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INDEX

7

Effects of specific pre season training package on selected physical physiological and skill performance variables of college level male Basketball Players

Dr. MD. SK.A. M.K. Jagirdar
Head, Dept. of Physical Education,
Milliya College,
Beed, Dist. Beed (MS) India

Manik M. Polharkar
Research Scholar,
Dr. B. A. M. University,
Aurangabad, Dist. Aurangabad (MS) India

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Introduction

In the modem world due to the growing awareness on sports large number of young men and women participate in all over the world. When, in 1891, DrJames Naismith, a lecturer in an American college, devised a game that would keep his students fit during the winter months, he surely could have had no idea what he was starting. Today, the game of basketball is played all over the world - by boys, girls, men and women - at many different levels (Chris Bunnet and Sean McSweeney, 1991).

The standard of games and sports has improved a lot due to the modem training. The physique of athletes should be carefully studied and activities should be accordingly chosen. Basketball is one of the most popular sports in the world. Success in basketball depends upon an athlete's speed, power, strength, agility, endurance, skill, flexibility and tactical knowledge. Basketball apart from being a highly skilled game, the rules governing this game has been frequently changed in order to make the game much faster than ever.

Federation of international basketball association (FIBA), the governing body of the game basketball in its amendments during the year 2000 in-order to advance the ball from back court to the front court and to speed up the game it reduces the 10 seconds

rule to 8 seconds and similarly the shot clock rule from 30 l second rule to 24 seconds. The rules of the game had been improvised continuously. The most important among the changes came during the year 2000. The game has been made to play in 4 ten-minute quarters. In this new format two time outs shall be taken at any time during the first two quarters and three time outs shall be taken at any time during the last two quarters, one time out for each extra period is also permitted, a brief interval of fifteen minutes at the end of second quarter and two minutes interval in between the first two quarter and between the third and fourth quarter is also given. These rule changes have brought in tremendous changes in the mode of playing and training methods.

Review of Related Literature

The literature in any field forms the foundation upon which all future work will be built. A study ofrelevant literature is an essential step to get a full picture of what has been done with regard to the problem under study. The review ofthe literature promotes a greater understanding ofthe problem and its crucial aspects and ensures the avoidance of unnecessary duplication. It also provides a competitive data based on the evaluation and interpretation of the significance of one's findings. Study of the related literature implies locating; reading and evaluating reports of research as well as reports of casual observation and opinion that are related to the individuals planned research report.

So a number of books, journals and websites were referred. In the following pages, an attempt has been made to present briefly a few of the important researches and studies conducted abroad and in, India, as they have significant bearing on the present study. The reviews ofthe literature have been classified under the following headings:

1. Studies on physical fitness variables
2. Studies on physiological variable
3. Studies on skill and performance variables

Stone WJ, Steingard PM. (1993) had studied the year-round conditioning specifically designed for basketball. They state that the yearround conditioning has reached a high level of sophistication over the past several decades. There is growing evidence that it can contribute to improved performance and reduced injury. They have identified anaerobic power (stages I and II), aerobic power, muscular strength/power/endurance,

and flexibility as the major components of conditioning for basketball. The conclude that the concept of year-round conditioning uses the principles of periodization in work and rest to achieve peak performance and avoid injury. They have also stated that there are unique problems associated with the various levels of competition that require diligent monitoring on the part of the coach to maximize physical condition and avoid overtraining Nummela and Mero (1996) investigated the effects of sprint training on the anaerobic performance characteristics in well-trained sprint runners employing the maximal anaerobic running test (MART). Another purpose was to study the applicability of mart in the prescription of sprint training. Nine male sprint runners performed the mart before and after a 10 week intensive training period. The present results suggested that sprint training induces an adaptive increase in the maximal anaerobic running power in well-trained male sprint runners.

Delecluse C. (1997) studied the influence of strength training on sprint running performance. Today, it is generally accepted that sprint performance, like endurance performance, can improve considerably with training. Strength training, especially, plays a key role in this process. Sprint performance will be viewed multi dimensionally as an initial acceleration phase (0 to 10 m), a phase of maximum running speed (36 to 100 m) and a transition phase in between. Immediately following the start action, the powerful extensions ofthe hip, knee and ankle joints are the main accelerators of body mass.

Gleim and McHugh (1997) in their study on "Flexibility and its effects on sports injury and performance" state that flexibility measures can be static [end of ROM (range of motion)], dynamic-passive (stiffiiess/compliance) or dynamic-active (muscle contracted, stiffness/compliance). Dynamic measures of flexibility are less dependent on patient discomfort and are more objective. Acute and chronic changes in flexibility are likely to occur with stretching exercises, but it is difficult to distinguish between changes in stretch tolerance as opposed to changes in muscle stiffness.

