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EFFECTIVENESS OF FOOTBALL TRAINING ON THE MOTOR ABILITIES OF 12- YEAR OLD STUDENTS

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ABSTRACT
The issue of developing the motor abilities of students is highly relevant to school-based physical education. Few specialists plan the development of motor qualities in relation to the formation of motor skills, and this is particularly true in football lessons. In this regard, we conducted a study aimed at determining the effectiveness of football training on the motor abilities of 12-year-old students. To achieve this, we conducted a one-time testing at the end of the 2023/2024 academic year involving 70 sixth-grade students (from "Victor Hugo" Secondary School No. 81 in Sofia - EG, and "Hristo Yasenov" Secondary School in Etropole - CG). Methods: The experimental group (EG) followed a thematic plan that included lessons for targeted football training. The control group (CG) followed a standard methodology where lessons did not emphasize the development of specific football skills. The study was conducted using the following tests: 10 m sprint, 20 m sprint, agility test, dribbling, standing long jump with both feet, shuttle run 6x20, and juggling. **Results**: After processing the results, we found significant differences in the motor abilities of the students in the experimental group compared to the control group. The experimental group showed improved motor skills and habits that meet the learning outcomes for football training, as well as developed motor qualities associated with their specific physical manifestations.**Conclusion**: Conducting football training during physical education classes contributes to meeting the requirements for the implementation of the educational content and provides better opportunities for improvement in this specific sport.

Key words: training, motor abilities, students, football

INTRODUCTION

The educational process is a social system (subsystem) with specific goals and objectives, functioning systematically and oriented towards teaching and mastering knowledge, training and improving motor skills and habits, raising intellectual levels, and building moral and ethical virtues (1). Moreover, physical education is an essential component of the educational system in Bulgaria. Evaluating the current state of motor abilities and assessing them for the subsequent optimization of the physical education process is a primary responsibility of sports educators (2).

Reference (3) defines the stages of the learning process as: 1) acquiring new educational material; 2) comprehending and summarizing the material; 3) consolidating the material; and 4) applying knowledge, skills, and habits in practice. (4) The strong attraction of children to the game of football allows this sport to be utilized not only as a means of physical development but also as a significant factor with educational and pedagogical influence. It helps build character and contributes to the social interaction of individuals. Reference (5) defines tactics as the creative and expedient selection and application of means, methods, and forms for the most effective competition against an opponent under game conditions. They note the interdependent relationship between tactical training and other aspects of sports preparation, highlighting the stimulating role of well-directed tactics for improving physical, mental, technical, and theoretical readiness. The development of a methodology for a differentiated approach in enhancing motor abilities is a crucial factor for optimizing

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the sports training process (6). (7) examines two methods for mastering technical elements—stereotypical and variable. Reference (8) compares results obtained in traditional physical education lessons and game-based lessons. It was found that students trained through games achieved greater movement coordination. According to the authors, this led to more targeted development of motor qualities and improvement in the physical capabilities of students.

The effectiveness of the learning process depends on improving the teaching and learning processes, stimulating activity, forming relationships, and the content of the training itself. Football, along with handball, is among the first two sports games introduced to children as early as the third grade. It is crucial that the training is adapted to the characteristics of motor activities and differentiated according to the specific conditions for different groups of sports, especially focusing on revealing the characteristics of sports games. Reference (9) proposes a method for football training that is based on the gradual learning of technical elements in simplified conditions, beginning with imitation exercises without the ball from a stationary position, progressing to exercises with a fixed ball, stationary and with acceleration. Reference (10) suggests an improved method for football training of students that emphasizes game-like situations for the formation of motor skills in football. The author critiques the traditional methodology that includes training with a static ball and stationary exercises and offers an alternative that aims at the integration of motor skills through subsequent practice in instructional games. Reference (11) in their "Football Training Program for Children and Youth" opposes the methodological sequence of learning technical skills involving static ball exercises first, followed by movement execution. They explain that training with movement starts on the basis of an already established motor skill involving a static ball, and the introduction of movement as a new element complicates rather than facilitates further improvement.

