

The Effect of an 8-week Core Training Program on 1 Mile and 100-Meter Dash Outdoor Running Times in College-Aged Athletes

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INTRODUCTION

The core is defined as part of the lumbo-pelvic hip complex consisting of more than 29 attachments.¹

Research suggests that enhanced core strength contributes to the advancement of athletic performance due to improvements in the following attributes: balance and stability, power generation, core endurance, neuromuscular control and injury prevention.^{2, 12-13}

Current research is limited in exploring the role of core stability on sport-specific performance in female>male athletes, non-youth athletes, and in sport-specific environments (vs. rehab settings).^{1-2,5}

SIGNIFICANCE OF RESEARCH

Number of NCAA athletes: > 480,000³

United States collegiate sports: \$18.9 billion industry³

Name, Image and Likeness (NIL) approval: July 1, 2022⁴

→ High financial stakes for athletes, coaches and industry in improving athletic performance.

HYPOTHESIS

The alternative hypotheses state:

- (1) There will be a statistically significant difference in running times between 0-4 weeks, 4-8 weeks and 0-8 weeks **and**,
- (2) There will be a statistically significant difference in McGill Core endurance test scores from baseline to 4 weeks and 8 weeks.

PARTICIPANTS, CRITERIA & RECRUITMENT

Participants: College-aged athletes, 18-25 years old. Minimum of 25 and maximum of 50.

Inclusion Criteria: (1) have a minimum of 1 year of athletic participation on a collegiate-level sports team **or** (2) are currently listed on an active collegiate athletic roster; English-speaking.

Recruitment: From Misericordia University, King's College and Wilkes University via (1) Email to Athletic Directors and Coaches **and** (2) Flyers posted around campuses.

Table 1: 8-Week Core Endurance Program from Hung et. al. (2019)

Exercise Protocol	Reps/Time	Assisted Equipment	Sets
Warm-up Exercise			
Dead-bug Exercise	30	Mini-band	1
Week 1 to 3 (Fundamental Strength)			
Crunch	20(week1-2) /25(week 3)	/	3
Back Bridge	20(week1-2) /25(week 3)	/	3
Plank	45s (week1-2) / 60s (week 3)	Mini-band	3
Side Plank with leg raise	30s (week1-2) / 45s (week 3)	/	3
Week 4 to 6 (Stabilization)			
Crunch	25	Air pad	3
Split Leg Bridge	20 per side	/	3
Plank with AP/BOSU and band	60 seconds	Mini-band & BOSU	3
Side Plank with leg raise	30 seconds	Air pad	3
Week 7 to 8 (Functional Strengthening)			
Mountain Climber	40	Mini-band	3
Pallof Press	60 seconds	BOSU	3
Split Leg Bridge	25	Air pad	3
Plank Variation	30s per type (5 types)	/	2

*AP: Air Pad; BOSU: BOSU Balance Trainer

METHODS AND INTERVENTIONS

Participants' core endurance measured via McGill Core Endurance test and one mile run/ 100-meter dash times recorded using Dashr Timing System.

8 Week Core Exercise Program (See Table 1)

- Performed 3x/week (2x at home, 1x at Misericordia with supervision from researchers)

Google Forms Survey Completed weekly

Data Collected at Week 0, Week 4, and Week 8

- McGill Core Endurance test
- 100 Meter Dash Time
- 1 Mile Run Time

IMPLICATIONS FOR PHYSICAL THERAPY

Core musculature plays a key role in providing proximal stability of the trunk necessary to perform during both high impact and high velocity movements of the body.¹

Research suggests that enhanced core strength contributes to the advancement of athletic performance due to improvements in balance, stability, power generation, core endurance, neuromuscular control, and injury prevention.^{2, 12-13}

Core training can lead to increase stability and stiffness in the spine to reduce unrequired "energy leaks" and torso movements during the extortion of external loads.⁸

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