IJPESS
Indonesian Journal of Physical Education and Sport Science
p-ISSN 2775-765X | e-ISSN 2776-0200
Volume 5, No. 2, June 2025 Page. 191-201
http://journal.unucirebon.ac.id/index.php ijpess

The Impact of Training with Varying Intensities on the Specific Strength and Speed of the Anchor Runner in the 100-Meter Relay for Female Students

Zainab Qahtan Abdul Muhsin

College of Physical Education and Sports Sciences for Women, University of Baghdad

*Corresponding Author: Zainab Qahtan, e-mail: zaineb@copew.uobaghdad.edu.iq

Received: 16 March 2025, Approved: 15 April 2025, Published: 30 June 2025

Abstract

Study Purpose. The selection of this type of training was based on the performance results in the 100m relay for female athletes. As the researcher specializes in track and field training at the College of Physical Education and Sport Sciences for Women and has observed the athletes' performance in this event, she was motivated to investigate the impact of variable-intensity training on enhancing specific strength and speed. Therefore, a training program incorporating different intensity levels was designed to assess its effectiveness in developing these attributes.

Material and methods. The study was carried out fourth-year female participants by selecting two groups: an experimental group and a control group. Pre-tests were conducted to both sets of participants before implementing the proposed training program for the experimental group, while the control group followed the conventional method. After applying the designed program, post-tests were conducted to evaluate the impact of training at varying intensities on the study variables.

Results. The investigator determined that the training method utilizing varying intensities led to a significant improvement in specific strength, speed, and performance in the experimental group, underscoring the efficiency of this approach in enhancing athletic performance. Furthermore, the results confirmed the presence of notable statistical variations in favour of the experimental group, demonstrating superior performance in the 100-meter relay race.

Conclusions. The researcher recommended applying this training approach to other track and field events to optimize the benefits of varying training intensities in enhancing athletic performance. The study contributes to the development of specific strength by employing training programs with varying intensity levels.

Keywords: Varying Intensities, Relay Sprint, Specific Strength.

DOI: https://doi.org/10.52188/ijpess.v5i2.1175

Introduction

Sports training science focuses on all training procedures and steps, along with the essential and external requirements necessary to enhance athletic performance and achievement. It represents a planned and structured process designed to achieve key objectives related to the fundamental components of athlete preparation and development, which include comprehensive physical fitness, technical fitness, tactical fitness, and psychological aspects. The integration of these elements enables the realization of the primary goal of training-maximizing athletic achievement.

The success of sports training is not solely dependent on the abilities of coaches or athletes and their performance in both planning and execution. Rather, it cannot be achieved without relying on scientific principles in the training process. This is evident in the significant improvement in athletic performance and achievement, which is not a matter of chance but a result of substantial reliance on various supporting and influential sciences in training, such as physiology, sports medicine, statistics, management, biomechanics, and others.

Sports training is not confined to a single level, nor is it limited to the preparation of elite athletes alone; rather, each level requires its own methods and approaches. The observed improvements in the research variables are attributed to the implemented training program. As Al-Obaidi et al. (2019) affirms, the physical workload system aims to achieve repeated periods of exertion, interspersed with intervals for recovery.

Sports training is a continuous process of improvement and progression across various athletic disciplines. In addition to fostering development at higher levels, it plays a crucial role in refining and enhancing elite performance. Thus, the level of training is never fixed; progress is dynamic, and what is considered a high standard today may not necessarily remain so in the future (Bastawisi, 2010).

To enhance training status and reach elite performance levels, it is essential to focus on the latest advancements and innovations in sports training and its applications. A coach's success is measured by their expertise, and to maintain that success, they must continuously stay informed about new developments in the field. The purpose of training is the functional development of the body, aiming to achieve physiological adaptation through regular physical exercise in response to high demands (Abu El-Ala, 2017).

