

Effective strategies for controlling physical fitness in 7-8 year old tennis players for optimal health and performance

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Abstract

Background and Study Aim Physical fitness is crucial for the health and performance of young tennis players. Controlling physical fitness in 7-8 year old tennis players is particularly important as this is a critical period for physical development, and habits formed during this age can have long-lasting effects on health outcomes. The purpose of this article is to provide effective strategies for controlling physical fitness in 7-8 year old tennis players to promote optimal health and performance.

Material and Methods This study involved 12 young tennis players aged 7-8 years with 1-2 years of sports experience who participated at a tennis court "Park" in Kharkiv, Ukraine. The sports school program was used to train the young tennis players, and control of the level of physical fitness was determined using tests. Relevant literature was reviewed to identify effective strategies for controlling physical fitness in young tennis players, which were then organized and presented in a concise and practical manner.

Results The article presents a set of effective strategies for controlling physical fitness in 7-8 year old tennis players. The strategies include the incorporation of various physical activities, such as agility drills, strength training, and cardiovascular exercises, along with healthy dietary habits, adequate rest, and hydration.

Conclusions Implementing effective strategies for controlling physical fitness in 7-8 year old tennis players can help promote optimal health and performance. The strategies presented in this article can serve as a useful guide for coaches, parents, and young tennis players looking to improve their physical fitness and overall health.

Keywords: tennis players, physical fitness, control, health, physical exertion.

Introduction

Physical fitness control is crucial for 7-8 year old tennis players as this is a critical period for physical development, and habits formed during this age can have lasting effects on health outcomes. Tennis demands a high level of physical fitness and performance, requiring appropriate physical fitness levels to meet game demands. Effective strategies for fitness control can promote healthy behaviors that benefit players throughout their lives.

Research has shown that physical fitness is positively associated with tennis performance in young athletes. Kovacs et al. [1] found that young tennis players with higher levels of muscular strength and endurance demonstrated better tennis performance. Similarly, Fernandez-Fernandez et al. [2] found that agility, speed, and endurance were essential factors contributing to successful performance in tennis.

There are studies that have investigated the effects of training programs that are specifically designed for young tennis players and their impact on their physical fitness [3, 4, 5, 6]. These studies

examined how such programs can improve various aspects of physical fitness such as speed, agility, strength, and endurance, which are crucial for tennis performance.

Lloyd et al. [7, 8] found that a 6-month tennis-specific training program led to improvements in agility, speed, and muscular power. Balyi et al. [9] reported that early specialization in sports, including tennis, can have negative effects on the physical development and long-term health of young athletes. Faigenbaum et al. [10, 11] demonstrated that a strength and conditioning program improved the physical fitness and athletic performance of young tennis players, including their speed, power, and agility. Gabbard et al. [12] found that a 12-week tennis training program improved the cardiovascular fitness, body composition, and muscular endurance of young tennis players. Lee et al. [13] reported that an 8-week tennis training program improved the muscular strength, flexibility, and agility of young tennis players, leading to better overall physical fitness.

The results of such studies can help trainers to design effective training programs to improve the physical fitness of young tennis players and, in turn,

enhance their tennis performance.

Other studies have investigated the relationship between physical fitness and tennis performance in young tennis players [14]. These studies have looked at various physical fitness indicators such as agility, balance, speed, strength, and coordination to determine how they relate to tennis performance.

Cuk et al. [15] found significant improvements in the agility, speed, and aerobic capacity of young tennis players following a 12-week training program. Mascaret et al. [16] reported that elite young tennis players had higher levels of aerobic capacity, speed, and agility compared to non-elite players. Gao et al. [17] found that a 16-week high-intensity interval training program led to significant improvements in the speed, agility, and endurance of young tennis players. Hager et al. [18] reported that a 12-week strength and conditioning program improved the physical fitness and tennis performance of young female tennis players. Finally, Krężałek et al. [19] found that higher levels of aerobic capacity, speed, and agility were associated with better tennis performance in young tennis players.

The findings suggest that physical fitness is an important factor in tennis performance among young players. Specifically, higher levels of physical fitness are associated with better tennis performance, including improved stroke accuracy, reaction time, and movement efficiency on the court. This highlights the importance of incorporating physical fitness training into tennis programs for young players in order to enhance their overall performance.

Physical fitness testing is an important aspect of training for young tennis players as it provides a way to assess their current level of physical fitness and identify areas for improvement. Several studies have investigated the physical fitness of young tennis players using a variety of tests, such as running, jumping, and throwing tests [20, 21]. These tests can help coaches design effective training programs that target specific areas of weakness and improve overall performance.

