AMERICAN JOURNALS
Open Access, Peer Reviewed Journals

American Journal of Research in Humanities and Social Sciences
ISSN (E): 2832-8019 Volume 14, | July, 2023

THE EFFECT OF SPECIAL EXERCISES TO DEVELOP RAPID STRENGTH AMONG JUNIOR FOOTBALL PLAYERS AGED (12-14) YEARS

Watheq Mdallal Obaid Alswaiedi
College of Political Science / University of Mustansiriya
wathqgq@uomustansiriyah.edu.iq
watheqgq@yahoo.com

A B S T R A C T

The objective of this study was to examine the impact of the Special Exercises To Develop Rapid Strength training method on individuals aged 12-14 years old who are novice football players. The study aimed to evaluate both the theoretical and practical aspects of this training method in order to determine its effectiveness and suitability for this specific age group. The study aimed to prepare special exercises to develop the rapid strength of football players junior age (12-14) years and the researcher assumed that there are statistically significant differences between the results of the pre- and post-tests of the two groups (experimental and control) and in favor of the experimental group, The researcher used the experimental approach to achieve the objectives of the research and contribute to solving the research problem, the research sample included (24) players from the oil club players within the participating teams. The sample of this research included 24 total players, during a pilot program in a Al-Naft Club. The program lasted 4 weeks, from 16 of September until 12 of December and the workouts occurred in frequency, 3 trainings per week, enduring 90 minutes each one. In order to realize this research, we used four reliable tests, which are the following: a) Forward Support Test, b) Three Partridges Right and Left Test, c) Medical Ball Push Test, d) Vertical Jump Test of Stability. These tests have been used by many researchers and are analyzed below. For the statistical analysis, we used paired samples t-test in order to compare two averages and for the analysis we used statistical software SPSS20. the league championship and the results of the tests showed the effectiveness of physical exercise to develop the rapid strength of the players of the Al-Naft Club junior category.

K E Y W O R D S

Special Exercises, Rapid Strength, Football, Players.

Introduction

The sport of football has extensively utilized scientific research findings to enhance its gameplay, encompassing both rule implementation and strategic and technical aspects (Vella et al., 2022). This game's inherent qualities of suspense, competition, and the amalgamation of physical and skill-based attributes in player development contribute to its distinctiveness (Zhen, 2023). Hence, it is imperative for experts in the gaming domain to explore optimal strategies for attaining the utmost level of advancement in this field (Tuyls et a;., 2021). Particularly, emphasis on swift muscular strength (i.e., strength and speed) is deemed fundamental among the physical attributes that players universally

