

The Effects of Distance Running on Idiopathic Hypertension in Middle-Aged Sedentary Males



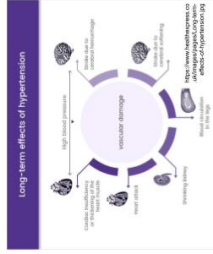
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Abstract

- Hypertension is an ever-present, rapidly rising condition that can have potentially life-threatening consequences without treatment
- If hypertension is left untreated, arteries can become damaged, arteriosclerosis, heart disease, strokes, kidney failure, and other fatal conditions can result as time progresses (McArdle et al., 2015).
- Physical activity has been shown to reduce high blood pressure; however, further research needs to be performed in order to determine if the physical activity of distance running can reduce blood pressure, specifically in middle-aged sedentary males.
- This study examined the effects of distance running by measuring blood pressure before and after a six-month training protocol.

Introduction

- Approximately 65 million adults in the United States have hypertension (Parker, Schmitz, Jacobs, Dengel, & Schreiner, 2007).
- While some studies show that genetics are the primary contributor to acquiring hypertension and exercise produces minimal results on the reduction of high blood pressure (Blino et al., 2013), aerobic physical activity has been shown to reduce blood pressure to prevent and treat hypertension.
- Active individuals are at a lower risk for developing hypertension than their sedentary counterparts (Cardoso et al., 2010).
- According to McArdle et al. (2015), systolic and diastolic blood pressures decreased by 6 to 10 mm Hg with aerobic exercise in previous men and women regardless of their age.



Operational Definitions

- **Hypertension:** High blood pressure that is 140/90 mm Hg or higher while at rest (Porcari, Bryant & Comana, 2015).
- **Physical Activity:** Body movements produced by active muscles that in turn, increase the amount of energy expended (McArdle et al., 2015).
- **Metabolic Equivalent (MET):** The energy expenditure of the individual (Powers & Howley, 2007). When an individual is at rest, their metabolic equivalent (MET) is at 1, which means they are consuming 3.5 milliliters of oxygen per kilogram of body weight per minute (mL/kg/min).
- **Distance Running:** Running more than 800 meters at one time (Augustyn et al., 2007). Two out of three of the groups in this study ran 1600 meters and 5000 meters at least 3 days per week.
- **Sedentary Individuals:** Those who spend a lot of their time sitting, reclining, or lying while having a low level of energy expenditure that ranges between 1 and 1.5 METs (Knaeps et al., 2018).

The Purpose Statement

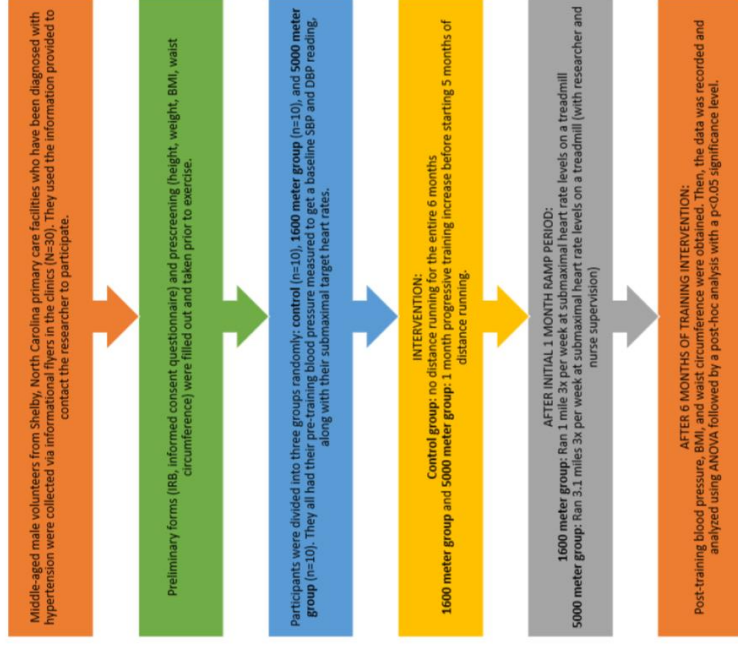
The purpose of this study was to determine the effects of distance running on sedentary middle-aged adults with idiopathic hypertension through quantitative, objective measurements.

- **Independent Variable:** Distances ran in meters/miles (measured using the Super Treadmill®)
- **Dependent Variable:** Blood pressure in mm Hg (measured using the LifeSource Blood Pressure Monitor®)

It is hypothesized that that the 5000-meter participants would have the greatest reductions in blood pressure due to evidence explaining that more aerobic activity has a high correlation with decreased blood pressure in hypertensive individuals.

Methods

Figure 1. A step-by-step procedure on how the data was gathered, organized, recorded, and analyzed.



Inclusion Criteria

The criteria for an individual to participate in this study included:

1. Exercising less than 2 days per week on a regular basis for the past 6 months
2. A body mass index (BMI) between 18.5 and 24.9 kg/m²
3. A resting systolic blood pressure (SBP) of 140 mm Hg or higher and/or a resting diastolic blood pressure (DBP) of 90 mm Hg.
4. No known history of metabolic, muscular, or coronary disease(s)
5. Did not take any antihypertensive medications
6. Did not drink alcohol or smoke at the time of enrollment

Implications

- Convenience sampling and small sample size contributed to being major biases in this study. These biases could be avoided by obtaining a larger sample size from a wider variety of areas.
- Future research should carry out a longer and more extensive study in order to determine how distance running affects various genders and sociocultural groups with idiopathic hypertension.
- It is important for sedentary adults to perform aerobic exercises at least three times per week to maximize health benefits.
- Individuals who participate in regular aerobic exercise, such as distance running, can decrease their high blood pressure and live a longer, healthier lifestyle without the side effects of antihypertensive medications.

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