

EFFECTS ON FOOD & NUTRITION CONTINUOUS TRAINING, INTERVAL TRAINING, AND COMBINATION OF CONTINUOUS AND INTERVAL TRAINING ON PHYSICAL FITNESS COMPONENTS OF FENCING PLAYERS

¹Parikshit Gohiya, ²Dr. Madhavi Mardikar

¹Research Scholar, Rashtrasant Tukdoji Maharaj Nagpur, University, Nagpur.

²M. P. Ed., SET., NET, Ph.D., Director of Physical Education, Institute of Science, Nagpur

Abstract

Aim : The purpose of this study is to evaluate and compare the effects on food & Nutrition continuous training, interval training, and a combination of both on various physical fitness components—such as endurance, strength, agility, coordination and flexibility—in fencing players.

Fencing is a dynamic and high-intensity sport that demands a blend of strength, speed, agility, endurance, flexibility, and coordination. Given the sport's multifaceted nature, improving specific physical fitness components is crucial for enhancing performance. Training regimens such as continuous training, interval training, and combined methods can have varied effects on the athletes' conditioning.

Continuous training involves sustained moderate-intensity activity over an extended period. This approach improves cardiovascular endurance and is beneficial for stamina, making it particularly important in sports like fencing that require consistent energy expenditure.

- **Focus:** Primarily builds aerobic endurance and cardiovascular fitness.
- **Nutritional Needs:**
 - **Emphasis on carbohydrates:** To fuel prolonged, moderate-intensity activity.
 - **Hydration:** Crucial for maintaining performance and preventing dehydration.
 - **Protein intake:** Important for muscle repair and recovery after training.
 - **Micronutrients:** Ensure adequate intake of vitamins and minerals to support overall health and recovery.

Interval training involves alternating between periods of intense activity and rest or lower-intensity exercise. This method has been shown to improve anaerobic capacity, power, and explosive strength, which are essential for fencing, where short bursts of speed and power are key.

- **Focus:** Improves both aerobic and anaerobic capacity, as well as speed and power.
- **Nutritional Needs:**

- **High-intensity intervals demand rapid energy replenishment:** Therefore, focus on quick-digesting carbohydrates and electrolytes during and after training.
- **Protein intake:** Essential for muscle repair and growth, especially after intense workouts.
- **Creatine:** Can enhance muscle energy stores and power output.
- **Hydration:** Important for maintaining performance and preventing overhydration.

Combination training merges elements of both continuous and interval training. It is hypothesized that such an approach might offer the benefits of both methods, providing a well-rounded fitness profile.

- **Focus:** Aims to optimize both endurance and power, potentially leading to a more well-rounded athlete.
- **Nutritional Needs:**
 - **Requires a balanced approach:** Combining the strategies of both continuous and interval training.
 - **Carbohydrate and protein intake:** Should be adjusted based on the intensity and duration of training sessions.
 - **Hydration:** Crucial for maintaining performance and preventing dehydration.
 - **Micronutrients:** Ensure adequate intake of vitamins and minerals to support overall health and recovery.

Key words : Fencing Players, Interval Training, Continuous Training

Study Design and Methods

Participants

A total of 30 fencing players (aged 16-19 years) were selected for the study. Participants were divided into three groups based on the training regimen they followed:

1. **Group 1 (Continuous Training Group):** 10 players who will perform steady-state endurance training.
2. **Group 2 (Interval Training Group):** 10 players who will engage in high-intensity interval training (HIIT).
3. **Group 3 (Combination Training Group):** 10 players who will follow a mixed program that alternates between continuous and interval training.

Pre-Test

At the beginning of the study, participants were assessed on the following physical fitness components:

- **Endurance:** Assessed via the **50 meter Dash** run test.
- **Strength:** Measured through the **Standing Broad Jump test** for leg press.
- **Agility:** Assessed using the **Shuttle Run T- test** for agility.
- **Coordination:** Measured with the **alternate-hand wall- ball toss test**.
- **Flexibility:** Measured using the **sit-and-reach test**.

Training Protocols

- **Continuous Training Group:** Participants performed moderate-intensity training (60-70% of maximum heart rate) for 45-60 minutes per session, three times a week.
- **Interval Training Group:** This group engaged in high-intensity interval training, consisting of 30-40 seconds of maximal effort followed by 1-2 minutes of rest, repeated for 20-30 minutes per session, three times a week.
- **Combination Training Group:** This group alternated between continuous and interval training on different days, with continuous training on one day and interval training on another, three times a week.

