

**COMPARATIVE STUDY OF HEALTH STATUS, MENTAL HEALTH
STATUS, ANTHROPOMETRIC MEASUREMENTS AND
PHYSICAL FITNESS OF RURAL AND URBAN
GIRLS OF MADHYA PRADESH**

By

SAV SINGH CHOUHAN

Supervisor

Prof. SUDHIRA CHANDEL

A Thesis

**Submitted to the Devi Ahilya Vishwavidyalaya, Indore
for the Degree of Doctor of Philosophy
in Physical Education**

August 2019

Dedicated

To

My Family
&
All My Well Wishers

DECLARATION BY THE CANDIDATE

☐

This is to certify that the thesis entitled “**COMPARATIVE STUDY OF HEALTH STATUS, MENTAL HEALTH STATUS, ANTHROPOMETRIC MEASUREMENTS AND PHYSICAL FITNESS OF RURAL AND URBAN GIRLS OF MADHYA PRADESH**” is my work, conducted under the supervision of **Prof. Sudhira Chandel**, School of Physical Education, Devi Ahilya Vishwavidyalaya, Indore. This was approved by the research committee. I have put in more than 200 days of attendance with the supervisor at the centre.

I further declare that to the best of my knowledge. The thesis does not contain any work, which has been submitted for the award of any degree either in this institute or any other University.

Besides this:-

1. I have successfully completed the course work of one semester as per UGC-Regulation 2009 norms.
2. I have also given a Pre. Ph.D. presentation and successfully incorporated the changes suggested on the basis of feedback and comments received.
3. I have also published two research papers in an ISSN Referred Journal and two papers presented from the research work of the thesis and has produced an evidence of the same in the form of acceptance letter/or the reprint.

☐

Research Scholar

SAV SINGH CHOUHAN

Supervisor

Prof. SUDHIRA CHANDEL
School of Physical Education,
Devi Ahilya Vishwavidyalaya Indore
(MP)

☐

Prof. DEEPAK MEHTA
Professor and Head
School of Physical Education
Devi Ahilya Vishwavidyalaya, Indore (MP)

☐

CERTIFICATE BY THE SUPERVISOR

This is to certify that the work entitles “**COMPARATIVE STUDY OF HEALTH STATUS, MENTAL HEALTH STATUS, ANTHROPOMETRIC MEASUREMENTS AND PHYSICAL FITNESS OF RURAL AND URBAN GIRLS OF MADHYA PRADESH**” is a piece of research work done by **MR. SAVSINGH CHOUHAN** under my guidance and supervision for the Degree of Doctor of Philosophy in Physical Education from School of Physical Education, Devi Ahilya Vishwavidyalaya, Indore. The candidate has put in an attendance of more than 200 days with me.

To the best of my knowledge and belief, I further declare that the thesis:

1. Embodies the work of the candidate himself and has been duly completed.
2. Fulfills the requirements of the Ph.D. ordinance pertaining to the award of the degree of Doctor of Philosophy in Physical Education from Devi Ahilya Vishwavidyalaya Indore.
3. It is up to the expected standards with respect to the prescribed format, language, and contents.

Supervisor

☐

Prof. SUDHIRA CHANDEL
School of Physical Education,
Devi Ahilya Vishwavidyalaya Indore, (MP)



DEVI AHILYA VISHWAVIDYALAYA
RNT MARG, INDORE - 452 001

CERTIFICATE
Ph.D. Course Work

Subject: *Physical Education*Faculty: *Physical Education*

This is to certify that Ms. / Mr. *Soucsingh Chouhan*.....
son / daughter / wife of Mr. *Amar Singh Chouhan*..... has successfully
completed the Ph.D. course work conducted at *School of Physical Education*
from *January 2013* to *May 2013*..... The Ph.D. course work is as per UGC
Regulation 2009 and Ph.D. Ordinance of the University. The credits and the grades earned
by the candidate are as follows :

S. No.	Course Title	Credits	Grade	Credits × Grade
1	Research Methodology	5	C	5 × 5 = 25
2	Computer Applications	3	C	3 × 5 = 15
3	Review of Literature	3	B	3 × 7 = 21
4	Comprehensive Viva-Voce	4	B	4 × 7 = 28
Total		15		
Semester Grade Point Average (SGPA): <i>5.93</i>				Percentage: <i>57.94%</i>
(Percentage Marks = 8.4 × SGPA + 8.1)				

S. K. Yadav
Course Coordinator

Date *29/05/2013*

S. K. Yadav
Head / Director
Dr. S. K. Yadav
Professor & Head
Chairman Board of Studies
Dept. of Physical Education
Devi Ahilya University, Indore (M.P.)

A. K. Sharma
Deputy Registrar (Exams.)
Devi Ahilya Vishwavidyalaya
INDORE
Registrar

School of Physical Education

Devi Ahilya Vishwavidyalaya, Indore

Takshashila Campus, Devi Ahilya University,

Khandwa Road, Indore - 452 001 (M.P.)

Mob.: 9826336271

Email : deepak48mehta@gmail.com



Dr. Deepak Mehta
The Head of Department

Date 13/05/2019

To Whom so ever it May Concern

This is to certify that Mr. Sav Singh Chouhan presented his Ph.D. Research work as per ordinance 18 of DAVV and UGC Regulation 2009 for the award of Degree of Philosophy in Physical Education on 08.05.19 at 11.00 A M in School of Physical Education, During her presentation queries of the scholars present were addressed and included in the summary and thesis.

Mr. Sav Singh Chouhan is permitted to submit his Ph.D. Research work and summary on the title, "COMPARATIVE STUDY OF HEALTH STATUS, MENTAL HEALTH STATUS, ANTHROPOMETRIC MEASUREMENTS AND PHYSICAL FITNESS OF RURAL AND URBAN GIRLS OF MADHYA PRADESH" Under the guidance of Dr.Sudhira Chandel.

Deepak Mehta
13/5/19
Head

School of Physical Education
Devi Ahilya University



Devi Ahilya Vishwavidyalaya, Indore

Central Library, Khandwa Road, Takshashila

Campus, Indore (MP)

INDIA – 452 001

Phone No.: +91-731-2764315E-Mail:

head.cl@dauniv.ac.in

Lr.No.Lib/Anti/plagiarism/2019

Date: 1.8.2019

CERTIFICATE

This is to certify that Mr. Sav Singh Chouhan Letter No.Acm./ xi/ Ph.D. / Phy. Edu. /2014 /DA/02/14173 Date 16/8/2013 has submitted Soft copy of the Draft the thesis entitled "COMPARATIVE STUDY OF HEALTH STATUS, MENTAL HEALTH STATUS, ANTHROPOMETREC MEASUREMENTS AND PHYSICAL FITNESS OF RURAL AND URBAN GIRLS OF MADHYA PRADESH." For the award of the Doctor of Philosophy (Ph.D.) in Physical Education. He has worked under the guidance of Dr. Sudhira Chandel Faculty of Physical Education Research Centre, School of Physical Education, DAVV, Indore.

The Thesis has been tested in the University Central Library for Plagiarism check using URKUND software provided by the University Grants Commission, New Delhi.

The thesis contains 3% (Three per cent) of published material from other sources as per the report generated by the URKUND' software.

Ajay Kumar
11/8/19
Librarian
Incharge Librarian
Encl: URKUND Report
Central Library
D.A.V.V., Indore

URKUND

Urkund Analysis Result

Analysed Document: Savsingh Chouhan Phy edu.pdf (D54590345)
Submitted: 7/27/2019 11:40:00 AM
Submitted By: head.cl@dauniv.ac.in
Significance: 3 %

Sources included in the report:

Chapter.docx (D31060963)
THESIS PAPER.pdf (D54536853)
1 to 5 chapters.docx (D29690604)
<http://www.kheljournal.com/archives/2015/vol2issue2/PartD/2-2-25.pdf>
<http://www.allsubjectjournal.com/download/1551/2-11-106.pdf>
<https://ajp.paramedics.org/index.php/ajp/article/download/580/812>
<http://citeserx.ist.psu.edu/viewdoc/download?doi=10.1.1.471.8723&rep=rep1&type=pdf>
<https://pdfs.semanticscholar.org/0c6f/ef240bc1bb458adabf773d68ebbc6e493203.pdf>
<http://herkules.oulu.fi/isbn9514272331/html/c155.html>

Instances where selected sources appear:

22

Bawes
Incharge Librarian
Central Library
D.A.V.V., Indore

CURRICULUM VITAE

NAME: - **SAV SINGH CHOUHAN**

Phone: +91-9685418983, 8989266710

E-mail: savsinghchouhan44@gmail.com

Objective

Looking for well growth and challenging opportunities to exploit the inner talent in the best working environment for the emergence as a competitive professional so as to serve the very purpose of the organization and the nation.

Personal Skills

I am Flexible, self motivated, a good team member, having comprehensive problem solving abilities, hard working, creative & an aspiring leader.

Educational Qualifications

Examination Passed	Year	Board / University	School / College	Division
M.Phil	2012	D.A.V.V, Indore	School Of Physical Education , D.A.V.V.,Indore (M.P.)	FIRST
M.P.E.	2007	D.A.V.V, Indore	School Of Physical Education , D.A.V.V.,Indore (M.P.)	SECOND
B.P.E.	2005	D.A.V.V, Indore	School Of Physical Education , D.A.V.V.,Indore (M.P.)	SECOND
Certificate in yoga	2003	D.A.V.V, Indore	School Of Physical Education , D.A.V.V.,Indore (M.P.)	'C' GRADE
12 th	2002	MP Board of Bhopal (M.P.)	Govt. H. School, Para, Jhabua	SECOND
10 th	2000	MP Board of Bhopal (M.P.)	Govt. H. School, Para, Jhabua	Third

Areas of Interest

- Sports psychology
- Coaching and Officiating
- Playing and organising games
- Methods in Physical Education
- Sports Management

Areas of Specialization

- Track and Field
- Gymnastic
- Cricket
- Football
- Kho-kho
- Swimming
- Kabaddi

Sports Achievements

- Represented in Kho-Kho Inter- University Competition in the year, 2006-07.
- Participate in Cross Country Race Inter-College Competition 2004-05.

Work Experience

- Worked as a Sports Officer (Gust facility) in Government P.G. College Jhabua, 2014-15
- Worked as an Assistant Professor in Vidyasagar College Indore, 31/08/2013 to 06/09/2014.
- Worked as a Sports Officer in Sanghvi Innovative Academy Indore, 01/08/2012 to 30/08/2013.
- Worked as a Sports Teacher in Mar Thoma Higher Secondary School Indore, 19/11/ 2008 to 21/03/ 2011.
- Worked as a Manager of DAVV, Indore Kabaddi (Men) Team in West Zone Inter University Tournament Organized by Sant Gadge Baba University Amravati 2014-15.
- Worked as a Manager of DAVV, Indore Basketball (Men) Team in West Zone Inter University Tournament Organized by Bharti Vidyapeeth, Pune, 2014-15.

Computational Technical Skills

- MS Word, MS Excel, MS Power Point.
- Internet

Workshops, Seminars and Paper Publication

- Research Paper Publish on “Comparative Study of Mental Health Status between Rural and Urban Girls of Madhya Pradesh” in International Online Multidisciplinary Journal Review of Research.

- Research Paper Publish on “Comparative Study Of Anthropometric Measurements Between Rural and Urban Girls of Madhya Pradesh” in International Journal of Physical Education & Sports Sciences.
- Paper Presented on “Comparative Study Of Health Status Between Rural and Urban Girls of Madhya Pradesh” Organised by School of Studies in Physical Education and Sports Sciences, Jiwaji University, Gwalior , 2019.
- Attend one week “National Workshop on Research Methodology for Sports Sciences using SPSS” Organised by Department of Physical Education and Sports, Manipal University, Jaipur, 2015.
- Participated in the Sponsored UGC National Workshop on “Research Writing in Social Sciences” Organised by School of Education, D.A.V.V., Indore, 2012.
- Participated in the Sponsored UGC SAP National Workshop on “Officiating in Games and Sports” Organised by School of Physical Education DAVV, Indore, 2017.
- Participated in the Sponsored UGC SAP Workshop on “Research Methodology and Quantities Techniques in Physical Education and Sports” Organised by School of Physical Education DAVV, Indore, 2017.
- Participated in the Sponsored UGC SAP National Workshop on “Research Methodology and Sports Psychology in Pursuit of Excellence in Sports” Organised by School of Physical Education DAVV, Indore, 2018.

Personal Profile

Father’s name : **Shri Amarsingh Chouhan**
 Mother’s name : **Mrs.Ditali bai Chouhan**
 Date of Birth : **01/08/1984**
 Languages known : Hindi & English
 Marital Status : Unmarried
 Gender : Male
 Nationality : Indian

Permanent Address

Village : Dhandhalpura bada
 Post : Khardu
 District : Jhabua (M.P.)

ACKNOWLEDGMENTS

I am thanks full and grateful to GOD Almighty Whose strength and help sustained us throughout the study.

The scholar feels highly privileged having worked under the esteemed supervision of **Prof. SUDHIRA CHANDEL**, who is a constant source of inspiration. Her enlightened guidance, Constructive criticism, untiring help, counselling and suggestion have ensured that the research study remains in the right direction and perspective.

I am grateful to Vice Chancellor, Devi Ahilya Vishwavidyalaya, Indore, RDC Members and Head of Department, School of Physical Education, Devi Ahilya Vishwavidyalaya, Indore (M.P.), for giving me opportunity to work on the present research project.

The research scholar wishes to express his sincere appreciation and gratitude to **Prof. Deepak Mehtaa**, Head, School of Physical Education, Devi Ahilya Vishwavidyalaya, Indore, (M.P.) for providing an opportunity to work on this study.

Thanks are due to other members of the staff especially for **Prof. S.K. Yadav**, **Prof. Ajay Kumar Sahani**, **Dr. V.F. Peter**, **Dr. Mukesh Solanki**, **Dr. Vivek B. Sathe**, School of Physical Education Devi Ahilya Vishwavidyalaya, Indore for their kind help to the scholar in the successful completion of this study.

Sincere thanks are also express to the **Mr. M. P. Jaiswal**, Librarian, **Gopal Joshi**, Library staff and the other staff of Devi Ahilya Vishwavidyalaya, Indore. For kind co-operation and providing literature for the successful completion of this study.

My heart full thanks to all the **Players**, **Coaches** and Sports Teachers of Schools for their kind help to the scholar in the collection of data.

S.S.C

Thanks are also due to **Ashish Patel, Yogesh Choudhry, Dr. Himanshu Bhalse,**

Dr. Vinod Patel, Dr. Rakesh Malviya, Devesh Tiwari, Dinesh Kaithwas, Virendra Singh Rana, Abhay Pratap Singh, Ashish Bhabar, Naval Parmar, Amit Bhabar Students of B.P.E.S. & M.P.Ed. Final year **Himani Verma, Pooja Patel, Monka Patel, Sangeeta Bhalse, Pratibha Kaithwas,** and **Aditi Kasera.** For their kind help to the scholar in the collection of data. For their constant encouragement and tremendous patience without which my work would not have seen fulfilment.

