Global Scientific Review
A Peer Reviewed, Open Access, International Journal
www.scienticreview.com
Volume 32, October 2024 ISSN (E): 2795-4951

The role of the arms in achieving the 100-meter running event for students

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Abstract.
The study included four chapters, as the first chapter included the introduction and the importance of the research. The study included an objective, which is to identify the role of the arms in achieving the 100-meter run for students.
As for the second chapter, it included the research methodology, as the descriptive methodology was chosen to suit the nature of the study, while the research sample included second-stage students from the College of Physical Education and Sports Sciences / University of Al-Qadisiyah, with a number of (50) students from a community of (330) students. The sample was tested to run 100 meters, then the test was repeated with the arms fixed, and the real reasons behind determining the percentage of the role of the arms in running the 100-meter event were highlighted.
After presenting, analyzing and discussing the results in the third chapter, a significant difference appeared between normal running and running with the arms fixed.
As for the fourth chapter, it included several conclusions, including that the arms play an important role in achieving the 100-meter run.
There were a set of recommendations, including the researcher recommending that trainers divide the proportions of the method on training body parts and give the arms the percentage resulting from the current study

Keywords: Arms role, 100m effectiveness, arm fixation, contribution rate.

1-1 Introduction and importance of research

All accurate information can only be obtained through scientific research, and through it we can determine the variables and study them regularly, because relying on estimates in the results will lead us to many errors in several aspects, including the sports aspect, which requires scrutiny and accuracy to identify the variables affecting each event, especially fast running events, "Scientific research is a necessity for every person, regardless of his knowledge or position, because the problems of daily life require thinking and a scientific approach to solve them." [1]

The importance of the research lies in studying the role of the arms and the extent of their impact on achieving the 100m race, in addition to determining that role, as the arms have an important impact on the speed of the runner.

1-2 Research problem

The arms have an effective role in determining the time of running short distances, and there is no scientific study to the researcher's knowledge that determines the role of the arms in achieving the 100m race event, and based on it, the percentage of arm training in the 100m event training program can be determined, so the researcher decided to study this topic.

1-3 Research objectives

Volume 32, October 2024 ISSN (E): 2795-4951

The researcher aims to:-
1- Identify the role of the arms in achieving the 100m running event for students.

1-4 Research hypotheses

1- There are statistically significant differences between achieving the 100m running event with and without the arms.

1-5 Research areas

1-5-1 Human field:- Students of the College of Physical Education and Sports Sciences / Al-Qadisiyah University.
1-5-2 Time field:- The period from 3/3/2024 to 12/6/2024.
1-5-3 Spatial field:- Arena and field stadium / College of Physical Education and Sports Sciences, Al-Qadisiyah University.

2- Research Methodology and Field Procedures

2-1 Research Methodology:-

The formulation of the problem to be solved is what determines the research methodology used to obtain the required information and accurate data, and since the nature of the problem requires the use of a descriptive method to address it, the researcher used this method to reach a solution to his problem, as descriptive research "diagnoses and describes existing phenomena and describes them and reveals the relationships between them and thus interprets them and in light of that it can predict events that will occur in the future".

2-2 Research Sample:-

The researcher selected his research sample from students of the College of Physical Education and Sports Sciences / Al-Qadisiyah University with a number of (50) students from the second stage out of (330) students randomly for the academic year 2023-2024.[2]

2-3 Research Methods and Tools:-

The researcher used the following tools to reach a solution to his problem:-
1- 3 Chinese-made electronic timers, Damone type.
2- 5 cm wide adhesive tapes to fix the arms.
3- Floor adhesive tapes to determine the distances of the stages for running 100m event, 5 pieces, length 1.22m
4- Records to record data.

2-4 Tests:-

1- 100m running test.
Test objective: Measure the time to cover the distance.
Test description: Each student runs 100m from a high start in the event's stadium and the time to cover the distance is calculated.
2- 100m running test with fixed arms.
Test objective: Measure the time to cover the distance.
Test description: Each student runs 100m from a high start with the arms fixed by tape to the trunk and the time to cover the distance is recorded.
Using the high start method is to control the variables affecting the time to cover the distance, as the low start is difficult to apply if the arms are fixed.

2-5 Research steps:-

The researcher met with the research sample on Monday 11/3/2024 and agreed to conduct the tests on Thursday 14/3/2024 at 9:00 am.