Ghanim and Jaleel (2022) also indicated that training plays a highly crucial role in concentrating on the role of muscle groups relevant to the activity, ensuring their proper movement trajectory while promoting energy efficiency and fluidity of motion. Skill, in this context, is a key indicator of performance effectiveness, as learners develop certain motor responses within an organized movement pattern.

To rely on science as a guide and consult it in the field of training, the researcher sought to explore the latest advancements in sports training that have been applied to help athletes reach elite performance levels. The researcher decided to implement a competitive training approach for first-year female students, which differs from the traditional method used in teaching and training track and field events. The students were provided with training units that closely resembled those designed for elite athletes, aiming to enhance their physical capabilities.

Therefore, the researcher contributed to developing a training program with varying intensities to enhance the physical and motor abilities of the students in this event. One of the justifications for this study lies in the fact that the approach applied to first-year students helped avoid following a monotonous training pattern. As Abdul-Maqsoud (2010) asserts, variation in the type of muscle contraction contributes to the development of certain specific physical abilities.

Based on the above, this study aims to formulate a training program that incorporates varying intensities and to examine the impact of these intensities on improving specific power

and speed of the anchor runner in the 100-meter relay. The use of the variable training approach contributed to the improvement of the research variables, as it achieved, in the words of Al-Rabadi (2015), the highest degree of effectiveness through the use of strength in varied methods.

The study was based on the proposed hypotheses: 1) There are notable statistical variations when evaluating the pre-test and post-test measures for the measured research variables in the experimental group, 2) There are notable statistical variations across the pre-test and post-test findings for the research variables in the control group. There are notable statistical variations in the post-test findings for the research variables across the experimental and control groups. Through a continuous review of the results and records of female participants at the Colleges of Physical Education and Sports Sciences in track and field events over many years, and as a specialist in this field, the researcher found no results comparable to the recorded championship standards. Instead, a noticeable decline was observed in the performances achieved by the students.

Therefore, after researching training methods and their potential for developing students' physical and motor abilities through lectures, the researcher found that it is possible to enhance students' performance and achievements in track and field courses and events by incorporating training units within the lecture. These units differ from those previously taught. Therefore, the researcher sought to develop a specialized training program incorporating varying intensities, blending them within a single training unit in a way that corresponds to the students' physical and motor skills. The importance of speed, alongside strength, plays a significant role in determining the effectiveness of physical preparation. As Al-Maliki et al. (2018) notes, it is defined as the ability to perform specific movements in the shortest possible time. Accordingly, the researcher proposed several solutions to the training process that may contribute to enhancing this athletic event.

To achieve this, the study was organized into the following domains: a) Human Domain: Female students attending their first academic year at the College of Physical Education and Sports Sciences, b) Temporal Domain: From February 1, 2024, to April 1, 2024 and c) Spatial Domain: Al-Kashafa Athletics Field in Baghdad.

Materials and methods

Study participants

The sample consisted of 20 female first-year students from the College of Physical Education and Sports Sciences for Women during the 2023–2024 academic year, representing 28.5% of the total population (70 students). Participants were randomly selected from sections B and C.

The study sample was categorized into two groups:

- Experimental Group: 10 students from section C.
- Control Group: 10 students from section B.

Homogeneity and equivalence between the groups were confirmed, as shown in Tables 1 and 2.

Table 1. Illustrates the consistency of the sample with respect to age, weight, and height.

No.	Variables	Unit of Measurement	Mean	SD	Median	Correlation Coefficient
1	Age	Years	18.98	3.45	19	0.047
2	Weight	kg	69.82	11.28	70	0.110
3	Height	cm	164.79	23.12	165	0.344

Table 2. Represents the correspondence of the experimental and control groups in terms of the research variables using the T-value.

