

Augmenting Chosen Biochemical Parameters of Blood of All India Interuniversity Basketball Players through 12 Days Rigorous Competitions

¹**Aruna Rani**

Associate Professor,
Lovely Institute of Education,
Lovely Professional University,
Phagwara, Punjab, India

²**Amarpreet Singh**

Assistant Professor,
Department of Physical Education,
Punjabi University, Patiala, Punjab, India

Abstract

The study is focused to examine the end product of rigorous basketball competitions (Ten authorized basketball games in Twelve days' rigorous competition duration) on chosen blood parameters of basketball players. Collection of Blood sample was done from ten volunteer basketball players with the help of medical expert. These were trained players and were free from any health issue. The average stature and age was 185 cm and 22 years respectively. The timing for collection of blood sample was set at 24 hours before the competition and after the competition. Collected data was further analyzed through Descriptive statistics (mean and standard deviation) with the help of trial version of SPSS (16). Value of the parameters was assessed through medical laboratory testing, and the results obtained through applying statistics specially the paired samples t' test there was significant enhancement of albumin, low-density lipoprotein and high-density lipoprotein and the data of creatinine were found to be low and significant before the competition. The outcomes display that the biochemical parameters of Basketball players are under influence of rigorous competitions. A better comprehension of the outcomes would give direction to the officials related with sports event organization and trainers to design the competitions and it will smooth the progress of the training of the sportspersons for peak performance.

Keywords: High-density lipoprotein, Low-density lipoprotein, Albumin, Creatinine, Basketball players.

Introduction

Basketball is a renowned sport which is different from other branches of sports and is considered among the fastest games of the sports world. Basketball is developing and is changing continuously from the time it started. The size, weight and the rules and regulations have also been changed. These technical or tactical changes are the end product of rigorously done research in the field. Many studies with focus on physiological, biochemical, biomechanical and motoric properties of players have contributed in advancement of the game. The significant reason of the increment in studies related to this field is that peak performance is openly associated to the element that ascertain the success and performance of body and bodily functions. (Aydas et al., 2002). Hematological and biochemical variables may differ based on the sort, sternness, length of workout, nutritional grade and the supplements intake (Pancar et al. 2017). So the research in regard with assessing the end products of activities on biochemical properties of the body

is a latest focus of the researchers. Related studies propose that continue aerobic activities has progressive sound influence on fat and carbohydrate metabolism, and it also becomes the reason of modest decrease in body weight, fat deposit, cholesterol with triglyceride. The hematocrit data of athletes in regard with rigorous exercise program decreased thus may lead to sportsman anemia (Lindemann, 1978). The end product of long-term workouts and competitions the energy disbursement and metabolites enhance in the body. Enhancement of metabolites becomes the reason of slow inactivity in the muscles and nervous system, that becomes the path to exhaustion. Bio-Chemical, psycho-physiological and environmental elements play a significant part in this overtiredness.

Objectives

The objective of the study was to investigate the effects of chosen Biochemical Parameters of Blood of All India Interuniversity Basketball Players through 12 Days Rigorous Competitions

Hypotheses

1. There would be a significant difference of albumin of basketball players.
2. There would be a significant difference of low density lipoprotein of basketball players.
3. There would be a significant difference of high density lipoprotein of basketball players.
4. There would be a significant difference of Creatinine of basketball players.

Design of the study

Selection of Subjects: - Total ten (10) basketball players were selected as subjects. The volunteer players were chosen from university players who were free from any health related issues and who were continually given trainings on skills in the camp. Blood samples were taken 24 hours prior to competition and 24 hours and after the competitions.

Variable Selection: -The below given four blood parameters were chosen to fulfil the objectives of this research.

1. Albumin
2. Low Density Lipoprotein
3. High Density Lipoprotein
4. Creatinine

Statistical Approach

After the collection of related data, the comparison of pre-competitions and post-competition data chosen biochemical properties of basketball players, it was analyzed through 't' test with the support of trial version of Statistical package for the social sciences (SPSS) with setting the level of significance at 0.05.

Analysis of data and findings

Table-1: Mean and Standard Deviation of Albumin of basketball players

| Group | Mean | Standard deviation | P value |
|-----------|------|--------------------|---------|
| Pre test | 4.33 | 0.16 | 0.004* |
| Post test | 4.59 | 0.22 | |

Level of Significance .05

The table no. 1 displays the effect of twelve days rigorous competition duration on Albumin of basketball players. The table shows calculated mean of pre- competition test of albumin and post-competitions test i.e. 4.33 and 4.59 respectively and the standard deviation is 0.16 and 0.22 respectively. The SPSS output of P value is 0.004 which is lower than 0.05 level of significance and thus resulting in significant difference of the two means. So the hypothesis, which states that there would be a significant difference of albumin of basketball players, stands accepted.

Table-2: Mean and Standard Deviation of Low Density Lipoprotein of basketball players

| Group | Mean | Standard Deviation | P value |
|-----------|-------|--------------------|---------|
| Pre test | 97.90 | 19.97 | 0.03* |
| Post test | 117.5 | 25.5 | |

Level of Significance .05

The table no. 2 reveals the effect of twelve days rigorous competition duration on Low density lipoprotein of basketball players. The table shows calculated mean of pre- competition test of Low density lipoprotein and post-competitions test i.e. 97.90 and 117.5 respectively and the standard deviation is 19.97 and 25.5 respectively. The SPSS output of P value is 0.03 which is lower than 0.05 level of significance and thus resulting in significant difference of the two means. So the hypothesis, which states that There would be a significant difference of Low density lipoprotein of basketball players, stands accepted.

