

exposure in the intervention group compared to control group with an injury risk ratio [IRR] of 0.34 (95% confidence interval [CI] 0.21–0.55, $P < 0.0001$).

Discussion/Conclusion: This is the first meta-analysis of randomized controlled trials to evaluate the effectiveness of FIFA 11+ Injury Prevention Program in reducing the incidence of hamstring injury among soccer players. This meta-analysis demonstrates that the FIFA 11+ Injury Prevention Program reduces the incidence of hamstring injury by 66% among soccer players.

Impact/Application to the field: The results showed a 66 % hamstring injury reduction. Therefore, it's recommended that soccer players and coaches implement the FIFA 11+ Injury Prevention Program in their current practice.

Conflict of interest statement: No conflict of interest of relevance to the submission of this abstract.

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(P4)

The FIFA 11+ injury prevention program reduces the incidence of groin injury among soccer players: a systematic review and meta-analysis of randomized controlled trials

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Introduction: Groin injuries are among the three most common and time-consuming injuries in soccer, accounting for 2-19% of all injuries, with an incidence of 0.1-2.1 injuries per 1000 hours of play. Sports injury prevention programs have been showing promising results in reducing the risk of groin injury. The purpose of this systematic review and meta-analysis was to investigate the effectiveness of the FIFA 11+ Injury Prevention Program on reducing the incidence of groin injury among soccer players.

Methods: This systematic review with meta-analysis was based upon the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). A systematic search for relevant studies published from 1985-2022 using the following databases: Cochrane Library, MEDLINE, AMED, PubMed, Web of Science, and PEDro was conducted. The keywords used in the search strategy were 'neuromuscular training', 'injury prevention programs', 'FIFA 11+', 'groin injury', 'soccer, and variations of these search terms. Included studies had to be randomized controlled trials using FIFA 11+ Injury Prevention Program for soccer players with the primary outcome being groin injury rate. There were no restrictions of age or playing level. The random-effects model was used in analysing the extracted data by the RevMan Meta-Analysis software version 5.

Results: The pooled results of 7939 players and 695503 exposure hours showed 48% groin injury reduction per 1000 hours of exposure in the intervention group compared to control group with an Injury Risk Ratio [IRR] of 0.52 (95% Confidence Interval [CI] [0.37, 0.73] $P=0.0001$).

Discussion/Conclusion: This is the first meta-analysis of randomized controlled trials to evaluate the effectiveness of FIFA 11+ Injury Prevention Program in reducing the incidence of groin injury among soccer players. This meta-analysis demonstrates that the FIFA 11+ Injury Prevention Program reduces the incidence of groin injury by 48% among soccer players.

Impact/Application to the field: The results showed a 48% groin injury reduction. Therefore, it's recommended that soccer players and coaches implement the FIFA 11+ Injury Prevention Program in their current practice.

Conflict of interest statement: No conflict of interest of relevance to the submission of this abstract.

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(P5)

The FIFA 11+ injury prevention program reduces the incidence of knee injury among soccer players: a systematic review and meta-analysis of randomized controlled trials

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Introduction: Knee injuries are among the most common injuries seen in soccer, represent between 10- 50 % of all soccer injuries. Sports injury prevention programs have been showing promising results in reducing the risk of knee injury. The purpose of this systematic review and meta-analysis was to investigate the effectiveness of the FIFA 11+ Injury Prevention Program on reducing the incidence of knee injury among soccer players.

Methods: This systematic review with meta-analysis was based upon the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). A systematic search for relevant studies published from 1985-2022 using the following databases: Cochrane Library, MEDLINE, AMED, PubMed, Web of Science, and PEDro was conducted. The keywords used in the search strategy were 'neuromuscular training', 'injury prevention programs', 'FIFA 11+', 'knee injury', 'soccer, and variations of these search terms. Included studies had to be randomized controlled trials using FIFA 11+ Injury Prevention Program for soccer players with the primary outcome being knee injury rate. There were no restrictions of age or playing level. The random-effects model was used in analysing the extracted data by the RevMan Meta-Analysis software version 5.

Results: The pooled results of 9647 players and 886001 exposure hours showed 46% knee injury reduction per 1000 hours of exposure in the intervention group compared to control group with an Injury Risk Ratio [IRR] of 0.54 (95% confidence interval [CI] 0.43, 0.69, $P < 0.0001$).

Discussion/Conclusion: This is the first meta-analysis of randomized controlled trials to evaluate the effectiveness of FIFA 11+ Injury Prevention Program in reducing the incidence of knee injury among soccer players. This meta-analysis demonstrates that the FIFA 11+ Injury Prevention Program reduces the incidence of knee injury by 46% among soccer players.

Impact/Application to the field: The results showed a 46% knee injury reduction. Therefore, it's recommended that soccer players and coaches implement the FIFA 11+ Injury Prevention Program in their current practice.

Conflict of interest statement: No conflict of interest of relevance to the submission of this abstract.

