LACTIC ACID FORMATION AMONG PLAYERS IN RELATION TO THEIR TYPES OF GAMES

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Abstract
The aim of the study was to find out the lactic acid formation among players in relation to their types of games. Forty six subjects were selected. The sample were selected through quota sampling technique followed by random sampling selection of the sportspersons. The data was collected from the male Handball, Basketball, Football players of Lovely Professional University, Phagwara, Punjab and Guru Nanak Dev University, Amritsar, Punjab. All the subjects had been listed before and after their respective match to analysis the formulation of lactic acid. The objective of the study was to calculate the lactic acid formation among football, handball and basketball players. After the match the lactic acid volume of all players has been recorded as the scores. Lactate scout was used to check the volume of lactic acid. After the collection of data on different variables to know the significance difference ANOVA and Partial correlation test were employed. The mean difference between handball and football players for lactic acid formation came out to be 0.5, which was not found to be significant at even 0.05 level of significance, which means that these two groups are not having differences in lactic acid formation. The mean difference between the football and basketball players for lactic acid formation came out to be 1.22, which was found to be significant at 0.01 level of significance, which means that these two groups differs in lactic acid formation. The level of significance was set at .05 levels.

Keywords: Lactic acid, Aerobic and Anaerobic

Introduction

The expression lactic acid is used most commonly by athletes to describe the intense pain felt during exhaustive exercise. Lactic acid test is generally done on a blood sample taken from a vein in the arm but it may also be done on a sample of blood taken from an artery. Lactic acid test is a blood test that measures the level of lactic acid made in the body. Most of it is made by muscle tissue and red blood cells. The delay is attributed to the time required to buffer and transport lactic acid from the tissue to the blood. A return to pre exercises levels of blood lactate clearance in both aerobically and anaerobically trained athletes compared to untrained individuals. The expression lactic acid is used most commonly by athletes to describe the intense pain felt during exhaustive exercise. "The identification of lactic acid as a product of muscle activity was discovered at early in 20th century" (Das 2011). Lactic acid is naturally present in humans, as well as in animals. It is formed from glycogen by muscle cells when the oxygen supply is inadequate to support energy production. Lactate was long considered one of the causes of both fatigue during exercise and the stiffness felt after. "At rest the normal range for lactic acid is 0.5 to 2.2 mmol per litre (4.5 to 19.8 mg/dL) Note: mg/dL = milligrams per deciliter; mmol/L = millimoles per liter. It is thought that complete exhaustion occurs somewhere in the range of 20-25 mmol per litres. Lactic acid concentration reaches its peak about 5 minutes after the cessation of intense exercise.

Objectives of the study

The main objective of this study is to calculate the lactic acid formation among football, handball and basketball players.

Procedure

Forty six subjects of inter university level were taken as a sample for this study. These 46 subjects were taken from different games i.e. Football, Handball, and Basketball. All the subjects were listed before and after the match to analysis the formulation of lactic acid but the measurement was taken after the match only. The study was carried out in two different universities namely Guru Nanak Dev University Amritsar, Punjab and Lovely Professional University, Phagwara, Punjab. The subjects were between the age groups of 18 to 25.

Tools

Lactate scout was used to check the volume of lactic acid in players.

Administration of the test
Lactic Acid Test
Objective: To measure volume of lactic acid in subjects.
Equipment Required: Lactate Scout
Procedure: Picking a single test strip out of the vial, close the vial immediately and insert firmly the strips into the lactate scout. Twist the top of the lancing device. Insert a new lancet, twist the protective cap off carefully and close the lancing device. Cock the lancing device by pulling back and letting go the rear of the shaft. The measurement of lactic acid was taken within 10 minutes after the match.
Measurement: to measure the level of lactic acid in blood the fingertip was clean, sanitize and dry the fingertip carefully. As soon as the droplet absorbed in the strips the measurement take place.
Scoring: The reading of lactic acid of each subjects display on lactate scout in mmol was recorded as the score. The objectives of present study were to find out the significant difference among football, handball and basketball on the basis of lactic acid formation. After the collection of data, One way ANOVA was applied and results has been presented in table 4.1.

Table 4.1
TABLE SHOW THE MEANS AND SD ON THE SCORES OF LACTIC ACID

	N	Mean	Std. Deviation
Handball	14	15.7	0.6
Football	22	15.2	0.6
Basketball	10	16.4	0.4
Total	**46**	**15.7**	**0.7**

Table 4.1 shows that means of the football, handball and basketball players on the lactic acid are calculated as 15.2, 15.7 and 16.4. The Sd for the different groups are found to be 0.6, 0.6 and 0.4. Further on the application of ANOVA following results have been calculated as below.

Table 4.2
TABLE SHOW THE SUMMARY OF ANOVA ON THE SCORES OF LACTIC ACID

Source of Variance	Sum of Squares	df	Mean Square	F ratio
Between Groups	5.88	2	2.938	9.941*
Within Groups	6.50	22	.296	

* Significant at the 0.05 level of significance

The calculated value of 'F' for comparing the means of handball, football and basketball players for lactic acid formation, came out to be 9.941, with df (2, 22) which is more than table value at 0.01 level of significance. Hence, it may be interpreted that there exists significant difference in the lactic acid formation of handball, football and basketball players. The difference of mean scores of handball, football and basketball players is calculated through Scheffe Post Hoc Test which have been shown in table below.

Table 4.3
TABLE SHOW THE SUMMARY OF SCHEFFE POST HOC TEST ON THE SCORES OF LACTIC ACID

Group	Group	Mean Difference (I-J)	Std. Error	Sig.
Handball	Football	0.5	0.3	.133
Football	Basketball	-1.22*	0.3	.001
Basketball	Handball	0.7	0.3	.083

*. The mean difference is significant at the 0.05 level.

The mean difference between the handball and football players for lactic acid formation came out to be 0.5, which is not found to be significant at even 0.05 level of significance, which means that these two groups are not having differences in lactic acid formation. The mean difference between the football and basketball players for lactic acid formation came out to be 1.22, which is found to be significant at 0.01 level of significance, which means that these two groups differs in lactic acid formation. From the values it is found that basketball players have more lactic acid formation than football players, meaning thereby, that basketball game is more tiring than football. The mean difference between the handball and basketball players for lactic acid formation came out to be 0.7, which is not found to be significant at even 0.05 level of significance, which means that these two groups are not having differences in lactic acid formation.

Results

In the present study it was observed that there is a significance difference among basketball players in comparison to handball and football players. It means calculated ratio of lactic acid is more among in comparison to handball and football players. The findings of the present study partially similar with the findings of Smith EW (1997). As basketball is the fastest game, so the rate of demand of energy is high during game, lactate is produced faster than the ability of the tissue to remove it and lactate concentration begins rise. Lactic acid is left over and creates soreness. Basketball is the fastest game so the muscle and the blood lactate can rise to very high levels .A common misinterpretation is that blood lactate or even lactic acid, has a direct detrimental effect on muscle performance.

Conclusion

There was significant difference among football, handball and basketball on the basis of lactic acid. Ratio of lactic acid formation was high among basketball players in comparison Handball and football.

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