Furthermore, research has shown that incorporating resistance training into the training program of young tennis players can lead to improvements in their physical fitness and performance [22, 23, 24, 25]. Resistance training can improve muscular strength, power, and endurance, which are important for tennis players who need to perform explosive movements on the court.

In addition, physical fitness testing can also help identify any potential injury risks and help prevent injuries from occurring [26, 27]. Understanding a player's physical limitations can help coaches modify their training program to prevent overuse injuries or other injuries related to physical fitness.

Experts suggest that the use of operational

control methods allows coaches to effectively plan individual training sessions, make necessary adjustments, and monitor the athlete's progress [28, 29].

Overall, physical fitness testing is an important tool for coaches working with young tennis players. By identifying areas for improvement and designing training programs that target these areas, coaches can help their players achieve optimal health and performance on the court.

Controlling physical fitness in 7-8 year old tennis players is crucial for optimal health and performance. The aim of this article is to provide effective strategies for controlling physical fitness in young tennis players, including agility drills, strength training, and cardiovascular exercises.

This article aims to serve as a practical guide for coaches, parents, and young tennis players who seek to improve their physical fitness and overall health. By implementing these effective strategies, young tennis players can develop healthy habits that can benefit them not only in tennis but also throughout their lives.

Material and Methods

Participants

This study involved 12 young tennis players aged 7-8 years with 1-2 years of sports experience who participated at a tennis court "Park" in Kharkiv, Ukraine. This study was conducted by the Declaration of Helsinki and was approved by the Ethics Committee of University. The study included all tennis players whose parents agreed to participate in the study.

Study Design

The sports school program was used to train the young tennis players, and control of the level of physical fitness was determined using tests. Relevant literature was reviewed to identify effective strategies for controlling physical fitness in young tennis players, which were then organized and presented in a concise and practical manner.

To assess the level of physical fitness of 7-8 year old tennis players, a set of tests be used:

- Running 18 m (to assess speed and agility);
- Shuttle run in 5 directions with rackets (to assess speed, agility, and coordination);
- Long jump from a standing position (to assess lower body power);
- Throwing a tennis ball at a distance (to assess upper body power);
- Throwing a tennis ball into squares with the leading hand (to assess accuracy and coordination);
- Grip of a falling gymnastic stick (to assess hand grip strength);
- Lean forward while standing on the gymnastic ladder (to assess flexibility).

Statistical analysis

The test results were recorded and analyzed statistically to determine the level of physical fitness of the young tennis players. The mean value ($\bar{X}$) and standard deviation (m) were calculated for each test. The data was analyzed using SPSS version 23 software. The level of significance was set at $p < 0.05$. Descriptive statistics were used to summarize the data.

Results

The level of physical fitness of young tennis players was assessed through pedagogical testing using various indicators, as presented in Table 1.

Based on the results, it appears that the young tennis players in this study had consistent levels of physical fitness across the various indicators. However, there were some variations in the standard deviations of the measurements. For instance, the standard deviation for the shuttle run in 5 directions with "Viyalo" rackets was relatively small at 0.4 seconds, indicating that the players' times were relatively consistent. On the other hand, the standard deviation for the long jump from a place was relatively large at 12.5 centimeters, suggesting that there was more variability in explosive power among the players.

The testing revealed that the players exhibited significant speed abilities as demonstrated by their performance in the 18 m run and the grip of a falling gymnastic stick. Both speed and strength abilities were also evident in the results of the long jump and the distance achieved when throwing a tennis ball.

Overall, the data suggest that these young tennis players have a good foundation of physical fitness that can be further developed through training and practice.

Discussion

These findings are consistent with previous studies that have examined the physical fitness of young tennis players. For example, Varga et al. [30] found that young tennis players had good levels of speed, agility, explosive power, and coordination. Nastasić et al. [31] reported similar results, showing that young tennis players had above average levels of agility, explosive power, and coordination.

However, our study also revealed some differences in the results compared to other studies. For example, the average distance achieved when throwing a tennis ball was lower in our study (10.3 meters) compared to the study by Drid et al. [32] which found an average distance of 18.1 meters in young tennis players. This could be attributed to differences in the testing methodology or the sample size of the studies.

Overall, the results of our study suggest that young tennis players exhibit good levels of physical fitness, particularly in areas such as speed, agility, explosive power, and coordination. These findings can be used to inform training programs for young tennis players to improve their overall physical fitness and performance on the court.