S.S.C

TABLE OF CONTENT

	Page
LIST OF TABLES.....	XVI
LIST OF ILLUSTRATION.....	XVIII
Chapter	
I INTRODUCTION.....	1-12
1	
Statement of the Problem	
Delimitations	
Limitations	
Hypothesis	
Definitions and Explanation of the Terms	
Significance of the Study	
II REVIEW OF RELATED LITERATURE.....	13-30
III PROCEDURE.....	31-53
Selection of Subjects	
Criterion Measure	
Description of Questionnaire, Test and Data Collection	
Statistical Procedure	
IV ANALYSIS OF DATA & FINDINGS OF THE STUDY.....	54-80
Level of Significance	
Finding of the Study	
Discussion of Findings	
Discussion of Hypothesis	

V SUMMARY, CONCLUSION & RECOMMENDATIONS.....81-83

Summary

Conclusions

Recommendations

APPENDICES.....84-121

Raw Scores

Health Status and Mental Health Status Questionnaire

BIBLIOGRAPHY.....122-128

LIST OF TABLE

Table No		Page No
4.1	Descriptive Statistics of Health Status of Urban and Rural Girls of Madhya Pradesh	55
4.2	Descriptive Statistics of Mental Health Status of Urban and Rural Girls of Madhya Pradesh	56
4.3	Descriptive Statistics of Body Weight (kg) of Urban and Rural Girls of Madhya Pradesh	57
4.4	Descriptive Statistics of Height (cm) of Urban and Rural Girls of Madhya Pradesh	58
4.5	Descriptive Statistics of Elbow Width (cm) of Urban and Rural Girls of Madhya Pradesh	59
4.6	Descriptive Statistics of Knee Width (cm) of Urban and Rural Girls of Madhya Pradesh	60
4.7	Descriptive Statistics of Upper Arm Circumference (cm) of Urban and Rural Girls of Madhya Pradesh	61
4.8	Descriptive Statistics of Forearm Circumference (cm) of Urban and Rural Girls of Madhya Pradesh	62
4.9	Descriptive Statistics of Thigh Circumference (cm) of Urban and Rural Girls of Madhya Pradesh	63
4.10	Descriptive Statistics of Calf Circumference (cm) of Urban and Rural Girls of Madhya Pradesh	64
4.11	Descriptive Statistics of Biceps Skinfold (mm) of Urban and Rural Girls of Madhya Pradesh	65

4.12	Descriptive Statistics of Triceps skinfold (mm) of urban and Rural Girls of Madhya Pradesh	66
4.13	Descriptive Statistics of Thigh Skinfold (mm) of Urban and Rural Girls of Madhya Pradesh	67
4.14	Descriptive Statistics of Calf Skinfold (mm) of Urban and Rural Girls of Madhya Pradesh	68
4.15	Descriptive Statistics of Physical Fitness of Urban and Rural Girls of Madhya Pradesh	69
4.16	Comparison of Health Status Between Urban and Rural Girls of Madhya Pradesh	70
4.17	Comparison of Mental Health Status Between Urban and Rural Girls of Madhya Pradesh	71
4.18	Comparison of Anthropometric Measurements Between Urban and Rural Girls of Madhya Pradesh	72
4.19	Comparison of Physical Fitness Between Urban and Rural Girls of Madhya Pradesh	74

LIST OF ILLUSTRATIONS

S.No.	Figure	Page No.
1	Bodyweight	35
2	Standing height	36
3	Elbow width. (diameter)	37
4	Knee width. (diameter)	38
5	Upper - arm circumference	39
6	Forearm circumference	40
7	Thigh circumference	41
8	Calf circumference	42
9	Biceps Skinfold width	43
10	Triceps Skinfold width	44
11	Thigh Skinfold width	45
12	Calfskin Fold width	46
13	Inclined Pull-Ups	48
14	Bant Knee Sit Ups	49
15	Shuttle Run	50
16	Standing Broad Jump	51
17	Graphical Representation of mean and SD of the health status of rural and urban girls of Madhya Pradesh	70
18	Graphical Representation of mean and SD of mental health status of rural and urban girls of Madhya Pradesh	71
19	Graphical Representation of mean and SD of anthropometric Measurements of rural and urban girls of Madhya Pradesh	73
20	Graphical Representation of mean and SD of physical fitness of rural and urban girls of Madhya Pradesh	74

Chapter I

INTRODUCTION

Health is a very important aspect for every person's life. If a person's health is not good, then he is unable to perform any kind of activity. Health plays an important role in the students' development process. If students have good health, they are actively performing their day-to-day work. If the students are healthy, then they can only provide a good and healthy environment for the one coming.

They make each person very aware of health and then make their busy schedule and take the time and enjoy physical activities. The same, the students are doing the same. Even today, the students are working for the health of themselves and their health.

Health is the greatest asset of men; anyone who has health should follow it carefully, otherwise it may not be lost that it is lost. To make this end, he should have enough knowledge about how he can stay healthy. Health is not only a lack of illness; It is a positive quality of the living body in which people work for fitness and happiness is different.

Health is physical and mental fitness. It is not just freedom from disease and other handicapping condition. There are, however, different degrees of fitness, as is evidenced by the fact that such terms as abundant health, good health, fair health, and poor health are commonly used. These terms evidently refer to different levels of health, which most of us have experienced at one time or another.

Good health enables peoples to enjoy life and to have the opportunity to achieve the goals they have set for themselves. The real purpose of health-is' to develop and maintain

vigor and vitality, to acquire interest and habits in a ways of living that are wholesome and to meet the demands put upon the individuals efficiently, with energy and satisfaction.¹

According to the World Health Organization – “Health is a condition or quality of the human organism expressing the adequate functioning of the organism in given conditions, genetic and environmental”.²

Health is physical and mental fitness. It is not just freedom from disease and other handicapping condition. There are, however, different degrees of fitness, as is evidenced by the fact that such terms as abundant health, good health, fair health, and poor health are commonly used. These terms evidently refer to different levels of health, which most of us have experienced at one time or another.

The human body works like a complex machine, in which though each and every body parts has a separate function but at the same time all the interrelated and interdependent. As a result, the malfunctioning of one part affects the total body functioning. It has been noticed that most of the students are ignorant about their body; for the same reason, they are unable to guard themselves against the various common diseases.³

¹Dr. S. Dheer et.al. “**Introduction to Health Education**,” Delhi: Friends Publication Year, 1991, p.2.

²Dr. Ajmer Singh, et al., “**Essentials Physical Education**,” Kalyani Publication, Year, 2004, p. 208.

³D. K. Gupta “**Health Training in Schools a Handbook for Teachers**,” Delhi: Khel Sahitya Kendra, 1996, p.1.

Anthropometrics Measurement was central concerns of the First Phase of the scientific era of measurement, which began in the 1860s. Current interest in anthropometrics measurement focuses on three areas, growth, and body type and body composition.⁴

Endomorph is characterized by a predominance of soft fatty tissue. Mesomorph by large muscles and bones ectomorph by the frail skeleton and small stringy musculature.⁵

The anthropometrics examination is a supplement and not a substitute for the medical examination it may, however, and frequently does. Indicate physical disorder that is not sufficiently advanced to be detected as a specific pathological state by the physicians. Trained administrator in determining appropriate medical follow-ups can administrate the anthropometrics measurement.

Anthropometrics measurements have contributed to knowledge in physical and health education in relation to body build physical growth.⁶

The main requirement to become a medium pace bowler is a smooth run, which increases in impetus as the crease is approached, a very quick arm action with plenty of wrist movement, and a follow-throw, which throw the whole weight of the body after the ball

⁴A. Allen Phillips and James F. Hank, "**Measurement and Evaluation in Physical Education**", New York John Willey and Sons, 1979, p.223.

⁵D. K. Gupta, "**Health Training in Schools a Handbook for Teachers**," Delhi: Khel Sahitya Kendra, 1996, p.1.

⁵Frank. M. Vendhcci, "**Measurement and Concepts in Physical Education**", St, Louis the C .V. Mos By Company, 1980, p. 234.

⁶Charles Harold. Mc Cloy and Norma Dorothy Young "**Test and Measurement in Health and Physical Education**", New York: Appleton Country Crofts, 1954, p.345.

when it has been delivered. These must combine with physical strength and stamina, accuracy, intelligence, determination, and temperament.

There are variations a pace bowler can resort to a slower ball is most effective for getting a batsman "Caught bowled" the batsman's misjudgment of the pace causing him to play a little too soon. This slow ball by the medium pace bowler is produced by the same method as is employed by slower bowlers, the run is not altered, the arm is brought over at the same speed, but the ball is held loosely

Mental health as defined by Kornhauser (1965) reflects behaviors, perceptions, and emotions that determine individual effectiveness, success, happiness and overall level of excellence of work as a person. It depends on the development and retention of those goals which are neither too high nor too small, which is realistic, successful maintenance in the form of a worthy, effective person (Laxminarayan and Prabhakaran, 1993) for a person's own self Allow. Therefore a mentally healthy person is firm in his intentions and is least concerned with stress and stress. Thus the concept of mental health takes the person's 'Gestalt' approach. It incorporates the concept of personality characteristics and behavior all in one. It may also be understood as the behavioral characteristics of the person.

A mentally healthy person shows a homogeneous organization of desirable attitudes, healthy values, and righteous self-concept and scientific perception of the world as a whole.⁷

Physical fitness is fine tuning for an engine for the human body. This enables us to our ability. Fitness can be described as a condition that helps in seeing, feeling and doing our

⁷Kornhauser, A. "**Mental Health of the Industrial Worker: A Detroit Study**"; New York: Wiley, 1965.

best. Specifically, this is: “The ability to perform daily tasks vigorously and alertly, with energy left over for enjoying leisure-time activities and meeting emergency demands. It is the ability to endure, to bear up, to withstand stress, to carry on in circumstances where an unfit person could not continue and is a major basis for good health and well-being.”⁸

Shirotriya” We are living in an era of growing complexities and pressures where human constitution and capacities are being taxed severally. The stresses relating to the job have become a predominant feature of modern life, exerting far-reaching effects on focal employee's behavior and adjustments n as well as off-the-job. This is the reason that systematic studies of stress in the organizational setting have increased dramatically over the past decade.⁹

The concept of mental health is as old as a human being. In recent years, clinical psychologists, as well as educationist, have started giving proper attention to the study of mental health. However, in India, relatively very few works have been conducted.¹⁰

The mental health of teachers plays an important role in the learning-learning process. If the teacher is impure mind, then they can harm the nation in case of poor teaching and guidance to the students. They cannot do justice with their jobs. His misdeed will not adversely affect his personality, but will create a tendency to malnutrition in children.

⁸Singh, Gill, Bains, Brar, Rathee, “**Modern Text Book Physical Education Health and Sports**”, Kalyani Publication Year, 2000, p.202.

⁹Shirotriya A.K Stress, “Frustration Tolerance and Mental Health among Various Paramilitary Forces”, **Unpublished Pre-Doctoral Thesis**, Lakshmibai National University of Physical Comparison of Occupational Education, Gwalior, 2009.

¹⁰Shirotriya A.K., “Comparative Analysis of Academic Anxiety and Mental Health of Regular Male Participants in Sports in the Government & Private Schools of Uttar Pradesh”, Parmita, **Quarterly Shodh Patrika**, Issue 1, April-June, 2009, p. 90-92.

Mental health as defined by Kornhauser Commutates those behaviors, Concepts and emotions that determine the overall level of personal efficacy, success, happiness and excellence of work as a person It depends on the development and retention of those goals which are neither too high nor too little, which allow for realistic, successful maintenance in itself as a capable, effective person (Laxminarayan and Prabhakar, 1993) are Therefore a mentally healthy person is firm in his intentions and is least concerned with stress and stress. Thus the concept of mental health takes the person's 'Gestalt' approach. It involves the concept of personality characteristics and behavior in all. It can also be understood as the person's behavioral characteristics. A mentally healthy person represents desirable outlook, healthy values and a homogeneous organization of religious self-concept and scientific perception as a whole¹¹.

Fitness means many things to many people. The physician may view fitness as the absence of disease. The body-builder may consider it well-developed muscles, while the young women may think it's a curacies figure. The coach define fitness as the factors related to success in sports, and the physical educator looks for strength, endurance, flexibility, speed, agility, and Physical fitness is many-faceted, basic to it are proper nutrition, adequate rest, good health practices, and good medical and dental cure. However, these are not enough. An essential element is a physical activity. It includes qualities important to individual men's physical fitness. A high level of fitness has a negative impact on both health and daily living.¹²

¹¹Kornhauser, "A **Mental Health of the Industrial Worker: A Detroit Study**"; New York: Willy, 1965.

Physical fitness is the sum total of 5 motor abilities, namely speed, strength, endurance, flexibility, and co-coordinative abilities. Therefore, sports depend to a great extent on these abilities. To improve and maintain physical fitness is the most important aim of sports training.¹³

A longitudinal study of the northern Finland birth cohort of 1966 enabled us to provide new information about the factors associated with these topical items: physical activity, health-related fitness, and obesity during the transition from youth to adulthood. This study evaluated how physical activity and social status in adolescence are associated with physical activity in adulthood, and how a change in the level of physical activity from adolescence to adulthood is associated with overall and abdominal obesity in adulthood. The relationship between occupational, physical activity, and physical fitness in young workers were also evaluated. In addition, population-based reference values of cardio respiratory fitness were produced for young adults.¹⁴

Define: Rural and Urban

The Indian government has two modes for classifying urban and rural areas. The first is the administrative definition based on whether a settlement has an urban or rural local body. The second definition is based on the census of India, which states that settlements having more than 5,000 people, population densities greater than 400 persons per square

¹²Aloke Ghosh, “**Hand Book of Sports Medicine and Physical Fit Caluietlia**”, Allied Book Agency 1980, p. 188.

¹³A. K. Uppal, “**Physical Fitness and Health**”, Gwalior L.N.C.P.E. Publishing, 1993, p. 27-29.

¹⁴ <http://herkules.oulu.fi/isbn9514272331/html/c155.html>

kilometer, of which 75% of male workers are involved in non-agricultural pursuits, are urban together with settlements governed by urban local bodies.

Definition of Urban

The term urban simply means the region or area that is densely populated and possess the characteristics of the human-made surroundings. The people living in such area are engaged in trade, commerce, or services. In the same way, there is high scale industrialization, which results in a much better employment scale. The Urban settlement is not limited to the cities only, but towns and suburbs (suburban areas) are also included in it.

An urban area is an area with people living in a high population density and infrastructure of the built environment. Urban areas that are created through urbanization are categorized by urban morphology as cities, towns, conurbations, or suburbs.

Definition of Rural

The term 'rural' can be defined as a region located outside the cities and towns. It also refers to a settlement area that is outside the boundaries of a city, commercial or industrial area. Therefore, it may include countryside areas, villages or hamlets, where there are natural vegetation and open spaces. Hence there is a low density of population in such area. The primary source of income of the residents is agriculture and animal husbandry. Cottage Industries also form an important source of income here.

There are fewer population densities and smaller settlements in specific rural areas. Agricultural areas are generally rural, although others like the forest are also there.¹⁵

Statement of the Problem

The purpose of the study was find out the health status, mental health status, anthropometric measurements, and physical fitness of rural and urban girls of Madhya Pradesh.

Objectives

1. To access the health status, mental health status, anthropometric measurements, and physical fitness of rural and urban girls of Madhya Pradesh.
2. To compare health status, mental health status, anthropometric measurements, and physical fitness of rural and urban girls of Madhya Pradesh.
3. To compare a various aspect of health status, mental health status, anthropometric measurements, and physical fitness of rural and urban girls of Madhya Pradesh.

Delimitations

1. The study was delimited to randomly select 500 rural and 500 urban girls of Madhya Pradesh.
2. The age group of the subjects 13 to 18 years.

¹⁵ [Htts://www.weekepedia.com/definition/2958/rural-area](https://www.weekepedia.com/definition/2958/rural-area).

Limitation

A true response to the questionnaire and test acted as a limitation of the study.

Hypothesis

It is hypothesized that there will be no significant difference in health status, mental health status, anthropometric measurements, and physical fitness between rural and urban girls of Madhya Pradesh.

Definition and Explanation of the Terms

Health Status

Health status means the present condition of an individual with regards to his physical, mental, and social well being.¹⁶

Health is a condition of the organism which measures the degree to which its aggregate power is able.

Anthropometrics Measurements

These are the dimension of the structure of the human body taken at specific sites to give measures of length, girth, and width.¹⁷

Anthropometrics measurements refer to those measurements of the human body such as height, length, weight, etc.¹⁸

¹⁶ **Ibid**, p.208.

¹⁷ Philip and Hunk, “**Measurement and Evaluation in Physical Education**”, p.219.

Mental Health Status

“The world health organization defines mental health as a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work protectively and fruitfully and is able to make a contribution to his or her community”¹⁹

Physical Fitness

“Physical fitness refers to the organic capacity of the individual to perform the normal task of daily living without undue tiredness or fatigues having a reserve of strength and energy available to meet satisfactorily any emergency demands suddenly placed upon him” Nixon.

As you undertake your fitness program, it's important to heart and to remember that fitness is an individual quality that differs from person to person. It is influenced by age, sex, heredity, personal habits, exercise, and eating practices. You can't do anything about the first three factors. However, it is within your power to change and improve the others where needed.²⁰

¹⁸Donald K. Mathews, “**Measurement and Physical Education**”, Philadelphia: W.B. Saunders Company, 1976, p.19.

¹⁹http://en.wikipedia.org/wiki/mental_health

²⁰ Singh, Gill, Bains, Brar, Rathee, “**Modern Text Book Physical Education Health and Sports**”, Kalyani Publication Year, 2000, p.203.

Significance of The Study

1. The study will be providing information about health status, mental health status, anthropometric measurements, and physical fitness of rural and urban girls of Madhya Pradesh.
2. The study help to physical educationists, coaches, social scientists and sports psychologists, sports scientists, physiotherapist, fitness training, anthropologists, and human physiologists to evaluate health status, mental health status, anthropometric measurements and physical fitness of rural and urban girls of Madhya Pradesh.
3. The study will provide a common frame of reference for comparing the subject's health status, mental health status, anthropometric measurements, and physical fitness of rural and urban girls of Madhya Pradesh.