No.	Variables	Unit of Measurement	Experimental Group		Control Group		Calculated T-Value	Statistical Significance
			Mean	SD	Mean	SD		
1	Test from a Standing Position (Explosive Leg Power)	cm	23.55	6.70	23.61	6.56	0.203	Random
2	Three Consecutive Jumps (Speed-Specific Strength for the Legs)	m	3.21	0.88	3.25	0.83	0.662	Random
3	Bunny Hops (45 sec) (Leg Strength Endurance)	count	26.2	5.31	26.8	5.16	0.84	Random
4	30m Sprint from a Flying Start (Speed)	sec	7.22	1.33	7.21	1.49	1.09	Random
5	Tabulated T-Value (2.101) at a 0.05 significance level with a degree of freedom (10 + 10 - 2 = 18).							

Study organization

The experimental method was employed using the equivalent groups approach, as selecting an appropriate research method is essential in scientific research to ensure alignment with the nature of the problem being addressed (Bastawisi, 2010). This method was chosen to assess the impact of training with varying intensities on the development of specific strength and speed of the anchor runner in the 100-meter relay race.

All factors that could potentially influence the experiment's results were carefully considered, and the training protocol was implemented according to a well-structured timeline to ensure the accuracy of measurements and final evaluations.

Research Instrument

- Arabic and Foreign References and Sources
- Tests and Measurements
- Global Internet Network
- Medical Scale
- Measuring Tape
- Various Weights
- Stopwatch
- Office Supplies
- Hurdles
- Benches
- Boxes of Different Heights

Tests Used in the Research

A panel of experts, including Prof. Dr. Aseel Jalil, Asst. Prof. Dr. Eman Sabeeh, Lect. Dr. Hind Waleed, and Lect. Dr. Liqaa Abdul-Zahra, reviewed the proposed tests and provided their assessments (Jalil, A., Sabeeh, E., Waleed, H., & Abdul-Zahra, L., personal communication, 2025).

After presenting a set of tests to a panel of experts in the fields of training, track and field, and testing and measurement, the following tests were selected based on a 75% agreement

rate. These tests are used to assess athletes' progress and determine the extent to which training objectives have been achieved (Farhat, 2007).

Selected Tests:

1. Vertical Jump Test from a Standing Position (Hassanein, 2015).
   Objective: Measures explosive leg power.
2. Three Consecutive Long Jumps Test.
   Objective: Measures speed-strength in the legs.
3. Knee Bends and Full Extension Test (45 seconds) – Bunny Hops (Mohsen, 2002).
   Objective: Measures strength endurance of the leg muscles.
4. 30-Meter Sprint Test from a Flying Start (Hassanein & Abdel-Moneim, 2017).
   Objective: Measures maximum transitional speed.

Pilot Study

The researcher carried out the pilot study on a group of five female students registered in their initial academic year at the Faculty of Physical Education and Sports Sciences for Women, who were excluded from the primary experiment. The study was carried out on February 4, 2024, at 10:00 AM at Al-Kashafa Athletics Field in Baghdad. The objective of the pilot study was to identify potential challenges the researcher might encounter during implementation, as well as to test the workflow of the assessments and the training program, ensuring the functionality and reliability of the equipment and tools used.

Al-Mandalawi et al. (1990) indicate that the pilot study serves as a scientific exercise for the researcher to personally identify both the limitations and advantages that may arise during the testing process, allowing for their mitigation in the future.

Pre-Tests

The pre-tests took place on Tuesday, February 6, 2024, at 10:00 AM at Al-Kashafa Sports Field in Baghdad for both the experimental and control groups of female students in their initial academic year.

The researcher ensured precision in conducting the tests and maintaining the workflow.

