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METHODOLOGY FOR MONITORING THE FUNCTIONAL STATE OF AMPUTEE FOOTBALL PLAYERS

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ABOUT ARTICLE

Key words: Polar H10 heart rate monitoring device, training plan for preparing amputee football players.

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Abstract: This article presents the initial and post-research functional state of amputee football players. The assessment of these results was conducted using the modern "Polar H10" heart rate monitoring strap, and information is provided on improving functional status based on the obtained data.

Relevance.

Today, there is a growing demand for modern methods of selecting, training, and organizing training sessions for individuals with musculoskeletal impairments, particularly amputees, in Paralympic sports. The further development of Olympic, non-Olympic, and Paralympic movements is crucial for taking mass sports to a new level and increasing public physical activity. Additionally, amputee football is one of the emerging non-Olympic sports, and its development not only promotes inclusivity but also provides opportunities to achieve new milestones in international sports competitions. Systematically improving the pre-competition macrocycle training methodology for highly skilled amputee football players remains a pressing issue.

Unlike able-bodied athletes, scientific research is being conducted worldwide to enhance the motor activity of individuals with congenital or acquired impairments, improve their training and competition performance, maintain high stability in gameplay, and execute

complex movements with greater amplitude. In amputee football training, various methods and tools are developed in accordance with training plans to increase motor activity, enhance psychological traits (such as attention and precision), develop reaction speed, and improve the ability to sense the ball's direction and teammates' positioning. However, despite extensive studies in these areas, selecting optimal training loads at different stages of preparation and planning the pre-competition macrocycle for amputee football players remains a crucial task.

Research Objective:

To develop a methodology for monitoring the functional state of amputee football players.

Research Tasks:

1. Analyze and summarize scientific and methodological literature related to the topic.
2. Evaluate and compare the initial and final functional states of amputee football players.

Research Results and Discussion

The study identified the necessity of applying two methodological approaches in organizing the training sessions of amputee football players.

1. The first approach focuses on determining the organizational aspects of training and characterizing the composition of participants.
2. The second approach is based on a set of sports-pedagogical methodologies, where each training session includes carefully selected and strictly regulated exercises with a specific direction.

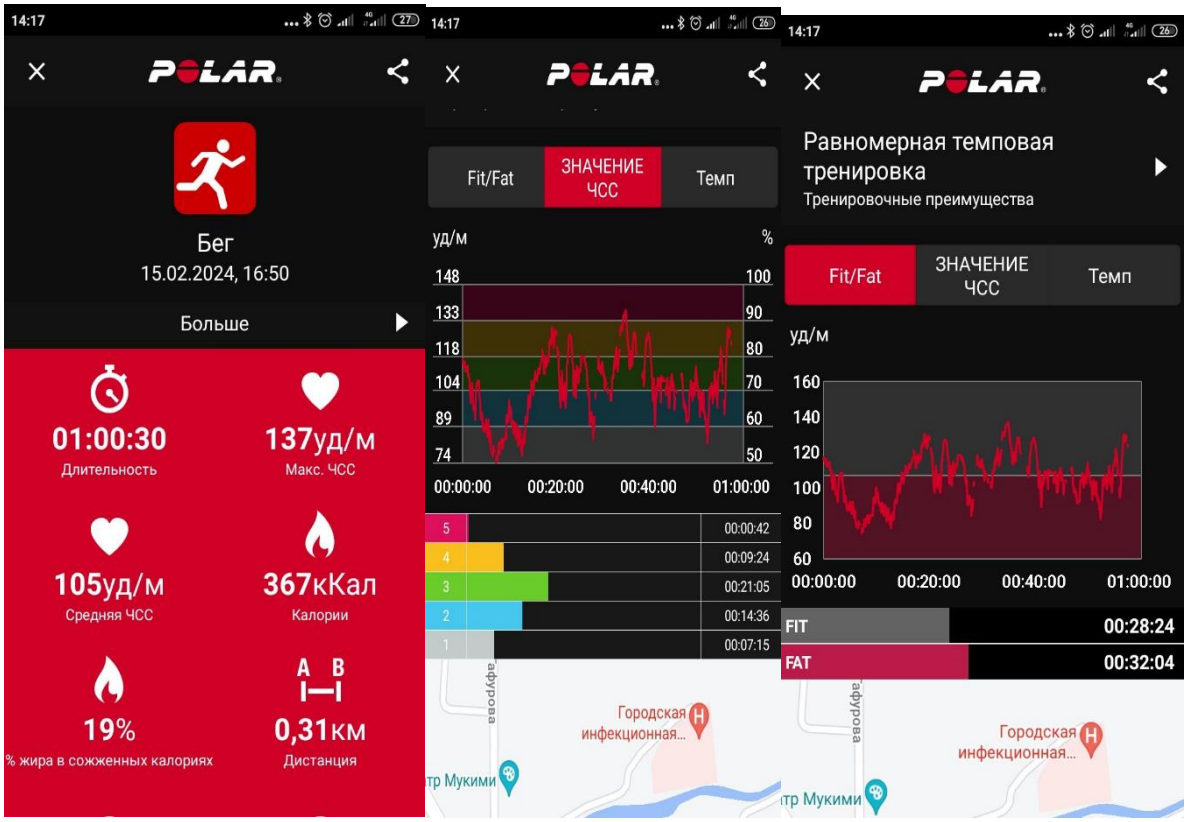
To eliminate fatigue symptoms in highly skilled football players, the application of non-traditional recovery methods was found to be effective. This allowed for enhanced recovery speed during both training sessions and official matches. The functional preparedness of amputee football players was assessed through comprehensive control tests covering different aspects of training.