depend on to enhance and cultivate their remaining qualities (Culvin, 2019). The interdependence between strength and speed is a crucial aspect in the context of sporting events, as both of these factors impose specific demands on athletes (Alkhawaldeh, 2023). Moreover, it is important to recognize that these elements have a reciprocal relationship, wherein each one influences and is influenced by the other (Glaude, 2022). Muscular strength serves as a fundamental cornerstone in the realm of sports, encompassing both individual and team-based activities (Jones, 2022). It is imperative for every athlete, particularly junior football players aged between 12 and 14 years, to cultivate their muscular strength during this critical developmental stage (Blake & Solberg, 2023). Furthermore, it is imperative for coaches to prioritize the cultivation of physical strength in players, particularly those in the junior category, as certain games necessitate early preparation (Thurlow, Kite & Cumming, 2022). This can be achieved by effectively utilizing training sessions to ensure optimal preparation and ultimately furnish national teams with players who possess exceptional physical attributes. Such attributes play a pivotal role in enhancing the overall skill set of players (Ilxomovich, 2022). The enhancement of strength and speed in athletes necessitates a systematic approach involving progressive training and ongoing skill development (Beckmann & Beckmann-Waldenmayer, 2019). This entails utilizing contemporary exercise techniques to cultivate muscular strength, thereby enabling players to attain mastery in motor performance, which serves as a foundation for technical proficiency (Strykalenko et al., 2021). Moreover, this approach facilitates the advancement and cultivation of specific physical attributes, ultimately enabling athletes to reach higher levels of performance (Kelly et al., 2022). Modern exercises are effective in the development of special muscle strength because it deliberately develops the player and gives him greater freedom in the implementation of the motor duty of physical performance and skill; the player decides how he considers appropriate to implement (Zayer, 2022). In addition to transitioning from one stage of the construction process to the next, the trainer employs physical exercises within the training's determinants, objectives, and steps. Therefore, it is crucial to conduct research in order to design a tailored regimen of specialized physical exercises aimed at enhancing the explosive strength of junior football players aged 12-14 years. In this study, physical exercises were implemented based on the individual player's body weight, avoiding the use of external weights due to potential risks associated with this training method. The objective of this research was to support the players and advance the scientific and practical understanding of muscle strength exercises in general, with a specific focus on the development of rapid strength in football players. Upon conducting a comprehensive examination of various studies, scientific research, and direct observations of football players, it has become evident that there exists a notable deficiency in the enhancement of overall muscular strength and, more specifically, rapid strength development. Additionally, it has been observed that contemporary methodologies for implementing physical exercises aimed at fostering rapid strength are not adequately utilized within the physical preparation curriculum administered by sports club coaches. Consequently, this deficiency poses a hindrance to the execution of certain movements and skills with the requisite strength, thereby impeding the growth and advancement of players' abilities. Therefore, the problem of research arises regarding the utilization of contemporary approaches in implementing modern physical training techniques to enhance and cultivate the explosive strength of young football players aged 12 to 14 years during both general and specific training phases. This deficiency in the development of explosive strength poses a significant impediment to skill enhancement. Hence, the researcher took into account the utilization of physical exercises as a means to enhance the rapid

strength of young football players within the age range of 12 to 14 years. This endeavor aims to make a valuable contribution to the physical and skillful development of these players. The objective of this study was to design specific physical training routines that would enhance explosive strength and assess their effects on adolescent football players between the ages of 12 and 14. The researcher hypotheses that engaging in physical exercises has a beneficial effect on the advancement of skill levels among young players aged 12 to 14 years. Additionally, it was hypothesized that there exist statistically significant disparities between the outcomes of the pre- and post-tests conducted on both the experimental and control groups.

Methodology

Research Methodology

The researcher employed the experimental method, specifically utilizing the experimental and control equivalent groups, to address the study's problem and accomplish its objectives (Podsakoff & Podsakoff, 2019).

Research population and sample

The study population consisted of players from Baghdad clubs who participated in the 2017/2018 league, totaling 16 clubs. The research sample was selected through a deliberate process, with the players from the Al-Naft SC Club being chosen randomly using a draw. The total number of participants in the research sample was 30 players, divided into two groups: experimental and control. Each group consisted of 10 players. Players who had already undergone exploratory experiences and those who were absent for more than two units were excluded from the study.

Specify Search Variables

The variables for the research were determined by the researcher, drawing upon their scientific expertise, field experience, and practical knowledge in the domain of game studies, specifically focusing on their specialization in football training.

Research Tests

The researcher utilized several tests that were employed in the study, specifically:

1. Forward Support Test (Żbikowski, 2015).
2. Three Partridges Right and Left Test (Mohamed, Mohamed & Djamel, 2019).
3. Medical Ball Push Test (Sayers & Bishop, 2017).
4. Vertical Jump Test of Stability (Sattler et al., 2012).

Exploratory Experience

The researcher intentionally conducted an exploratory experiment on a sample of individuals from the research community, as well as a separate group of eight junior players from the oil club. The purpose of this experiment was to assess the appropriateness of the tests for the research sample, determine the time required to conduct the tests, and identify any challenges that may arise during the researcher's workflow, with the intention of finding ways to address them.

Pre-Tests:

The pre-tests for the study variables were conducted at the Al-Naft SC Club Stadium on Saturday, October 8th, 2022, at 4:00 PM. These assessments were performed for both the experimental and control groups, and any variables that could potentially influence the research outcomes were appropriately controlled.

Table 1: Shows the results of the tribal tests between the two groups (experimental and control).

