

## FUTBOLDA KUVVET VE DAYANIKLILIĞIN ÖNEMİ

### THE IMPORTANCE OF STRENGTH AND ENDURANCE IN FOOTBALL

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#### ABSTRACT

Football is one of the most popular sports in the world. For this reason, many researches on football have been made in the literature. Strength and endurance performance is an important performance component in many sports. Strength and endurance performance is also very important for football players. Because the football game is a sport that lasts for 90 minutes and causes serious fatigue in the players, which requires high performance throughout the competition. For this reasons, the number of studies examining the motorcycle characteristics in the futbol has increased in recent years. This research focuses on the importance of strength and durability performance on the football.

**Keywords:** Football, strength performance, endurance performance

#### ÖZET

Futbol dünyadaki en popüler spor dallarından birisidir. Bu nedenle futbol üzerine literatürde birçok araştırma yapılmıştır. Kuvvet ve dayanıklılık performansı birçok spor dalında önemli bir performans bileşenidir. Kuvvet ve dayanıklılık performansı futbolcularda da oldukça önemlidir. Çünkü futbol oyunu, 90 dakika devam eden, oyunculara ciddi yorgunluğa neden olan, bunun yanında müsabaka boyunca yüksek performans gerektiren bir spor dalıdır. Bu nedenlerden dolayı son yıllarda futbolda motorsal özelliklerin incelendiği araştırmaların sayısında artış meydana gelmiştir. Yapılan bu araştırmada futbolda kuvvet ve dayanıklılık performansının önemi üzerinde durulmuştur.

**Anahtar kelimeler:** Futbol, kuvvet performansı, dayanıklılık performansı

**JEL CODE:** L83

#### INTRODUCTION

Football is one of the most widely played sports in the world, and players need tactical, technical and physical skills to succeed. In part, professional football is more concerned with selection rather than development. Individual tactics, technique and physical resources share importance when evaluating performance differences in football. The average importance of each of these first level analytic approaches to differences in performance is close to one-third. Within physical resources, power, strength and their derivatives acceleration, sprinting and jumping share importance with endurance in explaining differences in physical resources within the football performance (Hoff & Helgerud, 2004).

Strength and endurance are the foundations to speed, agility and power, which are the sport-specific skills needed in football. To attain high levels of endurance, football players must have excellent mobility and stability. Mobility equates to your freedom of movement and stability describes your ability to control movement and maintain posture. mobility and stability are the foundations to all human movement. They work together to maintain posture, protect your spine and organs from injury, and allow for force production as you transfer work and energy from one body part to another punting, pushing an opponent, catching and then running. Lacking quality mobility and stability decreases the athletes' performance and increases the risk for injury ([www.livestrong.com](http://www.livestrong.com)). In this reasons, strength performance and

endurance capacity are an important factor in football ([www.topendsports.com](http://www.topendsports.com)). However, there is still a lack of knowledge considering the relationships between endurance capacity, game performance and game intensity in football players (Lehto, 2009). In this context, this research focuses on the importance of strength and endurance performance on the football.

### **The Importance of Strength Performance in Football**

Greater muscular strength is associated with enhanced force-time characteristics (e.g. rate of external mechanical power and force development), general sport skill performance (e.g. jumping, sprinting, and change of direction), and specific sport skill performance, but is also associated with enhanced potentiation effects and decreased injury rates (Suchomel et al., 2016). Strength performance reduces the risk of injury to the football as in other sports.

Strength performance and muscle power in sport are known to be based on many factors (Ozgur, 2012). One of the mentioned factors is strength training. The strength performance is an important performance component, so the strength training one of the most important issue in football. Strength training using few repetitions, high loads and maximal mobilisation of force in the concentric mode have proved to be effective in the development of strength and related parameters. Strength training research in football show that maximal strength training using high loads (85%+ of 1RM) and maximal intended velocity in the concentric action gives high responses on sprints and jumps for football players. The fact that the same training also enhances aerobic performance parameters through improved work economy is another important reason for introducing this type of training (Hoff & Helgerud, 2004).

Football is a total-body sport and a football player's body needs to function as a complete unit. The upper body plays an important role while running in football players. It helps to propel the body forward and maintain balance, increasing overall speed. Neglecting upper-body strength and power can have negative effects on football player overall development as a football player, decreasing your ability to reach maximum velocity and change directions quickly. This is true because forces from the ground, also known as ground reaction forces, travel up each leg, through the core, and across the upper body with each step player take. Moreover, today's elite football matches are becoming more aggressive with players constantly struggling for position against one another by pushing and pulling with their upper bodies. For this reasons, upper-body strength training is a necessary component of football training program ([www.sharecare.com](http://www.sharecare.com)).