Chapter II

REVIEW OF RELATED LITERATURE

Raghupathi and Krishnaswamy (2013) ¹Comparing the physical growth and coordinative abilities between urban and rural school-going boys of Bangalore District, Karnataka. The study was conducted on one hundred eighty boys who were in the age group limit of 10 to 15 years. Out of this ninety, boys were from the urban school, and remaining was from a rural school.

Height, weight, chest circumference, differentiation ability & orientation ability were assessed to the subjects. Significant differences were found in physical growth and coordinative abilities. Urban boys had higher height & weight compared to rural boys. The rural boys had greater differentiation ability and orientation ability compared to the urban boys.

Kolekar and Sawant (2013) ²Undertook a cross-sectional study to compare the physical growth amongst healthy school children from the urban and rural areas of Sangli district, Maharashtra, India. A total of 2300 school children were taken for study, out of which 1390 were urban school children and 910 were rural school children. The anthropometric measurements, like height and weight, were taken. Height and weight of urban school children were significantly higher compared to those of rural children. This was

¹Raghupathi, K. and Krishnaswamy, PC, “Comparative Analysis of Physical Growth and Coordinative Abilities Among Rural and Urban School Boys”, **International Journal of Scientific Research**, 2013, p.2 (5):525-527.

²Kolekar, S.M. and Sawant, SU, “A detailed Study of Physical Growth in Urban and Rural Schools from 5 to 13 Years of Age”, **International Journal of Recent Trends in Science and Technology**, 2013, p.6 (2):89-93.

due to differences in the nutritional and socio-economic environment in urban and rural areas.

Singh and Bhola (2012)³ Undertook a study on anthropometric measurements and physical fitness of children from Haryana. For the study, 300 basketball players within the age group of 14 to 16 years who study in the different schools of Haryana were selected. The basketball players were assessed for anthropometric variables and physical fitness. Physical fitness was measured with the help of the AAHPER youth fitness test. The results revealed that the rural basketball players had significantly greater height, trunk length, and leg length compared to the rural players. The rural basketball players also had significantly greater abdominal and shoulder 39 circumferences and hip diameter than the urban basketball players. The urban basketball players were found to have significantly greater triceps, subscapular, thigh and calfskin folds than the rural basketball players. The rural basketball players were found to have significantly better endurance, speed, strength, and flexibility than the urban basketball players.

Maiti et al. (2011)⁴ They have carried out a study on adolescent girls from West Bengal, India. 2545 girls from the various rural and urban schools from the Paschim Medinipur, of age group 10 to 14 years, were selected for study and measured for anthropometric measurements. The results showed that the rural girls had mean nutritional indices such as underweight, stunting, and thinness significantly lower than the urban girls. In the rural areas, 35.4% of girls were underweight, 35.7% of girls were stunted, and 26.3%

³Singh, B. and Bhola, G., "Comparison of Selected Anthropometric Measurements and Physical Fitness of Haryana Schoolboys about Their Social Status", **Indian Journal of Movement Education and Exercises Sciences**, 2012, p.2.

⁴Maiti, S., Ali, K.M., De, D., Bera, T.K., Ghosh, D. and Paul, S., "A Comparative Study on Nutritional Status of Urban and Rural Early Adolescent School Girls of West Bengal, India", **Journal of Nepal Pediatric Society**, 2011, p.31 (3):169-174.

of girls were thin. In the urban areas, 19.6% of girls were underweight, 29.0% of girls were stunted, and 13.6% of girls were thin. The results showed that under nutrition constituted the most important health problems among adolescent girls in rural areas of India.

Kumar and Singh (2011)⁵ I compared the physical fitness among female students of Delhi University from rural and urban areas. One hundred female students out of which 50 were rural and 50 were urban measured for weight and height as well as physical fitness tests. The outcome of the study revealed that rural female students were found to have significantly greater strength, endurance, speed, and agility as compared to urban female students. On the other hand, urban female students were found to have significantly greater height and flexibility than rural female students.

Gill et al. (2010)⁶ Conducted a study to compare physical fitness components between female students belonging to rural and urban set-ups. A total of 100 female students, 50 rural and 50 urban of Punjab University, Patiala were assessed for speed, strength, endurance, agility, and flexibility. The height and weight were also measured. The results revealed that rural female students were found to have significantly higher strength, endurance, speed, and agility than the urban students. Urban female students, on the other side, were found to have significantly greater weight and flexibility compared to the rural female students.

⁵Kumar, S. and Singh, S., “Comparative Study of Physical Fitness Components of Rural and Urban Female Students of Delhi University Delhi”, **International Journal of Transformations in Business Management**, 2011, p.1 (1):1-11.

⁶Gill, M., Deol, N.S. and Kaur, R., “Comparative Study of Physical Fitness Components of Rural and Urban Female Students of Punjabi University”, Patiala. *Anthropologist*, 2010, p.12 (1):17-21.

Kaur and Singh (2010)⁷ Conducted a study on the anthropometric characteristics and motor abilities of girls from Punjab. For the study total 34 (17 rural and 17 urban), teenage girls, 17 from rural areas and 17 from urban areas, of the age group of 15 to 17 years were selected. All the girls were measured for diameters, circumferences, and skin folds thicknesses. The study revealed that the rural sports girls were found to have significantly greater height and weight compared to the urban sports girls. The rural girls also had a significantly higher rate of a mesomorph, and lesser value of various skin folds thicknesses compared to urban girls. It was also found that the rural girls were significantly better in standing broad jump, 50 m dash and 600 yards run and walk test compared to the urban girls.

Bhavan (2010)⁸ Conducted a study on anthropometric and physical variables of kho-kho and handball players of Andhra Pradesh School Games teams. Forty male players of kho-kho and handball of the age group 16 to 20 years were selected for the study. All the players were measured for height, weight, sitting height, body fat, speed, endurance, explosive strength, and muscular endurance. The results of the study showed that handball players were found to have better explosive strength, muscular endurance, height, weight, body fat, and somatotype compared to the kho-kho players. On the other hand, the study reported that the kho-kho players were found to have significantly better speed and endurance than the handball players.

⁷Kaur, B. and Singh, G., “A Comparative Study of Anthropometric Characteristics and Motor Abilities Between Urban and Rural Sports Girls”, **British Journal of Sports Medicine**, 2010, p.44 (Supple- I):i39.

⁸Bhavan, RP, “Comparison of Anthropometric and Physical Variables Among Kho-Kho and Handball Players of Andhra Pradesh School Games Teams”, **British Journal of Sports Medicine**, 2010, p.44 (Supple I):i34.

Rout and Nayak (2010) ⁹Conducted a study on the anthropometric measurements and motor fitness of tribal and non-tribal soccer players of Orissa. Eight anthropometric measurements were taken of all the soccer players. Cooper's JCR motor fitness test was used to measure the motor fitness of the players. Warner Soccer Skill Test items were used to measure soccer skill performance of the players. The results of the 36 study revealed that there was a significant difference between the tribal and non-tribal soccer players for height and ankle circumference. The non-tribal soccer players were found to have significantly greater height compared to the tribal soccer players. The tribal players were had significantly greater ankle circumference compared to non-tribal soccer players. The soccer players with superior motor fitness and greater ankle circumference had better skill performance than the players with low motor fitness and smaller ankle circumference. There was no significant difference between tribal and non-tribal soccer players in soccer skill performance.

Mo Siu-Mei Lee, et al. (2009)¹⁰Found that the prevalence of psychiatric morbidity and level of job satisfaction, along with a link among psychological distress and job satisfaction and associated factors, among non-physician employees of a laboratory medicine department at a university medical center. A cross-sectional descriptive and co relational study design were used for this purpose. It shows that

Employees were requested to fill a set of questionnaires including five items Short Character Rating Rating (BSRS-5) and 40-Item Job Satisfaction Questionnaire (JSQ-40). A

⁹Rout, P., and Nayak, A.K., "Comparison of Skill Performance Among Tribal and Non-tribal Soccer Players in Relation to Their Motor Fitness and Anthropometric Dimensions", **British Journal of Sports Medicine**, 2010, p.44 (Suppl I):i34.

¹⁰Mo Siu-Mei Lee, et al., "Relationship Between Mental Health and Job Satisfaction Among Employee in a Medical Center Department of Laboratory Medicine", **Journal Elsevier of& Formosan Medical Association**, 2009, p.108 (2): 145-154.

total of 38 (26.21%) male and 107 (73.79%) women, whose average age is 40.80 7.3 years, has completed the entire set of questionnaires. The spread of psychotherapy malaise as defined by BSR-5 was 34.33% with information ranking at the highest (23.36%), followed by depression (23.37%), hostility (24.63%), anxiety (23.13%), and inferiority (20.15%). The global satisfaction score on the scale of 0 to 100 indicated that most respondents were satisfied with their jobs. In general, subjects with more server psychological crisis reported lower levels of job satisfaction on five dimensions measured by JSQ-40. The factors related to organizational communication were particularly important in overall job satisfaction and the severity of the psychological crisis. The spread of psychiatric illness in the workplace is high. The severity of the psychological crisis is negatively linked to job satisfaction. It is recommended to improve the mental health and job satisfaction of employees to detect psychiatric morbidity through self-administered screening questionnaire, as well as the implementation of organizational mental-health promotion programs.

Nagai Michiko et al. (2007)¹¹ Compare the possibility of having a minor psychiatric disorder (MPD) among the civil servants with school teachers and to check that the teachers were especially involved with the MPD in the teachers. He conducted a questionnaire-based survey of 403 teachers working as state schools and 611 civil servants as a comparative group in a mid-size city of Japan. The response rate for teachers was 59.6% and for public servants 62.0%. Mental health was assessed using the 28-item General Health Questionnaire (GHQ-28), according to which people with six or higher scores were considered as MPDs.

¹¹Nagai Michiko et al., "Poor Mental Health Associated with Job Dissatisfaction Among School Teachers in Japan", **Journal of Occupational Health**, Vol. 49, 2007, No.6, p.515-522.

Logistic was used to identify factors related to regression analysis of the MPD. Although the proportion of subjects with the MPDS among teachers was higher among civil servants but adjusted for the possible potential conflicts in proportion was not statistically significant in much logistic regression analysis. In a separate analysis of teachers, reducing job satisfaction, and having less time for leisure was associated with the possibility of having an MPD. In the group of civil servants, working for long periods, reducing life satisfaction, the history of sick leave and physical illness increases the likelihood of an MPD. When the analysis was conducted separately for male and female teachers, job dissatisfaction was only associated with the MPP in female teachers. Teachers of Japanese school teachers, especially women teachers, were found to be associated with poor mental health, job dissatisfaction.

Vida Volbekien (2007) ¹²So and so the previous decade may have created a less active lifestyle and a decline in fitness among Lithuanian Children. The study was to analyze the differences in fitness-related fitness between 12-, 14-, and 16-year-old Lithuanian boys and girls from 1992- 2002. Methods: Children's height and weight were measured, and the Europhite Test battery was used to analyze children's fitness. For analyzing the differences, the children of year 12 (n = 697), 14 (n = 733) and 16 (n = 579) years were tested. Result: Boys and girls of A1-3 age group performed better in sitting and under examination (12.4-19.8%, P <0.001) and 20 meter shuttle run test (30.0-46.0%, p <0.001) but sit low -99 (3.5-7.3%, p <0.05) in 2002 compared with the results in 2002. Girls' performance was better in 2002 compared to 1992 in Long Broad Jump Tests (4.9-5.5%, p <0.001). These differences

¹²Vida Volbekiene; Ausara Griuciute, "Health-Related Physical Fitness Among School Children in Lithuania" A Comparison From 1992 to 2002, **Scandinavian Journal of Public Health**, Vol. 35, 2007, No.3, p. 235-242.

were not significantly affected by weight, body mass index (BMI) and "height + BMI"

Conclusion: Decrease in aerobic fitness and flexibility and linguistic schoolchildren showed a minor increase in the endurance of stomach muscles. The power of the foot muscles was reduced in girls but remained unchanged in the boys. The decrease in daily physical activity is one of the most important factors contributing to the reduction of aerobic fitness and Flexi 9 elite, and PE correction is not able to compensate for this effect. Neuro-muscular and cardio-respiratory fitness and morphological fitness trend among Swedish teenagers Between 1987 and 2001 Method: Comparison of data from two samples, 1987 (n = 479) and one 2001 (n) 1470. Subject to functional testing of lower limbs, trunk and upper body, sub-maximum error metrics, and muscle power in the measurement of body mass and height. Result: Cardio-respiratory fitness showed only small changes between boys and boys between 1987 and 2001. There was no change in girls. Neuro-muscular fitness, measured by three functional tests, was lower in 2001 than in 1987. The most obvious changes in these functional tests were found in the arm-hung test, while changes in the lower body and trunk strength tests were less. Our results show that the difference in the spread of overweight among adolescents between 1987 and 2001 is mainly due to a major change in the most inefficient group. The elite group showed only marginal changes. CONCLUSION: We suggest that the fitness of intern neuro-muscle is at least partially due to the difference in the quantity and nature of the physical activity, and this may result in health later in life. P.E.

Singh M. & Singh G. (2006)¹³ Assess psychological tension, work-family conflict, and levels of anxiety, depression, physical symptoms, and social dysfunction of middle-aged

¹³Singh M. & Singh G., "Assessment of Mental Health Status of Middle-Aged Female School Teachers of Varanasi City", **The International Journal of Health**, 2006 Volume 5 Number 1.

female school teachers. In the year 2001-2002, 50 middle-aged (MEAN 49 SD = 49.42) 3.46 of the 15 government recognized girls' schools in Varanasi city were selected gradually. An interview schedule and two questionnaires, i.e., general health questionnaire and Psycho-Social stress scale, were administered simultaneously. Psycho-Social Stress Scale Score showed moderate-high levels of stress in 54% of subjects, while 18% had fewer scores in cases, while 28% were from low to moderate tension. The level of concern was seen in 64% of cases and moderate in 32% of cases. In 92% of cases, depression levels were low. The somatic symptom score was moderate in 44% of cases, while the social dysfunction score was seen to be moderate in 80% of cases. The overall assessment shows that although the subjects are generally normal, in a significant proportion, there is a risk of developing.

Sherrill Evans et al. (2006) ¹⁴Assess psychological tension, work-family conflict, and levels of anxiety, depression, physical symptoms, and social dysfunction of middle-aged female school teachers. In the year 2001-2002, 50 middle-aged (MEAN 49 SD = 49.42) 3.46 of the 15 government recognized girls' schools in Varanasi city were selected gradually. An interview schedule and two questionnaires, i.e., general health questionnaire and Psycho-social stress scale, were administered simultaneously. Psycho-Social Stress Scale Score showed moderate-high levels of stress in 54% of subjects, while 18% had fewer scores in cases, while 28% were from low to moderate tension. The level of concern was seen in 64% of cases and moderate in 32% of cases. In 92% of cases, depression levels were low. The somatic symptom score was moderate in 44% of cases, while the social dysfunction score was seen to be modest in 80% of cases. The overall assessment shows that although the

¹⁴Sherrill Evans et al., "Mental Health, Burnout and Job Satisfaction Among Mental Health Social Workers in England and Wales", **The British Journal of Psychiatry**, 2006, p.188: 75-80.

subjects are generally normal, in a significant proportion, there is a risk of developing psychosomatic stress generated problems that can affect their mental health. Revocation strategies and modification of planned interventions are desirable. Stress may exacerbate recruitment and retention problems. Employers must recognize the demands placed upon MHSWs and value their contribution to mental health services.

Bharati et al. (2005)¹⁵ Conducted a study to examine the nutritional status of school children from Raichur region with the help of anthropometric measurements. For this study, a total of 560 children, from rural and urban areas were measured for height, weight, and mid-upper arm circumference. The results showed that the nutritional status of children from urban and rural areas was lower compared to the NCHS standard. The boys had reported significantly greater anthropometric measurements than the girls. The children from the urban area were found to have significantly greater all the anthropometric measurements than the rural children. The percentage of wasted and stunted children was higher in rural areas compared to the urban areas.

Srivastava S. K. (2002)¹⁶ Conducted study to assess the personality and mental health of the primary and secondary teachers. In a sample, 150 primary and 150 secondary teachers were selected from Hardware District (Uttaranchal). Introversion-Extroversion Personality Test and Mental Health Inventory were administered to respondents/teachers during working hours. Results show that personality types/symptoms affect the mental health of primary and secondary teachers and extroverted teachers enjoy better mental health compared to intro teachers.

¹⁵Bharati, P., Itagi, S., and Negeri, SN, "Anthropometric Measurements of School Children of Raichur, Karnataka", **Journal of Human Ecology**, 2005, p.18 (3):177-179.

