

# Experimental Effect of Gym Training On Bio-Chemical Variables of Urban Employees of District Budgam in Jammu And Kashmir State

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**Abstract-** To find out the effect of training on selected biochemical variables of urban employee of district Budgam. For the purpose of this study 50 urban employees from various departments were selected randomly from the district Budgam of Jammu And Kashmir State aged between 35 to 45 years. They were divided in to two equally groups (experiment and control). The experiment group containing 25 subjects underwent gym training programme. controlled group comprised of 25 subjects did not received any kind of gym training programme for the same period of time. After completing the eight weeks gym training programme (experiment) post test was conducted in the same way by testing the blood samples of the subjects. The data were collected on selected biochemical variables (determination of haemoglobin, serum urea, serum uric acid, total cholesterol, triglycerol, HDL-C and LDL-C.) The entire tests were done at IRAM CLINICAL LAB BUDGAM to get better results. The result concluded that the regular gym training programme contributes to the improve the selected biochemical variables indicating the good health status of urban employees.

**Index Terms-** Gym training, employee, Biochemical variables.

## I. INTRODUCTION

The modern day is providing us with lots of technological luxuries like cars, computer, television, computer games and others. Often, these modern luxuries make us to adopt a sedentary life style particularly among the employees' govt as well as private employees. In fact, this life style has become a serious threat to our health. The lack of physical exercise increases the deterioration rate of human body and often leads to illness and pre-mature death. Many technological advances are now available which provide us regular physical activities in our everyday life.

Gym exercise is one among them which lowers the build up of plaques in the arteries by increasing the concentration of High density lipoproteins (HDL) cholesterol and decreasing the concentration of lower density lipoproteins (LDL) cholesterol in our body.

## II. STATEMENT OF THE PROBLEM

Srinagar , Budgam , Baramulla and Anantnaag are the most populated cosmopolitan districts In the state Jammu and Kashmir with enough of job opportunities, therefore many men from urban areas rush here for employment. Such working men are

very much busy with their employment and they don't get time to take care of their health. There Psycho- physiological stress in the place of employment and home is over burdened so that they often suffer from various hazards. For such employed men there is a paucity of leisure time. For the non employee men in the urban the scenario of leisure time is different. They spend their leisure time by gossiping or watching television.

## III. OBJECTIVIES OF THE SYUDY

On the basis of the back ground of the study, here are some objectivise

1. To assess the selected – biochemical profile and health status of urban employees of the district Budgam of Jammu and Kashmir state.
2. To identify their health related fitness and other physiological problems on the basis of scientific and clinical lab testing.
3. To design a specific gym training programme on the basis of their identified problems.
4. To conduct a controlled experiment for evaluating the efficiency of the gym training programme in tackling Health Related Fitness Problems and associate variables.
5. To suggest some measures and guidelines for a more fruitful and healthy life of urban employee.

## IV. HYPOTHESIS

It was hypothesized that regular gym training in daily life would improve the selected biochemical variable status of urban employees of district Budgam of Jammu and Kashmir state.

## V. METHODOLOGY

For the purpose of this study 50 urban employees from various departments were selected randomly from the district Budgam of Jammu And Kashmir State aged between 35 to 45 years. They were divided in to two equally groups (experiment and control). Blood samples were collected from the subjects during pre-test with 12 hours fasting. After the pre test the experiment group containing 25 employee underwent gym training programme at Life line gym centre at Budgam, Daily one hour in the evening except Sundays for a total period of eight weeks. Whereas the controlled group comprised of 25

employees did not received any kind of gym training programme for the same period of time. After completing the eight weeks gym training programme (experiment) post test was conducted in the same way by testing the blood samples of the subjects. The data were collected on selected biochemical variables (determination of haemoglobin, serum urea, serum uric acid, total cholesterol, tri glycerol, HDL-C and LDL-C.) The entire tests were done at IRAM CLINICAL LAB BUDGAM to get better results.

### Measurement of Biochemical Variables:

**1. Estimation of Haemoglobin:** Haemoglobin concentration was estimated using colorimetric procedure by Cyanmethaemoglobin method. An aliquot of well-mixed whole blood was taken and reacted with a solution of potassium cyanide and potassium ferricyanide. The chemical reaction yields a product of stable colour, the cyanmethaemoglobin. The intensity of the colour is proportional to the haemoglobin concentration at 540 nm. The following reagents were used for the assay: (a) Reagent 1: Drabkin's Reagent (50 mg Potassium cyanide, 200 mg Potassium ferricyanide and 1000 ml Distilled water); (b) Reagent 2: Cyanmethaemoglobin standard. All reagents were supplied by Merck Ltd., India. A three sets of test tubes were taken and marked as Blank, Test and Standard. In the Blank 5.0 ml of Reagent 1 was taken. The tube marked as Test contained 5.0 ml of Reagent 1, then 20  $\mu$ l of an aliquot of well-mixed EDTA-anticoagulated blood specimen was added, mixed well and stand for 10 minutes. Another tube marked as Standard contained 5.0 ml of Cyanmethaemoglobin standard. Blank solution was used for setting the spectrophotometer. Absorbance (Abs.) of the Test and Standard was performed using spectrophotometer at 540 nm.

