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METHODS OF APPLYING DYNAMIC EXERCISES IN TRACK AND FIELD TRAINING

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Annotation

This article examines the methods of applying dynamic exercises in track and field training and their impact on athletes' physical fitness. During the study, a set of dynamic exercises aimed at developing speed, agility, and coordination was implemented. The findings revealed that the regular inclusion of dynamic exercises in the training process improves athletes' overall physical condition, refines technique, and helps prevent injuries. The paper also provides methodological recommendations for integrating dynamic exercises into track and field training sessions.

Keywords

track and field, dynamic exercises, physical fitness, speed, coordination, methodology.

МЕТОДЫ ПРИМЕНЕНИЯ ДИНАМИЧЕСКИХ УПРАЖНЕНИЙ НА ТРЕНИРОВКАХ ПО ЛЁГКОЙ АТЛЕТИКЕ

Аннотация

В статье рассматриваются методы применения динамических упражнений на тренировках по лёгкой атлетике и их влияние на физическую подготовленность спортсменов. В ходе исследования был использован комплекс динамических упражнений, направленных на развитие скорости, ловкости и координации. Результаты показали, что регулярное использование динамических упражнений в тренировочном процессе улучшает общее физическое состояние спортсменов, совершенствует технику и способствует профилактике травм. В работе также представлены методические рекомендации по интеграции динамических упражнений в занятия по лёгкой атлетике.

Ключевые слова

лёгкая атлетика, динамические упражнения, физическая подготовка, скорость, координация, методика.

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INTRODUCTION

Dynamic exercises are an essential component of modern track and field training, contributing significantly to the development of athletes' physical fitness and overall performance. These exercises involve controlled movements that enhance strength, flexibility, coordination, and speed, providing a foundation for more complex athletic skills. In recent years, sports science has emphasized the importance of integrating dynamic exercises into training programs to optimize performance while minimizing the risk of injuries.

Track and field, as a multi-disciplinary sport, requires athletes to possess a combination of explosive power, agility, endurance, and precise technique. Traditional training methods often focus on repetitive drills or static exercises, which, although beneficial, may not fully address the dynamic demands of competitive performance. Dynamic exercises, including plyometrics, agility drills, and dynamic stretching routines, allow athletes to develop neuromuscular coordination and improve movement efficiency in sport-specific contexts.

Despite the proven benefits of dynamic exercises, their systematic application in training programs remains inconsistent. Coaches face challenges in selecting appropriate exercises, determining optimal intensity and duration, and integrating them into the broader training schedule without causing fatigue or overtraining. Furthermore, there is limited research on the comparative effectiveness of different dynamic exercise methods for athletes of varying ages and skill levels.

The aim of this study is to explore practical methods of applying dynamic exercises in track and field training and to assess their impact on athletes' speed, agility, and coordination. By analyzing experimental results and reviewing current training practices, this research seeks to provide evidence-based recommendations for coaches and athletes. The study highlights the potential of dynamic exercises not only to enhance performance but also to improve injury prevention strategies, ultimately contributing to more efficient and safe training practices in track and field.

MATERIALS AND METHODS

The study was conducted with a group of 30 track and field athletes aged 16–22, including both male and female participants with at least two years of training experience. All athletes were healthy and free from injuries at the start of the study. The research was carried out over an 8-week period during the regular training schedule at a professional sports facility.

Dynamic exercises were incorporated into the athletes' warm-up and main training sessions. These exercises included plyometric jumps, agility ladder drills, bounding exercises, dynamic lunges, high-knee running, and sport-specific sprint

drills. Each session lasted 45–60 minutes, with dynamic exercises comprising 20–25 minutes of the total training time. Exercise intensity and volume were adjusted according to the individual fitness level and training experience of each athlete.

Performance was assessed before and after the 8-week intervention using standardized tests. Speed was measured through 30-meter sprint tests, agility through shuttle run drills, and coordination through obstacle course navigation. Heart rate and perceived exertion were monitored to ensure that exercises were performed safely and within the optimal training load.

Data collection included quantitative measurements of performance improvement and qualitative observations of movement technique and posture. The results were analyzed to determine the effectiveness of dynamic exercises in enhancing physical fitness parameters. Comparisons were made between baseline performance and post-intervention results to identify significant changes.

This methodological approach allowed for a controlled, systematic evaluation of dynamic exercise application in track and field training. The combination of objective performance metrics and observational data provided a comprehensive understanding of how dynamic exercises contribute to athletes' speed, agility, and coordination development.