METHODS

The purpose of our study is to determine the effectiveness of football training on the motor abilities of 12-year-old students. To achieve this, the following tasks were carried out:
1. To reveal the theoretical foundations of the investigated problem.
2. To determine the effectiveness of football training on the motor abilities of 12-year-old students from Sofia and Etropole.
3. To conduct a comparative and correlational analysis of the obtained results.

The subject of the study includes 70 sixth-grade students (35 boys from "Victor Hugo" Secondary School No. 81 in Sofia – EG and 35 boys from "Hristo Yasenov" Secondary School in Etropole – CG). The study involved one-time testing at the end of the 2023/2024 academic year. Methods: The experimental group (EG) followed a thematic plan that included lessons for targeted football training. The control group (CG) followed a standard methodology, without emphasizing the development of specific football skills in their football lessons. The study was conducted using the following tests: "10 m sprint," "20 m sprint," "Agility," "Dribble," "Standing long jump with both feet," "Shuttle run 6x20," and "Juggling." The test results were processed through: 1) Comparative analysis (to calculate the mean value) and 2) Correlation analysis – Pearson's linear correlation coefficient (r).

RESULTS

T**able 1** presents the descriptive statistics of various physical performance tests conducted on an experimental group consisting of 29 participants (with some metrics including 27 participants, as indicated by "Valid N"). The metrics evaluated are primarily related to speed, agility, endurance, and coordination. **Running 10 m**: **Mean (X):** 1.98 seconds; **Range (R):** 0.47 seconds; **Minimum and Maximum**: Times ranged from 1.72 to 2.19 seconds; **Standard Deviation (S):** 0.13 seconds, indicating a relatively low variability in participants' performance. ;**Coefficient of Variation (V%):** 6.32%, suggesting a consistent performance among participants; **Skewness (As):** -0.32, indicating a slight negative skew, meaning most participants achieved times slightly faster than the average; **Kurtosis (Ex):** -0.87, indicating a platykurtic distribution, which suggests a flatter than normal distribution with fewer extreme values.

Table 1. *Experimental group – (EG, Sofia).*

	N	R	Min.	Max.	X	S	V%	As	Ex
Running 10 m	29	0,47	1,72	2,19	1,98	0,13	6,32	-0,32	-0,87
Running 20 m	29	0,72	3,03	3,75	3,35	0,20	5,83	0,31	-0,58
Agility	29	1,66	8,36	10,02	9,28	0,41	4,41	-0,26	-0,09
Dribbling	29	5,24	11,53	16,77	13,55	1,29	9,51	0,85	-0,01
Standing Long Jump	29	55,00	150,00	205,00	184,66	14,07	7,62	-0,84	0,89
Shuttle Run	27	4,67	22,74	27,41	24,98	1,35	5,40	0,12	-0,83
Juggling	29	145,00	5,00	150,00	48,72	48,94	100,44	1,21	-0,05
Valid N (listwise)	27								

Running 20 m: **Mean (X)**: 3.35 seconds; **Range (R):** 0.72 seconds; **Minimum and Maximum:** Times ranged from 3.03 to 3.75 seconds; **Standard Deviation (S):** 0.20 seconds, indicating moderate consistency in running times; **Coefficient of Variation (V%):** 5.83%, showing a slightly higher consistency compared to the 10 m run; **Skewness (As):** 0.31, suggesting a mild positive skew, where some participants have slightly slower times than the mean; **Kurtosis (Ex):** -0.58, indicating a relatively flat distribution.

Agility (Pivot): **Mean (X)**: 9.28 seconds; **Range (R)**: 1.66 seconds; **Minimum and Maximum**: Values range from 8.36 to 10.02 seconds; **Standard Deviation (S)**: 0.41 seconds, showing low variability in agility times; **Coefficient of Variation (V%)**: 4.41%, reflecting high consistency; **Skewness (As)**: -0.26, which indicates a slight negative skew; **Kurtosis (Ex)**: -0.09, suggesting a distribution close to normal.

