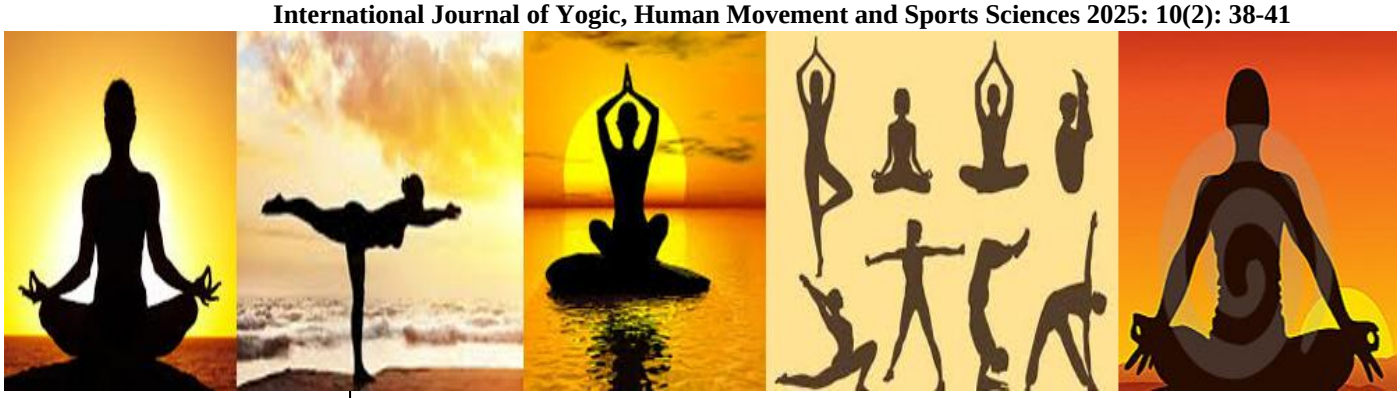

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The impact of altitude training on developing specific physical attributes for 1500 m runners 46T category

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Abstract
Our study examined the significance of altitude training for cultivating specific physical traits in T46 category 1500m athletes, given its influence on the enhancement of these attributes, which are fundamental to success in altitude training. Enhancing performance has emerged as the foremost priority for all professionals in the training domain across diverse specializations. Attaining or sustaining a superior level in sports events necessitates rigorous and extraordinary efforts from both coaches and athletes. The research challenge was articulated through the following inquiry: Does altitude training influence the development of particular features in 1500m runners with upper limb injuries? We aspire to identify a resolution to our issue through this investigation. The aims of our study corresponded with this research by focusing on altitude training for 1500m runners with upper limb injuries and finding special characteristics of these athletes. We also seek to discern the distinctions between pre- and post-tests for the study variables of 1500m runners with upper limb injuries. The research sample comprised national team players from Maysan Governorate, and the researcher employed the experimental method in this study owing to its appropriateness for the research objectives.

Keywords: Altitude training, T46 category, 1500m runners, upper limb disability, physical attributes

1. Introduction
The enhancement of performance has emerged as the most important priority for professionals working in the training sector across a variety of fields. Both coaches and athletes are required to put in extraordinary and strenuous efforts in order to achieve or maintain a competitive position in their respective sports. In order to accomplish this, it is necessary to overcome all of the scientific challenges that are preventing the team from becoming more advanced. This may be accomplished by employing a wide range of scientific disciplines, modern technology, and the scientific method through research in order to overcome these challenges. As a result of the intense competition that exists amongst athletes in order to win championships and improve their performance, a number of different strategies have been implemented. One of these strategies is the incorporation of scientific disciplines into sports training. These scientific disciplines include physiology, biochemistry, testing, and measuring. The results can be depended upon as a result of the progress that has been made in scientific research that is targeted at tackling the issues that restrict or impede athletic performance. As a consequence of this, training scientists have developed a wide variety of strategies and procedures to improve the performance of athletes. These strategies take into account all of the situations and circumstances that are experienced during competition and seek out solutions that enable athletes to overcome these obstacles and achieve success. Altitude training is one of the innovative methods and tactics that are utilized in the training of athletes.
(Wajdi Al-Fatih and Mohamed Lotfi, 2002) state that "altitude training entails executing exercises while the body's tissues and cells experience hypoxia through breath-holding or breath regulation (diminishing the frequency of breaths during performance)." Due to the requirement to compete at elevated altitudes, where oxygen levels are diminished, it is imperative for the body's organs and systems to acclimatize to the oxygen deprivation. The 1500-meter race is characterized by tremendous pressure and a lack of relief during the competition due to its rapid speed, which necessitates swift execution and great endurance. The race is also characterized by substantial endurance. Due to this, the researcher decided to