RESULTS

After the 8-week intervention, the athletes demonstrated notable improvements in speed, agility, and coordination. The average 30-meter sprint time decreased from 4.56 ± 0.12 seconds to 4.38 ± 0.10 seconds, indicating enhanced acceleration and running efficiency. Agility performance, measured by the shuttle run test, improved by an average of 8%, with athletes completing the drill in 12.4 ± 0.5 seconds compared to 13.5 ± 0.6 seconds at baseline. Coordination, assessed through an obstacle course navigation test, also showed significant enhancement, with a reduction in completion time from 18.2 ± 0.7 seconds to 16.7 ± 0.6 seconds.

Observational analysis revealed that athletes demonstrated more controlled movement patterns, better balance during dynamic exercises, and improved body posture during sprinting and jumping activities. No injuries or adverse effects were reported, indicating that the dynamic exercise program was safe and suitable for regular training integration.

These results suggest that incorporating dynamic exercises into track and field training leads to measurable improvements in key performance parameters. The data support the hypothesis that dynamic exercises not only enhance physical fitness but also optimize movement coordination, which is essential for sport-specific skills.

Table 1. Performance changes after 8 weeks of dynamic exercise training

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Performance Parameter	Pre-Training (Mean ± SD)	Post-Training (Mean ± SD)	Improvement (%)
30-meter Sprint (s)	4.56 ± 0.12	4.38 ± 0.10	3.95
Shuttle Run (s)	13.5 ± 0.6	12.4 ± 0.5	8.15
Obstacle Course (s)	18.2 ± 0.7	16.7 ± 0.6	8.24

The table clearly demonstrates that dynamic exercises had a positive impact on all measured performance indicators, confirming their effectiveness in enhancing track and field athletes' speed, agility, and coordination.

DISCUSSION

The results of this study demonstrate that dynamic exercises significantly contribute to the improvement of key performance indicators in track and field athletes. The observed decreases in sprint and shuttle run times indicate enhanced speed and agility, while improved obstacle course performance reflects better coordination and neuromuscular control. These findings align with previous research emphasizing the importance of dynamic movements in developing sport-specific physical qualities.

Dynamic exercises, such as plyometric jumps, agility drills, and dynamic stretches, activate multiple muscle groups simultaneously and improve the efficiency of the stretch-shortening cycle. This enhances explosive power, accelerative ability, and movement economy, which are critical in sprinting and jumping events. Furthermore, repeated exposure to dynamic exercises promotes proprioception, balance, and intermuscular coordination, which were evident in the athletes' improved obstacle course performance.

Incorporating dynamic exercises into regular training sessions also provides a functional approach to injury prevention. The exercises strengthen stabilizing muscles and improve joint mobility, reducing the risk of strains and overuse injuries. Observational data indicated that athletes exhibited more controlled movements and better posture during training, supporting the protective benefits of dynamic exercise routines.

However, the effectiveness of dynamic exercises depends on proper programming, intensity regulation, and individual adaptation. Coaches must consider each athlete's age, experience, and fitness level to optimize training outcomes. While the study showed significant improvements, the sample size was limited, and further research with larger groups and varied training contexts is necessary to generalize the findings.

Overall, the study confirms that dynamic exercises are a practical and effective component of track and field training. By improving speed, agility, and

coordination, these exercises enhance athletes' performance while promoting safer, more efficient movement patterns. Coaches and trainers should systematically integrate dynamic exercises into training programs to achieve optimal athletic development and reduce injury risk.

CONCLUSION

The present study highlights the effectiveness of dynamic exercises in enhancing track and field athletes' performance. Over the 8-week training period, athletes demonstrated measurable improvements in speed, agility, and coordination, confirming the positive impact of structured dynamic exercise routines. The results indicate that dynamic exercises not only contribute to physical performance enhancement but also promote neuromuscular coordination, balance, and overall movement efficiency.

Dynamic exercises such as plyometric jumps, agility ladder drills, and dynamic stretching were particularly effective in improving sport-specific skills. Athletes showed better control of movement patterns, enhanced explosive power, and more efficient execution of sprinting and agility drills. Additionally, the absence of injuries or adverse effects during the study suggests that these exercises can be safely integrated into regular training programs, providing both performance and preventive benefits.

The study also emphasizes the importance of systematic programming and individualization in the application of dynamic exercises. Coaches should adjust exercise intensity, volume, and progression according to each athlete's age, skill level, and training experience to maximize results and avoid overtraining.

In conclusion, dynamic exercises represent a vital component of modern track and field training. Their integration into regular training sessions improves key performance indicators, enhances coordination, and reduces the risk of injuries. This research provides practical recommendations for coaches and athletes, highlighting the need for structured, evidence-based approaches to training. Future studies should explore the long-term effects of dynamic exercises across different age groups and competitive levels to further refine training methodologies and optimize athletic development.

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