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## Influence of resistance training on speed among professional soccer players

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### Abstract

**Study Aim:** The aim of this study was to find out the influence of resistance training on speed among professional soccer players.

**Material and Methods:** A quasi-experimental study was conducted on sixty, boys (age 18-30 years) from the East Bengal Football Club, Kolkata, India. All the subjects were informed about the objectives and protocol of the study. Subjects with history of any infective or respiratory ailment condition were excluded from the study. The participants participated in the study voluntarily. The Physical fitness variable (*viz.*, Speed) was selected for the purpose the study.

**Statistical Analysis:** The normality of data was checked by using the Shapiro-Wilk test of normality. A descriptive analysis was used to describe the data distribution. Analysis of Covariance (ANCOVA) test was included in the present study. The statistical techniques were used to analyze the data on Statistical Package for Social Science (SPSS) version 26.0. The level of significance was set at 0.05.

**Results:** The mean difference between the Experimental and the Control group was .144. The experimental group showed significantly better on variable Speed than the control group as the P-value (Sig.) .000.

**Keywords:** Resistance training, speed, physical fitness

### Introductions

Enhancing the players' relevant and sport-specific physical activity is the main objective of strength and power training in a highly competitive sport. Some training techniques combine different types of exercises (e.g. weight training, plyometrics, sport specific force-based exercises) and enable optimal power growth and transfer to athletic activity due to neural and morphological changes typically associated with high-level training<sup>[1]</sup>. The positive effects of resistance training (RT) on proxies of muscular fitness, health, sport-related, and everyday activities have been examined and described in healthy children and adolescents in the form of randomized controlled trials<sup>[2]</sup>, systematic reviews<sup>[3]</sup>, meta-analyses<sup>[4]</sup>, and position stands<sup>[5]</sup>. However, findings from these studies can only partially be translated to the athletic context because physiology and proficiency in motor performance differ markedly between non-athletic and athletic youth<sup>[6]</sup>. In other words, specific characteristics of youth athletes' physiology and level of expertise have an impact on their trainability<sup>[7]</sup>.

### Materials and Methods

#### Participants

A quasi-experimental study was conducted on sixty, boys (age 18-30 years) from the East Bengal Football Club, Kolkata, India. All the subjects were informed about the objectives and protocol of the study. Subjects with history of any infective or respiratory ailment condition were excluded from the study. The participants participated in the study voluntarily. The informed consent of participants was not conducted or granted in this study because all participants' privacy and personal identity information were maintained. The study protocol was conducted at East Bengal Football Club, Kolkata. The subjects were purposively divided into two groups:

Group-A: Resistance training

☆ (N<sub>1</sub>=30)

Group-B: Control

☆ (N<sub>2</sub>=30)

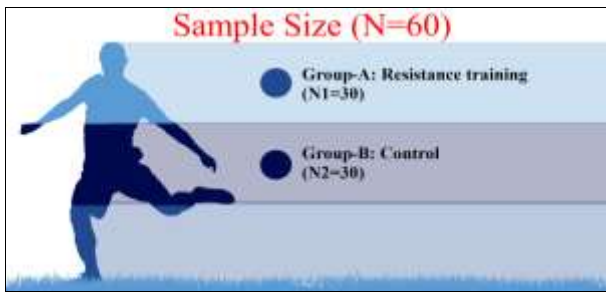


Fig 1: Selection and distribution of subjects.

Table 1: Distribution of respondents in terms of age, height and weight.

Variables	Sample Size (N=60)		
	Total (N=60)	Experimental (N <sub>1</sub> =30)	Control (N <sub>2</sub> =30)
Age	24.366±3.844	23.933±3.990	24.8±3.708
Height	174.03±7.924	176.566±8.741	171.502±6.173
Weight	71.433±6.641	73.3±6.742	69.566±6.089

The table shows the distribution of the respondents according to their age, height and weight. The mean and standard deviation of age, height, and weight of the respondents are (24.366±3.844), (174.03±7.924) and (71.433±6.641), respectively. Concerning the experimental group, the respondents' respective means and standard deviations are (23.933±3.990), (176.566±8.741) and (73.3±6.742). In contrast, the means and standard deviations of the respondents in the control group are (24.8±3.708), (171.502±6.173), and (69.566±6.089). The Physical fitness variable (*viz.*, Speed) was selected for the purpose the study.



Fig 2: Selection of tool.

