

HEALTH AND IMPORTANCE

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1. Introduction

The fact that the concept of sport has become a huge sector as time goes on, has led to an increase in the expectations of people and other formations from the athletes and the clubs. Of course, the basic system for the success of countries and sports clubs in the national and international arena is to reveal the best performance of the athletes and sports clubs in a healthy way. Therefore, the sports science, health scientists and social scientists, which are much more closely related to another subject, increase the quality and number of scientific studies in order to develop this field and the athlete. Sportive performance includes all of the physical and physiological efforts that an athlete regularly reveals while performing a sportive task. In revealing this performance, the importance of all kinds of internal and external factors should be taken into account, whether in the competition environment or during training (Bayraktar & Kurtoğlu, 2004).

Regardless of the sports branch in which the athlete is interested in professional or amateur level, it is necessary to see everything as a whole. The athlete's psychological state, social life, personal thoughts and dreams, physical and physiological capacity, working environment and training environment affect the athlete's health, sportive success and sportive performance significantly (Walker et al., 1987). Based on this information, in this section; In order to create the necessary sportive performance, it is aimed to compile and present the necessary information about the health and importance of the athletes, which is important for the clubs and countries to be at the forefront in national and international platforms.

2. Definition and History of Sports

Sport emerges as a social element that reveals unity and solidarity in a healthy way, based on brotherhood and friendship, and has its own rules and order, together with the state of being in a certain state of balance. Sport has entered into a certain formation with the beginning of people living together as a society chronologically. As it was known in long ago, wars were mostly won through physical strength. At that time, sports were seen as a kind of preparation for wars. This is clearly stated in a definition made on sports; It is a disciplined and regular type of game that is built on sports, struggle and competition, maturing and developing warrior-like forces and people (Erkal, 1978). In another definition, sport is a unifying, integrative, socio-cultural and competitive phenomenon that reveals and develops the existing abilities of a person, performed individually and collectively, with or without tools, within the framework of predetermined rules (Erkal, 1982).

As time passed and humanity underwent different changes, sports emerged in different forms and shapes accordingly. The factors that play a role in the transition of people from the traditional society structure to the modern society structure have also caused sports to undergo a change. With this change, sportive practices for different purposes took shape within the framework of the determined rules and started to be referred to as a set of planned and regular

movements called sports today. In this context, sports are as old and meaningful as our human history (Çumralıgil & Görücü, 2007).

Today, all countries have become aware of the transforming and impressive power of sports on the cultures of the world. Accordingly, they saw sports as a driving force in social dynamism and as a factor that activates social dynamics. Thus, politics has been seen as a tool of social and cultural change and interaction. Moreover, it has become the largest industry branch in today's world. Sports marketing, organizations, sponsorship and professional contracts bring this branch to the fore (Aripınar & Doruk, 2011).

Health

According to the World Health Organization, health is defined as “a state of complete physical, social and mental well-being and not merely the absence of disease or infirmity”. It is accepted that health is a fundamental right for all people (Nutbeam, 1998). It is aimed to eliminate or minimize the existing health barriers to protect health. In case of disability or illness, it is necessary to prevent the situation from worsening (Madi & Hussain, 2008). Health awareness refers to all the behaviors that people believe and live in for the protection of general health and the development of health. In other words, it can be said to be any activity carried out by individuals who think or feel that they are healthy, in order to prevent diseases (Walker et al., 1987).

3. Internal and External Factors Affecting Athlete Health

Basically, an individual should be considered in all aspects. Evaluation of the athlete in the same way is important in terms of athlete's health and performance. An athlete's physiological, psychological, physical and environmental factors should be affected positively or negatively, and these should be considered as a whole in the health and performance of the athlete and all of them should be brought to positive and good levels. These factors can be classified as internal and external factors. Intrinsic factors can be said to be the genetic code, physiological capacity and mental state that the athlete has brought from birth. External factors, on the other hand, can be said to be the environment in which the athlete lives, nutrition, people, trainer and athlete individuals, weather and physical environment conditions. Although the effect of other factors cannot be underestimated, the nutrition and training level of the athlete are more prominent (Walker et al., 1987; Madi & Hussain, 2008).

