

Information Processing Ability of Sports Children

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Abstract: *In early child hood sports is fun. Later stages children will take it as competitions. In this stage coaches are important and they will fulfill the children needs. Focusing only on winning typically diminishes the enjoyment experienced. Indeed, for both boys and girls the most important reasons given by them for participating in sports are developing skills, having fun, becoming physically fit, and being challenged (Gill, Gross, and Huddleston, 1983). Clearly, such a profile of objectives would require coaches to think expansively, the issue of the appropriateness of competitive vs. a social emphasis in children's sports programs must also take into account the level of the physical and psychological maturity of a participant. Many research reports that sports participation enhances the cognitive functions like, memory, attention and concentration, information processing, behaviour and academic performance for children. When the children started getting training in sports their skills will improve. Studies in the western countries have suggested a positive relationship between sports participation and information processing. However, there are not many studies in this direction in India. It is evident that results from the west cannot be directly applied to Indian context because of cultural skepticism. Keeping above points in view present study try to explore whether a sport coaching enhances children information processing. 30 children who are actively participating competitive sports and 30 children who are not participated in any competitive sports were selected using convenient sampling technique. Reaction Time Apparatus (1896) used to test the information processing ability of the children. The study will help to enrich the theoretical understanding of sports coaching and cognitive skills enhancement. The results were discussed in this paper.*

Keywords: Sports coaching, Information processing, Children

1. Introduction

The word sports is derived from – ‘dis’ and ‘portere’ meaning “carrying away from work”. In common parlance, sports activities are relaxing in nature and done for seeking ‘pleasure’ only. Basically sports are individual activities born out of natural urge for movement but now a days there is a tendency to include in it the team games which require some complex organization, serious and combined practice between various members of the team. A sportive child is a healthy child – a debonair fountain of verse and vivacity. A sportive adult is relaxed, free and happy individual, not unnecessarily troubled by the caring cares and coordinating anxieties of the world. So sports participation will start from childhood. Initially children join Sports for fun, enjoyment and this is the primary motivation to join Sports. (Coelho e Silva MJ, Malina RM (2009, in press)) Meanings attached to the concept of fun vary with age. It can refer to simply running around with teammates at young ages, to being on a team with friends or making new friends, to competing with peers of the same ability, and also to winning.

Human functioning in the environment can be conceptualized and studied in many ways, one of the most popular of which is based on the fundamental notion that humans are processors of information. It is assumed that information into various “storage systems” called memory, and that the information is processed. The term <processed> means that the information is coded, its code may be changed from one form to another, the information may be combined with other information, and so on. Information processing relates to human motor behavior (Marteniuk 1976). Reaction time is assessed in this study to find out about the information processing.

Roy.Jolly.,(1992), Investigates the reaction ability in children of different age groups selected under NSTC scheme of sports Authority of India. It also studies the developmental pattern of simple and choice reaction times among boys and girls of the age-group 9 years to 14 years. The results of the study revealed significant differences in reaction ability among different age group of boys and girls. The boys were found to be less variable than girls. It was also noted that simple reaction time showed development during earlier stages; while choice reaction time progressed towards later stages of development of children.

Dominique Lavisse, Dominique Devitene and Philippe Perrin (2000), investigated in the role of information Processing used by novice subjects submitted to different conditions aimed at guiding them to acquire the motor skills required to perform archery. The group was given information using fleeting sports (Gestural demonstrations and oral comments), while the group of subjects received information using permanent support (Participant and written comments). These protocols were applied to two sets of 20 children, respectively in primary or secondary school. Differences were noted in motor skill acquisition according to the quality of the cognitive constructions made by the subjects: better performances were obtained at the end of the training phase by the group of subjects. The effect was most significant in older subject, at a more advanced stage of cognitive development and clearly more efficient in mental operation. These results are interpreted with regard to cognitive theories of motor skill acquisition.

