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THE ADVANTAGES OF INCREASING INDIVIDUAL ATTACK SPEED IN QUALIFIED BASKETBALL PLAYERS WITH THE HELP OF ANAEROBIC EXERCISES

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Abstract

The article examines the advantages of increasing individual attack speed in qualified basketball players through the systematic use of anaerobic exercises. In modern basketball, the effectiveness of offensive actions depends not only on technical mastery and tactical awareness, but also on the athlete's ability to perform explosive movements under conditions of time deficit, physical contact, and high competitive intensity. Anaerobic training, including sprint drills, repeated acceleration, plyometric tasks, resisted running, change-of-direction exercises, and high-intensity interval loads, creates physiological and neuromuscular conditions for improving first-step quickness, fast break execution, one-on-one penetration, transition attack, and rapid decision-making during offensive play. The relevance of this issue is especially important for qualified players, whose performance improvement requires not general physical preparation, but highly specialized training means corresponding to the dynamic structure of basketball. The article emphasizes that properly organized anaerobic exercises contribute to the development of speed-strength abilities, phosphagen energy system efficiency, lactate tolerance, explosive power, coordination stability, and movement economy. In the context of sports education at a transport university, the study highlights the methodological importance of integrating anaerobic loads into basketball training programs while maintaining technical accuracy, recovery balance, and injury prevention. The results of such training may support more effective individual attacks, faster offensive transitions, and improved competitive performance.

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Keywords: Basketball, anaerobic exercises, individual attack speed, qualified players, explosive power, speed-strength training, offensive performance, high-intensity training

Introduction

MALAKALI BASKETBOLCHILARDA INDIVIDUAL XUJUM TEZKORLIGINI ANAEROB MASHQLAR YORDAMIDA OSHIRISH AFZALLIGI

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Toshkent davlat transport universiteti
“Jismoniy tarbiya va sport” kafedrasi assistent

Annotatsiya

Mazkur maqolada malakali basketbolchilarda anaerob mashqlar yordamida individual hujum tezligini oshirishning afzalliklari tahlil qilinadi. Zamonaviy basketbolda hujum harakatlarining samaradorligi faqat texnik mahorat va taktik tafakkurga emas, balki sportchining vaqt tanqisligi, jismoniy qarshilik va yuqori musobaqa shiddati sharoitida portlovchi harakatlarni tez bajarish qobiliyatiga ham bog‘liqdir. Sprint mashqlari, takroriy tezlanishlar, pliometrik topshiriqlar, qarshilik bilan yugurish, yo‘nalishni keskin o‘zgartirish mashqlari va yuqori shiddatli intervalli yuklamalar kabi anaerob tayyorgarlik vositalari birinchi qadam tezligi, tezkor hujumga chiqish, yakkama-yakka o‘tib ketish, hujumga o‘tish jarayoni va hujum paytidagi tez qaror qabul qilishni takomillashtirish uchun fiziologik hamda neyromushak asoslarini shakllantiradi. Ushbu masala ayniqsa malakali sportchilar uchun dolzarb bo‘lib, ularning natijadorligini oshirish umumiy jismoniy tayyorgarlikdan ko‘ra basketbol harakatlari tuzilishiga mos maxsus mashg‘ulot vositalarini talab etadi. Maqolada anaerob mashqlar tezkor-kuch sifatlari, fosfagen energiya tizimi samaradorligi, laktatga chidamlilik, portlovchi kuch, koordinatsion barqarorlik va harakat tejamkorligini rivojlantirishi ta’kidlanadi. Transport universiteti sport ta’limi sharoitida anaerob yuklamalarni texnik aniqlik, tiklanish muvozanati va jarohatlanishning oldini olish tamoyillari asosida basketbol mashg‘ulotlariga kiritishning metodik ahamiyati yoritiladi. Bunday tayyorgarlik individual hujum harakatlarini

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tezlashtirish, hujumga o‘tish samaradorligini oshirish va musobaqa natijalarini yaxshilashga xizmat qiladi.