### **The Importance of Endurance Performance in Football**

The endurance is an important performance component, so the endurance training one of the most important issue in football. Football training is largely based on the game itself, and a common recruitment pattern from player to manager and coach reinforces this tradition. New developments in understanding adaptive processes to the endurance performance and circulatory system as well as adaptations muscle and nerve to training and performance have given rise to more effective training interventions. Endurance interval training using an intensity at 90–95% of maximal heart rate in 3- to 8-minute bouts have proved to be effective in the development of endurance, and for performance improvements in football play (Hoff & Helgerud, 2004).

During a 90 min football game, elite level players run 8-12 km at an average intensity close to the lactate threshold and aerobic metabolism provides about 90 % of the energy cost of football match play (McMillan et al., 2005) . Within this endurance context, a football player has to perform numerous bouts of explosive activities, such as jumping, kicking, tackling,

turning, and sprinting which are mainly covered by anaerobic metabolism (Mohr et al., 2005; Roescher et al., 2010).

Physiological research has developed the training for VO<sub>2</sub>max as the most important feature for endurance in football play, showing that 3- to 8-minute intervals at 90-95% of maximal heart frequency with intervening lactate elimination periods enhance both aerobic endurance capacity and football players performance (Hoff & Helgerud, 2004).

Aerobic fitness is an important factor in a football match and it has been documented that high aerobic capacity (VO<sub>2</sub>max) correlates with work rate during a match (Reilly 1997). Higher VO<sub>2</sub>max allows the football players to run longer and faster and to be more involved in various actions of the game (Stolen et al. 2005). It has also been documented that aerobic capacity influences the match performance of the football players (Helgerud et al. 2001). In addition to high aerobic capacity also helps the players to recover better from high-intensity actions and intermittent exercise, typically observed in a football match (Reilly 1997; Lehto, 2009).

## Result

As a result, both strength and endurance performance are very important for players in the football. For this reason, strength and endurance training have an important issue in football training program.

## REFERENCES

- Helgerud, J., Engen, L.C, Wisloff, U. & Hoff, J. 2001. Aerobic endurance training improves soccer performance. *Medicine & Science in Sports & Exercise*, 33(11), 1925-1931.
- Hoff, J., & Helgerud, J. (2004). Endurance and strength training for soccer players. *Sports Medicine*, 34(3), 165-180.
- Lehto, H. (2009). The relationship between endurance capacity, game performance and estimated accumulation of fatigue in young football players. Master's thesis in Science of Sport Coaching and Fitness Testing, Department of Biology of Physical Activity, University of Jyväskylä.
- McMillan, K., Helgerud, J., Macdonald, R., & Hoff, J. (2005). Physiological adaptations to soccer specific endurance training in professional youth soccer players. *British Journal of Sports Medicine*, 39(5), 273-277.
- Mohr, M., Krstrup, P., & Bangsbo, J. (2005). Fatigue in soccer: a brief review. *Journal of sports sciences*, 23(6), 593-599.
- Ozgur, T. (2012). Muscle power and strength performance in sport. *International Journal of Basic and Clinical Studies (IJBCS)*, 1(2), 41-55.
- Reilly, T. (1997). Energetics of high-intensity exercise (soccer) with particular reference to fatigue. *Journal of Sport Sciences*, 15, 257-263.
- Roescher, C. R., Elferink-Gemser, M. T., Huijgen, B. C. H., & Visscher, C. (2010). Soccer endurance development in professionals. *International Journal of Sports Medicine*, 31(03), 174-179.
- Stolen, T., Chamari, K., Castagna, C. & Wisloff, U. 2005. Physiology of soccer: an up-date. *Sports Medicine*, 35 (6), 501-536.
- Suchomel, T. J., Nimphius, S., & Stone, M. H. (2016). The importance of muscular strength in athletic performance. *Sports Medicine*, 46(10), 1419-1449.
- <https://www.livestrong.com/article/109943-muscular-endurance-important-football/> Date of Access: 12.02.2016.

<https://www.sharecare.com/health/soccer/why-upper-body-strength-important> Date of Access:  
12.02.2016.

<http://www.topendsports.com/sport/soccer/fitness-components.htm> Date of Access:  
12.02.2016.