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PHYSICAL AND PHYSIOLOGICAL PROFILES OF DIFFERENT LEVELS OF BASKETBALL PLAYERS

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ABSTRACT

The purpose of the study was to know the physical and physiological profiles of different levels of male basketball players. Ninety male basketball players from different universities those who participate in intercollegiate, interuniversity and inter zonal tournament. Standardized test was applied to measure physical variable i.e. standing height, sitting height, leg length, upper arm length, forearm length, hand length, body composition and physiological variable i.e. resting pulse rate, resting B.P., vital capacity, resting respiratory rate, maximum breath holding time, air flow rate and cardio-vascular efficiency. Analysis of variance and LSD Post hoc test was applied to assess the significance difference among the group means. The level of significance was set at 0.05. The result of study showed that the entire physical variable of basketball players of different levels of achievement except hand length was differed significantly. But, no significance difference in physiological variables of basketball players of different levels of achievement was found.

KEY WORDS: Physical variable, Physiological variable, Basketball and Players

INTRODUCTION

Today the preparation of an athlete for top notch achievement is a completely dynamic state characterized by a high level of physical and physiological efficiency and degree of perfection of the necessary skills and knowledge, technique and tactical preparation(AtindraNath Dey, 1985).Due to its acyclical nature and intensity, basketball is classified as a high intensity intermittent team sport (Bangsbo J, 1994) During competitive soccer match play, elite players

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cover a distance of about 05–06 km(Withers RT, 1982; Van Gool D et al., 1988; Ohashi J et al.,1988; Bangsbo J et al., 1991) at an average intensity close to the anaerobic threshold, being 80–90% of maximal heart frequency (Hf_{max}) or 70–80% of maximal oxygen uptake (Vo_{2max})(Van Gool D et al., 1988; Reilly T , 1994; Helgerud J et al., 2001). It is estimated that aerobic metabolism provides 90% of the energy cost of basketball match play (Bangsbo J, 1994). Therefore, it is a prerequisite in the modern game for the elite basketball player to have high aerobic endurance fitness. Anthropometry included the measurement of age, weight, height, specific segment lengths, skeletal breadths, limb circumferences and skin fold thickness (Malina, 1988). In 1975, Bell and Rhodes's study found that goalkeephand, theirs were the tallest, on the midfielders were the shortest among a group of British college basketball players. Weight and body composition were another component of the anthropometry. Reilly and Secher (1990) pointed out that body composition played an important role in fitness for basketball player. Also, excess mass in form of fat might be detrimental to players' performance. Furthermore, Chin, So, Yuan, Li and Wong (1994) reported that low percentage body fat would generate higher forces for jumping. Purpose of the study was to know the physical and physiological profiles of intercollegiate, interuniversity and inter-zonal level of male basketball players.

METHODOLOGY:

In case of all the selected physiological variables namely resting pulse rate, resting blood pressure (both, systolic and diastolic), vital capacity resting respiratory rate, maximum breath holding time, air flow rate and cardiovascular efficiency, no significant difference existed between the means of Inter College, Inter University and Inter Zone basketball players. All the groups proved to be equal. This might be attributed to the fact that change in the physiological variables depends on the training age of the individual. The subjects of the present study were having the same age group i.e. 18-25 years. They were having more or less training age in all the

three selected groups. This categorization is only on the basis of performance, technical level and fitness level.

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Table I: **Analysis of Variance of Physical and Physiological variables of different levels of basketball players**

Variables	Source of Variance	DF	SS	MSS	F-Ratio	Required F-Ratio
Standing height	Between group With in group	2 87	1070.11 1225.64	535.05 14.09	37.98	3.11
Sitting height	Between group With in group	2 87	186.12 813.48	93.06 9.35	9.95	3.11
Leg length	Between group With in group	2 87	716.16 9399.43	358.08 9399.43	3.31	3.11
Upper arm length	Between group With in group	2 87	69.65 176.48	34.83 2.03	17.17	3.11
Forearm length	Between group With in group	2 87	32.27 212.18	16.14 2.44	6.62	3.11
Hand length	Between group With in group	2 87	3.517 54.61	1.758 0.628	2.8	3.11
Fat percentage	Between group With in group	2 87	283.85 653.76	141.93 7.51	18.89	3.11
Pulse rate	Between group With in group	2 87	94.47 3855.93	47.23 44.32	1.07	3.11
Systolic blood pressure	Between group With in group	2 87	200.62 3017.70	100.31 37.69	2.89	3.11
Diastolic blood pressure	Between group With in group	2 87	93.73 1354.97	46.86 15.57	3.01	3.11
Vital capacity	Between group With in group	2 87	0.036 6.491	0.018 0.075	1.917	3.11
Resting respiratory rate	Between group With in group	2 87	10.422 236.47	5.211 2.718	1.19	3.11
Maximum breath holding rate	Between group With in group	2 87	188.16 12138.83	94.08 139.53	0.674	3.11
Air flow rate	Between group With in group	2 87	0.009 4.809	0.005 0.005	0.084	3.11