Training Program

After reviewing sources on sports training science, training methods, and techniques in general—particularly the concept of varying intensity training—and after consulting the previously mentioned experts and specialists regarding the structure of the training unit and the appropriate training loads, the structured training plan was developed as follows:

a. The training program began on Sunday, February 11, 2024, and continued until Monday, March 11, 2024.
b. The execution of the training regimen extended over four weeks, comprising three training sessions per week, resulting in a total of 12 sessions.
c. An agreement was reached with the research sample to add an additional training session per week, considering that the initial schedule consisted of two sessions per week. The extra session was scheduled on a day when the students had no lectures to optimize training adaptation and induce improvements in performance and test results compared to the control group.
d. The main training session lasted for 60 minutes.
e. The total number of exercises was six, with three performed at submaximal intensity and three at moderate intensity. The training load was adjusted accordingly.
f. Training loads were progressively increased, taking into account the individual differences among the students.

g. Rest periods were determined based on heart rate recovery, with a return threshold of 120 beats per minute for submaximal intensity and 130 beats per minute for moderate intensity.
h. The researcher adopted interval training in both its low-intensity and high-intensity forms.
i. A variety of equipment was used during the exercises, including various weights, benches, and low hurdles.

Post-Tests

The researcher administered the post-tests on Tuesday, March 12, 2024, at 10:00 AM at Al-Kashafa Sports Field in Baghdad, following the same procedures as the pre-tests to ensure measurement accuracy and facilitate a reliable comparison of results.

Statistical analysis

The study utilized the subsequent statistical techniques:

a. Arithmetic mean
b. Standard deviation
c. Median
d. Coefficient of skewness
e. Percentage
f. Paired t-test
g. Independent t-test.

Results

The findings of the research were obtained through pre- and post-tests administered on both the experimental and control groups. This information is presented in tables that include arithmetic means, standard deviations, and both calculated and tabulated t-values, illustrating the impact of training with varying intensities on the research variables.

Table 3. Presents the arithmetic means, standard deviations, calculated and tabulated t-values, along with statistical significance for the pre- and post-tests of the research variables in the experimental group.

No.	Tests	Unit of Measurement	Pre-Test		Post-Test		Calculated t-value	Tabulated t-value	Statistical Significance
			Mean	SD	Mean	SD			
1	Vertical Jump in Place	cm	23.55	6.76	26.28	3.61	6.33	2.26	Significant
2	Three Consecutive Long Jumps	m	3.21	0.81	4.91	0.78	3.81	2.26	Significant
3	Knee Bends (45 sec)	Count	26.2	5.31	30.1	5.81	4.09	2.26	Significant
4	30m Sprint from a Flying Start	sec	7.22	1.33	6.97	1.29	2.88	2.26	Significant

The tabulated t-value associated with 9 degrees of freedom at a 0.05 level of significance

Table 3 illustrates statistically significant differences across all tests administered to the experimental group, namely: vertical jump in place, three consecutive long jumps, squat thrusts (45 seconds), and the 30-meter sprint from a flying start.

Table 4. Presents the arithmetic means, standard deviations, calculated and tabulated t-values, and statistical significance for the pre- and post-tests of the research variables in the control group.

No.	Tests	Unit of Measurement	Pre-Test		Post-Test		Calculated t-value	Tabulated t-value	Statistical Significance
			Mean	SD	Mean	SD			
1	Vertical Jump in Place	cm	23.11	6.56	24.88	3.72	2.00	2.26	Random
2	Three Consecutive Long Jumps	m	3.25	0.83	4.16	0.78	2.97	2.26	Significant
3	Knee Bends (45 sec)	Count	26.8	5.16	28.91	5.00	3.82	2.26	Significant
4	30m Sprint from a Flying Start	sec	7.21	1.49	7.02	1.28	1.91	2.26	Random

The tabulated t-value associated with 9 degrees of freedom at a 0.05 level of significance

The results presented in Table 4 indicate statistically significant differences in the tests of three consecutive jumps and squat thrusts (45 seconds), while no significant differences were observed in the vertical jump and 30-meter sprint tests among the control group participants.

Table 5. Presents the arithmetic means, standard deviations, calculated and tabulated t-values for the post-tests of the experimental and control groups in the study variables.