Table-3: Mean and Standard Deviation of High Density Lipoprotein of basketball players

| Group | Mean | Standard Deviation | P value |
|-----------|-------|--------------------|---------|
| Pre test | 46.77 | 7.86 | 0.04* |
| Post test | 52.92 | 6.62 | |

Level of Significance .05

The table no. 3 reveals the effect of twelve days' rigorous competition duration on High density lipoprotein of basketball players. The table shows calculated mean of pre- competition test of high density lipoprotein and post-competitions test i.e. 46.77 and 52.92 respectively and the standard deviation is 7.86 and 6.62 respectively. The SPSS output of P value is 0.04 which is lower than 0.05 level of significance and thus resulting in significant difference of the two means. So the hypothesis, which states that there would be a significant difference of high density lipoprotein of basketball players, stands accepted.

Table-4: Mean and Standard Deviation of Creatinine basketball players

| Group | Mean | Standard Deviation | P value |
|-----------|------|--------------------|---------|
| Pre test | 0.91 | 0.09 | 0.93 |
| Post test | 0.85 | 0.08 | |

Level of Significance .05

The table no.4 shows the effect of twelve days rigorous competition duration on creatinine of basketball players. The table shows calculated mean of pre- competition test of creatinine and post-competitions test i.e. 0.91 and 0.85 respectively and the standard deviation is 0.09 and 0.08 respectively. The SPSS output of P value is 0.93 which is

higher than 0.05 level of significance and thus resulting in non-significant difference of the two means. So the hypothesis, which states that there would be a significant difference of creatinine of basketball players, stands rejected.

Discussion

The outcome clearly displays difference among biochemical properties of the basketball players as an end product of rigorous competitions in three variables but in the case of creatinine it could not bring significant change. In the related reviews of the studies on the main focus was on impacts of work out on blood parameters. Results are inline with the results of Ibis et al. (2010) who found significant enhancement of High density lipoprotein values and but results are in contrast of the significant decreases in LDL values as in present study low density lipoprotein were found to be increased. In related reviews of the literature, many studies are focused on chronic effect of activities on blood properties were studied. The findings show co-occurrence of results of cakmakci and Pular (2008) where they found that High density lipoprotein and cholesterol levels were enhanced. The current study, the blood samples were collected the next day of competition to prohibit the severe impact of rigorous exercise. There was a significant enhancement in albumin, Low Density Lipoprotein, High Density Lipoprotein value and there was a non-significant decrease in creatinine values in comparison to prior values pre competition data ($P < 0.05$). The results may be attributed to low level of rest, recovery and nourishment. So, to interpret such results one needs to know about the nutritional status and fluid intake status must be taken in to consideration. The results of the current venture may contribute to the literature emphasizes the fact that in rigorous competition periods if the players are not provided with proper rest, recovery, food and liquid consumptions their health issue may prevail. Results are alarming when it concludes that Low density lipoprotein is increased. It may lead to dangerous health issue. So on the basis of the results of this particular finding, it may be suggested that coaches or organizers should take care about the health of players during competitions. Their nourishment level can be enhanced with increasing fluid consumption and rest for proper recovery. The results can be used for planning competitions and diet plans.

REFERENCES

- Aydas, F., Ugras, A., & Savas, S. (2002). Comparison Of The Selected Physical And Physiological Characteristics Of The Turkish National Boxing Team Members With Two Different Boxing Teams, *Gazi Journal of Physical Education and Sports Sciences*, 7(2), 11-22.
- Çakmakci, E., & Pular, A. (2008). Effect Of National Team Camping Period Of Taekwondo Sportswomen On Some Biochemical Parameters, *Selçuk University Journal of Physical Education and Sport Science*, 10, 39-47.
- Ibis, S., Hazar, S., & Gokdemir, K. (2010). Acute Effect Of Hematological Parameters On Aerobic And Anaerobic Exercise, *Journal of Human Sciences*, 7(1).
- Lindemann, R. (1978). Low Hematocrits during Basic Training-Athletes Anemia. *New England Journal of Medicine*, 299(21), 1191-1192. <https://doi.org/10.1056/NEJM197811232992113>
- Nieman, D. C., Warren, B. J., O'Donnell, K. A., Dotson, R. G., Butterworth, D. E., & Henson, D. A. (1993). Physical Activity and Serum Lipids And Lipoproteins In Elderly Women. *Journal of the American Geriatrics Society*, 41(12), 1339-1344. <https://doi.org/10.1111/j.1532-5415.1993.tb06485.x>
- Novosadova, J. (1977). The Changes In Hematocrit, Hemoglobin, Plasma Volume And Proteins During And After Different Types Of Exercise, *European Journal of Applied Physiology and Occupational Physiology*, 36(3), 223–230. <https://doi.org/10.1007/BF00421753>
- Oztin, S., Erol, A. E., & Pular, A. (2003). The Effect Of Pliometric And Explosive Power Trainings On The Physical And Physiological Characteristics Of 15-16 Ages Group Basketball Players. *Gazi Journal of Physical Education and Sports Sciences*, 8(1).

- Pancar, Z., Ozdal, M., & Cinar, V. (2017). The Effect Of 4-Weekly Low Intensity Physical Activity Program In Thyroid Hormone Levels In Obese And Overweight Children, *European Journal of Physical Education and Sport Science*, 3(11), 1-7.
- Tran, Z. V., & Weltman, A. (1985). Differential Effects Of Exercise On Serum Lipid And Lipoprotein Levels Seen With Changes In Body Weight: A Meta-Analysis. *Jama*, 254, 919–924.<https://doi.org/10.1001/jama.1985.03360070057023>
- Wilmore, J. H., & Costil, D. L. (2004). *Physiology of Sport and Exercise*. 3th ed., Champaign, IL: Human Kinetics.