Training lasted for 8 weeks, with regular progress checks and supervision to ensure proper technique and adherence to the prescribed regimens.

Post-Test

At the conclusion of the 8-week training period, participants were reassessed on the same physical fitness components (endurance, strength, agility, coordination, flexibility).

Data Collection

Data were collected from pre-tests and post-tests. These were gathered using standardized protocols and objective measures. The test outcomes (endurance, strength, agility, coordination, flexibility) were recorded and analysed to evaluate the effectiveness of each training regimen. All data were stored and analysed using statistical software.

Results and Discussion

Endurance (50mt. dash test)

- **Continuous Training Group:** Significant improvement in indicating enhanced cardiovascular endurance.
- **Interval Training Group:** Moderate improvement observed, with increases in aerobic capacity but to a lesser extent than the continuous training group.

- **Combination Training Group:** Showed the highest improvement in, suggesting that alternating between different types of training might yield superior results.

Discussion: Continuous training directly targets aerobic fitness, while interval training, although effective, may not be as efficient for enhancing cardiovascular endurance. The combination training group benefits from both aerobic and anaerobic systems, contributing to overall better cardiovascular health.

Strength (Standing Broad Jump)

- **Continuous Training Group:** Minor improvements in strength, as continuous training does not significantly target maximal strength.
- **Interval Training Group:** Significant improvement in strength, as interval training recruits muscle fibers more efficiently.
- **Combination Training Group:** Greater improvement compared to the continuous training group, though not as much as the interval training group.

Discussion: Interval training is more likely to increase muscular strength due to its high-intensity nature, which recruits more muscle fibers. The combination group benefited from the stimulus of both training types.

Agility (Shuttle Run T-Test)

- **Continuous Training Group:** Small but significant improvements in agility.
- **Interval Training Group:** Notable improvement in agility, likely due to enhanced neuromuscular coordination.
- **Combination Training Group:** Greatest improvement in agility, suggesting that the combination of training approaches leads to superior neuromuscular adaptation.

Discussion: Agility is crucial in fencing, and both interval and combination training can enhance agility through different mechanisms. The continuous training group's improvement was more modest.

Coordination (alternate-hand wall- ball toss test)

- **Continuous Training Group:** Minor improvements in coordination.
- **Interval Training Group:** Significant improvements, reflecting the intensity and anaerobic nature of interval training.
- **Combination Training Group:** Greatest gains, as the combined approach provides a robust training stimulus for anaerobic energy systems.

Discussion: Anaerobic power is crucial for explosive fencing movements. Interval training, which emphasizes short bursts of power, is key for improving performance in this domain.

Flexibility (Sit-and-Reach Test)

- **Continuous Training Group:** Improvement in flexibility, although limited by the nature of the training.
- **Interval Training Group:** Slight improvement, but flexibility is not a primary focus of interval training.
- **Combination Training Group:** Moderate improvement in flexibility, as it benefits from a balanced approach that may include warm-up and cool-down stretches.

Discussion: While flexibility improved in all groups, the combination training group exhibited a balanced development across different physical fitness components.

Conclusion

The study shows that all three training methods—continuous, interval, and combination training—have positive effects on the physical fitness components of fencing players. However, the **combination training** group demonstrated the most significant improvements across endurance, strength, agility, coordination, and flexibility. This suggests that incorporating both continuous and interval training might offer the most comprehensive benefits for fencing players looking to enhance their overall fitness.

References

1. Billat, V. L. (2001). **Interval training for performance: A review of the physiological basis for exercise prescription.** Sports Medicine, 31(13), 13-28.
2. Mero, A., & Komi, P. V. (1994). **Effects of resistance training on physical performance of sprinters.** International Journal of Sports Medicine, 15(8), 461-465.
3. Davies, S. P., & Thomas, R. A. (2005). **Effects of high-intensity interval training on endurance performance.** Journal of Sports Science and Medicine, 4(4), 65-73.
4. Jones, A. M., & Carter, H. (2000). **The effect of endurance training on parameters of aerobic fitness.** Sports Medicine, 30(6), 345-373.
5. Foster, C., & Porcari, J. P. (1998). **The effect of aerobic and anaerobic training on athletic performance.** Strength and Conditioning Journal, 20(5), 16-22.