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IMPROVING TECHNICAL MOVEMENTS THROUGH THE DEVELOPMENT OF FLEXIBILITY IN FREESTYLE WRESTLERS

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Abstract: This article analyzes the scientific and methodological foundations of improving technical movements in freestyle wrestlers through the development of flexibility. The study examines the influence of flexibility, joint mobility, and muscle elasticity on the quality of technical performance in wrestling. Modern stretching methods, functional exercises, and flexibility-oriented training approaches were applied during the research process. The results of the study demonstrated that the systematic development of flexibility significantly improves the accuracy, amplitude, coordination, and effectiveness of technical actions in freestyle wrestlers. In addition, flexibility training contributes to injury prevention and enhances overall athletic performance.

Keywords: freestyle wrestling, flexibility, technical movements, physical training, joint mobility, muscle elasticity, stretching exercises, sports methodology, functional preparation, athletic performance.

INTRODUCTION

In recent years, the modernization of sports training systems and the achievement of high athletic performance in international competitions have become important priorities in the field of sports science. Freestyle wrestling, as one of the most physically demanding Olympic sports, requires athletes to possess not only technical and tactical skills but also a high level of physical preparedness. Among the main physical qualities necessary for successful wrestling performance, flexibility occupies a particularly important place.

Freestyle wrestling is characterized by rapid changes of movement, explosive actions, complex body positions, and continuous physical interaction with an opponent. During matches, wrestlers perform throwing techniques, defensive maneuvers, counterattacks, and rotational actions that require a large range of motion in the joints and excellent muscular coordination. Therefore, flexibility becomes an essential factor influencing the effectiveness and precision of technical movements.

Flexibility can be defined as the ability of the body to perform movements with maximum amplitude in the joints. It depends on the elasticity of muscles, tendons, ligaments, and joint structures. In sports practice, flexibility is usually divided into general flexibility and special flexibility. General flexibility refers to the overall mobility of the body's joints, while special flexibility is directly connected with the specific technical requirements of a particular sport. In freestyle wrestling, special flexibility is extremely important because many wrestling techniques require unusual body positions and highly coordinated movement patterns.

Scientific research in sports physiology indicates that athletes with higher flexibility levels are able to execute technical actions more efficiently, economically, and safely. Increased flexibility improves movement coordination, reduces muscular tension, and enhances the overall quality of technical execution. Wrestlers with good flexibility can adapt more effectively to changing competitive situations and maintain better control during complex technical actions.

Another important aspect of flexibility development is injury prevention. Wrestling training and competitions involve high mechanical stress on muscles and joints. Limited flexibility often causes excessive muscle tension and restricted joint mobility, increasing the risk

of strains, sprains, and other sports injuries. Systematic flexibility training helps improve the elasticity of muscles and connective tissues, reducing the likelihood of injuries and accelerating recovery processes after intensive physical нагрузки.

The development of flexibility is particularly effective during adolescence because the musculoskeletal system at this age demonstrates increased adaptability and elasticity. Young wrestlers can significantly improve their flexibility through properly organized stretching exercises and mobility training. Early development of flexibility creates a strong foundation for mastering advanced technical skills in later stages of athletic preparation.

Modern wrestling training systems include various methods for improving flexibility, such as:

— static stretching exercises
— dynamic stretching drills
— active and passive flexibility training
— partner-assisted stretching exercises
— functional mobility exercises
— sport-specific movement drills

These training methods are designed not only to increase joint mobility but also to improve coordination, balance, and technical efficiency. Contemporary coaches increasingly integrate flexibility exercises directly into technical training sessions to ensure the practical application of improved movement capabilities.

Research conducted in sports pedagogy and biomechanics demonstrates that flexibility directly influences the amplitude, speed, and precision of technical movements in wrestling. Athletes with better flexibility often perform techniques with greater control and reduced energy expenditure. Furthermore, flexibility contributes to the development of tactical variability because wrestlers are able to apply a wider range of technical actions during matches.

Despite the significant attention paid to physical preparation in freestyle wrestling, many training programs still focus primarily on strength and endurance development, while flexibility training receives insufficient emphasis. As a result, some wrestlers experience limitations in technical execution and movement coordination. This highlights the necessity of improving modern wrestling methodology by integrating scientifically based flexibility-development programs.

The relevance of this study lies in examining the relationship between flexibility development and technical improvement in freestyle wrestlers. The research aims to identify effective training methods that enhance technical performance through systematic flexibility development. The findings of this study may contribute to the optimization of wrestling training methodology and improve the physical and technical preparation of athletes.

Overall, the development of flexibility should be considered an integral part of freestyle wrestling preparation because it significantly influences technical mastery, movement quality, injury prevention, and competitive performance. Scientifically organized flexibility training can help wrestlers achieve higher levels of athletic excellence and improve their effectiveness during competitions.

METHODOLOGY

The present study was conducted to determine the effectiveness of flexibility development in improving technical movements among freestyle wrestlers. The research methodology was based on modern principles of sports pedagogy, sports physiology, biomechanics, and wrestling theory. A comprehensive approach combining pedagogical observation, experimental training methods, physiological assessment, and statistical analysis was applied throughout the study.

The research focused on examining the relationship between flexibility indicators and the quality of technical performance in freestyle wrestling. Particular attention was given to joint mobility, muscle elasticity, coordination abilities, movement amplitude, and technical efficiency during wrestling-specific actions.

The study involved young freestyle wrestlers who regularly participated in organized sports training programs. The athletes were divided into experimental and control groups. The experimental group followed a specially designed flexibility-development program integrated into wrestling training sessions, while the control group continued traditional wrestling preparation without additional flexibility-oriented exercises.