4. Nutrition Principles for Athletes

The primary purpose of nutritional supplementation in athletes is to increase the adaptation to physical and physiological loads to higher levels by meeting the energy needs and nutrient needs that are parallel with increasing loads (Andaç et al., 2020). These nutrients and energy types that should be taken vary according to the demographic characteristics of the athletes, their metabolic status, and the intensity and duration of exercise. One of the problems encountered here is that the athlete cannot supplement with sufficient energy. There are 6 basic nutrients that athletes need. These; carbohydrates, proteins, fats, vitamins, minerals and water. These nutrients have separate functions in our body. Athletes should take enough nutrients and energy elements to increase their performance during exercise and competition, to improve recovery phases and durations at rest, to maintain optimum body weight, and to keep energy stores adequately (Rodriguez et al., 2009). Sports-specific physiological requirements for

competitions and trainings are a whole, including adequate and balanced nutrition (intake of appropriate macro and micronutrients), providing nutritional diversity and fluid consumption as much as the amount lost. Thus, reducing the risk of injury in heavy training, reaching the highest performance in the sport of interest and reaching the ideal body composition of the athlete are supported (Kolukısa & Eyipınar, 2020).

5. Energy Requirements in Athletes

Nutrition and diet programs created for athletes should primarily be in a way that meets the energy needs of the athlete in a special way. In order to achieve success in sports, it is important to establish a very good balance of nutrition and energy. 55-60% of the energy that a healthy individual should receive during the day consists of carbohydrates, 25-30% fats and 12-15% proteins (Saris & Van Loon, 2004; Rodriguez et al., 2009). Compared to normal individuals, energy expenditure is 2-3 times higher in athletes. As mentioned before, this requirement varies according to the type, intensity and duration of the exercise (Ersoy, 2012; Çavdar et al., 2018). Dietitians, who are responsible for the creation of diet and nutrition programs for athletes, generally prefer the Harris-Benedict equation. Energy needs of athletes are calculated by basal metabolic rate and physical activity type. The daily energy intake can be calculated by multiplying the basal metabolic rate and the appropriate physical activity factor. As the type and intensity of physical activity increases, the need for energy increases accordingly (Mengi, 2016).

6. Fluid Requirements in Athletes

Water constitutes approximately 60% of the human body and is important for all vital activities. In addition to these, it also has important functions such as regulating body temperature and sweating in the physiological context. For athletes, water is very important for muscle strength because 75% of the muscles are composed of water (Cerit, 2016). Athletes have to pay attention to fluid consumption in order to maintain adequate hydration (meeting the water requirement) and exercise capacity (Kerksick et al., 2018). As long as adequate hydration is not provided for the human organism, the amount of blood and oxygen reaching the muscles decreases, the temperature inside the body rises and performance and health are adversely affected. Dehydration is inevitable when 2% or more of the total weight is lost as water. If this situation occurs in athletes, adverse effects are observed in muscular strength, endurance and other biomotor features (Grout et al., 2016; Kerksick et al., 2018). Ensuring adequate fluid intake is very important for optimal health and athletic performance. Therefore, adequate fluid intake should be taken before, during and after exercise (Rodriguez et al., 2009; Şakar, 2009).

7. Ergogenic Support for Sports Performance

Externally provided ergogenic supports can be said as mechanical technologies, nutritional contents, drugs and psychological methods that can increase sports performance and adaptation to exercise. In the field known as nutritional supplements, there are supplements that can be used in the form of tablets, capsules and gels or as powders. They are used to increase performance and improve body composition. The unconscious use of these products for the purposes of increasing performance and focusing on the target should also be prevented. These ergogenic aids can increase performance, but it is necessary to use the right product at the right

rate, in the right form and at the right time (Argan and Köse, 2009; Thomas et al., 2006). The ergogenic aids used by athletes are mainly as follows;

Creatine; It is formed by the combination of the amino acid methionine, glycine and arginine. It is a highly effective ergogenic nutritional supplement for athletes to increase performance capacity and lean body mass (Kerksick et al., 2018).