Methodology

Selection of Subjects

The purpose of the study was to find out the effect ofspecific pre season training package on selected physical, physiological and skill performance variables of college

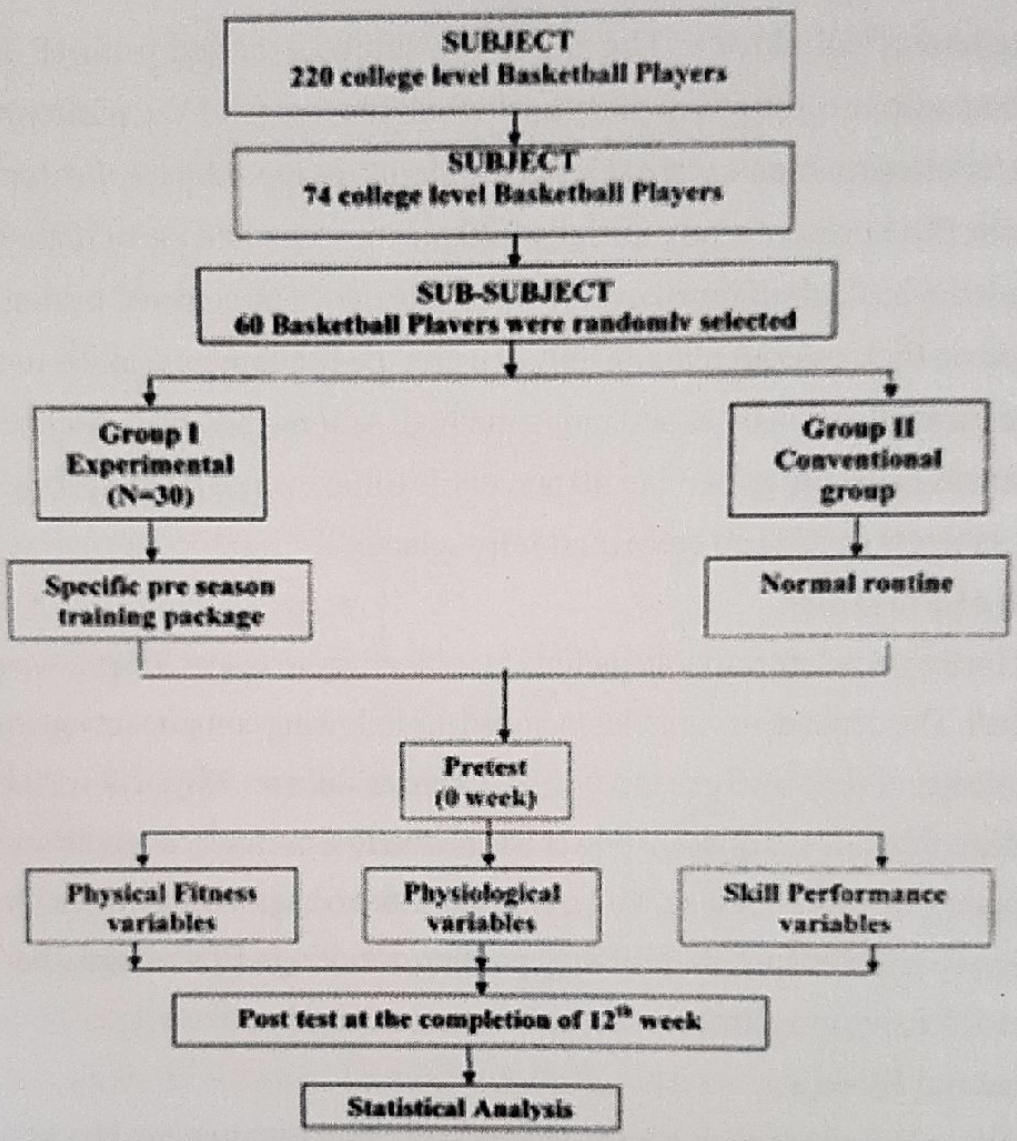
level male basketball players. The age of the subjects ranged from 18-23 years. To achieve the purpose ofthe study, sixty basketball players who had participated in inter collegiate level tournaments were selected randomly as the subjects. In order to validate the subjects ofthe present study initially 220 players who had participated in the inter collegiate level basketball tournaments were selected. The selected basketball players were tested on their overall playing ability using the fundamental skills and technique during the game situation by expert rating method. Among the selected subjects (n=220) 74 were found in the range of 35 to 40 percentile ofthe overall playing ability. From the screened subjects (n=74) 60 were randomly selected.

Selection of Variables

The independent variable included in this study was specific pre season training in basketball. The dependent variables included the following components such as physical, physiological and skill performance variables are as follows. Physical variables such as speed, agility, flexibility, explosive power and abdominal muscular strength and endurance Physiological variable such as V02 max (maximal oxygen up taking capacity) Skill performance variables such as dribbling, passing, shooting - close range, shooting - long range and defensive movement.