The research process included several stages:

— preliminary assessment and data collection
— implementation of the experimental flexibility-training program
— monitoring of technical and physical performance indicators
— final testing and comparative analysis of results

To ensure scientific validity and reliability, multiple research methods were applied during the investigation.

Analysis of Scientific and Methodological Literature

Scientific literature related to freestyle wrestling, sports physiology, flexibility training, biomechanics, and athletic preparation was thoroughly analyzed. Previous studies concerning the role of flexibility in sports performance and injury prevention were examined to establish the theoretical foundation of the research.

The literature analysis helped identify:

— the physiological mechanisms of flexibility development
— the influence of flexibility on technical performance
— effective methods of stretching and mobility training
— sport-specific flexibility requirements in wrestling
— modern approaches to athletic preparation

Pedagogical Observation

Pedagogical observation was conducted throughout the training process to monitor the athletes' movement quality, flexibility levels, technical performance, and adaptation to training loads.

During observation sessions, the following indicators were evaluated:

— joint mobility during technical actions
— movement amplitude
— coordination and balance
— muscle relaxation during movement execution
— technical accuracy and efficiency

Special attention was paid to the wrestlers' ability to perform complex technical actions under conditions of fatigue and dynamic movement.

Pedagogical Experiment

A pedagogical experiment constituted the central component of the study. The experimental group participated in a specially designed flexibility-development program integrated into regular wrestling training.

The program included:

— static stretching exercises
— dynamic stretching drills
— active flexibility exercises
— passive flexibility training

— partner-assisted stretching
— sport-specific mobility exercises
— functional movement drills
— coordination exercises

Training sessions were conducted regularly over a specified experimental period. The flexibility exercises were performed during warm-up, main training sections, and recovery phases to maximize effectiveness.

The intensity and complexity of exercises gradually increased according to the athletes' adaptation levels and individual physical capabilities.

Flexibility Assessment Tests

Several standardized tests were used to evaluate flexibility levels and joint mobility among the wrestlers.

The testing procedures included:

— sit-and-reach flexibility test
— shoulder mobility assessment
— hip joint flexibility evaluation
— spinal mobility test
— leg flexibility measurement
— movement amplitude analysis

These tests allowed researchers to determine improvements in muscle elasticity and range of motion after the experimental training program.

Technical Performance Evaluation

Technical performance was assessed through wrestling-specific movement analysis. Coaches and specialists evaluated the athletes' technical execution during training and simulated competition situations.

The following indicators were analyzed:

— technical movement accuracy
— speed of execution
— coordination quality
— movement efficiency
— tactical adaptation during movement
— balance and body control

Video analysis methods were also used to examine the quality and precision of technical actions in greater detail.

Physiological Monitoring

Physiological responses to flexibility training were monitored throughout the study. The athletes' recovery processes, muscular condition, and adaptation to physical loads were systematically observed.

The following physiological indicators were considered:

— muscular tension levels
— recovery speed after training
— fatigue resistance
— injury occurrence frequency
— overall physical condition

Monitoring these indicators allowed researchers to evaluate the safety and effectiveness of the training methodology.

Overall, the applied methodology allowed for a comprehensive evaluation of the role of flexibility development in improving technical movements among freestyle wrestlers. The

combination of pedagogical, physiological, and biomechanical approaches ensured the scientific reliability and practical significance of the research findings.

RESULTS

The results of the study demonstrated that systematic flexibility training positively influenced the technical preparedness of freestyle wrestlers.

The following improvements were identified during the experiment:

— increased joint mobility
— improved muscle elasticity
— greater movement amplitude
— enhanced technical accuracy
— improved coordination abilities
— reduced injury risk

Wrestlers who regularly performed flexibility-oriented exercises demonstrated better technical execution compared to athletes following traditional training methods.

The study also revealed that:

— dynamic stretching improved movement speed
— static stretching enhanced muscle relaxation
— functional exercises improved coordination and balance
— sport-specific flexibility drills increased technical efficiency

In addition, athletes showed improved recovery after intensive training sessions and greater movement freedom during competitive situations.

The findings confirmed that flexibility development contributes significantly to the improvement of technical actions in freestyle wrestling.

DISCUSSION

The research findings confirmed that flexibility is one of the key physical qualities influencing technical mastery in freestyle wrestling. Joint mobility and muscle elasticity allow wrestlers to perform technical movements with greater efficiency and precision.

The discussion revealed several important aspects:

— flexibility increases movement amplitude during technical actions
— stretching exercises improve muscle elasticity and coordination
— dynamic flexibility drills enhance movement speed
— flexibility training reduces the likelihood of injuries
— sport-specific exercises improve wrestling performance

The study also demonstrated that integrating flexibility exercises into regular wrestling training significantly enhances technical preparation. Wrestlers with higher flexibility levels performed technical actions more confidently and effectively during training and competition.

Furthermore, individualized flexibility programs proved more effective than generalized training approaches because they considered the athletes' age, physical condition, and functional abilities.

CONCLUSION

The results of the research demonstrated that flexibility development plays an important role in improving technical movements in freestyle wrestlers.

The following conclusions were reached:

— flexibility is one of the essential physical qualities in freestyle wrestling
— stretching exercises improve technical movement quality
— increased joint mobility enhances movement efficiency
— flexibility training contributes to injury prevention
— scientifically organized training improves athletic performance

Overall, the implementation of modern flexibility-development methods contributes to the improvement of technical, physical, and functional preparedness in freestyle wrestlers. Properly designed flexibility training programs help athletes achieve higher sports performance and improve technical mastery in competitive activities.

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