Furthermore, due to the intense training and high workload during official competitions, a set of exercises aimed at maintaining work capacity throughout the championship was developed.

Additionally, using the Polar H10 heart rate monitoring strap, recommendations were formulated to adjust the maximum intensity of training sessions to match competition-level intensity based on aerobic capacity indicators (VO2 max).

The functional state of the national para-football team members was pedagogically analyzed during their training sessions at the National Paralympic Committee's football field. This analysis was conducted using the Polar H10 heart rate monitoring device. The functional condition of highly skilled amputee football players was monitored during 60-minute specialized training sessions, where workload exercises were used to assess their physiological response.

Figure 3.1. Analysis of Amputee Football Players' Training Process



The training session lasted 1 hour, 5 seconds (01:00:05). The maximum heart rate (HR) recorded was 137 beats per minute (bpm), with an average HR of 105 bpm. The total energy expenditure was 367 kcal, with 19% of the energy derived from fat burning.

Regarding training intensity zones, the session was divided as follows:

- Aerobic zone: 32 minutes and 4 seconds (32:04)
- Anaerobic zone: 28 minutes and 24 seconds (28:24)

A breakdown of time spent in different intensity zones:

- Zone 1 (low intensity): 7 minutes and 15 seconds (7:15)
- Zone 2 (moderate intensity): 14 minutes and 36 seconds (14:36)
- Zone 3 (high intensity): 21 minutes and 5 seconds (21:05)

- Submaximal intensity zone: 9 minutes and 24 seconds (9:24)
- Maximal intensity zone: 42 seconds (0:42)