Dribbling: **Mean (X)**: 13.55 seconds; **Range (R):** 5.24 seconds; **Minimum and Maximum**: Dribbling times ranged from 11.53 to 16.77 seconds; **Standard Deviation (S):** 1.29 seconds, indicating higher variability compared to previous tests; **Coefficient of Variation (V%)**: 9.51%, suggesting moderate variation in dribbling ability; **Skewness (As)**: 0.85, indicating a positive skew, which means more participants performed slightly below average; **Kurtosis (Ex):** -0.01, which is close to zero, indicating a near-normal distribution. **Standing Long Jump**: **Mean (X)**: 184.66 cm; **Range (R):** 55.00 cm; **Minimum and Maximum**: The jump distance ranged from 150 cm to 205 cm; **Standard Deviation (S):** 14.07 cm, indicating substantial variability; **Coefficient of Variation (V%)**: 7.62%, suggesting a moderate consistency in jump performance; **Skewness (As)**: -0.84, which suggests a significant negative skew, indicating that a larger proportion of participants jumped distances closer to the upper limit; **Kurtosis (Ex)**: 0.89, indicating a leptokurtic distribution, meaning that there are more extreme values than in a normal distribution. **Shuttle Run**: **Mean (X)**: 24.98 seconds; **Range (R)**: 4.67 seconds; **Minimum and Maximum**: From 22.74 to 27.41 seconds; **Standard Deviation (S)**: 1.35 seconds, indicating moderate variability; **Coefficient of Variation (V%)**: 5.40%, showing decent consistency in performance; **Skewness (As)**: 0.12, suggesting a distribution that is nearly symmetrical; **Kurtosis (Ex)**: -0.83, which suggests a platykurtic distribution, indicating fewer extreme values.

Juggling: **Mean (X)**: 48.72 successful attempts; **Range (R)**: 145.00 attempts; **Minimum and Maximum**: Participants performed between 5 and 150 successful attempts; **Standard Deviation (S)**: 48.94, which indicates a very high level of variability in performance; **Coefficient of Variation (V%)**: 100.44%, reflecting a very wide range of skill levels among participants; **Skewness (As):** 1.21, indicating a positive skew, suggesting that most participants have lower juggling counts with a few performing significantly better; **Kurtosis (Ex)**: -0.05, indicating a distribution that is close to normal, but slightly flat. **Running and Agility Tests**: The results for the running and agility tests (10 m, 20 m, agility, dribbling) indicate relatively low variability, with coefficients of variation between 4% and 10%. This suggests that the participants have similar physical conditioning and training levels in terms of speed and agility. **Jumping and Shuttle Run**: The standing long jump and shuttle run showed moderate variability, suggesting differences in explosive power and endurance among the participants. **Juggling**: The juggling test shows the highest variability, with a coefficient of variation over 100%. This suggests a significant disparity in hand-eye coordination skills among participants.

Skewness and Kurtosis: Most of the measures show a skewness value close to zero, indicating distributions that are approximately symmetrical. The kurtosis values generally indicate distributions that are either slightly flatter or slightly more peaked than a normal distribution, with no extreme outliers being overly dominant.

The experimental group demonstrates a relatively uniform level of performance in most speed and agility metrics, with low variability and consistent means. The greatest variability is observed in the juggling test, which could indicate a wide range in participants' coordination skills. These results suggest that while the group has similar levels of physical conditioning in terms of running and agility, there are substantial differences in coordination-based tasks, such as juggling.

Table 2. *Control Group – (CG – Etropole)*

	N	R	Min.	Max.	X	S	V%	As	Ex
Running 10 m	29	0,50	1,78	2,28	1,99	0,14	7,08	0,34	-0,61
Running 20 m	29	0,70	3,11	3,81	3,45	0,20	5,87	0,15	-0,83
Agility	29	3,12	8,42	11,54	9,52	0,65	6,87	0,90	1,91
Dribbling	29	4,68	11,54	16,22	13,91	1,16	8,36	0,26	-0,54
Standing Long Jump	29	55,00	145,00	200,00	177,90	14,62	8,22	-0,62	-0,03
Shuttle Run	29	6,86	22,24	29,10	25,82	2,03	7,88	0,32	-1,08
Juggling	29	65,00	3,00	68,00	22,76	18,40	80,84	0,98	-0,16
Valid N (listwise)	29								

Table 2 presents the descriptive statistics for a set of physical performance tests conducted on a control group of 29 participants. These metrics are similar to the experimental group, evaluating speed, agility, coordination, and endurance.

