



# The role of sport science in coaching education.

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## ABSTRACT

This article discusses how in order for developing players to master the game of tennis, it has always been a careful blend of science and art. The article summarises early scientific approaches to coaching whilst also outlining modern day coaching methodology- whereby the ever present role of sport science has now become commonplace within modern day coach education.

**Key words:** Coach education, Sport science.

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## INTRODUCTION

Playing the sport of modern tennis well involves both an artistic as well as a scientific approach. The artistic element of grace and magnificent shot making has to be augmented by proper technique and training methods. As early as 1964, Tony Trabert outlined in his chapter in Alan Tengrove's classic book "the Art of Tennis" the importance of proper equipment, tips for playing in the heat, injury prevention, proper conditioning and mental toughness.

Even earlier in 1925 Coleman Griffith, an educator known as the Father of Sport Psychology, wrote about the scientific approach to coaching by examining ideas related to the job of the coach: "In short the coach has a definite amount of time to spend, in exchange for time he wants to purchase the highest degree of skill time can buy. The highest degree of skill comes out of a knowledge of proper practice length, of practice periods, the proper distribution of practice periods, the advantage of learning by whole, rather than parts, the methods of presenting new material, the laws that govern increases and the amount that can be learned in a given time, the effect of attention on the rate of learning and the effects of learning and relearning, and the rate of forgetting." (Griffith, 1925 p. 1)

The same principles hold true for the field of coaching education today. Woodman (1993) described that the field of coaching while becoming more scientific and systematic, will essentially remain an art. He explains it as a mixture of scientific knowledge and empirical sport-specific information. The important thing is that effective and efficient learning occurs. Learning, according to Martens (2004) in his book 'Successful Coaching', is a relatively permanent improvement in performance as a result of practice. It may not be directly

observable; rather it is inferred from changes in performance over time. Typically, the field of sport science follows and attempts to explain the different techniques and training methods. Scientific articles on tennis have increased dramatically over the years. In fact, several tennis-specific editions of scientific journals have been dedicated to tennis in recent years. This includes the British Journal of Sports Medicine (2006, 2007), the Journal of Science and Medicine in Sport (2003) and the Strength and Conditioning Journal (2009).

## COACHING STRUCTURE

The ITF recognized the importance of sport science in coaching by forming a coaches' commission. This commission recognized the difficulty facing coaches from many nations in obtaining tennis specific sport science material (1999). This effort has furthered and supported sport science related information for coaches through conferences, scientific manuscripts and tennis-specific articles in a variety of languages. It is recognized that each nation has its own culture, politics and traditions as it relates to a national coaching education strategy. In Europe, for example, a harmonization of standards has taken place based on the free movement of labor, allowing countries to recognize each others' standards, training and qualifications. Sue Campbell (1992, 1993) described a five level approach agreed upon by the European group. Training for sport coaches consists of:

1. Sport-specific knowledge: techniques, tactics and strategies of the sport
2. Performance related core knowledge: sport science, ethics/philosophy, pedagogy and management/vocational skills

3. Practical experience: considerable emphasis is placed on the practical experience gained

4. Mentoring: As Campbell further explained; the most difficult challenge concerns that of the Master Coach particularly as it relates to mentoring. Mentoring requires great skill, openness, and a willingness to share ideas – something that Master Coaches are not always prepared to do.

#### COACHING EDUCATION AROUND THE WORLD

With the advent of the Olympic movement and the status of Tennis within it, Coaching Education has been thrust to the forefront. Many nations have established their own unique models of coach education and certification to ensure that those individuals working with a country's top young players are employing both current coaching practices and working with these players with a methodology and philosophy that is player centered where the health and well being of the athlete is first. This includes proper timing of competing, training and resting for optimal performance.



#### TRAINING AND TECHNOLOGY

With the advantage of a sound theoretical base as well as the establishment of sound educational delivery systems, coaches around the world now are becoming more adept at developing long-term developmental programs. One of the most important aspects of becoming a good tennis player is the ability to design a proper training program focusing on the long-term benefits, not just immediate results. Roetert and Ellenbecker (2009) explain that since tennis is a year-round sport, properly structuring training and competition into phases can maximize players' chances of peaking at the desired times.

Lubbers (2005) and Pankhurst (2006) spoke and wrote about phases of development in *The Progressive Development of a World Class Player*. The progressive development of a world-class player is a long-term process that research suggests takes a minimum of 10 years or 10,000 hours (Ericsson, 1999). Further research shows that world-class players go through distinct

phases of talent development Bloom (1985) and Gibbons (1998).



Finally, the use of modern technology has also become more and more commonplace in the training of tennis players. Technology is used for disciplines such as biomechanical analysis (Elliot & Reid, 2009), physical training (Kovacs, 2009, Calvo, 2009) and coaching education (Lubbers, 2009).

#### CONCLUSION

The bottom line is that principles of sport science can and should form the foundation for well-designed coaching education programs. A systematic design of training and competing will enhance the performance of players while staying injury free. Coaches who embrace this approach will ensure that players will be well-prepared to become the next generation of champions.

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