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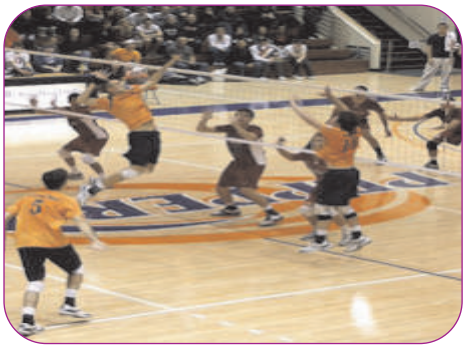
Review of Literature

STUDIES OF PROTEIN SUPPLEMENTATION ON SELECTED PHYSICAL FITNESS, PHYSIOLOGICAL AND BIOCHEMICAL VARIABLES AMONG ATHLETES, VOLLEY BALL AND BASKET BALL PLAYERS OF SPORTS COLLEGE MADHYA PRADESH



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ABSTRACT :

Games and sports have been part of human life almost since the time immemorial.Be it is necessity for his survival i.e. Hunting for food and Shelter, Safety from wild animals or other enemies or as a pursuit ofpleasure, the games and sports have been indispensable to mankind andhave been part of his culture.The purpose of the study was to find out the, effect of protein, supplementation along with theregular physical fitness training given to experimental groups on selected physical, physiological and biochemical variables. It was hypothesized that physical fitness training and supplementation process may improve the selected physical fitness variables, physiological and biochemical variables. It was also hypothesized that there may be significant difference among the control and experimental groups. It was also hypothesized that there may be significant difference among 'volleyball players, basketball players and athletes who took whey protein supplementation. It was also hypothesized that there may be significant difference among volleyball players, basketball players and athletes who took casein protein supplementation. The study was delimited to the following aspects.1. 15 volleyball players, 15 basketball players and 15 athletes were randomly selected from Swami Sivanandha Sports College. 2. Their age group is ranged from 13 to 15 years. 3. The nutrient rich foods stuffs were selected and formulated and it was given as supplementation in the training period. 4. Regular physical fitness training followed by sport school students was followed. 5. The study was conducted only on sports school students. 6. The supplementation was given for a period of three months.

KEYWORDS :*Protein, Supplementation, Physiological, Biochemical, Athletes.*

INTRODUCTION:

One of the challenges confronting the coaches and sport scientist is to understand the physical factors contributing to successful performance. One the common methods to identify the appropriate training program for improving fitness level is the analysis of the effect of these practices on various factors of training exercises. The initial testing session at the start of a program can give the athletes and coach information of current functional capability and allow them to compare that capacity with reference values from appropriate peer group, so that future testing can be compared to this and any changes can be noted. Also the assessment of current status reveals the strengths and weaknesses of training program and become a basis for development of an optimal training program (Mirzaie et al., 2011a).

Nutrition science seeks to explain metabolic and physiological .responses of the body to diet.With advance molecular biology, biochemistry and genetics, nutrition science is additionally developing into the study

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of integrative metabolism, which seeks to connect diet and health through the lens of biochemical processes. The three basic conditions that must be observed to maintain the top physical efficiency and performance as stated by margin are

1. The general unimpaired physical and mental health.
2. Adaptation to control environment.
3. Good nutrition with adequate quantities of calories, protein, fat, carbohydrate, vitamins andfluid.

The human body is make up of chemical compounds such as water, amino acids (proteins), fatty acids (lipids), nucleic acids (DNA/RNA) and carbohydrates (e.g: sugars and fiber). Thesecompounds in turn consist of elements such as carbon, hydrogen, oxygen, nitrogen and phosphorous, and may or may not contain minerals such as calcium, iron or zinc. Minerals ubiquitously occur in the form of salts and electrolytes. All these chemical compounds and elements occur in various forms and combinations (e.g hormones i vitamins, phospholipids, hydroxyapatite), both in human body and in organisms (e.g. plants, animals) that humans eat.

The contribution that nutrition can make to the general health of any individual which has been generally accepted has not been given the attention it deserves. As the saying "A sound mind in a sound body", it is needless to .say that one can never think or act promptly that personis in ill health or malnourished. Good nutrition is therefore vital to optimal event performance.

Physical activity is essential for normal development in early adolescence It is because of this,physical training is generally accepted and recommended as an essential part of school (Driskell, and Wolinsky 2002). Exercise alone cannot be beneficial to the body. Proper exercise and balanced diet are the true basic necessities for a healthy man. Fitness is a combination of heart and muscle capacity to use oxygen for energy production. Nutrition and well-being hence assumes a vital role in the field of sports.

Regular involvement in sports and exercise programmes offer positive cognitive experiences, which include feeling healthy and relaxed, detached consciousness, improved quality of life, and euphoria, sense of accomplishment, self-worth and confidence. Regular aerobic physical activity for a total 30 minutes is a vital part of a healthy life style, as it leads to proper functioning of heart, less injury, better sleep and improvement in body composition (Wardlaw, 2003). Physical activities also reduce stress and positively affect blood pressure, blood cholesterol and blood glucose regulation. In addition, it aids in weight control both by raising energy expenditure for a short period oftime after exercise and by increasing overall energy (Gordon, 2003).

METHODOLOGY

In this chapter the selection of the subjects, selection of variables, reliability of instruments, competency of the tester, reliability of data, orientation of subjects, collection of thedata, administration of the tests, the experimental design and the statistical procedures have been presented.

