



## Impact of Functional Training on Athletic Performance among School-Level Athletes

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### Abstract:

The purpose of this study was to examine the impact of functional training on athletic performance among school-level athletes in West Godavari District, Andhra Pradesh. Functional training has emerged as an effective training approach that emphasizes multi-joint, multi-planar movements designed to improve strength, balance, coordination, agility, flexibility, and overall athletic performance. Unlike traditional training methods that focus on isolated muscle groups, functional training develops movement patterns that closely resemble sports-specific actions and daily physical activities. For the present investigation, a sample of 60 school-level athletes aged 13–17 years was selected from various government and private schools in West Godavari District. The participants underwent a structured functional training program for a period of twelve weeks, with training sessions conducted five days per week. Selected athletic performance variables such as speed, agility, explosive power, balance, and coordination were assessed before and after the training intervention using standardized field tests. The collected data were analyzed using appropriate statistical techniques, including mean, standard deviation, and paired t-test. The findings revealed significant improvements in all selected athletic performance variables following the functional training program. Notable gains were observed in sprint speed, agility performance, vertical jump height, dynamic balance, and movement coordination. These improvements may be attributed to enhanced neuromuscular efficiency, core stability, and movement control developed through functional training exercises. Similar findings have been reported in studies of adolescent and school-aged athletes, where functional training improved movement quality, balance, strength, agility, and sport-specific performance. The study concludes that functional training is an effective and practical method for enhancing athletic performance among school-level athletes. Therefore, physical education teachers, coaches, and sports trainers are encouraged to incorporate functional training exercises into regular training programs to improve the overall physical fitness and competitive performance of young athletes in Andhra Pradesh.

**Keywords:** Functional Training; Athletic Performance; School-Level Athletes; Physical Fitness; Speed; Agility; Explosive Power; Balance; Coordination; Sports Performance; Adolescent Athletes; Physical Education; West Godavari District; Andhra Pradesh; School Sports Training.

## 1. Introduction

Sports and physical activities play a vital role in the physical, mental, and social development of school-aged children. Participation in sports during adolescence contributes significantly to the development of physical fitness, motor skills, self-confidence, discipline, and overall well-being. In recent years, coaches, physical education teachers, and sports scientists have increasingly focused on training methods that enhance athletic performance while reducing the risk of injury among young athletes. One such training approach that has gained considerable attention is functional training.

Functional training refers to a systematic exercise program that emphasizes movements rather than isolated muscles. It involves multi-joint and multi-planar exercises that mimic the natural movements performed in sports and daily activities. Functional training aims to improve strength, balance, coordination, flexibility, agility, stability, and neuromuscular efficiency simultaneously. Unlike traditional resistance training, which often targets individual muscle groups, functional training develops integrated movement patterns that enhance overall athletic performance.

Athletic performance is a multidimensional concept influenced by various physical fitness components, including speed, agility, muscular strength, power, endurance, balance, and coordination. For school-level athletes, the development of these components is essential for achieving success in sports competitions. Effective training programs during the developmental years can contribute significantly to improved performance and long-term athletic development. Functional training has been recognized as an effective method for improving these fitness components because it closely replicates the movement demands of sporting activities.

The school years represent a critical period for physical growth and motor skill development. During this stage, athletes are highly responsive to appropriate training stimuli, making it an ideal time to introduce scientifically designed training programs. In many schools, traditional training methods continue to dominate sports preparation. However, the growing popularity of functional training has encouraged researchers and practitioners to investigate its effectiveness in enhancing athletic abilities among young athletes.

In Andhra Pradesh, school sports competitions are conducted regularly at district, state, and national levels. West Godavari District has produced several talented athletes who actively participate in various sporting events. Despite the increasing participation of students in sports activities, limited research has been conducted on the effectiveness of functional training programs among school-level athletes in this region. Understanding the impact of functional training on athletic performance can provide valuable information for coaches, physical education teachers, and sports administrators in designing effective training programs for young athletes.

Functional training incorporates exercises such as squats, lunges, planks, medicine ball drills, balance exercises, agility drills, and core stabilization activities. These exercises improve movement efficiency by strengthening the muscles responsible for maintaining posture, stability, and dynamic movement control. Enhanced core strength and neuromuscular coordination developed through functional training may contribute to better performance in speed, agility, balance, and power-related activities.

Therefore, the present study entitled "Impact of Functional Training on Athletic Performance among School-Level Athletes in West Godavari District, Andhra Pradesh" was undertaken to examine the effectiveness of a structured functional training program on selected athletic performance variables. The findings of the study are expected to contribute to the scientific understanding of functional training and provide practical recommendations for improving sports performance among school-level athletes.

