

This project does not attempt to produce generalizable knowledge. It is dedicated to the practice of developing skills and demonstrating understanding of the research process.

## Introduction

The vertical jump test is a test often used to assess lower body power (Haff and Triplett, 2016). The six-minute walk test (6MWT) has been useful in assessing for a variety of respiratory or cardiac diseases (Olsson, 2005). The 6MWT requires participants to walk as far as they can in the six minutes, which is physically taxing on the body (Olsson, 2005). Studies have found that a gradual, progressive warmup can improve performance whereas static stretching can negatively impact performance (Vetter, 2007). The purpose of this study was to assess the effects of a 6MWT, and a 6-minute treadmill walk test on vertical jump. It was hypothesized that the six-minute treadmill test would produce a higher vertical jump than the 6MWT because of the oxidative work the 6MWT requires.

## Methods

### Participants

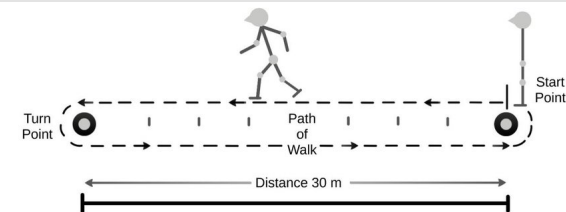
- 3 male, 3 female (n=6)
- Non-NCAA athletes
- No injury or surgery <6 months
- Ages 18-22

### Day 1 Protocol

- Subjects were familiarized with testing protocol
- Height and weight were recorded
- Warm-up with 6 minutes on treadmill at 2 MPH
- Vertec vertical leap test with 3-step approach until two consecutive fails with 30 seconds of rest between attempts
- Record results (dependent variable)

### Day 2 Protocol

- Warm-up with 6MWT (independent variable)
- Vertec vertical leap test with 3-step approach until two consecutive fails with 30 seconds of rest between attempts
- Record results (dependent variable)



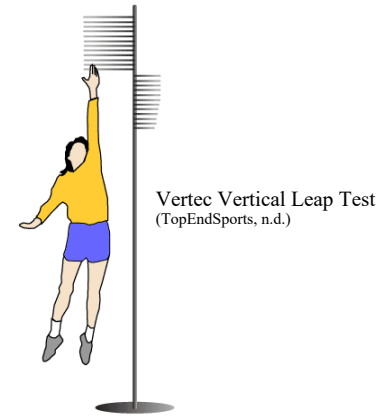
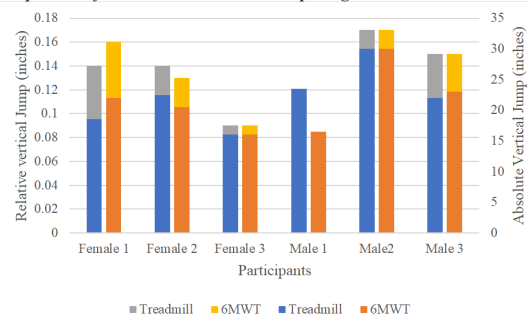
## Results

Table 1 describes the data that was found, including relative and absolute values of the subjects' vertical leap for both the 6MWT and the treadmill warm-up. Figure 1 describes the relative and absolute jump heights of each participant on both the treadmill warmup and six-minute walk test. This study found that subjects jumped higher after the six-minute treadmill warmup when compared to vertical leap after the six-minute walk test. Of the 6 participants, 4 had a lower vertical jump in the 6MWT and 2 had no change in vertical leap. The largest decrease in jump height was seen in male one (M1). M1 had a vertical leap of 23.5 inches after the treadmill walk warmup and a 16.5-inch vertical leap after the 6MWT. Similarly decreases were found in female one (F1) (decreased 3.5 inches), female two (F2) (decreased 2 inches), and male 3 (M3) (decreased one inch). Female three (F3) and male two (M2) had constant vertical jumps of 16 inches and 30 inches, respectively.

**Table 1**  
Description of Absolute and Relative Jump Heights

	Weight (lbs)	Height (in)	Treadmill (absolute)	6MWT (absolute)	Treadmill (relative)	6MWT (relative)
Mean	175.17	67.08	22.08	21.33	0.13	0.13
Std. Deviation	49.03	3.96	4.79	5.12	0.04	0.04
Range	138.00	10.00	14.00	14.00	0.09	0.11
Minimum	132.00	62.00	16.00	16.00	0.08	0.06
Maximum	270.00	72.00	30.00	30.00	0.17	0.17

**Figure 1**  
Comparison of Relative and Absolute Jump Heights



Vertec Vertical Leap Test  
(TopEndSports, n.d.)

## Discussion

This lab was conducted using a Vertec vertical jump and a treadmill. It was hypothesized that the six-minute treadmill test would produce a higher vertical jump than the six-minute walk test (6MWT). The average jump height after the treadmill warm-up was 22.08 inches. The average jump height after the 6MWT was 21.33. The jump height decreased when the 6MWT was used as the warm-up. This could be due to the oxidative work required for this warm-up. Female 3 and Male 2 had no change between the two sessions. This could be due to familiarization with the test and the repetitive of the test. In comparison with previous studies, a gradual warm-up can improve performance (Vetter, 2007). This aligns with the results found in this study that a light walking warm-up improved performance whereas the 6MWT negatively impacted performance.

## Conclusion

To conclude, the 6MWT was found to have a negative impact on vertical jump compared to the 6-minute treadmill warm-up. The participants scored significantly lower on the vertical jump test after completing the 6MWT. It can be concluded that the 6-minute treadmill test would prime the lower body enough to positively impact vertical jump without overexerting the lower body as seen in the fatiguing 6MWT. A limitation to this study is that the shoes participants wore were not standardized. Future studies can standardize by controlling the shoes that participants wear. In the sports training environment, team training shoes would be given to the participants to wear. When implementing the vertical jump test into a training program, coaches can complete a similar warm-up to the 6-minute treadmill warm-up to better prime the lower body.

## References

- Haff, G., & Triplett, N. T. (2016). Essentials of strength training and conditioning (4th ed.). Human Kinetics.
- Olsson, L. (2005). Six minute walk test. European Heart Journal, 26(20), 2209-2209. <https://doi.org/10.1093/eurheartj/ehi452>
- Vetter, R. E. (2007). Effects of six warm-up protocols on sprint and Jump Performance. The Journal of Strength and Conditioning Research, 21(3), 819. <https://doi.org/10.1519/r-20296.1>