Carlton.L.G, Chow, J.W., and chae, W.S., (2000) investigated the use of visual information in highly skilled tennis players. While we have previously demonstrated that experts are able to predict opponent direction from information picked up before ball contact, the present experiment examined whether visual information of the

opponent movements results in reduced reaction latencies. Players hit volleys from balls projected from a ball machine or hit by an opponent. In both conditions the time of ball projection was known but not the ball direction. The direction of ball of travel on any trial was randomly determined. Reaction time latencies, measured from the time of ball projection to the initiation of the racquet volleying motion by the player, were 129 ms the ball was hit by an opponent and 179 ms when the ball was projected from the ball machine. Both of these latencies were shorter than reaction times under a 2-choice reaction time paradigm (246 ms)

Participation in sports helps children improve of their information processing. Studies have suggested a positive relationship between sports participation and information processing improvement. However, there are not many studies in this direction in India. It is evident that results cannot be generalized because of cultural skepticism. Keeping above points in view present study tries to explore whether sports participation influence on children information processing.

2. Methodology

Problem:

Information processing ability of sports children.

Aim:

Aim of the study is to explore the information processing ability of sports children.

Objectives:

The objective of the study is as follows:

- 1) To study the information processing ability of the sports children
- 2) Compare the information processing ability of Sports children (Participated in competitive sports) and non Sports children (Not participated in competitive sports).

Hypothesis:

Based on previous studies the following hypothesis was found:

- 1) Information processing ability is varying in different conditions.
- 2) There is a difference between sports children (participated in competitive sports) and sports children (not participated in competitive sports) on information processing.
- 3) There is a gender difference in information processing.

Operational Definitions:

- 1) **Sports children (participated in competitive sports):** children who are actively participating in competitive sports with minimum 2 years.
- 2) **Sports children (not participated in competitive sports):** children who are not actively participated in any kind of competitive sports.
- 3) **Information processing ability:** Information processing is the flow of information inward from the receptors through various stages until decisions on initiation of responses are made. In the present study reaction time is

consider to measure the time lapse between input and output.

Research Design:

The present study is exploratory in nature. To achieve the aim of the study a comparison has been made between sports children (Actively participating in competitive sports) and sports children (Not participating in competitive sports) on using Reaction time apparatus (1896) is used to measure the information processing ability of the children.

Sample:

The sample consists of two groups. That is 30 sports children (Actively participated in competitive sports) and 30 sports children (not participated in competitive sports). The total no of subjects for the current research consist 60 children. Out of 60 subjects 30 were Sports children i.e. actively participating in State and National level competition and 30 children who are not actively participating in any competitive sports. Subjects were taken from different schools, Sports clubs, sports associations situated in different parts of Bangalore city.

Sports children (Participated in competitive sports)		sports children (Not participated in competitive sports)	
Girls	Boys	Girls	Boys
15	15	15	15

The inclusive criteria for sports children (Actively participating in competitive sports):

- 1) Actively participating in competitive sports.
- 2) School going children
- 3) Age range from 9 to 14 years.

The inclusive criteria for sports children (not participated in competitive sports):

- 1) Actively not participated in any kind of competitive sports.
- 2) School going children
- 3) Age range from 9 to 14 years.

Tools:

- 1) Information schedule: This elicits children age, socio economic status, education, level of participation in sports, kind of sports, years of participation and etc.
- 2) Reaction Time Apparatus:

The speed with which a response is given to stimuli is technically known as "reaction time". Reaction time apparatus has three keys on the experimenter side and red, white and green light with click and touch button on subject side. The subject has to respond by releasing the button. The quickness with which the players respond to the stimuli was noted down (in milli seconds). The test is conducted in these conditions: Simple reaction time, choice reaction time and distraction time.

- a) Simple reaction time: Simple reaction time was measured using reaction time apparatus with chronoscope. The players were asked to respond to flash of light as quickly as possible by releasing the response key with the index finger of the preferred hand. The time taken for processing the information from the onset of the stimulus up to the initiation of responses was recorded. A few practice trials were given to the subject before starting

the actual experiment. Total 20 trials were taken and mean, SD formed out.