Caffeine; most naturally produced stimulant found in food ingredients such as coffee, tea, guarana, non-alcoholic beverages, and chocolate. Intake of this nutrient; It provides a physiological contribution by triggering the release of adrenaline in the blood circulation. Since the adrenaline released during exercise allows the fatty acids to be released more and earlier, the fat burning phase is faster (Kerksick et al., 2018; Grout et al., 2016). In an experimental study, it was reported that up to 6 mg of caffeine supplement intake per body weight (kg) could improve both sportive performance and cognitive function (Ozan et al., 2022).

Glutamine; It is the most abundant but non-essential amino acid in our body. It has important functions for our body. Along with increasing exercise capacity, it stimulates protein and glycogen synthesis, and accordingly, it provides muscle tissue growth and repair. In addition, it reduces muscle fatigue by improving glycogen stores (Karakuş, 2014).

Carnitine; It is usually found in skeletal and cardiac muscles in our body. Meat, fish, chicken and some dairy products can be mentioned as sources of carnitine (Kerksick et al., 2018). This amino acid plays an important role in muscle-energy metabolism by oxidation of fatty acid and increasing energy consumption. There are claims that it is effective in increasing endurance performance (Karakuş, 2014).

Protein powders; amino acids are the building blocks of our proteins. It is also involved in the structure of enzymes, hormones and hemoglobin in the cell. Athletes take protein supplements to increase their existing muscle mass, prevent protein breakdown, increase muscle glycogen synthesis and increase athletic performance (Kerksick et al., 2018).

8. Doping

It is stated in the sources that elite level athletes use stimulants to increase their performance in sportive games and competitions that contain the competitive factor since ancient times (Finley & Pleket, 1976; Lippi et al., 2008). As time progresses, and thanks to the technological opportunities that today's dominate, significant advances and developments have been made in the field of biotechnology. With these developments, it has been observed that there are attempts to open the areas of use of synthetic molecules and recombined hormones and to have an effect on the genes of athletes (Pokrywka et al., 2013).

One of the oldest use of doping, which is also known in the past and today, is the use of dried fig diet by Charms of Sparta to increase running performance in the Olympic Games held in 668 BC. It is also known that in ancient times, the Greeks used some stimulants in sports training and the Romans used herbal stimulants that are good for fatigue and injury (Voy et al., 1991). With the 19th century, an increase was observed in the number of drugs whose usage areas became widespread. The anabolic effects of the detected substances as hormonal stimulants were discovered and started to be used as muscle builder and restorative. Anabolic effects began to be obtained with the synthesis of the testosterone hormone, which was also in

isolation at the beginning of the 20th century. When these substances, which were first tested on race horses, started to show positive effects, people started to try them for themselves (Kearns et al., 1942).

The use of amphetamines, a synthetic stimulant, began to appear in the mid-1930s. The first recorded death with the use of doping occurred in a cyclist at an Olympic game held in Rome. The doping used during the competition caused the competitor to fall unconscious and lose her life. As time progressed, its use became widespread in national and international organizations. (Laties & Weiss, 1981).

Detection of doping in the participants of the Tour de France, which is a very important organization at the international level, resulted in disappointment from many viewers and followers. It was determined that this is a situation that needs to be taken and WADA (World Anti-Doping Agency) was established in 1999 (Christiansen, 2005). Despite this establishment and supervision, its use in various organizations is inevitable, and penalties and sanctions have also been applied within the framework of international law. Since the middle of the 20th century, many deaths and damages have occurred during performances with the use of these substances. It is known as a problem that threatens sports and the health of the athlete (Houlihan, 2002).

9. Athlete Health and Sports Injuries

9.1. Athlete Heart and Sudden Deaths

In general, it is known that sports and exercise play an important role in people's quality of life and health. However, sports-related illness or death is likely to occur in sudden forms. Athletes in society are generally seen as people with superior physical equipment. Sudden deaths that occur because of this also bring negative feelings towards sports in the society in general (Maron et al., 1996). Sudden deaths in athletes are generally caused by the cardiovascular system. Cardiac deaths that occur suddenly may sometimes not give any symptoms until the moment of death (Maron et al., 1996).

