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## A comparative analysis of lower limb explosive strength between judo and Kho-Kho players

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### Abstract

This study aims to compare the explosive strength of lower limbs between Judo and Kho Kho players. A sample of 40 male athletes, comprising 20 Judo players and 20 Kho Kho players, aged between 18 and 25 years, were recruited for this study. The explosive strength of their lower limbs was measured using a standardized protocol, including the standing broad jump test. Independent T-test statistical analysis revealed no significant difference in explosive lower limb strength between judoka and Kho-Kho players. The findings of this study highlight the unique physical capabilities of athletes in each sport and underscore the importance of tailored training strategies to optimize athletic performance in Judo and Kho Kho. Coaches and trainers can use these insights to develop specialized training regimens that target the specific muscle groups involved in each sport, ultimately enhancing the explosive strength of their athletes.

The recognition of the diverse physical attributes required by different sports emphasizes the need for customized conditioning programs to meet the unique demands of Judo and Kho Kho. Overall, this study provides valuable insights that can inform training practices and contribute to the advancement of athletic performance in these distinct sports.

**Keywords:** Judo, Kho-Kho, explosive strength, lower limbs and independent T-test

### Introduction

The explosive strength of lower limbs plays a crucial role in the performance of various sports activities. Lower body muscle mass and explosive strength are closely related factors that play a crucial role in various physical activities and sports performance. Having well-developed lower body muscles, such as the quadriceps, glutes, and hamstrings, is essential for generating power and force during movements such as jumping, sprinting, and cutting. These muscles contribute to explosive strength, which is the ability to quickly generate force and torque during rapid movements. In addition to enhancing performance, strong lower body muscles also provide stability and support in daily activities like walking and standing (Kumar, 2022) [3]. Judo and Kho-Kho are two distinct sports that require varying levels of limb strength from their players. Judo, a Japanese martial art, places a significant emphasis on upper body strength, with athletes needing to develop strong arms and shoulders to execute powerful throws and grappling techniques. (Kuvačić *et al.*, 2017) [6] In contrast, Kho-Kho, a traditional tag sport from India, relies more on lower body strength and agility, as players need to manoeuvre quickly and efficiently to outmanoeuvre their opponents. (Wani, 2018) [7] (Chelliah, 2013) [4, 5].

When comparing the limb strength of Judo and Kho-Kho players, it is essential to consider the specific muscle groups involved in each sport. For Judo athletes, the development of arm, shoulder, and core strength is crucial for executing throws and maintaining balance during intense grappling exchanges. (Luque *et al.*, 2016) [1] On the other hand, Kho-Kho players require strong leg muscles, including quadriceps, hamstrings, and calf muscles, to support rapid directional changes and swift movements across the playing field. (Wani, 2018) [7].

Understanding the distinct physical demands of Judo and Kho-Kho provides valuable insight into the specialized training regimens tailored to each sport. In Judo, strength training exercises often focus on building upper body and core power, incorporating movements such as pull-ups, push-ups, and overhead presses. In contrast, Kho-Kho training emphasizes lower body strength and agility, incorporating exercises such as squats, lunges, and agility drills to enhance speed and manoeuvrability.

The comparison of limb strength between Judo and Kho-Kho players not only sheds light on

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the diverse physical attributes required by different sports but also underscores the importance of tailored training strategies to optimize athletic performance in each discipline. The purpose of this study is to compare the explosive strength of the lower limbs between Judo players and Kho-Kho players.

### Material and Methods

**Selection of Subjects:** A sample of  $n = 40$  males, comprising Judo ( $n_1 = 20$ ) and Kho-Kho ( $n_2 = 20$ ) players, was recruited for this study, all of whom were boys aged between 18 and 25 years.

### Selection of Variable

The explosive strength of their lower limbs was measured using standardized protocol, including the standing broad jump test.

### Criterion Measure

The participants were assessed on parameter, such as jump distance (in meters), to quantify their explosive strength.

### Statistical Analysis

In order to compare calculated lower limbs explosive strength means of Judo and Kho-Kho players' independent sample T-test was employed using IBM SPSS 21.0.

### Results

Statistical analysis revealed no significant difference in explosive lower limb strength between judoka and Kho-Kho players ( $p > 0.05$ ). The mean jump distance for judoka was 2.226 m, whereas for Kho-Kho players, it was 2.246 m. These findings suggest that both judoka and Kho-Kho players possess comparable levels of explosive lower limb.

### Discussion on Findings

This comparative study between judoka and Kho Kho players demonstrates that there is no significant difference in explosive lower limb strength among boys. While it is evident that judo players have impressive upper body strength and overall physical power, (Franchini *et al.*, 2007)<sup>[2]</sup> Kho-Kho players cannot be overlooked when it comes to lower body strength and agility. Kho-Kho requires intense running, jumping, dodging, and quick changes in direction, which all contribute to the development of strong and agile lower body muscles. This leads to the argument that Kho-Kho players have a unique set of physical capabilities that can be considered equal, if not superior, to those of judo players. Additionally, the agile footwork and swift movements in Kho-Kho demand a different type of strength and endurance, showcasing the athletes' physical prowess in a different manner. (Sc, 2022)<sup>[8]</sup> The explosive lower limb strength exhibited by Kho-Kho players may be attributed to the dynamic and fast-paced nature of the sport, which requires quick bursts of power and agility. Therefore, while judo players may excel in upper body explosive strength, Kho-Kho players showcase their prowess in lower limb explosive strength, making both sports unique and worthy of admiration (Chelliah, 2013)<sup>[4, 5]</sup>.

### Conclusion

In conclusion, this study demonstrates that there is no significant difference in explosive lower limb strength between Judo and Kho-Kho players. While Judo players

exhibit impressive upper body strength, Kho-Kho players showcase their prowess in lower limb explosive strength, emphasizing the unique physical capabilities of athletes in each sport. These findings underscore the importance of tailored training strategies to optimize athletic performance in Judo and Kho-Kho, highlighting the need for customized conditioning programs to meet the specific demands of each sport.

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