

Introduction

In 2012, the U.S. Army Training and Doctrine Command undertook a comprehensive study of baseline physical fitness related to military task performance, providing the foundation for the Army Combat Fitness Test (ACFT). The ACFT assesses military-relevant physical demands (e.g., muscular strength and power, agility, and aerobic capacity) using a testing battery to measure health-related physical and skill-related combat fitness parameters. From October 2018 to April 2020, ACFT field testing was conducted across the U.S. Army. At the time of this investigation, the ACFT was comprised of six events: three-repetition maximum deadlift, standing power throw, hand release push-up, sprint-drag-carry, leg tuck, and timed 2-mile run.

During ACFT field testing, about 50% of the test battalions were resourced with medical and fitness teams (MFT) to provide exercise programing, health education classes, instruction on proper exercise technique, and enhance availability of patient care for Soldiers. These teams consisted of physical and occupational therapists, athletic trainers, strength and conditioning coaches, dietitians, and psychologists.

The shift to a multi-component fitness test theoretically requires changes in physical fitness training to prepare Soldiers for the new testing battery. Increased access to sports medicine teams may increase physical fitness augmenting military readiness.

This investigation aimed to measure the effects of medical and fitness teams on physical fitness among U.S. Army Soldiers, as measured by the ACFT.

Methods

This observational investigation was designed to assess 61 operational battalions during field testing of the ACFT. Operational battalions were selected by the U.S. Army Training and Doctrine Command and chosen as representative of typical U.S. Army units. ACFT field testing occurred from October 2018 to April 2020. MFTs arrived between October 2018 and January 2019.

Results herein are a secondary analysis of a subset of a larger investigation. This secondary analysis examines electronic surveys administered following the ACFT field testing phase, January–April 2020. Surveys collected demographics and physical training activities (unit and personal fitness training) within the previous 12 months. ACFT records were obtained from the U.S. Army's Digital Training Management System (DTMS). DTMS data was acquired for a Soldiers initial ACFT completed during the first 6 months of ACFT field testing. A follow-up ACFT was acquired between 6 months and 12 months after the Soldiers initial test. Only Soldiers who had completed all six events for both the initial and follow-up ACFT and had at least 180 days between the initial and follow-up ACFT were included in the analysis. Independent t-tests were used to evaluate differences between resourced (MFT) and non-resourced groups (No MFT). Multivariate linear regression, controlling for age, BMI, baseline performance and MOS category, was used to determine ACFT event performance estimates.