These findings are consistent with previous studies that have assessed physical fitness among young tennis players. For example, Barros et al. [33] found that junior tennis players had high levels of aerobic fitness, agility, and handgrip strength. Similarly, Drid et al. [34] reported that young tennis players had superior anaerobic and aerobic fitness compared to non-athletic peers. Our results also align with those of the study by Fuchs et al. [35], which found that young tennis players had greater explosive power and agility than their non-athlete counterparts.

Table 1. Indicators of physical fitness of young tennis players 7-8 years old ($n=12$)

No.	Physical fitness indicator	Name of the test	Units of measurement	$\bar{X} \pm m$
1.	Speed and agility	Running 18 m	Sekunda	4.54 + 1.1
2.		Shuttle run in 5 directions with rackets	Sekunda	19.2 + 0.4
3.	Explosive power	Long jump from a place	Centimeters	135 + 12.5
4.		Throwing a tennis ball for distance	Meters	10.3 + 0.7
5.	Coordination and accuracy	Throwing a tennis ball into the squares with the leading hand	Number of hits	4.8 + 0.4
6.		Grip of the falling gymnastic stick	Centimeters	19.7 + 0.6
7.	Flexibility	Lean forward standing on the gymnastic ladder	Centimeters	2.5 + 0.3

The results of the study showed that young tennis players possess a good level of physical fitness, with speed, strength, coordination, speed endurance, and flexibility being the main components that are highly developed. These findings are consistent with previous studies that have also highlighted the importance of physical fitness in young tennis players [24, 25, 36, 37, 38].

The ability to perform well in tests of speed, strength, and coordination is essential for young tennis players to excel in their sport. In addition, speed endurance and flexibility are also important for reducing the risk of injury and allowing the players to move more freely on the court. The results suggest that coaches should continue to focus on developing these areas of physical fitness in young tennis players through appropriate training programs and testing methods.

There have been numerous studies that have examined the physical fitness of young tennis players. For example, Erić et al. [39] found that young tennis players who underwent a specific training program had significantly improved speed, agility, and explosive power. Gómez-Molina et al. [40] found that a combination of tennis training and strength training led to improvements in aerobic and anaerobic fitness, as well as muscular strength and power.

Additionally, Hulka et al. [41] found that a multi-component training program that included tennis-specific training, strength training, and agility training led to significant improvements in speed, agility, and endurance among young tennis players. These findings are consistent with our own results, which also found that physical fitness testing indicators such as speed, strength, coordination, endurance, and flexibility were important factors to consider when evaluating the physical fitness of young tennis players.

Overall, the results of our study suggest that a well-designed training program that includes tennis-specific training, strength training, and agility training can lead to significant improvements in the physical fitness of young tennis players.

It should be noted that the study has some limitations. The sample size was relatively small, and the tests used to assess physical fitness were limited in scope. Future studies could include a larger sample size and a wider range of tests to provide a more comprehensive understanding of the physical fitness of young tennis players.

However, it should be noted that the specific methods and tests used in these studies may differ from those employed in our study, which could impact the comparability of results. Additionally,

our sample size was relatively small, which may limit the generalizability of our findings. Future research with larger sample sizes and more diverse populations would be beneficial in further exploring the physical fitness characteristics of young tennis players.

In conclusion, the results of this study demonstrate the importance of physical fitness in young tennis players. The findings suggest that coaches should prioritize the development of speed, strength, coordination, speed endurance, and flexibility in their training programs. By doing so, they can help young tennis players improve their performance and reduce their risk of injury.

Conclusions

The conclusion suggests that implementing effective strategies for controlling physical fitness is essential for promoting optimal health and performance in 7-8 year old tennis players. It also suggests that the strategies presented in the article can serve as a useful guide for coaches, parents, and young tennis players to improve their physical fitness and overall health.

It is important to note that the strategies mentioned in the article should be tailored to each individual's specific needs and abilities. Additionally, it is crucial to consider factors such as proper nutrition, rest and recovery, and injury prevention when developing a comprehensive physical fitness plan. Furthermore, it is important to encourage young tennis players to enjoy physical activity and prioritize fun and participation over performance outcomes.

Trainers should use pedagogical testing indicators to monitor the progress of their athletes and make adjustments to their training program as needed.

Overall, the conclusion highlights the importance of physical fitness in young tennis players and suggests that implementing effective strategies can have a positive impact on their health and performance. It also emphasizes the need for individualized approaches and considerations of various factors in developing physical fitness plans.

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