No.	Tests	Unit of Measurement	Pre-Test		Post-Test		Calculated t-value	Tabulated t-value	Statistical Significance
			Mean	SD	Mean	SD			
1	Vertical Jump in Place	cm	26.28	3.61	24.88	3.72	3.38	2.10	Significant
2	Three Consecutive Long Jumps	m	4.91	0.78	4.16	0.78	1.98	2.10	Random
3	Knee Bends (45 sec)	Count	30.1	5.81	28.91	5.00	4.56	2.10	Significant
4	30m Sprint from a Flying Start	sec	6.97	1.29	7.01	1.28	6.61	2.10	Significant

The tabulated t-value associated with 18 degrees of freedom at a 0.05 level of significance

Table 5 illustrates statistically significant differences between the experimental and control groups in the post-test results for the variables of vertical jump in place, squat thrusts (45 seconds), and the 30-meter sprint from a flying start. However, no statistically significant difference was found in the three consecutive long jumps test.

Discussion

Tables (3, 4, and 5), which present the arithmetic means, standard deviations, and both calculated and tabulated t-values for the research tests in the experimental and control groups for the pre- and post-tests, indicate the existence of notable statistical variations between the pre- and post-tests in the study variables within the experimental group. This can be attributed

to the training program followed by the research participants, which was designed by the researcher to enhance the efficiency of the exercises included in the training units using varying intensities. This approach positively influenced the explosive power of the legs. Additionally, this type of training contributed to improving the capacity of the working muscles by enhancing their efficiency, incorporating diverse exercises, and utilizing resistance at different intensity levels. Hussein (2015) asserts that the majority of athletic activities demand different forms of speed.

(Abdul-Ameer & Sabeeh, 2021) indicated (Abdul-Ameer & Sabeeh, 2021)that the impact of specialized exercises is reflected in their ability to consider the specificity of the athlete by utilizing training equipment that closely simulates actual performance in terms of the direction of muscle contraction. Moreover, the use of low hurdles, performing jumping exercises at varying speeds, increasing the number of repetitions, and reducing rest periods until the heart rate reached 120 beats per minute at maximum intensity significant contributed to the development of speed. Additionally, the gradual increase in exercise intensity within the training unit facilitated physical adaptation and enhanced specific strength components. Shughli (2019) concurs that maintaining consistent performance relies on the efficiency of both the nervous system and the muscles. The improvement observed in the motor pathway can be attributed to the training program, as Muzahim (2018) asserts that “the athlete possesses the physical and technical qualities necessary to enhance her performance effectively.

Hara (1990) emphasized that 'the selection of diverse strength exercises is based on the requirements of the sports activity and the training condition. Additionally, the improvement in speed resulting from performing exercises using various methods and at different intensity levels within a single training unit, along with the type of exercises and their execution under different training loads, indicates adaptation within the nervous and cognitive systems, thereby contributing to enhancing speed-oriented strength. Additionally, the student's ability to effectively integrate strength and speed played a key role in enhancing these capacities overall and in achieving a faster performance for the anchor runner in the 100-meter relay.

Al-Azzawi (2018) indicated that the enhancement of speed-specific strength in the legs is closely linked to the enhancement of explosive strength, achieved through specialized exercises that align with the principles and demands of skill execution and repetition.

Since this sport relies entirely on team coordination and ensuring the smooth handoff of the baton to the final runner—who ultimately determines the team’s victory or defeat the researcher focused on training the team to achieve the best possible timing using the variable-intensity approach. This training method enhances maximum efficiency by incorporating diverse strength applications within a single training unit or across different exercise sets.

The training within the session also involved alternating between heavy and light weights, while ensuring that the execution remained explosive in both scenarios. For exercises that did not require additional loads, multiple plyometric jumps were utilized, which positively impacted the students’ 100-meter relay performance. Despite the control group’s efforts in training during lectures, the specificity of the experimental group’s training played the most significant role in driving this development in the research variables.

