Organising the recovery process within the annual training cycle for elite basketball players

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Abstract

Objective of the study is to conduct an experimental evaluation of a model for organising the recovery process for student basketball players with competitive experience within a one-year training cycle.

Methods and structure of the study. The following methods were employed in this research: analysis and synthesis of scientific and methodological literature, questionnaires, factor analysis, pedagogical experiments, modelling, testing, and methods of mathematical statistics.

The study was conducted at the Volga State University of Physical Culture, Sport and Tourism, Kazan (experimental group) and the Orel State University named after I.S. Turgenev, Orel (control group). 30 qualified basketball players, members of university national teams, took part in the experiment, divided into two groups of 15 people each.

Results and conclusions. In the experimental group, a specially developed model for organising the recovery process was applied, whilst the athletes in the control group carried out recovery activities independently, following their coach's recommendations. The effectiveness of the model for organising the recovery process was tested as part of a pedagogical experiment by examining changes in the indicators of physical, technical, functional and psychological fitness among qualified basketball players:

Physical fitness: in the experimental group, improvements in general and specific physical fitness indicators were recorded in the following ranges: 2.29–23.06% and 4.12–10.70%, respectively.

Technical fitness: in the experimental group, improvements in technical fitness indicators were recorded within the following range: 34.32–61.80%.

Functional fitness: in the experimental group, improvements in functional fitness indicators were recorded within the following ranges: respiratory system (spirometry) 12.55–21.62%; overall fitness (Wingate test) 10.26–23.12%; heart rate response to exercise 6.98–9.66%; Romberg's test (stability platform) 13.84–37.69%, respectively.

Psychological fitness: in the experimental group, improvements in psychological fitness indicators were recorded within the range of 8.93–25.56%.

Improvements in all indicators studied were less pronounced in the control group.

The experimental model developed allows for the integration of recovery measures into the training process of elite basketball players, taking into account the loads they undergo (training and competitive), as well as the characteristics and specifics of the training periods within the annual cycle. The effectiveness of the model was verified by assessing changes in the indicators of physical, technical, functional and psychological fitness of skilled basketball players, where a more significant improvement in results was observed in the experimental group compared to the control group in virtually all indicators studied. Thus, based on the results of the study, it can be concluded that the model for organising the recovery process for skilled basketball players in university basketball teams has proven its effectiveness following its trial.

Keywords: *basketball players, high level of skill, organisation, model, physical recovery process.*

Introduction. It is now clear that the intensity of matches and training loads in university basketball is on a par with that of professional sport. The athletic training of elite basketball players at universities involves high training and competitive loads, which significantly impact the effectiveness of training and hinder the recovery process. This calls for a review of approaches to organising recovery measures, with an emphasis on a comprehensive approach [2, 4].

A survey of specialists and athletes revealed that the recovery methods used are often monotonous and fragmented, confirming the need to review existing practices and to seek out and implement more effective approaches.

At the same time, the factor analysis we conducted identified the key components of sporting proficiency in skilled basketball players, such as speed-strength endurance, coordination abilities, functional and general endurance. The effective development of the aforementioned components requires a comprehensive approach to the selection of recovery methods.

A review of the literature revealed no studies dedicated to the comprehensive application of recovery methods in student basketball. This indicates a gap in this area of scientific research; however, as many experts note, for effective training and the achievement of high results, regardless of the sport or the athletes' level, the body must be adapted to high loads [1, 3, 5].

Objective of the study is to conduct an experimental evaluation of a model for organising the recovery process for student basketball players with competitive experience within a one-year training cycle.

Methods and structure of the study. The following methods were employed in this research: analysis and synthesis of scientific and methodological literature, questionnaires, factor analysis, pedagogical experiments, modelling, testing, and methods of mathematical statistics.

The study was conducted at the Volga State University of Physical Culture, Sport and Tourism, Kazan (experimental group) and the Orel State University named after I.S. Turgenev, Orel (control group). 30 qualified basketball players, members of university national teams, took part in the experiment, divided into two groups of 15 people each.