### **Statement of the Problem:**

Hence, the problem for the present study is stated as: "Impact of Functional Training on Athletic Performance among School-Level Athletes in West Godavari District, Andhra Pradesh."

### **Objectives of the Problem:**

1. To determine the effect of functional training on the speed of school-level athletes.
2. To assess the impact of functional training on the agility of school-level athletes.
3. To examine the influence of functional training on explosive power among school-level athletes.
4. To evaluate the effect of functional training on balance among school-level athletes.
5. To investigate the impact of functional training on coordination among school-level athletes.
6. To compare the pre-test and post-test performance scores of school-level athletes following a structured functional training program.

### **Limitations Of the Study :**

1. The study was confined to school-level athletes from selected schools in West Godavari District, Andhra Pradesh; therefore, the findings may not be generalized to athletes from other districts or states.
2. The study was limited to athletes within a specific age group and educational level.
3. Only selected athletic performance variables, namely speed, agility, explosive power, balance, and coordination, were considered for investigation.
4. The duration of the functional training programme was limited to the prescribed training period and did not examine long-term effects.
5. Factors such as nutritional habits, lifestyle patterns, psychological status, and socio-economic conditions of the participants were not controlled completely.
6. Individual differences in learning ability, motivation, and training adaptation among the athletes may have influenced the results.
7. Environmental conditions and school facilities available during the training period may have affected the performance outcomes.

### **Delimitations Of The Study:**

1. The study was restricted to school-level athletes studying in selected schools of West Godavari District, Andhra Pradesh.
2. Only male school-level athletes aged between 13 and 17 years were selected as subjects for the study.
3. The sample size was limited to 60 school-level athletes.
4. The study focused exclusively on the effects of a functional training programme.
5. The training programme was conducted for a period of 12 weeks.
6. Training sessions were administered five days per week according to the prescribed schedule.
7. The selected athletic performance variables were speed, agility, explosive power, balance, and coordination.
8. Standardized field tests were used for measuring the selected performance variables.
9. The study was confined to the academic year in which the investigation was conducted.

## **2. Methodology**

The present study was designed to investigate the impact of functional training on athletic performance among school-level athletes in West Godavari District, Andhra Pradesh. An experimental research design involving pre-test and post-test measures was adopted to determine the effectiveness of the functional training programme on selected athletic performance variables. For the purpose of the study, sixty (N = 60) school-level athletes were selected from various government and private schools in West Godavari District, Andhra Pradesh. The subjects were male athletes aged between 13 and 17 years who regularly participated in school sports and athletic activities.

### **Selection of Variables**

#### **Independent Variable**

The independent variable selected for the study was:

- Functional Training Programme

#### **Dependent Variables**

The following athletic performance variables were selected as dependent variables:

1. Speed
2. Agility
3. Explosive Power
4. Balance
5. Coordination

### 3. Experimental Procedure

Before the commencement of the training programme, all subjects underwent pre-testing on the selected athletic performance variables. The initial scores obtained from the pre-test served as baseline data. Following the pre-test, the subjects participated in a structured functional training programme for a period of twelve weeks. The training sessions were conducted five days per week under the supervision of the investigator and qualified physical education personnel.

After the twelve-week functional training programme, all subjects were again tested on the selected athletic performance variables using the same testing procedures adopted during the pre-test. The post-test scores were recorded for statistical analysis.

**TABLE 3: Pre-Test and Post-Test Mean Scores of Selected Athletic Performance Variables among School-Level Athletes (N = 60)**

Variable	Pre-Test Mean	Post-Test Mean	Mean Difference	Improvement (%)
Speed (sec)	8.54	7.98	0.56	6.56
Agility (sec)	11.72	10.89	0.83	7.08
Explosive Power (m)	1.82	2.06	0.24	13.19
Balance (sec)	19.45	25.82	6.37	32.75
Coordination (No.)	17.68	23.54	5.86	33.14

The table shows improvements in all selected athletic performance variables after twelve weeks of functional training. The highest percentage improvement was observed in coordination (33.14%), followed by balance (32.75%) and explosive power (13.19%).

**TABLE 2: Significance of Difference between Pre-Test and Post-Test Scores of Selected Athletic Performance Variables (Paired t-test)**

Variable	Pre-Test Mean	Post-Test Mean	Mean Difference	t-value	Significance
Speed (sec)	8.54	7.98	0.56	5.84	Significant

Agility (sec)	11.72	10.89	0.83	6.27	Significant
Explosive Power (m)	1.82	2.06	0.24	7.15	Significant
Balance (sec)	19.45	25.82	6.37	8.94	Significant
Coordination (No.)	17.68	23.54	5.86	9.32	Significant

**Table Value of t at 0.05 Level of Significance (df = 59) = 2.00**

The calculated t-values for all selected athletic performance variables were greater than the required table value (2.00). Therefore, significant improvements were observed in speed, agility, explosive power, balance, and coordination following the functional training programme. This indicates that functional training had a positive effect on the athletic performance of school-level athletes in West Godavari District, Andhra Pradesh.

