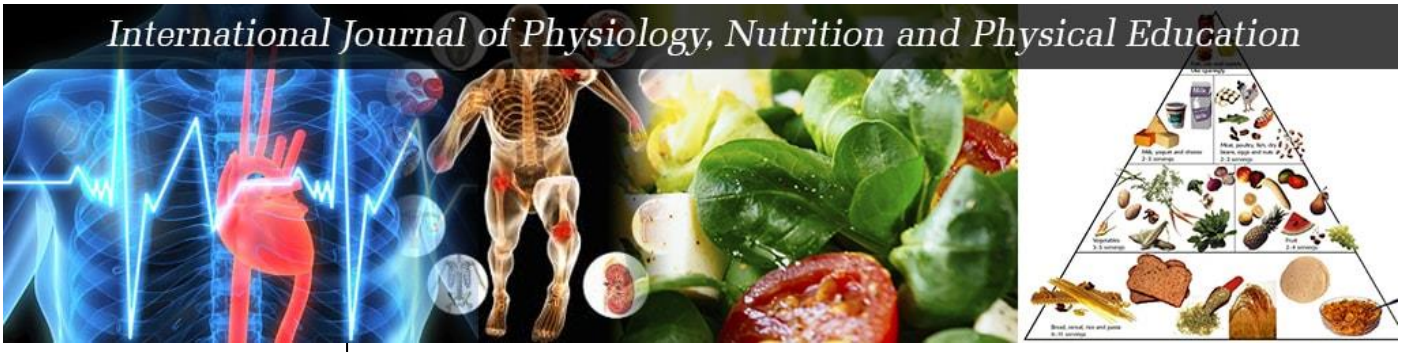

ISSN: 2456-0057
IJPNPE 2018; 3(2): 747-752

www.journalofsports.com
Received: 11-05-2018
Accepted: 12-06-2018

Sandeep U
Assistant Professor,
Department of Physical Education and Sports, School of Social Work, Roshni Nilaya, Mangalore, Karnataka, India

M Chandrachooda
Assistant Professor,
Department of Physical Education, Dairy Science College, Bengaluru, Karnataka, India

Subraya Prabhu S
Assistant Professor,
Department of Physical Education Veterinary College, Hassan, Karnataka, India

Correspondence
Sandeep U
Assistant Professor,
Department of Physical Education and Sports, School of Social Work, Roshni Nilaya, Mangalore, Karnataka, India

Compare intelligence and motor educability among high school boys and girls of Kundapura Taluk, Karnataka state

Sandeep U, M Chandrachooda and Subraya Prabhu S

Abstract
In the field physical education a concept of "motor intelligence" does, not seem to be in sue. The desire of physical educationists to predict certain inclination of individual towards acquisition of motor skills have resulted in the formation of concept like "motor educability", "motor mindedness" etc. According to oberteuffer, all the above types concepts having similar purposed can be grouped under three heading as "motor capacity", "motor educability" and "motor ability". "Educability and motor capacity proceed on the assumption that motor ability is general and can be measured by certain related performances tests. The performance tests chosen to judge the motor capacity or motor ability primarily test the specific and common physical ability. In other side sportsmen people are more active than non sportsmen people. They are living in such a way that they do all the works by themselves in there are not access life. All works in the house, cultivation, grazing the castles, cutting the wood for preparing food etc. all are to be carried out by themselves manually. They are not access to sophisticated gazettes dud to this they are active and their health problems are less, when compared to non sportsmen people. It is observed there may be difference in physical fitness between sportsmen and non sportsmen people. The researcher is coming from rural background and is very much interested to know whether any difference in physical fitness and motor educability is there among sportsmen and non sportsmen.

Keywords: Intelligence and motor educability among high school boys and girls of Kundapura Taluk Karnataka state

Introduction
It is evident that sport, especially in this age of increased participation, holds many meanings for its participants, as well as having a significant impact on society. Sport, as it is defined, requires that, participants use relatively complex physical skills and physical prowess or vigorous physical exertion. This further raises the question "what does it take for one, to succeed in sports?" One of the answers to this question is, by performing the skills involved in the particular sport, with the greatest efficiency, while expending the least amount of effort. The researcher, with a view to explore into the factors, that influence easier and efficient learning of skills, ventured to find out the effect of intelligence, on a person's ability to learn motor skills.