Kalit so‘zlar: basketbol, anaerob mashqlar, individual hujum tezligi, malakali sportchilar, portlovchi kuch, tezkor-kuch tayyorgarligi, hujum samaradorligi, yuqori shiddatli mashg‘ulotlar.

Introduction

Modern basketball is characterized by constant acceleration, sudden changes of direction, rapid transition from defense to attack, and the need to make effective decisions within a very short period of time. In such competitive conditions, individual attack speed becomes one of the decisive factors that determines the productivity of qualified players. A player who can quickly create space, beat an opponent in one-on-one situations, accelerate after receiving the ball, and finish an offensive action before the defense is reorganized gains a clear tactical advantage. Therefore, the improvement of individual attack speed is not only a component of physical preparation, but also an important methodological direction in the development of basketball performance.

In qualified basketball players, the growth of sport mastery usually depends on specialized physical qualities rather than on general motor development. At this stage, ordinary running exercises or traditional endurance loads are not sufficient to improve offensive speed. Basketball requires short, explosive, repeated actions that are performed at maximum or near-maximum intensity. These actions are mainly supported by anaerobic energy mechanisms, especially the phosphagen system and anaerobic glycolysis. For this reason, anaerobic exercises are considered one of the most effective tools for increasing attack speed, explosive power, acceleration ability, and resistance to fatigue during high-intensity offensive episodes.

Individual attack speed in basketball includes several interconnected elements. It involves first-step quickness, sprint acceleration, dribbling speed, change-of-direction ability, jump explosiveness, body control during contact, and the capacity to repeat fast offensive actions throughout the game. The player must not only move quickly, but also maintain technical precision while performing dribbling, passing, feints, stopping, pivoting, and shooting. Thus, speed training in basketball cannot be separated from coordination, technique, tactical thinking,

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and psychological readiness. Anaerobic exercises are valuable because they allow coaches to develop these qualities under conditions close to real match intensity. The relevance of this topic is especially significant for sports education in higher educational institutions, including transport universities, where student-athletes combine academic activity with systematic training. In such conditions, training time must be used efficiently, and each exercise should have a clear functional and pedagogical purpose. Anaerobic training helps to solve this problem because it produces a strong training effect within a relatively limited time. Sprint intervals, repeated high-intensity drills, plyometric jumps, resisted movements, and basketball-specific acceleration tasks can improve both physiological readiness and offensive effectiveness when they are planned correctly.

Another important aspect is the relationship between anaerobic preparation and tactical advantage. A faster attacking player can force the defender to react late, create numerical superiority, open passing lanes, and increase the tempo of the team's offense. In modern basketball, where defensive systems are highly organized, the ability of one player to break defensive balance through speed becomes extremely important. Individual speed in attack also influences fast breaks, transition offense, isolation plays, cuts to the basket, and quick finishing near the rim.

Therefore, the study of anaerobic exercises as a means of increasing individual attack speed has both theoretical and practical importance. It allows coaches, teachers, and sports specialists to design more effective basketball training programs for qualified players. A scientifically grounded approach to anaerobic load planning can improve offensive dynamics, maintain technical accuracy under fatigue, and contribute to higher competitive performance.

Literature Review

Scientific studies on basketball performance show that individual attack speed is closely connected with the intermittent and high-intensity nature of the game. McInnes, Carlson, Jones, and McKenna emphasized that basketball imposes repeated physiological loads on players, including short sprints, jumps, accelerations, stops, and rapid changes of direction. This view is supported by Abdelkrim, El Fazaa, and El Ati, who demonstrated through time-motion analysis that elite young basketball players perform numerous explosive actions during competition. Therefore, the improvement of individual attack speed should be

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examined not as a separate running ability, but as a complex performance quality based on anaerobic power, neuromuscular coordination, agility, and technical execution.

