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## **Fitness Profiles in Elite Tactical Units: A Critical Review**

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## Background

Elite tactical units (ETUs) are at the forefront of national security and service. These units require their personnel to routinely perform at the highest level; above and beyond the expectations of civilians and regular tactical members[1]. Fitness profiles are a collection of physiological measures employed for task specific abilities that have been demonstrated to predict quality performance in sport.

The physiological measures take into account the physical demands of operational tasks, and have been shown to be useful in the design of programs that address specific weaknesses in the fitness attributes, as related to occupational requirements [2].

Fitness profiles may aid in the ETU selection process. For these reasons, this critical literature review will endeavour to identify, critically appraise, and synthesise key findings from the current body of knowledge around fitness profiles within ETU populations.

## Method

- A two-tiered approach was employed to identify and include relevant studies to inform this review.
- Search bias was limited via use of broad search terms to capture all studies, while duplication bias was limited during the first step of screening by removing all duplicates.
- Two reviewers (DM & TW) independently and separately screened and selected the studies to limit selector bias and ensure an objective selection.
- Lastly, inclusion and exclusion criteria were established prior to screening; except for the inclusion criteria 'each study must contain a fitness measure', which was implemented partway through screening. The PRISMA chart outlines the search process in its entirety (Figure 1)
- All included studies were then critically appraised using a modified Downs and Black checklist [3].
- The level of interrater agreement was then calculated via Cohen's Kappa coefficient ( $\kappa$ ), [4].
- The Critical Appraisal Scores (CAS) were finalized, by using the average of the two final scores. The studies were then graded using qualitative ratings proposed by Kennelly [5].
- The Kennelly system converts to a percentage-based score to enable comparable grading of the modified Downs and Black, with < 45.4% signifying 'poor' methodological quality, between 45.4% and 61.0% showing 'fair' methodological quality, and >61.0% demonstrating 'good' methodological quality.

## Results

Article Title	SI	AM	STR	PWR	END	FLEX	AC	AGI	SPD	D&B	K
Pryor et al., 2012	✓	✓	✓	✓	✓	✓	✓	x	x	54%	Fair
Dhahbi et al., 2015	✓	✓	✓	✓	✓	x	x	x	x	64%	Good
Solberg et al., 2015	✓	✓	✓	✓	x	✓	✓	✓	x	63%	Good
Males et al., 1999	✓	x	x	x	✓	x	✓	x	x	46%	Fair
Sporis et al., 2012	✓	✓	✓	✓	✓	✓	✓	x	x	66%	Good
Nindl et al., 2007	✓	✓	✓	✓	x	x	x	x	x	52%	Fair
R. Orr et al., 2015	✓	✓	✓	✓	x	x	x	x	✓	57%	Fair
Simpson et al., 2017	✓	x	x	x	x	x	✓	x	x	54%	Fair
Hunt et al., 2013	✓	x	✓	✓	✓	✓	✓	✓	x	63%	Good
Dawes et al., 2014	✓	✓	x	x	✓	x	✓	x	x	57%	Fair
Sperlich et al., 2011	✓	✓	x	x	x	x	✓	x	✓	52%	Fair
Dhahbi et al., 2016	✓	✓	x	✓	x	x	x	x	✓	55%	Fair
Muza et al., 1987	✓	✓	x	x	x	x	✓	x	x	54%	Fair
Sharp et al., 2008	✓	✓	✓	✓	x	x	✓	x	x	68%	Good

SI= Subjective Info, AM= Anthropometric Measures, STR= Strength, PWR= Power, END= Endurance, FLEX= Flexibility, AC= Aerobic Capacity, AGI= Agility, SPD= Speed, D&B= Downs and Black Score, K= Kennelly Score

Table 1. Results of Critical Review



## Results

- A total of 11 studies focused on various military special force units, whilst 3 studies specifically studied Special Weapons and Tactics police.
- Methodological quality was fair quality overall (57.5%±6.3%: range 46%- 68%). (See Table 1.)
- The most common measures examined were anthropometric and aerobic capacity, in 79% and 71% of studies, respectively.
- The least common measures were agility and speed, recorded in only 14% and 21% of studies, respectively.

