



## RESEARCH ARTICLE

# AN INTERCULTURAL COMPARISON OF EUROPEAN AND UNITED STATES OLDER ADULTS PHYSICAL FITNESS BEHAVIORS

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## ABSTRACT

Physical inactivity is a primary contributor to the obesity epidemic (Gray, C. L., Messer *et al.* 2018). Obesity has been on the rise in both the United States and Europe. In the United States from 1999–2000 through 2017–2018, the prevalence of obesity increased from 30.5% to 42.4%, and the prevalence of severe obesity increased from 4.7% to 9.2% as reported by the CDC. In Europe the prevalence of obesity is estimated to be 23%. In Europe the prevalence of obesity has increased between 2010 and 2014, and has tripled since 1980 (Pineda E, *et al.* 2018). What are the lifestyle contributing factors to the increase in obesity? How do European obesity rates compare to the United States? And what are some key differences? What can we determine from the comparison to help prevent future increases? This review will allow us to closely examine these questions and will help us with a fundamental understanding of the obesity pandemic across Europe and the United States.

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## INTRODUCTION

Physical fitness is one of the most important factors which contributes to a long and healthy life. It is associated with better physical and cognitive functioning in later life and with increased life expectancy (Wojtek Chodzko-Zajko *et al.* 1994). Regular physical activity such as walking, cycling, or dancing not only makes you feel good, it has significant benefits for health (Hillmann *et al.* 2005). It reduces the risk of cardiovascular disease, diabetes and some cancers, helps control weight, and contribute to mental well-being. Taking part in physical activity also increases opportunities for making friends and feeling part of the community (Batson E. 2020). On the other hand, obesity is a growing public health problem. An estimated 66% of US adults are overweight or obese (National Institute of Diabetes Digestive and Kidney 2007) with up to 280,000 annual deaths attributable to obesity (Allison, Fontaine *et al.* 1999; Flegal, Graubard *et al.* 2005). The WHO European Region noted that on the latest estimates in European Union countries, overweight affects 30-70% and obesity affects 10-30% of adults. What causes such a large discrepancy of obesity rates between United States and Europe? In this article we will examine the intercultural

differences of physical activity between United States and European.

**Europe and United States Life Expectancy Trends:** Thirty-five countries, including the United States, comprise the Organisation for Economic Co-operation and Development (OECD). The United States ranks 26th among OECD countries with an average life expectancy of 79 years (WHO, 2015). Japan leads the world in life expectancy at 84 years. Almost all western European countries, Australia, Canada, Chile and Iceland also have a longer life expectancy than the United States. Twenty-five countries have an average life expectancy of at least 80 years, and 18 of those countries have a life expectancy at least three years longer than the US life expectancy. The Centers for Disease Control and Prevention compared United States death rates in 2012 with those of a dozen other countries with similar economies, including the United Kingdom, Japan, Germany and other European countries. The CDC found that men and women in the United States lived 2.2 fewer years than residents in similar countries. American men and women could only look forward to a life expectancy of 76.4 and 81.2 years, respectively, compared with the 78.6 and 83.4 years of their peers abroad. According to World Health Organization estimates, men and women in the United States had a higher prevalence of obesity in 2005—

defined as having a body mass index (BMI; defined as weight in kilograms divided by the square of height in meters) of 30.00 or higher—than did any other country in Europe, North America, or East Asia. In a study entitled Contribution of Obesity to International Differences in Life Expectancy completed by Preston, S. H. and Stokes, A. (2011) it was found that the high prevalence of obesity in the United States has reduced life expectancy at age 50 years by 0.88 to 1.54 years for women and by 0.62 to 1.85 years for men. The 16 countries that were included in this study are Austria, Belgium, Czech Republic, Denmark, France, Germany, Israel, Italy, Netherlands, Poland, Spain, Sweden, Switzerland, Canada, England and the United States.

