ($F=3.9$, $P=0.0327$). Adults who met the guidelines via jog/run had longer telomeres than sedentary adults. With the sample delimited to adults with obesity only, there were no differences in LTL across the 3 levels of jog/run/wk ($F=0.8$, $P=0.4529$). **CONCLUSION:** Jogging/running is predictive of adults with longer telomeres, but only among overweight adults, not in adults with normal weight or obesity.