The role of anaerobic fitness in basketball has been widely discussed in the literature. Delextrat and Cohen noted that basketball players require standardized evaluation of anaerobic fitness because many decisive actions occur in short periods of maximum intensity. Hoffman, Epstein, Einbinder, and Weinstein also showed that anaerobic performance and recovery capacity are essential for basketball players, especially when explosive actions are repeated under incomplete recovery conditions. These findings indicate that attacking speed depends not only on the player's ability to accelerate once, but also on the capacity to reproduce high-speed actions throughout the game.

Research by Ben Abdelkrim, Chaouachi, Chamari, Chtara, and Castagna highlights that competitive level and playing position influence the physical demands placed on basketball athletes. This is important for qualified players because their training should reflect the specific requirements of their role on the court. Guards often need rapid ball control, fast changes of direction, and quick penetration, while forwards and centers require explosive movement, powerful take-off, and effective acceleration in limited space. Castagna and colleagues also underlined the importance of explosive power in basketball performance, showing that speed and power abilities are significant components of competitive readiness.

The development of repeated sprint ability is another important direction in the literature. Bishop, Girard, and Mendez-Villanueva explained that repeated-sprint training should include high-intensity efforts with controlled recovery, because this type of work improves the ability to maintain speed during repeated explosive episodes. Meckel, Gottlieb, and Eliakim also examined repeated sprint testing in young basketball players and showed that sprint performance may change depending on the stage of the game. This supports the idea that anaerobic exercises are valuable not only for increasing maximum speed, but also for maintaining attacking intensity under fatigue.

The literature also emphasizes the importance of agility and speed-strength preparation. Sheppard and Young defined agility as a quality that includes both physical change-of-direction ability and perceptual decision-making. In basketball, this means that a fast attacking player must react to defenders, control

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the ball, and choose the correct movement direction. Plisk described speed, agility, and speed-endurance development as key areas of athletic preparation, while Gamble stressed that team-sport training should be specific to competitive movement patterns. For this reason, anaerobic exercises for basketball should include sprinting, cutting, stopping, re-acceleration, dribbling, and finishing actions.

Plyometric and resistance exercises are also important for increasing individual attack speed. Stojanović, Ristić, McMaster, and Milanović confirmed that plyometric training improves vertical jump performance, which is closely related to explosive power and quick take-off. Faigenbaum and Myer noted that properly organized resistance training can be safe and effective for young athletes when progression and injury prevention principles are respected. Haff and Triplett, as well as Bompa and Buzzichelli, emphasized that strength and conditioning programs must be periodized and adapted to the athlete's level. Thus, anaerobic training for qualified basketball players should be systematic, progressive, and integrated with technical-tactical tasks.

Overall, the analyzed literature confirms that increasing individual attack speed in basketball requires a scientifically grounded combination of anaerobic power, repeated sprint ability, agility, explosive strength, and basketball-specific coordination. Anaerobic exercises provide an effective methodological basis for improving first-step quickness, attacking acceleration, fast breaks, one-on-one penetration, and technical stability under high-speed conditions.

Methods

The study was designed on the basis of a pedagogical and sports-training approach aimed at determining how anaerobic exercises can improve individual attack speed in qualified basketball players. The methodological foundation of the research was connected with the analysis of basketball-specific movements, the selection of high-intensity training means, and the evaluation of changes in offensive speed indicators. The research logic was based on the idea that individual attack speed is not a single physical quality, but an integrated performance characteristic that includes acceleration, explosive power, change-of-direction ability, dribbling speed, technical stability, and the capacity to repeat fast offensive actions under fatigue.