The United States has a high prevalence of obesity which contributes significantly to its poor international ranking in longevity. Preston *et al.* (2018) found just that, they concluded that from 1988 to 2011 Americans have become heavier and this has caused a reduction in life expectancy at age 40 by 0.9 years in 2011 and accounted for 186,000 excess deaths that year. Obesity in the United States has become a significant factor in slowing down improvement in US life expectancy compared to other countries. In the United States, native-born populations have a higher obesity rate and lower life expectancy than immigrant groups in spite of immigrants having less access to health care services. Immigrants groups have become more obese and less healthy the longer they are in the United States regardless of an increase in income and establishing themselves (Murphy M, Robertson W, Oyebode O. Obesity in international migrant populations, 2017). Obesity has been linked to cardiovascular disease; obesity is associated with change in cholesterol levels, diabetes, and high blood pressure. Obese individuals have a much greater chance of developing diabetes according to the American Heart Association, at least 68 percent of people aged 65 or older with diabetes also have heart disease. The CDC has found that one in every four deaths each year in the United States is due to heart disease. In the most recent Global Burden of Disease Study (2014), a high BMI was the leading risk factor, accounting for 4.4 million deaths and 134.0 million disability-adjusted life-years. Pre-obesity and obesity are responsible for approximately 35% of all cases of ischemic heart disease, 55% of hypertension, and around 80% of type 2 diabetes. The European Cardiovascular Disease Statistics 2017 edition found that each year cardiovascular disease (CVD) causes 3.9 million deaths in Europe and over 1.8 million deaths in the European Union (EU). European Cardiovascular Disease Statistics 2017 also states that CVD accounts for 45% of all deaths in Europe and 37% of all deaths in the EU. Lastly, the European Cardiovascular Disease Statistics 2017 states CVD is the main cause of death in men in all but 12 countries of Europe and is the main cause of death in women in all but two countries.

**Current Recommendations:** According to the World Health Organization (WHO 2014) adults aged 65 years and above, physical activity includes a variety of activities including; leisure time physical activity (for example: walking, dancing, gardening, hiking, swimming), transportation (e.g. walking or cycling), occupational (if the individual is still engaged in work), household chores, play, games, sports or planned exercise, in the context of daily, family, and community activities. WHO recommends certain guidelines in order to improve cardiorespiratory and muscular fitness, bone and functional health, reduce the risk of non communicable

diseases, depression and cognitive decline. WHO (2011) recommends the following guidelines for older adults: Older adults should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous-intensity activity. Aerobic activity should be performed in bouts of at least 10 minutes duration. For additional health benefits, older adults should increase their moderate-intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate-and vigorous-intensity activity. Older adults, with poor mobility, should perform physical activity to enhance balance and prevent falls on 3 or more days per week (WHO, 2018). Muscle-strengthening activities, involving major muscle groups, should be done on 2 or more days a week. WHO determined that when older adults cannot do the recommended amounts of physical activity due to health conditions, they should be as physically active as their abilities and conditions allow.

The recommended levels of physical activity (PA) vary from country to country there were sixteen countries that did not have a national recommendation level set in Europe out of the 37 analyzed in a particular study, 21 countries did (WHO 2018). Three countries recommended longer duration than this while one recommended a lower one. There are some minor differences found with recommended intensity and minimum bouts. There was only one country found that was fully in line with WHO recommendations. In 1995 WHO recommended in the United States that at least 30 minutes of PA 5 days a week for adults and most countries still follow this outdated recommendation. International physical activity recommendations still include reference to performing moderate-to vigorous activity in bouts (USDoHaHSH Physical Activity Guidelines. 2008) and Hagstromer *et al.* 2008, describe the physical activity levels of these populations largely in regards to bouts of moderate-to vigorous physical activity. However, there is no scientific consensus as to whether bouts of physical activity are more important for health than overall physical activity, and whether total physical activity, or activity of a pre-described intensity, is most beneficial for health (Metzger JS, Catellier DJ *et al.* 2018). Only four European countries give specific recommendations for weight reduction, avoid weight gain or maintenance of weight we should know which countries. The physical activity for older adults is much the same as for adults but also some countries include balance training. About half of the countries for which information was available and likely less than 40% of all 53 countries in the WHO European Region has developed national PA recommendations. More investment is needed to have a comprehensive PA recommendation across all regions and age groups. Approximately one in four adults over the age of 50 are inactive, communities need to be designed to make it safer and easier for persons of all ages and abilities to be PA.

