

## BIOMECHANICS OF ANKLE SPRAIN INJURY AND STABILITY TRAINING

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**INTRODUCTION:** A promising option for preventing ankle sprains during sports training is a series of exercises based on the ankle disc training approach (Parkkari, 2001). The mechanism of action of these exercises (referred to as 'stability training') is poorly understood. A biomechanical analysis on the role of the various components of the lower limb including muscles, tendons and ligaments in stabilizing the ankle may provide insight into the mechanism of action. There is little point in conducting a complex and costly biomechanical analysis, however, if stability training cannot be integrated into established sports training programme. The purpose of this pilot study was to assess the feasibility of integrating stability training in recruit training in the New Zealand Defence Force. Recruit training is ideal because it has a high incidence of ankle injuries and is done in a controlled environment. This is a work in progress; the long term aim is to test the effectiveness of stability training in both military and high-risk sports environments using randomised controlled trials.

**METHOD:** The participants were an intake of army recruits and were assigned to one of two groups: an intervention group who received the altered training (current standard training plus stability training) and a control group undergoing the current standard training.

**RESULTS:** Of the 133 recruits who completed training, 68 were in the intervention group and 65 were in the control group. There were few issues with implementation and integration of the stability training into the military training protocol. The Physical Training Instructors (PTIs) reported 100 percent compliance by the subjects in the intervention group. The exercises fitted easily into the existing training programme and the PTIs considered it a benefit that the exercises could be conducted anywhere and that no complex training was required of the trainers or recruits. This type of intervention also suited the PTI's philosophy of a 'holistic overview of being fit' and their long term goal of 'training smarter'.

**DISCUSSION:** The goal of stability training is to improve neuro-muscular control around the ankle and knee and enhance joint rigidity and shock attenuation. This approach has a great potential for reducing the risk of ankle injury. This pilot has demonstrated that it is feasible to incorporate stability training in an established training programme. The next step in this work is to carry out a biomechanical study of the stability training exercises to investigate the mechanism of injury causation and prevention and ultimately improve the effectiveness of this training approach.

**CONCLUSION:** Biomechanical analysis of specific sports activities is an expensive and sophisticated process. It is imperative, therefore, to first identify and establish prevention strategies that are practical and acceptable to the trainees and instructors. Valuable feedback from trainees and instructors can also help tailor subsequent biomechanical analysis and intervention strategies.

### REFERENCES:

Parkkari, J., et. al. (2001). "Is it possible to prevent sports injuries? Review of controlled clinical trials and recommendations for future work." *Sports Medicine* 31(14): 985-95.

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