Psycho-physical Unity of Man: Since time immemorial, an antagonism between body and mind has been reported in literature. Is it a theoretical assumption or a living reality? Plainly speaking, it is neither. Body and mind are two facets of the same being - the man. Neither can exist without the other. The fact is that, philosophers often ignored the study of the body, and kept the 'mind' as the focus of their study: the work of dealing with the body went often to the physician. That is why, the philosopher assumed that the "material self" (the body) and the "mental- self" were independent things and they had no connection whatsoever, between them. Rather, they were two polarities, often, contradicting each other. This concept is no longer tenable.
The perceivable part is the one, which is the result of the activities of the muscles and bone etc., whereas the hidden behavior, like an under-current, occurs in various parts of the body, connected with the response, such as afferent nerves-the cerebral cortex-the efferent nerves.

The internal aspect of behavior is usually known as nerval activity, cerebral activity or neurotransmission. Conversely, the observable movement of muscles and bones result in physical activity. Motor activity cannot occur without excitation from the efferent system of nerves. Hence physical activity (external aspect) and mental activity (internal aspect) are a continuum rather than two polarities or separate compartments of behavior. If we are unaware of the activities, they are called unconscious. But so far as we know, all essentially are, activities of the cerebral cortex".

In cognitive or motor activity, the concerned organs of the body have to play their respective roles. The texture of physical functions and mental processes is so beautifully woven in the human organism that it is hardly possible to separate the mental from the physical. "No act is purely motor, perceptual, conceptual or verbal, rather the degree of emphasis on any act allows us to refer to it in a certain way", says Singer. Through overdoing (over-learning), some physical activities occur so quickly and accurately, that one hardly feels one's mental involvement in them.

We only have the internal behavior and the external behavior. Often when we fail to understand the anatomical and the physiological relationship between the two, there is a tendency to view the mental (internal) and the physical (external) as entirely antithetical entities. There is constant inter-action between the organs and the nervous system producing internal behavior. The body states profoundly affect the mental states and vice-versa.

Learning: learning as "the acquisition of new behavior or the strengthening or weakening of old behavior as a result of experience". Behavior involves response to an internal or external stimulus. When change is noticed in the response pattern of an individual, it is considered a consequence of learning. Learning, then, must be viewed as 'a change in the behavior of an individual as a result of experience'. Experience is the result of visible or invisible response activity that the individual makes either to combat the environmental forces or to adjust to the environment. Learning is a very comprehensive term which includes all activities and experiences that leave more or less a permanent effect on the individual.

Cognitive learning: Cognitive learning points to the 'change in the behavior of a person' in the areas of problem solving, concept formation, reasoning, and acquisition of knowledge through memory and/or understanding. In this phase of learning there is maximum mental activity. This is also termed as conceptual learning. Learning and assimilation of various academic subjects like history, geography, philosophy, mathematics, languages etc., are part and parcel of cognitive processes. Cognitive learning guides and shapes our life-style and helps in higher accomplishments social and cultural. Cognitive processes refer to higher think ability. Acquisition and assimilation of varied knowledge is the sine qua non of cognitive learning.

Affective Learning: Affective phase of learning refers to "attitudinal changes". The amount of knowledge one has acquired suffices to change or modify one's attitude. The resultant change in behavior relates to the value structure of the individual. The development of an attitude- good or bad- towards a thing or a person is the result of a long interaction between the situation and the individual. Once fixed, attitudes either do not change or even if they do, the process is gradual and also painful. Attitudes, especially ones which are the result of temporary association or experience, change quickly. When a person grows older, he needs longer period of time and more consistent effort for an affective attitudinal change in him. Attitude scales are available to measure or check the attitude of a person toward something, but it is hard to do so oppositely because of the subjectivity involved in this process. Opportunities for affective learning have to be provided in the formative years. For teachers and parents, it is very essential that they should know how and when to develop right type of attitudes in children during various stages of development. The more a particular stimulus is given repeatedly the more fixed would the attitudes become and to effect a change would be a Herculean task.

Effective Learning: Effective learning pertains to the area which consists of motor output of an individual. In other words, physical activities are nothing but motor processes. The process by which an individual acquires motor skills is classified as effective learning. To recapitulate, all behavioral acts comprise of three phases. i.e. Cognition, Affection and Conation. The continuity of action involves both body and mind simultaneously. Neither body nor mind can train or act in isolation. Those who draw a wedge between their outlook on mental learning and physical activity are totally unscientific. However, there are areas of human activity where one or the other phase of learning is more exaggerated or dominant.

