IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 3, December 2025
Impact Factor: 7.67

Comparative Analysis of Biomotor Skills Between Sprinters and Middle – Distance Runners

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Abstract: *The purpose of the present study was to see the comparative difference between the selected Bio motor variables among sprinters and middle distance male Athletes. To achieve the objective of the study 30 state level male Athletes (15 sprinters and 15 middle distance runners) were selected as subjects by using purposive sampling technique. The age of the subjects ranged between 18 – 21years. The study was limited to selected Bio motor variables namely Speed and Agility. The data were recorded by different measures namely 30 meter dash, Modified shuttle run (4x15). To compare the bio motor variables among Sprinters and Middle distance Athletes t – test was used with the data analysis software SPSS and significant was set at 0.05 level of confidence. The finding of a study revealed that there is an significance difference between Sprinters and Middle distance Athletes*

Keywords: Bio motor, Speed, Agility

I. INTRODUCTION

The sports of competing in track and field events, including running race and various competition in jumping and throwing. One of the most popular sports in the world is running. This is evident from the extremely quick growth of enthusiasts who switch from competitive to recreational activities. Running's widespread appeal can be attributed to its many varieties, since people can engage in a range of numbers, such as splint, middle-distance, long-distance, road race, race walking, cross-country running and marathon running. The variation in the quantity of running competitions will result in distinct training regimens and physical attributes such as sprinters and the middle distance runners.

The World Athletics, a sprint number category is chosen by athletic parents to a distance of up to 400 meters; the Olympic distance categories are 100, 200 and 400 meters. The running sprint lasts less than a minute and a 100-meter run takes roughly 10 seconds. Sprinting in the ability to run a small distance in a condensed amount of time. It's utilized in a lot of running-based sports. Usually to get to a target or objective fast or to evade or catch an opponent. According to human physiology, a runners near-top speed cannot be sustained fro longer than 30 to 35 seconds because of the depletion of muscular phosphocreatine reserves, which maybe secondary to profound metabolic acidosis carried on by anaerobic glycolysis.

Middle-distance running race are track competitions that last up to 3,000 meters and longer than sprints. Through the 3000 meters might potentially be considered a middle distance event, the 800 and 1500 mile runs are the typical middle distances. The endurance necessary increases with the length of the race. In the context of this topic, middle-distance events occur between 800 and 2,000 meters. The 3,000 meters race is regarded as middle-distance by some authorities.

There are differences in the physiological characteristics of athletes among different sports and races. There are certain physiological variations between sprint and middle distance runners and reaction time are very important for Athletes (Thomas MA, 2017). A substantial amount of fast-twitching muscle fibres are required by sprinters to move quickly during the transition, while long-distance runners required significant quantities of slow-twitching muscle fibres to sustain their speed during a relatively lenthy race (Costill et al 1976). The bio motor variable namely speed, agility, flexibility, balance, explosive power this are variables plays on important role of an Athlete.

DOI: 10.48175/IJARSCT-30475

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Statement of the problem

The purpose of the present investigation was to compare the selected Bio motor variables of the subjects.

Hypothesis

It was hypothesized that they may be a significant difference in selected Bio motor variables of the subjects.

Delimitation

- The study was delimited to male athletes only.
- The study was delimited to thirty (N-30) athletes only.
- The study was delimited only to compare selected Bio motor variables among sprinters and middle distance runners.
- The study was delimited to age between 18yrs to 21yrs of state level male athletes.

Limitations of the study

- Life style of the athletes will not be considered in this study.
- Environmental factors will be considered.
- Socio economic status of the players will not be considered.
- Emotional background will be not considered.

Definitions of terms

Bio motor : The bodily processes that are used throughout any kind of physical exercise are known as bio motor skills.
Variables : The characteristics of variables that vary depending on the race or condition. The qualities are typically represented in quantitative form, such an enumeration or measurement.
Speed : is the capacity to swiftly move across the ground or fast move limbs in order to throw and grab.
Agility : The ability to move and adjust the body's posture and motion rapidly and efficiently while preserving balance, acceleration, control, and the right reaction to a shifting circumstance.

II. REVIEW OF RELATED LITERATURE

Singh (1978) assessed hockey players level of physical fitness. For the current study, sixty-seven male hockey players were chosen at random from Punjab state's entire population. The individuals underwent testing in nine district. Extended flexibility, explosive strength, coordination, balance and endurance are all elements of physical fitness. Hockey players levels in each component of physical fitness were determined by statistically analysing the data that was so gathered. According to this study, among hockey players, explosive strength and respiratory endurance were the most components of physical fitness.