Figure 1. Directed Acyclic Graph for Multivariate Linear Regression

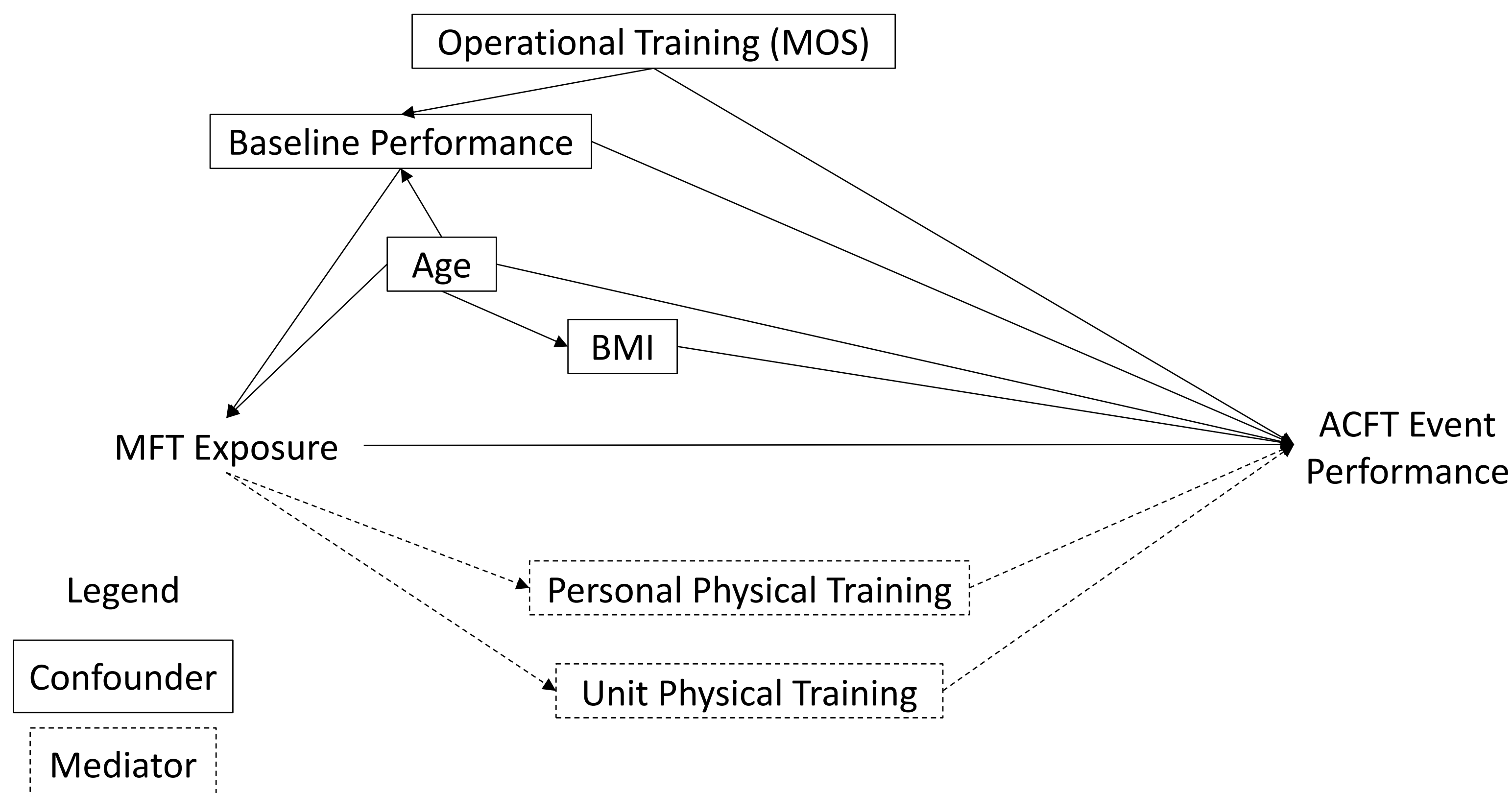
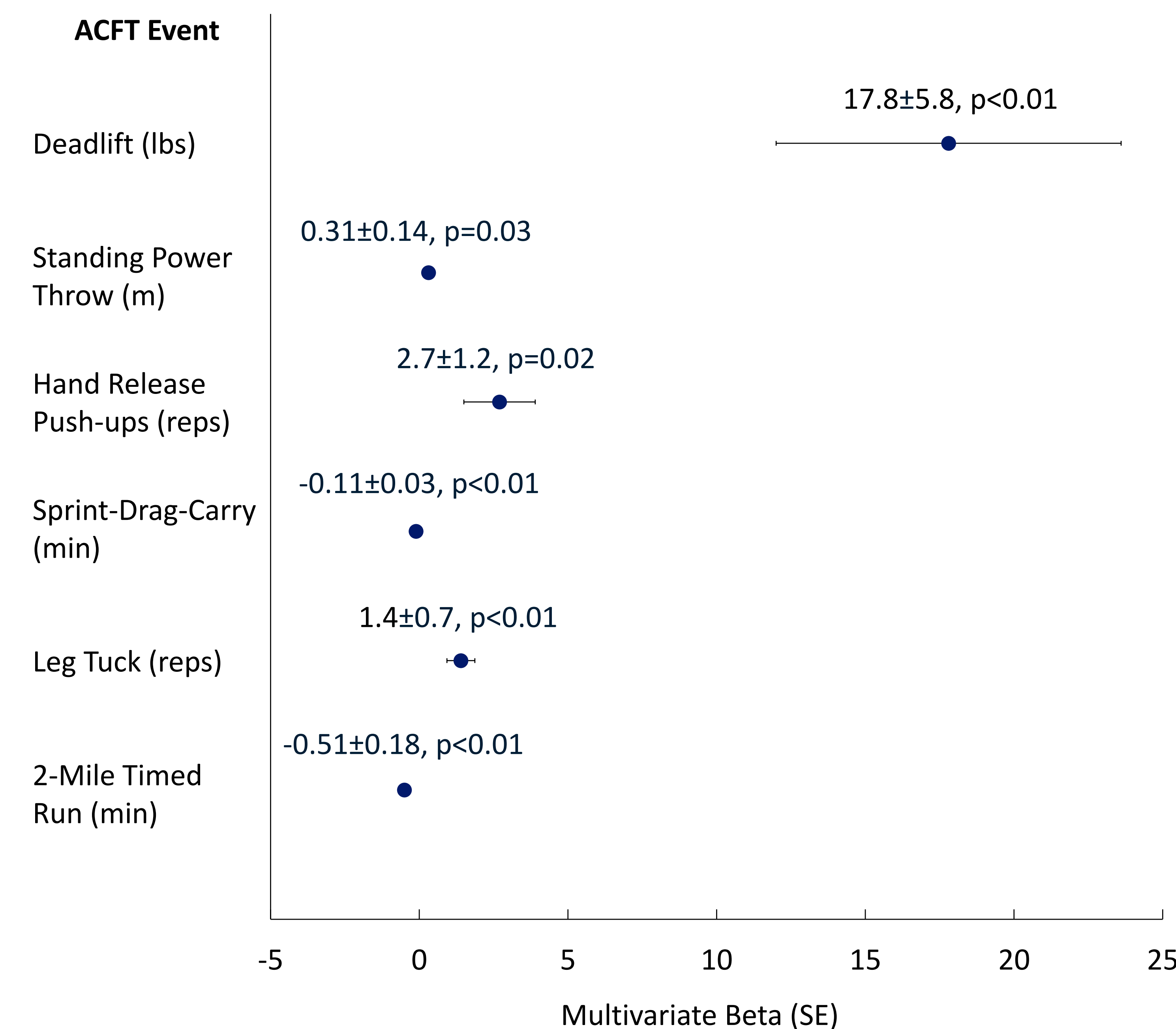


