The Effects of Cardio Warm Up (CW) and Dynamic Warm Up (DW) on Sprint Time in Trained Individuals

GARDNER-WEBB UNIVERSITY

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This project makes no effort to suggest generalizability. Instead, it was designed to demonstrate competency using lab equipment, capacity to integrate knowledge with application, and understanding of the scientific method.

INTRODUCTION

- According to Sander et al., (2013) a warmup to increase sprint time should include nonspecific running, coordination exercises, stretching, and acceleration runs.
- According to Zhou et al., (2020), an investigation into multiple studies found that aspects such as arm motion, takeoff angle, standing posture, warm up exercises, and handheld weights improved sprint times.
- The purpose of this study was to determine how a dynamic warmup compared to a cardio warm up will improve sprint time in trained collegiate D-I athletes.
- It was hypothesized that with the addition of a broad jump at the end of a standardized dynamic warm up, that trained individuals will show an increased sprint time performance in a 20-yard sprint test compared to a cardio warm up.

METHODS AND PARTICIPANTS

- **Cardio Warm Up**
  - 2–3-minute slow jog around track at football field
  - Knee hugs/high knees (10) (slow & controlled)
  - Quad pulls/ butt kicks (10) (slow & controlled)
  - Front lunges with twist/ back lunges with a lean (10)
  - Leg cradles/ side lunges (10)

- **Dynamic Warm Up**
  - 50% 20-yard jog and walk back to goal line
  - Right and left single leg broad jump
  - Knee hugs/high knees (10) to the 20-yard line and walk back
  - Quad pulls/butt kicks (10) to the 20-yard line and walk back
  - Front lunges with twist/ back lunges with a lean (10) to the 20-yard line and walk back
  - Right and left single leg broad jump
  - Leg cradles/ side lunges (10) to the 20-yard line and walk back
  - Double leg broad jump

- **Participants**

  This study used 8 participants from Gardner-Webb University. Participants were volunteers from the second level Exercise Physiology Class. The data collected included 4 males and 4 females. Participants ages ranged from 20-32 years old.

PROTOCOL

Step 1: **Researchers arrive to Football Field 15 minutes prior to participants arriving.**

Step 2: **Subjects arrive, introduced to warm up protocol. Then subjects are randomly assigned to CW or DW**

Step 3: **Each group completes respective warmup, testing begins**

Step 4: **Record 20 yard sprint data for analysis**

RESULTS

Table 1.

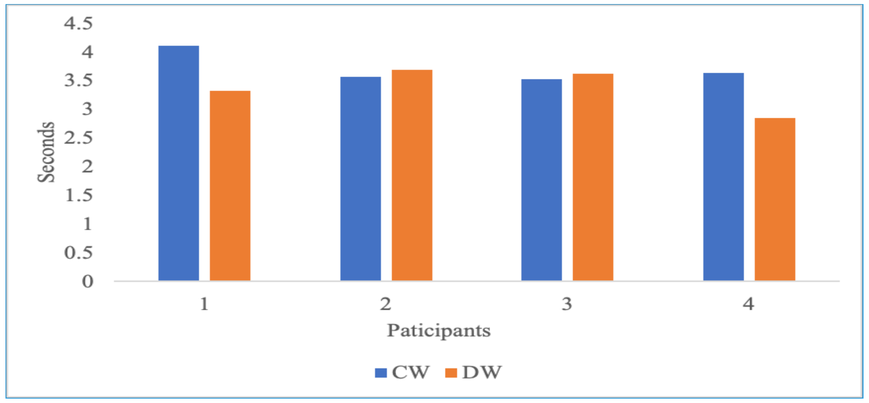
Descriptive Data of the Participants

Subject	CW or DW	Sex	Height	Weight	20-yard Sprint Time
1	CW	Male	172 cm	98.8 kg	4.11 sec
2	DW	Female	170.6 cm	66.6 kg	3.33 sec
3	CW	Female	173.7 cm	73.9 kg	3.57 sec
4	DW	Male	182.8 cm	122.5 kg	3.69 sec
5	CW	Male	176.7 cm	70.3 kg	3.53 sec
6	DW	Female	155.4 cm	77.6 kg	3.62 sec
7	DW	Male	155.7 cm	79.4 kg	2.85 sec
8	CW	Female	173.7 cm	70.3 kg	3.64 sec

Notes. CW: cardio warm-up. DW: dynamic warm-up. CM: centimeters. KG: kilograms. Sec: seconds.

Figure 1.

Sprint Times of Trained Individuals Following a CW and DW



Notes. Participants were divided into two groups CW (blue) (2 females, 2 males) and DW (orange) (2 females, 2 males). The fastest 20-yard sprint was 3.3sec and the slowest speed was 4.11sec.

DISCUSSION

There was no significant data shown in the results to determine if CW or DW was more effective to improving a 20-yard sprint time. This means additional studies should be done. Future researchers should eliminate the jog from the CW and focus on doing static vs dynamic warmup. Additional studies should look to use a larger sample size as well as determine to differentiate the true impact a DW compared to a CW.

Limitations

Only 8 participants, future research studies should include at least 20.

Application

The application of this study to real life is that warmups help to increase sprint time, however, more research should be conducted to determine which warmup type will specifically increase a 20-yard sprint time.

CONCULSION

- During this project, since subjects were trained athletes, majority had a basic understanding of how to correctly perform the warmup exercises. The dynamic warm up showed to be more beneficial at increasing and improving a 20-yard sprint time. There were several limitations to this study. One of these limitations included the fact that trained individuals played in high school, while others currently play in college. A second limitation is that trained individuals played different sports such as softball, soccer, and baseball. This study and its results can help coaches, athletic trainers, and strength and conditioning coaches maintain and improve the speed and power of sprinting. Future researchers should focus on athletes in various universities and division to see the impact of this study at a national level.

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