Bushnell D. Tyler (2004) Analyse the differences in technique between distance runners and sprinters with the same top speed. For the study, a total of 20 college subjects (10 each) were chosen. All participants ran 60 meters on the track (first at 5.81 m\s and then at their fastest pace) and their knee, thigh and shank positions, contact time and stride length were measured. They ($p<0.05$). They also came to the conclusion that distance runners could benefit from using proper learning technique to increase their speed. (Bushnell 2004).

Chandra shekaran (2012) determined which aspects of motor fitness improve playing skill in both high and low-achieving football players at the state level. A random selection of 150 players, aged 20 to 25 from different districts in Tamil nadu was made. Speed, agility, explosive power, and cardiovascular endurance were the fitness test they were required to take. The data which were gathered both before and after the competition, were statistically analysed and the results showed that playing ability entirely depends on physical health and a stress-free mind. More than that, socioeconomic class is related to playing games more effectively.

Ishwar singh malik, charan singh and rajesh examined many aspects of football players physical fitness. Eighty participants chosen at random from four distinct Haryana districts: Rohtakwere, Biwari and Mohindergarh. In order to

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compare the players from different districts, the mean of the physical fitness variables was calculated using AAPHER adolescent fitness test had an age limit of 18 to 25. The least significant test was used to determine the significance of the difference between the means in the event of a significant f value, with a significance level of 0.05. based on the study's findings, it was clear that Rohtak football players from other districts, such as Riwari, Bhiwani and Mohindergarh in practically every physical fitness variable.

III. METHODOLOGY

The purpose of the present investigation was to compare the Bio motor variables among sprinters and middle distance runners.

In order to achieve this purpose 30 athletes from Bengaluru who have represented state level and were selected the subjects is in the age group of 18-21 years. These samples were tested with 2 selected bio motor variables.

The variables were as follows (Bio motor variables)

VARIABLE		TEST
Speed	-	30 meter dash
Agility	-	Modified shuttle run (4x15)

Descriptive of tests

A brief description of tests is explained below.

Speed: (30 meters dash)

Purpose : To measure the maximum speed**.**

Equipment : 30 meter running on track and stop watches.

Personnel administering test were used for the purpose.

Procedure:

The test was administered on all the subjects one after one the subjects stood behind the starting line and the command "On your mark" "Set" "whistle", subject started immediately started at the whistle and stopped when the subject crosses the finishing line.

Scoring : Scoring was recorded to the nearest on tenth of a second.

Agility : (Shuttle run)

Purpose : To measure the agility of the performer in running and changing direction.

Equipment's : Wooden blocks, marker cones, measurement tape, stopwatch and non-slip surface.

Procedure

The performer starts behind the line on the signal **GO** and he touches the line which is marked 15 meters away from the starting line. It is counted as one it continues running up to 4 times.

Scoring

The score from each performer is the length of time required to complete the course**.**

IV. ANALYSIS AND INTERPRETATION OF DATA

STATISTICALLY TECHNIQUES

The following statistical procedure were followed to find out the Bio motor variables among sprinters and middle distance runners of Athletes.

The data collected was the subject to statistical analysis by using mean and the standard deviation.

The 't' ratio and the analysis were applied to examine the data. The 't' ratio was calculated to find out the significant difference among sprinters and middle runners of Athletes.

30 Meter dash

The number of subjects, mean value, standard deviation and t-ratio between different independent Bio motor variables for sprinters and middle distance runners of Athletes are shown for '30 m' as variable.

Table -1

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Sl.no	Groups	N	Mean	S.D	T ratio
1	Sprinters	15	3.81533	0.274301	
2	Middle distance	15	4.23266	0.311092	0.000553

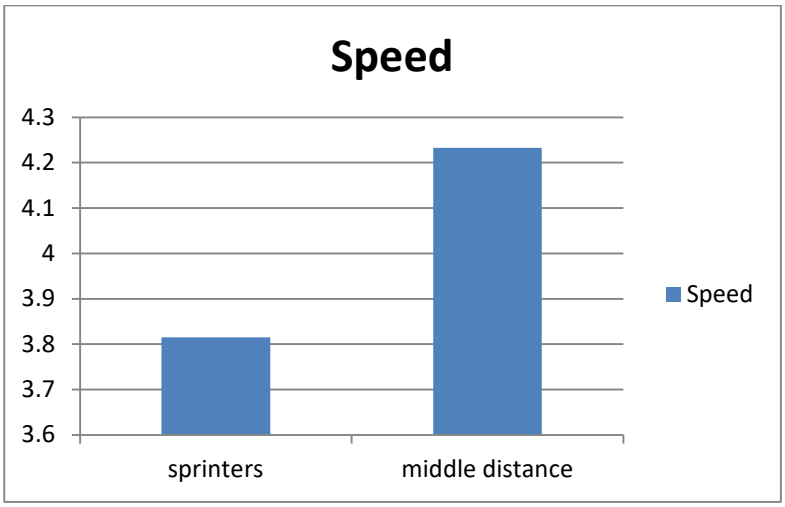
Significant at 0.05 level

The efficiency of the middle distance athlete's is less than the sprinters of Athletes.