Running 10 m: **Mean (X):** 1.99 seconds; **Range (R)**: 0.50 seconds; **Minimum and Maximum**: Times ranged from 1.78 to 2.28 seconds; **Standard Deviation (S):** 0.14 seconds, indicating low variability; **Coefficient of Variation (V%):** 7.08%, which shows that participants had similar performance levels; **Skewness (As):** 0.34, indicating a slight positive skew—some participants took slightly longer to complete the sprint compared to the mean; **Kurtosis (Ex):** -0.61, suggesting a flatter than normal distribution, which means fewer extreme results compared to a normal distribution.

Running 20 m: **Mean (X)**: 3.45 seconds; **Range (R):** 0.70 seconds; **Minimum and Maximum**: Times ranged from 3.11 to 3.81 seconds; **Standard Deviation (S)**: 0.20 seconds, suggesting moderate consistency; **Coefficient of Variation (V%)**: 5.87%, indicating good consistency in participants' sprint performance; **Skewness (As)**: 0.15, showing a very mild positive skew; **Kurtosis (Ex)**: -0.83, indicating a platykurtic distribution, implying fewer extreme outcomes than a normal distribution.

Agility (Pivot): **Mean (X)**: 9.52 seconds; **Range (R)**: 3.12 seconds; **Minimum and Maximum**: Times ranged from 8.42 to 11.54 seconds; **Standard Deviation (S)**: 0.65 seconds, which shows some degree of variability; **Coefficient of Variation (V%)**: 6.87%, demonstrating relatively uniform performance; **Skewness (As)**: 0.90, indicating a moderate positive skew—some participants performed slower than the average; **Kurtosis (Ex)**: 1.91, suggesting a leptokurtic distribution with more participants performing near the mean and few extreme values.

Dribbling: **Mean (X)**: 13.91 seconds; **Range (R)**: 4.68 seconds; **Minimum and Maximum**: Dribbling times ranged from 11.54 to 16.22 seconds; **Standard Deviation (S)**: 1.16 seconds, indicating some variability in the dribbling skills of participants; **Coefficient of Variation (V%)**: 8.36%, suggesting that there is moderate variation in performance; **Skewness (As)**: 0.26, indicating a slightly positive skew; **Kurtosis (Ex)**: -0.54, suggesting a slightly flat distribution compared to normal.

Standing Long Jump: **Mean (X)**: 177.90 cm; **Range (R)**: 55.00 cm; **Minimum and Maximum**: Jump distances ranged from 145.00 cm to 200.00 cm; **Standard Deviation (S)**: 14.62 cm, indicating significant variation in explosive power among participants; **Coefficient of Variation (V%)**: 8.22%, suggesting a moderate spread in the participants' abilities; **Skewness (As):** -0.62, indicating a slight negative skew—more participants jumped further distances; **Kurtosis (Ex)**: -0.03, indicating a distribution close to normal.

Shuttle Run: **Mean (X)**: 25.82 seconds; **Range (R)**: 6.86 seconds; **Minimum and Maximum**: Times ranged from 22.24 to 29.10 seconds; **Standard Deviation (S)**: 2.03 seconds, indicating substantial variability among participants; **Coefficient of Variation (V%)**: 7.88%, reflecting moderate consistency in performance; **Skewness (As)**: 0.32, suggesting a very mild positive skew; **Kurtosis (Ex)**: -1.08, suggesting a platykurtic distribution with fewer extreme values compared to a normal distribution.

