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DEVELOPMENT OF SPEED-STRENGH QUALITIES IN FREESTYLE WRESTLERS AGED 14-16 BASED ON EXPERIMENTAL TRAINING METHODS

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Abstract. *This study investigates the impact of specialized training methods on the development of speed-strength qualities in freestyle wrestling aged 14 to 16. A total of 24 athletes were divided into 2 groups: an experimental group that followed an 8-week target program focusing on explosive strength, and a control group that continued traditional wrestling training. Physical performance was assessed using standard motor test, including the standing long jump, vertical jump, and 10-meter sprint, before and after the intervention. The result showed statistically significant improvements in the experimental group compared to the control group (p <0.05), indicating the effectiveness of the applied methods in enhancing speed-strength indicators. These findings support the integration of innovative training approaches to improve the physical preparedness of adolescent freestyle wrestlers.*

Key words: *freestyle wrestling, speed-strength development, explosive strength, adolescent athletes, training program, physical performance, experimental study.*

Introduction. The development of speed-strength qualities plays a crucial role in the performance of wrestling, particularly during adolescence - a sensitive period for physical and neuromuscular adaptation. Speed-strength, often referred to as explosive power, determines an athlete' s ability to perform technical actions quickly and effectively in response to dynamic match conditions. According to Verhoshansky [1] (1985), the explosive capacity of muscles is a key factor in overcoming resistance in combat sports. Platonov (2013) and Matveyev (2010) also emphasize that structured, phase-based training programs are essential for long-term athletic development. In freestyle wrestling, success largely depends on the athlete's capacity to generate force rapidly during throws, lifts, and transitional actions. [2,3] However, traditional training system often neglect the targeted development of explosive abilities, especially in young athletes. Given the increasing demands of competitive wrestling, there is a pressing need to enhance these physical qualities through evidence-based interventions. Despite the wide recognition of speed-strength's importance, few experimental studies have addressed the comparative effectiveness of specialized training programs in adolescent wrestlers. This gap highlights the need for scientific exploration into optimized training methods that align with the physiological characteristics of young athletes. [5,11]

The purpose of this study is to experimentally validate the effectiveness of a specialized training program aimed at developing speed-strength qualities in freestyle wrestlers aged 14-16, using objective performance indicators and statistical analysis to compare result between an experimental and control group.

Methods. The study involved 24 male freestyle wrestlers aged 14 to 16, with an average training experience of 3-4 years. All participants were members of local wrestling clubs and had no recent injuries or medical restrictions. The athletes were randomly assigned to two groups;

Experimental group (n = 12), Control group (n = 12) Informed consent was obtained from the athletes and their guardians in accordance with ethical standards for research involving minors.

1.00.1 Table 1. Weekly Training Program for the Experimental Group, Speed-Strength Focus)

Week	Day	Main Exercises (40–50 min)	Reps/Sets	Focus Area
1–2	Mon	Squat jumps, Standing long jumps, 10m sprints from push-up	3×8, 3×6, 4 reps	Explosive leg power, acceleration
	Wed	Bounding, Lateral jumps, Jump rope (fast pace)	3×15m, 3×12, 3×1 min	Coordination elastic strength
	Fri	Depth jumps (30 cm), Medicine ball chest throws, Core circuit	3×6, 3×8, 2 rounds	Reactive strength, upper body power
3–4	Mon	Hurdle hops, Sprint starts with resistance, Jump squats.	4×6, 4×10m, 3×8	Start speed explosiveness
	Wed	Box jumps, Medicine ball overhead throws, Zigzag runs	3×5, 3×6, 4 reps	Vertical force, coordination
	Fri	Depth jumps (40 cm), Resisted sprints, Core circuit	4×5, 4×10m, 2 rounds	Load progression
5–6	Mon	Reactive bounding, Weighted jump squats, Sprint relays	4×10m, 3×6, 3 reps	Neuromuscular adaptation
	Wen	Step jumps onto platform, Side medicine ball throws, Ladder drills	3×6, 3×8, 3×20s	Direction change speed
	Fri	Depth jumps (50 cm), Resistance band sprints, Core work	3×5, 4×10m, 2 rounds	Max effort
7–8	Mon	Complex jumps (box + depth), Sled push (light), Sprint finish drills	3×3, 3×15m, 4×10m	Peak power
	Wed	Vertical jumps, Overhead medball throw (distance), Jumping lunges	4×6, 3×5, 3×10	Final overload
	Fri	Test simulations, Plyo combo sets, Light sparring + recovery	2×8, 2×4, 1×10 min	Testing readiness

1.01 Table 2. Pre-Test Result of Experimental and Control Groups (Before Training Program)

Test Type	Experimental Group (n = 12)	Control Group (n = 12)
Standing Long Jump (cm)	188.2 ± 7.9	186.4 ± 8.5
Vertical Jump (cm)	39.6 ± 2.8	39.1 ± 3.1
10-Meter Sprint (sec)	2.01 ± 0.06	2.02 ± 0.05

1.02 Table 3. Post-Test Result of Experimental and Control Groups (After Training Program)

Test Type	Experimental Group (n = 12)	Control Group (n = 12)
Standing Long Jump (sm)	**204.7 ± 6.5**	**189.1 ± 8.1**
Vertical Jump (sm)	**44.2 ± 2.6**	**40.1 ± 3.0**
10-Meter Sprint (sec)	**1.87 ± 0.05**	**1.03 0.06**

Results. The initial assessment revealed no significant difference between the experimental and control groups in tested indicators ($p > 0.05$**), confirming baseline equivalence. After the 8-week intervention, the experimental group demonstrated substantial improvements across all performance variables. The standing long jump increased from 188.2**±7.9sm to 204.7±6.5sm ($p<0.01$), while the vertical jump increased from 39.6±2.8sm to 44.2±2.6sm ($p <0.01$). Similarly, the 10-meter sprint time decreased from 2.01 ± 0.06 s to 1.87 ± 0.05 s ($p < 0.01$), indicating enhanced acceleration capacity. In contrast, the control group showed minimal or statistically insignificant changes. The standing long jump improved slightly from 186.4 ± 8.5 cm to 189.1 ± 8.1 cm ($p > 0.05$), and the vertical jump increased from 39.1 ± 3.1 cm to 40.1 ± 3.0 cm ($p > 0.05$). Sprint time decreased from 2.02 ± 0.05 s to 2.00 ± 0.06 s ($p > 0.05$). These results suggest that the implemented training program had a significant positive impact on the development of speed-strength qualities in adolescent freestyle wrestling, as opposed to traditional training methods.

