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Prediction of roller sports performance based on selected motor fitness variables among state level roller sports achievers

S Sathish[1*], Dr. D Prasanna Balaji[2], Dr. A Mahaboobjan[3]
[1] Research Scholar, Department of Physical Education, National College, Affiliated to Bharathidasan University, Tiruchirappalli, Tamil Nadu, India
[2] Associate Professor, Department of Physical Education, National College, Affiliated to Bharathidasan University, Tiruchirappalli, Tamil Nadu, India
[3] Professor, Secretary, Department of Physical Education, Chair School of Education, and Yoga, Bharathidasan University, Tiruchirappalli, Tamilnadu, India

Abstract
The purpose of the study was to investigate the prediction of roller sports performance based on selected motor fitness variables among state level roller sports achievers. To achieve the purpose of the study one hundred roller skating players were randomly selected from various schools in Tamil Nadu State. India and their age ranged between 8 to 12 years. The subjects had past skating experience of at least three years in roller skating and only those who represented their respective schools were taken as subjects. A series of motor fitness components were speed, agility, leg strength, flexibility and balance were selected and measured by the following tests. The speed was assessed by 50-meter dash, agility was assessed by 20 yard shuttle run, balance was assessed by stork stand test, leg strength was assessed by standing broad jump test, flexibility was assessed by stork stand test, balance was assessed by stork stand test and roller sports performance was assessed by subjective rating. All testing was done one week before school competition by using scientifically approved equipment's mean and standard deviations were calculated for each of the selected variables to assess the inter-relationship among the selected motor fitness variables and roller skating. The results revealed that an inter-relationship exists significantly between the motor fitness variables and roller-skating sports performance among state level roller sports achievers.

Keywords: Speed, agility, leg strength, flexibility, balance and roller sports

Introduction

Today sports have become inseparable phenomenon of our social life. It is at the apex of human civilization because of its trials, competitive events and the scope of improving personality. The acquisition of new knowledge for betterment of performance of human being in relation to physical, motor and psychological qualities is in process of saturation. To strive for skill barrier is a million-dollar question for the experts in sports. In the process they also explore the field of psychology and enlisted certain psychological parameters which do influence sports performance.

The physical fitness is the sum of five motor abilities namely speed, strength, flexibility, endurance and coordinative abilities and their complex form like strength endurance, maximum strength, explosive strength, maximum speed and agility are the basic prerequisites of human motor action. Therefore, the sports performance is depended to a great extent on these abilities. The improvement and maintenance of specific physical fitness or condition is the main aim of sports training. Each sport requires different type and level of specific fitness as a result different type of fitness training is required for different sports. Some sports like running requires a very high level of endurance and low level of other motor abilities, sports like shooting and archery do not require high level of physical fitness. After going through the literature research scholar found that there is need of prediction study on sprinting performance related to their motor fitness variables at state level players and hence this study was undertaken.

Exercise is a subset of physical activity that is planned, structured, repetitive and has a final or an intermediate objective, the improvement or maintenance of physical fitness. Hence, physical fitness is a set of attributes that are either health or skill related. The degree to which people have these attributes can be measured with specific tests. Sports and physical activity have been considered an integral part of human life since its inception. Physical activity is an indispensable condition of human life. It is universally accepted that sports and games fulfil the requirements of human activities.

Motor fitness components like speed, agility, strength, flexibility, balance and endurance play a significant role in predicting roller sports performance. Specifically, speed and agility are highly correlated with march and glide skills. Furthermore, tests like the 50-meter sprint, standing broad jump, and shuttle run can effectively assess these components and their impact on overall playing ability. Motor fitness is a term that describes an athlete's ability to perform a particular motor skill effectively or successfully influences the technical execution during sports or other physical activity. Specifically, motor fitness encompasses several key components, such as like speed, agility, strength, flexibility, balance and endurance all of which are crucial for optimizing performance in roller skating. Once a player has these abilities practiced, these dominant abilities would be enduring and persist over a long period of time.

Roller skating is a lifetime fitness sport for children and adults. According to the available literature, balance, speed, and agility are efficiently required to perform well in every

sport Hillis TL, Holman S. (2014) [6], Winter T, Beck H, Walther A, Zwipp H, Rein S. (2015) [12], Mostaert M, Deconinck F, Pion J, Lenoir M. (2016). Improving skating performance requires understanding the contributing biomechanical variables. Balance is the capacity to maintain the centre of pressure on a support base with maximum stability and minor body sway. Encouraging children to engage in physical activity can improve neuromuscular capacities and overall health. Younger people with higher stability may benefit from the particular skating skills because skating is done on a relatively limited surface area, i.e., the blades that are in touch with a surface. The sensory systems, such as visual, somatosensory, and vestibular systems that help with postural control and the motor systems that regulate muscular output, all undergo adaptations as a result of balance training. Complex skating skills require a more refined balance, possibly getting better with training and maturity. The ability to quickly change direction and speed is known as agility. As a result, it consists of two elements: direction modifications and stimulus-related decision-making Yanci J, Los Arcos A, Salinero JJ, Mendiguchia J, Gil E, Sanesteban D, *et al*. (2015) [13]. In the scientific literature, it is recommended that agility be well-developed throughout childhood and adolescence as a crucial physical quality. Visual processing, spatial awareness, dynamic balance, and rhythm are thought to be present in athletes with good agility Thakur D, Motimath B. (2014) [11]. The process of a child becoming good agile continues over a long period. In many competitive sports, speed, especially forward linear speed, is one of the most crucial performance factors. Speed is also considered an important element for maximizing performance on skates Farlinger CM, Fowles JR. (2008) [5]. The goal of the athlete during sprinting is to move from an initial point to the endpoint in the shortest time. Thus, it seems logical that training for maximum skating speed would correspond to training for sprinting.