In any sports branch, it is essential to make health screening and evaluations before participating in sports to prevent such deaths. Studies have shown that athletes with cardiovascular disease risk have a higher risk of death compared to those who do not (Maron et al., 1998).

9.2. Athlete Injuries

Sports injury can be expressed as temporary or permanent damage that occurs when a part or the whole body is overloaded and forced more than normal during sportive activity. Sports injury can be something that every athlete and participant will encounter at every level, from amateur to professional, to competitions in recreational activities (Kalyon, 1990). Recently, increasing interest in participation in sports, intensification of the work done, increase in the possibilities of sportive fields and partially unconscious performance of sportive activities are important factors that increase sports injuries. Injuries occur more frequently in contact, high-speed and high-altitude athletes compared to other sports (Polat et al., 2010).

Factors that cause athlete injuries in general; physical and mental fitness for sports, technical inadequacy, incomplete applications in warm-up procedures, equipment used, planning and

implementation of training, gender, age and other physical factors, and the duration and scope of the exercise and activity.

Sports injuries can be examined under two headings; primary and secondary injuries. Primary injuries are injuries to which athletes are directly exposed to physical pressure and stress. Secondary injury, on the other hand, is the recurrence of an injury that has previously occurred in a region for any reason (Can, 2004). Additional common and affected areas in sports injuries; musculoskeletal trauma, bursitis, joint injuries, tennis elbow, strain and sprain, golfer's elbow and muscle tears (Griffith, 2000).

In order to prevent sports injuries and injuries, athletes must undergo regular medical and rehabilitative controls. The aim here is to predetermine the mechanisms of injury and disability, to apply treatment procedures, and to make early treatment of previous disabilities and injuries suitable for return. Children who have some sportive abilities and are suitable for sportive characteristics are exposed to loads more than normal at very early times and generally continue their studies without a medical evaluation. (Griffith, 2000).

Studies on this subject show that some sports and different physiological needs cause bigger problems and injuries during adolescence. Therefore, the classification of children according to age and other characteristics and their physiological and psychological development should be taken into account when directing them to sports (Stanitski, 1993).

10. Types of Sports Injuries

In a study conducted with the participation of 1560 athletes, cases that applied to the clinic for 5 years due to disability and complaints were examined. It has been reported that 22% of the injuries are contusion and 20% are fractures. Regionally, the most common disability area was the groin, leg, knee and ankle with 60%. The most common problem was determined as overuse injuries (Önçağ et al., 1988).

As a result of injuries, the sports lives of the athletes are disrupted and their training programs are disrupted. In many of the injuries that occur, the athletes can stay away from sports for a lifetime or become an obstacle. Most of the injuries and injuries that occur during competition and sportive events are soft tissue injuries. In this context, simple skin wounds and skin damage requiring surgery can also occur (Bayraktar & Kurtoğlu, 2004). The most common condition in sports injuries is soft tissue injury. These injuries generally occur in muscle, tendon and ligament tissues.

The sports branches where soft tissue injuries are frequently seen and reported are basketball and volleyball. If classification is made in soft tissue injury; contusion, hematoma, open wounds, cramps, tendopathies, tendon ruptures, muscle injuries and bursitis (Bağrıçak & Açak, 1998).

In addition to soft tissue injuries, injuries to the joint and bone tissues also occur. Weakness of the muscles, lack of strength in the tendon and weakness in the connective tissue can be mentioned among the factors of joint injuries. Joint injuries occur due to sudden severe strain of muscles and tendons or long-term use. Types of joint injuries; sprain, strain, dislocation, injury and hemarthrosis (Kayserilioğlu, 2006). Injuries in the bone tissue are caused by micro

and macro traumas, deterioration of bone integrity and deterioration of bone functions. The deterioration of the integrity of this tissue is defined as a fracture (Hlobil & Mechelen, 1990).