Notable statistical variations were observed between the experimental and control groups, in favor of the experimental group. The variable-intensity training approach helped avoid reliance on a fixed training pace, leading to improvements in specific strength, speed, and performance. Additionally, the incorporation of plyometric exercises on platforms and weight training at both maximal and moderate intensities within a single training session had a clear impact in generating notable statistical variations, both when comparing the pre- and post-tests and across the two groups.

Talha (2024) indicated that bodyweight training is one of the methods that effectively contribute to developing the muscle groups involved in performance and enhancing strength endurance.

Conclusions

Variable-intensity training led to a clear improvement within the study variables for the experimental group, thereby achieving the second research objective. Moreover, variable-intensity training contributed to a significant enhancement in the experimental group, with its findings surpassing those of the control group. Furthermore, the improvement in strength and speed variables within the experimental group contributed to achieving better performance, thereby fulfilling the second research objective. Based on these findings, this training approach can be applied to other athletic events within track and field disciplines. To build on these outcomes, it is recommended to conduct long-term studies on this type of training—variable-intensity training to examine its impact on athletic performance in greater detail. In addition, for enhanced effectiveness, variable-intensity training should be compared with other training methods within the same sporting event to determine the most efficient approach for performance improvement.

Acknowledgment

I would like to express my sincere gratitude and appreciation to everyone who contributed to the completion and support of this research, including the students who participated in the study and the College of Physical Education and Sports Sciences for Women.

Conflict of interest

The author declares that they have no conflicts of interest that could influence the outcome of this study.

References

Abdul-Ameer, S. I. & Sabeeh, I. (2021). The effect of special exercises in developing the strength endurance of the arms of the national team players with the goal ball for the blind. *Modern Sport*, *20*(3), 0134. https://doi.org/10.54702/msj.2021.20.3.0134

Abdul-Maqsoud, A. S. (2010). Theories of sports training (Physiological strength training) (1st ed.). Cairo: Markaz Al-Kitab for Publishing.

Abu El-Ala, A. A. F. (2017). Athletic Physiological Training Foundations, 1st Edition, Dar Al-Fikr Al-Arabi, Cairo.

Alayan, Z. M., & Ghanem, O. M. (2004). Pre-experimental research methods: Theoretical foundations and practical application. Amman: Al-Safaa for Publishing and Distribution.

Al-Azzawi, Z. A. S. (2018). The effect of specialized exercises based on certain biomechanical variables and foot scan index on the development of key physical abilities and performance of the full-length rear air cushion on the vault table for juniors. *Karbala Journal of Physical Education Sciences, 4(*3).

Al-Maliki, F. A., & Al-Obaidi, N. (2018). Sports training science (2nd ed.). Baghdad: Dar Al-Arqam for Printing and Copying.

Al-Mandalawi, Q. H., et al. (1990). Tests and measurement in physical education. Higher Education Press.

Al-Obaidi, N. M., et al. (2019). Sports training. Baghdad: Dar Al-Arqam Printing House.

Al-Rabadi, K. J. (2015). Power games. Jordan: Jordanian University for Publishing.

Bastawisi, A. (2010). Fundamentals and theories of sports training. Cairo, Egypt: Dar Al-Fikr Al-Arabi.

Farhat, L. E. (2007). Measurement and testing in physical education (4th ed.). Markaz Al-Kitab for Publishing.

Ghanim, D. & Jaleel, A. (2022). The effect of special exercises in developing some physical abilities and achievement of the long jump under 20 years for young women. *Modern Sport*, *21*(1), 0092. https://doi.org/10.54702/msj.2022.21.1.0092

Hara. (1990). Principles of Training (A. A. Nasif, Trans.) (2nd ed.). Baghdad: University of Baghdad Press.

Hassanein, M. S. (2015). Measurement and evaluation in physical education and sports (3rd ed., Vol. 1). Dar Al-Fikr Al-Arabi.