In animals, learning follows a very simple pattern. In human beings, it follows a complex pattern because level of maturation, motivation, opportunities and a host of other factors affect it. The complexity of pattern in human learning may also be attributed to the ability of the human brain to memorize, retain and recall experiences. A lot of research has been conducted on animals and human beings to reveal the real springs and the mechanism of learning process. The psychologist to-day knows a lot about the processes and procedures of learning, and yet overall knowledge concerning learning, is comparatively inadequate and, much is shrouded in mystery. Learning has been investigated into by various Schools of psychology, and tackled from different angles. The tentative organization of facts derived from research on learning has resulted in a number of theories.

Intelligence: The term intelligence is a very popular term used widely to mean many things-quick understanding, fast learning, accuracy in learning, clever talking, quick doing, good memory etc. So it is difficult to define intelligence. The term intelligence comes from a Latin word coined a Greek word used to cover all cognitive processes. It is generally mistaken for Intellect. Intellect is the end product of what has been learnt and retained. In short intellect is nothing but the knowledge gained by using intelligence, whereas intelligence is the capacity to acquire knowledge or to learn things.

Motor Educability: As intelligence testing occupies an important place in education, a number of experiments in physical education have attempted to construct tests of motor intelligence. Motor educability, is a term suggested by "ease with which an individual learns new motor skills".

Methodology

In this study, numerical data was used. The data collected involved 80 students of Kundapura Taluk Karnataka State, who were taken as the subjects. Through this experimental

method, two tests were conducted, namely, "Metheny Johnson Motor Educability Test" to find the motor learning ability of the students and "Otis Self-Administering test of mental ability" to find the intelligence of the same students.
The test battery consists of the following four motor stunts:

1. Front Roll 2.Back Roll 3. Jumping Half-Turns 4.Jumping full -turns

While all the four stunts are to be performed by the boys, only the first three test stunts are used in case of girls.
Test Area: Figure No. 1

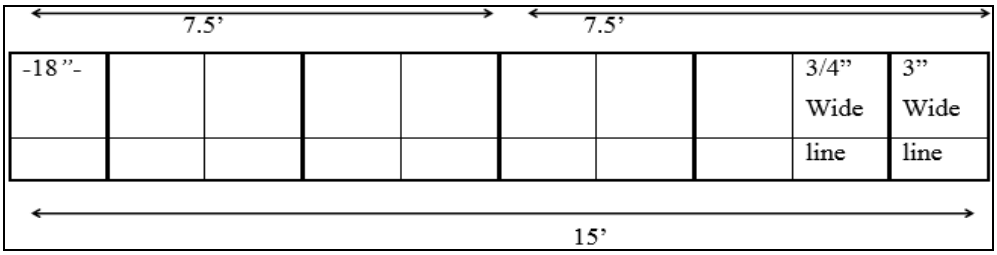

Fig 1

A canvas measuring 15 feet in length and 2 feet wide is marked, as shown in figure 1. The 15 feet length is divided into ten sections of 18 each. The width of the transverse lines is 3/4 inch and 3 inch alternatively as shown in fig. 1. Another 3/4" wide line is marked length-wise in the middle of the 2 lane. This properly marked piece of canvas is placed over a gymnasium mat, with the sides and ends properly tucked to the mat, so that the canvas remains properly stretched. Alternately, the above area may be directly painted or marked on the gymnasium mat without using the canvas.

Test Items: Front Roll: Ignoring the long middle dividing line, the subject is asked to start outside the marked area and perform two front rolls. One up to 7.5" i.e. 3" wide centre line and the other in the second half of 7.5". The subject is to perform the rolls without touching the limits or over reaching the lanes mentioned above.

Scoring: Each correct roll gets 5 points, hence a maximum of 10 points. Two points are deducted for over reaching the side line right or left for each roll. One point is deducted for over reaching the end limit on each roll and full five points are deducted when the subject fails to perform a true front roll.

Back roll: The test is similar to front roll both in performing and scoring. The subject is to start outside the marked chart area and is to perform two back rolls in the 2 feet lane area, one up to first half and the second back roll in the second half.

Jumping Half Turns: The subject is asked to start with feet on first 3 inch line, jump with both feet to second 3 inch wide line, executing a half turn either right or left, jump the third 3 inch executing half turn in opposite direction to first half turn, then the 4th and 5th 3" wide lines executing half turns, right or left alternatively.