11. Treatment of Sports Injuries

Early and accurate diagnosis of sports injuries makes a significant contribution to facilitating treatment and returning the athlete to sports. First, biomechanical and postural structures should be analyzed and deficiencies or traumas should be determined beforehand. For an unused region, the decrease in performance should be prevented at the maximum level by operating the other region (Bayraktar & Yücesir, 2009). Treatment in sports injuries is examined in 3 steps; preventive medicine is curative and rehabilitative. At the time of the injury, it is necessary to intervene in 4 main sections. These; first aid, preliminary treatment (rest, cold application, compression, elevation, immobilization), definitive treatment – physical therapy (massage therapy, cold therapy, hot therapy, bandaging) rehabilitation (Bayraktar & Yücesir, 2009).

12. Conclusion

To summarize, it is important for the athletes to participate in sports in a controlled and conscious way, from early ages to advanced ages, both in amateur and professional sports, at the point of protecting their health. In this regard, it can be concluded that more effective work of all national and international institutions and organizations can lead to positive developments on behalf of individuals, clubs and countries.

REFERENCES

- Andaç Öztürk, S, Kalkan İ, Durmaz C, Pehlivan M, Özüpek G, Bakmaz ZD. (2020). Üniversiteli sporcu öğrencilerin beslenme destek ürünleri kullanım durumu. *Tıp Fakültesi Klinikleri Dergisi*, 3(1), 5-14.
- Argan M, Köse H, (2009). Sporcu besin desteklerine (sports supplements) yönelik tutum faktörleri: fitness merkezi katılımcıları üzerine bir araştırma. *Spor Bilimleri Dergisi*, 20(4), 152-164.
- Arıpınar E, Donuk B. (2011). *Spor Yönetim ve Organizasyonlarında Etik Yaklaşımlar Fairplay*, İstanbul: Ötüken Yayınları.
- Bağrıaçık A, Açak M. (2005). *Spor Yaralanmaları ve Rehabilitasyon*. İstanbul: Yaylacık Matbaası.
- Bayraktar B, Kurtoğlu M. (2004). Sporda Performans ve Performans Artırma Yöntemleri. *Klinik Gelişim Dergisi*, 22(1), 16-24.
- Bayraktar B, Yücesir İ. (2009). Yumuşak doku yaralanmaları, iyileşme süreci ve tedavi yaklaşımları. *Klinik Gelişim Dergisi*, 22(1), 60-67.
- Cerit M. (2016). *Erkek ve Fit Yaşantı*. Ankara: Spor Yayınevi ve Kitabevi.
- Christiansen AV. (2005). The legacy of festina: patterns of drug use in european cycling since 1998. *Sport in History*. 25(3), 497-514.
- Çavdar B, Cinel Y, Bayazıt B, Yılmaz O, (2018). Fitness merkezlerinde egzersiz yapan bireylerin besin takviyesi kullanımı ile ilgili görüşlerinin belirlenmesi. *Muş Alparslan Üniversitesi Uluslararası Spor Bilimleri Dergisi*, 2 (2), 19-28.
- Çumralıgil B, Görücü A. (2007). *Örgütlenme Yönetim Biçimleriyle Spor*. Konya: Selçuk Üniversitesi Yayını.
- Erkal M. (1978). *Sosyolojik Açıdan Spor*. İstanbul: Kutsun Yayınevi
- Erkal M. (1982). *Sosyolojik Açıdan Spor*. İstanbul: Filiz Kitabevi.
- Ersoy G. (2012). *Egzersiz ve Spor Yapanlar İçin Beslenme*. Ankara: Nobel Akademik Yayıncılık.
- Finley MI, Pleket HW. (1976). *The Olympic Games: The First Thousand Years*. London: Chatto & Windus.
- Grout A, McClave SA, Jampolis MB, Krueger K, Hurt RT, Landes S, Kiraly L. (2016). Basic principles of sports nutrition. *Current Nutrition Reports*, 5 (3), 213-222.
- Hlobil H, Mechelen WV. (1990). *How can Sports Injuries be Prevented (Spor Sakatlıkları Nasıl Engellenebilir)*. Ankara: Başbakanlık Gençlik ve Spor Genel Müdürlüğü Eğitim Daire Başkanlığı Yayınları, 6-7.
- Houlihan B. (2002). Managing compliance in international anti-doping policy: The world anti-doping code. *European Sport Management Quarterly*. 2, 188-208.
- Karakuş M, (2014). Sporcularda ergojenik destek. *Spor Hekimliği Dergisi*, 49 (4), 159-164.

