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Dennien, Brad; Robinson, Jeremy; Schram, Ben; Orr, Rob Marc

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Use of a modified load carriage predictive equation to identify specialist police candidates at greater risk of injury and selection failure

Bradley Dennen\textsuperscript{a}, Jeremy Robinson\textsuperscript{b}, Ben Schrama\textsuperscript{a,c} & Robin Orr\textsuperscript{a,c}
\textsuperscript{a}Faculty of Health Sciences and Medicine, Bond University; \textsuperscript{b}Australian Federal Police, ACT, Australia; \textsuperscript{c}Tactical Research Unit, Bond University, Queensland, Australia;

Methods
• Retrospective data were collected from 18 specialist tactical police officer candidates attending a selection course within an Australian law enforcement agency
• Baseline data were provided for 20-meter Multi-Stage Fitness Test (20m-MSFT) performance (converted to est. VO\textsubscript{2max}), time to complete a 10 km pack march carrying a load of 25 kg in a backpack and 3.5 kg in the hands, the 10 km pack march course terrain profile, and outcomes (pass or fail) of the candidate on the tactical police selection course.
• Baseline data were then entered into a load carriage energy cost equation, modified to account for loads in the hands and on the feet, to determine the % of VO\textsubscript{2max} work effort (Figure 1) and scored on a risk matrix for load carriage (Table 1) based on earlier work by Orr and Pope \cite{1}.

Results
• Descriptive results from the outcome measures are shown in Table 2.
• Of the 18 participants, 11 passed the selection course (mean height = 181.36 ± 5.35 cm; mean weight = 85.36 ± 6.65 kg) while seven (mean height = 187.42 ± 4.5 cm; mean weight = 95.85 ± 7.44 kg) failed.
• Seven participant’s work efforts exceeded a predicted work effort of 60% VO\textsubscript{2max} and of these seven, five failed the selection course. Likewise, 71% of those who were considered to be at moderate risk or higher were injured (Figure 2).

Conclusion
Modified load carriage equations may be of use in identifying specialist candidates at a greater risk of physical injury and subsequent selection course failure.

Operational Relevance
Modified load carriage equations, like the one proposed in this program of research, may augment initial selection processes to identify specialist candidates at a greater risk of injury and selection failure.

References: