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Fiziksel Egzersiz ve Lise Eğitiminde Fiziksel Egzersizin Yeri Üzerine Bir Derleme Çalişmasi*

A Review Study on Physical Exercise and The Place Of Physical Exercise in High School Education

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Özet: Teknolojik gelişmelerin insanlara sunmuş olduğu yeniliklerden biri olan internet ve internet araçlarına olan erişimin lise öncesinden itibaren bireyler arasında tercih edilmeye başlanmıştır. Yapılan bu tercih ile beraber insanların yaşamındaki fiziksel hareketsizliğin geçmişe göre daha da arttığı söylenebilir. Hareketsiz bir yaşamın bedenen ve zihnen olumsuz sonuçları beraberinde getireceği unutulmamalıdır. Özellikle orta öğretimde eğitim görmekte olan öğrenciler için fiziksel egzersiz önem arz etmektedir. Yoğun eğitim süreci ve sınavlara hazırlık gibi birçok faktör lise öğrencilerini bedenen ve zihnen yormaktadır. Bu nedenle fiziksel egzersiz lise öğrencileri için önem arz etmektedir. Bu çalışmanın amacı fiziksel egzersiz ve lise eğitiminde fiziksel egzersizin yeri üzerine bir inceleme yapmaktır.

Anahtar Kelimeler: Fiziksel egzersiz, lise, öğrenci.

Abstract: *Access to the internet and internet tools, one of the innovations that technological developments have offered to people, has begun to be preferred among individuals since pre-high school. With this choice, it can be said that physical inactivity in people's lives has increased compared to the past. It should not be forgotten that an inactive life will bring about negative consequences physically and mentally. Physical exercise is especially important for students studying in secondary education. Many factors such as intensive education process and preparation for exams tire high school students physically and mentally. Therefore, physical exercise is important for high school students. The aim of this study is to conduct an examination on physical exercise and its place in high school education.*

Keywords: *Physical exercise, high school, student.*

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GİRİŞ

Gelişen teknoloji, internet ve internet araçlarına olan erişimin yaygınlaşması, lise öncesi kesimlerden başlayarak bireylerin sanal (dijital) dünyada daha çok zaman geçirmesine olanak tanımıştır. Örneğin fiziksel egzersiz yerine e-spor, sohbet yerine chat, gezip görmek yerine video blog gibi alternatifler, lise öğrencileri dahil diğer tüm toplum tabakalarını etkilemiştir. Dolayısıyla bir sosyalleşme aracı veya yöntemi olarak düşünülebilecek fiziksel egzersiz faaliyetleri, geçmişe göre ikinci plana itilmiştir.

Düzenli olarak yapılan fiziksel egzersiz psikolojik ve sosyal iyi oluşa kadar sağlıkla ilgili çeşitli faydalarla sonuçlanır (Warbunton, 2006). Düzenli egzersiz bireyin yaşam kalitesini arttırır, vücut işlevlerini geliştirir, yorgunluğa karşı direnci azaltır, vücut esnekliğini arttırır, kas gücü ve dayanıklılığını geliştirir, vücut ağırlığı yönetimine yardımcı olur, genel sağlığının korunmasına katkı sağlar, işlevsellik yoluyla yaşlanmanın etkilerini azaltabilir (Landolfi, 2013). Fiziksel aktivitenin kötü duygu durumlarına karşı koruma sağlar, psikolojik iyi oluşu arttırır, kaygı belirtilerine ve kaygı bozukluklarının gelişimine karşı koruma sağlar, depresif belirtileri azaltır. Dünya Sağlık Örgütünün bireyler için egzersiz önerileri; Haftada en az 150-300 dakika orta yoğunlukta aerobik egzersiz, haftada en az 75-150 dakikalık şiddetli aerobik egzersiz veya haftanın her günü orta ve şiddetli yoğunlukta egzersize eşdeğer bir çalışma, sağlık faydaları sağladığında haftada 2 veya daha fazla gün büyük kas gruplarını içeren orta veya daha yüksek yoğunlukta kas güçlendirici aktiviteler yapmalı şeklindedir (WHO, 2004). Bu bilgiler neticesinde bu çalışmanın amacı fiziksel egzersiz ve lise eğitiminde fiziksel egzersizin yeri üzerine bir inceleme yapmaktır. Çalışma, nitel araştırma yöntemi kullanılarak yapılmıştır. Çalışmada, doküman analizi yöntemi aracılığıyla verilere ulaşılmıştır. Bu çalışmada veri toplamak için; kitap, tez, makale, internet siteleri ve benzeri kaynaklardan faydalanılmıştır.

FİZİKSEL AKTİVİTE VE EGZERSİZ

Günümüzün teknoloji odaklı toplumunda hayatta kalma faaliyetleri ve enerji harcaması için yapılan fiziksel çalışmalar azalmıştır; insan yaşam tarzı önemli ölçüde değişmiştir. Bu değişiklik, modern yaşamı giderek daha yerleşik hale getirmektedir (Freese, 2018). Fiziksel hareketsizlik ile karakterize edilen yerleşik bir yaşam tarzı, çok sayıda sağlık riski ile ilişkilidir. Bu nedenle, bilim adamları, ev işlerine ve aktif işe gidip gelmeye ek olarak, kaybedilen fiziksel aktiviteyi telafi etmek için insanların günlük yaşamlarına düzenli egzersizin dahil edilmesi gerektiğini öne sürmektedirler (Malm, 2019). Fiziksel aktivite, hareketle harcanan tüm enerjiyi ifade etmektedir. İskelet kasları tarafından üretilen ve dinlenme seviyesinin üzerinde enerji harcamasıyla sonuçlanan herhangi bir vücut hareketi olarak tanımlanır. Bu tanım, ev ve açık hava işleri, ev dışında yapılan işler (mesleki faaliyet), yürüyüş, bisiklete binme, alışveriş, spor, kasıtlı egzersizler ve diğer günlük yaşam faaliyetleri veya diğer eğlence faaliyetleri gibi her türlü faaliyeti içerir. Dünya sağlık örgütüne göre fiziksel aktivite, iskelet kasları tarafından üretilen enerji

harcamayı gerektiren herhangi bir bedensel harekettir. Boş zaman dâhil olmak üzere, bir yere gidip gelmede ulaşım için veya bir kişinin işinin bir parçası olarak yapılan tüm hareketleri ifade etmektedir (WHO, 2022). Egzersiz, ruhsal ve fiziksel sağlığı geliştirmek için tasarlanmış, planlanmış ve yapılandırılmış güçlü fiziksel aktivitelerin tümü şeklinde ifade edilebilir (Tylka, 2015). Egzersiz, sağlığın ve esenliğin geliştirilmesi için en güçlü yaşam tarzı davranışlarından biridir (Thivel, 2018). Egzersiz, vücuttaki fiziksel uygunluğun bir ya da birden fazla kompenentini iyileştirmeyi hedefleyen bir yaklaşım olarak da ifade edilebilir (Thomas, 2019). Düzenli egzersiz bireyin yaşam kalitesini arttırır, vücut işlevlerini geliştirir, yorgunluğa karşı direnci azaltır, vücut esnekliğini arttırır, kas gücü ve dayanıklılığını geliştirir, kilo yönetimine yardımcı olur (Landolfi, 2013). Düzenli egzersiz aynı zamanda azalan kaygı ve depresyon, gelişmiş benlik saygısı, daha kaliteli uyku ve sağlıkla ilgili daha yüksek yaşam kalitesi gibi psikolojik faydalarla da ilişkilidir (Tylka, 2015). Egzersiz, ölçülü olarak yapıldığında olumlu bir sağlık ve zihinsel etki sağlar. Aktif olmayan bireylere kıyasla, fiziksel olarak aktif yetişkinlerde tüm nedenlere bağlı ölüm, kalp-damar hastalıkları, metabolik sendrom, diyabet ve bazı kanser oranları daha düşüktür (Gibbs, 2015).

Fiziksel aktivite ve egzersiz sarkopeni, tip 2 diyabet, kırıklar, osteoartiküler bozukluklar ve pulmoner hastalık gibi bulaşıcı olmayan hastalıkların yönetimi ve önlenmesi için koruyucu bir faktördür (De Maio, 2022). American College of Sports Medicine (2019) ve (2020) düzenli fiziksel egzersizin faydalarını aşağıdaki gibi belirtmiştir;

- Ruh halini ve uykuyu iyileştirme,
- Yaşlanmanın etkilerini azaltma,
- Enfeksiyon riskini azaltma,
- Semptomları azaltma ve bağışıklık sisteminin korunmasına sağlama,
- Düşmeleri önleme veya düşmeye bağlı yaralanma riskini azaltma,
- Bağımsızlığı artırma,
- Demans/Alzheimer geliştirme riskini azaltarak beyni sağlıklı tutma ve düşünce geliştirme,
- Yeni kronik sağlık sorunları (diyabet, yüksek tansiyon veya kalp hastalığı gibi) geliştirme riskini azaltma ve bunlara bağlı oluşabilecek komplikasyon riskini azaltma,
- Çeşitli kanser türlerine yakalanma riskini azaltma ve tekrarlamalarını önlemeye yardımcı olma.

Fiziksel aktivite sadece fiziksel bir eylem değil aynı zamanda ruhsal bir aktivitedir. Bu nedenle fiziksel aktivite sadece fiziksel sağlığı etkilemekle kalmaz, aynı zamanda ruh sağlığı üzerinde de olumlu bir etkiye sahiptir (Hu & Hao, 2022). Hareketsiz yaşlı insanlar, egzersiz yapanlara göre daha fazla kaygı, depresyon ve stres yaşarlar. Bu bağlamda fiziksel aktivite, strese karşı koruyucu bir faktördür ve aktivitenin yoğunluğuna göre stres düzeyi değişkenlik göstermemektedir (Figueira, 2023).

Fiziksel egzersiz, değinilen tanım ve açıklamalardan da anlaşılacağı üzere fiziksel sağlık için son derece faydalıdır. Bununla birlikte, düzenli yapılan fiziksel egzersizin kişiyi daha mutlu ve başarılı kıldığı, dolayısıyla sosyal ilişkilerinde de başarılı olduğu belirlenmiştir (Kaya Sarıdede, 2018). Hatta fiziksel egzersiz, psikolojik ve ruhsal sağlığa olumlu katkı sunduğu gibi, sosyal yaşamda da faydalar sağlamaktadır. Toplumsal yaşam içinde ve hatta farklı toplumlar arasındaki ilişkilerde bir köprü görevi olmaktadır. Öyle ki dezavantajlı gruplara mensup kişiler için de özsaygılarını artırma noktasında önemli bulunmuştur (Evli, 2018). Bunlarla ilgili çeşitli araştırmalar da yapılmıştır. Bu araştırmalardan birisinde üniversite öğrencileri değerlendirilmiş ve sonuç olarak fiziksel egzersize yönelik tutumla mutluluk arasında bir bağlantı olduğu tespit edilmiş ve fiziksel egzersiz yapanların mutluluk düzeylerinin de arttığı sonucuna ulaşılmıştır (Öktem, 2022).

Spor

Spor, "*hareket yoluyla bireyin fizyolojik, duygusal, sosyal, motor ve zihinsel gelişimini destekleyen, enerji dengesini ve sağlıklı yaşamı sağlayan önemli bir bileşen olarak*" tarif edilmektedir (Demir & Cicioğlu, 2018). Spor, düzenli olarak uygulandığında sinir ve kas sisteminin gelişiminde, yani psiko-motor gelişimde etkilidir (Kaya Sarıdede, 2018). Spora olan geleneksel yaklaşımlarda bireysel özellikler ele alınırken, çağdaş dünyada sporun toplumsal yönleri de ele alınmaya başlanmıştır (Tezcan, 1992). Tanım ve açıklamalarda da spor ile birey arasındaki bağa işaret edilmiştir.

Spor, kısacası bireyin yaşamı için değerlidir ve bu özelliği nedeniyle her yaş grubu için doğru şekilde teşvik edilmelidir. Henüz çocukluk çağından itibaren spora yönlendirmek, sağlıklı birey ve sağlıklı toplum için gereklidir. Beslenmeye ilişkin fiziksel egzersiz yapan çocuklarla ilgili bir araştırmada fiziksel egzersiz yapan çocukların yapmayanlara göre daha az hasta olup hastalandığında da daha hızlı iyileştiği, daha güçlü hafızaya sahip olduğu, dayanıklı ve güçlü olduğuna dair sonuçlara ulaşılmıştır (Uncuoğlu Aydoğan & Yılmaz, 2018).

Dünya'da ve Türkiye'de fiziksel egzersiz ve spor

Spor, ilk kez 1440 yılında İngiltere'de kullanılmış ve zaman içerisinde "kendini eğlendirme" olan ilk anlamından uzaklaşarak oyun, bireysel atletik faaliyet, avlanma gibi rekabete dayalı bir yoruma ulaşmıştır (Akıncı, 2021). Terim, son derece yenidir. Zira sporun ilk nerede ve ne zaman yapıldığına ilişkin somut bir bilgi bulunmamaktadır; ancak *"ilk*

insanların avlanma, av olmama, kaçma-kovalama gibi hayatlarını sürdürebilmek için doğayla verdiği mücadelelerde sergilediği hareket ve kullandığı aletlere kadar dayandığı" kabul edilebilir (Tekin & Tekin, 2014). Zaman içerisinde de sporun anlamı, uygulama sıklığı kimi koşullarla değişime uğramıştır. Tezcan (1992) sanayileşme ve kentleşme hareketi, teknolojideki değişim, kitle iletişim araçları, boş zamanın artması, gelir düzeyinin yükselmesi, sporun bir toplumsal hareketlilik aracı olarak kabulü, spor eğitiminin yaygınlaşması, yabancılaşmayı önlemesi, uluslararası bütünleşme, ulusal düzeyde dayanışma, değer algılarındaki değişim gibi unsurlara bu bağlamda dikkat çekmiştir. Günümüz koşulları düşünüldüğünde de sporun kapsam ve etkisinin değişimini sürdürdüğü görülebilmektedir. Belki de bunların içindeki en güncel somut örneği elektronik spor (e-spor) oluşturmaktadır. Bilindiği üzere, spordan beklenen hareketlilik ve dinamikliğin aksine, bilgisayar ve oyun konsollarıyla yürütülen çeşitli oyun etkinlikleri e-spor olarak ifade edilmektedir. Dolayısıyla gerçekten bir spor olup olmadığı tartışmaya açıktır. Ayrıca yakın gelecekte teknolojinin gelişmesi ve yaygınlaşmasıyla birlikte arıtılmış gerçeklik ve/veya sanal gerçeklik ile sporun çok daha iç içe geçmesi de beklenebilir. Bununla paralel şekilde sanal gerçeklik gözlüğünün kuvvet egzersizinde maksimum tekrara etkisi, bench press egzersizi ile incelenmiştir (Akça & Özer, 2020). Benzer araştırmalar Türkiye'de ve yurtdışında yapılmaktadır.

Türklerde spor, Türk tarihi boyunca karşılaşılan bir durumdur. Esasen tarihsel açıdan ifade edilirken spor yerine beden hareketi denilmesi de olası yanlış anlaşılmaları önleyecektir. Şöyle ki hem savaşlar hem de uygarlık inşasında önemli bulunan bedensel faaliyetler, birçok uygarlığın aksine Türker'de, Hunlara dek uzanan bir süreçte kadınların da katılım sağladığı bir aktivite olagelmiştir (Dever & İslam, 2015). Hatta Selçuklular döneminde spor tekkeleri açılarak devlet tarafından bir örgütlenme inşasına girişildiği de aktarılmıştır (Dever & İslam, 2015). Evliya Çelebi de Osmanlı genelinde sporun desteklendiğini, spor meydanları yapıldığını ünlü eserinde ifade etmiştir (Akın Zorba, 2014).

Cumhuriyet döneminde de spora olan ilgi ve destek sürdürülmüştür. Mustafa Kemal Atatürk, "*Türk sporunun yüksek seviyelere çıkacağına yönelik inancını çeşitli şekillerde dile getirmiştir*" ve devlet politikalarının neredeyse tümünde (eğitimden örgütlenmeye dek) spora ve sporcuya yer verilmiş ve bunda toplumsal cinsiyet gözetilerek kadınlar da desteklenmiştir (Canşen, 2015). Sporun tüm ülkeye yayılması ve köylere dek ulaşabilmesi için Atatürk döneminin konuyla ilgili son adımı da 1938 yılında çıkarılan Beden Terbiyesi Kanunu olmuştur (Tuncel, 2003).

Türkiye'de spor yerel düzeyde belediyeler tarafından desteklenmektedir. Diğer yandan tam anlamıyla sporun yönetilmesi işi merkeziyetçi bir yaklaşımlar sağlanmaktadır. Gençlik ve Spor Bakanlığı merkezi örgüt konumunda yer alırken Gençlik ve Spor İl Müdürlükleri illerdeki örgütlenmelerdir. Bakanlık içinde kurulan Spor Hizmetleri Genel Müdürlüğü'nün örgütlenme şeması Tablo 1'de (Genel Müdür ve Yardımcıları eklenmeden) gösterilmiştir.

Tablo 1. Spor Hizmetleri Genel Müdürlüğü Örgütlenmesi (Daire Başkanlıkları) (Spor Hizmetleri Genel Müdürlüğü, 2023a)

Okul Sporları	Spor Eğitimi ve Araştırmaları
Spor Etkinlikleri	Spor Federasyonları
Spor Kulüpleri	Sporcu Sağlığı, Performansı ve Hizmet Kalite Standartları
Sporcu Yetiştirme	Yönetim Hizmetleri

Tarihi 1922 yılına uzanan bu yapılanmanın en güncel şekli, 2018 yılında Spor Genel Müdürlüğü ifadesinin Spor Hizmetleri Genel Müdürlüğü şeklinde değişmesiyle gerçekleşmiştir (Spor Hizmetleri Genel Müdürlüğü, 2023b).

Lise eğitiminde fiziksel egzersiz ve spor.

Millî Eğitim Bakanlığı (MEB) tarafından oluşturulan lise müfredatında, Beden Eğitimi ve Spor Dersi her sınıf için zorunludur. Dersin hedeflediği beceriler ise dayanıklılık, çabukluk, esneklik, hareketlilik, koordinasyon, kuvvet ve ritim olarak sıralanırken ondan fazla özel amaç (bilgi sahibi olunmasından gönüllülüğe kadar) müfredat çerçevesinde belirlenmiştir ve her sınıf için 72 saatten lise eğitimi boyunca 288 saat olarak uygulanmasına karar verilmiştir (T. C. Millî Eğitim Bakanlığı, 2018). Öte yandan spor liselerindeki durum bundan farklıdır.

Tıpkı MEB'in amaç ve hedefleri gibi, çağdaş dünyada da benzerlikler bulunmaktadır. Fiziksel hareketlilikle öğrenci kapasitesinin en üst noktaya ulaşmasına yardımcı olmak, bu dersin temel amacı olarak kabul edilmiştir ve ders aslında zihinsel ve ruhsal gelişimle birlikte sosyalleşme işlevine de sahiptir (Çelik ve Pulur, 2011). Ders ayrıca "*bedensel, duygusal, akademik, entelektüel, sosyal ve ruhsal açıdan kendini çok boyutlu ve bütünsel olarak tanımasını sağlayan*" bir alan olarak tarif edilmiştir ki bu yönüyle diğer derslerden de ayrışmıştır (Bağcı & Yücelkan, 2022). Ayrıca genel olarak öğrencilerin boş zamanlarını doğru şekilde yönlendirmek, öğretimin kalıcı ve eğitimin zevkli olmasını sağlamaktadır

(Cihan & Araç Ilgar, 2018). Bu önerme düşünüldüğünde ilgili dersin diğerlerinden daha etkili olabileceği söylenebilir.

Lise eğitiminde fiziksel egzersiz ve spor ile ilgili yapılmış birçok çalışma bulunmaktadır. Bu çalışmalardan bazıları şöyledir:

Akcan ve Bulgu (2012) lise öğrencilerine dönük uyguladıkları araştırmada, spora nasıl başlanıldığını tespit etmiştir. Edindikleri sonuçlara göre arkadaş aracılığıyla spora başlayanların oranı %30 ile ilk sırada yer almış, onu kendi isteğiyle başlayanlar %26 ile takip etmiş ve bu ikisini ise okuldaki olanaklar, aile, çevredeki olanaklar, öğretmenler, basın ve yayın izlemiştir. Okuldaki olanaklar %13.4 iken öğretmen aracılığı %6.3 olmuş ve toplamda %19.7 ile aslında eğitim-öğretim sürecinin ziyadesiyle etkisiz olduğu ortaya konulmuştur. 1996 yılında birden fazla ilde lisanslı sporcularla yapılan bir araştırmada ise spor branşına teşvik eden unsurlar araştırılmıştır. Önceki araştırma spora başlama iken, bu araştırma daha özel şekilde spor branşını araştırmıştır. Araştırmada ilk sırayı aile alırken, yakın çevredeki branş antrenörü ikinci sırada yer almış ve onu da sırasıyla arkadaşlar, Beden Eğitim ve Spor dersinin öğretmeni, mahalle gibi çevre koşulları, okuldaki spor salonu ve tesisler, televizyon, basın ile yayın izlemiştir (Sunay & Saracaloğlu, 2003). Ne yazık ki diğer araştırmayla paralel şekilde okulun etkisi geride kalmıştır. Diğer yandan 1996 yılında yapılmış olması, aradan geçen otuz yıla yakın süre dikkate alındığında kimi değişimler olabileceğini de düşündürmektedir.

Çelik ve Pulur'un (2011) araştırmasında ise Anadolu liseleri ile meslek liseleri öğrencilerinin Beden Eğitimi ve Spor dersine olan tutumları incelenmiş ve okul türüne göre anlamlı bir farklılık olmadığı tespit edilmiştir. Bu ve benzer araştırmalarda aslında spor liseleri için ayrıca bir araştırma yapılması ve spor liseleri ile diğer lise türlerinin karşılaştırılması da alan yazınının geliştirilmesi için faydalı görülmüştür. Çelik ve Pulur'un çalışmasına benzer bir başka araştırma ise Antalya'da yapılmıştır. Bu çalışmada ise lise birinci sınıf öğrencilerinin tutumları incelenmiş ve devlet liseleriyle özel liselerde okuyan öğrenciler arasında anlamlı bir fark bulunmadığı tespit edilmiştir (Kılıç, Uğurlu & Cenik 2018).

Sonuç

Sonuç olarak fiziksel egzersiz, bireylerin sağlıklı bir yaşam sürdürmeleri açısından önemli bir rol oynamaktadır. Düzenli yapılan fiziksel egzersizin bireylerde psikolojik ve ruhsal sağlığa olumlu katkıları ile bireyin mutlu olmasına katkısı göz önünde bulundurulmalıdır. Liselerde haftada iki ders saati görülen beden eğitimi ve spor dersi ile öğrencilerin hareketliliklerini, esnekliklerini, kuvvet ve dayanaklıklarını geliştirici fiziksel uygulamalar yapılmasına rağmen bu sürenin lise öğrencileri için yeterli olmayabileceği söylenebilir. Öğrencilere fiziksel egzersiz açısından katkı sağlayabilmek için okul dışında da fiziksel egzersiz yapabilecekleri alanlara yönlendirilmeleri önerilmektedir.

Ayrıca liselerde bulunan spor salonu ve alanlarının benzer nitelikte olması, kısıtlı düzeyde spor branşının uygulanması ve tanıtılması anlamına gelmektedir. Dolayısıyla liselerde olabildiğince farklı spor branşlarının tanıtılması, öğrencilerin kendi yetenek ve ilgilerine göre bir spor branşına yönelmesine ve fiziksel egzersiz yapmasına katkı sağlayabilecektir.