investigate this training strategy, which is thought to have a major impact on both the ability to rapidly adapt to new situations and the ability to maintain performance endurance. Both of these are crucial foundations for athletes to achieve a high standard. This particular training technique was described by the researcher. It is believed to have an impact on both speed and endurance performance, both of which are necessary for attaining a high level of athleticism. Because of this, it is necessary to have a training plan that is really effective in order to keep up expert performance with increased precision and execution. The significance of the research is highlighted by this, as is the requirement to gain an understanding of the extent to which altitude training influences the development of particular physical traits in runners who compete in the 1500-meter race and include their upper limb activities.

2. Research Problem

In the context of the research issue, the researcher inquired: Does altitude training affect the development of certain attributes in the upper limbs of 1500-meter runners?

3. Research Objectives

In the context of the research issue, the researcher inquired: Does altitude training affect the development of certain attributes in the upper limbs of 1500-meter runners?

4. Research Hypotheses

- The existence of statistically significant disparities between pre-tests and post-tests, together with the validity of post-tests for specific attributes.
- The existence of statistically significant disparities between the post-tests favoring the experimental group.
- For high-altitude training regarding the variables under investigation for 1500m athletes with upper extremities.

5. Research Fields

- **Human field:** Players of the Paralympic Committee team in Maysan.
- **Time field:** 3/3/2022 to 25/9/2022.
- **Location:** Olympic Stadium in Maysan.

6. Research Methodology

Due to the fact that the experimental method is suitable for addressing the research topic, the researcher decided to use it. The experimental method suggests that the researcher can control all variables and essential components in the study, with the exception of one variable. This method is modified to assess the impact of the variable on the education or training process (Abu Al-Ala Abdel Fattah, 1982) [1].

6.1 Research sample

The Maysan Committee team, which consists of eight players for the 2021-2022 season, was defined by the researcher as the research community. The research sample serves as the model for the study, so the researcher needs to select a sample that accurately reflects the original community. It is crucial that "this sample meets a main condition, which is the possibility of generalizing its results to the original group from which it was selected." The sample was split into two groups: experimental and control, and the researcher selected every member of the research community (Mohamed Hassan Alawi and Osama Kamel Rateb).

The researcher opted to employ the experimental method as it is appropriate for the research topic. The experimental technique refers to the researcher's capacity to regulate all variables and essential components, except for one variable, which is altered to assess its effect on the educational or training process (Amr Allah Al-Basati, 2001) [2].

The sample was standardized for variables such as age, weight, height, and training age (Salma Nassar el.al,1982) [3] (Abd al-Majid al-Sha'ar, 1991) [4].

Table 1: demonstrates the uniformity of the sample with respect to age, weight, height, and training age

Variables	Mean	S.d	Coefficient of variation
Height	169.50	1.883	1.110
Weight	67.80	1.881	2.774
Chronological age	24.63	9.66	4.293
Training age	4.67	0.492	1.151

6.2 Methods of Gathering Information

- Arabic and foreign sources.
- Internet network.
- Tests and measurements.

6.3 The instruments and apparatus employed in the study

- Metric tape measure with stopwatch.
- A device for measuring weight.
- Cones and dell computer.

6.4 The assessments employed in the study

6.4.1 Physiological assessments

- Strength endurance assessment.
- The force characterized by velocity.

6.5 Investigative experiment

To identify potential obstacles and challenges in implementing the primary experiment, the researcher conducted a pilot study, which serves as practical training to recognize both the advantages and disadvantages encountered during the tests to mitigate them (Mohamed Hassan Alawi, Osama Kamel Rateb). To present a clear and correct depiction of the test items utilized in this research, and following the identification of the research sample, the researcher executed a pilot experiment on May, including a sample of two players, with the objective of:

- Understanding the challenges and issues encountered by the researcher.
- Assessing the legitimacy of the technologies and instruments employed.
- Verifying the appropriateness of the assessments employed in the study.
- Understanding the duration required for the assessments.
- Evaluating the efficacy of the support team.

The researcher administered pre-tests on the research sample, focusing on physical qualities, at five o'clock in the afternoon at the Maysan Olympic Stadium.

6.6 Main experiment

The primary experiment began on Thursday, March 3, 2022, and persisted for a duration of 10 weeks, culminating with the last training session on September 25, 2022. The experimental group engaged in altitude workouts on Saturdays, Mondays, and Thursdays, which are indicative of their training schedule. The intensity of the altitude exercises was meticulously matched to the distinct characteristics and goals of the training session, which was conducted in a single session. The

control group participated in the standard exercises designed by the coach on Saturdays, Mondays, and Thursdays.

6.6.1 Post-tests
The primary experiment commenced on Thursday, March 3, 2022, and continued for 10 weeks, concluding with the final training session on September 25, 2022. The experimental group did altitude workouts on Saturdays, Mondays, and Thursdays, the sample's training days. The altitude workouts were done in one training session at the right intensity for the training goals. The control group did coach-designed workouts on Saturdays, Mondays, and Thursdays.

6.6.2 Statistical methodologies
The researcher utilized SPSS statistical software for a comprehensive analysis of the results.

7. Results
Presentation and analysis of findings concerning the distinct characteristics of 1500m runners within the upper limb control group:

Table 2: presents the averages and standard deviations of the unique characteristics of the 1500m athletes with upper limb amputation in the control group

Variables	Significance type	Pre-test	S.d	Post-test	S.d	Calculated t value
		Mean		Mean		
The force characterized by speed	Sig.	2.17	0.05	2.52	0.24	6.1
The power endures	Sig.	2.32	0.07	2.82	0.63	4

Table (2), indicates that all cardiac measurements are near normal levels, suggesting satisfactory development and enhancement in the research sample. The outcomes of the speed endurance and performance endurance assessments demonstrate a notable enhancement in the sample's level (Maytham Jabbar Matar,2010) [7]. The investigator posits that the method taken by the training professionals is the root cause of this phenomena. When it came to improvements in speed endurance and speed strength, this method was also influential (Mohamed Ali El-Katt, 1999) [6]. According to (Abu Alaa Abdel Fattah), "structured training generates functional adjustments in the body's systems, including the cardiovascular system (Abu Al-Ala Abdel Fattah, 1982) [1]. Individuals who are equipped with the necessary skills are able to adapt to the physiological changes that occur in the body's systems as a result of muscular activity.

A decrease in heart rate during periods of rest or physical activity and a reduction in recovery time after exercise are two effects of structured sports training that are observed in the heart, according to (Salma Nassar el,al, 1982) [3].

- Presentation and discussion of the results of special strength with speed and speed endurance for the experimental group:

Table 3: presents the arithmetic means and standard deviations of explosive strength and speed endurance for the experimental cohort

Variables	Significance type	Pre-test		Post-test	S.d	Calculated t value
		Mean	S.d	Mean		
The force characterized by speed	Sig.	2.44	0.02	2.95	0.32	7.94
The power endures	Sig.	2.66	0.54	3.51	0.11	11.74

Table (3), indicates that all cardiac parameters exhibit increased levels of growth, signifying significant improvement in the research sample. The performance endurance and speed tests show that the sample quality has greatly improved.

The researcher posits that the explanation for this phenomenon is associated with the methodology employed in altitude training and the specific exercises utilized, along with the structured and continuous training regimen of (2) hours per session that the team engages in, which also influenced the observed changes. The altitude training method enhances the body's defense mechanisms by increasing volume and improving the efficiency of functional systems, particularly the respiratory and circulatory systems, thereby augmenting power characterized by speed and strength endurance (Wajih Mahjoub and Ahmed Badri, 2004). [8]

8. Conclusion
- The enhancement of the employment status of the research sample.
- Development of heart muscle measurements in the research sample.
- Relative increase in endurance and performance speed for 1500m players with upper limb rotations.
- The enhancement of functional efficiency and cardiac muscle metrics significantly correlates with improved endurance and performance speed in 1500-meter upper limb athletes, as evidenced by most cardiac measures and functional variables examined.

9. Recommendations
- Because of the significance of ensuring that the goals of the training process are verified through the use of evaluations and assessments.
- Emphasize functional and cardiac data to prove device safety and efficacy, emphasizing the importance of training in achieving this goal.
- Highlighting the necessity to perform additional functional assessments of the respiratory system as well as other physical abilities and traits.

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