## Discussion, Conclusion & Recommendations

- Studies were consistently given lower scores in the area of internal validity. None were randomised-control studies and as such no blinding was implemented.
- Due to the high variance in the outcome scores and measurement tests, the ability to effectively compare across studies was limited.
- Future fitness profiles research would benefit from standardized outcome measures as well as agreed standardised measurements

## Conclusion

- Though fitness is a critical part of research and practice, there is no standardized measure or result for this population. Further research needs to be done in the development of a fitness profile which uses standardized outcome measures and covers the spectrum of the fitness requirements for this population. This is important for the development of selection criteria and return from injury.

## Key References

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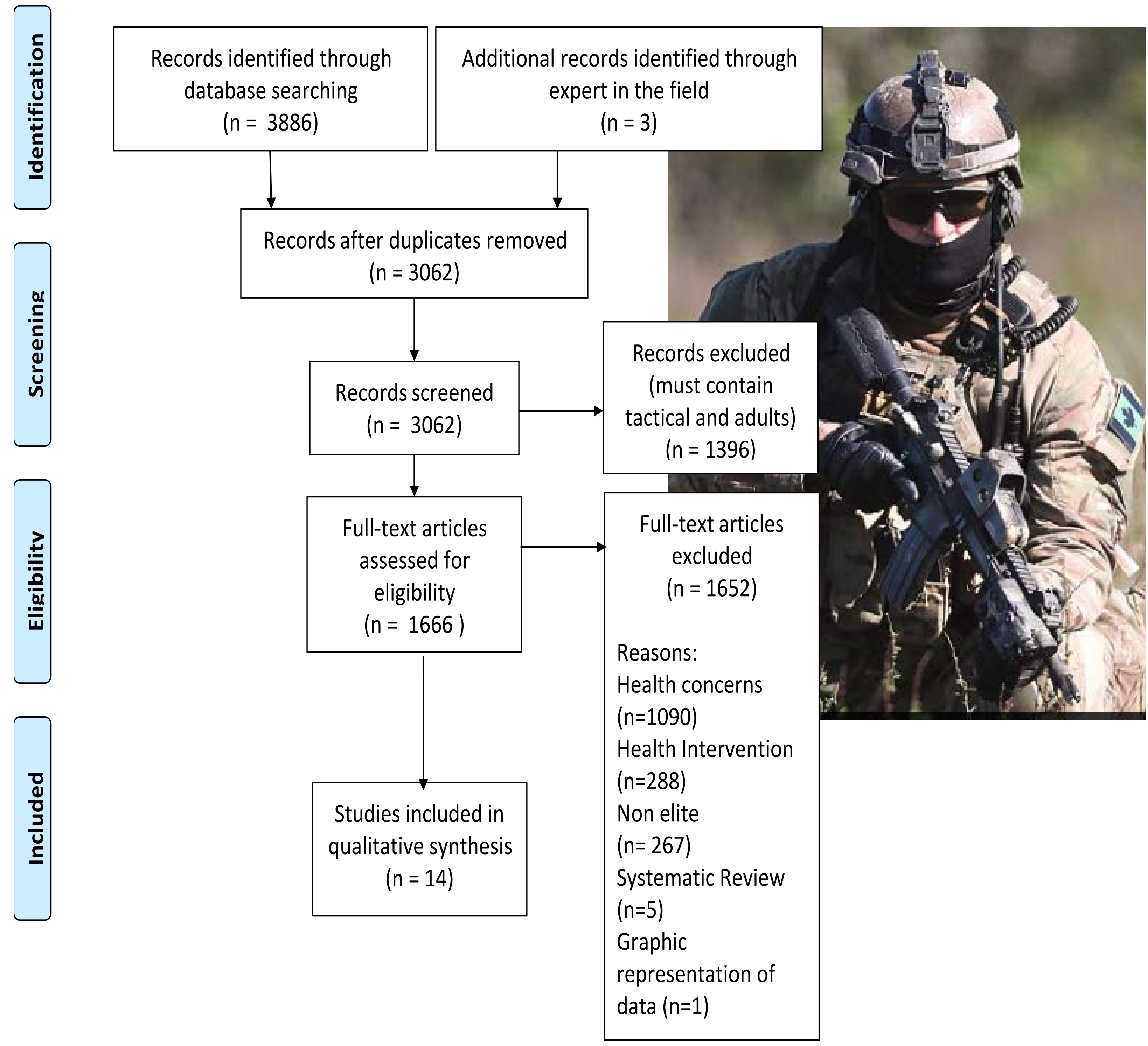


Figure 1: PRISMA Flow Chart showing the review and screening process of all articles