Table 1. Respondent Characteristics

	MFT (n=323)	No MFT (n=76)	P-value
Age (years)	26.6±6.1	30.1±7.2	<0.01
Height (inches)	69.8±2.9	69.9±2.5	0.78
Weight (pounds)	181.6±26.9	185.7±26.3	0.23
Body mass index (kg/m ²)	26.2±3.1	26.8±3.4	0.14
Initial ACFT Events			
Deadlift (lbs)	242.0±56.5	228.5±59.1	0.06
Standing Power Throw (m)	9.2±1.7	9.2±2.0	1.00
Hand Release Push-ups (reps)	36.1±9.6	30.9±8.7	<0.01
Sprint-Drag-Carry (min)	1.94±0.26	1.86±0.25	0.02
Leg Tuck (reps)	7.3±5.2	6.7±5.3	0.37
2-Mile Timed Run (min)	16.87±1.83	16.72±1.86	0.52
Follow-up ACFT Events			
Deadlift (lbs)	259.5±58.2	236.1±61.6	<0.01
Standing Power Throw (m)	9.6±1.9	9.2±1.8	0.10
Hand Release Push-ups (reps)	37.5±10.4	32.1±10.6	<0.01
Sprint-Drag-Carry (min)	1.83±0.23	1.90±0.29	0.05
Leg Tuck (reps)	9.1±5.5	7.4±5.6	0.02
2-Mile Timed Run (min)	16.6±1.8	17.0±2.3	0.10