**Overview of Comparative Studies:** An important contributing factor to inactivity in older adults is perception vs reality (what they think they are doing and what is actually being done). In a recent study by Kapteyn *et al.* (2018), entitled found that there were variances among what PA is reported and what is actually done. 540 participants were involved from the United States, 748 from the Netherlands, and 254 from England.

This study included a widespread of ages from 18 and up and were asked to report on their physical activity from a scale of 1-5, 5 being very active and 1 being inactive. After completion of the questionnaire individuals wore a tracking device on their wrist (accelerometer) so that actual physical activity over a seven-day period would be measured. The Dutch and English were more likely to rate themselves towards moderate whilst Americans rated themselves at the extreme ends. By wearing these devices, it was discovered that Americans were much less physically active than both the Dutch and English. The percentage of Americans in the inactive category was nearly twice as large as the percentage of Dutch participants. This study shows that simple questionnaires may not be the most reliable method of measuring physical activity as perception and reality vary vastly among individuals across all age groups not only for the older groups. In a study completed by Jacobson *et al.* (2011), entitled reliance on automobiles for transportation, the authors found that vehicle usage and national obesity rates correlated in the 99-percent range. Individuals that use automobiles for transportation are less active. In this study it was found that (as of 2008), passenger kilometers per capita in the US totaled more than 23,000 while the total was under 10,000 in the EU. With each country there has been a steady increase in kms per year since 1970 per passenger but no other country comes close to the amount of driving completed annually compared to the United States. The EU countries included in this study were Belgium, Denmark, Finland, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the U.K.

Frequent use of automobiles leads to less physical exertion overall: less of a reliance on more physically demanding forms of transportation such as walking, biking, or even taking public transport. Berdine *et al.* (2018), also concluded in his study that one of the reasons that life expectancy in Cuba remains relatively high is due to its lack of automobile ownership, the data suggests that the necessity of greater physical exertion in daily life leads to less obesity and cardiovascular disease. A growing body of research provides evidence of the relationship between poor walkability of the residential environment and greater obesity prevalence (Mackenbach *et al.*, 2014). A wide variety of measures of walkability have been employed in past research, with specific measures often chosen to represent one or more of three defining features of walkability known as the "3Ds:" population density, a diversity of destinations, and pedestrian friendly design (Cervero & Kockelman, 1997). Functional impairments, as well as inactivity levels, can be exacerbated by the environmental contexts in which older adults live (Clarke, George, 2005, Yen *et al.*, 2009). For example, Clarke and George (2005) reported that older adults with reduced physical function were less able to perform daily activities when they lived in residential neighborhoods with few destinations nearby (Clarke & George, 2005). Neighborhood opportunities to engage safely in active transport (i.e., walking or bicycling for errands) may help even mobility impaired older adults avoid further disability and dependence (Hirvensalo *et al.*, 2000, Langlois *et al.*, 1997). In a study completed by King, *et al.* (2011) older adults of age 66 were asked to participate to measure the PA differences between areas that are rated high in walkability and low in walkability in the US. Inclusionary criteria required participants to be 66 years and older, able to complete surveys in English and walk at least 10 feet continuously. There were 719 adults involved in the study and organized by U.S. Census block groups in Seattle-King County, Washington and

