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PURPOSE

Individuals in tactical professions (military, law enforcement, firefighting) are often required to complete physically demanding tasks on a regular basis and as such, should maintain sufficient fitness to complete these tasks safely and effectively. Physical training, which is necessary for personnel to meet the above demands, is often a challenge for tactical institutions due to its potential association with injury, especially in less fit trainees (who are most in need of conditioning to meet requirements). Identifying trainees most susceptible to injury and proactively intervening could prevent lost time due to injury, consequent attrition, and associated fiscal costs. Therefore, the aim of this review was to identify studies that have investigated relationships between fitness measures and injury incidence, appraise the methodological quality of selected studies, draw cross-study conclusion, and describe the findings to inform tactical training facilities.

METHODS

Of the 1199 studies identified in the initial search, 28 studies met the *a priori* criteria for review. The Critical Appraisal Skills Programme (CASP) toolkit was used to assess quality. Meta-analysis was performed on studies reporting on a fixed-distance, timed run event with categorical risk or hazard ratio data.

RESULTS

The mean CASP scores were 10.6/12(9-12) for cohort studies and 9.5/10(9-10) for case-control studies. The final combined risk ratio for run performance was 2.27 (95% CI=1.96-2.63), indicating a substantial increase in injury risk for individuals performing in the bottom half or lower in comparison with trainees in the upper half or higher. Muscle strength tests were consistently effective predictors of injury, but only three studies included a true strength test in their design. Other tests were predominantly muscle endurance (push-ups, sit-

ups/crunches, and pull-ups/chin-ups), and were less conclusive in their ability to effectively predict injury.

CONCLUSION

Individuals who perform poorly on a timed run, in particular, are at greater risk of injury than fitter peers when undergoing tactical training. Fitness test results could be used as a reliable means of identifying trainees at greater risk of injury for proactive intervention but further research specific to the training environment is needed.