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Table 1 Key Anaerobic Factors Improving Individual Attack Speed in Basketball Players

Anaerobic training component	Main physical effect	Offensive game advantage
Short sprint accelerations	Improves first-step quickness and explosive start	Helps the player beat the defender in one-on-one situations
Repeated high-intensity drills	Develops speed endurance and fatigue resistance	Maintains attack tempo during the second half of the game
Plyometric jumps	Increases explosive power and take-off ability	Supports faster drives, layups, rebounds, and finishing actions
Change-of-direction exercises	Enhances agility, balance, and body control	Allows sharper cuts, crossovers, and penetration into free zones
Ball-based anaerobic drills	Combines speed with dribbling and decision-making	Transfers physical speed directly into real offensive performance

The participants of the study were qualified basketball players engaged in regular training within the system of higher education sports preparation. The training process was organized with consideration of the academic and athletic environment of a transport university, where the effectiveness of physical preparation depends on rational time management, load control, and the connection between theoretical knowledge and practical training. The athletes had previous basketball experience, sufficient technical background, and the physical readiness necessary to perform high-intensity anaerobic exercises. This made it possible to use specialized drills without reducing the methodological safety of the training process.

The research methods included theoretical analysis of scientific and methodological literature, pedagogical observation, testing of speed and speed-strength qualities, comparative analysis of training results, and practical assessment of offensive actions during basketball exercises. The main indicators used to evaluate individual attack speed were first-step acceleration, short-distance sprint performance, change-of-direction speed, dribbling speed over a limited distance, repeated sprint ability, and the speed of completing one-on-one attacking actions. These indicators were selected because they directly correspond to the dynamic structure of basketball offense.

The anaerobic training program included short sprint drills, repeated accelerations, shuttle runs, resisted running, plyometric jumping exercises, lateral

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movement tasks, and high-intensity interval drills with the ball. Special attention was paid to exercises that reproduced real offensive situations: acceleration after receiving the ball, fast dribbling with direction change, explosive drive to the basket, quick stop and restart, attack after a feint, and transition from defense to fast break. This approach allowed the training process to combine physical development with technical and tactical requirements.

The training load was organized according to the principles of progression, specificity, intensity regulation, and sufficient recovery. Anaerobic exercises were performed at high or near-maximum intensity, but the total volume was controlled to avoid excessive fatigue and technical deterioration. Rest intervals were planned depending on the purpose of the exercise. Longer recovery periods were used for maximum acceleration and explosive power drills, while shorter intervals were applied in repeated sprint and fatigue-resistance tasks. This helped to develop both peak speed and the ability to maintain offensive intensity during repeated game episodes.

Pedagogical observation was used to assess the quality of movement execution, coordination, decision-making, and technical precision under speed conditions. The coach or teacher monitored whether the athlete-maintained body balance, controlled the ball effectively, reacted quickly to changing situations, and completed attacking actions without unnecessary movements. The obtained data were analyzed comparatively before and after the implementation of anaerobic training. Such methodological organization made it possible to evaluate not only physical improvements, but also their practical transfer to basketball-specific individual attack performance.

Results

The implementation of anaerobic exercises in the training process of qualified basketball players showed a positive influence on the development of individual attack speed and the quality of offensive actions. The most noticeable improvement was observed in the athletes' first-step quickness, which is one of the key elements of successful one-on-one play. Players became more capable of creating an initial advantage over the defender immediately after receiving the ball, performing a feint, or changing the direction of movement. This improvement was especially evident in attacking situations where the player had

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to penetrate into the restricted area, quickly move away from defensive pressure, or start a fast break after gaining possession.

The development of short-distance acceleration also demonstrated practical value. After systematic use of sprint drills, resisted running, and repeated acceleration exercises, players performed offensive movements with greater explosiveness and confidence. Their ability to reach maximum or near-maximum speed over short distances increased, which is highly important in basketball because most decisive attacking actions occur within limited court space. Faster acceleration helped players use open zones more effectively, respond quicker to tactical opportunities, and finish offensive episodes before the opposing team could organize defensive support.

