International Journal of
Environmental Research and Public Health

MDPI

Article

Time Spent Jogging/Running and Biological Aging in 4458 U.S. Adults: An NHANES Investigation

Christina M. Blackmon, Larry A. Tucker *, Bruce W. Bailey and Lance E. Davidson

Department of Exercise Sciences, College of Life Sciences, Brigham Young University, Provo, UT 84602, USA
* Correspondence: tucker@byu.edu; Tel.: +1-801-422-4927

Abstract: Telomere length is a good index of cellular aging. Longer telomeres are predictive of longer life, and healthy lifestyles are associated with longer telomeres. This study explored the relationship between time spent jogging or running each week and leukocyte telomere length (LTL) in 4458 randomly selected U.S. adults. The association was studied using data collected by the National Health and Nutrition Examination Survey (NHANES), and a cross-sectional design. Total weekly jog/run time was calculated from survey responses. From the minute totals, three categories were formed: <10 min/week, 10–74 min/week, and ≥75 min/week. Adults in the third category met the U.S. guidelines. Data were analyzed using one-way ANOVA. Partial correlation was used to adjust for differences in potential mediating factors, including demographic and lifestyle/medical factors. In the total sample, after adjusting for all the potential covariates, mean LTL significantly differed across the three jog/run categories ($F = 4.1$, $p = 0.0272$). Specifically, adults who met the guidelines via jogging and/or running had significantly longer telomeres than adults who performed no jogging/running. Adults in the middle category did not differ from the other two categories. A minimum of 75 min of jogging/running weekly is predictive of longer telomeres when compared to adults who do not jog or run regularly.

Keywords: cellular aging; telomeres; physical activity; jogging; fitness; disease risk

Citation: Blackmon, C.M.; Tucker, L.A.; Bailey, B.W.; Davidson, L.E. Time Spent Jogging/Running and Biological Aging in 4458 U.S. Adults: An NHANES Investigation. *Int. J. Environ. Res. Public Health* **2023**, *20*, 6872. https://doi.org/10.3390/ijerph20196872

Academic Editors: Marco Guicciardi, Santo Di Nuovo and Mauro Murgia

Received: 30 August 2023
Revised: 27 September 2023
Accepted: 29 September 2023
Published: 2 October 2023

1. Introduction

Over the past century, life expectancy in the U.S. has shown a nearly continual upward trend. Since 1900, the expected lifespan for a U.S. adult has increased by roughly 30 years [1]. The mechanisms behind the lengthened lifespan vary from improved sanitation to medical technological advancements to higher average education [2–4]. Still greater improvements are likely to be seen for years to come, continually increasing the length of life.

The recognition of a greater life expectancy also encourages the need for enhanced quality of life throughout the extended years lived. Compression of morbidity plays a key role in protecting high quality of life into the later years. Many factors can impact the ability to compress years of morbidity and simultaneously extend life, including genetics, smoking, diet, and exercise [5–8]. The precise mechanisms by which each of these affect morbidity risk has been heavily researched, and one of the many possible pathways of influence connected to all the factors is their impact on telomeres.

Telomeres are the end caps of chromosomes. Telomeres protect our genetic material during cellular replication and division. Through the countless replication and division cycles that occur throughout the lifespan, telomeres shorten. Thus, telomeres act as a type of biological clock, with shorter telomeres being highly associated with older age [9]. Over years of shortening, telomeres can ultimately be destroyed. This leaves the DNA vulnerable to damage and increases the risk of individuals developing age-related diseases [10,11]. Consequently, techniques and practices for preserving telomere length are a valuable area for focused research in search of solutions for lengthened quantity and quality of life.