**2. Estimation of serum Urea:** Urea reacts with hot acidic Diacetylmonoxime in the presence of Thiosemicarbazide and produces a rose-purple coloured complex, which is determined colorimetrically. The following reagents were used for the assay: (a) Reagent 1: Urea Reagent; (b) Reagent 2: Diacetylmonoxime (DAM); (c) Reagent 3: Working Urea Standard, 30 mg%; Working solution was prepared with dilution of 1 ml of Reagent 1 to 5 ml with purified water (solution I). All reagents were supplied by Span Diagnostics Ltd., India. Three sets of test tubes were taken containing Standard (2.5 ml of solution I, 0.01 ml of Reagent 3 mixed well and 0.25 ml of Reagent 2 was added); Test (2.5 ml of solution I, 0.01 ml of serum sample mixed well and 0.25 ml of Reagent 2 was added) and Blank (2.5 ml of solution I and 0.25 ml of Reagent 2 was added). Then the samples were mixed well and test tubes were kept in the boiling water exactly for 10 minutes. After 10 minutes the test tubes were cooled under running water for 5 minutes. Measurement of the OD of Standard and Test was performed against Blank on a spectrophotometer at 525 nm within 10 min.

**3. Estimation of serum Uric acid:** Uric acid in alkaline medium reduces phosphotungstic acid to "tungsten blue" a blue coloured complex, which is measured colorimetrically. The following reagents were used for the assay: (a) Reagent 1: Sulphuric acid, 2/3 N; (b) Reagent 2: Sodium tungstate, 10% W/V; (c) Reagent 3: Sodium carbonate, 14% W/V; (d) Reagent 4: Phosphotungstate; (e) Reagent 5: Stock Uric acid standard, 100 mg%; Working Standard was prepared with dilution of 0.1

ml of stock Uric acid standard to 10 ml purified water and mixed well. All reagents were supplied by Span Diagnostics Ltd., India. The estimation of serum Uric acid was performed in two steps. Step I: Deproteinization of the serum sample was performed using 0.5 ml of serum, 4.0 ml of purified water, 0.25 ml of Reagent 1 and 0.25 ml of Reagent 2 taken in a test tube. The solutions were mixed well and stand for 10 minutes and then centrifuged at 2000 rpm for 15 minutes to obtain a clear supernatant. Step II: Three sets of test tubes were taken containing Standard (1.5 ml of working standard, 0.5 ml of Reagent 3 and 0.5 ml of Reagent 4); Test (1.5 ml of supernatant, 0.5 ml of Reagent 3 and 0.5 ml of Reagent 4) and Blank (1.5 ml of purified water, 0.5 ml of Reagent 3 and 0.5 ml of Reagent 4). Then the samples were mixed well and kept in darkness for 15 minutes. Measurement of the OD of Blank, Standard and Test was performed against purified water using a spectrophotometer at 710 nm.

**4. Estimation of serum total cholesterol (TC), high density lipoprotein cholesterol (HDL-C):** Cholesterol reacts with hot solution of Ferric Perchlorate, Ethyl Acetate and Sulphuric acid (Cholesterol Reagent) and gives a lavender coloured complex which is measured at 560 nm. High density lipoprotein cholesterol (HDL-C) is obtained in the supernatant after centrifugation. The Cholesterol in the HDL-C fraction is also estimated by this method. The following reagents were used for the assay: (a) Reagent 1: Cholesterol Reagent; (b) Reagent 2: Working Cholesterol Standard, 200 mg%; (c) Reagent 3: Precipitating Reagent. All reagents were supplied by Span Diagnostics Ltd, India.

**5. Estimation of serum Total cholesterol (TC):** Three sets of test tubes were taken containing (i) Blank (3.0 ml of Reagent 1); (ii) Standard (3.0 ml of Reagent 1 and 15  $\mu$ l of Reagent 2) and (iii) Test (3.0 ml Reagent 1 and 15  $\mu$ l serum samples). Then the samples were mixed well and test tubes were kept in the boiling water bath exactly for 90 seconds (1½ minutes). Immediately after 90 seconds, the cooling of test tubes was done in room temperature under running tap water. Measurement of the OD of Standard and Test was performed against Blank on a spectrophotometer at 560 nm.