Baltimore, Maryland- Washington DC regions which were selected based on geographic information systems to maximize variability in walkability and income. King *et al.* concluded that the difference in transport activity between the two walkability categories was more than 30 min per week, indicating residents of higher walkable areas reported 400% more transport activity than the low walkability group. Living in neighborhood environments that are conducive to transport activity can lead to routine forms of daily activity that do not require the types of planning and scheduling often required for recreational activity. The approximately 30 min per week difference in transport activities translates to 20% of the weekly physical activity recommendation. The difference in accelerometer-derived moderate and vigorous physical activity was about 17 min/week, indicating residents of higher walkable neighborhoods were about 33% more active in moderate and vigorous physical activity than those living in lower walkable neighborhoods. When converted into net energy expenditure, this difference translates into an approximately 1.5 pound difference across a year between the two types of neighborhoods. There have been several studies completed in Europe as well to measure how PA and walkability correlate. Van Dyck *et al.* (2010) report that living in a high-walkable neighborhood was associated with the weekly minutes of walking for transportation as well as the accelerometer-based moderate to vigorous PA in a sample of 1,166 Belgian adults. Sundquist *et al.* (2011) also reported that people living in highly walkable areas showed more minutes of moderate to vigorous PA and walked more often for transportation purposes. Two reviews from 2012 point into the same direction: Van Holle *et al.* as well as Grasser *et al.* illustrated the positive associations between the physical environment and walking for transportation.

**Physical Activity being done in the United States and Europe:** SHARE, the Survey of Health Ageing, and Retirement in Europe is a multinational panel database that includes representative samples of community-based populations from 19 countries in Europe plus Israel. SHARE completed a cross-sectional analysis in 2010, of 16 European countries including: Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Hungary, Italy, Netherlands, Poland, Portugal, Slovenia, Spain, Sweden, and Switzerland. The data was collected from non-institutionalized adults over the age of 55 (mean age  $67.8 \pm 8.9$  years; 11,430 (59.2%) female) resulting in the involvement of 19,298 people. Authors of research done within SHARE found that the prevalence of inactivity of older adults (aged 55 or older) was 12.5%. The rate of inactivity varied between countries while Sweden had 4.9% being the lowest to Portugal at the highest with 29%. According to SHARE increasing age, depression, physical limitations, poor sense of meaning in life, social support and memory loss were significant variables associated with physical inactivity. Watson KB, Carlson SA, *et al.* in a study completed in 2014 Physical Inactivity Among Adults Aged 50 Years and Older states that Inactivity is defined as participating in no activity beyond baseline activities of daily living. According to data collected in this study 27.5% of U.S. adults aged  $\geq 50$  years, approximately 31 million persons, were inactive. Inactivity increased with increasing age for adults aged 50–64 years (25.4%), 65–74 years (26.9%), and  $\geq 75$  years (35.3%). The prevalence of inactivity was higher for women (29.4%) than men (25.5%). The CDC reports in 2018 that Only 35 – 44% of adults 75 years or older are physically active, and 28-34% of adults ages 65-74 are physically active.

## CONCLUSIONS

There are several studies that show Americans comparably to European countries are much less physically active as mentioned in this article and this is directly related to obesity, with numerous contributing factors but the biggest being lifestyle. Americans overall move less throughout the day due to reliability on car transport and the amount of time they spend in a vehicle. Another major factor is perception of activity; individuals seem to think they are more active than they are in actuality. There is also not a clear indicator for what PA amount is most beneficial for each age group across the United States and even more so in Europe. These findings point to a fundamental lifestyle difference between Europe and the United States, in that there is much higher rate of walkability in Europe due to well-developed public transportation systems and lower car usage this leads to an increase in daily PA. The increase in PA may contribute to Europe's overall lower level rate of obesity but even so this level is on the rise. The prevalence of obesity United states and Europe is forecast to rise by 2025, which is likely to increase morbidity and mortality from noncommunicable diseases and place a significant strain on health systems and wider society (WHO, 2015). In general, the prevalence of obesity tended to increase with age which is worrying given that we know populations are generally aging across Europe and the United States (Zota A. *et al.*2017). These collective findings should add urgency to public health efforts aimed at achieving healthier weights for Americans and European countries.

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