- b) Choice Reaction time: In choice reaction time flashes of different lights of different combinations were shown and the player has to release the response key only to an appropriate signal light. The lights alternated in an irregular order viz., red and white, red alone, white alone etc. The player had to respond only to one particular stimulus and no response was expected for other combination flashes of light. Thus the player had to observe the stimulus and make the choice for the appropriate stimulus as per the instruction given by the experimenter. The complexity of the task required the players to attentively practice a few trials before the actual reading was recorded. This was to enable the players to be acquainted with the apparatus and to make them adapted to different combinations of light. The average time recorded for the correct responses were noted down in milliseconds.
- c) Discriminative reaction time: Here the experimenter was presented 'auditory' and 'visual' stimuli in random order. The players have to place his right index finger on the right key (light key) and left index finger on the left key (sound key). When the experimenter presented the 'light' or 'sound' stimuli the player has to respond by releasing the appropriate key. Releasing the wrong key would result in an error. Average times for processing the information for both auditory and visual as well as the errors committed were calculated.

Procedure:

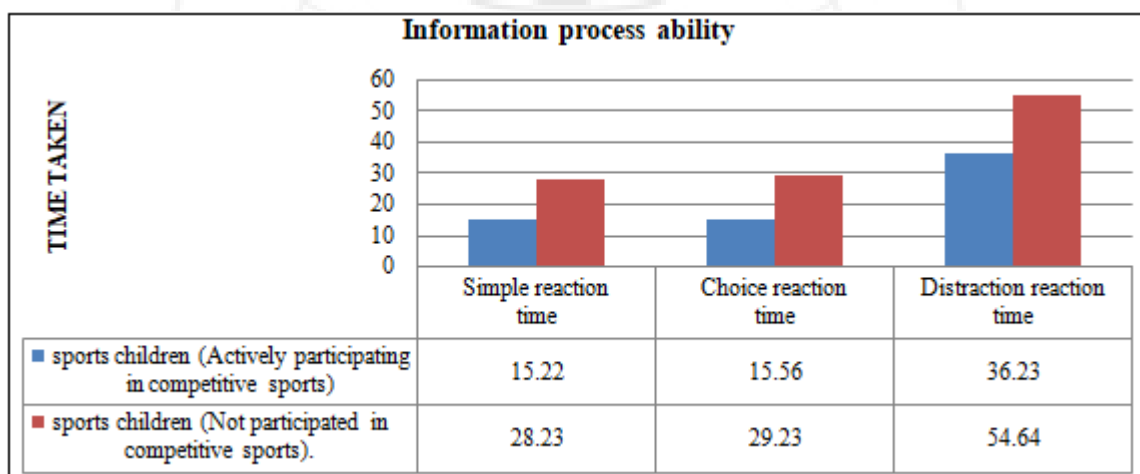
Sample consists of children age range between 9 to 14 years from Bengaluru. Firstly subject were made sit comfortably. The speed with which a response is given to stimuli is technically known as "reaction time". Reaction time apparatus has three keys on the experimenter side and red, white and green light with click and touch button on subject side. The subject has to respond by releasing the button. The quickness with which the players respond to the stimuli was noted down (in milliseconds). The test is conducted in these conditions: Simple reaction time, choice reaction time and distraction time.

3. Results and Discussion

Table 2: Shows the information processing scores of the sports children (Actively participating in competitive sports) and sports children (Not participated in competitive sports).

Information processing ability	sports children (Actively participating in competitive sports) N = 30		sports children (Not participated in competitive sports) N = 30		t value
	Mean	SD	Mean	SD	
Simple reaction time	15.22	5.43	28.23	6.76	2.82*
Choice reaction time	15.56	5.82	29.23	8.32	3.05**
Distraction reaction time	36.23	10.92	54.64	14.36	3.94**

p≤0.01 = statistically significant; higher the score greater information processing ability.