Juggling: **Mean (X)**: 22.76 successful attempts; **Range (R)**: 65.00 attempts; **Minimum and Maximum**: Juggling attempts ranged from 3.00 to 68.00 successful attempts; **Standard Deviation (S)**: 18.40, indicating a high level of variability; **Coefficient of Variation (V%)**: 80.84%, indicating significant differences in coordination skills among participants; **Skewness (As)**: 0.98, suggesting a positive skew—most participants performed fewer juggling attempts with a few participants significantly outperforming the average; **Kurtosis (Ex)**: -0.16, indicating a distribution that is slightly flatter than normal; **Running and Agility Tests**: The running and agility tests (10 m, 20 m, agility, and dribbling) showed moderate variability, with coefficients of variation ranging from 5% to 8%. This suggests relatively uniform levels of physical conditioning among participants.**Jumping and Shuttle Run**: The standing long jump and shuttle run exhibited greater variability, suggesting differences in participants' explosive power and endurance capabilities. **Juggling**: The juggling test presented the highest coefficient of variation (80.84%), indicating substantial differences in hand-eye coordination skills among the participants. This result implies a wider range of abilities, from very low to moderate proficiency in juggling.

Table 3. *Student's t-test for EG and CG*

	CG			**EG**			**Dif**	Statistical Significance	
	n_1	**`C_1**	**S_1**	**n_2**	**`C_2**	**S_2**	**d**	**t_{emp}**	**a**
Running 10 m	29	1,99	0,14	29	1,98	0,13	0,01	0,217	0,829
Running 20 m	29	3,45	0,20	29	3,35	0,20	0,11	2,014	0,049
Agility	29	9,52	0,65	29	9,28	0,41	0,24	1,694	0,096
Dribbling	29	13,91	1,16	29	13,55	1,29	0,36	1,127	0,265
Standing Long Jump	29	177,90	14,62	29	184,66	14,07	-6,76	1,793	0,078
Shuttle Run	29	25,82	2,03	27	24,98	1,35	0,84	1,799	0,078
Juggling	29	22,76	18,40	29	48,72	48,94	-25,97	2,674	0,010

This comparison provides insight into how the experimental intervention might have influenced each group's physical performance. Each variable is analyzed for statistical significance in **Table 3**. Running 10 Meters: Mean Difference (d): 0.01 seconds, t_emp: 0.217, α = 0.829. Analysis: There is no statistically significant difference between the control and experimental groups for the 10-meter sprint. The p-value (α) is well above the threshold of 0.05, indicating that both groups performed similarly. This suggests that the intervention did not significantly impact acceleration over a short distance. Running 20 Meters: Mean Difference (d): 0.11 seconds, t_emp: 2.014, α = 0.049.

Analysis: The difference between the two groups is statistically significant, as α is slightly below the 0.05 threshold. The experimental group had a slightly faster average time than the control group, suggesting that the intervention had a positive effect on participants’ speed over the longer 20-meter distance. This could imply improved endurance or acceleration due to the training applied to the experimental group. Agility: Mean Difference (d): 0.24 seconds, t_emp: 1.694, α = 0.096. Analysis: No statistically significant difference was found for agility, as α

exceeds the 0.05 threshold. Although the experimental group showed a slight improvement in agility, it was not enough to be considered statistically relevant. The difference observed might be due to random variations or minor individual improvements not directly attributable to the intervention. Dribbling: Mean Difference (d): 0.36 seconds, t_emp: 1.127, α = 0.265. Analysis: The dribbling performance showed no statistically significant difference between the groups, with α being greater than 0.05. The control and experimental groups displayed similar dribbling capabilities, implying that the intervention did not markedly affect this skill.Standing Long Jump: Mean Difference (d): -6.76 cm, t_emp: 1.793, α = 0.078.

Analysis: The experimental group showed a better average jump distance, with an improvement of 6.76 cm, but this difference was not statistically significant (α = 0.078). Although the p-value is close to the 0.05 threshold, it suggests only a trend toward improvement, which might indicate a slight benefit of the intervention that could require more data or a longer duration to confirm significance. Shuttle Run: Mean Difference (d): 0.84 seconds, t_emp: 1.799, α = 0.078.