2-5-1 Research survey

The researcher conducted a survey of his work steps to identify the time specified for the tests and the extent of the need for assistant staff*.

2-7 Statistical methods:-

SPSS program was used.

1. T-test law for asymmetric samples.
2. Percentage law.

3- Presentation, analysis and discussion of the results

3-1 Presentation and analysis of the results

3-1-1 Presentation and analysis of the results of the 100-meter sprint test:-

Table (1)

shows the arithmetic mean, standard deviation, calculated and significant (t) value for the 100-meter sprint test and its stages.

Result	Sig.	Table t-value	Run 100m with arms fixed		*Run 100m*		*i) Stages and distances [3]*
			a	s-	a	s-	
Moral	0.000	4.294	0.58	5.26	0.40	4.20	Acceleration distance (35m)
Moral	0.001	3.389	0.79	6.53	0.64	4.99	Maximum speed distance (40m)
Moral	0.000	4.151	0.65	4.60	0.51	3.020	Speed sustain distance (25m)
Moral	0.000	4.931	1.56	14.29	1.28	11.80	Completion distance (100m)

From what is shown in Table (1), it is indicated that there is a significant difference between the regular running test for partial distances and the achievement with the arms fixed, and in favor of the arm fixation test statistically, because the significant value is less than the significance level of (0.05).

Table (2)

shows the percentage of the role of the arms in the time of running the 100m event in its various stages

Completion distance (100m)	Speed sustain distance (25m)	Maximum speed distance (40m)	Acceleration distance (35m)
%14	0.13	0.24	0.10

We find in Table (2) that the ratio of the arms' influence in the acceleration phase, which represents the distance from the starting line to (35m), reached (0.10), while we find the ratio in the other phase of the 100m event (the maximum speed phase)

reached (0.24), while in the final phase of the 100m test, the ratio of the arms' role reached (0.13). 4-2 Discussion of the results

3-2-1 Discussion of the results of the 100m running test: -

By using statistical treatments, the final results were obtained, and the researcher had sufficient information about the results of the research sample, which showed that the 100m running test with fixed arms had a significant effect on the time to cover the distance in its various stages and the distance in its entirety. This proves that the arms of speed runners have an important role in achieving the achievement of speed activities, "The movement of the arms must be consistent with the movements of the legs and swing strongly and quickly without muscle tension."[4] The result of the difference between the two tests appeared for several reasons, including: -

1- Arms: The action of rotating the hip requires a counter-reaction from the upper body. When the athlete's left knee is in the forward swing and upward, we find that the right arm swings forward and upward, and the left arm swings backward and upward to balance the work of that leg. When the left foot is lowered and the right leg begins to move forward, the action of the arms is the opposite. We also find that the shoulders can balance the rotational action of the hip, but the rotation The shoulders are relatively slow.[5]

2- Shoulders: Although the shoulders also rotate to balance the hip action and such rotation will be necessary relatively slow, and thus to avoid complications of that slowing down we can know that good speed runners use the arm action such as the rate and force that does not need the participation of the shoulders to achieve what is required of equality between the hip action and the reaction of the upper body.[6]

The arm action is fixed at a right angle at the elbow and shoulder, and the arm determines the swing of the hand forward at approximately the level of shoulder height and backward is determined at the level behind the hip, and the arm action of speed runners has a limited focus of attention from researchers.

The previous factors clearly determine the role and importance of the arms in the runner's kinetic balance during running, and this balance helps a lot in directing the forces of the arms and hips towards running and not dispersing the athlete's forces, and fixing the arms in the second test greatly affected the time to cover a distance of 100 m due to the students' inability to balance the rotational action of the hip with the arms, which forced the students to use the shoulders for that purpose, but the movement of the shoulders is slow and has a limited range.

4- Conclusions And Recommendations

4-1 Conclusions:-

1- The role of the arms is great in achieving the 100 m running event.

2- Fixing the arms helped in studying the percentage of their contribution to the achievement.

4- Shoulder movement in fast running is limited and slow.

4-2 Recommendations:-

1- The researcher recommends that speed event coaches rely on the results of this study.

2- Researchers should focus their attention on the role of the arms in achieving the running event in general.

3- Apply this study to a sample of champion runners.

Volume 32, October 2024 ISSN (E): 2795-4951

3- Divide the training percentages in sports curricula into the runner's body parts according to their importance.

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