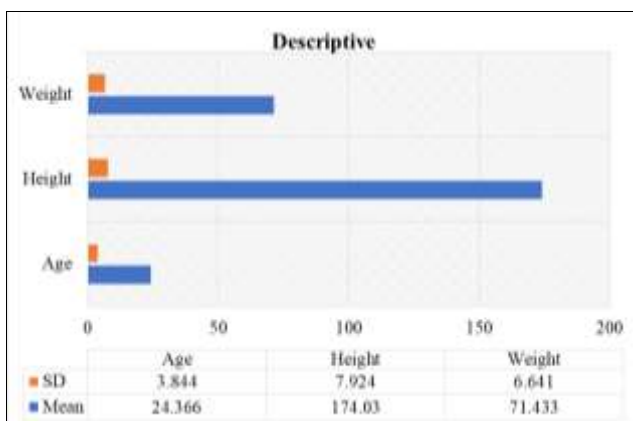


Fig 3: Graphical distribution of respondents in terms of age, height and weight.

Research Design

All training (*viz.*, Two months) and testing were performed at the same time of day to minimize the effects of diurnal contamination. Prior to training, data and testing all subjects were fully familiarized with training methodologies and testing procedures to minimize learning effects. During the experimental period, all subjects refrained from participation in additional exercise that was not related to the experiment.

Sampling Technique

Purposive sampling technique also known as judgment, selective or subjective sampling method and occurs when "the items selected for the sample are chosen at the discretion of the researcher. Researchers often believe that they can obtain a representative sample through reliable estimation, which saves time and money." were used to select specific group of individuals (Black, K., 2010), (*viz.*, experimental (N<sub>1</sub>=30) and control (N<sub>2</sub>=30) from the East Bengal Football Club, Kolkata, India. for analysis.

Ethical Considerations

There were some ethical issues in the current study. The researcher considered the following guidelines when collecting and displaying research data:

1. Integrity
2. Dignity
3. Autonomy
4. Confidentiality
5. Responsibility
6. Competence
7. Justice and Privacy

Statistical Analysis

The normality of data was checked by using the Shapiro-Wilk test of normality. A descriptive analysis was used to describe the data distribution. Analysis of Covariance (ANCOVA) test was included in the present study. The statistical techniques were used to analyze the data on Statistical Package for Social Science (SPSS) version 26.0. The level of significance was set at 0.05.

Results

Table 2: Analysis of Covariance (ANCOVA) results comparing Experimental and Control Group on the variable, "Speed".

Source of variation	Sum of squares	Degrees of freedom	Mean Sum of squares	F-ratio	Sig.
Between groups	.299	1	.299	53.729*	.000
Within groups	.318	57	.006		
Total	2022.373	60			

\*Significant at .05 level.

It is evident from Table 2 that the results of Analysis of Covariance (ANCOVA) among the experimental and control group with regard to the variable speed were found statistically significant as the obtained P-value (Sig.) being .000 which was significant as it was less than 0.05 ( $p < 0.05$ ). As the calculated F-value (53.729\*) was found to be significant, hence LSD Post-hoc test was applied to analyze the direction and significance of the difference between paired means among experimental and control group. The outcomes of the LSD post hoc test have been shown in Table 3.

**Table 3:** Analysis of LSD Post-hoc Test results comparing Experimental and Control Group on the variable, “Speed”.

of Strength and Conditioning Research. 2015;29:1439–1450.

Speed				
Descriptive	Experimental Group	Control Group	Mean Difference	P-value (Sig.)
Minimum	min = 5.40	5.17	.144*	.000
Maximum	max = 6.20	6.21		
Range	R = 0.8	1.04		
Sum	sum = 345.59	354.66		
Mean	$\bar{x}$ = 5.729	5.873		
Median	$\tilde{x}$ = 5.71	5.9		
Standard Deviation	s = 0.201	0.215		
Variance	s <sup>2</sup> = 0.040	0.046		
Mid-Range	MR = 5.8	5.69		
Interquartile Range	IQR = 0.33	0.27		
Sum of Squares	SS = 2.392	2.746		
Mean Absolute Deviation	MAD = 0.169	0.154		
Root Mean Square	RMS = 5.763	5.914		
Std Error of Mean	SE $\bar{x}$ = 0.025	0.027		
Skewness	$\gamma_1$ = 0.263	1.199		
Kurtosis	$\beta_2$ = 2.347	5.919		
Coefficient of Variation	CV = 0.034	0.036		

Level of Significant at 0.05

The mean difference between the Experimental and the Control group was .144. The experimental group showed significantly better on variable Speed than the control group as the P-value (Sig.) .000.

**Conflict of interest**

The authors declare no conflicts of interest.

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