Analysis: No significant difference was observed between the two groups for the shuttle run, as indicated by α = 0.078, which is above the significance threshold. The experimental group performed marginally better, but the lack of statistical significance means this may not be attributed with certainty to the intervention. Juggling: Mean Difference (d): -25.97 successful attempts, t_emp: 2.674, α = 0.010. Analysis: The difference in juggling skills between the experimental and control groups was statistically significant (α = 0.010), with the experimental group outperforming the control group by an average of 25.97 successful attempts. This suggests that the intervention had a positive effect on coordination, as indicated by the significantly higher juggling performance in the experimental group.

The results show statistical significance in the performance of the 20-meter run and juggling tasks, both favoring the experimental group. This suggests that the intervention was effective in improving both speed (20 m) and coordination (juggling).

For running 10 meters, agility, dribbling, standing long jump, and shuttle run, there were no statistically significant differences between the two groups, suggesting that the intervention did not markedly impact these skills in the current experimental setting.

The most notable improvement was seen in the juggling skill, with a substantial and statistically significant increase in performance, indicating that the intervention had a strong effect on improving hand-eye coordination. The data indicates that the intervention applied to the experimental group had positive effects on coordination (as measured by juggling) and speed endurance (as evidenced by the 20-meter run). However, other physical attributes, such as short-distance acceleration, agility, and explosive power (jumping), did not show statistically significant improvements. This suggests that the intervention might be particularly beneficial for activities requiring sustained speed and coordination, while additional modifications or extended periods may be required to enhance other physical capabilities.

The presented **Table 4** highlights the correlations between various physical performance indicators for two distinct groups: the control group (KG - Etropole) and the experimental group (EG - Sofia). The metrics examined include sprinting times (10 m and 20 m), agility, dribbling, long jump, shuttle run, and juggling. The correlations are noted with significance levels, which provide insights into the relationships between these performance indicators.

Running (10 m and 20 m: Control Group (Etropole): There is a very strong positive correlation between 10 m and 20 m sprint times (r = 0.791, p < 0.01), indicating that athletes who perform well over short distances tend to perform similarly over longer sprint distances. This suggests consistent sprinting ability across different distances. **Experimental Group (Sofia):** A strong positive correlation is also present between 10 m and 20 m sprint times (r = 0.619, p < 0.01). The consistency of this relationship across both groups supports the notion that short sprint capacity is a reliable predictor of slightly longer sprint performance in this context.

Table 4. *Correlation between EG and CG*

		Running 10 m	Running 20 m	Agility	Dribling	Standing long jump	Shuttle	Joggling
Running 10 m	CG	1						
	EG							
Running 20 m	CG	,791**	1					
	EG	,619**						
Agility	CG	,415*	,405*	1				
	EG	,636**	,766**					
Dribling	CG	,259	,180	,271	1			
	EG	,493**	,471**	,528**				
Standing long jump	CG	-,586**	-,594**	-,458*	-,207	1		
	EG	-,406*	-,440*	-,252	,018			
Shuttle	CG	,826**	,778**	,648**	,339	-,697**	1	
	EG	,643**	,510**	,638**	,070	-,538**		
Joggling	CG	-,017	-,302	-,160	-,185	,331	-,238	1
	EG	-,104	-,236	-,168	-,350	,518**	-,458*	

Agility: Control Group: Agility is moderately correlated with both 10 m sprint (r = 0.415, $p < 0.05$) and 20 m sprint times (r = 0.405, $p < 0.05$), suggesting that quicker sprint times are associated with better agility. This could imply that acceleration over short distances contributes to the agility needed for sharp directional changes.**Experimental Group:** In the experimental group, agility has strong correlations with 10 m sprint (r = 0.636, $p < 0.01$) and 20 m sprint (r = 0.766, $p < 0.01$), indicating an even stronger relationship compared to the control group. This suggests that improvements in sprinting ability in the experimental group may be more closely linked to enhanced agility.

