# The Effects of Plyometric Training on Males in an Army Airborne Unit

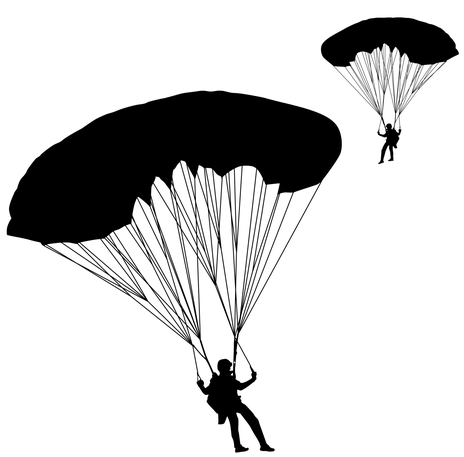
*Lane Evans*
*Exercise Science*
*Gardner-Webb University*

## Abstract

- A total of 2,000 Army paratroopers from Fort Bragg, NC participated in this study.
- Plyometric training was implemented into Battalion X, while Battalion Y was used as a control group that used no intervention.
- Data was gathered daily from Army physicians to monitor the amount of injuries that were obtained from static-line airborne operations along with video footage from each landing zone.
- After 12 months, the study was concluded and injuries from the two Battalions were compared.

## Introduction & Review of Literature

- Knee injuries average to be around 15% of the injuries that are obtained while landing during static-line airborne operations (Potter, R. N., 2002).
- Paratroopers are the at the highest risk of obtaining an injury within the Army due to the amount of airborne operations that they conduct in a year.
- These injuries dismantle paratroopers from being able to complete their jobs and defend our country.
- Studies have shown that poor trunk control and increased trunk lean while landing is positively associated with with knee injuries (E, W., A, G., & G, M., 2017). These factors cannot always be corrected while using a parachute, but landing mechanics can.
- Recent research has shown that preventive biomechanics, such as plyometric training, have been used correct biomechanical deficits in landing that lead to knee injuries (Hewett, T. E., & Bates, N. A., 2017).
- To reduce the amount of injuries obtained by a paratrooper, Fort Bragg has agreed to incorporate plyometric training as an intervention into their daily physical training.



## Purpose & Hypothesis

- The purpose of this study was to measure the effectiveness of plyometric training in reducing knee injuries from static-line airborne operations.
- It was hypothesized that the implementation of plyometric training would increase knee stability and reduce knee injuries.

## Methods

**Participants**

- Informed consent was given from Battalion Commanders for all paratroopers under their commands.
- Two Army Battalions participated (Battalion X and Battalion Y)
- Army Company Commanders and Platoon Leaders were informed of study.

**Intervention**

- Battalion X implemented plyometric training, while Battalion Y was used as a control group and used no intervention.
- Data was obtained daily from Army physicians.
- Data was also received from eight different cameras placed around each landing zone during each Airborne operation.

**Instrumentation**

- Due to this study being a naturalistic observation of the paratroopers, instrumentation was minimal to only cameras. This was due to having no interaction with the paratroopers individually.
- Eight cameras were equipped around each landing zone to analyze landing procedures along with injuries obtained during each Airborne operation.

**Results**

- Injuries obtained within both Battalions during the 12-month period were compared.
- Linear regression analyses

## Operational Definitions

- **Plyometric training:** Plyometric training involves jumps and landings which incorporate the stretch-shortening cycle. This will build ability and agility to allow for less of an impact while landing.
- **Parachute Landing Fall (PLF)**: According to the U.S. Army Research Institute of Environmental Medicine, a PLF is a categorization of any injury that is obtained by a Airborne operation.
- **Airborne Operation:** An Airborne operation is the process of delivering highly training military units behind enemy line by use of aircraft and parachuting. In this study, only practice Airborne operations were included.
- **Knee injuries**: Knee injuries during this study were obtained from landing procedures. Causes of these injuries were from medial knee displacement, knee valgus, and unequal foot timing while landing.
- **Army Physician**: These are doctors that work within a battalion to monitor the injuries or illness that soldiers may obtain while fulfilling their duties.
- **Army Battalion:** A Battalion is a larger unit of soldiers which is composed of multiple companies. Typically, an Army Battalion consists of around 1,000 soldiers.

## Conclusion

- Limitations of the study were that only males were in these Airborne battalions, which restricted the diversity of this study to measuring the effectiveness of plyometric training only in males.
- It was assumed that the soldiers only exercised during their daily physical training.
- Further research should include females and also how soldiers are trained during Airborne school.

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