Chapter 1

Sports Injuries and Rehabilitation

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Abstract

Effective management of sports injuries depends on accurate diagnosis and a personalized rehabilitation program. The primary goal of rehabilitation is to safely return the athlete to sports, prevent recurrent injuries, and fully restore functional capacity. The rehabilitation process typically begins with controlling pain and inflammation, followed by restoring joint mobility, increasing muscle strength, improving proprioception, and continuing with sport-specific exercises. A multidisciplinary approach requires collaboration between physical therapists, orthopedists, sports physicians, and athletic trainers. Biomechanical analyses and objective measurements to assess progress enhance the effectiveness of rehabilitation. Psychological support is also critical in helping athletes maintain motivation throughout the recovery process.

Introduction

Sport is not only a fundamental component of a healthy lifestyle but also carries the inevitable risk of injuries during participation. This seminar aims to examine the types, causes, prevention, and treatment methods of sports injuries while exploring ways to enhance athletes' performance and simultaneously reduce risks (Kılıç et al., 2014). By emphasizing the positive health benefits of sports, it seeks to provide athletes and sports enthusiasts with the necessary knowledge to engage in more informed and safer sports practices (Alpaslan, 2012).

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https://doi.org/10.58830/ozgur.pub798.c3381

Sports injuries refer to damage sustained to a specific region or the body as a whole due to forces exceeding the normal physiological limits. This term typically encompasses various types of harm occurring during sports participation (Budak et al., 2020). Sports injuries are commonly classified into three categories: mild injuries, which generally heal within 1 to 7 days; moderate injuries, which may require 8 to 21 days for recovery; and severe injuries, which often necessitate a healing period exceeding 21 days (Timpka et al., 2014).

In addition, injuries can be classified according to body regions, such as musculoskeletal, head and neck, or limb injuries. These classifications aid in better understanding of the injuries and facilitate the development of effective treatment strategies (Batur et al., 2019).

First aid in sports injuries plays a vital role in mitigating the severity of the situation. Prompt and proper intervention, including appropriate support of the injured area and the implementation of necessary precautions, can minimize the effects of the injury and accelerate the healing process. Correctly administered first aid helps prevent potential complications, thereby facilitating a healthier recovery for the athlete (Ayral, 2013).

The rehabilitation and return-to-play process following sports injuries plays a critical role in helping athletes regain their previous performance levels. An effective rehabilitation program accelerates the healing process and assists the athlete in restoring strength, flexibility, and endurance (Çiğdem, 2022). A carefully controlled return-to-play protocol reduces the risk of re-injury, enhances the athlete's confidence, and prepares them for a safe return to sports. These processes support the athlete in regaining physical and mental resilience, facilitating a successful comeback to athletic activity (Kılıç et al., 2014).

Sport

Sport encompasses physical activities performed individually or in groups, within established rules, aimed at competition or achieving specific goals, and contributes to the development of an individual's physical and mental capabilities (Tanriverdi, 2012).

Sports Injuries

The term sports injuries refers to damages that occur when body tissues in a specific area or throughout the body exceed their tolerance limits due to exposure to an abnormal force (Arıkan & Çimen, 2020).

Classification of Sports Injuries

Sports injuries are generally classified into three main categories: mild injuries, which typically heal within 1 to 7 days; moderate injuries, with a recovery period usually ranging from 8 to 21 days; and severe injuries, which often require a healing process longer than 21 days (Gülşen, 2023).

Sports injuries can occur in various regions of the body. For example, musculoskeletal injuries encompass problems affecting joints, muscles, or bones (Karayılan et al., 2013). Head and neck injuries typically refer to conditions involving the skull, face, or cervical region (Yünceviz et al., 1997). Limb injuries generally involve areas such as the arms, legs, or shoulders. These different locations can influence the type, severity, and treatment approaches of the injury. Moreover, the variation in body regions utilized across different sports disciplines may lead to differences in the types of injuries sustained (Kabak & Çelik, 2022).

Acute Sports Injuries

Acute sports injuries, typically resulting from sudden physical impacts during sports activities, arise from unexpected movements or instantaneous accidents. These injuries may include sprains, muscle tears, or ligament strains, with symptoms usually being immediately noticeable and often requiring urgent medical intervention (Ergen, 2002). Bone fractures caused by sudden and severe physical forces during sports-related activities are also classified as acute injuries (Üzümcügil et al., 2012).