Discussion. The results of this study clearly demonstrate the effectiveness of a targeted training program in developing speed-strength qualities in adolescent freestyle wrestlers. The statistically significant improvements in the experimental group across all measured indicators – standing long jump, vertical jump, and 10-meter sprint – support the hypothesis that specialized training protocols lead to enhanced physical performance compared to traditional methods. These findings are consistent with earlier studies emphasizing the importance of explosive power in combat sports Verhoshansky (1985) introduced the concept of shock training and plyometrics, highlighting its role in maximizing neuromuscular adaptation. Matveyev (2010) and Platonov (2013) further reinforced the importance of periodized, functionally-oriented training programs that reflect the physiological capabilities of adolescent athletes. The marked improvement in lower-body explosive strength and short-distance sprinting capacity observed in the experimental group is likely attributed to the integration of depth jumps, resisted sprints, and plyometric circuits into their weekly routines. Such training stimuli have been shown to enhance motor unit recruitment, increase tendon stiffness, and improve intermuscular coordination —all of which are critical components of speed-strength development (Markovic & Mikulic, 2010). In contrast, the control group, which followed a standard wrestling training model, showed only marginal or statistically insignificant progress. This result underscores the limitation of traditional training approaches that do not specifically address explosive strength as a separate component of performance. Notably, the training protocol used in this study adhered to principles of progressive overload, individualization, and variation—key tenets for eliciting long-term adaptations in young athletes. The use of exercises such as box jumps, bounding, and sled pushes not only targeted neuromuscular performance but also kept the training engaging and sport-specific. While the study provides strong evidence supporting the use of speed-strength focused programs, limitations include the relatively short duration (8 weeks) and small sample size. Future research should explore long-term adaptations and incorporate biomechanical and hormonal assessments for a deeper understanding of physiological responses.

CONCLUSION

This study demonstrated that a targeted speed-strength training program significantly enhances the physical performance of freestyle wrestlers aged 14 to 16. The experimental group, which incorporated plyometric, sprint, and explosive power exercises, showed statistically significant improvements in standing long jump, vertical jump, and 10-meter sprint performance compared to the control group. These-result confirm the importance of integrating specialized training methods into the preparatory process for adolescent wrestlers. The applied approach not only improved explosive capabilities but also contributed to overall athletic readiness providing a competitive advantage during match-specific actions that require rapid force production. It is recommended that wrestling coaches and physical preparation specialists implement structured speed-strength sessions within weekly training cycles to optimize athlete development during sensitive training periods. Further research is encouraged to investigate the long-term effects of such programs across larger populations and to explore additional variables such as agility, reaction time, and sport-specific performance outcomes.

REFERENCES

1. Verhoshansky, Y. V. (1985*). Programming and Organization of Training. Moscow: Fizkultura i Sport.*
2. Matveyev, L. P. (2010). *Fundamentals of Sports Training*. Moscow: Fizkultura i Sport.
3. Platonov, V. N. (2013). *Periodization of Sports Training: General Theory and Its Practical Application*. Kiev: Olympic Literature.
4. Markovic, G., & Mikulic, P. (2010). Neuromuscular adaptations to plyometric training. *Sports Medicine*, 40(10), 859–895. https://doi.org/10.2165/11318300-000000000-00000
5. Bompa, T. O., & Buzzichelli, C. A. (2019). Periodization: Theory and Methodology of Training (6 *th ed) Champaign, IL: Human Kinetics.*.
6. Rump, M. C., Cronin, J. B., & Oliver, J. L. (2012). Effect of different training methods on sprint and vertical jump performance in youth. *Strength and Conditioning Journal*, 34(6), 62–79.
7. Faigenbaum, A. D., & Myer, G. D. (2010). Resistance training among young athletes: Safety, efficacy and recommendations. *British Journal of Sports Medicine*, 44(1), 56–63. https://doi.org/10.1136/bjsm.2009.068098
8. Behringer, M., Vom Heede, A., Matthews, M., & Mester, J. (2011). Effects of strength training on motor performance skills in children and adolescents: A meta-analysis. *Pediatric Exercise Science*, 23(2), 186–206.
9. Chelly, M. S., & Denis, C. (2001). Leg power and hopping stiffness: Relationship with sprint running performance. *Medicine & Science in Sports & Exercise*, 33(2), 326–333.

10. Lloyd, R. S., & Oliver, J. L. (2012). The youth physical development model: A new approach to long-term athletic development. A new approach to long-term athletic development. *Strength and Conditioning Journal*, 34(3), 61–72.
11. McGuigan, M. R., Wright, G. A., & Fleck, S. J. (2012). Strength training for athletes: Does it really help performance? *International Journal of Sports Physiology and Performance*, 7(1), 2–5.
12. Suchomel, T. J., Nimphius, S., & Stone, M. H. (2016). The importance of muscular strength in athletic performance. *Sports Medicine*, 4(10), 1419–1449. https://doi.org/10.1007/s40279-016-0486-0