¹⁶Srivastava S.K., "An Assessment of Personality and Mental Health Among Primary and Secondary Teacher", **Health Administrator**, Vol: XVII, Number 2002, p.1:50-53.

Catherine So-Kum Tang et al. (2001) ¹⁷Examined the mental health consequences of job stress among Chinese teachers in Hong Kong. A total of 269 Chinese teachers participated in Study 1, who provided cross-sectional data regarding associations between stress processing factors, burnout, and negative mental health. The study was a six-month longitudinal study which aims to establish the direction of associations between the variables envisaged between two-time points, with a separate sample of 61 Chinese secondary school teachers. The results of structural equation modeling analysis on cross-sectional data on T1 have shown that stress-related efficacy of self-efficacy and active attitude related to negative burnouts, which had a direct impact on negative mental health. Tension processing agents were also directly linked to the teachers' mental health status. Results of similar analysis on longitudinal data on T2 further indicated that the burnout on T1 had a direct impact on Burnout on T @, which had a direct effect on negative mental health on T2. The discoveries and limitations of the study were discussed.

Kaur (1999)¹⁸ I compared the motor fitness of rural and urban girls studying in Punjab schools. In all 4000 girls of grade eleven were selected as a sample for the study. The AAHPER youth fitness test was used to assess the physical fitness of girls. The results showed that rural girls possessed significantly better shoulder strength than urban girls. Abdomen strength of rural girls was found significantly better than urban girls. Leg strength of rural girls was also found significantly better than urban girls. The rural girls were found

¹⁷Catherine So-Kum Tang et al., "Mental Health Outcomes of Job Stress Among Chinese Teachers: Role of Stress Resource Factors and Burnout", **Journal of Organizational Behavior**, 2001, Volume 22 Issue 8, p. 887-901.

¹⁸Kaur, J., "Assessment of Motor Fitness of Rural and Urban Senior Secondary School Girls of Punjab State", **Unpublished Ph. D. Thesis**, Panjab University, Chandigarh, 1999.

to have significantly better performance in agility and cardio-vascular endurance than the urban girls.

Cheryl J. Travers and Cary L. Cooper (1993)¹⁹ UK Tense check among teachers; the data was gathered through questionnaires, random sampling of 1790 teachers prepared from the cross-section of school types, areas, and teaching grade. An analysis of the results of the universities revealed that teachers experienced less job satisfaction and poor mental health than other highly stressed business groups. Regarding the various subgroups in the sample, the bisexual analysis revealed that the relationship between stress and the level of the membership of a particular subsystem is necessary to consider (for example, being a headman). Further investigations of data through the use of multivariate analysis revealed that ten reliable factors could be obtained regarding 'source of job pressure' for this sample of teachers. Teachers were found to be reporting related to stress. UK

Chandel (1993)²⁰ Undertook a study to compare the selected physical fitness variables and anthropometric measures of tribal and non-tribal students of Himachal Pradesh. The results revealed that in all tests and measurements, the composite mean scores of tribal students were higher than their non-tribal counterparts, but none of the difference in the means was found statistically significant.

¹⁹Cheryl J. Travers and Cary L. Cooper, "Mental Health, Job Satisfaction and Occupational Stress Among UK Teachers", **Work & Stress**, Volume 7, Issue 3 July 1993, p. 203-219.

²⁰Chandel, AS, "Comparative Study of Selected Physical Fitness, Physiological and Anthropometric Variable of Tribal and Non-tribal Students of Himachal Pradesh", **Unpublished Master's Thesis**, Chandigarh: Punjab University, 1993.

Winter Haider & Joy Erin (1993) ²¹ I compared two specific physical fitness programs for the law enforcement officer in Connecticut. The Connecticut state police specific recruit/trainee program & the united states marshal specific fitness in total programmer the Connecticut state police require specific physical fitness conditioning through recruit trainee program two programs were examined for the comparable account. Assessment variable includes body composition sit-up/min Push-up/min flexibility, a 1.5-mile run and blood pressure, including resting heart rate. Particular was placed on a scientific level. Quite was analyzed by one-way analysis of variant and by the Fisher exact test or 2*2 tables the outcome of this analysis is showed that officer going for specific physique fitness program reveals a significant value to the specific physical fitness condition of the law enforcement officer.

Rimmi (1992)²² Conducted a study to see the differences in anthropometric characteristics and physical fitness between urban and rural students of Patiala district of Punjab. The results showed no significant difference in age and weight between rural and urban students. The significant difference was found in height between rural and urban students. Urban males were found to have significantly greater standing vertical jump than the rural students. The rural students had significantly more excellent performance in 50 meters dash and endurance performance than the urban students. The rural girls were significantly better than urban girls in the physical fitness tests.

²¹Winter Haider & Joy Erin, "A Comparative Study of Physical Fitness Programming for Low Enforcement Officers in Connecticut", **Dissertation Abstract International**, Dec.1993, 1786.

²²Rimmi, S., "A Comparison of Physical Fitness of Urban and Rural Secondary School Female Students", **Unpublished M. Phil. Thesis**, Punjabi University, Patiala, 1992.

O Ekblom (1990)²³The trends in neuro-muscular and cardiorespiratory fitness and morphological fitness in Swedish adolescents between 1987 and 2001. *METHOS*: comparison of data from two samples, one from 1987 (n=479) and one from 2001 (n=1470). Subjects underwent for functional tests of muscular strength in the lower limbs, trunk, and upper body, submaximal ergo metrics and measurement of body mass and height. **RESULT:** Cardiorespiratory fitness showed only small changes in 1987 and 2001 among boys, with no changes in girls. Neuromuscular fitness, as measured by three function test, was a lower in 2001 compared to 1987. The most pronounced difference in these functional test was found in the arm-hang test, while O Ekblom, "Health-Related Fitness in Swedish Adolescent," Sweden 24 (1990); 196. Changes in the lower body and trunk strength test were less. The result of the killing indicated that between 1987 and 2001, the difference in the spread of overweight among adolescents is mainly due to a major change in the most disqualified groups. The best groups showed only marginal changes.

Hebbelink(1982)²⁴ Anthropometrics measurements of the monitorial Olympic Games have been published, height weight, segmental lengths breadths, girths and skin folds subjects were the male populations of Olympic swimmers (N-23), cyclists (Nz -18), canoeists (N-12), rowers (Nz-65) Field hockey players (N-33), Gymnasts (N=11) and fencers (N=9), A one-way analysis of variance or ANOVA was applied. When a comparison was made among male Olympic athletes in seven sports, Swimmers were found to be the youngest. The rower was more substantial and taller and had greater sitting height. Leg

²³O Ekblom, "**Health-Related Fitness in Swedish Adolescent**", Sweden 24, 1990: 196.

²⁴M. C. Hebbelink, "**Selected Anthropometric Characteristics of Montreal Olympic Athlete' Physical Structure of Olympic Athletes**", New York: S. Karger, Basel Muncher, 1982.

length, shoulder, and hip breadth and forearm and thigh girths than most other sports body fat. No significant F- Ratio were found within or between the two groups for any of the experimental variables measured. Either the caloric expenditure during the workouts was insufficient to cause change inner fat metabolism, or dietary intake was modified to maintain the body composition.

Gangadharam (1981)²⁵ Conducted a comparative study that selected anthropometric measurements, i.e., height, chest girth, upper arm girth, calf girth and weight of 60 athletes of different sport and concluded that volleyball players significantly differed from the basketball and hockey players. The group did not differ significantly in any other anthropometric measurements undertaken in this study.

Harris & Linda (1981)²⁶ Studied the relationship between physical fitness and attendance in school, academic achievement, and self-esteem in seventh-grade middle school students. A correlation study was conducted in which 320 seventh grade students in two middle schools were chosen as the subjects. The findings indicated that being fit or non-fit did not affect on days absent from school.

Yi-Ching Huang and Robert²⁷ M. Malina, Physical activity, and health-related physical fitness were evaluated in 282 Taiwanese teenagers at the age of 12-14. In two junior high schools in Taiwan, subjects were randomly selected from the 7th, 8th and 9th classes. Physical activity was estimated as total daily energy expenditure, and energy expenditure

²⁵T. Gangadhar, "A Comparative Study of Selected Anthropometric Measurements of Athletes of Different Sports", **Unpublished Master's Thesis**, Jiwaji University, 1981.

²⁶Dawson Harris & Christine Linda, "Relationship Between Physical Fitness and Attendance in School Academic Achievement and Self-esteem", **Dissertation Abstract International**, 1981.

²⁷<http://herkules oulu.fi/isbn9514272331/html/c155.html>

was estimated from moderate to vigorous physical activity up to 24 hours of activity records ranging from three days to weekdays and one weekend. Was there Health Fitness Assessment The form of the one-mile run (cardio endurance), time-sit-up (abdominal strength and endurance), sit-and-reach (lower back flexibility), and subcutaneous obesity (the sum of triples, subculture) was done in. Supernatural and medical calf skin folds). Physical activity is correlated with a one-mile run performance and sit-end-access important and positively, but not with sit-up and subcutaneous obesity. Overall, the strength of the relationship between the estimated energy expenditure and the typical fitness items in the total sample varies from low to medium, only about 1% to 12% of the variance in the fitness variable being told by the estimated energy expenditure. Active vs. Passive and Fit vs. Inappropriate Teenagers provides additional insights. The more active (highest quartile) cardio aspirants are more fit in endurance and sit-and-reach, and one-mile run (better time, least quartile) and more fit in the sit than the less active (least quartile) The-and-reach (highest quartile) are more active than, the lower fit in each item. Physical activity is often defined in terms of energy expenditure because of any physical movement produced by the skeletal muscles that greatly increases the energy expenditure on the level of comfort (Bauchard and Shepherd 1994). The dose or volume of physical activity can be calculated from the frequency, duration (time), intensity, and type of physical activity. Although physical activity is often evaluated in terms of energy expenditure, it can be seen as a bicultural behavior: energy is expended inactive behaviors that occur in different forms and cultural contexts (Malina 2001a).

Leisure-time physical ²⁸The activity can be defined as a broader descriptor of activities participating during the free time, depending on the individual's interests and needs. These activities include formal exercise programs as well as participation in informal activities such as walking, hiking, gardening, and dance, etc. (Holly 2001). Exercise is a subset of the physical activity of leisure-time and can be defined as a planned, structured, and repetitive physical activity to improve or maintain one or more components of physical fitness. (Cabperson et al. 1995). The term sport is used in North America, and it refers to a form of physical activity that involves competition, but in Europe, the term sport may also embrace exercise and recreation (Bouchard & Shepherd 1994). Occupational, physical activity is physical activity that is associated with the performance³ of a job. The relatively new terms health-related physical activity and health-enhancing physical activity are sometimes used when the health effects of physical activity are in focus. Habitual physical activity may be defined as the level and pattern of energy consumption during the usual activities of life, including both work and leisure (Andersen et al. 1978).

Physical fitness ²⁹An adaptive state that can be defined as a group of attributes that people have or that are related to physical activity (Holly 2001). Physical fitness can be divided into performance and health-related fitness. Performance-related fitness is related to the characteristics related to performance in various sports or in some businesses. Health-related fitness includes those components of physical fitness that are influenced by routine physical activity and which are related to health conditions. Health-related fitness is defined as being able to do daily activities in a vigorous way, and the symptoms and abilities

²⁸ <http://herkules;oulu.fi/isbn9514272331/html/c155.html>

²⁹ <http://herkules.oulu.fi/isbn9514272331/html/c155.html>

associated with hypothyroidism and early risk of conditions before the condition. (Bouchard & Shepherd 1994). According to the Toronto model presented by Bouchard & Shepherd (1994), the components of health-related fitness are defined as morphological, muscular, motor, cardio respiratory, and metabolic fitness (Fig. 1). Morphology refers to fitness body structure and strength of the bone (Skinner and Oja 1994). Body structure describes the amount of fat mass and fat-free mass and also considers whether body fat is distributed peripherally or abdominally (Howrah 2001). Muscular or musculoskeletal fitness indicates muscular strength, muscular endurance and flexibility, and motor fitness refers to postural control (Skinner & Oja 1994). Cardio respiratory fitness refers to the functioning of the heart and respiratory system to supply oxygen to muscles working during heavy dynamic exercise (Holly 2001), and during a maximum exercise test, direct measurements of Max Oxygen Uptec (VO_{2max}) is considered as the standard of gold. Cardio respiratory fitness evaluation. Metabolic fitness was carbohydrate, and lipid metabolism, usually in the ratio of glucose tolerance, insulin sensitivity, lipid profile, and usually, lipid oxidized oxygenation during stable state exercise (Bouchard and Shepherd 1994)

Chapter III

PROCEDURE

In this chapter is the selection of subjects, criterion measure, questionnaires and test details, administration questionnaires, analysis of data, and the statistical process has been presented.

Selection of Subjects

500 rural and 500 urban girls of 13 to 18 year age randomly selected as a subject for the study.

Criterion Measure

The criterion measure of the study was the score obtained from the questionnaire of health status, mental health status, and anthropometric measurements & Physical fitness test.

Description of Questionnaire and Test

Health Status

The psychological component of the quality of life is considered; as a result, measure. To assess the psychological aspect of quality of life (Goldberg and Hilieer 1979) 28- Item edition of the General Health Questionnaire (GHQ-28) was used. The general health questionnaire-28 is often used as an indicator of psychological well-being, and this latter creation resembles the psychological dimension of the quality of life.

Measures: - In GHQ-28, the respondent is said to compare the recent psychological state with its normal state. Four options are available for each questionnaire item. (1-not at all, 2-not more than normal, 3- higher than usual, 4-to-much too — scoring process (1, 2, 3, 4). And the total scale score is from 28 to 112. High score weakens the patient's psychological well-being.

Mental Health Status

To assess Mental Health Status (Dr.Arun Kumar Singh and Dr. Alpana Sengupta 2005) 130- items version of the Mental Health Battery (MHB-SS) used. This mental health battery contains six popular indexes of mental health, i.e., (1) emotional stability, (2) overall adjustment, (3) autonomy (4) safety-insecurity, (5) self-concept, and (6) intelligence. A brief description of the dimensions used are as follows:

Emotional stability: This is to experience stagnant subjective emotions that have positive or negative values for the person.

Over All Adjustment: It refers to the person's various aspects of the environment, such as obtaining a holistic, harmonious balance between home, health, social, emotional and school demands on one side and on the other hand the sensation.

Autonomy: It refers to a phase of freedom and self-determination in thinking.

Security-insecurity: This refers to the high (or low) sense of security, confidence, and fear, freedom, or anxiety, especially in relation to meeting the present or future needs of a person.

Self-concept: This refers to the total view of the person and the sum of the evaluation of knowledge and achievements towards himself.

Wisdom: It refers to the general mental capacity, which helps the person to reasonably think

and behave purposefully in the environment.

Reliability: both the stable stability reliability and the internal sustainability reliability of mental health batteries (MHB) were calculated. There are six parts of this trial. Test-retest reliability of all six parts of mental health battery, from first to sixth, i.e., emotional stability, overall adjustment, autonomy, safety-insecurity, self-concept, and intelligence are 0.876, 0.821, 0.767, 0.826, 0.786, and 0.823. Respectively and their odd equations are 0.725, 0.871, 0.812, 0.829, 0.861 and 0.792, respectively.

Validity: MHB was validated against various tests which were first developed. Part I of the MHB was validated against the first developed emotional stability test by Sen Gupta and Singh (1985). This part has 0.673 concurrent validity. Part II was first validated against Hindi conversion of Bells Adjustment Inventory by High School Adjustment Inventory (HSA1) and Mohsin, Shamshad and Jehan (1987), developed by Singh and Gupta (1987). This section has 0.704 concurrent validity. Part-II Part-V and I were calculated for validity, which was found to be 0.681 and 0.601, respectively. Part-4 was validated against the neuroticism scale of the MPI optimized by Jalota and Kapoor (1975). Its concurrent validity was found at 0.821. Similarly, Part VI was validated against Jalota Group General Mental Ability Test. (1976). This section has a current validity of 0.823.

Anthropometric Measurements

Dr. Devinder K. Kansal, (Test and Measurement in Sports and Physical Education) used the following Anthropometric variables selected for the study.

General Body Measurements:

1. Body Weight.
2. Stature Height.
3. Elbow Width. (Diameter)
4. Knee Width. (Diameter)
5. Upper - Arm Circumference.
6. Fore - Arm Circumference.
7. Thigh Circumference.
8. Calf Circumference.
9. Biceps Skinfold Width.
10. Triceps Skinfold width.
11. Thigh Skinfold width.
12. Calf Skin fold width.

Anthropometric Measurements

1. Body Weight:

Objective: To measure the weight of the subjects.

Equipment: Portable Weighing Machine.

