Research Paper Physical Education

Study on Selected Motor Fitness Components of Two Different Positioned Basketball Players

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ABSTRACT

The purpose of this study was to compare the selected motor fitness components namely speed and the agility of two different positioned basketball players. 40 State level male basketball players, aged between 19-24 years were randomly selected from West Bengal as the subject for the study. The subjects were divided into two groups depending on the position of the game: inner players (N = 20) and outer players (N = 20). They were chosen by the experts. The motor fitness components namely Speed and agility were selected as the parameters for the study. To measure the speed, 20meter Dash Test was used and the score was recorded in meter/sec and agility was measured by Illinois Agility Test and the score was recorded in seconds. To calculate the data Descriptive statistics and independent t-Test were used. The level of significance was set at 0.05. The result showed that the inner players were significantly taller (4.575) than the outer players whereas the outer players were more agile and had more speed than the inner players, but not statistically significant.

KEYWORDS Speed, Agility, Inner Players, Outer Players.

Introduction:
With the motor aspect, for the quality change of movement direction, a sufficient level of starting, accelerating, slowing and reactive power is required (Bompa, 1999).

Basketball is a spectacular team game played by two teams of five players each. It stands out as an extremely complex game, with very specific structural and functional characteristics (Trninic, 1996). It includes intermittent and sophisticated moving activities with the complex requirements for a combination of individual skills, team play and motivational aspects (Trninic & Dizdar, 2000). Success in high number of game tasks is accomplished by quick actions in a relatively small space (Trninić, et al., 2010b). Basketball has plenty of acceleration, deceleration, sprints, quick direction changes and rebounds. Crisafulli et al (2002) have found that basketball players, during the 40 minutes of a basketball game, cover about 4500-5000 m in different types of movement (changes of direction and course of movement, running, dribbling, defensive movements and rebounds) and at different, variable speeds. Narazaki et al. (Narazaki, Berg, Stergiou, & Chen, 2008) provide information that players during a match spend 34% of the time in running and rebounding, 56.8% in walking and 9% of the time in standing still. It is clear that the game of basketball consists of short but very intense activities, broken by longer or shorter periods of passive or active rest, during which a basketball player recovers (Spencer, Bishop, Dawson, & Goodman, 2005; Taylor, 2004; Trninic, 1996). In reference to this, basketball 'live' activity mainly takes place in the maximal and sub maximal intensity. The intensity of the activities of players during the game is illustrated by the fact that approximately 75% of 'live' game time players spend in activities in which the pulse reaches the value of 85% or more of maximum heart rate (Erculj, Dezman, Vuckovic, Milic, 2002; McInes et al., 1995). Basketball practice is also full of agility exercises, where players change the direction and the way of movement and full of exercises of acceleration, power, development of perception and ability to make optimal decisions (Young, & Farrow, 2006). The course of the basketball game means continuity in the offense and defense phases, or in stages of transition (Trninić et al., 2010a). Highly developed ability to accelerate and change of direction are of great importance not only for outer players, but for those who play on inner positions (centers). Generally, basketball is a team sport and to achieve the success of the team both outer players and inner players need to possess these very essential motor qualities. Therefore the study was taken to examine the ability of acceleration and agility of basketball players of two types i.e. outer players and inner players.

Objective: To compare the selected motor fitness components namely speed and agility between the inner and outer positioned basketball players.

Methodology:
Subjects: 40 State level male basketball players, aged between 20-24 years, were randomly selected from West Bengal as the subject for the study. The subjects were divided into two groups depending on the position of the game: inner players (N = 20) and outer players (N = 20). They were chosen by the experts.

Parameters: Motor fitness components namely Speed and Agility were selected as the parameters for the study.

Test and Criterion Measure: To measure the speed, 20meter Dash Test was used and the score was recorded in meter/sec and the agility was measured by Illinois Agility Test and the score was recorded in seconds.

Statistics: Descriptive statistics and independent t-test were used to calculate the data of the research work. The level of significance was set at 0.05.

