

TABLE OF CONTENTS

	Page
Title Page	i
Certificate by the Supervisor	ii
Declaration by the Scholar	iii
Dedication	iv
Acknowledgement	v
Content	viii
List of Tables	xiv
List of Figures	xvi
List of Appendices	xvii
CHAPTER – I INTRODUCTION	1-33
1.1 Sports Training	2
1.2 Principles of Training	2
1.2.1 Individuality	3
1.2.2 Specificity of Training	4
1.2.3 Progressive Overloads Training	5
1.2.4 Adaptations of Training	5
1.2.5 Reversibility of Training	6
1.2.6 Warm-up and Cool Down	7
1.3 Bicycle Ergometer	8
1.3.1 Intensity	10
1.3.2 Importance of Intensities of Training	10
1.3.3 Intensity zones	11
1.3.4 Frequency	11

TABLE OF CONTENTS (continued)

	Page	
1.3.5	Importance of Frequency of Training	12
1.4	Physical Parameters and its Importance	12
1.5	Physiological Parameters and its Importance	14
1.5.1	Resting Heart Rate	14
1.5.2	Blood Pressure	15
1.5.3	Maximal Oxygen Uptake	16
1.5.4	Body Composition	17
1.6	Biochemical Parameters and its Importance	18
1.6.1	Triglycerides	19
1.6.2	High Density Lipoprotein	20
1.6.3	Low Density Lipoprotein	21
1.6.4	Hemoglobin	22
1.7	Volleyball	23
1.8	Need of the Study	24
1.9	Statement of the Problem	25
1.10	Hypotheses	25
1.11	Significance of the Study	27
1.12	Delimitations	28
1.13	Limitations	29
1.14	Definition and Explanation of the Terms	30
1.14.1	Explosive Power	30
1.14.2	Muscular Endurance	30
1.14.3	Speed	30
1.14.4	Agility	30

TABLE OF CONTENTS (continued)

	Page
1.14.5 Resting Heart Rate	31
1.14.6 Mean Arterial Blood Pressure	31
1.14.7 Maximal Oxygen Uptake (VO ₂ Max)	31
1.14.8 Percent Body Fat	32
1.14.9 Triglycerides	32
1.14.10 High Density Lipoprotein	33
1.14.11 Low Density Lipoprotein	33
1.14.12 Hemoglobin	33
CHAPTER – II REVIEW OF RELATED LITERATURE	34 – 87
2.1 Studies Showing the Effect of Exercise on Physical Parameters	35
2.2 Studies Showing the Effect of Exercise on Physiological Parameters	50
2.3 Studies Showing the Effect of Exercise on Biochemical Parameters	69
2.4 Other Studies Related to Volleyball Players	82
2.5 Summary of the Literature	87
CHAPTER- III METHODOLOGY	88 – 116
3.1 Selection of Subjects	88
3.2 Selection of Variables	89
3.2.1 Dependent variables	89
3.2.2 Independent Variables	90
3.3 Experimental Design	91
3.4 Pilot Study	91

TABLE OF CONTENTS (continued)

		Page
3.5	Criterion Measures	92
3.6	Orientation of Subjects	93
3.7	Reliability of Data	94
3.8	Instruments Reliability	94
3.9	Tester's Reliability	94
3.10	Test Administration of Physical Variables	96
3.10.1	Vertical Jump Test	96
3.10.2	Sit-Up Test	97
3.10.3	50- Metre Dash	98
3.10.4	Agility T- Test	99
3.11	Measurement of Physiological Variables	100
3.11.1	Resting Heart Rate	100
3.11.2	Mean Arterial Blood Pressure	101
3.11.3	Step Test (VO ₂ max Assessment)	102
3.11.4	Assessment of Percent Body Fat	105
3.12	Measurement of Biochemical Variables	106
3.12.1	Estimation of Triglycerides	107
3.12.2	Estimation of High Density Lipoprotein	108
3.12.3	Estimation of Low Density Lipoprotein	109
3.12.4	Estimation of Hemoglobin	109
3.13	Training Programme	110
3.13.1	Bicycle Ergometer Training	111
3.13.2	Test Administration	111

TABLE OF CONTENTS (continued)

	Page	
3.13.3	Assessment of Maximal Work	114
3.13.4	Load Dynamics	114
3.14	Statistical Techniques	115
CHAPTER-IV RESULTS AND DISCUSSIONS		117 – 206
4.1	Overview	117
4.2	Test of Significance	117
4.3	Level of Significance	118
4.4	Computation of Analysis of Covariance and Post Hoc Test on Selected Dependent Variables	119
4.4.1	Results on Explosive Power	121
4.4.1.1	Discussion on the Findings of Explosive Power	125
4.4.2	Results on Muscular Endurance	129
4.4.2.1	Discussion on the Findings of Muscular Endurance	133
4.4.3	Results on Speed	136
4.4.3.1	Discussion on the Findings of Speed	140
4.4.4	Results on Agility	144
4.4.4.1	Discussion on the Findings of Agility	148
4.4.5	Results on Resting Heart Rate	151
4.4.5.1	Discussion on the Findings of Resting Heart Rate	155
4.4.6	Results on Mean Arterial Blood Pressure	158
4.4.6.1	Discussion on the Findings of Mean Arterial Blood Pressure	162
4.4.7	Results on Maximal Oxygen Uptake (VO ₂ Max)	165

TABLE OF CONTENTS (continued)

	Page
4.4.7.1 Discussion on the Findings of Maximal Oxygen Uptake (VO ₂ Max)	169
4.4.8 Results on Percent Body Fat	172
4.4.8.1 Discussion on the Findings of Percent Body Fat	176
4.4.9 Results on Triglycerides	179
4.4.9.1 Discussion on the Findings of Triglycerides	183
4.4.10 Results on High Density Lipoprotein	186
4.4.10.1 Discussion on the Findings of High Density Lipoprotein	190
4.4.11 Results on Low Density Lipoprotein	193
4.4.11.1 Discussion on the Findings of Low Density Lipoprotein	197
4.4.12 Results on Hemoglobin	200
4.4.12.1 Discussion on the Findings of Hemoglobin	203
4.5 Discussions on Hypotheses	204
CHAPTER- V SUMMARY, CONCLUSIONS AND RECOMMANDATIONS	209-212
5.1 Summary	209
5.2 Conclusions	210
5.3 Recommendations	211
5.4 Suggestions for further Research	212
BIBLIOGRAPHY	213-225
Text Book	213
Journals and Periodicals	215
Websites Visited	225
APPENDICES	226-238