Overuse Sports Injuries

Unsupervised or improper execution of exercises has led to a significant increase in sports injuries. One of the primary contributors to this rise is overuse injuries, which result from repetitive stress and microtraumas. Overuse injuries can cause athletes to be sidelined from training for extended periods, and without timely intervention, recovery may be prolonged. Therefore, a thorough understanding of the causes and mechanisms of these injuries is essential for effective prevention (Örsçelik, 2015).

Injury Prevention Methods in Sports

Analyzing the potential causes of sports injuries to develop preventive programs and translate this knowledge into practice is of utmost importance (Argut & Çelik, 2018). One of the initial steps in preventing sports injuries is the identification of target groups (Akkoç & Gözübüyük, 2019).

Nutrition

The amount of nutrients athletes consume is critically important for achieving their optimal performance. A key concern for both groups is that inadequate nutrition leads to fatigue, which subsequently increases the risk of injury (Ergen, 2002).

The Role of Facility and Equipment Safety in Preventing Sports Injuries

Ensuring the safety of the environment where sports activities take place is of vital importance in minimizing the risk of injuries. The surface quality of sports fields, including aspects such as appropriate flooring, evenness, and shock absorption, directly influences not only performance but also the safety of athletes. Slippery, uneven, or excessively hard surfaces significantly increase the likelihood of traumatic injuries such as sprains and falls. Likewise, proper lighting enhances environmental awareness and helps reduce the risk of collisions and impact-related injuries. Therefore, regular inspection and maintenance of sports facilities are fundamental components of an effective injury prevention strategy. In addition, the correct use and upkeep of sports equipment play a crucial role in creating a safe environment for athletic performance. The quality and suitability of equipment—particularly protective gear such as helmets, knee pads, and braces in contact sports—are essential in preventing severe injuries. Regular equipment checks and ensuring compatibility with the athlete's physical characteristics help mitigate potential risks. These preventive measures not only promote individual safety but also support the sustainability and integrity of sporting activities (Tüzün, 2006; Turan et al., 2025).

The Importance of Warm-Up, Cool-Down, and Neuromotor Exercises in Injury Prevention

Warm-up and cool-down routines, along with exercises targeting flexibility, coordination, and balance, play a crucial role in efforts to prevent sports injuries. A proper warm-up prepares the muscles for activity by increasing elasticity and neuromuscular readiness, thereby reducing the risk of injury. Conversely, cool-down exercises help the body relax post-exercise, reduce muscle stiffness, and support the recovery process. These routines not only enhance physiological preparedness but also help athletes develop greater bodily awareness. As a result, they contribute to the formation of a more balanced physical structure and serve as an effective buffer against injury. By integrating such practices into training regimens, athletes can

improve performance while safeguarding their long-term musculoskeletal health (Çelebi, 2017; Çabuk & Asan, 2024).

Appropriate Use of Sport-Specific and Protective Equipment

Athletes should use sport-specific equipment and, where applicable, protective gear in full compliance with established standards and guidelines. A mismatch between the characteristics of the equipment and the athlete's body dimensions may significantly increase the risk of injury. This issue is particularly relevant in sports that involve a high risk of falling or frequent physical contact. In such cases, the use of properly fitted protective equipment can substantially reduce the likelihood of injuries. To ensure safety and effectiveness, standardized criteria have been developed for these materials, emphasizing the importance of proper selection and usage in athletic practice (Arslan, 2013).

The Role of Proper Technique in Injury Prevention and Performance Enhancement

Learning and consistently applying proper techniques during sports activities not only enhances athletic performance but also plays a crucial role in reducing the risk of injury. Correct and efficient movement patterns promote balanced use of the body, increase endurance, and help athletes maintain physical integrity throughout training and competition. Conversely, improper techniques can place excessive strain on muscles and joints, leading over time to overuse injuries and diminished performance. Therefore, technical training should be considered a fundamental component of injury prevention strategies in all levels of athletic development (Şenışık, 2013).