Results:

Table-1: Descriptive Statistics

Parameters	Groups	Mean	S D
Height (cm)	Inner Player	175.40	4.57
	Outer Player	168.70	4.69
Weight (kg)	Inner Player	62.70	3.59
	Outer Player	60.55	3.82
BMI (kg/m^2)	Inner Player	20.43	1.66
	Outer Player	20.24	1.61
Speed (meter/sec)	Inner Player	3.81	0.09
	Outer Player	3.75	0.11
Agility (sec)	Inner Player	16.83	0.54
	Outer Player	16.78	0.46

Table 2: Mean Difference of Two Groups on Selected Parameters

Parameters	Groups	Mean	Mean Difference	Std. Error Difference	df	t-Ratio	Sig. (2-tailed)
Height (cm)	Inner Player	175.40	6.70	1.46	38	4.575	0.001
	Outer Player	168.70					
Weight (kg)	Inner Player	62.70	2.15	1.17	38	1.836	0.074
	Outer Player	60.55					
BMI (kg/m^2)	Inner Player	20.43	0.19	0.52	38	0.360	0.721
	Outer Player	20.24					
Speed (meter/sec)	Inner Player	3.81	0.06	0.032	38	1.820	0.076
	Outer Player	3.75					
Agility (sec)	Inner Player	16.83	0.05	0.029	38	1.689	0.739
	Outer Player	16.78					

*. Significant at 0.05 level

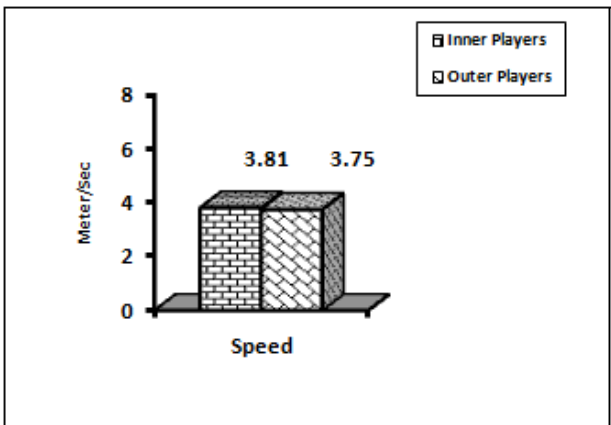

Figure1: Graphical representation of Speed between the Two Groups

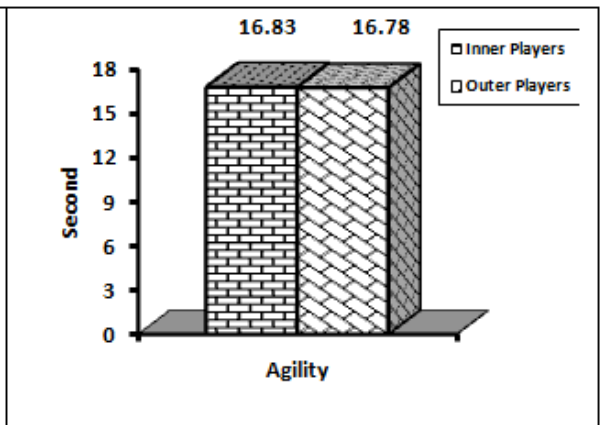

Figure2: Graphical representation of Agility between the Two Groups

Findings and Discussion:

Table-1 revealed that the Inner players were taller and heavier than the Outer players. Whereas the outer players were more agile and had speed than the inner players. Table-2 expressed that the Inner players were significantly taller (4.575) than the outer players. This was expected regarding the usual division of roles in the game according to positions. The Outer players showed better results in the speed and agility but not significantly. This can be expected given that the motor structure of their game requires a high level of these abilities in order to be able to implement the basic tactical tasks, primarily in the transition from offence to defense or vice-versa. Therefore, these abilities are often treated in the majority of the total training time because these are trained during condition training and tactical training. However, the results of Outer players are not significantly better than the results of Inner players. This suggests that Inner players in modern basketball have the motor potential for quick running and change of direction during the game and that frequent observations from practice that outer players are 'faster' and agile than inner ones cannot be fully accepted. It is possible that outer players are 'faster' and agile in some situations of the game, but in terms of motor potential inner players can be equally fast and agile. The result of the study is supported by the research work of Jakovljević S et al (2011) who worked on Acceleration and Speed of Change of Direction and the Way of Movement of Quality Basketball Players and found that the Outer players displayed better results in variable of acceleration and agility than inner players, but not statistically significant.

Conclusion:

On the basis of the result it can be concluded that in game of basketball the Inner players are significantly taller than the outer whereas the Outer players are better than the Inner players in speed and agility but not significantly.

REFERENCES

Barry L. Johnson and Jack K. Nelson (1988)Practical Measurement for Evaluation in Physical Education (New Delhi: Surjeet Publication. | | Bompa, T.O. (1999). Periodization in sport. Champaign: Human kinetics | | Buttifant, D., Graham, K., & Cross, K. (1999). Agility and speed measurement in soccer players are two different performance parameters. In:Fourth World Congress of Science and Football.Sydney: University of Technology | | Clake HH and Clarke DH (1987). Application of Measurement to Physical Education. Printice Hall, Inc., Englewood Cliffs, New Jersey | | Crisafulli, A., Melis, F., Tocco, F., Laconi, P.,Lai, C., & Concu, A. (2002). External mechanical | work versus oxidative energy consumption ratio during a basketball fi eld test. Journal of | Sports Medicine & Physical Fitness 42, 409-417. | | Draper, J.A., & Lancaster, M.G. (1985). The 505 test: A test for agility in horizontal plane. Australian Journal of Science and Medicine in Sport, 17(1), 15-18. | | Jakovljević S et al (2011). Acceleration and Speed of Change of Direction and the Way of Movement of Quality Basketball Players. Physical Culture. 65(1): 16-23. | | Karalejić, M., i Jakovljević, S. (2009). Dijagnostika u košarci. [Diagnostics in basketball] Beograd: 3D plus i VSZŠ. | | Kukrić, A., Karalejić, M., Petrović, B., & Jakovljević, S. (2009). Effect of complex training on explosive strength of legs extensors in junior basketball players. Fizička kultura, 63(2), 165-180. | | Malina, R.M. Bouchard, C., & Bar-Or O. (2004). Growth, Maturation, and Physical Activity. Champaign (IL): Human Kinetics. | | Mayhew, J.L., Piper, F.C., Schwegler, T.M., & Ball, T.E. (1989). Contributions of speed. agility | and body composition to anaerobic power measurements in college football players. The Journal | of Applied Sport Science Research, 3(4), 101-106. | | Narazaki, K., Berg, K., Stergiou, N., & Chen, B. (2008). Physiological demands of competitive | basketball. Scandinavian Journal of Medicine & Science in Sports, Early View 1-8. | | Sheppard, J.M., & Young, W.B. (2006). Agility literature review: Classifi cation. training and | testing. Journal of Sport Sciences, 24(9), 919-932. | | Trninić, S. (1996). Analiza i učenje košarkaške igre. [Analysis and learning of basketball game]. Pula: Vitka | | Trninic, S., & Dizdar, D. (2000). System of the performance evaluation criteria weighted per positions | in the basketball game. Collegium Antropologicum, 24(1), 217-234. | | Trninić, S., Karalejić, M., Jakovljević, S, i Jelaska, I. (2010b). Structural analysis of knowledge based on specifi c attributes of the game of basketball. Physical Culture, 64(2), 22-41. | | Verma, J .P., A (2000)Text Book on Sports Statistics, Venus Publication , Gwalior, India | | Young, W., Hawken, M., & McDonald, L. (1996). Relationship between speed. agility and | strength qualities in Australian rules football. Strength & Condition Coach, 4(4), 3–6. |