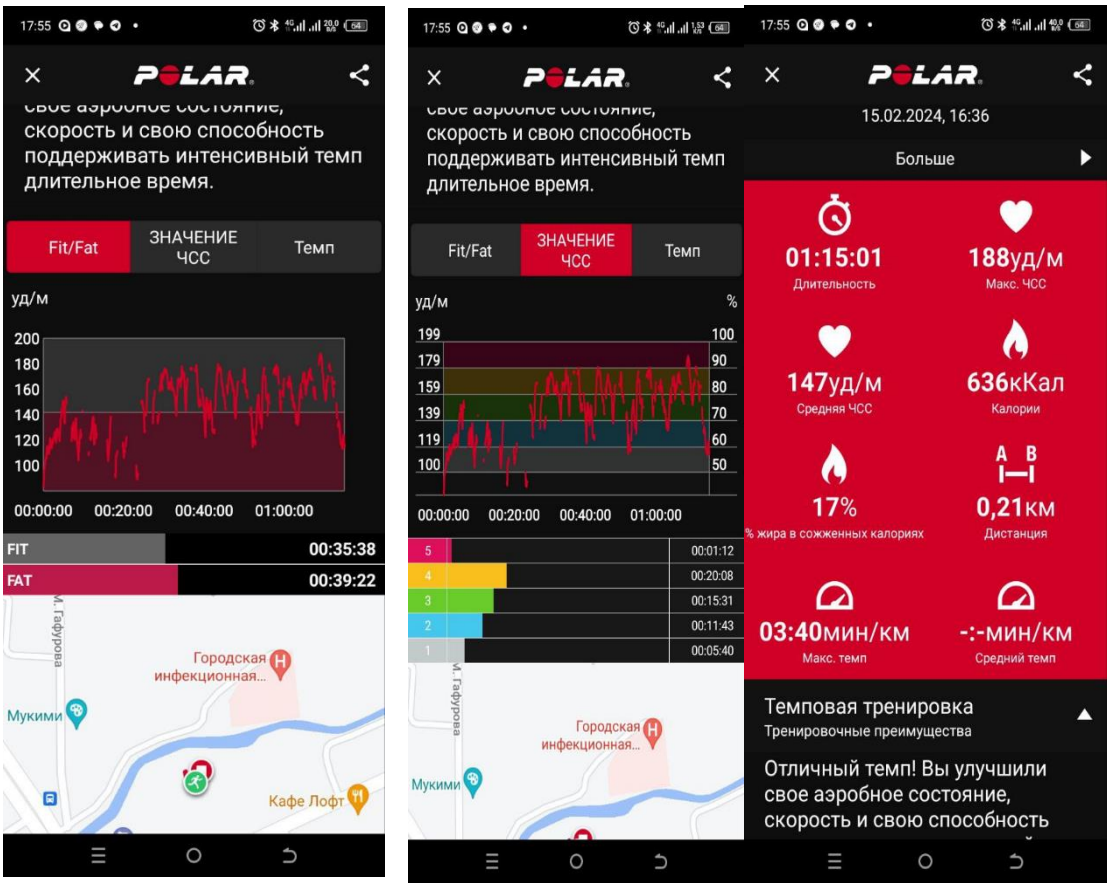


Figure 3.2. Analysis of Amputee Football Players' Training Process

The training sessions of the national amputee football team were pedagogically analyzed on the football field of the National Paralympic Committee. The functional state of highly skilled amputee football players was monitored during 76-minute specialized training sessions using load exercises.

The total duration of the training was 1 hour, 15 minutes, and 1 second. The maximum heart rate (HR) recorded was 188 beats per minute, with an average HR of 147 beats per minute. The energy expenditure reached 636 kcal, with 17% fat oxidation observed. The players spent 39 minutes and 22 seconds in the aerobic zone and 35 minutes and 38 seconds in the anaerobic zone.

Analysis by intensity zones:

- Zone 1: 5 minutes 40 seconds
- Zone 2: 11 minutes 43 seconds
- Zone 3: 15 minutes 31 seconds
- Submaximal intensity zone: 20 minutes 8 seconds

