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## The Efficacy and Convenience of Different Means for Improving Blood Pressure

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# Efficacy and convenience of different exercise protocols for improving blood pressure

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## Introduction

- 1 in 3 Americans are hypertensive (Faststats, 2017)
- This poster evaluates the efficacy and convenience of different means of improving blood pressure for a general population that does not regularly exercise with the goal of providing approachable recommendations to get more people physically active while combating hypertension.

## Methods

### Kinesio Tape (Shah, 2018)

- Passive engagement
- Improvements in blood pressure for up to 5 days
- Results have not been replicated
- Low risk/Investment, low reward

### Hand Grippers (Carlson, 2016)

- Demonstrated a decrease of 7 mm Hg in systolic blood pressure
- Convenient and Portable
- 3 days per week
  - 4 sets of 2 minute isometric hold using non-dominant hand
    - 30% of maximum voluntary contraction
- Low Risk/Investment, Moderate to High Reward

### Breaking Up Periods of Inactivity (English, 2018)

- Add 3 minutes of activity every 30 minutes of inactivity
- Walking is the most effective recommendation
  - Effective for healthy, overweight, and type-2 diabetic populations
- Low Risk/Investment, Moderate to High Reward

### Walking (He, 2018) (Takeshi, 2016)

- Decrease of 8.3 mm Hg in systolic blood pressure for hypertensive elderly individuals
- 1 hour of brisk walking 3 times per week for 12 weeks
- Walking protocols can reduce high blood pressure during all activities (resistance exercises/daily living)
- Low to Moderate Risk/Investment, High Reward

### Aquatic Exercise (Igarashi, 2017)

- Decrease of 8.4 mm Hg in systolic blood pressure
- Similar benefits to land based training programs
- Safer for obese and elderly populations due to decreased risk of falling
- Low to Moderate Risk/Investment, High Reward

### Broad Isometric Exercise (Inder, 2015)

- Average drop of 6.77 mm Hg in systolic blood pressure
- Examples of convenient isometric exercises are planks and wall sit variations
- Moderate Risk/Investment, High Reward

## Traditional Resistance Training

(Niño, 2017) (Crisafulli, 2018)

- All protocols demonstrated improvements in blood pressure
  - It is recommended to train in a variety of modalities to cover a variety of physiological pathways
- Blood Flow Restriction
  - Specific protocol that can be used to increase hypertrophy and decrease blood pressure but current results are inconclusive
- Moderate Risk/Investment, High Reward

## Traditional Aerobic Training

(Carpio-Rivera, 2016) (Niño, 2017)

- Aerobic exercise is an essential part of a balanced training program
- Results in a beneficial drop in blood pressure following moderate to intense aerobic exercise
  - More intense sessions resulted in greater improvements to blood pressure
  - Walking does not have an acute physiological effect but it does elicit chronic improvements
- Moderate Risk/Investment, High Reward

## Discussion

- It is up to the individual to decide on their ability to commit to a certain program
  - Time, mobility, and pre-existing conditions will play a large role
  - You should consult your doctor before beginning any new program
- Individuals taking high blood pressure medication need to exercise under the supervision of trained professionals
- Some programs were found to be more effective than pharmaceutical intervention (Law, 2009)
- Mood and stress are closely linked to blood pressure and exercise can improve both conditions (Stress, 2019) (Guszkowska, 2004)

## Conclusion

- Increasing activity levels is the easiest recommendation to make as most americans are sedentary (Faststats, 2017)
- Adopting some form of exercise program is effective in creating significant improvements in blood pressure

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