Scoring: Perfect executing of four jumps is worth ten points. Only 2 points are deducted for each wrong jump when the subject either does not land with both feet on the 3 inch line or turns the wrong way or both.

Jumping Full Turns: The subject is asked to start with the feet outside the marked area at about the centre of the lane. He/she is required to jump with feet together to the second rectangular space, executing a full turn with the body either right or left, continue jumping to alternate rectangular spaces across the marked mat, executing full turns, rotating body in the same direction, landing on both feet every time.

Scoring: Perfect execution of five jumps is worth ten points. Two points are deducted, if the subject fails to keep balance on landing on both feet; turns too far or oversteps the squares.
Since Metheny-Johnson Motor Educability Test Battery consists of 4 stunts, the maximum score is 40.

Intelligence test

Otis Self-Administering Test of Mental Ability: Otis test of mental ability was devised by Arthur Otis. It is a group test and verbal test which measures verbal intelligence. It is easy to administer, score and to calculate the IQ. It can be given to an individual or to a group. It gives a measure of verbal IQ i.e. it indicates the ability of the subject to deal with words effectively and the ability to solve problems using verbal symbols.

Aim: To determine the mental ability of the subject using Otis self-administrating test of mental ability

Materials: Otis Self Administering Test of Mental Ability Booklet**,** Key to check the answers**,** Norms**,** Stop watch**,** Writing materials

Plan: Administer the Otis test of intelligence. Determine the subject's IQ and classify her on the basis of her IQ.

Procedure: Seat the subject comfortably on a chair. Give her the Otis self-administering test of ability booklet. This is a test to see how well you can think. It contains the questions of different kinds. Read each question and find the answer. If you have any doubt asks me. I will clarify it. But once the test begins, I will not answer any of your doubts. At the signal "start", start answering the questions. Write down your answer on a sheet of paper against the appropriate serial numbers. You are allowed 20 minutes to answer the questions. If any question is difficult, do not spend much time to get the correct answer, but go on to the next question. Though it is not possible for you to answer all the questions try to answer as many questions as possible. At the signal "stop" stop answering the questions and hand over the booklet to me.
With these instructions read the instructions on the facing sheet along with the subject. When the subject indicates that she does not have any doubts, give the signal "start" and start the stop watch simultaneously. Allow 20 minutes to write the answers and at the end of the 20 minutes give the signal stop and collect the booklet from the subject. Check up the answers of the subject with reference to the key and count the number of correct answers.

Otis Self Administering Test of Mental Ability in Progress Analysis of Results

1. Check up and find out the number of correct answers. The number of correct answers is the raw score.
2. Norms for college students is 40 and 39 for high school students.
3. Calculate the IQ by applying the formula: IQ = 100 + Score of the subject - Norm score of the age group

Precautions

1. After reading of the instructions and examples on the facing sheet, the subject should not turn-over to the next page until she is asked to do so.
2. If any question is difficult she should not spend too much time over it but has to go on to the next question.

The obtained Score of Metheny-Johnson Motor Educability test and the Otis Self Administering test of Mental ability were converted into T- Scores with formula as given by The Mean of the resultant T scores were computed and then the relationship between Motor Educability and Intelligence was found out by applying the Pearson Product- Moment formula at .05 level of Significance.

Analysis and interpretation of data

The purpose of this study was to find out, the relationship between Intelligence and Motor Educability, of boys in the age group of 14 to 16 years, in Kundapura Taluk Karnataka state. For this purpose boys from various high schools in Kundapura Taluk Karnataka state were selected at random. The Motor Educability of the boys was tested by applying the Metheny-Johnson Motor Educability test and to find out the Intelligence quotient, which indicates the intelligence, the Otis Self-administering test of Mental Ability was conducted. The total score in the Motor Educability test was out of 40 and the raw score of the Intelligence test was out of 75, which was further converted into IQ score.

Table 1: The Raw scores of Intelligence, IQ scores, raw scores of Motor Educability of Boys

S. No.	Intelligence scores	IQ	Motor Educability score	S. No.	Intelligence scores	IQ	Motor Educability score
1	23	84	36	21	23	84	29
2	31	92	38	22	26	87	27
3	41	102	36	23	21	82	40
4	16	77	40	24	13	74	38
5	25	86	38	25	18	79	33
6	26	87	39	26	24	85	37
7	37	98	36	27	31	92	38
8	18	79	39	28	14	75	38
9	11	72	37	29	23	84	35
10	23	84	39	30	23	84	40
11	20	81	37	31	35	96	33
12	28	89	36	32	25	86	32
13	26	87	37	33	46	107	35
14	30	91	39	34	26	87	40
15	33	94	39	35	28	89	40
16	20	81	31	36	26	87	37
17	26	87	39	37	28	89	34
18	27	88	34	38	33	94	40
19	23	84	38	39	26	87	32
20	28	89	39	40	27	88	40