Hassanein, M. S., & Abdel-Moneim, H. (2017). The scientific foundations of volleyball and measurement methods (4th ed.). Rose Youssef Press. https://www.iraqoaj.net/iasj/article/142896.

Hussein, Q. H. (2015). Foundations of sports training (1st ed.). Jordan: Dar Al-Fikr Al-Arabi.

Mohsen, A. S. (2022). The use of complex training with the circuit training method to develop fast strength and improve long jump performance (Master's thesis). University of Baghdad, College of Physical Education.

Muzahim, N. Z. K. (2018). The impact of plyometric training on the development of explosive power, speed-strength, and performance in the long jump event (Master's thesis, University of Baghdad, College of Physical Education).

Shughli, A. F., et al. (2019). Encyclopedia of track and field for girls. Baghdad: National Publishing Office.

Talha, H. (2024). The motor and functional foundations of sports training. Amman: Dar Al-Fikr Al-Arabi.

Information about the authors:

Dr. Zainab Qahtan Abdul Muhsin, Assistant Professor: zaineb@copew.uobaghdad.edu.iq https://orcid.org/0000-0003-0501-9731, Department of Individual Games, College of Physical Education and Sports Sciences for Women, University of Baghdad, Iraq

Cite this article as: Muhsin, Zainab Qahtan Abdul. (2025). The Impact of Training with Varying Intensities on the Specific Strength and Speed of the Anchor Runner in the 100-Meter Relay for Female Students. *Indonesian Journal of Physical Education and Sport Science (IJPESS)*, *5*(2), 191-201. https://doi.org/10.52188/ijpess.v5i2.1175

Appendix 1. Proposed Exercises

No.	Exercises	Percentage	Exercise Objectives
1	Sprint from a flying start in a standing position for 30 meters.	%90	Increase speed
2	Load-bearing on both legs, alternating five strides on the right leg and five on the left over a 30-meter distance.	%80	Enhance speed-strength
3	Two-legged jumps over low hurdles, 40 cm in height, for ten repetitions.	%80	Improve strength endurance
4	Jumping from a squat position, leaping upward and landing with both feet together for 60 seconds.	%85	Improve strength endurance
5	Half-squat jumps from a standing position for 10 seconds.	%90	Enhance speed-strength
6	Sprint from a flying start for 40 meters.	%90	Complete the relay distance at high speed

7	Hurdle running over ten low hurdles, spaced 10 meters apart.	%80	Develop strength endurance
8	Running with ankle weights (500 grams per leg) over a 30-meter distance.	%90	Develop strength endurance
9	Running with ankle weights (1 kg per leg) over a 20-meter distance.	%85	Develop strength endurance
10	Step down from a 30 cm box, followed by a 30-meter sprint at maximum speed.	%90	Enhance speed-strength
11	Step-ups on a 30 cm bench for 30 seconds.	%90	Develop strength endurance
12	Maximum sprint over a 100-meter distance.	%100	Achieve maximum sprint speed
13	Bounding run over a 30-meter distance.	%90	Enhance speed-strength
14	From a standing position, perform 10 vertical jumps, followed by a 10-meter sprint at maximum speed.	%95	Achieve maximum sprint speed
15	Perform 10 half-squat jumps, then jump over 10 hurdles, each 40 cm in height.	%80	Improve strength endurance

Appendix 2. Training Unit Model

Week:
Unit:
Date:
Training Unit Duration:

No.	Exercise	Intensity	Repetitions	Work-to-Rest Ratio	Sets	Rest Between Sets
1	2	%90	5	3 :1	3	120 sec/min
2	12	%90	5	3 :1	3	120 sec/min
3	5	%90	5	3 :1	3	120 sec/min
4	7	%80	7	2 :1	3	130 sec/min
5	15	%80	7	2 :1	3	130 sec/min
6	9	%85	7	2 :1	3	130 sec/min