This is because sprinters are involved in more exercises like running ABC drills etc. the 't' ratio was found to be 0.000553 for the data collected and it was found to be significant at 0.05 level of confidence.

GRAPH -1

Figure showing the variation in the Mean values of sprinters and middle distance showing state level Athletes for 30 m dash.



Modified Shuttle Run 4x15 Meters

The number of subjects, mean value, standard deviation and t-ratio between different independent Bio motor variable for sprinters and middle distance runners of Athletes are shown for 'modified shuttle run' as variable.

TABLE - 2

Sl no	Groups	N	Mean	S D	T ratio
1	sprinters	15	18.16266	0.388319947	1.5274
2	Middle distance	15	19.8233	0.986390727	

Significant at 0.05 level. In shuttle run the sprinters are better than middle distance runners of Athletes. The 't' ratio was found to be 1.5274 at 0.05 level of confidence it was found to be significant.

GRAPH -2

Figure showing the variation in the Mean values of sprinters and middle distance showing state level Athletes for modified shuttle run are shown in graph.

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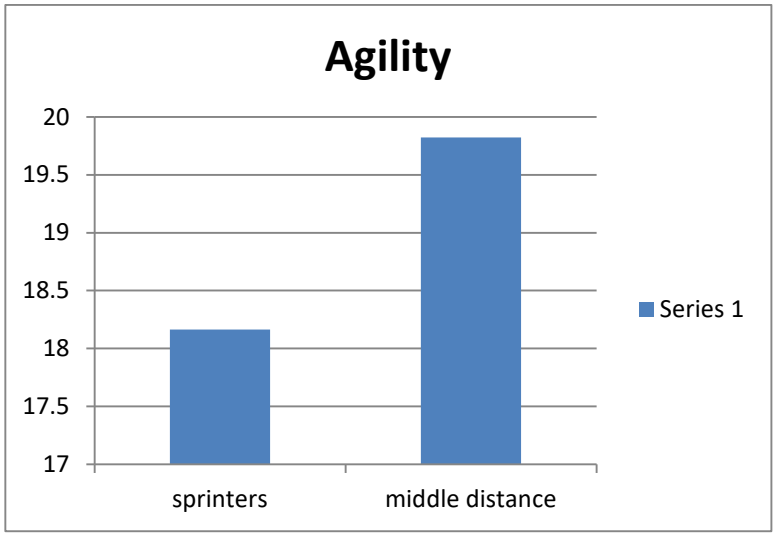

V. SUMMARY, CONCLUSION AND RECOMMENDATIONS

SUMMARY

- The purpose of the study was to compare and analyse the variations in selected Bio motor variables among sprinters and middle distance runners of Athletes.
- The present study was conducted on 30 men subjects selected from state level Athletes Bengaluru.
- The age of the subjects were running from 18-21.
- The research scholar had gone through the scientific literature pertaining to the analysis of Bio motor variables from different sources and also concluded the experts in these areas along with said literature and expert opinion. The administrative feasibility in terms of availability of instruments and expertise for meaning and recording of data was also given due consideration while selecting Bio motor variables. Based on the above mention criteria following variables are selected.
- The Bio motor variables were measured by administering test namely “30 meter dash to asses” speed, shuttle run to asses’ agility.

CONCLUSION

It was found from the analysis that

- In speed sprinters are better than the middle distance runners. The significance difference is seen in speed when compared with table value.
- In agility the splinters were better than middle distance runners. The significance difference is seen in speed when compared with table value.
- The study shows that, sprinters better in all Bio motor variables when compared to middle distance runners of the present study.

RECOMMENDATIONS

- While concluding this study the researcher felt certain related avenues for further research.
- The findings of the study showed that the similar study may be conducted on the other Athletes also.
- Investigation may be made on the other components which were not taken in this study.
- The study may be conducted at higher levels.
- Standard playing equipment and facilities should be provided to the athlete.
- There should be regular organization of tournaments, coaching camps etc…, at the college level.

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