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Formation of functional training of shortdistance runners of the training group

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Abstract

Purpose: to dissect the intricate structure of functional training tailored for short-distance runners within a dedicated training group. Against the backdrop of the global significance of short-distance running and the continued dominance of certain nations, understanding the nuances of functional training becomes paramount. The investigation seeks to unravel the intricacies of the training regimen for short-distance runners, offering insights that can contribute to the ongoing discourse surrounding the preparation and development of athletes in this highly specialized domain. By determining the key elements comprising functional training, the study endeavors to provide valuable guidance for coaches, trainers, and sports scientists involved in shaping the future of short-distance running.

Methods: The following methods were used during the study:

1) Analysis of literary sources, research papers and scientific articles in which scientific research, scientific and practical experience of foreign and domestic scientists in the field of sports were studied and analyzed. 2) A pedagogical test during which the technical actions of young handball players during competitive activities were monitored. 3) Mathematical and statistical calculation, in which the coefficient of useful movement of technical movements of handball players in attack was calculated using a mathematical formula. 4) Methods of pedagogical control were used.

Results: The left leg of the 11th examinee was 93^0, and the right leg was equal to 85^0, the difference between them was 8^0. 12^{th} tester's left leg index is 94^0 and right leg index is 79^0, the difference between them is 15^0, which is the lowest index of the group. was evaluated. The indicator of the left leg of the 13th examinee was equal to 85^0, and the right leg was 91^0, and the difference between them was equal to 6^0. The left leg of the 14^{th} examinee was 87^0, and the right leg was equal to 94^0, and the difference between them was 7^0. The left leg of the 15th examinee was equal to 98^0, while the index of the right leg was 90^0, and the difference between them was equal to 8^0.

Conlcusion: According to it, in Table 1, when the indicators of the asymmetric condition of the legs of 15 short-distance runners from the experimental group were waxed, the average index of the left leg was $89.8^0 \pm 6.2^0$. The average index of the right leg was $87.9^0 \pm 4.4^0$ and the interval difference was equal to $6.9^0 \pm 4.1^0$ was determined. In order to make the situation more clear, we conducted the functional test on 15 of the test subjects of the control group in table 2 and obtained the following results. Summarizing the parameters of the control group at the beginning of the study, the average of the left leg was $84.5^0 \pm 6.6^0$, while the average of the right leg was the indicator was $85.9^0 \pm 6.5^0$ and the interval difference was found to be equal to $7.5^0 \pm 3.2^0$. According to the structure of the functional training of short-distance runners in the training group, the differences between the functional test experiment and the control group were $5.3^0 \pm 0.4^0$ in the left leg. The difference in the index of the right leg was $2.0^0 \pm 2.1^0$, the interval difference was $0.6^0 \pm 0.9^0$.

Keywords: Functional training, control, experience, sports training, result, speed, competition, technology, sprint, card, reaction, comparison, planning.

Introduction

In contemporary global athletics, short-distance running stands out among various disciplines, with leading nations dedicating considerable resources to the training, classification, and specialization of athletes in this field. Robust scientific research endeavors focus on short-distance runners, encompassing meticulous planning and management of annual and multi-year training sessions. These initiatives extend to investigating tools and methods for enhancing physical fitness, refining tactical approaches, and elevating the overall functional status of athletes engaged in short-distance running [1]. Prominently, nations on the American continent, such as Jamaica and the United States of America, currently dominate short-distance running on the world stage. Notably, these countries maintain leadership across genders in this field, underscoring their sustained commitment to excellence [2]. Despite such achievements, the imperative of preparing future talents to sustain the legacy of highly skilled athletes remains a pressing concern globally.

Results and discussion

The evolving landscape of short-distance running has given rise to a highly competitive environment, prompting continuous advancements in methodologies and technologies to achieve faster results. Notably, the transformation in the design and effectiveness of running shoes serves as a

Table 2. Structure of indicators of the asymmetric condition of the legs during short-distance running according to the functional status of the test subjects of the experimental group belonging to the educational training group (1)

	Name	*Left leg (degree)*	*Right leg °C*	*Differences of left and*
1	B. T.	84	90	4
2	T.S.	92	87	5
3	A.A.	96	82	14
4	G'.A.	89	92	3
5	Q.S.	87	89	2
6	X.E.	82	91	9
7	SH.D.	76	81	5
8	B.O.	97	86	11
9	Q.D.	92	91	1
10	A.B.	95	90	5
11	N.D.	93	85	8
12	A.D.	94	79	15
13	Q.D.	85	91	6
14	B.I.	87	94	7
15	E.J.	98	90	8
X ± σ		89,8±6,2	87,9±4,4	6,9±4,1

tangible example of how technology has influenced the sport over the past few decades [3, 4]. The number of teeth in running shoes, once limited to 4-6, has now expanded to 11, showcasing the impact of technological innovation on athletic performance.