**6. Estimation of serum High density lipoprotein cholesterol (HDL-C):** Estimation of HDL-C was performed in two steps. The first step was the separation of HDL-C from total cholesterol in the serum samples. Secondly, estimation of HDL-C from the supernatant obtained from step one. Step I: A 0.2 ml of serum samples and 0.2 ml of precipitating reagent were taken in centrifuge tube. They were mixed well and kept at room temperature for 10 minutes and then centrifuged at 2000 rpm for 15 minutes to obtain a clear supernatant. Step II: Three sets of test tubes were taken (i) Blank (3.0 ml of Reagent 1); (ii) Standard (3.0 ml of Reagent 1 and 15  $\mu$ l of Reagent 2) and (iii) Test (3.0 ml of Reagent 1 and 120  $\mu$ l of supernatant from step 1). The samples were mixed well and the tubes were kept immediately in the boiling water bath exactly for 90 seconds (1½ minutes). Immediately after 90 seconds, the cooling of test tubes was done in room temperature under running tap water. Measurement of the OD of Standard and Test was performed against Blank on a spectrophotometer at 560nm.

**7. Estimation of serum Triglyceride (TG):** In the presence of enzyme *lipase*, triglycerides break into glycerol and fatty

acids. Again, glycerol reacts with ATP and the reaction produces glycerol-3-phosphate and ADP. Enzyme *glycerolkinase* helps in this reaction process. Glycerol-3-phosphate reacts with oxygen in the presence of *glycerol-3-phosphate-oxidase* and produces dihydroxy-acetone-phosphate and hydrogen peroxide ( $H_2O_2$ ). The hydrogen peroxide reacts with aminoantipyrine and chlorphenol in the presence of enzyme *peroxidase* and produces chinonimine and water. The following reagents were used for the assay: (a) Reagent 1: Reaction solution 4×25 ml [Good's buffer (pH 7.2): 50 mmol  $l^{-1}$ , 4-chlorphenol: 4 mmol  $l^{-1}$ , ATP: 2 mmol  $l^{-1}$ ,  $Mg^{2+}$ : 15 mmol  $l^{-1}$ , glycerokinase:  $\geq 0.4$  KU  $l^{-1}$ , peroxidase:  $\geq 2.0$  KU  $l^{-1}$ , lipoproteinlipase:  $\geq 2.0$  KU  $l^{-1}$ , 4-aminoantipyrine: 0.5 mmol  $l^{-1}$ , glycerol-3-phosphate-oxidase:  $\geq 1.5$  KU  $l^{-1}$ ]; (b) Reagent 2: Standard solution 1×3 ml [triglycerides]. All reagents were supplied by Merck Ltd., India. Three sets of test tubes were taken containing Standard (1000  $\mu l$  of reagent 1 and 10  $\mu l$  of reagent 2); Test (1000  $\mu l$  of reagent 1 and 10  $\mu l$  of serum sample) and Blank (1000  $\mu l$  of reagent 1). Then the samples were mixed well and incubate for 10 minutes at 37°C. Measurement of the OD of Standard and Test was performed against Blank on a spectrophotometer at 500 nm within 60 minutes.

**8. Assessment of low-density lipoprotein cholesterol (LDL-C):** Low-density lipoprotein cholesterol (LDL-C) was indirectly assessed using standard equation.

$$LDL-C = TC - (HDL-C + TG/5)$$

TC (total cholesterol); HDL-C (high density lipoprotein cholesterol), and TG(triglyceride), All values are in  $mg\ dl^{-1}$ .

## RESULT

To analyse the effect of gym training on the bio chemical variables "t" test were used and the result revealed that

1. There was a significant decrease in the cholesterol level of the experimental group compared to that controlled group.
2. There was a significant reduction in the triglycerides level of the experimental group compared then controlled group.
3. There was reduction in the low level lipoproteins level in the experimental group as compared to the control group.

4. There was significant improvement in high level lipoproteins level in experimental group as compared to controlled group.

## VI. CONCLUSION

The result concluded that the regular gym training programme contributes improvement in the selected biochemical variables indicating the good health status of urban employees. A significant reduction in total cholesterol (TC) level was detected among the experiment group of urban employee of district Budgam, a significant reduction in TC level was reported, the triglyceride (TG) level reduced significantly among the experiment group of urban employee of district Budgam, a significant reduction in TG level was reported among the experiment group of urban employee of district Budgam. In addition, a significant reduction in LDL-C level was reported among the experiment group of urban employee of district Budgam. And significant change in LDL-C level was observed among the experiment group of urban employee of district Budgam.

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