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Speed, Agility and Power Potential of Young Basketball Players

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Speed, Agility and Power Potential of Young Basketball Players

By Denis Čaušević, Semir Mašić, Ivor Doder, Kęstutis Matulaitis, Seth Spicer, Ahmed Gawash

Abstract

- Basketball constantly evolves and physical performance is becoming more important.
- Physical fitness assessments are the most reliable way to determine a player's preparedness.
- The aim of the research was to investigate if U16 basketball players' speed, agility, and power were related to their playing positions.
- The study included 40 young basketball players aged 14.99 ± 0.84 years.
- The variables measured were height, body mass, BMI, FFM, BF%, CMJ, CMJ free arms, SJ, 5m, 10m, 15m, and 20m sprints, T-test, Illinois test, and 505 test.

Introduction

- Athlete anthropometrics and performance characteristics in basketball may be overlooked compared to other specialized sports
- Basketball is a polystructural complex sport involving jumping, sprinting, and changes of direction with and without the ball
- Basketball requires high levels of power, speed, and agility, which are crucial for success
- Physical fitness tests are important for evaluating physical fitness levels and contributing to optimal training and physical development in team sports
- Anthropometric characteristics, such as body height, play an important role in the development of young basketball players and determining their positions on the team
- The main aim of the research mentioned is to determine if the speed, agility, and power of U16 basketball players are related to their playing positions

Results

- Anthropometric and body composition data are presented in Table 1, according to playing position.
- Forwards were better than guards and centers in the majority of analyzed tests, in terms of positions.
- Players in center and forward positions are significantly taller and heavier than guards.
- Statistically significant differences in power were found between positions, where vertical jump height was significantly higher in centers and forwards in comparison to guards.

Table 1. Anthropometric and body composition data by playing positions (mean \pm SD)

Variables	Guards (n = 15)	Forwards (n = 13)	Centers (n = 12)
Body mass (kg)	58.32 \pm 9.72 ^o	67.13 \pm 5.66 ^o	79.00 \pm 10.31**
Height (cm)	173.80 \pm 5.62 ^o	182.27 \pm 2.74 ^o	190.45 \pm 5.94**
Body mass index (kg/m ²)	19.21 \pm 2.44 ^o	20.22 \pm 1.85	21.71 \pm 2.05*
Fat-Free mass (kg)	52.22 \pm 8.46 ^o	61.35 \pm 4.56 ^o	72.16 \pm 9.88
Percentage of body fat (%)	10.38 \pm 3.02	8.48 \pm 3.09	8.73 \pm 2.41

ANOVA statistical differences (bold text) ($p < 0.05$). * – statistical differences with guards ($p < 0.05$);
* – statistical differences with forwards ($p < 0.05$); ^o – statistical differences with centers ($p < 0.05$)

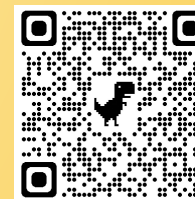
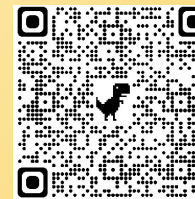
Discussion

- Results showed significant differences in the speed, power potential, height, body mass, and FFM of players in different positions.
- Findings also showed significant differences in sprint and agility times between different playing positions, with forwards being faster.
- Coaches heavily influence an athlete's playing position based on their anthropological characteristics.
- Athletes may undergo dramatic changes to their performance over extended periods of time, so coaches should acknowledge the value in allowing athletes to fully mature and develop before selecting their permanent playing position.
- Statistically significant differences in power were found between positions, where vertical jump height was significantly higher in centers and forwards compared to guards.
- The results presented in this study support that there are differences in anthropometric measures and physical fitness ability between player positions in younger groups of basketball players.
- These factors may play a large role in the position an athlete is selected for and their performance in that role.

Conclusion

- Statistically significant differences exist in the speed, agility, and power of basketball players in different positions.
- Different positions within the game have specific physical attributes and demands in youth basketball.
- These results provide coaches with insight into the current state of their athletes and which physical attributes may be beneficial for each position.
- Training programs and athlete selection can be adjusted to the specific demands of each playing position based on these results.

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