Despite these technological advancements and the creation of optimal conditions for athletes, the success of short-distance runners is still intricately tied to their functional condition and the efficiency of various bodily systems [5]. The intense nature of sprinting, especially in distances like 100 and 200 meters, places considerable demands on the athlete's body, necessitating a comprehensive understanding of their functional state from the initial starting position to the finish line.

The significance of the lower starting state is emphasized in evaluating the athlete's ability to manage body weight, ankle placement on starting blocks, and the shoulder girdle's capacity to support body weight. Any deficiencies in these aspects can adversely impact results, making a thorough analysis of the individual functional state crucial [5].

In pursuit of enhancing short-distance running results, our study employed functional tests targeting key aspects such as leg strength, speed, respiratory patterns, body reactions to specific loads, heart rate, and stride length [6]. The rationale behind these tests lies in their ability to gauge the athlete's overall preparedness and identify areas for improvement.

One specific test focused on evaluating the symmetric movement of the athletes' muscular system, particularly assessing the asymmetry in walking and running. This involved a horizontal position where athletes extended their arms at a 90-degree angle to the body, supporting themselves with the inner side of the palm. The test required lifting one leg straight and repeating the process with the other leg, with any detected differences leading to the formulation of tailored suggestions and recommendations [7].

The integration of functional tests into our study allows for a comprehensive understanding of short-distance runners' physical capabilities and potential areas for improvement. By identifying asymmetries and weaknesses, the study aims to contribute valuable insights for coaches and trainers in devising targeted training programs, ultimately enhancing the overall performance of short-distance runners.

As can be seen from this table, the difference between the left and right legs of the

Table 2. Structure of the indicators of the asymmetric position of the legs during short-distance running according to the functional status of the subjects of the control group belonging to the training group (2).

	Name	*Left leg (degree)*	*Right leg*	*Differences of left and right legs (degree)*
1	SH.R.	94	82	8
2	M.B.	82	77	5
3	T.I.	86	92	6
4	O.J.	84	72	8
5	K.A.	89	84	5
6	O.D.	82	93	11
7	B.I.	74	84	10
8	I.N.	91	89	2
9	A.S.	82	91	9
10	A.H.	97	82	15
11	B.L.	83	89	6
12	B.J.	74	85	9
13	M.F.	84	92	8
14	Q.A.	88	96	8
15	SH.D.	78	81	3
	X ± σ	84,5±6,6	85,9±6,6	7,5±3,2

experimental group was found in the assessment of the asymmetric condition of the legs of athletes running short distances. 1st tester's left leg was 84^0, while his right leg was 90^0, the difference between them was 4^0. 2nd tester's left leg was equal to 92^0, and his right leg was equal to 87^0, and the difference between them was 5^0. 3rd tester's measurements showed that the difference between left leg 96^0 and right leg 82^0 was 14^0, and this athlete's interval showed a big difference. The left leg of the 4th examinee was equal to 89^0, while the indicators of the right leg were 92^0, and the difference between them was 3^0. 5th tester's indicators were as follows: the left leg was 87^0 and the right leg was 89^0, the difference between them was equal to 2^0. The left leg of the 6th examinee was equal to 82^0, and the right leg was equal to 91^0, and the difference between them was 9^0. The indicator of the left leg of the 7th examinee was equal to 76^0, and the right leg was equal to 81^0 and the difference was 5^0. The index of the left leg of the 8th examinee was equal to 97^0, while the indicators of the right leg were equal to 86^0 and the difference between them was 11^0. The indicators of the 9th examinee were equal to 82^0 of the left leg and 91^0 of the right leg, and the difference between them was 1^0. The asymmetric difference of this athlete was 1^0 and was considered the highest indicator of the group. The indicators of the 10th examinee were 95^0 on the left leg and 90^0 on the right leg, and the difference between them was 5^0.

Summarizing the indicators of the experimental group obtained at the beginning of the study, the average indicator of the left leg was $89.8^0 \pm 6.2^0$, while the average of the right leg was the average indicator was $87.9^0 \pm 4.4^0$ and the interval difference was equal to $6.9^0 \pm 4.1^0$.

The indicators of the experimental group are presented in the table, and according to it, we can come to the following conclusion when evaluating the asymmetric condition of the athletes' legs. 1st tester's left leg was 94^0, while his right leg was 82^0, the difference between them was 8^0. 2nd tester's left leg was equal to 82^0, and his right leg was equal to 77^0, and the difference between them was 5^0. 3rd tester's indicators showed the difference between left leg 86^0 and right leg 82^0 was 6^0, and the distance of this athlete showed a big difference.

