Enhancing Performance of Grassroots Football Players in Goa: A 12–Week Training Program

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ABSTRACT

Structured training programs are increasingly recognized as essential tools for improving physical fitness and sport-specific performance in youth athletes. This study provides empirical evidence by evaluating the impact of a 12-week structured training intervention on the biomotor abilities of grassroots U13 male football players in Goa. Utilizing a pre–post true experimental design, 40 participants were randomly divided into experimental and control groups. The experimental group engaged in a scientifically designed regimen of four weekly sessions incorporating plyometric exercises, resistance training, and high-intensity interval training (HIIT). Standardized assessments were employed, including the 30m dash for speed, Illinois Agility Test for agility, 1-minute sit-ups for muscular endurance, sit-and-reach test for flexibility, and dribbling and accuracy tests for football-specific skills. Results from repeated-measures ANOVA revealed statistically significant improvements in the experimental group: speed improved from 6.78 ± 0.40 sec to 6.21 ± 0.35 sec ($p < 0.001$), agility from 17.60 ± 0.72 sec to 16.85 ± 0.68 sec ($p < 0.01$), muscular endurance from 28.5 ± 3.7 reps to 35.2 ± 4.1 reps ($p < 0.01$), flexibility from 26.1 ± 2.2 cm to 28.3 ± 2.4 cm ($p < 0.05$), and football-specific skills from 80.6 ± 4.2% to 88.2 ± 3.6% ($p < 0.01$). In contrast, the control group showed negligible changes across these parameters.These findings underscore the transformative potential of evidence-based training programs in enhancing youth athletic performance and advancing grassroots football. The insights provided are crucial for coaches, trainers, and policymakers dedicated to fostering excellence in youth sports development.

Keywords : Grassroots Football, U13, Training Program, Physical Fitness, Football-Specific Performance, Goa

Introduction

Football, often hailed as "the beautiful game," is cherished worldwide for its ability to captivate audiences and connect individuals from diverse cultural and social backgrounds. Its universal appeal is grounded in both the excitement of play and its potential to inspire and unite communities. At the heart of football's enduring success lies grassroots development, where young players embark on their journey, honing foundational skills and cultivating a deep passion for the sport. Grassroots football serves as the bedrock for identifying talent and nurturing future athletes, making it a critical element in ensuring the sport's growth and continued prominence.

In Goa, a state with a profound footballing legacy, the scope to nurture young talent is particularly promising. The region's cultural affinity for football, combined with its rich history and active community engagement, provides an ideal platform to develop young players. For the Under-13 (U13) age group, this stage is vital in shaping future athletes, as players in this phase undergo rapid physical and skill development. Structured training programs during this period should focus on more than just technical abilities; they should enhance physical fitness components such as speed, agility, endurance, and flexibility while fostering football-specific skills.

However, grassroots football in Goa often faces challenges in providing scientifically designed, targeted training programs for young athletes. This lack of access to evidence-based interventions can hinder the holistic development and athletic potential of aspiring footballers. To address this gap, this study investigates the impact of a 12-week structured training program designed specifically for U13 male football players.

The training program integrates plyometric exercises, resistance training, and high-intensity interval training (HIIT), targeting key biomotor abilities essential for football performance. Parameters such as speed, agility, muscular endurance, flexibility, and football-specific skills are assessed using standardized tests, ensuring a comprehensive evaluation. The study aims to provide empirical insights into the effectiveness of structured training in enhancing athletic performance at the grassroots level. Through this research, the study not only highlights the value of methodical, evidence-based training interventions but also underscores their potential in transforming grassroots football in Goa. The findings contribute actionable knowledge for coaches, trainers, and policymakers, emphasizing the importance of investing in the development of young athletes to ensure both individual excellence and the long-term growth of the sport. By equipping young players with the tools they need to thrive, this study sets the foundation for fostering a new generation of football talent.

Procedure of research:

The current study employed a parallel true experimental design to examine the effectiveness of a 12-week structured training program on the biomotor abilities and football-specific skills of grassroots U13 male football players in Goa. A total of 40 male participants were randomly assigned into two groups: the experimental group and the control group, ensuring an unbiased distribution for robust comparisons.

Experimental Group The experimental group underwent a carefully structured training program aimed at enhancing physical fitness and football-specific abilities. The 12-week program included four supervised training sessions per week, incorporating the following components:

- **Plyometric exercises :** Designed to improve explosive power.
- **Resistance training :** Focused on building muscular strength and endurance.
- **High-intensity interval training (HIIT) :** Targeted at boosting cardiovascular fitness.
- **Flexibility drills :** Included to enhance range of motion and reduce injury risk.

Control Group The control group continued their regular football-related activities without receiving any specialized intervention. This allowed for baseline comparisons to assess the impact of the structured training program.