Description: The weight of the subject was taken with a weighing machine. The machine pointer was set to zero. The subjects were allowed to wear minimal clothes. They were wearing t-shirts and vest but were asked to stand on the machine without shoes and one by one.

Scoring: The weight was recorded in the nearest half of one kilogram. For every One the needle of measurement was set to zero. The calibration of the machine was checked and stopped for measuring standard weight kg.



Figure1:- Measuring Body Weight of the Subject

2. Standing Heights:

Objective: To measure the vertical height of the subjects.

Equipment: Flexible Steel Tape and Stadiometer.

Description: An upright plain wall was used to measure the standing height of the subjects.

A Scale, in centimeters, was drawn on the wall. After removing the

Shoes, the subject stood erect, with his heels, buttocks and upper back in contact with the scale and arms hanging naturally on the sides. Stiff cardboard was held horizontally on his head slightly pressing the head and touching the scale marked on the wall at the right angle.

The subject was asked to stay out by lowering the head, and the reading indicated by the lower end of the hardboard on the scale was recorded accordingly.

Scoring: Height was recorded to the nearest centimeter.



Figure 2:- Measuring Standing Height of the Subject

3. Elbow Widths (Diameter)

Objective: To measure the straight distance between the two outermost points on the condyles of the lower end of the humerus.

Equipment: Sliding Caliper

Description: Width between Humor's medial and lateral epic was measured with the upper arm horizontal and making a right angle with the forearm. The angle of the caliper elbow was applied to the angle bisecting. There was little pressure on the crossbar to compress the underarm tissue. The measurement is taken either in mm.



Figure 3:- Measuring Elbow Widths of the Subject

4. Knee Widths. (Diameter)

Objective: Measure the knee width by using the sliding caliper.

Equipment: Sliding Caliper.

Description: With the individual seated and the knee bent at a right angle, the greatest distance between the lateral and medial epicondyles of the femur was measured with the sliding calipers with slight pressure on the crossbars. The measurement is either taken in mm or cm.



Figure 4:- Measuring Knee Widths of the Subject

5. Upper - Arm Circumference

Objective: To measure the midpoint of the Upper arm between the inferior border acromion process and the superior border of the top of the radius while the arm was hanging freely by the side.

Equipment: Steel Tape.

Description: With the arm extended and hanging loosely at the side of the subject, the circumference was measured with a flexible steel tape at the level halfway between the tip of acromion and olecranon. Measurement is taken either in mm.



Figure 5:- Measuring Upper Arm Circumference of the Subject

6. Fore - Arm Circumference

Objective: To measure the midpoint between the olecranon process of the ulna and styloid process of radius bones by flexible measuring tape.

Equipment: Steel Tape.

Description: With the arm hanging loosely at the side, the steel tape is wrapped around the forearm just below the elbow point, and the maximal measurement is taken by moving the tape slightly up and down keeping the tape in the horizontal direction. Measurement is taken either in mm.



Figure 6:- Measuring Fore- Arm Circumference of the Subject

7. Thigh Circumferences

Objective: To measure the thigh circumference.

Equipment: Flexible Steel Tape.

Description: The circumference of the thigh was measured with the help of flexible steel tape placed around the point of the upper thigh perimeter, along with its top edge, placed below the fold of the thigh. The subject stood with body weight evenly distributed on both feet.

Scoring: The measurement was recorded to the nearest CM.



Figure 7:- Measuring Thigh Circumference of the Subject

8. Calf Circumferences

Objective: To measure the calf circumference.

Equipment: Flexible Steel tape.

Description: Calf circumference was taken with the help of the steel tape at the maximum circumference on the calf in a place at the right angle to its long axis. The leg was held hanging over a tabletop so that the tape measure may be in a horizontal plane. In this position, the calf muscle is fully relaxed.

Scoring: The measurement was recorded in the nearest centimeter.



Figure 8:- Measuring Thigh Circumference of the Subject

9. Biceps and Triceps Skin Fold Width

Objective: To measure the body fat percentage.

Equipment: Skin folds Caliper Sketch Pen.

Description: The subject with naked arms was asked to stand at ease with hanging arms. Usually, the midpoint of the upper arm marked previously for measuring upper arm circumference help to provide a landmark for measuring biceps and triceps skin folds are also to be taken at exactly the same level where the upper arm circumference is measured. The lighter arm of the caliper was slowly released so as to put full pressure of the jaws on the vertical skin fold. The reading was noted from the dial of the caliper about two seconds after leaving the smaller arm of the caliper when the reading was quite stable.

Scoring: The measurement was recorded in millimeters.



Figure 9:- Measuring Biceps Skin Fold Width of the Subject



Figure 10:- Measuring Triceps Skin Fold Width of the Subject

10. Thigh Skin Fold Widths:

Objective: To measure the body fat percentage.

Equipment: Skinfold Caliper.

Description: The subject was asked to sit on a table with a naked thigh and legs hanging freely. The skinfold was picked about 1 cm at previously marked thigh on the anterior side.

Scoring: The measurement was taken in millimeters.



Figure 11:- Measuring Thigh Skin Fold Width of the Subject

11 Calf Skin Fold Widths:

Objective: To measure the body fat percentage.

Equipment: Skinfold Caliper.

Description: The subject was asked to sit on the tabletop comrade in such a way that one foot was in front of the long part of a table and the other was in front of the table width. The examiner sat on his clutches between the legs of the subject and raises the skin of the skin in the middle part of the left foot of the subject, and the jaw of the caliper fits exactly to the marked level where the periphery of the calf is measured.

Scoring: The reading was recorded in millimeters.



Figure 12:- Measuring Calf Skin Fold Width of the Subject

Physical Fitness

AAHPER Youth Physical Fitness Test: - In 1958, the research committee of American Alliance for Health, Physical Education and recreation constructed a Youth physical fitness test battery for the nationwide use for assessing the fitness level of America youth (Hunsicker, 1958). Subsequently, extensive data were collected, and the national norms were revised (AAHPER, 1965). This test battery included the following seven test. In 1976, AAHPER Youth fitness test was again revised, and the following modifications were made in six tests. The **AAHPER** fitness test which was modified in Indian circumstance by Aniruddha Kumar Diwakar 2002 was used for data collection for this study.

- (i) Pull-ups (boys) or Inclined Pull-ups (girls).
- (ii) Sit-ups (Girls and Boys).
- (iii) Shuttle Run;
- (iv) Standing Broad Jump.
- (v) 50 Meter Dash.
- (vi) 600 Meter Run-Walk.

(i) Pull-Ups (Body) or Inclined Pull-Ups (Girls)

Equipment:- A Wood or Metal bar approximately 1.5 inches in diameter piece of pipe or the rungs of a ladder may also be used and stopwatch.

(b) Inclined Pull-Ups

Purpose: - To Measure the Body Strength.

Equipment: Adjustable horizontal bar approximately 1½ inch in diameter was preferred.

Test administration: Adjustable the height of the bar to the subjects chest level, subject grasps the bar with the palm facing out, extends legs the bar, keeping the body straight with heels on the floor, subject fully extends arms to they form an angle of 90 degrees with the body line. Subject pulls the body up with the arms until the chest touches the bar. Lower the bodies until the elbows were fully extended. Repeats the exercise as many as possible.

Scoring: Recorded the number of complete pull-ups to the nearest whole number.



Figure 13:- Inclined Pull-Ups

(ii) Bent-Knee Sit-Ups

Purpose: -To measure the efficiency of Abdominal and Hip Flexor muscles.

Equipment Used: Stopwatch and Mats.

Description:-The subject was asked to assume a supine lying position on the mat with knees bent to an angle a little less than 90 degrees, hands held behind the neck, A partner held down the feet. The subjects brought his head and elbow forward in a Curl-up motion after touching the knee subject has to go back to his starting position. The finger remains locked behind the neck throughout the exercise. The subjects were given only 60 seconds to perform the sit-ups. A number of correctly executed sit-ups performed in one minute were recorded as the score.

Scoring: -The total number of correctly executed sit-ups in 60 seconds as he calculated his score.



Figure 14:-Bent-Knee Sit-Ups

(iii) Shuttle Run

Purpose: - To Measure the agility.

Equipment: Two blocks of wood (2"x2"x4"), a stopwatch and marking powder. The subject should wear spikes or run barefoot.

Test Administration: Two parallel lines are marked on the floor 10 yards apart, or the width of the regular volleyball court may be used for the test. The two wooden blocks are placed behind one of the lines. The subject is asked to start from behind the other line. On the signal ready? Go, the timer starts the watch, and the subject runs towards the blocks, picks-up one block runs behind to The starting line places the block behind the initial line, runs back and raises the second block to move across the start line. As soon as the second block is placed on the ground, the timer closes the clock and records the time.

Scoring: - Recorded as a test item's score in the nearest 10th position of one second



Figure 15:- Shuttle Run

(IV) Standing Broad Jump

Purpose: -To measure the explosive muscles power of leg extensors.

Equipment Used: Measuring Tape and Jumping Pit.

Description:-The subject stood behind the starting line with feet comfortably apart and the toes just behind the take-off line. In preparing the Jump, the subject swung the arms backward and bent the knees. Simultaneously extending the knees and swinging forward the arms accomplished the Jump. Three trials were allowed. Measurements were taken from the taking offline to that part of the body that touched the pit nearest to the take offline. Running or stepping was not permitted; the best out of three trials was recorded as his score.

Scoring: -.Maximum distance out of three trails, in meters and full centimeters as his score.



Figure 16:- Standing Broad Jump

(v) 50 Yard Dash

Purpose: - To measure the speed.

Equipment Used:-Measuring Tape, Stop Watch, and a clapper.

Description: -One subject runs at a time. He took position behind the starting line. The researcher stood at the finish line with a stopwatch. The starter started the race with a clapper. The researcher started the watch and stopped the watch when the subject crosses over the finish line. Time taken by the subject was recorded.

Scoring: - The time taken by the subject in 1/10 seconds is calculated in the form of his score

(vi) 600 Meter Run and Walk Test Item

Purpose of the Test:-To measure the Cardio-vascular Efficiency of the subjects.

Equipment Used: - Stop Watch, Clapper, and Measuring Tape.

Description:-The test was conducted on 400 met. Track and Instruction were given to all the subjects about the start, finish and the laps they have to complete. Five subjects participated at a time. At the finish line, 4-5 students helped the researcher to find out the positions of subjects. The timing was noted down according to the position of the subjects. The subjects were permitted to complete the test by running or walking or both.

Scoring: -The minimum time is taken by the subject to complete 600-meter run, in completed second as recorded his score.

The validity of the AAHPER Test: The test has been found quite valid as various test items of the AAHPER test battery are found to correlate significantly with various motor or physical fitness factors. Thus, it may be concluded that the AAHPER Test possesses factorial validity.

Evaluation of the AAHPER Test: - Norms for the various items on the AAHPER Youth

Fitness test are available on a percentile rank basis for each age and sex of United States Children and have been published in a large number of test and measurement books (AAHPER Fitness Test Manual, 1991).

Statistical Procedure

The t-test was applied to compare the health status, mental health status, anthropometric measurements, and physical fitness of rural and urban girls Madhya Pradesh.

Chapter IV

ANALYSIS AND DISCUSSION OF FINDINGS

The analysis of the data has been presented in this chapter. The data for Health Status, Mental Health Status, Anthropometric Measurements, and Physical Fitness were collected from 1000 girls (500 from urban and 500 from rural) of Madhya Pradesh. Ages of the subjects were ranging between 13 to 18 years.

To access the Health Status, Mental Health Status, Anthropometric Measurements, Physical Fitness of rural and urban girls of Madhya Pradesh, descriptive statistics were used.

To compare Health Status, Mental Health Status, Anthropometric Measurements, Physical Fitness, and their aspects between rural and urban girls of Madhya Pradesh, T-test was used.

Level of Significance

The level of significance to check the t-value was set at 0.05 level that was considered appropriate for the purpose of the study.

Findings of the Study

The finding of the study has been presented in two sections. The data have been characterized by descriptive statistics in section 01 from table 4.1 to 4.15, and the comparison has been shown by *t*-test in section 02 from table 4.16 to 19

Section 01

The descriptive statistics of Health Status of 500 urban and 500 rural girls have been presented in table 4.1.

TABLE – 4.1
DESCRIPTIVE STATISTICS OF HEALTH STATUS OF URBAN AND RURAL
GIRLS OF MADHYA PRADESH

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	91.00	80.00	Mean	97.60	87.83
20	92.00	81.00	Std. Error of Mean	0.25	0.28
30	94.00	83.00	Std. Deviation	5.51	6.33
40	96.00	86.00	Skewness	0.37	0.12
50	97.00	87.00	Std. Error of Skewness	.11	0.11
60	99.00	90.00	Kurtosis	-0.66	-1.03
70	100.00	91.00	Std. Error of Kurtosis	0.22	0.22
80	103.00	94.00	Minimum	86.00	72.00
90	106.00	97.00	Maximum	110.00	100.00

Table 4.1 shows the descriptive statistics of Health Status. First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of the health status of urban and rural girls are 97.60 ± 5.51 and 87.83 ± 6.33 , respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

The descriptive statistics of Mental Health Status of 500 urban and 500 rural girls have been presented in table 4.2.

TABLE – 4.2
DESCRIPTIVE STATISTICS OF MENTAL HEALTH STATUS OF URBAN AND RURAL GIRLS OF MADHYA PRADESH

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	81.00	73.00	Mean	90.31	83.56
20	84.00	77.00	Std. Error of Mean	.30	0.36
30	86.00	79.00	Std. Deviation	6.71	7.94
40	88.00	81.00	Skewness	0.04	0.16
50	90.00	83.00	Std. Error of Skewness	0.11	0.11
60	91.00	86.00	Kurtosis	-0.72	-0.40
70	55.0	88.00	Std. Error of Kurtosis	.22	0.22
80	97.00	90.00	Minimum	74.00	67.00
90	99.00	93.00	Maximum	107.00	106.00

Table 4.2 shows the descriptive statistics of Mental Health Status. First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of Mental Health Status of urban and rural girls are 90.31 ± 6.71 and 83.56 ± 7.94 , respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

The descriptive statistics of Body Weight in Anthropometric Measurements of 500 urban and 500 rural girls have been presented in table 4.3.

TABLE – 4.3
DESCRIPTIVE STATISTICS OF BODY WEIGHT (KG) OF URBAN AND RURAL GIRLS OF MADHYA PRADESH

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	46.10	46.00	Mean	52.52	52.51
20	48.00	48.00	Std. Error of Mean	.199	0.20
30	49.00	49.00	Std. Deviation	4.45	4.45
40	51.00	51.00	Skewness	.050	0.00
50	53.00	52.00	Std. Error of Skewness	.109	0.11
60	54.00	54.00	Kurtosis	-1.134	-1.13
70	55.00	55.00	Std. Error of Kurtosis	.218	0.22
80	57.00	57.00	Minimum	45.00	45.00
90	59.00	59.00	Maximum	60.00	60.00

Table 4.3 shows the descriptive statistics of Body Weight (Anthropometric Measurement). First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of Body Weight of urban and rural girls are 52.52 ± 4.45 and 52.51 ± 4.45 , respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

The descriptive statistics of Stature / Height in Anthropometric Measurements of 500 urban and 500 rural girls have been presented in table 4.4.

TABLE – 4.4
DESCRIPTIVE STATISTICS OF HEIGHT (CM) OF URBAN AND RURAL
GIRLS OF MADHYA PRADESH

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	151.00	151.00	Mean	156.99	157.33
20	152.00	152.00	Std. Error of Mean	0.21	0.21
30	153.00	154.00	Std. Deviation	4.63	4.59
40	155.00	156.00	Skewness	0.11	0.00
50	157.00	158.00	Std. Error of Skewness	0.11	0.11
60	158.00	159.00	Kurtosis	-1.24	-1.23
70	160.00	160.70	Std. Error of Kurtosis	0.22	0.22
80	162.00	162.00	Minimum	150.00	150.00
90	164.00	164.00	Maximum	165.00	165.00

Table 4.4 shows the descriptive statistics of Height (Anthropometric Measurement). First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of Height of urban and rural girls are 156.99 ± 4.63 and 157.33 ± 4.59 , respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

The descriptive statistics of Elbow Width in Anthropometric Measurements of 500 urban and 500 rural girls have been presented in table 4.5.