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Cardio vascular efficiency	Between group With in group	2 87	111.52 2589.13	55.76 29.76	1.87	3.11

Table – II: Post HOC test of significance for physical variables and difference among means of different groups

Variables	**Inter College**	**Inter University**	**Inter Zonal**	**M.D.**	**C.D.**
Standing height	173.9 173.9	179.85 179.85	182.07 182.07	5.95 8.17 2.22	1.1135
Sitting height	87.03 87.03	88.62 88.62	90.55 90.55	1.59 3.52 1.93	0.9070
Leg length	90.02 90.02	92.78 92.78	96.880 96.88	2.76 6.86 4.1	3.0834
Upper arm length	35.63 35.63	36.83 36.83	37.78 37.78	1.2 2.15 0.95	0.4226
Forearm length	46.91 46.91	47.75 47.75	48.37 48.37	0.54 1.46 0.92	0.4633
Fat percentage	16.00 16.00	12.41 12.41	12.08 12.08	3.59 3.92 0.33	0.8129

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RESULTS AND DISCUSSION:

It is evident from Table I that Physical and Physiological parameters i.e. standing height, sitting height, leg length, upper arm length, fore arm length, fat percentage of basketball players of different levels of achievement differed significantly as the obtained 'F' values among the group were > the required 'F' value at 0.05 level.

It is revealed that there was no significant difference in selected groups of basketball players in relation to hand length, pulse rate, systolic blood pressure, diastolic B.P., vital capacity, resting respiratory rate, maximum breath holding time, air flow rate and cardio vascular efficiency.

Table II revealed that the differences in the means of Inter College and Inter University, Inter College and Inter Zonal and Inter University and Inter Zonal were found significant in standing height. Inter Zonal group proved to be superior as compared to all other groups. Differences in the means of Inter College and Inter University, Inter College and Inter Zonal and Inter University and Inter Zonal were significant in sitting height. The Inter-Zonal group proved to be superior as compared to both the groups. Leg length in the above table reveals that the difference in the means of inter college and Inter Zonal, interuniversity and inter-zonal were found significant, but Inter College and Inter University group was not statistically significant. Inter-Zonal group proved to be superior as compared to other groups. Differences in the means of Inter College and Inter University, Inter College and Inter-Zonal and Inter University and Inter-Zonal groups were significant. Inter-Zonal group proved to be superior as compared to other groups in upper arm length. Differences in the means of Inter College and Inter University, Inter College and Inter-Zonal and Inter University and Inter-Zonal groups were significant in fore arm length. Inter-Zonal group proved to be superior as compared to other groups. Fat Percentage in the above table reveals that the differences in the means of Inter College and Inter University, Inter College and Inter-Zonal and Inter University and Inter Zonal groups were significant. Lower percentage of fat found in Inter-zonal group as compared to the other groups.

In case of all the selected physiological variables namely resting pulse rate, resting blood pressure (both, systolic and diastolic), vital capacity resting respiratory rate, maximum breath holding time, air flow rate and cardiovascular efficiency, no significant difference existed

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between the means of Inter College, Inter University and Inter-Zone basketball players. All the groups proved to be equal. This might be attributed to the fact that change in the physiological variables depends on the training age of the individual. The subjects of the present study were having the same age group i.e. 18-25 years. They were having more or less training age in all the three selected groups. This categorization is only on the basis of performance, technical level and fitness level.

CONCLUSIONS

1. Variability exists among the male basketball players of different groups with respect to their standing height, sitting height, leg length, upper arm length, fore arm length and total body fat percentage.
2. Variability does not exist among the male basketball players of different groups with respect to their Hand length.
3. The observed sequence of performance in standing height, sitting height, leg length, upper arm length, forearm length and total body fat is Inter Zone>Inter University>Inter College.
4. Variability does not exist among the male basketball players of different groups with respect to their selected
5. Physiological Variables i.e. Resting Pulse Rate, Resting Systolic Blood Pressure, Diastolic Blood Pressure, Vital Capacity, Resting Respiratory Rate, Maximum Breathe Holding Time, Air-flow Rate and Cardio-Vascular Efficiency.

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