The Impact of Overtraining on Athletic Health and Injury Risk

Overtraining occurs when athletes push their bodies beyond physiological limits without adequate recovery, and it is a well-recognized contributor to sports injuries. This condition, commonly referred to as overtraining syndrome, results from chronic physical overload without sufficient rest, leading to muscle fatigue, heightened stress levels, and an increased risk of long-term injuries. A relevant example is Turkish national athlete Oğuz Uyar, who participated in the Tokyo 2020 Olympic Games. Uyar reported experiencing significant physical strain and motivational decline due to intense training sessions during the preparation period. He noted that he did not receive professional psychological support during this time and even considered quitting sports at certain points. However, he overcame these challenges through competitive achievements and the consistent

encouragement of his coach (Uğraş, et al., 2024). To mitigate these risks, it is essential to implement a well-balanced training program that incorporates appropriate rest intervals. Structured recovery periods not only reduce injury incidence but also support sustained athletic performance and overall well-being (Dinçer & Ertuna, 2020).

Rest and Recovery

Physical fatigue and nutritional deficiencies can significantly increase the likelihood of sports injuries. Therefore, adopting a healthy lifestyle that includes adequate rest and sleep is essential. Allowing the body sufficient time to recover not only reduces injury risk but also promotes optimal physical performance and long-term health (Şipal). Engaging in intensive training without allowing for full recovery may lead to persistent fatigue in athletes. Over time, this can result in chronic exhaustion and significantly increase the risk of injury. After training, the body initiates repair processes, particularly within muscle fibers. Adequate rest, quality sleep, and proper energy replenishment are essential components of this recovery phase, supporting both physical restoration and injury prevention (Gümüşdağ et al., 2015).

Post-Injury Stages in Sports Injuries

The Importance of Immediate First Aid in Sports Injuries

In recent years, there has been a noticeable increase in participation in sports activities. While most sports-related injuries are minor, serious injuries can also occur from time to time. Properly administered first aid plays a vital role on the field, contributing to faster recovery and reducing the risk of complications. The fundamental principle of first aid is prompt and timely intervention; therefore, every field staff member should be capable of providing effective first aid until medical professionals arrive (Altunhan & Ökmen, 2022).

P.R.İ.C.E

Protection

This stage refers to the protection of the injured area. It may involve covering the affected region with bandages or wraps to shield it from external factors. Protecting the injured tissue at this stage is also crucial in preventing the damage from worsening and progressing to more severe levels (Bayraktar & Yücesir, 2009).

Rest

Inadequate rest leads to increased physiological stress, depletion of energy stores, and impaired motor accuracy, resulting in a significant decline in athletic performance (Canyurt & Asan, 2024). Adequate rest is provided to the affected area to prevent it from being subjected to excessive stress. This phase should be adjusted according to the severity of the injury. Resting supports the healing process and allows the injured tissue to repair itself naturally (Orlando et al., 2011).

Ice

Applying ice to the injured area can help reduce swelling, alleviate pain, and decrease blood flow. Typically, ice should be applied in intervals of 15 to 20 minutes, without direct contact with the skin. This approach can minimize discomfort and inflammation in the affected region (Kazan, 2011).

Compression

Compression applied to the injured area helps reduce edema by exerting external pressure, preventing the accumulation of swelling, and minimizing bruising caused by internal bleeding. Additionally, it provides mechanical support essential during the healing process, aiding in the restoration of force production necessary for rehabilitation. Compression also enhances neuromuscular feedback and allows for controlled movement, both of which are crucial for effective recovery (Kraemer et al., 2004).

Elevation

Elevation involves positioning the injured limb or area above the level of the heart. This approach facilitates venous return and helps to reduce swelling and pain by promoting the drainage of excess fluid from the affected region. Keeping the injured area elevated can relieve discomfort by decreasing local blood flow and support the overall healing process (Bleakley et al., 2007).

Massage in Sports Injuries

Massage is a widely used therapeutic method that can accelerate the recovery process and reduce muscle tension in sports injuries. By enhancing blood circulation, massage may promote nutrient delivery to the injured area, alleviate pain, and improve mobility. However, it is essential to consult a specialist before applying massage, as improper techniques or timing may worsen the injury. Seeking professional guidance ensures that

the appropriate methods are used and the treatment is safely administered (Abanoz, 2023).