TABLE – 4.5
DESCRIPTIVE STATISTICS OF ELBOW WIDTH (CM) OF URBAN AND RURAL GIRLS OF MADHYA PRADESH

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	5.28	5.30	Mean	6.06	6.12
20	5.47	5.52	Std. Error of Mean	0.03	0.03
30	5.68	5.70	Std. Deviation	0.56	0.59
40	5.85	5.90	Skewness	0.06	-0.02
50	6.02	6.13	Std. Error of Skewness	0.11	0.11
60	6.24	6.34	Kurtosis	-1.13	-1.23
70	6.44	6.55	Std. Error of Kurtosis	0.22	0.22
80	6.64	6.74	Minimum	5.11	5.10
90	6.87	6.92	Maximum	7.10	7.10

Table 4.5 shows the descriptive statistics of Elbow Width (Anthropometric Measurement). First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of Elbow Width of urban and rural girls are $6.06 \pm .56$ and $6.12 \pm .59$, respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

The descriptive statistics of Knee Width in Anthropometric Measurements of 500 urban and 500 rural girls have been presented in table 4.6.

TABLE – 4.6
DESCRIPTIVE STATISTICS OF KNEE WIDTH (CM) OF URBAN AND RURAL
GIRLS OF MADHYA PRADESH

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	6.41	6.42	Mean	7.47	7.41
20	6.70	6.63	Std. Error of Mean	0.03	0.03
30	6.96	6.86	Std. Deviation	0.74	0.74
40	7.22	7.10	Skewness	-0.11	0.08
50	7.50	7.36	Std. Error of Skewness	0.11	0.11
60	7.81	7.69	Kurtosis	-1.26	-1.28
70	8.03	7.98	Std. Error of Kurtosis	0.22	0.22
80	8.21	8.20	Minimum	6.20	6.11
90	8.46	8.46	Maximum	8.69	8.70

Table 4.6 shows the descriptive statistics of Knee Width (Anthropometric Measurement). First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of Knee Width of urban and rural girls are 7.47 ± 0.74 and 7.41 ± 0.74 , respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

The descriptive statistics of Upper Arm Circumference in Anthropometric Measurements of 500 urban and 500 rural girls have been presented in table 4.7.

TABLE – 4.7

**DESCRIPTIVE STATISTICS OF UPPER ARM CIRCUMFERENCE (CM) OF
URBAN AND RURAL GIRLS OF MADHYA PRADESH**

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	11.02	11.34	Mean	15.06	15.16
20	11.96	12.15	Std. Error of Mean	0.14	0.13
30	12.92	13.07	Std. Deviation	3.02	2.93
40	13.71	14.08	Skewness	0.09	0.10
50	14.90	15.05	Std. Error of Skewness	0.11	0.11
60	16.08	16.14	Kurtosis	-1.25	-1.17
70	17.26	17.13	Std. Error of Kurtosis	0.22	0.22
80	18.16	18.19	Minimum	10.14	10.12
90	19.19	19.32	Maximum	20.49	20.49

Table 4.7 shows the descriptive statistics of Upper Arm Circumference (Anthropometric Measurement). First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of Upper Arm Circumference of urban and rural girls are 15.06 ± 3.02 and 15.16 ± 2.93 , respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

The descriptive statistics of Fore Arm Circumference in Anthropometric Measurements of 500 urban and 500 rural girls have been presented in table 4.8.

TABLE – 4.8
DESCRIPTIVE STATISTICS OF FOREARM CIRCUMFERENCE (CM) OF
URBAN AND RURAL GIRLS OF MADHYA PRADESH

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	11.45	11.20	Mean	15.04	15.10
20	12.21	11.95	Std. Error of Mean	0.12	0.131
30	13.23	13.03	Std. Deviation	2.74	2.92
40	13.93	13.96	Skewness	0.15	0.030
50	14.89	14.95	Std. Error of Skewness	0.11	0.109
60	15.82	16.16	Kurtosis	-1.11	-1.263
70	16.78	17.17	Std. Error of Kurtosis	0.22	0.218
80	18.00	18.29	Minimum	10.16	10.15
90	18.96	19.18	Maximum	20.15	20.11

Table 4.8 shows the descriptive statistics of Fore Arm Circumference (Anthropometric Measurement). First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of Fore Arm Circumference of urban and rural girls are 15.04 ± 2.74 and 15.10 ± 2.92 , respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

The descriptive statistics of Thigh Circumference in Anthropometric Measurements of 500 urban and 500 rural girls have been presented in table 4.9.

TABLE – 4.9
DESCRIPTIVE STATISTICS OF THIGH CIRCUMFERENCE (CM) OF URBAN AND RURAL GIRLS OF MADHYA PRADESH

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	26.47	26.33	Mean	32.47	32.80
20	28.02	27.78	Std. Error of Mean	0.19	0.21
30	29.47	29.50	Std. Deviation	4.32	4.63
40	31.09	30.81	Skewness	0.07	-0.06
50	32.26	33.23	Std. Error of Skewness	0.11	0.11
60	33.76	34.79	Kurtosis	-1.15	-1.33
70	35.16	36.32	Std. Error of Kurtosis	0.22	0.22
80	36.99	37.56	Minimum	25.14	25.15
90	38.56	39.05	Maximum	40.21	40.25

Table 4.9 shows the descriptive statistics of Thigh Circumference (Anthropometric Measurement). First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of Thigh Circumference of urban and rural girls are 32.47 ± 4.32 and 32.80 ± 4.63 , respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

The descriptive statistics of Calf Circumference in Anthropometric Measurements of 500 urban and 500 rural girls have been presented in table 4.10

TABLE – 4.10
DESCRIPTIVE STATISTICS OF CALF CIRCUMFERENCE (CM) OF URBAN AND RURAL GIRLS OF MADHYA PRADESH

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	21.05	21.27	Mean	26.24	26.03
20	22.31	22.27	Std. Error of Mean	0.16	0.16
30	23.66	23.41	Std. Deviation	3.67	3.55
40	25.02	24.73	Skewness	-0.03	0.07
50	26.16	25.90	Std. Error of Skewness	0.11	0.11
60	27.59	27.30	Kurtosis	-1.28	-1.20
70	28.85	28.42	Std. Error of Kurtosis	0.22	0.22
80	30.26	29.64	Minimum	20.13	20.13
90	31.25	31.13	Maximum	32.23	32.23

Table 4.10 shows the descriptive statistics of Calf Circumference (Anthropometric Measurement). First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of Calf Circumference of urban and rural girls are 26.24 ± 3.67 and 26.03 ± 3.55 , respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

The descriptive statistics of Biceps Skin fold in Anthropometric Measurements of 500 urban, and 500 rural girls have been presented in table 4.11.

TABLE – 4.11
DESCRIPTIVE STATISTICS OF BICEPS SKIN FOLD (MM) OF URBAN AND RURAL GIRLS OF MADHYA PRADESH

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	6.51	6.35	Mean	12.85	12.74
20	7.85	7.77	Std. Error of Mean	0.21	0.21
30	9.24	9.49	Std. Deviation	4.80	4.65
40	11.10	11.05	Skewness	0.09	0.05
50	12.63	12.68	Std. Error of Skewness	0.11	0.11
60	14.33	14.47	Kurtosis	-1.27	-1.21
70	16.16	16.02	Std. Error of Kurtosis	0.22	0.22
80	18.15	17.52	Minimum	5.12	5.12
90	19.74	19.28	Maximum	21.00	21.00

Table 4.11 shows the descriptive statistics of Biceps Skinfold (Anthropometric Measurement). First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of Biceps Skinfold of urban and rural girls are 12.85 ± 4.80 and 12.74 ± 4.65 , respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

The descriptive statistics of Triceps Skinfold in Anthropometric Measurements of 500 urban and 500 rural girls have been presented in table 4.12.

TABLE – 4.12
DESCRIPTIVE STATISTICS OF TRICEPS SKIN FOLD (MM) OF URBAN AND RURAL GIRLS OF MADHYA PRADESH

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	8.67	8.45	Mean	15.21	14.50
20	10.38	9.83	Std. Error of Mean	0.20	0.20
30	12.72	11.53	Std. Deviation	4.41	4.44
40	14.03	12.70	Skewness	-0.21	0.08
50	15.55	14.26	Std. Error of Skewness	0.11	0.11
60	16.93	15.93	Kurtosis	-1.16	-1.22
70	18.38	17.55	Std. Error of Kurtosis	0.22	0.22
80	19.87	19.14	Minimum	7.14	7.13
90	21.00	20.81	Maximum	22.22	22.23

Table 4.12 shows the descriptive statistics of Triceps Skinfold (Anthropometric Measurement). First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of Triceps Skinfold of urban and rural girls are 15.21 ± 4.41 and 14.50 ± 4.44 , respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

The descriptive statistics of Thigh Skin fold in Anthropometric Measurements of 500 urban, and 500 rural girls have been presented in table 4.13.

TABLE – 4.13
DESCRIPTIVE STATISTICS OF THIGH SKIN FOLD (MM) OF URBAN AND RURAL GIRLS OF MADHYA PRADESH

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	11.00	11.00	Mean	16.19	16.08
20	12.00	12.00	Std. Error of Mean	0.17	0.16
30	14.00	14.00	Std. Deviation	3.81	3.64
40	15.00	15.00	Skewness	-0.05	0.11
50	16.00	17.00	Std. Error of Skewness	0.11	0.11
60	18.00	18.00	Kurtosis	-1.26	-1.16
70	19.00	19.00	Std. Error of Kurtosis	0.22	0.22
80	20.00	20.00	Minimum	10.00	10.00
90	21.00	21.00	Maximum	22.00	22.00

Table 4.13 shows the descriptive statistics of Thigh Skinfold (Anthropometric Measurement). First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of Thigh Skinfold of urban and rural girls are 16.19 ± 3.81 and 16.08 ± 3.64 , respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

The descriptive statistics of Calf Skin fold in Anthropometric Measurements of 500 urban, and 500 rural girls have been presented in table 4.14.

TABLE – 4.14
DESCRIPTIVE STATISTICS OF CALF SKIN FOLD (MM) OF URBAN AND RURAL GIRLS OF MADHYA PRADESH

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	11.00	11.00	Mean	16.010	16.012
20	12.00	12.00	Std. Error of Mean	0.17	0.16
30	13.00	13.00	Std. Deviation	3.82	3.67
40	15.00	15.00	Skewness	-0.05	0.04
50	16.00	16.00	Std. Error of Skewness	0.11	0.11
60	17.00	17.00	Kurtosis	-1.28	-1.19
70	19.00	19.00	Std. Error of Kurtosis	0.22	0.22
80	20.00	20.00	Minimum	10.00	10.00
90	21.00	21.00	Maximum	21.00	21.00

Table 4.14 shows the descriptive statistics of Calf Skinfold (Anthropometric Measurement). First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of Calf Skinfold of urban and rural girls are 16.01 ± 3.82 and 16.01 ± 3.67 , respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

The descriptive statistics of Physical Fitness in Anthropometric Measurements of 500 urban and 500 rural girls have been presented in table 4.15.

TABLE – 4.15
DESCRIPTIVE STATISTICS OF PHYSICAL FITNESS OF URBAN AND RURAL
GIRLS OF MADHYA PRADESH

Percentiles	Urban	Rural	Statistics	Urban	Rural
10	20.00	21.00	Mean	26.34	29.23
20	22.00	23.00	Std. Error of Mean	0.23	0.27
30	23.00	25.00	Std. Deviation	5.19	6.12
40	24.00	27.00	Skewness	0.10	0.03
50	26.00	30.00	Std. Error of Skewness	0.11	0.11
60	28.00	32.00	Kurtosis	-0.76	-1.06
70	29.00	34.00	Std. Error of Kurtosis	0.22	0.22
80	31.00	35.00	Minimum	15.00	18.00
90	34.00	37.00	Maximum	39.00	45.00

Table 4.15 shows the descriptive statistics of Physical Fitness (Anthropometric Measurement). First three columns show the percentile, and the last three columns show the descriptive statistics. The mean and standard deviation of Physical Fitness of urban and rural girls are 26.34 ± 5.19 and 29.23 ± 6.12 , respectively. The skewness, kurtosis, their standard errors, minimum and maximum score itself shows the scientific authenticity of data. The percentile scales shows the value of data at different percentiles.

Section 02

The comparison of Health Status of 500 urban and 500 rural girls have been presented by T-test in table 4.16 to 4.19.

TABLE – 4.16
COMPARISON OF HEALTH STATUS BETWEEN URBAN AND RURAL GIRLS OF MADHYA PRADESH

Variable	Category	N	Mean	MD	df	t
HEALTH STATUS	Urban	500	97.60	9.772	998	26.037*
	Rural	500	87.82			

Tab. 't' at 998 degrees of freedom= 1.96

Table 4.16 reveals that there is a significant difference found in Health Status between Urban and Rural Girls of Madhya Pradesh. Since the calculated t value (26.037) is greater than the tabulated t value (1.96) at 0.05 level of significance. Hence, It seems that the Health Status of Urban Girls (M= 97.60) is found to be better than the Rural Girls (M= 87.82) of Madhya Pradesh. The graphical representation of a comparison of means of Health Status between Urban and Rural Girls of Madhya Pradesh has been presented in figure 1.

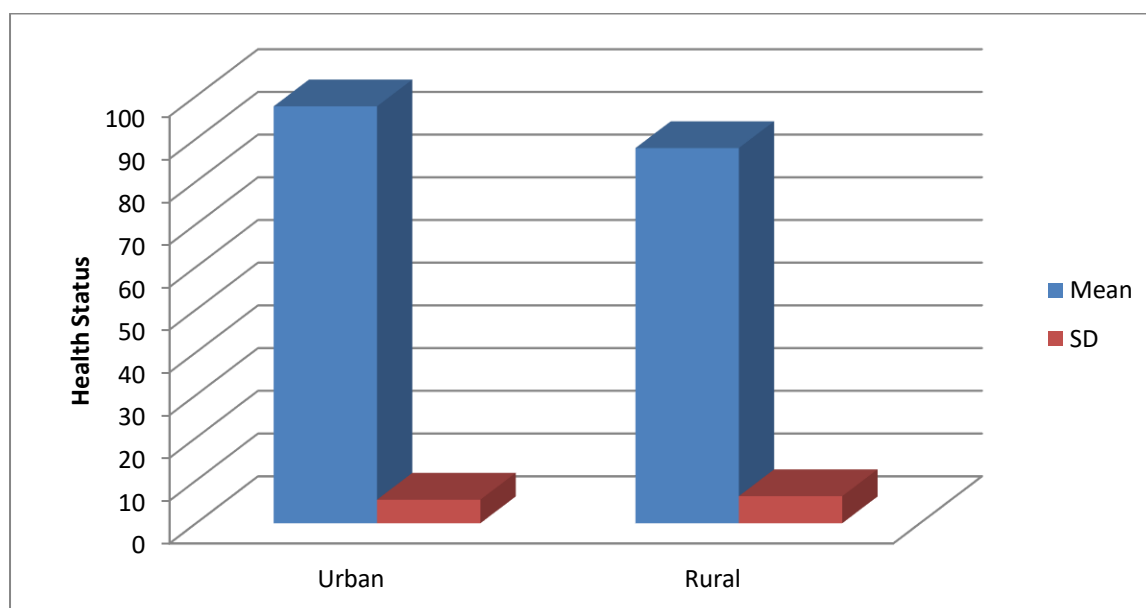


Figure 1: Graphical Representation of Mean and SD of Health Status of Rural and Urban Girls of Madhya Pradesh

The comparison of Mental Health Status of 500 urban and 500 rural girls have been presented by t -test in table 4.17.

TABLE – 4.17

COMPARISON OF MENTAL HEALTH STATUS BETWEEN URBAN AND RURAL GIRLS OF MADHYA PRADESH

Variable	Category	N	Mean	MD	df	t
MENTAL HEALTH STATUS	Urban	500	90.31	6.75	998	14.5*
	Rural	500	83.56			

Tab. 't' at 998 degrees of freedom= 1.96

Table 4.17 reveals that there is a significant difference found in Mental Health Status between Urban and Rural Girls of Madhya Pradesh. Since the calculated t value (14.5) is greater than the tabulated t value (1.96) at 0.05 level of significance. Hence, It seems that the Mental Health Status of Urban Girls (M= 90.31) is found to be better than the Rural Girls (M= 83.56) of Madhya Pradesh. The graphical representation of a comparison of means of Mental Health Status between Urban and Rural Girls of Madhya Pradesh has been presented in figure 2.