- Kayserilioğlu A. (2006). Spor yaralanmalarından korunma. *Türkiye Klinikleri Journal of Internal Medical Sciences*, 2(27), 72-80.
- Kearns B, Harkness R, Hobson V, Smith A. (1942). Testosterone pellet implantation in the gelding, *Journal of the American Veterinary Medical Association*. C/780, 197–201.
- Kerksick CM, Wilborn C., Roberts MD ve ark. (2018). Exercise & Sports Nutrition Review Update: Research & Recommendations. *Journal of the International Society of Sports Nutrition*, 15 (38), 1-57.
- Kolukısa Ş, Eyipınar CD. (2020). *Sporcu Beslenmesi ve Egzersiz*. Ankara: Nobel Akademik Yayıncılık.
- Laties VG, Weiss B. (1981). The amphetamine margin in sports. *Federation Proceedings*. 40(2), 2689-2692.
- Lippi G, Franchini M, Guidi GC. (2008). Doping in competition or doping in sport? *British Medical Bulletin*. 86, 95-107.
- Madi HH, Hussain SJ. (2008). Health protection and promotion. *Eastern Mediterranean Health Journal*, 14, 15-22
- Mengi Ö. (2016). Sporcularda Beslenme Alışkanlıkları, Duygu Durumu Ve Performans Arasındaki İlişki. (Yayımlanmamış yüksek lisans tezi). Trakya Üniversitesi Sağlık Bilimleri Enstitüsü, Edirne.
- Nutbeam, D. (1998). Health promotion glossary. *Health Promotion International*, 13(4), 349-364
- Ozan, M., Buzdaglı, Y., Eyipinar, C. D., Baygutalp, N. K., Yüce, N., Oget, F., Kan, E., et al. (2022). Does Single or Combined Caffeine and Taurine Supplementation Improve Athletic and Cognitive Performance without Affecting Fatigue Level in Elite Boxers? A Double-Blind, Placebo-Controlled Study. *Nutrients*, 14(20), 4399.
- Önçağ H, Kızılay C, Taşkiran E. (1988). Spor yaralanmaları ve istatistiki değerlendirmesi, *Spor Hekimliği Dergisi*, 3, 4-13.
- Pokrywka A, Kaliszewski P, Majorczyk E, Zembroń-Łacny A. (2013). Genes in sport and doping. *Biology of Sport*. (30),155-161.
- Rodriguez NR, Di Marco NM, Langley S. (2009). American college of sports medicine position stand. Nutrition and athletic performance. *Medicine and Science in Sports and Exercise*, 41(3), 709-731.
- Saris WH, Van Loon LJ. (2004). Nutrition and health-nutrition and performance in sports. *Nederlands Tijdschrift Voor Geneeskunde*, 148 (15), 708-712.
- Şakar Ş, (2009). *Sporcu Beslenmesi*. Klinik Gelişim, 22 (1), 1-9.
- Thomas DT, Erdman KA, Burke LM, (2016). Position of the academy of nutrition and dietetics, Dietitians of Canada, and the American College of sports medicine: Nutrition and athletic performance. *Journal of the Academy of Nutrition and Dietetics*, 116 (3), 501-524.
- Voy RO, Deeter KD. (1991). Drugs, sport, and politics. *Leisure Press, Champaign, IL*, 227.

Walker SN, Sechrist KR, Pender NJ. (1987). The health-promoting lifestyle Profile: development and psychometric characteristics. *Nursing Research*, 36(2), 76-81.

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