Physiotherapy and Exercise in Sports Injury Recovery

Physiotherapy and exercise play a crucial role in the treatment of sports injuries. These interventions accelerate the healing process of the injured area, enhance strength and flexibility, and support the athlete's return to sport. Properly guided exercises performed under professional supervision contribute significantly to the effective and safe recovery from injuries (Mendonça et al., 2022).

Surgical Interventions in Sports Injuries

Surgery in sports injuries is typically considered for the repair of severe tendon tears, fractures, or other significant structural damage. It allows for direct correction of the affected area and restoration of function. However, surgical treatment is usually considered only after other therapeutic options have been explored, or depending on the severity of the injury. The necessity for surgery varies based on the type of injury and the individual's specific condition (Flint et al., 2014)

Rehabilitation in Sports Injuries

Rehabilitation is a vital component of the recovery process in sports injuries. A properly designed rehabilitation program strengthens the injured area, enhances flexibility, and helps the athlete return to their pre-injury performance level. This process supports a controlled and safe return to sport. An effective rehabilitation plan not only prevents re-injury but also facilitates a quicker and more confident comeback. Rehabilitation under professional supervision ensures that athletes regain their ability to perform safely and effectively (Ergun & Baltacı, 2014).

Commonly Affected Areas in Sports Injuries

Upper Limb Injuries

Upper extremity injuries involve the area extending from the shoulder to the fingertips, encompassing a range of injuries to the shoulder, elbow, wrist, or fingers. These types of injuries can occur due to sports activities, falls, or sudden impacts. Treatment varies depending on the type and severity of the injury and often requires specialized medical approaches. In many cases, upper extremity injuries most frequently affect the shoulder joint. Such injuries typically occur as a result of falling onto an outstretched hand or direct trauma to the area. Sports with a high incidence of upper

limb injuries include football, volleyball, handball, tennis, swimming, and gymnastics (Kılıç et al., 2014).

Lower Extremity Injuries

Lower extremity injuries refer to injuries occurring in the hip, knee, ankle, and foot regions. These injuries typically result from sudden movements, excessive strain, or direct trauma during physical activity. They are more commonly seen in sports such as running, football, basketball, and skiing. Treatment methods vary depending on the type, severity, and location of the injury. Approaches may include rest, physical therapy, and, in some cases, surgical intervention (Özkan).

Head and Spinal Injuries

Head and neck injuries are among the most frequently encountered and serious issues in the field of sports, and unfortunately, head injuries can sometimes lead directly to death. Direct pressure to the brain can cause severe damage. The most common athletic head injury is concussion, which—though often mild—can result in serious consequences. Intracranial bleeding caused by head trauma is one of the leading causes of death in sports-related injuries. Therefore, rapid assessment and continuous monitoring are crucial in such cases (Cantu, 1996).

Referances

Abanoz, H. (2023). Spor yaralanmalarinda masaj. *Spor & Bilim 2022-II*, 189.

Akkoç, O., & Gözübüyük, Ö. B. (2019). Klasik hipertrofi ile kan akışı sınırlandırılarak yapılan antrenmanların kas kuvveti ve kalınlığı açısından karşılaştırılması. *Spor Bilimleri Dergisi*, *30*(4), 158-167.

Alpaslan, A. H. (2012). Ergen ruh sağlığı ve spor. *Kocatepe Tıp Dergisi*, *13*(3), 181-185.

Altunhan, Ö. Ü. A., & Ökmen, M. Ş. (2022). Akut spor yaralanmalarinda ilk yardimin önemi. *Beden Eğitimi Ve Spor Araştırmaları 2021-II*, 21.

Argut, S. K., & Çelik, D. (2018). Genç sporcularda spora bağlı yaralanmalara neden olan faktörler. *Spor Bilimleri Araştırmaları Dergisi*, *3*(1), 122-127.

Arikan, G., & Çimen, E. (2020). Üniversite adaylarının spor yaralanma kaygı düzeylerinin incelenmesi. *Eurasian Research in Sport Science*, *5*(2), 118-127.

Arslan, A. S. (2013). Sporda koruyucu ekipman ve bandajlama. *Spor Hekimliği Dergisi*, *48*(1), 025-034.

Ayral, D. (2013). İlk yardim ve sportif rehabilitasyon ilkeleri. *Spor Hekimliği Dergisi*, *48*(2), 057-068.