Positive changes were also observed in change-of-direction speed. Shuttle runs, lateral acceleration drills, and basketball-specific movement tasks contributed to better body control during sudden stops, turns, and re-accelerations. As a result, players were able to perform attacking maneuvers with less loss of balance and fewer unnecessary movements. This improved their effectiveness during dribbling penetration, crossover actions, cuts without the ball, and quick movement along the perimeter. The ability to change direction rapidly created additional difficulties for defenders and increased the attacking player's tactical variability.

The use of plyometric and explosive strength exercises had a visible effect on jump power and dynamic movement quality. Players demonstrated more active push-off, sharper movement rhythm, and better coordination during fast offensive actions. This was reflected not only in vertical jumping ability, but also in the speed of starting movement, stopping, and changing pace. In attacking situations near the basket, improved explosive power allowed players to finish actions more actively, resist physical contact, and maintain body stability during layups or short-range shots.

Another important result was the improvement of repeated sprint ability. In basketball, individual attack speed must be reproduced many times during the game, often under fatigue. High-intensity interval exercises and repeated anaerobic loads helped players maintain offensive activity during consecutive game episodes. They became more resistant to temporary fatigue and were able to continue performing quick attacks, fast cuts, and transition movements even after several intensive actions. This indicates that anaerobic training improved not

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only maximum speed, but also the functional capacity to preserve speed in competitive conditions.

Technical performance under high-speed conditions also became more stable. When anaerobic drills were combined with dribbling, passing, finishing, and decision-making tasks, players gradually adapted to executing technical elements at increased tempo. They showed better control of the ball during acceleration, fewer coordination errors during direction changes, and more accurate completion of individual attacks. This confirms that anaerobic preparation is most effective when it is integrated with basketball-specific technical content.

The observed results demonstrate that anaerobic exercises provide several interconnected advantages for qualified basketball players. They improve acceleration, explosive power, speed-strength ability, agility, fatigue resistance, and offensive efficiency. Most importantly, these improvements are directly connected with the practical demands of modern basketball. Faster individual attack actions allow players to increase pressure on the defense, create scoring opportunities, and support a higher team offensive tempo.

Discussion

The obtained results show that anaerobic exercises have a direct methodological value for improving individual attack speed in qualified basketball players. In modern basketball, offensive success is often determined by the player's ability to perform a short explosive movement earlier than the defender can react. This means that speed in attack is not simply a physical advantage, but a functional element of tactical superiority. When a player accelerates faster, changes direction more sharply, or attacks the basket with greater explosiveness, the defensive system is forced to make urgent corrections. Such situations create open spaces, provoke defensive mistakes, and increase the probability of successful scoring actions.

The discussion of anaerobic training effectiveness should be connected with the specific energy demands of basketball. Most attacking actions are performed within short time intervals and require maximum muscular effort. A quick drive to the basket, a fast break sprint, an explosive cut, or a sudden stop followed by re-acceleration are supported primarily by anaerobic mechanisms. Therefore, the use of sprint intervals, plyometric tasks, resisted movements, and repeated high-intensity exercises corresponds to the real physiological structure of the game. This explains why anaerobic exercises are more suitable for developing

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individual attack speed than long-duration aerobic loads, which have a different functional orientation.

At the same time, the effectiveness of anaerobic exercises depends on their connection with basketball technique. A player may improve sprint speed, but this improvement will not automatically increase offensive productivity if the athlete cannot control the ball, read the defender, or complete the action accurately. For this reason, the most valuable training effect was achieved when high-intensity movements were combined with dribbling, feints, passing, finishing, and decision-making. This confirms the principle of specificity: physical preparation in basketball must reproduce the rhythm, direction, intensity, and technical complexity of real game situations.

Another important issue is the relationship between speed and fatigue resistance. In qualified basketball, attack speed must be repeated throughout the entire match. A player who can perform only one or two explosive actions may be dangerous in isolated episodes, but stable competitive effectiveness requires the ability to reproduce speed many times. Anaerobic interval training develops this quality by adapting the athlete to repeated high-intensity loads with incomplete recovery. As a result, the player becomes more capable of maintaining offensive tempo in the second half of the game, during pressure defense, and in decisive final minutes.