Results of the study and discussion. Taking into account a review of the literature, the opinions of experts and athletes, and the results of the factor analysis conducted, a model was developed for organising the recovery process for elite basketball players on university teams within an annual training cycle. The model comprised the following components: objectives, content, process, monitoring and evaluation, and outcomes:

1. The objective block formulates the goals and objectives. The aim of the model is to achieve a balance between physical load and the body's capabilities through the comprehensive use of specially selected recovery methods.

2. The content block describes specially selected recovery methods (11 sets of recovery methods) which have specific effects: relaxing, toning, stimulating and supportive.

3. The procedural section describes the application of recovery programmes within the annual training cycle for elite basketball players, taking into account the characteristics of the preparatory period (shortened timeframe) and the specifics of the competitive period (the round-robin system of major competitions and the presence of an inter-match training interval).

4. The monitoring and assessment section defines indicators (physical, technical, functional and psychological readiness) and the criteria for their assessment.

5. The results section describes the outcomes achieved.

To test the effectiveness of the developed model, a pedagogical experiment was conducted involving two groups of qualified basketball players: an experimental group (EG) and a control group (CG), each comprising 15 athletes. In the experimental group, a specially developed model for organising the recovery process was implemented, whilst the athletes in the control group carried out recovery activities independently, following the coach's recommendations.

The effectiveness of the model for organising the recovery process was assessed by studying changes in indicators such as the physical, technical, functional and psychological fitness of the qualified basketball players.

Physical fitness was assessed using indicators of general physical fitness (GPF) and specific physical fitness (SPF).

In terms of GPF indicators, an improvement ranging from 2.29% to 23.06% was recorded in the experimental group, and from 0.89% to 2.52% in the control group, respectively.

In terms of SPF indicators, an improvement ranging from 4.12% to 10.70% was recorded in the experimental group, and from 1.09% to 1.6% in the control group, respectively.

Technical proficiency was assessed using the following indicators: 'Number of two-point shots', 'Two-point shot percentage', 'Number of three-point shots', 'Three-point shot percentage'.

In the experimental group, improvements in technical fitness indicators were recorded in the range of 34.32–61.80%, whilst in the control group they ranged from 3.22% to 5.88%, respectively.

Functional fitness was assessed using the following tests and trials: respiratory system (spirometry), general work capacity (Wingate test), heart rate (HR) response to exercise, and the Romberg test (stability platform).

In the respiratory system assessment indicators (spirometry), an improvement ranging from 12.55% to 21.62% was recorded in the experimental group, and from 2.91% to 3.71% in the control group, respectively.

In the indicators assessing overall physical fitness (Wingate test), an improvement ranging from 10.26% to 23.12% was recorded in the experimental group, and from 2.02% to 3.23% in the control group, respectively.

In the indicators assessing the heart rate response to exercise, an improvement ranging from 6.98% to 9.66% was recorded in the experimental group, and from 0.42% to 1.57% in the control group, respectively.

In the Romberg test on a stabilisation platform, an improvement was recorded in the experimental group ranging from 13.84% to 37.69%, and in the control group – 0.93–1.85%, respectively.

Psychological readiness was assessed using tests such as: 'Traffic Lights', 'Tapping Test', 'Snake', and 'Tremor'.

In the experimental group, improvements in psychological readiness indicators were recorded in the range of 8.93% to 25.56%, whilst in the control group, improvements ranged from 1.87% to 0.22%, respectively.

Thus, the experimental group showed more significant improvements in virtually all indicators studied compared with the results of the control group.

Conclusions. Based on the findings of this study, it can be concluded that the experimental model developed allows for the integration of recovery measures into the training process of elite basketball players, taking into account the loads they undergo (training and competitive) as well as the characteristics and specific features of the training periods within the annual cycle. The effectiveness of the model was tested by assessing changes in the indicators of physical, technical, functional and psychological fitness of skilled basketball players, where a more significant improvement in results was observed in the experimental group compared to the control group for virtually all indicators studied. Thus, based on the results of the study, it can be concluded that the model for organising the recovery process for skilled basketball players in university basketball teams has proven its effectiveness following its trial.

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