

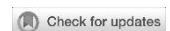


Neuromuscular Adaptations to Fartlek versus Interval Training in Adolescent Female Volleyball Players: A Surface Electromyography-Based Randomized Controlled Study

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ABSTRACT

The purpose of the study. Volleyball is a fast-paced game that demands speed, agility, explosive power, endurance, and coordination. Various training models have long been practiced to enhance these attributes. The present study was initiated to provide scientific validation by identifying muscular activation effectiveness and correlating physiological variables with data derived from different training methods.

Materials and methods. A three-group true experimental research design involving 45 adolescent female volleyball players was employed. The interventional strategies compared were Fartlek and interval training over a 4-week duration. The study examined selected physiological variables, including VO₂ max, resting heart rate, and muscular endurance. Neuromuscular analysis of the Deltoid, Biceps Brachii, Triceps Brachii, Rectus abdominis, Quadriceps, and Gastrocnemius muscles was administered using cumulative average muscular activation data collected from sEMG signal amplitudes. Data were analyzed using ANCOVA to determine the effectiveness of the training methods.

Results. The findings indicate that Fartlek training results in higher muscular activation, which impacts neuromuscular coordination and consequently influences the performance skills of the volleyball players. Furthermore, employing electromyographical analysis provided a foundation for adopting muscular activation analysis in future studies.

Conclusions. Fartlek training stands ahead of interval training in terms of its impact on selected physiological variables. The study confirms that Fartlek training is more effective than interval training and clarifies the underlying reasons for this superiority.

Keywords:

explosive power; VO₂max; volleyball athletes; normative standards; physical fitness; performance evaluation.

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INTRODUCTION

MATERIALS AND METHODS

RESULTS

DISCUSSION

CONCLUSION

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^{abcde}Authors'Contribution: a-Study design; b-Data collection; c-Statistical analysis; d-Manuscript preparation; e-Funds collection.

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