Dribbling: Control Group: The correlation between dribbling and other performance metrics is generally low, with the exception of agility (r = 0.493, $p < 0.05$). This suggests that good dribbling performance is more closely associated with agility rather than raw sprinting speed or explosive strength.**Experimental Group:** Dribbling shows a moderate correlation with agility (r = 0.471, $p < 0.05$) and a weaker relationship with other indicators, suggesting that while agility plays a role in dribbling ability, other factors such as technical skills may contribute more prominently.**Long Jump; Control Group:** Long jump performance is negatively correlated with sprint times for both 10 m (r = -0.586, $p < 0.01$) and 20 m (r = -0.594, $p < 0.01$). This indicates that athletes who perform better in sprints tend to achieve longer jumps, likely due to shared attributes like explosive power. **Experimental Group:** Similar negative correlations are present, though weaker, with 10 m (r = -0.406, $p < 0.05$) and 20 m sprint times (r = -0.440, $p < 0.05$). The trend in both groups highlights the importance of explosive lower-body strength for both sprinting and jumping. **Shuttle Run; Control Group:** The shuttle run exhibits a very strong positive correlation with sprint times (r = 0.826 for 10 m and r = 0.778 for 20 m, both $p < 0.01$), suggesting that faster sprinting ability greatly contributes to shuttle run performance, which involves repeated accelerations and changes of direction.**Experimental Group:** The shuttle run in the experimental group also shows strong correlations with sprint times (r = 0.643 for 10 m and r = 0.510 for 20 m), indicating similar trends, albeit with slightly lower correlations compared to the control group.**Juggling; Control Group and Experimental Group:** Juggling performance shows no significant correlations with other metrics in either group. The correlation values are quite low and non-significant, suggesting that juggling ability may rely more on coordination, rhythm, and skill proficiency, rather than on physical attributes like strength or speed. **Sprinting and Explosiveness:** Sprinting and long jump performance exhibit strong interrelationships, indicating the importance of lower body power. The correlation between sprint times, agility, and long jump suggests that athletes with better explosive strength perform well in these dynamic physical activities.**Agility and Skill Metrics:** Agility is correlated with dribbling performance in both groups, indicating that athletes who can accelerate quickly and change direction efficiently tend to be better at dribbling. However, juggling remains independent of other metrics, emphasizing its reliance on specific motor coordination skills.**Group Differences:** Generally, the experimental group tends to have slightly weaker correlations for similar metrics compared to the control group. This could imply differing training focuses or the presence of additional factors affecting the experimental group's performance outcomes.

The correlation analysis reveals meaningful relationships between sprinting, agility, and explosive performance metrics, highlighting the interconnectedness of these attributes in young athletes. It also underscores that juggling is a distinct skill unrelated to the other examined physical capacities. Future training programs should consider focusing on enhancing sprint capacity and agility to indirectly improve dribbling and explosive jumping abilities, while juggling requires targeted motor coordination exercises.

DISCUSSION

The findings derived from both the descriptive statistics and the correlation analysis provide insightful details into the impact of the experimental and control interventions on the physical performance metrics of young athletes. The data reflects specific improvements and interdependencies between metrics such as sprinting, agility, dribbling, long jump, shuttle run, and juggling.

Differences in Experimental and Control Groups Descriptive Analysis Results: The comparison between the experimental group (EG - Sofia) and control group (KG - Etropole) revealed notable differences in performance for various tests, such as 20 m sprint and juggling. The significant differences in these tests (α = 0.049 and α = 0.010, respectively) indicate that the training intervention applied to the experimental group was effective in improving specific motor abilities. The experimental group's lower time in the 20 m sprint and significantly better juggling scores highlight the success of the targeted training approach. Juggling Performance: One of the most striking observations is the significant improvement in juggling ability in the experimental group compared to the control. This could be attributed to specific interventions that emphasize coordination, concentration, and ball control, which are crucial in developing juggling proficiency.

Long Jump Performance: While the experimental group showed slightly improved results in long jump, the difference compared to the control group was not statistically significant (α = 0.078). This indicates that although explosive power may have improved, it did not achieve a level that was distinct from natural variation among participants.