Experimental Design

The selected subjects were randomly divided into two groups of thirty each. Group I is the experimental group which underwent a specific pre season basketball training package and Group II acted as the conventional group which had not participated in any specific training other than their regular routine like warming up then go for under basket shots and then play games without any skill workout and other kind offitness training.



Statistical Analysis

The primary objective of the present study is to compare the experimental group with that of the conventional group on the effect of specific pre season training package on selected physical, physiological and skill performance variables of college level male basketball players. In order to achieve this objective, the collected data before and after the twelve weeks training programme were tested by appropriate statistical tool, analysis of covariance. The statistical analysis of data collected pertaining to experimental study and the results of the same are tabulated and presented in this chapter. In order to test the significance ofthe obtained data's, the obtained results were tested at 0.05 level ofsignificance which was considered to be sufficient for the study

Result of an Individualized Effect

The results on individualized effect of training the experimental group with specific pre season training package are described in the tables 11 and 12 Table of Significance Of Mean Gains / Losses Between Pre And Post Test Experimental Group Trained With Specific Training Package On Selected Physical, Physiological And Skill Performance Variables Of College Level Male Basketball Players

Variables	Pre-Test Mean	Post-Test Mean	SD	SEM	MD	"t"
Abdominal muscular strength and endurance	39.6 ±2.53	44.23 ±6.16	5.95	1.09	4.63	4.26*
Flexibility	30.13 ±3.18	35.93 ±3.07	2.64	0.48	5.80	12.01*
Speed	6.53 ±0.25	6.11 ±0.24	0.26	0.05	0.42	8.78*
Agility	9.71 ±0.36	9.66 ±0.36	0.94	0.17	0.05	3.32*
Explosive power	16.63 ±1.20	23.92 ±1.02	1.45	0.26	7.29	27.54*
VO_2 Max	53.48 ±1.97	56.95 ±2.43	1.97	0.36	3.47	9.63*
Dribbling	25.05 ±0.61	23.67 ±0.53	0.83	0.15	1.38	9.16*
Passing	78.43 ±7.00	90.23 ±6.51	6.42	1.17	11.80	10.07*
Defensive movement	22.35 ±0.77	20.79 ±0.63	0.78	0.14	1.56	11.03*
Shooting - close range	16.30 ±1.56	20.30 ±1.66	1.64	0.30	4.00	13.36*
Shooting – long range	29.83 ±1.91	36.33 ±2.54	2.67	0.49	6.50	13.31*

*2.04

Table - indicates that the obtained^' values of the experimental group trained with specific training package on variables are: (4.26) abdominal muscular strength and endurance, (12.01) flexibility, (8.78) speed, (3.32) agility, (27.54) explosive power, (9.63) V02 max, (9.16) dribbling, (10.07) passing, (11.03) defensive movement, (13.36) shooting - close range, 13.31 shooting - long range). The obtained t-values are significant at 0.05 levels for degree of freedom 1, 29 and the required critical value was 2.04. Hence the obtained t-values on the selected variables are higher than the required critical value , it is concluded that the experimental group trained with specific training package has produced significant changes positively from its baseline post treatment on physical variables such as abdominal muscular and strength endurance (4.63 $P < 0.05$), flexibility (5.80 $P < 0.05$), speed (0.42 $P < 0.05$), agility (0.05 $P < 0.05$), explosive power (7.29 $P < 0.05$), Physiological variables of V02 max (3.47 $P < 0.05$) and skill performance variables of dribbling (1.38 $P < 0.05$), defensive movement (1.56 $P < 0.05$), shooting close range (4.00 $P < 0.05$), and shooting long range (6.50 $P < 0.05$).

Summary

Sports performance is indeed an aspect of complex human performance, which has several dimensions. Hence, several disciplines ofsports science are required to work in a coordinated manner to explore the nature of sports performance and the process of improving sports performance. In last few decades, several disciplines of sports science have been established e.g. Sports medicine, sports pedagogy, sports nutrition, sports biochemistry, sports neuro-physiology, sports cybernetics etc.,Basketball today being a fast paced sport, success in it depends a lot on the athletes speed, power, strength, agility, endurance, skill, flexibility and tactical knowledge.

Conclusion

The following conclusions may be drawn based on the findings ofthe study. In the criterion measures the experimental group shows significant improvement than the conventional group.

1. The experimental group trained with specific pre season training package has significantly improved the physical variables such as speed, agility, explosive power, strength and flexibility which are very essential physical components for any

basketball player to achieve maximum success in their playing career.

2. The experimental group trained with specific pre season training package has significantly improved in the only important physiological variable V02 max.
3. The experimental group trained with specific pre season training package has significantly improved in all the selected skills variables.

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