DEFENCE INNOVATION NETWORK

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Defence Innovation Network Grant Scheme: Pilot Project

KINESTHETIC MEASURES OF SOLDIER READINESS

PROBLEM

It is well known that soldiers undertake physical exercise training (e.g. strength and conditioning) on a regular basis. For some roles within the Australian Army (e.g. infantry and Special Forces), additional role-specific training is also highly arduous (e.g. load marching, shooting drills). Currently the unmeasured additional load of the role-specific training is not taken into consideration during subsequent physical exercise training, thus, increasing the potential risk of injury.

Within the elite sports community the performance on a counter movement jump (CMJ: measured on a force platform) is used to monitor load and individual fatigue (Chapman, Cronin, Newton, & Gill, 2012). However this assessment focusses predominantly on the power of the lower body. An additional tool to monitor load and individual fatigue is velocity-based training (VBT). The advantage of VBT is that it can be applied to many common strength and conditioning exercises for both the lower and upper body (e.g. bench press, squats) (Walker, 2017). However, neither of these tools have been used specifically in a military environment to monitor load and fatigue and subsequently tailor physical exercise training accordingly.

Further, an alternative method to monitor load and individual fatigue within a physical exercise training session is Autoregulatory Progressive Resistance Exercise (APRE) (Mann, Thyfault, Ivey, & Sayers, 2110). The potential advantages of APRE in a military population are that it does not need specialised measuring equipment.

NEED AND RELEVANCE TO DEFENCE

Soldiers are the core capability of the Australian Army. Accordingly, their physical prowess and readiness is critical. Currently the interactions between fatigue induced by physically demanding occupational tasks and regular physical exercise training is poorly understood. Having an understanding of how commonly used strength and conditioning measurement tools can be used to understand and optimise physical exercise training would improve Defence capability.

RESEARCH QUESTION

What is the best way to use a CMJ and VBT to identify the readiness of individual soldiers and subsequently adjust their physical training load? A secondary question is how well does APRE compare with VBT outcomes?

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EXPECTED OUTCOME

The expected Defence outcome is guidelines on how to use CMJ and VBT to identify soldier readiness and subsequently adjust their physical training load.

A secondary outcome if it can be accommodated within the research design is guidelines on how well APRE compares to velocity-based training.

REFERENCES

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