The pedagogical significance of the results is also important for sports training in a transport university environment. Student-athletes usually have limited time for specialized training because they combine study, practical lessons, and sport activity. Anaerobic exercises are useful in this context because they provide a strong and targeted training effect within a compact training structure. However, their use requires careful planning. Excessive intensity, insufficient recovery, or poor technical control may lead to overfatigue and increased injury risk. Therefore, anaerobic loads should be introduced progressively, with attention to warm-up quality, movement mechanics, recovery intervals, and individual readiness.

The results also show that increasing individual attack speed influences not only the player's personal performance, but also the collective structure of team offense. A faster player creates defensive imbalance, attracts help defense, opens passing opportunities, and accelerates the general rhythm of attack. Thus, anaerobic preparation should be considered not as an isolated physical training

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component, but as an integrated factor of tactical development. For qualified basketball players, its main advantage lies in the combination of explosive movement capacity, technical stability, and practical offensive effectiveness.

Conclusion

The improvement of individual attack speed in qualified basketball players through anaerobic exercises is one of the most effective directions of modern basketball training. The analysis of the training process shows that offensive speed is not formed only by natural quickness or general physical preparation. It develops as a result of purposeful, systematic, and basketball-specific work that combines explosive movement, neuromuscular coordination, technical accuracy, and tactical awareness. Anaerobic exercises create the necessary physiological and methodological basis for this development because they correspond to the real intensity, rhythm, and movement structure of competitive basketball.

The main advantage of anaerobic training is its ability to develop first-step quickness, acceleration, explosive power, change-of-direction speed, and repeated sprint capacity. These qualities directly influence the effectiveness of individual attack actions. A qualified player who can start faster, change direction sharply, overcome defensive pressure, and maintain speed during repeated offensive episodes becomes more dangerous in one-on-one situations and more useful for the team's attacking system. Such a player can create scoring opportunities not only through shooting or passing, but also through speed superiority, sudden penetration, and rapid transition play.

The study also demonstrates that anaerobic exercises are especially effective when they are closely connected with basketball technique. Sprinting, jumping, resisted running, shuttle movements, and interval loads should not be used only as general physical drills. Their practical value increases when they are combined with dribbling, feints, passing, stopping, pivoting, finishing, and decision-making under pressure. In this case, the player develops not only physical speed, but also the ability to use this speed in real offensive situations. This is particularly important for qualified athletes, because at a higher level of play, the difference between successful and unsuccessful attack often depends on fractions of a second and the ability to preserve technical precision at maximum intensity.

Another important conclusion is that anaerobic preparation improves the player's resistance to fatigue during intensive game situations. Basketball does not require

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one isolated acceleration, but the repeated reproduction of explosive actions throughout the entire match. High-intensity anaerobic training helps athletes maintain attacking activity during fast breaks, repeated drives, cuts, and transition episodes, even when fatigue begins to accumulate. This creates a stable foundation for maintaining offensive tempo during decisive phases of competition.

For sports education in a transport university, the use of anaerobic exercises has significant pedagogical value. It allows teachers and coaches to organize training more efficiently, especially when student-athletes have limited time for practice. However, such training must be planned carefully. Load intensity, volume, recovery, technical control, individual readiness, and injury prevention should be considered as essential conditions of the training process. Anaerobic exercises should be introduced progressively and should always serve the broader goal of improving basketball performance.

Thus, increasing individual attack speed with the help of anaerobic exercises provides clear advantages for qualified basketball players. It strengthens explosive capacity, improves technical stability under high-speed conditions, increases tactical variability, and raises the effectiveness of individual and team offense. A scientifically organized anaerobic training program can become an important methodological tool for improving competitive readiness and achieving higher results in modern basketball.

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