Batur, A., Ahmet, K., & Küçükceran, K. (2019). 2017 Avrupa kış gençlik olimpik festivali süresince oluşan spor yaralanması olgularının analizi. *Anatolian Journal of Emergency Medicine*, *2*(3), 13-16.

Bayraktar, B., & Yücesir, İ. (2009). Yumuşak doku yaralanmaları, iyileşme süreci ve tedavi yaklaşımları. *Klinik Gelişim Dergisi*, *22*(1), 60-67.

Bleakley, C. M., O'Connor, S., Tully, M. A., Rocke, L. G., MacAuley, D. C., & McDonough, S. M. (2007). The PRICE study (Protection Rest Ice Compression Elevation): design of a randomised controlled trial comparing standard versus cryokinetic ice applications in the management of acute ankle sprain [ISRCTN13903946]. *BMC musculoskeletal disorders*, *8*, 1-8.

Boden, B. P., & Jarvis, C. G. (2009). Spinal injuries in sports. *Physical medicine and rehabilitation clinics of North America*, *20*(1), 55-68.

Budak, H., Sanioğlu, A., Keretli, Ö., Durak, A., & Barış, Ö. (2020). Spor yaralanmasının kaygı üzerindeki etkileri. *Kilis 7 Aralık Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi*, *4*(1), 38-47.

Çabuk, S., & Asan, S. (2024). Futbolcularda uzuv içi ve uzuvlar arası kuvvet dengesizliği ve asimetri. M. Mavibaş & Y. E. Çingöz (Ed.), *Tematik Yaklaşımla Sportif Bakış* I (s. 72 - 84). İzmir: Duvar Yayınları.

Cantu, R. C. (1996). Head injuries in sport. *British journal of sports medicine*, *30*(4), 289.

Canyurt, F., & Asan, S. (2024). Uyku kalitesinin bilişsel ve fiziksel performans üzerindeki etkisi: Sağlıklı yaşam için kritik bir biyolojik süreç. In Y. E. Çingöz & M. Mavibaş (Eds.), *Tematik yaklaşımla sportif bakış II* (pp. 41–52). Duvar Yayınları.

Çelebi, M. M. (2017). Isınma ve germe egzersizlerinin propriosepsiyon ve denge üzerine etkisi. *Ankara üniversitesi tıp fakültesi mecmuası*, *70*(2), 83-89.

Çiğdem, Ö. (2022). Spor Yaralanmaları Psikolojisinin Görsel Haritalama Üzerinden Bibliyometrik Analizi. *Akdeniz Spor Bilimleri Dergisi*, *5*(4), 904-932.

Dinçer, Ş., & Ertuna, A. (2020). Aşırı Antrenman Sendromu. *Spor Hekimliği Dergisi*, *55*(1), 061-068.

Ergen, E. (2002). Spor yaralanmalarından korunma. *Dirim*, *77*(1), 6-13.

Ergun, N., & Baltacı, G. (2014). Spor yaralanmalarında fizyoterapi ve rehabilitasyon prensipleri. *Ankara: Pelikan Yayınevi*.

Flint, J. H., Wade, A. M., Giuliani, J., & Rue, J.-P. (2014). Defining the terms acute and chronic in orthopaedic sports injuries: a systematic review. *The American journal of sports medicine*, *42*(1), 235-241.

Gülşen, M. (2023). Spor yaralanmalari ve siniflamalari. *Sporcu sağliği*, 185.

Gümüşdağ, H., Egesoy, H., & Cerit, E. (2015). Sporda toparlanma stratejileri. *Hitit Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *8*(1), 53-70.

Kabak, S., & Çelik, A. (2022). Spor alanı ile ilgili özel yetenek sınavına girecek olan bireylerin branşlarına göre spor yaralanma kaygı düzeylerinin incelenmesi. *Akdeniz Spor Bilimleri Dergisi*, *5*(Özel Sayı 1), 444-455.

Karayilan, Ş. Ş., Dönmez, G., Babayeva, N., Yargiç, M. P., Korkusuz, F., & Doral, M. N. (2013). Spor yaralanmalari ve genetik. *Spor Hekimliği Dergisi*, *48*(4), 139-146.