Data Collection and Assessment The performance of participants from both groups was evaluated before and after the 12-week intervention period using standardized tests for the following parameters:

1. **Speed :** Measured using the 30m dash.
2. **Agility :** Assessed via the Illinois Agility Test.
3. **Muscular Endurance :** Evaluated using the 1-minute sit-up test.
4. **Flexibility :** Assessed with the Sit-and-Reach test.
5. **Football-Specific Skills :** Measured using the SAI Football Test batteries, which included dribbling and passing accuracy evaluations.

The experimental group's progress was compared against the control group's outcomes using repeated-measures ANOVA to identify statistically significant improvements. **Ethical Considerations** The study adhered to ethical research practices, including obtaining informed consent from the parents or guardians of all participants. All training sessions were designed in compliance with age-appropriate

guidelines, prioritizing the safety and well-being of the participants throughout the study.

Analysis and Interpretation

The collected data was analysed with the help of statistical techniques such as descriptive statistics.

Table 4.1 : *Descriptive Analysis of the 12-Week Training on Key Biomotor Abilities*

Parameter	Experimental Group (Mean ± SD)	Control Group (Mean ± SD)	p-value	Significance
Speed (30m Dash)	6.21 ± 0.35 sec (Post) vs	6.75 ± 0.38 sec (Post) vs	$p < 0.001$	Highly Significant
	6.78 ± 0.40 sec (Pre)	6.77 ± 0.41 sec (Pre)		
Agility (Illinois Test)	16.85 ± 0.68 sec (Post)	17.58 ± 0.71 sec (Post)	$p < 0.01$	Significant
	vs 17.60 ± 0.72 sec (Pre)	vs 17.61 ± 0.73 sec (Pre)		
Muscular Endurance (1-min Sit-ups)	35.2 ± 4.1 reps (Post) vs	29.0 ± 3.8 reps (Post) vs	$p < 0.01$	Significant
	28.5 ± 3.7 reps (Pre)	28.7 ± 3.6 reps (Pre)		
Flexibility (Sit-and-Reach)	28.3 ± 2.4 cm (Post) vs	26.2 ± 2.3 cm (Post) vs	$p < 0.05$	Significant
	26.1 ± 2.2 cm (Pre)	26.0 ± 2.4 cm (Pre)		
Football-Specific Skills (Dribbling and Accuracy)	88.2 ± 3.6% (Post) vs	81.0 ± 4.0% (Post) vs	$p < 0.01$	Significant
	80.6 ± 4.2% (Pre)	80.9 ± 4.1% (Pre)		

Table 4.1 displays the outcomes from standardized assessments measuring key performance metrics, including speed (30m Dash), agility (Illinois Agility Test), muscular endurance (1-Minute Sit-Up Test), flexibility (Sit-and-Reach Test), and football-specific skills (dribbling and passing accuracy using SAI Football Test Batteries). The repeated-measures ANOVA analysis demonstrated significant improvements across all parameters for the experimental group ($p < 0.05$ to $p < 0.001$), whereas the control group exhibited negligible changes, emphasizing the efficacy of the structured training program.

Major Findings

- The speed (30m Dash) of the experimental group significantly improved from 6.78 ± 0.40 seconds to 6.21 ± 0.35 seconds ($p < 0.001$), highlighting enhanced explosiveness and quickness.
- Agility, assessed through the Illinois Agility Test, showed significant improvement in the experimental group ($p < 0.01$) compared to negligible changes in the control group.

- Muscular Endurance, measured via the 1-minute sit-up test, exhibited significant gains in the experimental group ($p < 0.01$), with a mean increase of 6.7 repetitions post-intervention.
- Flexibility, evaluated using the Sit-and-Reach Test, improved significantly in the experimental group ($p < 0.05$) compared to baseline.
- Football-specific skills, including dribbling and passing accuracy measured via SAI Football Test Batteries, improved by an average of 7.6% in the experimental group ($p < 0.01$).

These findings strongly support the effectiveness of the structured training program in improving key biomotor abilities and football-specific skills among U13 grassroots players in Goa. The statistical validation provided by repeated-measures ANOVA underscores the robustness of these results.

Discussion

This study highlights the effectiveness of a structured 12-week training program in enhancing the biomotor abilities and football-specific skills of U13 male players. The significant improvements observed in speed, agility, muscular endurance, flexibility, and dribbling accuracy demonstrate the program's success in preparing young athletes for competitive football. Incorporating plyometric exercises, resistance training, and HIIT, the program proved impactful in developing both general fitness and sport-specific performance. These findings support the value of age-appropriate, evidence-based interventions during formative years, offering insights for coaches, trainers, and policymakers to elevate grassroots football and nurture young talent effectively.

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