#### 4. Discussion

The purpose of the present study was to investigate the impact of functional training on athletic performance among school-level athletes in West Godavari District, Andhra Pradesh. The selected athletic performance variables included speed, agility, explosive power, balance, and coordination. A structured functional training programme was administered for twelve weeks, and the effectiveness of the programme was assessed through pre-test and post-test measurements.

The analysis of data revealed significant improvements in all selected athletic performance variables following the completion of the functional training programme. The findings indicate that functional training is an effective training method for enhancing the physical abilities required for athletic performance among school-level athletes.

About speed, the post-test mean score showed a noticeable improvement compared to the pre-test score. The significant reduction in sprint time indicates that functional training enhanced neuromuscular coordination, stride efficiency, and lower-body muscular strength. The incorporation of dynamic movement exercises, sprint drills, and core-strengthening activities likely contributed to the improvement in running performance.

The results related to agility also demonstrated significant enhancement after the training intervention. Agility is an essential component of athletic performance that involves rapid changes in body position and direction while maintaining balance and control. Functional training exercises such as ladder drills, cone drills, multidirectional movements, and body-weight exercises may have improved the athletes' reaction time, movement efficiency, and coordination, thereby contributing to better agility performance.

The findings further revealed significant improvement in explosive power as measured through the standing broad jump test. Functional training exercises involving squats, lunges, jumping activities, and plyometric movements likely increased the strength and power of the lower extremities. Improved muscular power enables athletes to perform explosive movements more effectively during sports participation.

A remarkable improvement was observed in balance performance following the functional training programme. Balance is a critical factor for maintaining body stability during dynamic sporting activities. Functional training incorporates numerous exercises that challenge the body's postural control systems, resulting in enhanced stability and body awareness. The significant improvement in balance observed in the present study may be attributed to increased core strength and neuromuscular control.

Among all the variables studied, coordination exhibited one of the highest percentage improvements. Functional training emphasizes integrated body movements that require the simultaneous activation of multiple muscle groups. Such exercises improve motor control, movement precision, and coordination between different body segments. The

results suggest that the training programme effectively enhanced the athletes' ability to perform coordinated movements efficiently.

The calculated t-values for all selected variables were greater than the required table value at the 0.05 level of significance. Therefore, the null hypothesis stating that there would be no significant improvement in athletic performance following functional training was rejected. The findings clearly indicate that functional training produced statistically significant positive effects on speed, agility, explosive power, balance, and coordination among school-level athletes.

The results of the present investigation are consistent with previous research findings that reported positive effects of functional training on physical fitness and sports performance. Researchers have observed that functional training enhances muscular strength, movement efficiency, stability, balance, agility, and overall athletic performance. The present study supports these findings and extends their applicability to school-level athletes in West Godavari District, Andhra Pradesh.

## **5. Conclusion**

The present study was conducted to examine the impact of functional training on athletic performance among school-level athletes in West Godavari District, Andhra Pradesh. Based on the analysis and interpretation of the collected data, it was concluded that the twelve-week functional training programme produced significant improvements in the selected athletic performance variables, namely speed, agility, explosive power, balance, and coordination.

The findings demonstrated that functional training is an effective training method for enhancing overall athletic performance among school-level athletes. The significant improvements observed in the post-test scores indicate that functional training contributes to the development of neuromuscular coordination, core stability, movement efficiency, and physical fitness, which are essential for successful sports performance.

Among the selected variables, balance and coordination showed the greatest percentage improvements, highlighting the effectiveness of functional exercises in improving body control and movement precision. Similarly, improvements in speed, agility, and explosive power suggest that functional training enhances the physical capabilities required for athletic activities and competitive sports.

The statistical analysis confirmed that the calculated t-values for all selected variables were significant at the 0.05 level, indicating that the observed improvements were not due to chance. Therefore, the hypothesis that functional training would positively influence athletic performance was accepted.

In conclusion, the study establishes that functional training is a practical, safe, and scientifically effective approach for improving athletic performance among school-level athletes. The incorporation of functional training exercises into regular physical education and sports training programmes can contribute substantially to the physical development and competitive success of young athletes. The findings of this study may serve as a valuable reference for coaches, physical education teachers, sports trainers, and researchers interested in enhancing athletic performance through modern training methods.

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