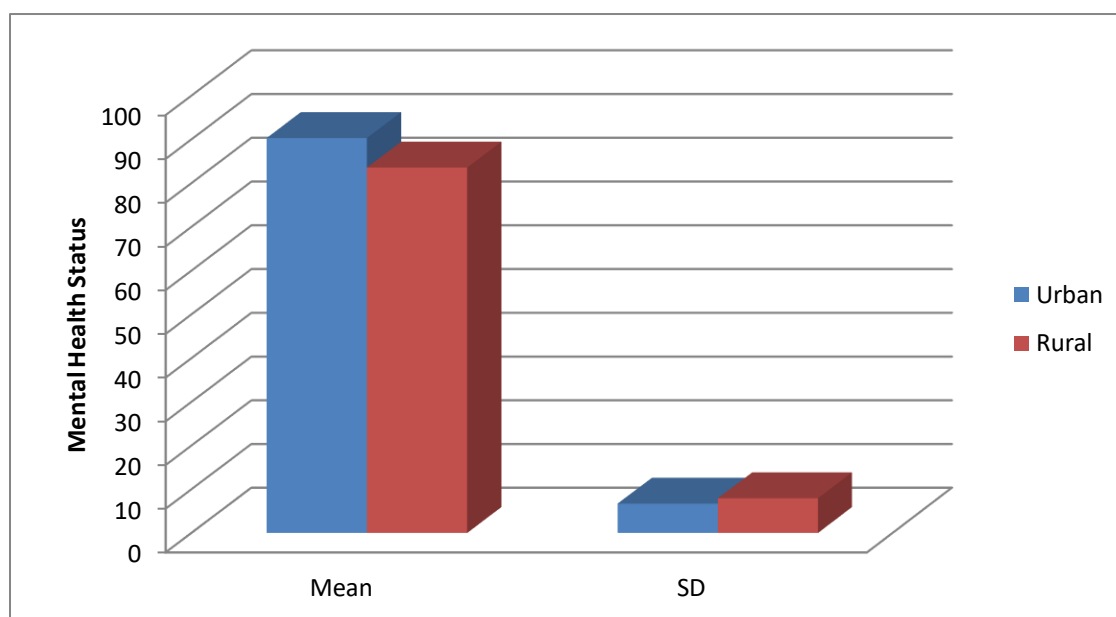


Figure 2: Graphical Representation of Mean and SD of Mental Health Status of Rural and Urban Girls of Madhya Pradesh

The comparison of Anthropometric Measurements of 500 urban and 500 rural girls have been presented by T-Test in table 4.18.

TABLE – 4.18

**COMPARISON OF ANTHROPOMETRIC MEASUREMENTS BETWEEN
URBAN AND RURAL GIRLS OF MADHYA PRADESH**

Variable	Category	N	Mean	MD	df	t
Bodyweight	Urban	500	52.52	.00400	998	.014
	Rural	500	52.51			
Height	Urban	500	156.99	-.33800	998	1.15
	Rural	500	157.33			
Elbow Width	Urban	500	6.06	-.06118	998	1.684
	Rural	500	6.12			
Knee Width	Urban	500	7.47	.05798	998	1.240
	Rural	500	7.41			
Upper Arm Circumference	Urban	500	15.06	-.09978	998	-.530
	Rural	500	15.16			
Fore Arm Circumference	Urban	500	15.04	-.07166	998	-.400
	Rural	500	15.10			
Thigh Circumference	Urban	500	32.47	-.32926	998	-1.16
	Rural	500	32.80			
Calf Circumference	Urban	500	26.23	.20892	998	.916
	Rural	500	26.02			
Biceps Skinfold	Urban	500	12.85	.10826	998	.362
	Rural	500	12.74			
Triceps Skinfold	Urban	500	15.21	.70760	998	2.53*
	Rural	500	14.50			
Thigh Skinfold	Urban	500	16.19	.10600	998	.450
	Rural	500	16.08			
Calf Skinfold	Urban	500	16.01	-.00200	998	-.008
	Rural	500	16.01			

Tab. 't' at 998 degrees of freedom= 1.96

Table 4.18 reveals that there is a significant difference found in the Triceps Skinfold (Anthropometric Measurements) between Urban and Rural Girls of Madhya Pradesh. Since the calculated *t* value (2.53) is greater than the tabulated *t* value (1.96) at

0.05 level of significance. Hence, It seems that the Triceps Skinfold (Anthropometric Measurements) of Urban Girls (M= 15.21) is found to be better than the Rural Girls (M= 14.50) of Madhya Pradesh.

Table 4.18 also reveals that there are a no significant difference found in Anthropometric Measurements in case of Body Weight ($t = .014$), Height ($t = 1.15$), Elbow Width ($t = 1.684$), Knee Width ($t = 1.24$), Upper Arm Circumference ($t = .530$), Fore Arm Circumference ($t = .40$), Thigh Circumference ($t = 1.16$), Calf Circumference ($t = .916$), Bicep Skinfold ($t = .362$), Thigh Skinfold ($t = .450$) and Calf Skinfold ($t = .008$) between Urban and Rural Girls of Madhya Pradesh. Since the calculated t value is lower than the tabulated t value (1.96) at 0.05 level of significance. Hence, It seems that the Urban and Rural Girls of Madhya Pradesh are found to be similar in case of following Anthropometric Measurements, i.e., Body Weight, Height, Elbow Width, Knee Width, Upper Arm Circumference, Fore Arm Circumference, Thigh Circumference, Calf Circumference, Bicep Skinfold, Thigh Skinfold, and Calf Skinfold.

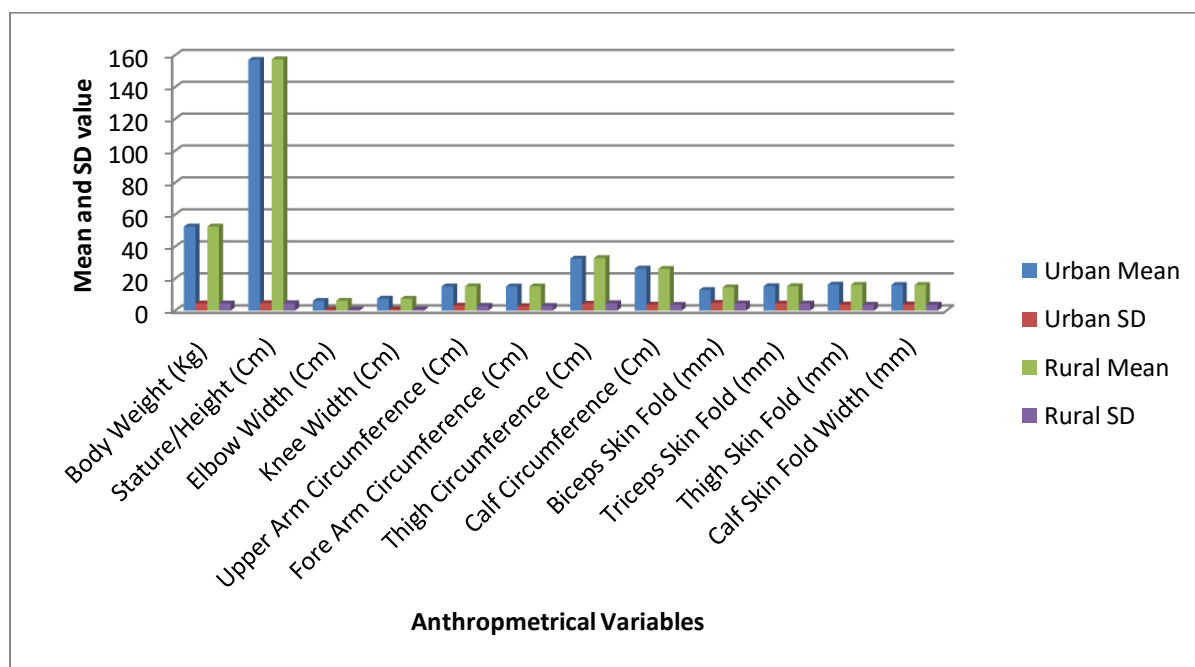


Figure 3: Graphical Representation of Mean and SD of Anthropometric measurements of Rural and Urban Girls of Madhya Pradesh

The comparison of Physical Fitness of 500 urban and 500 rural girls have been presented by T-test in table 4.19.

TABLE – 4.19

COMPARISON OF PHYSICAL FITNESS BETWEEN URBAN AND RURAL GIRLS OF MADHYA PRADESH

Variable	Category	N	Mean	MD	df	t
PHYSICAL FITNESS	Urban	500	26.33	2.88	998	8.04*
	Rural	500	29.22			

Tab. 't' at 998 degrees of freedom= 1.96

Table 4.19 reveals that there is a significant difference found in Physical Fitness between Urban and Rural Girls of Madhya Pradesh. Since the calculated t value (8.04) is greater than the tabulated t value (1.96) at 0.05 level of significance. Hence, It seems that the Physical Fitness of Rural Girls (M= 29.22) is found to be better than the Urban Girls (M= 26.33) of Madhya Pradesh. The graphical representation of a comparison of means of Physical Fitness between Urban and Rural Girls of Madhya Pradesh has been presented in figure 4.

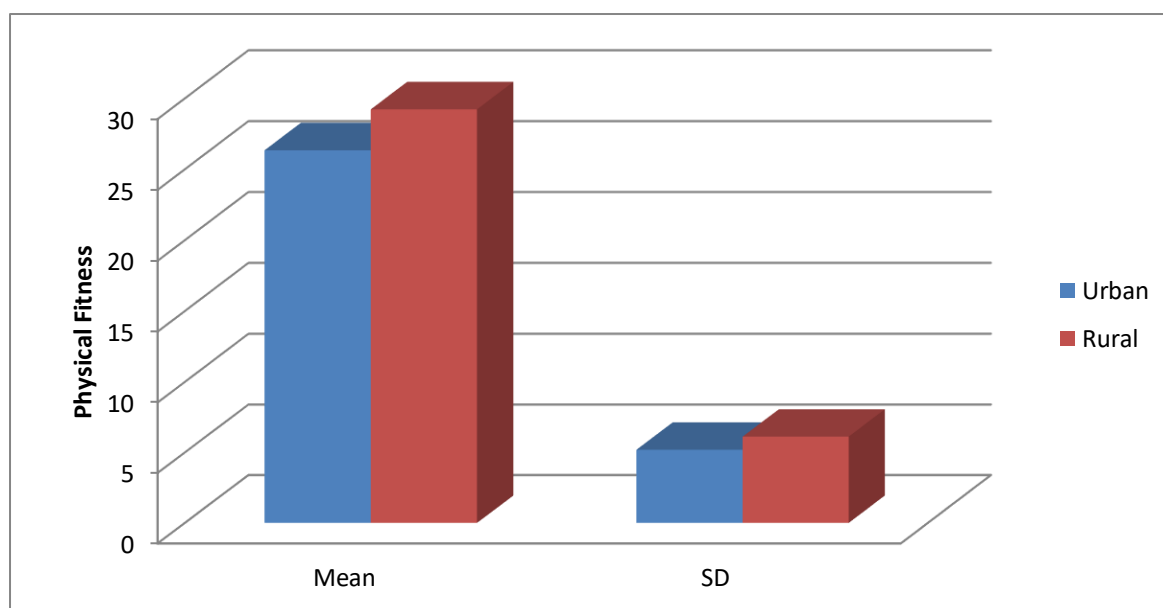


Figure 4: Graphical Representation of Mean and SD of Physical Fitness of Rural and Urban Girls of Madhya Pradesh

Discussion of Findings

The result of the present study shows that the urban girls of Madhya Pradesh possess greater Health Status in comparison to rural girls. World Health Organization says that there are many factors combine together to affect the health status of an individual. Whether people are healthy or not, is determined by the social, economic, and physical environment, person's individual characteristics and behaviors. By 2011 census, Madhya Pradesh located is the fifth-biggest state in the country by population of more than 7 Corers inhabitants.72.37 % population lives in the rural area, and the remaining 28.63 % lives in urban part. The female literacy of the urban area of Madhya Pradesh is 69.46% with average literacy of urban area 82.85 %. Education plays an important role in the Health Status of an individual, high educational level linked with good health. The income and social status of the urban population are better than the rural one, which closely related to Health Status. The climate of the urban area is better than the rural area, which is one the cause of better Health Status of Urban Girls. The customs, traditions, and the beliefs of the family and community of the urban area is much better than the rural area, which directly affects the health status. The good personal behavior and coping skills of urban girls are one of the factors of better Health Status. The effect of urbanization may also interact with rearing styles; for example, mothers with higher levels of education are more likely to engage in health-promoting behavior (Sherar et al., 2009).

Good mental health is integral to human health and wellbeing. Various social, economic, and physical environments are operating at different stages of life. Barreto (2000) stated that the variables related to lifestyle, educational and economic features of the geographic context are commonly highlighted as having an important impact on public health.

The result of the present study is also evident that the Mental Health Status of urban girls better than rural girls. The causes and triggers of poor mental health are complex and not fully understood. There is evidence that the vast majority of people who experience poor mental health in adulthood first had trouble as children, often from the early hood. Mental health problems can be characterized by early rejection, insecurities, poverty, and rejection in rural areas. (Mental Health Taskforce, 2016). Evidence reveals that personality and perceived competence of rural girls affect mental health, as self-critical personalities are more susceptible to stress, though it is also possible that they are more aware of it or more willing to report it. Poor prenatal period of rural people might be one of the causes of poor Mental Health Status of rural girls since the prenatal period has a significant impact on physical, mental, and cognitive outcomes in early life and throughout life. A mother's maternal health is particularly important and poor environmental conditions, poor health and nutrition, smoking, alcohol and drug misuse, stress, and highly demanding physical labor can all have a negative effect on the development of the fetus and later life outcomes. Children with poor mothers are more likely to be disadvantaged even before birth, for example, with an increased likelihood of poor nutrition during pregnancy and low birth weight and exposure to stress, poor working conditions, and demanding physical labor. Poor family building and parenting of rural people influence children's mental and physical health and a range of other outcomes throughout their lives; in addition, adult mental health can be profoundly affected during family building. This risk during adulthood partly relates to socioeconomic factors. Action to support mental health at the community level provides a platform to develop and improve social norms, values, and practices while encouraging community empowerment and participation. Central to a number of community-based approaches is the realization that changes within a community are best achieved through

engaging people of the community. This change is brought about by efforts to improve key determinants of mental health, including a socially inclusive community, freedom from discrimination and violence, and access to economic resources, these all can be easily seen in urban girls. There are many other factors that determine the Mental Health like low- and middle-income, adequate human resources to deliver essential mental health care and interventions are lacking in rural girls, this might also be one of the reasons of rural girls poor mental health. Researches stated that countries with low political freedoms, an unstable policy environment, and poorly developed services and monitoring systems create vulnerability among the population, which has adverse effects on mental wellbeing. The effect of political, social, and economic turbulence on mental and physical health has been powerfully demonstrated by the decline and subsequent fluctuations in life expectancy in the Russian Federation after the collapse of the Soviet Union.

The present study also shows that the rural and urban girls are similar in all anthropometric measurements except the Triceps skin fold where the urban girls have more triceps skinfold than the rural one. On the other hand the rural girls are more physically fit than the urban girls this might be due to the rural girls are more likely to be involved in domestic activities as well as agricultural activities that required more energy expenditure, while urban girls tended to focus interests on less physically active social activities such as sitting and talking with friends (Coelho e Silva et al., 2003). Trends in physical fitness show contrasts that are more variable. Youth from rural communities were more likely to be classified as physically fit, especially in CRF, compared with urban youth in Oman (Albarwani et al., 2009). On the other hand, differences in several motor fitness and somatic characteristics between rural and urban Belgian youth were negligible (Taks et al., 1991). It is possible that rural adolescents resided in safer neighborhoods and were more likely to be physically active, which increased the

likelihood of being classified as aerobically fit. Transport to school may be an additional factor that moderates the relationship between CRF and area of residence. In an earlier study of adolescents from the Portuguese Midlands, a greater percentage of urban than rural youth walked to school, while a greater percentage of rural than urban youth used public transport (Coelho e Silva et al., 2003). It is not clear, however, whether the mode of transport significantly affects the CRF of youth. Social and cultural differences between rural and urban areas are reasonably well documented but vary within and between countries (Barreto, 2000; Reyes et al., 2003). Low-income urban neighborhoods generally had a negative influence on health, academic achievement, and behavioral outcomes (Cicognani et al., 2008). Young people living in neighborhoods with good access to shops tended to have healthier diets and were less likely to be overweight (Veugelers et al., 2008). The economic status of an area may influence access to recreational facilities and in turn to sports and other active leisure behaviors. Open public spaces in less deprived neighborhoods tended to have better environmental quality compared with more deprived neighborhoods; however, the former had fewer activities and safety features (Badland et al., 2010). This was especially relevant as participation in organized sports is related to MVPA, and PA is often identified as sports among the youth of both sexes (Malina, 2008). Among American youth, organized sports contributed to 23% of the time in MVPA in boys of 6–12 years (Wickel and Eisenmann, 2007) and to about 65% of the daily EE in MVPA in boys of 12–14 years (Katzmarzyk and Malina, 1998). In the present study, differences in MVPA between rural and urban groups were only apparent for boys at the weekend. Urban boys were more active than rural boys, and it may be suggested that sports participation was a more likely feature among urban boys.