Variables	Unit of Measurement	Experimental		Control		T	Sig
		M	SD	M	SD		
Explosive power of the arms	CM	2.89	0.318	2.95	0.212	0.487	0.632
Explosive power of the legs	CM	79.60	7.26	80.03	7.45	0.131	0.897
Speed power of the arms	Repetition	6.40	1.26	6.10	1.19	0.545	0.593
The power characteristic of the speed of the legs	second	1.98	0.407	1.97	0.600	0.044	0.966

Under the significance level: 0.05df (18).

Main Experiment (Suggested Exercises):

The researcher devised a set of specialized physical exercises based on his scientific and field experience in the field of training, as well as a review of some contemporary scientific sources, in order for the study sample to benefit from certain theories and training methods, and to develop and gain strength rapidly. The physical exercises were designed with consideration for the weights that were appropriate and in line with the body weight of the players. These exercises aimed to enhance the rapid strength of the experimental group, while also taking into account individual variations. The exercises were graded based on the principle of difficulty and ease, with the intention of facilitating adaptation. The researcher emphasized the importance of distributing the intensity of the load, rationing the intensity of the load, and adjusting rest periods based on the level of intensity. In the initial segment of the primary section of the training module, the instructor commences by elucidating the significance of incorporating physical exercises to enhance muscular development. Additionally, the instructor provides a visual representation of the exercise's execution by personally demonstrating it, while also elucidating the kinetic sequence involved in its implementation. Furthermore, the instructor highlights the key muscle groups engaged during the exercise, placing particular emphasis on the recommended number of repetitions per set. It is worth noting that the exercise duration was limited to a range of 21 to 31 minutes, encompassing a total of 30 distinct exercises. Regarding the control group, it was implemented in accordance with the established methodology, and the researcher took care to ensure that no exercise was administered to the control group in order to control for variables that may influence the research outcomes.

- ❖ The duration of the exercise application is (4) weeks.
- ❖ The number of training units is (12) units.
- ❖ The number of training units per week is (3) units.

Post-Tests

Following the completion of all training modules, post-tests were administered on Wednesday, December 9, 2022, encompassing all variables. The researcher ensured that the test results were adjusted by considering the presence of equivalent conditions in the pre-tests.

Statistical Means

The researcher employed the statistical software package (SPSS -24) to analyze the data pertaining to various statistical principles.

Results

Presentation, analysis and discussion of results:

Presentation, analysis and discussion of the results of the experimental group of pre- and post-physical tests:

Table 2: Shows the results of the pre- and post-tests of the physical tests of the experimental group.

Variables	Unit of Measurement	Pre-Test		Post-Test		T	Sig
Explosive power of the arms	CM	2.89	0.318	3.55	0.388	5.28	0.000
Explosive power of the legs	CM	79.60	7.26	90.18	3.15	4.68	0.000
Speed power of the arms	Repetition	6.40	1.26	9.80	1.03	8.50	0.000
The power characteristic of the speed of the legs	second	1.98	0.407	3.85	0.774	6.36	0.000

The tabular T-value below the significance level was 0.05 df (9).

Table (2) demonstrates that there are statistically significant differences between the arithmetic averages of the experimental group's pre- and post-tests, in favor of the post-test. These differences in post-test scores are attributed to the researcher's use of modern physical exercises, which she says significantly aided in the development of muscular ability and proved their effectiveness and success because they were prepared in a codified manner, taking into account the scientific progress in the field of training science; were interconnected; featured a diverse range of exercises; were consistent with and complemented the players' existing abilities; and were consistent with and compatible with the players' abilities throughout implementation. According to Cronin and Hansen (2005), the power attribute of speed can be enhanced through the development of force, speed, or a combination of both. This is because speed is comprised of two components: force and speed. To effectively develop these components, it is crucial to focus on force development at high speeds and with maximum intensity, while ensuring that the force exerted does not exceed the maximum limit. Additionally, the utilization of players' bodies or specific body parts as resistance to strengthen targeted muscle groups has been found to contribute to the enhancement of rapid strength. In addition to the study conducted by Harrison et al. (2019), which explores the use of exercises involving the individual athlete's body or specific body parts as resistance to enhance the strength of targeted muscle groups, the researchers intentionally incorporated these exercises to observe their influence on the players' ability to control the movement of their legs and arms during performance. Additionally, the study aimed to assess the impact of these exercises on the players' motor pathways and their ability to effectively utilize these

body parts during early stages of development. The exercises were designed to integrate and enhance both strength and speed qualities, thereby bridging the gap between these two attributes through increased muscle contractions or kinetic frequencies. Bompa and Buzzichelli (2021) have highlighted this aspect. When aiming to enhance or build strength, it is imperative to engage in exercises that involve rapid kinetic contractions or high kinetic frequencies.