Table 2: The Raw scores of Intelligence, IQ scores, raw scores of Motor Educability of Boys

S. No.	Intelligence scores	IQ	Motor Educability score	S. No.	Intelligence scores	IQ	Motor Educability score
1	39	100	19	21	16	77	37
2	35	96	20	22	19	80	34
3	47	108	19	23	22	83	37
4	40	101	40	24	24	85	37
5	28	89	38	25	22	83	37
6	40	101	7	26	18	79	38
7	24	85	20	27	34	95	38
8	35	96	27	28	23	84	35
9	39	100	19	29	30	91	35
10	31	92	18	30	24	85	37
11	18	79	37	31	42	103	38
12	23	84	35	32	36	97	38
13	28	89	35	33	28	89	37
14	36	97	35	34	20	81	37
15	30	91	38	35	43	104	38
16	28	89	37	36	31	92	40
17	20	81	36	37	30	91	30
18	31	92	36	38	36	97	27
19	33	94	37	39	42	103	38
20	28	89	36	40	33	94	19

Table 1 and 2 exhibits the intelligence test score as attained in the Otis test of Intelligence, converted into IQ score and the Motor Educability score as attained in the Johnson Metheny Test of Motor Educability.

Table 3: Relationship between Intelligence and Motor Educability of Boys

S. No	Statistical values	M.E	I.Q
1	Mean	36.625	86.7
2	Standard deviation	3.216	7.0317
3	T ratio	-0.057	

Table No 3 shows relationship between intelligence and motor educability of boys.
H_0 = There is no relationship between motor educability and intelligence of boys.
H_1 = There is a relationship between motor educability and intelligence of boys.

The coefficient correlation is -0.057 and the critical value for df 78 at 0.5 level of significance is 0.3120. Since r is less than the critical value one can conclude that there is no relationship between intelligence and motor educability of boys. Therefore the H_0 is accepted and the research Hypothesis is rejected.

Table 4: Relationship between Intelligence and Motor Educability of Girls

S. No	Statistical values	M.E	I.Q
1	Mean	32.4	91.15
2	Standard deviation	8.158	7.9438
3	T ratio	-0.3712	

Table 4 shows relationship between intelligence and motor educability of girls.
H_0 = There is no relationship between motor educability and intelligence of girls.
H_1 = There is a relationship between motor educability and intelligence of girls.

The coefficient correlation is -0.3712 and the critical value for df 78 at 0.5 level of significance is 0.3120. Since r is more than the critical value on the negative side, one can conclude that there is a significant negative relationship between intelligence and motor educability of boys. Therefore the H_0 is rejected and the research Hypothesis is accepted.

Table 5: Relationship between Intelligence and Motor Educability of Boys and Girls

S. No	Statistical values	Boys	Girls
1	Mean	34.5125	88.925
2	Standard deviation	6.5177	7.783096
3	T ratio	-0.34059	

Table 5 shows relationship between intelligence and motor educability of boys and girls.
H_0 = There is no relationship between motor educability and intelligence of boys and girls.
H_1 = There is a relationship between motor educability and intelligence of boys and girls.

The coefficient correlation is -0.34059 which is more than the critical value for df 168 at 0.5 level of significance. Since r is more than the critical value on the negative side, one can conclude that there is a significant negative relationship between intelligence and motor educability of boys and girls together. Therefore the H_0 is rejected and the research Hypothesis is accepted.

Table 6: Significance of Motor Educability between Boys and Girls

S. No	Statistical values	Boys	Girls
1	Mean	36.625	32.4
2	Standard deviation	3.216	8.158
3	T ratio	-0.178	

Table 6 indicates the difference in Motor Educability between boys and girls. The Mean of the boys motor educability 36.625 and that of the girls is 32.4.
H_1 = There is a significant difference between motor educability of boys and girls.
H_0 = There is no significant difference between motor educability of boys and girls.

The T ratio is 0.178 for df 79 for two tailed test of significance at p value of 0.006. Therefore one can conclude that there is a significant difference between motor educability of boys and girls. Therefore the H_0 is rejected and the research Hypothesis is accepted.