Parental education may influence PA among the urban boys since parents serve as important behavioral role models from early childhood through to the teen years (Sherar

et al., 2009). Urban adolescents of both sexes were from more highly educated families and also had higher levels of PA, particularly among males. The literature on the issue of parental education, however, is somewhat inconclusive. Some studies showed a positive relationship between maternal education and youth PA (Gordon-Larsen et al., 2000; Lasheras et al., 2001; Hesketh et al., 2006; Butcher et al., 2008), while others showed no relationship (Sallis et al., 2002; Riddoch et al., 2007). The equivocal nature of the findings may be attributed to variation in methods of assessing PA and parental education in different countries. The use of aggregated and self-reported protocols may not reflect the true and detailed variation in PA. Moreover, the educational background of parents is often used as a proxy for socioeconomic status (Gidlow et al., 2006). Future studies should address variables related to income and professional activity of parents as complementary criteria.

On the basis of the results, it was stated that significant difference was found between urban and rural girls of Madhya Pradesh in relation to Physical Fitness and Rural Girls were having greater Physical Fitness in Comparison to Urban girls, and this might be due to that rural girls do hard work at their home. They do not only work their home but also involved physical activity related to sports and games. Kanwar Mandeep Singh (2016) compare the physical fitness of the rural and urban children from Punjab. Total 360 children (180 rural and 180 urban) of age between 12 to 17 years were selected to participate in the study. All the subjects were measured for various physical fitness components concluded that rural children had greater Physical Fitness, the present study was supported by the study conducted by Kanwar Mandeep Singh (2016). Narges Aliniya (2015) compares physical fitness relevant to performance and skill between urban and rural students in Astra city. Out of two urban and rural schools, 270 urban students and 158 rural students were selected from fourth, fifth, and sixth grade of element Aryl

School. The physical fitness tests were taken from urban and rural students in the same condition. The tests were included: flexibility, cardio respiratory endurance, muscular endurance, muscles of the shoulder girdle, agility, speed, explosive power, and BMI. Descriptive (average, standard deviation) and inferential statistics (independent t-test) were used for data analysis. The results of the study indicated that in all measured parameters, there was a significant difference between rural and urban students ($p < 0.05$). Rural students were stronger than urban students. The lifestyle of rural children likely was the best reason for their better physical fitness. The present study was supported by the study conducted by Narges Aliniya (2015).

Discussion of Hypothesis

The hypothesis that there will be no significant difference in Health Status, Mental Health Status, Anthropometric Measurements and Physical Fitness between rural and urban girls of Madhya Pradesh have been rejected in case of Health Status, Mental Health Status, Anthropometric Measurements (Triceps Skinfold) and Physical Fitness. On the other hand, the null hypothesis has been accepted in case of Body Weight, Height, Elbow Width, Knee Width, Upper Arm Circumference, Fore Arm Circumference, Thigh Circumference, Calf Circumference, Bicep Skinfold, Thigh Skinfold, and Calf Skinfold.

Chapter V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

A purpose of the study was to find out the health status, mental health status, anthropometric measurement, and physical fitness of rural and urban girls of Madhya Pradesh. The objectives of the study are:

1. To access the health status, mental health status, anthropometric measurement, and physical fitness of rural and urban girls of Madhya Pradesh.
2. To compare health status, mental health status, anthropometric measurement, and physical fitness of rural and urban girls of Madhya Pradesh.
3. To compare a various aspect of health status, mental health status, anthropometric measurement, and physical fitness of rural and urban girls of Madhya Pradesh.

Randomly selected five hundred rural and five hundred urban girls of Madhya Pradesh were as a subject for the study. The age group of the subject ranged from 13 to 18 years. For the purpose of study Anthropometrical variables (Body Weight, Stature Height, Elbow Width (Diameter), Knee Width,(Diameter), Upper - Arm Circumference, Fore - Arm Circumference, Thigh Circumference, Calf Circumference, Biceps Skin fold Width, Triceps Skinfold width, Thigh Skin fold width, Calf Skin fold width) Mental health status, Health status and Physical Fitness were selected.

The data on Anthropometrical variables (Body Weight, Stature Height, Elbow Width (Diameter), Knee Width,(Diameter), Upper - Arm Circumference, Fore - Arm Circumference, Thigh Circumference, Calf Circumference, Biceps Skin fold Width, Triceps Skinfold width, Thigh Skin fold width, Calf Skin fold width) were recorded with the help of Anthropometrical kit, Physical fitness was recorded with the help of the AAHPER Youth Physical Fitness Test , Mental health status and Health status was

recorded with the help of GENERAL HEALTH QUESTIONNAIRE (Goldberg and Hillier 1979). Descriptive statistics, T-test was employed to analyze the raw data at 0.05 level of significance.

Conclusions

- The significant difference was found between Urban and Rural Girls of Madhya Pradesh in relation to **Triceps Skin Fold Width**.
- Urban Girls of Madhya Pradesh had greater **Triceps Skin Fold Width** in comparison to rural girls of Madhya Pradesh.
- Insignificant difference was found between Urban and Rural Girls of Madhya Pradesh in relation to Body Weight, Stature Height, Elbow Width (Diameter), Knee Width,(Diameter), Upper - Arm Circumference, Fore - Arm Circumference, Thigh Circumference, Calf Circumference, Biceps Skin fold Width, Thigh Skin fold width, Calf Skin fold width.
- The significant difference was found between Urban and Rural Girls of Madhya Pradesh in relation to **Physical fitness**.
- Rural Girls of Madhya Pradesh had greater **Physical fitness** in comparison to urban girls of Madhya Pradesh.
- The significant difference was found between Urban and Rural Girls of Madhya Pradesh in relation to **Mental Health Status**.
- Urban Girls of Madhya Pradesh had greater **Mental Health Status** in comparison to rural girls of Madhya Pradesh.
- The significant difference was found between Urban and Rural Girls of Madhya Pradesh in relation to **Health Status**.
- Urban Girls of Madhya Pradesh had greater **Health Status** in comparison to rural girls of Madhya Pradesh

Hence it was overall concluded that Rural girls had good physical fitness bur. Urban girls are more intelligent in perspective of Health and disease. The coaches/trainer/Physical Education teacher associated with the urban and rural girls of Madhya Pradesh must take into consideration the results observed in the study.

Recommendations

- Similar studies may be undertaken with the emphasis of other physiological and psychomotor and psychological variables.
- Male subjects of other states regarding rural and urban may be studied.
- The study may be conducted Urban and Rural girl's athletes (In the field of sports).
- Different age of female in relation to rural and urban may be studied.
- Comparison of Rural and Urban on other variables i.e., Health-related physical fitness and skill-related physical fitness may be studied.

BIBLIOGRAPHY

Books

- A. Allen Phillips and James F. Harnk, “**Measurement and Evaluation in Physical Education**” New York, John Willey and Sons, 1979.
- Aloke Gnosh, “**Hand Book of Sports Medicine and Physical Fit Caluietlia**”, Allied Book Agency 1980.
- Charles Horold. Mc Cloy and Norma Dorothy Young “**Test and Measurement in Health and Physical Education**” New York: Appleton Country Crofts, 1954.
- D. K. Gupta, “**Health Training in Schools a Handbook for Teachers**”, Delhi: Khel Sahitya Kendra, 1996.
- D. K. Gupta “**Health Training in Schools a Handbook for Teachers**”, Delhi: Khel Sahitya Kendra, 1996.
- Dheer Dr. S. et. at., “**Introduction to Health Education**” Delhi: Friends Publication year – 1991.
- Donald K. Mathews, “**Measurement and Physical Education**” Philadelphia: W.B. Sanders Company, 1976.
- Frank. M. Vendhcci, “**Measurement and Concepts in Physical Education**” St, Louis the C .V. Mos By Company, 1980.
- Gupta Dr. K. **Health Training in Schools a handbook for Teachers**, Delhi: Khel Sahitya Kendra-1996.

Kornhauser, A. “**Mental Health of the Industrial Worker: A Detroit Study**”; New York: Wiley, 1965.

Kornhauser, A. “**Mental Health of the Industrial Worker: A Detroit Study**”; New York: Wiley, 1965.

Horold Charles, Mc Cloy and Norma Dorothy Young, “**Test and Measurement in Health and Physical Education**”, New York: Appleton Country Crofts, 1954.

Mathews Donald K., “**Measurement and Physical Education**” Philadelphia: W.B. Saunders Company, 1976.

Phillips & Harnk A. Allen and James F., “**Measurement and Evaluation in Physical Education**”, New York, John Willey and Sons, 1979.

Philip and Hunk, “**Measurement and Evaluation in Physical Education**”

Singh Dr. Ajmer et. at., “**Essentials Physical Education**” ,Kalyani Publication, Year-2004.

Singh, Gill, Bains, Brar, Rathee, “**Modern Text Book Physical Education Health and Sports**”, Kalyani Publication Year, 2000.

Singh, Gill, Bains, Brar, Rathee, “**Modern Text Book Physical Education Health and Sports**” Kalyani Publication Year, 2000.

Singh, Gill, Bains, Brar, Rathee, “**Modern Text Book Physical Education Health and Sports**” Kalyani Publication year, 2000.

Vendhcci Frank. M., “**Measurement and Concepts in Physical Education**”, St. Louis. The C.V. Mos By Company, 1980.

Uppal, A. K. “**Physical Fitness and Health**”, Gwalior L.N.C.P.E. Publishing, 1993.

Journals and Periodicals

Bhavan, R.P., “Comparison of Anthropometric and Physical Variables Among Kho-Kho and Handball Players of Andhra Pradesh School Games Teams”, **British Journal of Sports Medicine**, 2010.

Bharati, P., Itagi, S., and Megeri, S.N., “Anthropometric Measurements of School Children of Raichur, Karnataka”, **Journal of Human Ecology**, 2005.

Catherine So-Kum Tang et al., “Mental Health Outcomes of Job Stress Among Chinese Teachers: Role of Stress Resource Factors and Burnout”, **Journal of Organizational Behavior**, 2001.

Cheryl J. Travers and Cary L. Cooper, “Mental Health, Job Satisfaction and Hebbelink M. C. “Selected Anthropometric Characteristics of Montreal Olympic Athlete' Physical Structure of Olympic Athletes” New York: S. Kargor. Basel Muncher. 1982.

Chandel, A.S., “Comparative Study of Selected Physical Fitness, Physiological and Anthropometric Variable of Tribal and Non-tribal Students of Himachal Pradesh”, **Unpublished Master’s Thesis**, Chandigarh: Punjab University, 1993.

Dawson Harris & Christine Linda, “Relationship Between Physical Fitness and Attendance in School Academic Achievement and Self-esteem”, **Dissertation Abstract International**, 1981.

Ekblom, O “**Health Related Fitness in Swedish Adolescent**”, Sweden 24 1990.

- Gangadharam T. "A Comparative Study of Selected Anthropometric Measurements of Athletes of Different Sports", **Unpublished Master's Thesis**, Jiwaji University. 1981.
- Gill, M., Deol, N.S. and Kaur, R., **Comparative Study of Physical Fitness Components of Rural and Urban Female Students of Punjabi University**, Patiala, Anthropologist, 2010.
- Jashi G. R., "A Study of Mental Health and Job Satisfaction Among Industrial Employees" **JIAAP**, 1998.
- Kumar, S. and Singh, S., "Comparative Study of Physical Fitness Components of Rural and Urban Female Students of Delhi University Delhi", **International Journal of Transformations in Business Management**, 2011.
- Kaur, J., "Assessment of Motor Fitness of Rural and Urban Senior Secondary School Girls of Punjab State", **Unpublished Ph. D. Thesis**, Panjab University, Chandigarh, 1999.
- Kornhauser, A, **Mental Health of the Industrial Worker: A Detroit Study**"; New York: Willy, 1965.
- Kolekar, S.M. and Sawant, S.U., "A Comparative Study of Physical Growth in Urban and Rural School Children from 5 to 13 years of age", **International Journal of Recent Trends in Science and Technology**, 2013.
- Kaur, B. and Singh, G., "A Comparative Study of Anthropometric Characteristics and Motor Abilities Between Urban and Rural Sports Girls", **British Journal of Sports Medicine**, 2010.

- MO, Siu-Mei Lee, et al., “Relationship Between Mental Health and Job Satisfaction Among Employee in a Medical Center Department of Laboratory Medicine”, **Journal Elsevier of& Formosan Medical Association**, 2009.
- Maiti, S., Ali, K.M., De, D., Bera, T.K., Ghosh, D. and Paul, S., “A Comparative study on Nutritional Status of Urban and Rural Early Adolescent School Girls of West Bengal, India”. **Journal of Nepal Pediatric Society**, 2011.
- M.C Hebbelink, “**Selected Anthropometric Characteristics of Montreal Olympic Athlete' Physical Structure of Olympic Athletes**”, New York: S. Kargor, Basel Muncher. 1982.
- Nagai Michiko et.al., “Poor Mental Health Associated with Job Dissatisfaction Among School Teachers in Japan”, **Journal of Occupational Health**, Vol. 49, 2007.
- O. Ekblom, “**Health Related Fitness in Swedish Adolescent**”, Sweden 24, 1990.
- Occupational Stress Among UK Teachers”, **Work & Stress**, Volume 7, Issue 3 July 1993.
- Piccolo. John “Skin folds and Other Anthropometric Measurements of Preadolescent Boys from Three Ethimic Groups”, **Research Quarterly**, May 1962.
- Rout, P. and Nayak, A.K., “Comparison of Skill Performance Among Tribal and Non-tribal Soccer Players in Relation to Their Motor Fitness and Anthropometric Dimensions”, **British Journal of Sports Medicine**, 2010.
- Rimmi, S., “A Comparison of Physical Fitness of Urban and Rural Secondary School Female Students”, **Unpublished M. Phil Thesis**, Punjabi University, Patiala, 1992.

- Raghupathi, K. and Krishnaswamy, P.C., “Comparative Analysis of Physical Growth and Coordinative Abilities Among Rural and Urban School Boys”, **International Journal of Scientific Research**, 2013.
- Lee Mo Siu-Mei, et al. (2009) "Relationship Between Mental Health and Job Satisfaction Among Employee in a Medical Center Department of Laboratory Medicine" **Journal of Elsevier & Formosan Medical Association**-2009.
- Srivastava S.K. “An Assessment of Personality and Mental Health Among Primary and Secondary Teacher”, **Health Administrator**, Vol: XVII, Number, 2002.
- Shirotriya A. K Stress, “Frustration Tolerance and Mental Health among Various Paramilitary Forces”, **Unpublished Pre-Doctoral Thesis**, Lakshmibai National University of Physical Comparison of Occupational Education, Gwalior, 2009.
- Shirotriya A. K., “Comparative Analysis of Academic Anxiety and Mental Health of Regular Male Participants in Sports in the Government & Private Schools of Uttar Pradesh” Parmita, **Quarterly Shodh Patrika**, Issue 1, April-June, 2009.
- Singh M. & Singh G., “Assessment of Mental Health Status of Middle-Aged Female School Teachers of Varanasi City”, **The International Journal of Health**, 2006.
- Singh, B. and Bhola, G., “Comparison of Selected Anthropometric Measurements and Physical Fitness of Haryana School boys in Relation to Their Social Status”, **Indian Journal of Movement Education and Exercises Sciences**, 2012.
- Sherrill Evans et al., “Mental Health, Burnout and Job Satisfaction Among Mental Health Social Workers in England and Wales”, **The British Journal of Psychiatry**, 2006.

S. Loop Anne and Anne B. Tipton, “A Health Survey of Hunter College Freshmen”
Research quarterly, March 1952.

T. Gangadharam, “A Comparative Study of Selected Anthropometric Measurements of Athletes of Different Sports”, **Unpublished Master's Thesis**, Jiwaji University, 1981.

Vida Volbekiene; Ausara Griuciute, “Health Related Physical Fitness Among School Children in Lithuania” A Comparison From 1992 to 2002, **Scandinavian Journal of Public Health**, Vol. 35, 2007.

Winter Haider & Joy Erin, “A Comparative Study of Physical Fitness Programming for Low Enforcement Officers in Connecticut”, **Dissertation Abstract International**, Dec.1993, 1786.

Miscellaneous

<http://www.topendsports.com/testing/sportspecific.htm>

<http://herkules.oulu.fi/isbn9514272331/html/c155.html>

<http://herkules.oulu.fi/isbn9514272331/html/c155:html>

<http://herkules;oulu.fi/isbn9514272331/html/c155.html>

<http://herkules.oulu.fi/isbn9514272331/html/c155.html>

http://en.wikipedia.org/wiki/mental_health