



Effects of Plyometric Training Combined with Whole-Body Vibration on Physical Performance of Basketball Players

*Günseli Usgu, PT, PhD

**İnci Yüksel, PT, PhD

*Serkan Usgu PT, PhD

**Hasan Kalyoncu University, Gaziantep, TURKEY;*

***Middle East University(Northern Cyprus)*



Disclosures

We have no financial conflicts to disclose.



Introduction

- Whole body vibration (WBV) is a neuromuscular training modality to enhance explosive and maximal strength (1). The potentially beneficial effects of WBV are caused by the transmission of mechanical, sinusoidal vibrations throughout the body via the feet (2).
- WBV has been used to enhance neuromuscular performance of athletes by increasing muscle activation via the stretch reflex. Increased muscle strength and power after WBV results from increased neuromuscular activation during WBV, which subsequently induces adaptations similar to resistance training (3,4).

Introduction

- ▶ Pliometric training is a technique used by athletes in all types of sports to increase strength and explosiveness (5,6). Plyometrics consists of a rapid stretching of a muscle (eccentric action) immediately followed by a concentric or shortening action of the same muscle and connective tissue (6).

Purpose

- The purpose of this randomized controlled study was to investigate the effects of 6 weeks of whole-body vibration (WBV) training combined with the plyometric exercises on physical performance of professional basketball players.



Method

24 elite male professional basketball players (18-32 years) were randomly assigned to either WBV group (n=12), which performed plyometric exercises on a vibration platform; or control group (n=12) which performed plyometric exercises on the same platform with no vibration.

- 22 basketball players completed this study properly.
- Table 1 Demographic information

Variables	WBV Group (n=11)	Control Group (n=11)
	X± SD	X ±SD
Age (year)	22,45±5,22	24±6,96
Height (m)	1,95±0,08	1,94±0,08
Mass (kg)	89,45±11,13	91,09±9,97
Body Mass Index (kg/m ²)	23,20±1,80	23,86±1,14



Method

- ▶ Both groups performed same plyometric exercises two times per week for 6 weeks. In WBV group vibration intervention consist of progressive frequencies from 25 Hz with increment of 5 Hz two weekly with amplitude of 2 mm.

Method

- Maximal muscular strength and power were evaluated via by 1 repetition maximum (1RM) half squat strength test, maximum jump height and peak power of vertical jump test before and after 6 weeks of plyometric training.

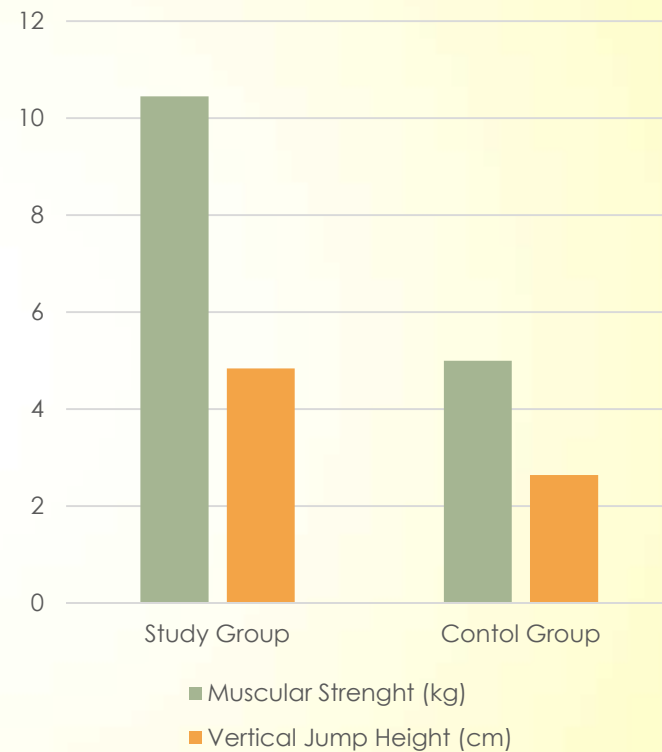


Results

- Wilcoxon T tests revealed that maximal muscular strength, vertical jump height and peak power were significantly increased in both groups (all p's <0.05), following six weeks WBV training.

Results

- When the two groups compared with each other, Mann Whitney –U tests showed that the increments in all parameters were significant in favor of WBV with plyometric training group (study group) (all p 's < 0.05).





Conclusion

- The results of this study indicated that training program including WBV added to the plyometric exercises is an effective method to enhance muscular strength and power in professional basketball players.

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