Table 7: Significance of Intelligence between Boys and Girls

S. No	Statistical values	Boys	Girls
1	Mean	86.7	91.15
2	Standard deviation	7.0317	7.9438
3	T ratio	0.2285	

Table 7 indicates the difference in Motor Educability between boys and girls. The Mean of the boys motor educability 86.7 and that of the girls is 91.15.
H_1 = There is a significant difference between Intelligence of boys and girls.
H_0 = There is no significant difference between Intelligence of boys and girls.

The T ratio is 0.2285 for df 79 for two tailed test of significance at p value of 0.004. Therefore one can conclude that there is a significant difference between intelligence of boys and girls. Therefore the H_0 is rejected and the research Hypothesis is accepted.

Findings

1. The coefficient correlation for the IQ and ME of boys is -0.057 and the critical value for df 78 at 0.5 level of significance is 0.3120. Since r is less than the critical value one can conclude that there is no relationship between intelligence and motor educability of boys. Therefore the H_0 is accepted and the research Hypothesis is rejected.
2. The coefficient correlation for the IQ and ME of girls is -0.3712 and the critical value for df 78 at 0.5 level of significance is 0.3120. Since r is more than the critical value on the negative side, one can conclude that there is a significant negative relationship between intelligence and motor educability of boys. Therefore the H_0 is rejected and the research Hypothesis is accepted.
3. The coefficient correlation for the IQ and ME of both boys and girls is -0.34059 which is more than the critical value for df 168 at 0.5 level of significance. Since r is more than the critical value on the negative side, one can conclude that there is a significant negative relationship between intelligence and motor educability of boys and girls together. Therefore the H_0 is rejected and the

research Hypothesis is accepted.

4. The T ratio to test the motor educability of boys and girls is 0.178 for df 79 for two tailed test of significance at p value of 0.006. Therefore one can conclude that there is a significant difference between motor educability of boys and girls. Therefore the H_0 is rejected and the research Hypothesis is accepted.
5. The T ratio to test the intelligence of boys and girls is 0.2285 for df 79 for two tailed test of significance at p value of 0.004. Therefore one can conclude that there is a significant difference between intelligence of boys and girls. Therefore the H_0 is rejected and the research Hypothesis is accepted.

Conclusions

The following conclusions were drawn from the study:

1. It was observed that there is a negative correlation between motor educability and intelligence of girls while there is no correlation of the same with boys. This might indicate that the girls are more concentrating on studies and their lack of exposure to physical activity might have affected this. The boys also scored negative values but were found to be statistically not significant enough. Since the prior experience of students in physical activities might affect this research it would be appropriate to screen the subjects for minimum level of motor ability before selecting them for research.
2. Both the boys and girls had significant differences in their motor educability and intelligence, with boys being better in motor educability and girls being better in intelligence. So one can assume that since the girls are immersed more in academic activities and less in physical activities this difference becomes obvious.
3. Though the study proves that there is significant difference in motor educability and intelligence in boys and girls, one cannot conclusively say that this would be the case as the prior physical activity experiences were not taken into consideration. Therefore it would be appropriate to do the same in similar studies.

References

1. Anne Patro HRH. Trends and Developments in Physical Education London, 1986.
2. Bucher Charles A. Foundation of Physical Education and Sports London: The C.V. Mosby Company, 1983.
3. Clarke Harrison H, Clarke David H. Application of Measurement to Physical Education, (New Jersey, Prentice Hall Inc, 1976.
4. Deshpande JV, Gore AD, Shanubhogue A. Statistical analysis of on normal data, (New Delhi: H.S. Poplai for willey Eastern Limited Publisher, 1995.
5. Evelyn Peach. Anatomy and Physiology for Nurses, Calcutta: Oxford University Press, 1978.
6. Gene Hooks. Application of Weight training in Athletics, London: Prentice Hall International, 1962.
7. Williams JF. The Principles of Physical Education, Meerut: College Book house, 1994.
8. Kamlesh ML. Psychology in Physical Education and Sport, New Delhi: Metropolitan, 1983.
9. Levin Jack. Elementary Statistics in Social Research, New York: Harper and Row, 1977.
10. Nataraj P. Psychology, Mysore: Srinivas Publication, 1996.
11. Towned Stewart M. Mathematics in Sport, England: Ellis Horwood Limited, 1984.
12. Wiri N. Analysis of Variance, (New Delhi: South Asian Publisher Pvt. Ltd., 1986.