The left leg of the 4th examinee was equal to 84^0, while the indicators of the right leg were 72^0, and the difference between them was 8^0. 5^{th} tester's indicators were as follows: the left leg was 89^0 and the right leg was 84^0, the difference between them was equal to 5^0. The left leg of the 6th examinee was equal to 82^0, while the right leg was equal to 93^0, and the difference between them was 11^0. The indicator of the left leg of the 7th examinee was equal to 74^0, while the right leg was equal to 84^0 and the difference was 10^0. The indicator of the left leg of the 8th examinee was equal to 91^0, while the indicators of the right leg were equal to 89^0 and the difference between them was 2^0. The asymmetric difference of this athlete was 2^0 and was considered the highest indicator of the group. The indicators of the 9th examinee were 82^0 left leg and 91^0 right leg, and the difference between them was 11^0. The indicators of the 10th examinee were 97^0 on the left leg and 82^0 on the right leg, and the difference between them was 15^0, which is the lowest indicator of the group. evaluated.

The left leg of the 11th examinee was 83^0, and the right leg was equal to 89^0, and the difference between them was 6^0. The left leg index of the 12th examinee is equal to 74^0 and the right leg index is 85^0, the difference between them is 9^0. 13rd tester's left leg index was equal to 84^0, and his right leg was 92^0, and the difference between them was equal to 8^0. The left leg of the 14th examinee was 88^0, while the right leg was equal to 96^0, and the difference between them was 8^0. The left leg of the 15th examinee was equal to 78^0, while the index of the right leg was 81^0, and the difference between them was equal to 3^0. Summarizing the indicators of the control group obtained at the beginning of the study, the average indicator of the left leg was $84.5^0 \pm 6.6^0$, while the average of the right leg was the mean value was $85.9^0 \pm 6.6^0$ and the interval difference was found to be $7.5^0 \pm 3.2^0$.

Then, the intermediate differences between the experimental and control groups were $5.3^0 \pm 0.4^0$ in the left leg, while the difference in the right leg index was 2.0^0. It was 2.1^0 and the interval difference was $0.6^0 \pm 0.9^0$. The results of the research show that it is necessary to develop a set of passive and active exercises that develop the flexibility and flexibility of the back muscles and reduce the intermediate asymmetric difference in the legs of the short-distance runners.

Conclusion

The investigation into the functional condition of short-distance runners within the experimental and control groups of the training program revealed crucial insights into the structure of indicators related to the asymmetric condition of the legs during short-distance running. The primary objective was to enhance the results of these runners by conducting comprehensive functional tests encompassing leg strength, speed, respiratory metrics, body reactions to special loads, heart rate, and stride length.

The study aimed to evaluate the fitness level of athletes through functional tests and subsequently formulate recommendations for improvement. By assessing the symmetry of the muscular system during walking and running, the study successfully determined the athletes' movement capabilities along the distance.

The functional tests, particularly those focusing on leg strength, involved athletes lying horizontally with their hands extended at a 90-degree angle to the body. The test identified leg asymmetries in short-distance runners, crucial for understanding their running dynamics.

According to the functional condition of the subjects of the experimental and control group of the training group, the structure of the indicators of the asymmetric condition of the legs during short-distance running was studied, and the following conclusion was made. In order to further improve the results of short-distance runners, we conducted functional tests on leg strength, speed, number of inhalations and exhalations, reaction of the body to special loads, heart rate and stride length. It is intended to determine the level of fitness of athletes' bodies by organizing functional tests on short-distance runners, and to develop the necessary recommendations. By determining the level of symmetry of the muscular system of athletes, i.e., the asymmetry of athletes in the process of walking and running, it was possible to determine the level of their movement along the distance. A study conducted to determine the indicators of functional training of short-distance runners in the training group showed how important leg strength is in short-distance runners. The procedure for performing functional tests is that the athletes are lying horizontally with their hands extended at an angle of 90 degrees to the body and resting on the ground with the inner side of the palm. By keeping one leg straight and lifting the other leg

up to the position with the back muscles tensed, and repeating this test while switching legs, leg asymmetries in the running process of short-distance runners were determined. At the end of the test, the difference between the two legs was determined.

The results of the research show that it is necessary to develop a set of passive and active exercises that develop the flexibility and flexibility of the back muscles and reduce the intermediate asymmetric difference in the legs of the short-distance runners. In addition to height and body weight measurements of short-distance runners, it is assumed that the number of steps, length of steps, frequency of steps, asymmetric conditions of legs are important for athletes to achieve high sports results. Studies on the functional fitness of short-distance runners in a training group show the importance of leg asymmetry while developing leg strength in short-distance runners to achieve high performance in running.

The research underscores the necessity of developing a targeted set of passive and active exercises to enhance the flexibility of back muscles, addressing and reducing the observed asymmetric differences in the legs of short-distance runners. Beyond conventional measurements like height and body weight, the study highlights the importance of factors such as step count, step length, step frequency, and leg asymmetry for achieving optimal sports performance. The findings emphasize the significance of developing leg strength while addressing asymmetry in order to propel short-distance runners towards achieving peak running performance.

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