Presentation, analysis and discussion of the results of the control group for pre- and post-physical tests:

Table 3: Shows the results of the pre- and post-tests of the physical tests of the control group.

Variables	Unit of Measurement	Pre-Test		Post-Test		T	Sig
Explosive power of the arms	CM	2.95	0.212	3.20	0.286	2.677	0.02
Explosive power of the legs	CM	80.03	7.45	84.68	3.90	2.556	0.03
Speed power of the arms	Repetition	6.10	1.19	7.70	0.948	3.073	0.01
The power characteristic of the speed of the legs	second	1.97	0.600	3.19	0.560	5.157	0.00

The tabular T-value below the significance level was 0.05 df (9).

The findings displayed in Table 3 indicate that there exist statistically significant disparities between the mean values of the pre- and post-test results of the control group. However, it should be noted that the observed increase in the control group's scores is relatively modest when compared to the outcomes of the experimental group. The improvement in the test results can be attributed to the researcher's observation that the repetition of performance and the commitment to the training units by the control group, at a rate of three units per week, within the designated program period, have logically contributed to this outcome.

Presentation, analysis and discussion of the results of the post-tests between the two groups (experimental and control)

Table 4: Shows the arithmetic means, standard deviations and value (T) calculated in the post-tests between the two groups (experimental and control).

Variables	Unit of Measurement	Experimental		Control		T	Sig
		M	SD	M	SD		
Explosive power of the arms	CM	3.55	0.388	3.20	0.286	2.30	0.002
Explosive power of the legs	CM	90.18	3.157	84.68	3.908	3.46	0.000
Speed power of the arms	Repetition	9.80	1.03	7.70	0.948	4.73	0.000
The power characteristic of the speed of the legs	second	3.85	0.774	3.19	0.560	2.18	0.000

(*) df = 18 and significance level 0.05.

Based on the analysis of Table 4, it is evident that there exist statistically significant disparities between the post-test outcomes of the experimental and control groups, with the experimental group demonstrating superior performance. The disparities observed in the test results can be attributed to the efficacy of scientifically designed physical exercises, specifically tailored to adhere to the fundamental principles and foundations of physical and sports training. These exercises were carefully constructed to target and enhance specific strength in the arms and legs, while also taking into consideration the individual variations among the participants in the study. Each exercise required the player to exert resistance against their own body mass, and the training load was systematically increased in a manner that ensured comfort and compatibility between exercises and repetitions within the groups. According to Rasulovich (2021), it is crucial to consider the inter-exercise and inter-group rest intervals in order to facilitate the enhancement of rapid strength. This finding was corroborated by the researcher during the implementation of specialized physical training regimens. According to Piepiora (2021), the attainment of high achievement necessitates a training program that is scientifically designed, aligns with the specific category, and considers the principle of individual differences among all players to ensure compatibility and adaptation. The researcher incorporated the principle of gradation to mitigate the intensity of the workload and facilitate typical adaptations to physical exercise. This approach aligns with the findings of Bompa and Buzzichelli (2021), who emphasize that reducing rest periods is a key factor in promoting adaptations through the process of enhancing overcompensation and expanding the range of adaptive responses in a systematic manner. Furthermore, the exercises employed in the study were characterized by elements such as suspense, excitement, diversification, compatibility, and control of movements. By diversifying exercise distances and varying the level of movement difficulty, the acquisition of educational experience and improvement in physical performance can be enhanced. According to Nesterchuk et al. (2020), the inclusion of comprehensive exercises targeting strength and speed elements played a significant role in enhancing the physical fitness level of the participants. The concept of rapid force pertains to a physical attribute that encompasses both force and speed. It is defined by the interconnectedness between various levels of force and speed and aligns with the inherent nature of skill execution in a given activity. To enhance the qualities of explosive power and exceptional speed, it is imperative to focus on the development of both force and speed components.