Figure 2. Effect of MFTs on ACFT Event Performance n=399



Results

Figure 3. Unit Physical Training Activities MFT n=223, No MFT n=52

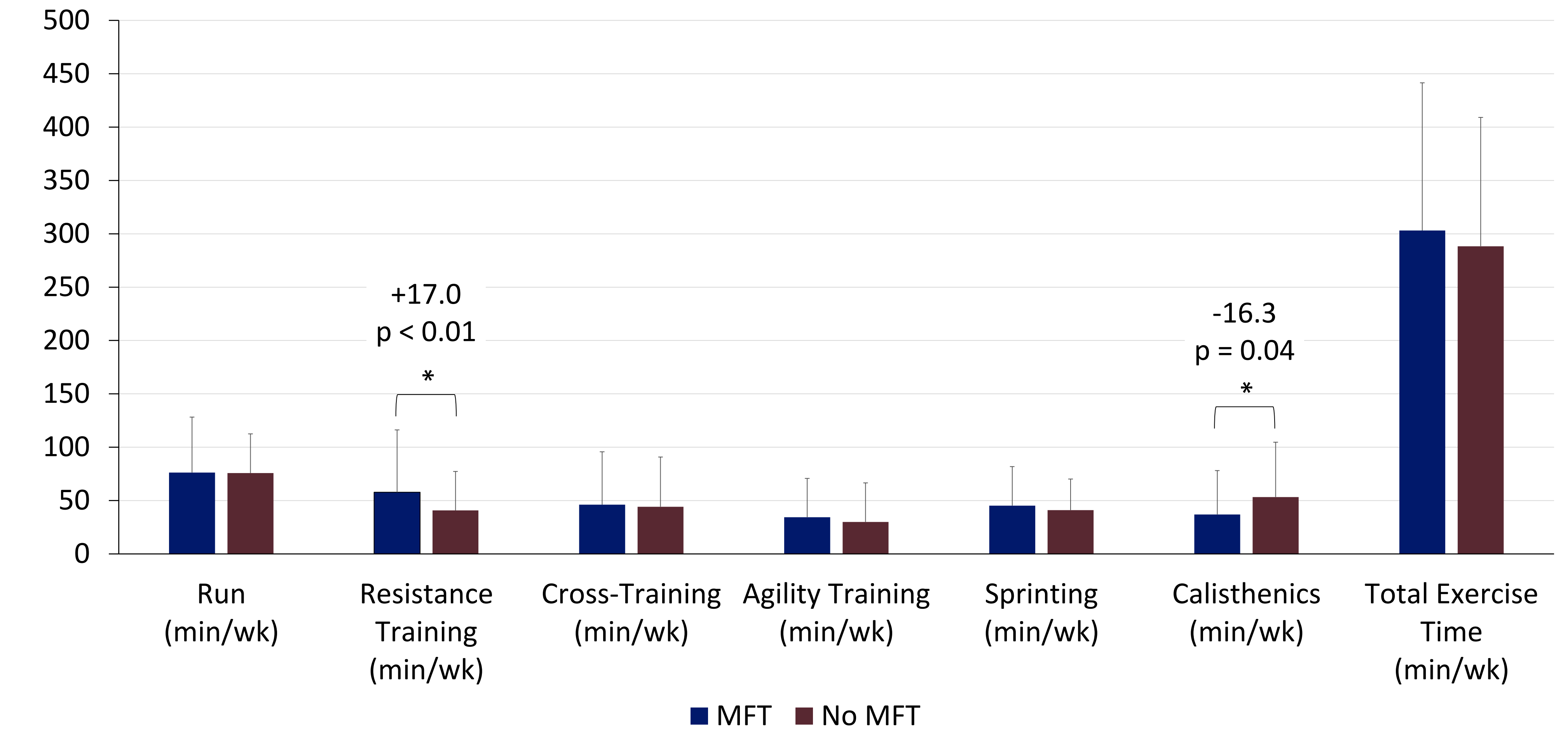
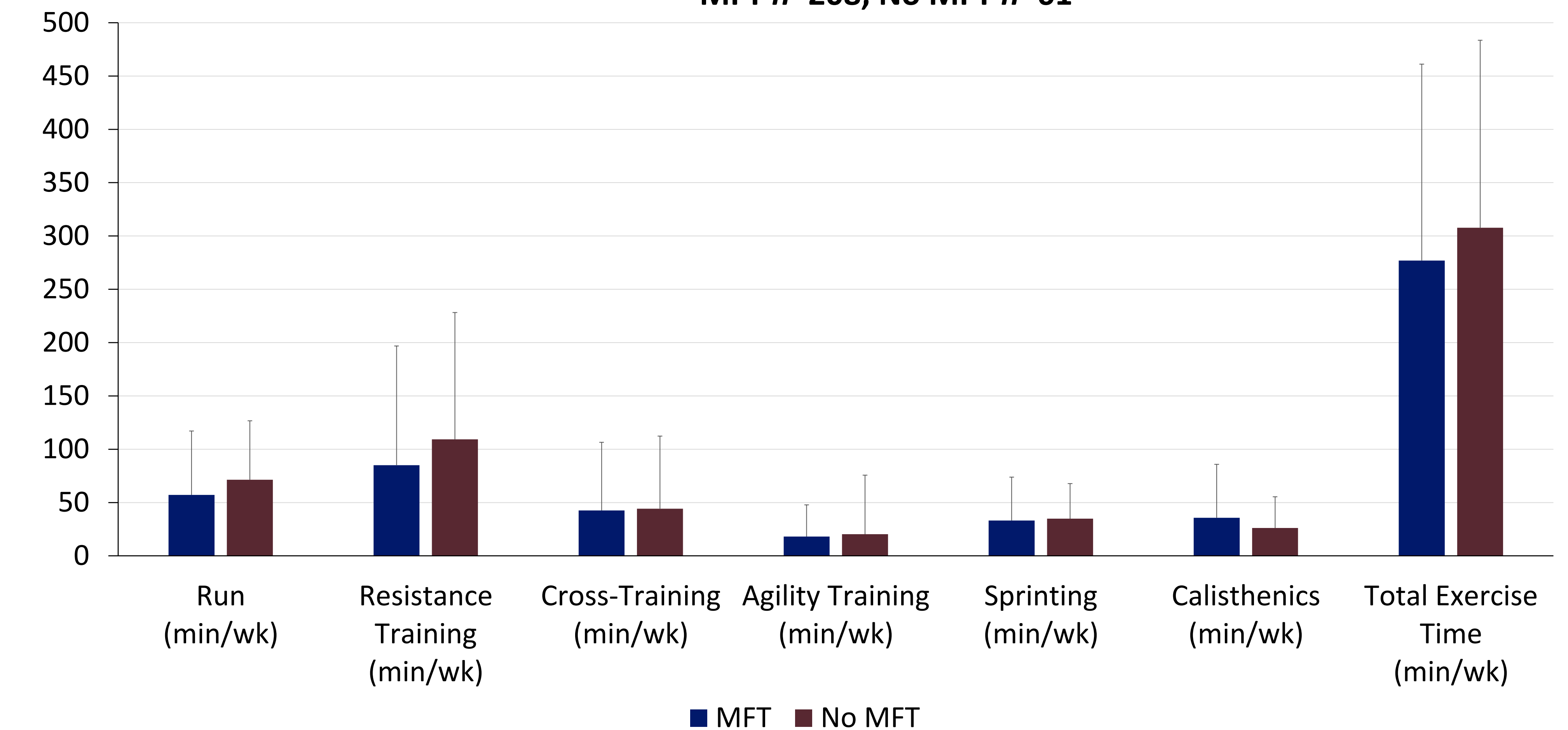


Figure 4. Personal Physical Training Activities MFT n=208, No MFT n=61



Conclusion

Soldiers in units with MFTs performed better on all ACFT events compared to Soldiers training without MFTs, indicating higher physical fitness and suggesting that these resources may have allowed for improvements in physical performance.

Footnotes

Military Occupational Specialty (MOS) categories used in multivariate linear regression include Field and Air Artillery, Support and Administration, Signal and Communication, Military intelligence, Armor, Engineer, Transportation, Military Police, Repairer and Maintenance, Infantry, Supply and Logistics, Medical, Chemical Warfare, and Officers.