Graph 1 shows the distribution mean score of information processing abilities of sports children

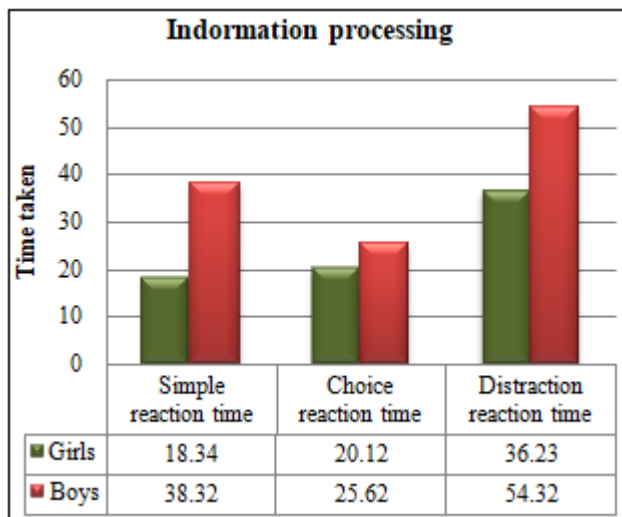
Table 2 shows the mean scores. The sports children (Actively participating in competitive sports) better compare to sports children (Not participated in competitive sports). The Mean score in sports children is 15.22 in simple reaction time, 15.56 in choice reaction time and 36.23 in distraction reaction time. The mean score of non sports children is 28.23 in simple reaction time, 29.23 in choice reaction time and 54.64 in distraction reaction time. To find out is there any differences between the information processing ability 't' test were calculated. The obtained 't' test score of simple reaction time is 2.82, choice reaction time is 3.05 and distraction reaction time t score is 3.94 indicates that there is a significant difference between sports children (Actively participating in competitive sports) and sports children (Not participated in competitive sports) at

0.01 level. The obtained result supports previous studies done by, Dominique Lavis, Dominique Devitene and Philippe Perrin (2000), investigated in the role of information Processing used by novice subjects submitted to different conditions aimed at guiding them to acquire the motor skills required to perform archery. The effect was most significant in older subject, at a more advanced stage of cognitive development and clearly more efficient in mental operation. These results are interpreted with regard to cognitive theories of motor skill acquisition.

Table 3 shows the scores of information processing ability of the sports children (Actively participating in competitive sports) and sports children (Not participated in competitive sports).

Information processing ability	Sports children (Actively participating in competitive sports) and sports children (Not participated in competitive sports).				t value
	Girls N = 30		Boys N = 30		
	Mean	SD	Mean	SD	
Simple reaction time	18.34	6.12	38.32	8.34	2.84**
Choice reaction time	20.12	6.32	25.62	7.43	2.94**
Distraction reaction time	36.23	8.92	54.32	13.25	3.68**

$p < 0.05$ = statistically significant; lesser the score greater information processing ability.



Graph 2: shows the distribution of Mean score sports children (Actively participating in competitive sports) and sports children (Not participated in competitive sports).

Table 3 shows the mean scores. The girls scored better compare to boys. The Mean score of girls is 18.34 in simple reaction time, 20.12 in choice reaction time and 36.23 in distraction reaction time. The mean score of boys is 38.32 in simple reaction time, 25.62 in choice reaction time and 54.32 in distraction reaction time. To find out is there any differences between the information processing ability 't' test were calculated. The obtained 't' test score of simple reaction time is 2.84, choice reaction time is 2.94 and distraction reaction time 't' score is 3.68 indicates that there is a significant difference between girls and boys at 0.01 level. The obtained result supports the studies done by, Millslagel 1988 found that reaction time experienced women basketball players in a task that involved recalling the presence of the ball in structures game situations and transitional situations was faster than reaction time in experienced men players.

4. Conclusion

- 1) Sports participation positively effect on information processing.
- 2) Sports children (Actively participating in competitive sports) having better information processing ability compare to sports children (not participated in competitive sports).
- 3) There is a gender difference in information processing.

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