Impact of Submaximal Load of Bicycle Ergometer Exercise on Total Protein

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Abstract

The purpose of the present investigation was to find out the impact of sub maximal load of bicycle ergometer exercise on Total Proteins. To achieve the purpose, ten male long distance runners were selected as subjects randomly. They were aged between 20-23 years. Submaximal load of bicycle ergometer exercise was selected as independent variable. The Total Proteins was selected as dependent variable. Blood samples were drawn from all the ten subjects before and after 15 minutes of sub maximal load of bicycle ergometer exercise. The data pertaining to the variable in this study was examined by using dependent't' test. The 0.05 level of confidence was fixed as the level of significance to test the significance, which was considered as an appropriate. The result indicates that sub maximal load of bicycle ergometer exercise on Total Proteins and it enhanced performance.

Key words: Submaximal load, Bicycle ergometer exercise, Total proteins.

Introduction

Physical activity and exercise have a several beneficial effects for physical and psychological health. Regular activity and exercise are recommended for maintenance of optimal heath and prevention or management of chronic diseases (Cherubini et.al., 1998, Pate et al., 1995). Regular exercise increases oxygen supply to brain, increased oxygen carrying capacity of the blood. The changes that occur in the blood during exercise demonstrate that blood is carrying out necessary task.

(Peters, T 1975) studied about serum albumin and he reported that an elevation of albumin content after exercise would cause an expansion of the intravascular fluid compartment at the expense of the extra vascular compartment through the latter mechanism because of an increase in plasma osmotic pressure. (Gillen 1991) and others showed that a single-exposure protocol involving intense, intermittent exercise produced a 10% PV expansion after 24 h. This was accompanied by a 10% increase in plasma albumin content that occurred before, and presumably caused, the PV expansion

(Van Beaumont (1972) and others compared the plasma protein during the muscular exercise and bed rest of human samples. During short periods of intensive exercise, there was a small loss of plasma protein, with prolonged sub maximal exercise there was a net gain in plasma proteins.

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Methodology

The purpose of the study was to find out the Impact of Submaximal Load of Bicycle Ergometer Exercise on Total Proteins. This study was conducted on ten male Long Distance Runners from the Department of Physical Education and Sports Sciences, Annamalai University. Their age ranged between 20-23 years. Ten male subjects performed 15 minutes duration at the relative workload $65+_5$ % of their VO₂ max.

Blood samples were drawn from anti cubical vein before and after the exercise with assistance from qualified lab technician. The blood samples served for the determination of Total Proteins. The Total Proteins the individual were tested by Modified Biuret & Dumas Method.

Statistical analysis was performed on all of the collected data. Comparisons between means were undertaken with dependent't' test at 0.05 significant level.

Table-I
Analysis of Total Proteins Prior and After the Exercise
(Scores in Milligram/ Deciliter)

Test	Mean	Standard deviation	T Ratio value	Table T Ratio
Before Exercise	6.58	0.01		
After Exercise	7.87	0.06	68.19	2.26

* Significant at 0.05 levels

Table I indicates that, 't' ratio value of male Long Distance Runners between prior and immediately after the Bicycle Ergometer Exercise in Total Proteins was 68.19 and it is greater than the table value 2.26 at .05 level of significance. It was concluded that Sub Maximal Load of Bicycle Ergometer Exercise had significant effect on the Total Proteins. The results of this study indicate that there was an increase in Total Proteins after sub maximal load of bicycle ergometer exercise in university Long Distance Runners.

Discussion

Exercise increases the total protein particularly albumin. Plasma proteins are the major basis for the blood's osmotic pressure. As plasma protein concentration increases so does the osmotic pressure increases, as a result more fluid is retained in the blood. These mechanism works together to increase the fluid portion of the blood and blood plasma. These results provide strong evidence that an increase in plasma albumin content plays a critical role in the exercise-induced expansion of BV. Relative changes in plasma volume and total content of plasma protein were calculated from hematocrit changes.

Conclusions

From the results of the study following conclusions were drawn.

- 1. There was significant difference in Total Proteins between prior and after Sub maximal Load of Bicycle Ergometer exercise.
- 2. Bicycle Ergometer exercise is effective to increase Total Proteins.

References

- Ambica Shanmugam, (1992), *Fundamentals of Biochemistry for Medical Student*, Madras: C.I.T Publishers, 257.
- Cherubini. A, et al., (1998), Effect of aging and exercise on cardiovascular performance in healthy elderly, *American Journal of Geriat Cardio*, 25-32.
- Mack. C.M Gillen, (1991), Plasma volume expansion in humans after a single intense exercise protocol, *Journal of Applied Physiology*, 71.
- Peters. T, (1975), Plasma proteins structure function, and genetic control, *Journal of Serum Albumin*, 133-181.
- Van. Beaumont W, (1972), Evaluation of hemoeoncentration from hematocrit measurements. *Journal of Applied Physiology*, 81, 712-713.

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