• Maximum intensity zone: 1 minute 12 seconds

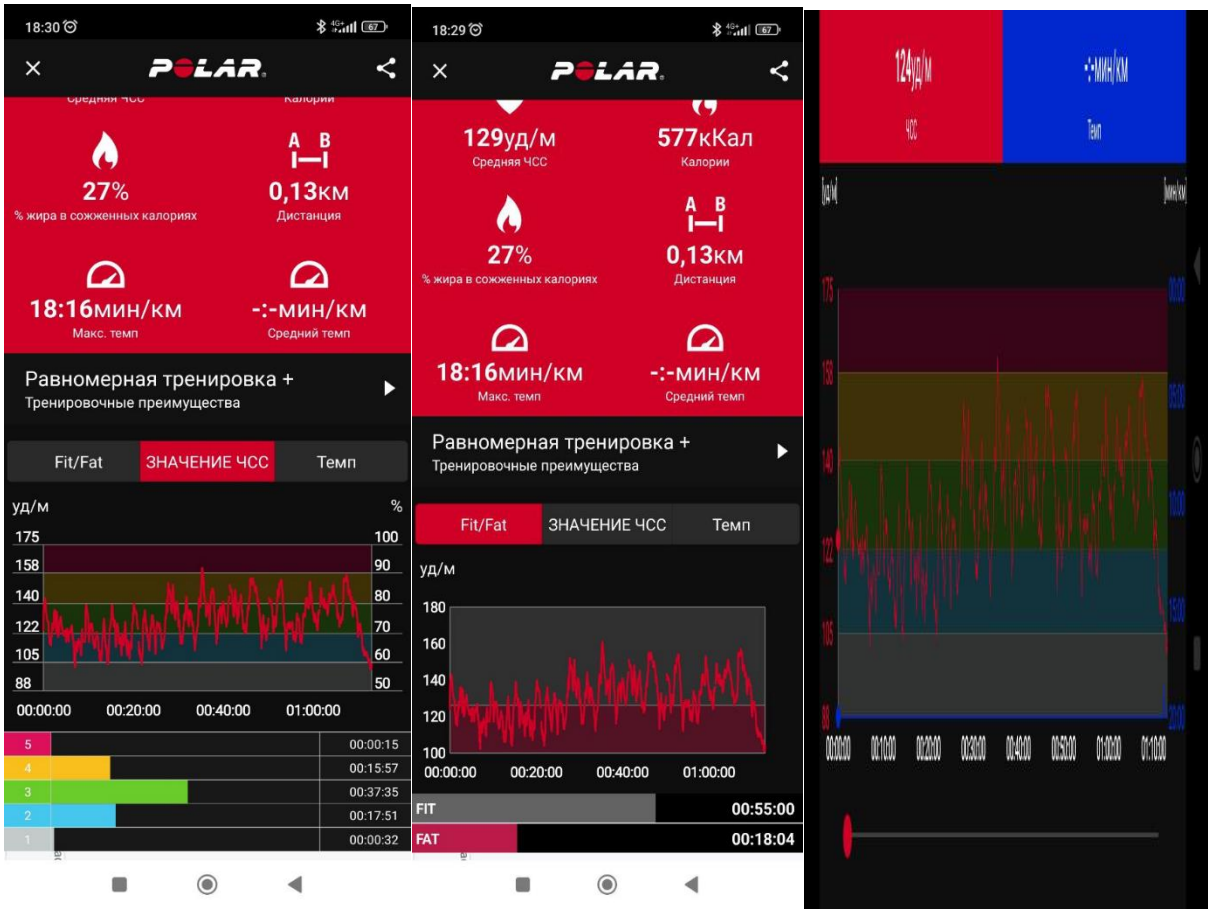


Figure 3.3. Analysis of Training Processes of Amputee Football Players

The training sessions of the national amputee football team were pedagogically analyzed on the football field of the National Paralympic Committee. The functional state of highly skilled amputee football players was monitored during 76-minute specialized training sessions involving load exercises. The total duration of the training was 01:15:01. The maximum heart rate (HR) recorded was 188 bpm, with an average HR of 147 bpm. The total energy expenditure was 636 kcal, with 17% of fat burned. The training included 18:04 minutes in the aerobic zone and 55:00 minutes in the anaerobic zone.