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(P7)

Does coincidence anticipation timing improve in police officers after a 4-week video intervention?E. Mundy^a, A. Shim^a, R. Lockie^b, D. Newman^c, M. Smith^a, W. Davis^d^aCollege of Saint Mary, United States of America^bCal State University, United States of America^cFlorida Atlantic University, United States of America^dAthens State University, United States of America

Introduction: Decision making is a critical part of a police officer's daily routines. Improving the ability to make proper decisions with accuracy improves the response and effectiveness of proper outcomes. The purpose of this study was to determine if a 4 week/twice per week 15-minute video simulation intervention program would improve coincidence anticipation timing in police officers.

Methods: Relatively healthy police officers (age 39±17 years; height 175.28 ± 12.72 cm; mass 88 ± 25.4 kg) from a Midwest law enforcement agency were selected for the 4-week study. A one group pre/post design (n=15) was selected for this investigation. Coincidence Anticipation timing scores were measured pre/post using a Bassin anticipation timer (Model 35575 Lafayette Instruments, Lafayette, IN) The object stimulus speed was set at 3 mph in accordance with prior studies. The pre and post time scores were measured in .001 seconds. A Virtra (V-100 model, Tempe, AZ), a 300-degree active video shooting simulator was selected as the intervention. Each participant performed a different video moving target simulation for 15 minutes, two times per week, for 4 consecutive weeks.

Results: A dependent t-test (SPSS ver. 26) determined a significant relationship (p = 0.035) between pre and post coincidence anticipation scores after 4 weeks.

Discussion: Moving video shooting simulations provided the ability for subjects to actively track targets compared to older video methods. This investigation was a novel approach towards proving dynamic video shooting simulations can improve object interception scores within several weeks of active practice. In conclusion, a 4-week video simulation training program can significantly improve coincidence anticipation timing in police officers.

Impact and application to the field: Concurrent and additional training for police officers using video simulators can help with decision-making process while out in the field. Constant training interventions are necessary to maintain readiness of law enforcement personnel to reduce injuries and fatalities.

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

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(P9)

Does phalanx range of motion correlate to buttoning speed in adults?J. Clark^a, H. Vredenburg^a, A. Shim^a, J. McDonald^a, T. Ruppert^a, G. Cesar^b^aCollege of Saint Mary, United States of America^bMadonna Rehabilitation Hospital, United States of America

INTRODUCTION: Hand usage is substantial in physical sports and daily activities. However, the use of fingers with physical activities

requires a certain range of motion 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 phalanx flexibility and the speed of buttoning down a shirt.

METHODS: Subjects (n = 15) from a Midwestern facility volunteered to participate in this study (age: 50.63 ± 2.6 years). All participants were healthy with no upper extremity injuries. A valid and reliable digit instrument (Baseline 12-1015 model finger goniometer, White Plains, NY, USA) was selected to measure distal, middle phalanx flexion and phalanx extension of the forefinger of the subject's dominant hand. All subjects sat on a chair resting their elbows and forearms in a pronated position on a table while the researcher recorded the degrees of range of motion (ROM) using the finger goniometer for distal, middle phalanx flexion and phalanx extension of the dominant hand. Participants were then provided a 5-button (1.27 cm button width) shirt made by the same manufacturer. All sized shirts were fitted for each participant according to their shirt size before the time trials. The researcher digitally timed the participants in .001 seconds on how fast the participant could button down the shirt taking the best time trial of 3 attempts. Pearson correlations were analyzed using SPSS version 27.

RESULTS: The relationship between the variables displayed a strong negative correlation between the dominant distal phalanx flexion ROM and buttoning speed (r = -0.73). Other results displayed a weak positive correlation between the middle phalanx digit ROM to best buttoning speed time (r = .06), and finger extension ROM compared to best buttoning speed (r = 0.03) trial.

DISCUSSION: Major significance was found between the dominant forefinger distal phalanx flexion ROM and the fastest trial of buttoning down a shirt (r = -0.73). This indicates total grip strength may not be the primary or sole intervention when attempting to improve efficiency of fine motor function in physical or daily activities.

APPLICATION TO THE FIELD: This discovery could change therapy methodologies or physical training techniques with care givers or therapists on improving or restoring this fine motor skill. Replication of a sport skill or daily task might not be the only practical use towards skill restoration.

All co-authors have no conflict of interest towards the relevance of this submission.

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(P10)

Do police academy fitness scores correlate to final academic scores in cadets; a pilot studyM. Tangeman^a, A. Shim^a, R. Lockie^b, J. Dawes^c, I. Bonder^a^aCollege of Saint Mary, United States of America^bCal State University, United States of America^cOklahoma State University, United States of America

Introduction: To successfully complete academy training, law enforcement recruits must exhibit proficiency in both, levels of physical fitness and academic testing/cognitive abilities. Insight into the relationship between levels of physical fitness and academic testing could provide valuable information into the improvement of academy preparation and training. The purpose of this study was to determine if a relationship exists between physical fitness tests and academic scores for cadets currently in academy.

Methods: All cadets (N=15; 13 males, 2 females) volunteered to participate in this study as part of a cohort completing 16-weeks of academy testing and training. All subjects were deemed to be in