

good health and signed a voluntary consent for academy data to be released and analyzed. Cadets were then screened for five physical fitness components: vertical jump, 1-minute push-up test, 1-minute sit-up test, 300-m run, and 2.4-km run. For the entirety of the 16-week academy, physical training was completed daily in addition to academic lectures and tactical skills training. All practitioners followed the same exact protocols while testing for the five physical fitness components. A combination of academic and situational skill performance was assessed throughout the duration of the academy. Primary investigators were provided with participant academic data for analysis.

Results: A Pearson correlation (SPSS ver. 26, New York, NY) revealed no statistical significance ($p=0.52$) existed between physical fitness testing components and academic scores. Of all the fitness components, the vertical jump had a weak to moderate negative relationship with academic scores ($r = -.357$). The results of this investigation indicate there is not a direct relationship between commonly performed physical fitness tests and academic scores during academy training.

Discussion/Conclusion: All police academy classes are tested on physical fitness and academic proficiencies, including occupational skill work. Cadet physical fitness levels could indirectly affect academic and skill performance based on the cadet's ability to recover from physical stressors. Past research indicates increased fatigue and stress from high-intensity activity potentially decreases an individuals' cognitive abilities. Subsequently, increases in inflammation due to high physical stress may lead to a reduction in physical performance. While no statistically significant correlations were discovered in this study, previous observations suggest increases in perceptual motor skill learning have been shown to improve academic scores. By gathering insight into possible correlations between physical fitness components and academic scores, law enforcement agencies could reduce overall costs and improve upon current academy training procedures, thus improving cadet graduation rate.

Impact/Application to the field:

- While statistically significant relationships were not discovered, the data and information collected may be used to direct law enforcement academy personnel toward an emphasis on improving cadets' physical and academic performance.
- Improvements in the academy preparation of cadets could increase the current pool of active law enforcement officers, thus reducing stress and improving on positive outlook of veteran law enforcement officers.

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(P12)

Towards defining muscular regions of interest from axial magnetic resonance imaging with anatomical cross-reference: A scoping review of lateral hip musculature

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Introduction: Measures of hip muscle morphology and composition (e.g., muscle size and fatty infiltration) are possible

with magnetic resonance imaging (MRI). Standardised protocols or guidelines do not exist for evaluation of hip muscle characteristics, hindering reliable and valid inter-study analysis. This scoping review aimed to collate and synthesise MRI methods for measuring lateral hip muscle size and fatty infiltration to inform the future development of standardised protocols.

Methods: Five electronic databases (Medline, CINAHL, Embase, SportsDISCUS and AMED) were searched. Healthy or musculoskeletal pain populations that used MRI to assess lateral hip muscle size and fatty infiltration were included. Lateral hip muscles of interest included tensor fascia late (TFL), gluteus maximus, gluteus medius, and gluteus minimus. Data on MRI parameters, axial slice location, muscle size and fatty infiltrate measures were collected and analysed. Cross referencing for anatomical locations were made between MRI axial slice and E-12 anatomical platinatate sections.

Results: From 2692 identified publications, 79 studies contributed data on volume ($n=31$), cross sectional area (CSA) ($n=24$), and fatty infiltration ($n=40$). Heterogeneity was observed for MRI parameters and anatomical boundaries scrutinizing hip muscle size and fatty infiltration. Seven single level axial slices were identified that provided consistent CSA measurement, including three for both gluteus maximus and TFL, and four for both gluteus medius and minimus. For assessment of fatty infiltration, six axial slice locations were identified including two for TFL, and four for each of the gluteal muscles.

Discussion: Several consistent anatomical levels were identified for single axial MR slice to facilitate muscle size and fatty infiltration muscle measures at the hip, providing the basis for reliable and accurate data synthesis and improvements in the validity of future between studies analyses. Further studies into whole muscle measures are required to further optimise methodological parameters for hip muscle assessment.

Impact and application to the field: This work establishes the platform for standardised methods for the MRI assessment of lateral hip musculature and will aid in the examination of musculoskeletal conditions around the hip joint.

Conflict of interest statement: My co-authors and I acknowledge that we have no conflict of interest of relevance to the submission of this abstract.

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(P13)

Does distal phalanx pinch strength correlate to buttoning speed in female adults?

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INTRODUCTION: Hand usage is substantial in physical sports and daily activities. However, the use of fingers with physical activities requires force between the thumb and index finger when discussing improving or maintaining fine motor skill development, especially with older adults. The purpose of this study was to determine if a relationship existed between distal phalanx pinch strength and the speed of buttoning down a shirt.

METHODS: Subjects ($n = 20$) from a Midwestern facility volunteered to participate in this study (age: 40.75 ± 13.56 years). All female participants were healthy with no upper extremity injuries. A Jamar Hydraulic Pinch Gauge, (model# H&PC-10192; JLW Instruments) was used to measure the pinch strength of the thumb and index distal phalanx of the subject's dominant hand. All subjects stood upright in a comfortable stance, grasped the dynamometer's circular head with their opposite hand, and placed