Kazan, A. G. D. E. E. (2011). Soğuk uygulamalar ve hemşirelik bakımı. *Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi*, *18*(1), 73-82.

Kılıç, B., Yücel, A. S., Gümüşdağ, H., Kartal, A., & Korkmaz, M. (2014). Spor yaralanmaları üst ekstremite yaralanmaları kapsamında omuz yaralanmaları ve tedavi yöntemleri.

Kraemer, W. J., French, D. N., & Spiering, B. A. (2004). Compression in the treatment of acute muscle injuries in sport. *International SportMed Journal*, *5*(3), 200-208.

Mendonça, L. D. M., Schuermans, J., Denolf, S., Napier, C., Bittencourt, N. F., Romanuk, A., Tak, I., Thorborg, K., Bizzini, M., & Ramponi, C. (2022). Sports injury prevention programmes from the sports physical therapist's perspective: An international expert Delphi approach. *Physical therapy in sport*, *55*, 146-154.

Orlando, C., Levitan, E., Mittleman, M. A., Steele, R. J., & Shrier, I. (2011). The effect of rest days on injury rates. *Scandinavian journal of medicine & science in sports*, *21*(6), e64-e71.

Örsçelik, A. (2015). Kas-iskelet sistemi yaralanmaları: aşırı kullanım yaralanmaları. *Turkiye Klinikleri J Sports Med-Special Topics*, *1*(3), 62-69.

Özkan, Ö. Sporda kas yaralanmalari.

Şenişik, S. (2013). Spor yaralanmalarini önlemeye yönelik oyun kurallarinin düzenlenmesi. *Spor Hekimliği Dergisi*, *48*(2), 049-056.

Şipal, Ö. G. O. Boks disiplininde sakatlik faktörü. *SPOR BİLİMLERİ TEMELİNDE*, 24.

Spinal cord injuries are more commonly seen in sports that involve frequent contact or high-speed movements. These types of injuries are particularly prevalent in contact sports such as American football, soccer, wrestling, rugby, and hockey, as well as in high-speed sports like motorcycling, surfing, and skiing, and activities such as mountaineering and gymnastics. Sudden movements and high-risk factors inherent to these sports significantly increase the risk of spinal cord injury (Boden & Jarvis, 2009).

Tanriverdi, H. (2012). Spor ahlaki ve şiddet. *The Journal of Academic Social Science Studies. Publication of Association Esprit, Société et Rencontre Strasbourg/FRANCE*, *5*(8), 1071-1093.

Timpka, T., Jacobsson, J., Bickenbach, J., Finch, C. F., Ekberg, J., & Nordenfelt, L. (2014). What is a sports injury? *Sports Medicine*, *44*, 423-428.

Turan, M., Savaş, B. Ç., & Çabuk, S. (2025). Genç sporcuların keşfi, gelişimi ve beslenmesinde sistematik yaklaşımlar: Mevcut modeller ve gelecekteki yönelimler. İ. Uçan, B. Tatlısu, & R. Ceylan (Ed.), *Beden Eğitimi ve Spor Eğitiminde Akademik Perspektifler 2* (s. 65 - 81). İzmir: Duvar Yayınları.

Tüzün, M. (2006). Spor sakatliklarinda acil eylem plani ve antrenörün rolü. *Gazi Beden Eğitimi ve Spor Bilimleri Dergisi*, *11*(1), 39-48.

Uğraş, S., Ateş, F., & Cengiz, C. (2024). Olimpiyata giden yol: Öyküleyici Bir Araştırma. *Sportif Bakış: Spor ve Eğitim Bilimleri Dergisi*, *11*(3), 420-433. https://doi.org/10.33468/sbsebd.421

Üzümcügil, A., Leblebicioğlu, G., & Doral, M. N. (2012). El bileği karpal instabilitesine neden olan spor yaralanmaları. *TOTBİD Dergisi 2012; 11 (3): 228*, *234*.

Yünceviz, R., Karsan, O., Şenol, D., & Süleyman, C. (1997). Serbest Ve Greko Rome N Güreşçilerinde Spor Sakatliklarinin Vücut Bölgelerine Göre Dağilimi. *Gazi Beden Eğitimi ve Spor Bilimleri Dergisi*, *2*(4), 13-17.