Methodology

To achieve the purpose of the study one hundred roller skating players were randomly selected from various schools in Tamil Nadu State. India and their age ranged between 8 to 12 years. The subjects had past skating experience of at least three years in roller skating and only those who represented their respective schools were taken as subjects. A series of motor fitness components were speed, agility, leg strength, flexibility, balance and roller sports performance were selected as criterion variables as shown in table I. All testing was done one week before the school competition by using scientifically approved equipment's mean and standard deviations were calculated for each of the selected variables to assess the inter-relationship among the selected motor fitness variables and roller-skating sports performance.

Table 1: Selected Criterion Variables and Tests

S.No.	Variables	Test	Unit of Measurements
1	Speed	50 Yards Dash	In Seconds
2	Agility	20 Yards Shuttle Run	In Seconds
3	Leg Strength	Standing Broad Jump	In Meters
4	Flexibility	Sit & Reach Test	In Centimetre
5	Balance	Stork Stand Test	In Seconds
6	Roller Sports Performance	Subjective Rating	In Points

Statistical Analysis

Statistical methods were used for the calculation of mean and standard deviation (SD). Statistical analyses were carried out on MS-Excel 2013. Pearson correlation coefficients (r) were calculated to establish the relationships between roller sports performance based on selected motor fitness variables. Statistical significance was determined using a probability level of $p \leq 0.05$. Motor fitness variables values of the research group and other findings in the study are presented in the following tables.

Table 2: Descriptive Statistics Motor Fitness Variables

S.No.	Variables	Mean	SD	Range	Min	Max
1	Speed	6.97	0.83	2.15	6.22	8.37
2	Agility	9.98	0.96	2.85	8.52	11.37
3	Leg Strength	2.29	0.47	1.51	1.34	2.85
4	Flexibility	23.30	4.69	13	18	31
5	Balance	12.85	2.47	11.51	6.24	17.75
6	Roller Sports Performance	12.71	1.21	3.80	11.20	15.00

Table II shows that the mean and standard deviation of the motor fitness variables of roller sports achievers i.e. motor fitness variables i.e. speed (6.97 ± 0.83), agility (9.98 ± 0.96), leg strength (2.29 ± 0.47), flexibility (23.30 ± 4.69) balance (12.85 ± 2.47) and roller sports performance (12.71 ± 1.21). The Mean values of motor fitness variables were shown in figure -1.

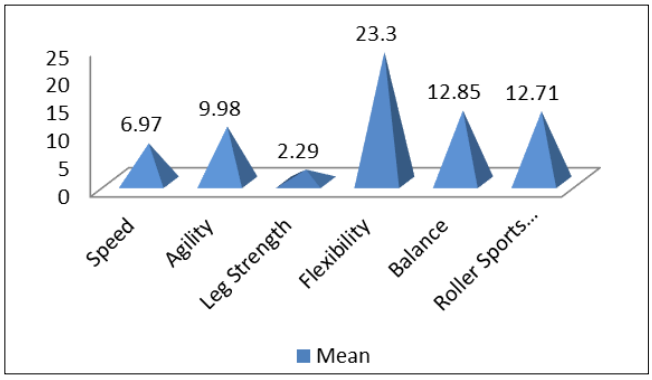

Fig 1: Mean Values of Motor Fitness Variables

Table 3: Correlation of Motor Fitness Variables with Roller Sports Performance

S.No.	Variables	Calculated 'r'
1	Speed	0.39*
2	Agility	0.46*
3	Leg Strength	0.74*
4	Flexibility	0.30
5	Balance	0.73*

'r' (28,2) = 0.361 at 0.05 level of Significance

Table III shows that the correlation of motor fitness variables with roller sports performance i.e. speed (0.39), agility (0.46), leg strength (0.74) and balance (0.73) values were significantly higher than the tabulated value 0.361 at 0.05 level of significance. Flexibility (0.30) was insignificant correlation to the roller sports performance because said variable value was less than table value 0.361 at 0.05 level of significance.

Discussions on Findings

The results revealed that an inter-relationship exists significantly between the motor fitness variables and roller-

skating sports performance among state level roller sports achievers. The results of the study in line with the studies of Hillis TL, Holman S. (2014) [6], Winter T, Beck H, Walther A, Zwipp H, Rein S. (2015) [12].

Conclusions

It was concluded that the significant inter-relationship exists between the motor fitness variables and roller-skating sports performance among state level roller sports achievers.

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