SELECTION OF THE SUBJECTS

The purpose of this study was to rind out the effect of protein Supplementation onselected physical fitness, physiological and biochemical variables. To achieve this purpose, forty five rive male sportsman in the age between 12 to 16 years were selected for the study. 15athletes, 15 basketball players, and 15 volley ball players from Ramakrishna Mission Swami Sivanandha sports school were randomly divided into groups.

RESEARCH DESIGN

Random groups design is adapted in this study as the investigator was particular to make athorough analysis to find out, whether there is any significant improvement in the mean level of the group in selected physical fitness physiological and biochemical variables. The subjects were divided into three groups. Each group consisted of 5 athletes, 5 basketball players and 5 volley ball players. Experimental group I look whey protein and experimental group II took casein proteinand group III acted as a control group.

SELECTION OF VARIABLES

The following physical, physiological and biochemical variables were selected. The three

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groupundertook their training in their concerned discipline. The pretests were taken in the selected physical limes physiological and biochemical variables. The supplementation and .training prolonged for a period of 12 weeks. Then posttests were conducted in the same variables for all the groups.

Table. No.1. In the present study the following factors were selected as variables.

S. No.	Variables
1.	Physical Fitness Variables 1. Speed 2. Muscular Endurance 3. Strength
2.	Biochemical Variables 1. Serum protein 2. Hemoglobin
3.	Physiological Variables 1. Vital Capacity 2. Blood Pressure systolic and diastolic

SELECTION OF TESTS

In this study the variables were measured by administering the following tests related test toassess each of the selected variables has been indicated below.

Table-2. For Testing Components and Test Items

S. No.	Variables	Tests/Equipment's
1.	Physical Fitness Variables Speed Muscular Endurance Strength Cardiovascular Endurance Fat free Body Weight	 50 yard dash Sit ups Pull ups 600 Mts run Skin fold caliper
2.	Biochemical Variables 1. Serum protein 2. Hemoglobin	 Cyanmethemoglobin and Buretter method
3.	Physiological Variables 1. Vital Capacity 2. Blood Pressure systolic and diastolic	 Spirometer Sphygmomanometer

In previous studies cited that having good anaerobic and aerobic capacity, power, agility are most important factors needed to achieve good result in taekwondo(Heller et al., 1998, Pieter and Zemper, 1989).In this regard, the main emphasize of general preparation phase is enhance the cardiovascular endurance and muscular strength, significant reduction in bf% and significant increase in aerobic and anaerobic factors following exercise was similar to the other investigations (Mirzaie et al., 2011b, Arabaci and Çankaya, 2008). Finally, these results can be used as a feedback to the coaches to review the applied training protocols.

CONCLUSIONS

From the results of the study the following conclusions were drawn.

1. Significant. difference was found among the paired means of whey protein group, caseinprotein group and control group irrespective of the game in physical variables of speed,cardiovascular endurance, muscular endurance; strength, fin free body weight, in physiologicalvariables of systolic blood pressure, diastolic blood pressure and vital capacity and biochemicalvariables of hemoglobin.
2. Significant difference was found among the paired means of volleyball players, basketballplayers and athletes irrespective of group in the physical variables of cardiovascular endurancemuscular endurance and strength and ,biochemical variables of serum protein. However therewas no significant difference in the physical variables of speed and Cat free body weight.

3. Significant difference was found among the paired means of groups and games-interaction inthe physical variable of speed, muscular endurance, cardiovascular endurance, vital capacity,strength, diastolic blood pressure and serum protein. There was no significant difference in thevariables of systolic blood pressure .hemoglobin and tin free body weight.
4. Volleyball players, basketball players, and athletes had equal level of improvement due towhey protein supplementation in speed, and equal level of reduction in diastolic blood pressure.Volleyball players had significant improvement than athlete and basketball players in muscularendurance and strength. They had significant improvement than basketball players in cardiovascular endurance also. Athletes had significant improvement than the basketball players incardio vascular endurance and strength and then volleyball players in serum protein and strength.Basketball players had significant improvement than volleyball players in vital capacity.
5. Volleyball players, basketball players 'and athletes had equal level of improvement due tocasein protein supplementation in cardiovascular endurance, serum protein and vital capacity.Volleyball players had significant improvement than basketball significant improvement than basketball players in speed.
6. The whey protein supplementation volleyball group had significant 1 improvement than thecontrol group in speed, cardiovascular 111 endurance, muscular endurance, strength, vitalcapacity, and serum protein and significant reduction in diastolic blood pressure. It had 111significant improvement than the casein protein group in muscular a endurance, cardio vascularendurance and strength.
7. The whey protein supplementation basketball group had significant improvement than thecontrol group in speed, cardiovascular endurance, muscular endurance, strength, vital capacityand sewn, protein and significant reduction in diastolic blood pressure. It had significantimprovement than the casein protein supplementation group in speed, strength, vital capacity andmuscular endurance, serum protein and strength and has no significant improvement than thecontrol group in cardiovascular endurance, muscular endurance, serum protein and strength andhad no significant improvement in speed and diastolic blood pressure.
8. The whey protein athletes had significant improvement than the control group in cardiovascularendurance, muscular endurance, strength, speed and serum protein but had no significantimprovement in speed, and no significant reduction in diastolic blood pressure.

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