When analyzing the training in terms of intensity zones:

• First intensity zone: 5:40 minutes

• Second intensity zone: 11:43 minutes

• Third intensity zone: 15:31 minutes

• Submaximal intensity zone: 20:08 minutes

• Maximal intensity zone: 1:12 minutes

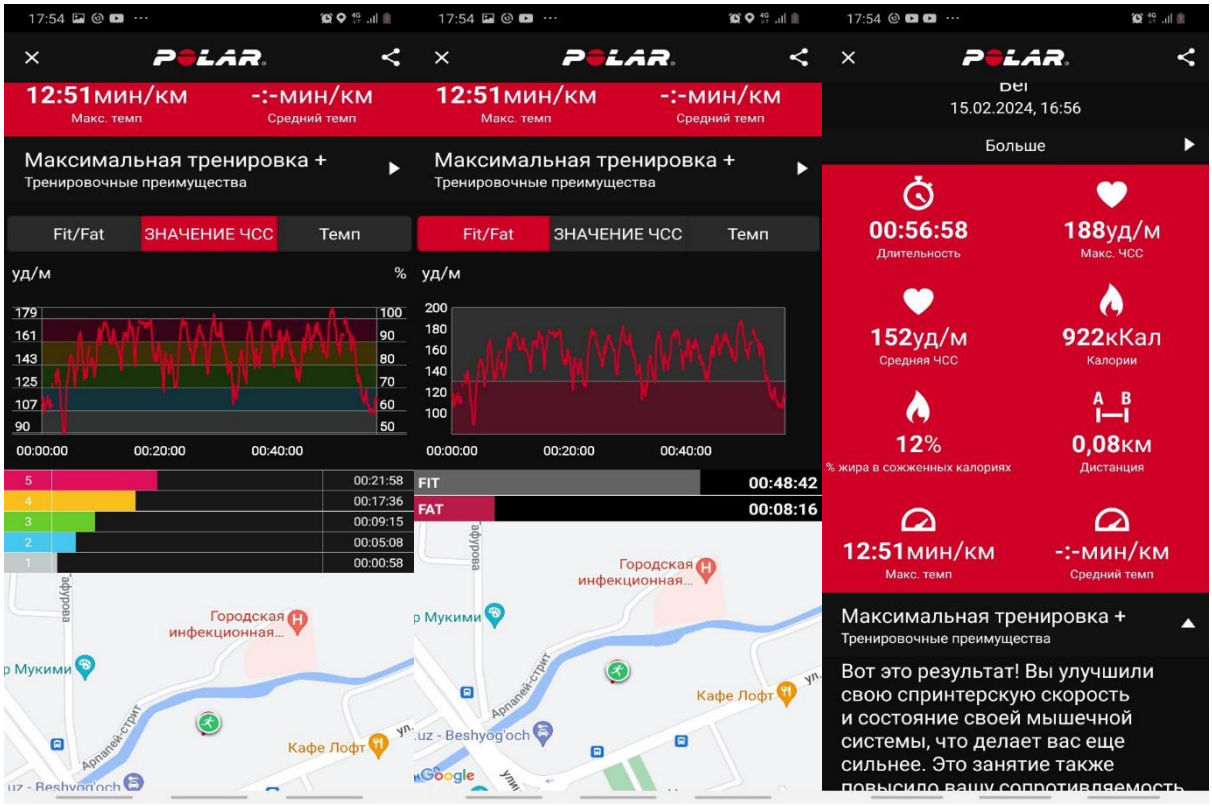


Figure 3.4. Analysis of the Training Process of Amputee Football Players.

The training sessions of the national parafootball team members were pedagogically analyzed at the football field of the National Paralympic Committee. The functional state of highly skilled amputee football players was monitored during a 56-minute special training session through workload exercises.

The total duration of the training was 56 minutes and 58 seconds. The maximum heart rate (HR) reached 188 bpm, while the average HR was recorded at 152 bpm. Energy expenditure amounted to 922 kcal, with 12% of fat burned. The players spent 08 minutes and 16 seconds in the aerobic zone and 48 minutes and 42 seconds in the anaerobic zone.

Analyzing the training by intensity zones:

- Zone 1: 00:58 min
- Zone 2: 05:08 min
- Zone 3: 09:15 min
- Submaximal intensity zone: 17:36 min
- Maximum intensity zone: 21:58 min

These indicators suggest that the overall physical preparedness and functional state of highly skilled amputee football players are within the normal range.

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