Conclusion

The test results indicate that the implementation of specialized exercises has a beneficial effect on the enhancement and development of rapid strength. The experimental group consistently outperformed the control group across all test outcomes, highlighting the efficacy of these exercises in fostering the development of rapid strength qualities. Consequently, the exercises played a significant role in augmenting physical attributes and elevating the overall physical performance of the players. The researcher suggests the implementation of physical exercises, specifically designed by the researcher, to enhance the rapid strength components of young football players during their early stages of training. This is crucial as rapid strength serves as a fundamental foundation for the development and improvement of other physical attributes. Given that players commence training from a young age, it is imperative to prioritize the development of muscle strength through consistent and prolonged training.

References

1. Al Behadili, H. J. H., & Kasim, M. A. (2022). Developing Ball Dribbling And Passing Skills Using The Integrative And Reciprocal Methods Of Emerging Footballers. Eurasian Journal of Humanities and Social Sciences, 11, 76-82.
2. Al Behadili, H. J. H., & Kasim, M. A. (2022). Effects Of A Training Program For The Plyometric On The Harmonic Abilities And Muscular Ability Of Football Players. European Journal of Interdisciplinary Research and Development, 6, 60-69.
3. Al Behadili, H. J. H., & Kasim, M. A. (2022). The Implications For Learning Of Transferring On Passing Skills In Junior Football Players. Open Access Repository, 8(9), 39-49.
4. Ali, H. F. S., & Kasim, M. A. (2022). The Effect Of An Educational Curriculum Using The Jigsaw Strategy To Learning Skills Of Volleyball For Secondary School Students. European Journal of Interdisciplinary Research and Development, 9, 160-168.
5. Ali, H. F. S., & Kasim, M. A. (2022). The Effect Of Using The Cooperative Learning And Blended Learning Method In Improving The Level Of Students Performance In Learning Volleyball For Secondary School Students. American Journal of Interdisciplinary Research and Development, 11, 231-242.
6. Alkhawaldeh, I. I. M. (2023). The Effect of Mental Fatigue on the Accuracy of the Direct Free Kick in Terms of Some Kinematic Variables for Football Players. Asian Journal of Sports Medicine, 14(2).
7. Beckmann, J., & Beckmann-Waldenmayer, D. (2019). Talent development in youth football. In Football Psychology (pp. 283-296). Routledge.
8. Blake, M., & Solberg, V. S. H. (2023). Designing elite football programmes that produce quality athletes and future ready adults: incorporating social emotional learning and career development. Soccer & Society, 1-16.
9. Bompa, T., & Buzzichelli, C. (2021). Periodization of strength training for sports. Human Kinetics Publishers.
10. Bompa, T., & Buzzichelli, C. (2021). Periodization of strength training for sports. Human Kinetics Publishers.
11. Cronin, J. B., & Hansen, K. T. (2005). Strength and power predictors of sports speed. The Journal of Strength & Conditioning Research, 19(2), 349-357.
12. Culvin, A. (2019). Football as work: The new realities of professional women footballers in England (Doctoral dissertation, University of Central Lancashire).
13. Glaude, M. (2022). Athletes' Perspectives of Group Dynamics in Professional Gridiron Football. McGill University (Canada).
14. Harrison, P. W., James, L. P., McGuigan, M. R., Jenkins, D. G., & Kelly, V. G. (2019). Resistance priming to enhance neuromuscular performance in sport: evidence, potential mechanisms and directions for future research. Sports Medicine, 49(10), 1499-1514.
15. Ilxomovich, M. F. (2022). Features of the educational and training process of young football players at the stage of initial training. Web of Scientist: International Scientific Research Journal, 3(02), 1314-1320.
16. Jabbar, Q. M., & Kasim, M. A. (2023). Social Adaptation And Psychological Adjustment And Their Relationship To Defensive Skills In Volleyball For The Premier League. European Journal of Interdisciplinary Research and Development, 12, 134-143.