Correlational Analysis

Relationship Between Sprinting and Other Metrics: There is a strong positive correlation between short (10 m) and longer (20 m) sprint distances for both the experimental and control groups. This suggests that sprint training impacts both acceleration and top-speed capabilities similarly across different sprint distances.

Agility and Dribbling: The correlations between agility and dribbling were moderate, indicating that improvements in agility could partially explain better dribbling performance. This relationship was particularly stronger in the experimental group, highlighting the role of agility drills in enhancing dribbling performance.

Explosive Metrics and Sprinting: A negative correlation was observed between long jump performance and sprint times, suggesting that athletes who are faster tend to also perform well in explosive activities like jumping. This aligns with the concept that sprinting and jumping share similar physiological demands, such as fast-twitch muscle fiber recruitment and lower body explosiveness.

Motor Skills and Coordination Juggling Independence: The low or insignificant correlations between juggling and other physical performance metrics in both groups suggest that juggling requires unique skill sets, such as hand-eye coordination and rhythm, that are not directly impacted by traditional physical conditioning. This reinforces the need for specific training exercises to target coordination and ball-handling skills independently.

Conclusions

1. Effectiveness of Experimental Interventions: The experimental intervention effectively enhanced specific aspects of athletic performance, particularly in sprinting

over 20 meters and juggling. These findings support the utility of targeted training methods to improve both physical conditioning and technical skills.

2. Interdependence of Physical Attributes: The strong correlations between sprint performance, agility, and jumping demonstrate the interconnected nature of these attributes, highlighting that training in one domain may lead to improvements in others due to shared physiological and biomechanical characteristics.

3. Skill-Specific Training: Juggling performance appeared unrelated to other physical metrics, suggesting that the development of ball control and coordination requires specialized training approaches that do not necessarily overlap with improvements in explosive strength or sprinting.

Recommendations

1. Targeted Agility and Sprint Training: Given the strong correlation between sprint times and agility, training programs should incorporate exercises like shuttle runs, ladder drills, and cone drills to further enhance athletes' agility. This approach will also improve their sprinting performance, thus providing a twofold benefit.
2. Coordination Training for Technical Skills: To further develop juggling skills, coaches should focus on specific coordination drills. Activities such as ball juggling with progressively increasing difficulty levels, or drills incorporating visual focus and hand-eye coordination, would be ideal to develop this unique skill.
3. Combined Strength and Conditioning Programs: Considering the strong relationship between explosive lower body power (long jump) and sprinting, programs should incorporate plyometric exercises, such as box jumps and depth jumps, to develop fast-twitch muscle fibers that contribute to both speed and jumping ability.
4. Individualized Performance Assessments: The variability in responses observed between the experimental and control groups suggests the importance of individualized assessment. Training programs should be tailored based on the athletes' initial levels to ensure that each participant reaches their full potential.

CONCLUSION

The study conducted on young athletes revealed important insights regarding the relationships between different physical performance metrics and the effectiveness of targeted training interventions. The experimental group's improvements in 20 m sprinting and juggling underscore the potential benefits of specific training approaches aimed at enhancing both motor and technical abilities. Correlation analyses showed interconnectedness among agility, sprinting, and explosive power metrics, which suggests that multi-faceted, well-rounded training could result in comprehensive athletic improvement.

Few specialists plan the development of motor qualities in conjunction with the formation of motor habits, and this is especially true for football lessons. Implementing football training within physical education classes contributes significantly to fulfilling the requirements of the educational curriculum and provides enhanced opportunities for improvement in this specific sport.

Moreover, the independence of juggling skills from other physical metrics emphasizes the need for skill-specific coordination training. This insight is vital for coaches and practitioners aiming to provide holistic development programs for athletes, emphasizing both physical conditioning and technical proficiency.

For further research, longitudinal studies are recommended to observe the long-term effects of these interventions and to evaluate whether skill-specific improvements, like those seen in juggling, translate into enhanced game performance in real-world settings. Also for further research with a larger sample size or more extended training duration could help clarify the potential benefits of the intervention on other physical skills and confirm these preliminary findings.

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