

## Postural Risk, Upper Extremity Stability and Hand Dexterity in Rifle Shooters

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### Abstract

**Aim:** To identify the correlation between postural risk, upper extremity stability and hand dexterity in Rifle shooters. **Method:** This study was a cross sectional study with a sample of 34 subjects. All subjects were professional 10 m air rifle shooters who fulfilled the inclusion and exclusion criteria. Each subject were assessed for postural stability using [Rapid Upper Limb Assessment (RULA) scale and Rapid Entire Body Assessment (REBA) scale], their hand dexterity was assessed using different tasks in purdue pegboard. Closed kinetic chain upper extremity stability test (CKCUEST) was used to assess upper extremity stability. **Results:** The observed data was analyzed using GraphPad Instat Version 3.0 using paired t-test. Means and standard deviations were calculated for each demographic data. Correlation were observed between postural risk using (RULA scale and REBA scale) and upper extremity stability in rifle shooters; correlation between upper extremity stability and hand dexterity in rifle shooters; and correlation between postural risk using (RULA and REBA scale) and hand dexterity in rifle shooters were observed. **Conclusion:** Correlational analysis showed that the rifle shooters are at postural risk with respect to their standing shooting stance (right limbs > left limbs). Significant correlation was found between normalized score and power score of upper extremity stability. Significant correlation was found between Normalized score of CKCUEST and hand dexterity.

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### Introduction

10 m air rifle shooting is a shooting event where the shooter shoots at a target placed over a distance of 10 m in a standing position using an air rifle which weighs over approximately 5.5kg maximum (12.13 lbs). The shooter is allowed to wear a specialized clothing which improves the balance and stability of his stance and prevents chronic back injury which can be due to asymmetric offset load on the spine while the shooter holds the rifle in position. Starting from the ground, feet and legs are there to hold the body up, give a direction to the entire position and balance it. Hips are for height of the rifle and give a sturdy platform to put the left elbow onto. It also aids in direction of the position and balances it. Shoulders are for attaching the rifle to the body and otherwise keep relaxed. Right arm/hand gives stability to the rifle and takes care of triggering (Gianikellis 2000.).