17. Jones, S. (2022). Sports Practitioners, Athlete Welfare and Duties of Care: A Case Study of the Professional Practice of Hamstring Management in English Professional Rugby Union (Doctoral dissertation, University of Kent (United Kingdom)).
18. Kasim, M. A. (2022). Effects Of Together Learning On University Students To Achievement Motivation. Open Access Repository, 8(05), 57-65.
19. Kasim, M. A. (2022). Evaluation Implementing Cooperative Learning In Physical Education College Programs To Basic Handball Skills Learning In Universities Iraqi. ResearchJet Journal of Analysis and Inventions, 3(04), 289-297.
20. Kelly, A. L., Williams, C. A., Cook, R., Sáiz, S. L. J., & Wilson, M. R. (2022). A Multidisciplinary Investigation into the Talent Development Processes at an English Football Academy: A Machine Learning Approach. Sports, 10(10), 159.
21. Mohamed, K. S., Mohamed, Z., & Djamel, M. (2019). Weights and the plyometric training as connection to improve muscles capacities growth among volleyball players.
22. Nesterchuk, N., Grygus, I., Ievtukh, M., Kudriavtsev, A., & Sokołowski, D. (2020). Impact of the wellness program on the quality of life of students. Journal of Physical Education and Sport, 20, 929-938.
23. Piepiora, P. (2021). Assessment of personality traits influencing the performance of men in team sports in terms of the big five. Frontiers in Psychology, 12, 679724.
24. Podsakoff, P. M., & Podsakoff, N. P. (2019). Experimental designs in management and leadership research: Strengths, limitations, and recommendations for improving publishability. The Leadership Quarterly, 30(1), 11-33.
25. Rasulovich, R. R. (2021). Distribution of training loads at the stage of competitive preparation for middle runners. Academicia: an international multidisciplinary research journal, 11(2), 744-753.
26. Salih, M. M. M., Hashim, R. S., & Kasim, M. A. (2021). Forecasting Achievement Sports through Cooperative Learning in Handball Training in Physical Education. Annals of Applied Sport Science, 9(3), 0-0.
27. Sattler, T., Sekulic, D., Hadzic, V., Uljevic, O., & Dervisevic, E. (2012). Vertical jumping tests in volleyball: reliability, validity, and playing-position specifics. The Journal of Strength & Conditioning Research, 26(6), 1532-1538.
28. Sayers, M. G., & Bishop, S. (2017). Reliability of a new medicine ball throw power test. Journal of Applied Biomechanics, 33(4), 311-315.
29. Strykalenko, Y., Huzar, V. I. K. T. O. R., Shalar, O. L. E. H., Oloshynov, S., Homenko, V., & Svirida, V. (2021). Physical fitness assessment of young football players using an integrated approach.
30. Thurlow, F. G., Kite, R. J., & Cumming, S. P. (2022). Revisiting youth player development in Australian Rules Football: Is there a place for bio-banding?. International Journal of Sports Science & Coaching, 17(3), 637-646.
31. Tuyls, K., Omidshafiei, S., Muller, P., Wang, Z., Connor, J., Hennes, D., ... & Hassabis, D. (2021). Game Plan: What AI can do for Football, and What Football can do for AI. Journal of Artificial Intelligence Research, 71, 41-88.
32. Vella, A., Clarke, A. C., Kempton, T., Ryan, S., & Coutts, A. J. (2022). Assessment of Physical, Technical, and Tactical Analysis in the Australian Football League: A Systematic Review. Sports Medicine-Open, 8(1), 124.

33. Zayer, M. A. M. (2022). the Effect of Compound Exercises, Kinetic Sense (Hearing-Optical) Using a Light-Sensor Assisting Device To Develop Some Physical and Skill Abilities of Young Football Players. Revista iberoamericana de psicología del ejercicio y el deporte, 17(1), 40-46.
34. Żbikowski, K. (2015). Using volume weighted support vector machines with walk forward testing and feature selection for the purpose of creating stock trading strategy. Expert Systems with Applications, 42(4), 1797-1805.
35. ZHEN, C. (2023). An Analysis of the Strategic Planning of Winter Olympic Sport in China (Mainland): The Cases of Short-track Speed Skating, Curling and Freestyle Skiing (Aerials).