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Extended Abstract

Introduction

Developing technology and widespread access to the internet and internet tools have allowed individuals to spend more time in the virtual (digital) world, starting from pre-high school ages. For example, alternatives such as e-sports instead of physical

exercise, chat instead of chatting, video blogging instead of traveling have affected all other layers of society, including high school students. Therefore, physical exercise activities, which can be considered as a means or method of socialization, have been pushed to the background compared to the past.

Regular physical exercise results in a variety of health-related benefits, ranging from psychological to social well-being (Warbunton, 2006). Regular exercise increases the individual's quality of life, improves body functions, reduces resistance to fatigue, increases body flexibility, improves muscle strength and endurance, helps manage body weight, contributes to the protection of general health, and can reduce the effects of aging through functionality (Landolfi, 2013). Physical activity protects against bad moods, increases psychological well-being, protects against anxiety symptoms and the development of anxiety disorders, and reduces depressive symptoms. World Health Organization's exercise recommendations for individuals; At least 150-300 minutes of moderate-intensity aerobic exercise per week, at least 75-150 minutes of vigorous-intensity aerobic exercise per week, or the equivalent of moderate-to-vigorous-intensity exercise every day of the week, moderate or vigorous exercise involving major muscle groups 2 or more days per week when providing health benefits Muscle strengthening activities should be done at higher intensity (WHO, 2004). As a result of this information, the aim of this study is to conduct an examination on physical exercise and its place in high school education. The study was conducted using the qualitative research method. In the study, data was obtained through the document analysis method. To collect data in this study; Books, theses, articles, websites and similar sources were used.

Literature Review

In today's technology-driven society, physical work for survival activities and energy expenditure has decreased; human lifestyle has changed significantly. This change makes modern life increasingly more sedentary (Freese, 2018). A sedentary lifestyle characterized by physical inactivity is associated with numerous health risks. Therefore, scientists suggest that, in addition to household chores and active commuting, regular exercise should be included in people's daily lives to compensate for lost physical activity (Malm, 2019). Physical activity refers to all the energy spent through movement. It is defined as any body movement produced by skeletal muscles that results in energy expenditure above resting level. This definition includes any activity such as household and outdoor chores, work outside the home (occupational activity), walking, cycling, shopping, sports, intentional exercise, and other activities of daily living or other recreational activities. According to the World Health Organization, physical activity is any bodily movement that requires the expenditure of energy produced by skeletal muscles. It refers to all movements undertaken for transportation to and from a place or as part of a person's work, including leisure (WHO, 2022).

Physical activity is not only a physical action but also a spiritual activity. Therefore, physical activity not only affects physical health, but also has a positive effect on mental health (Hu & Hao, 2022). Sedentary older people experience more anxiety, depression and stress than those who exercise. In this context, physical activity is a protective factor against stress, and the stress level does not vary depending on the intensity of the activity (Figueira, 2023).

Physical exercise is extremely beneficial for physical health, as can be seen from the definitions and explanations mentioned. However, it has been determined that regular physical exercise makes a person happier and more successful, and therefore successful in his social relationships (Kaya Sarıdede, 2018). In fact, physical exercise not only contributes positively to psychological and spiritual health, but also provides benefits in social life. It serves as a bridge in social life and even in relations between different societies. So much so that it has been found important in increasing the self-esteem of people from disadvantaged groups (Evli, 2018). Various studies have also been conducted on these. In one of these studies, university students were evaluated and as a result, it was determined that there was a connection between the attitude towards physical exercise and happiness, and it was concluded that the happiness levels of those who did physical exercise increased (Öktem, 2022).

Conclusion

As a result, physical exercise plays an important role in helping individuals live a healthy life. The positive contributions of regular physical exercise to individuals' psychological and spiritual health and their contribution to happiness should be taken into consideration. Although physical education and sports classes are offered two hours a week in high schools and physical practices that improve students' mobility, flexibility, strength and endurance, it can be said that this time may not be sufficient for high school students. In order to contribute to students' physical exercise, it is recommended that they be directed to areas where they can do physical exercise outside of school.

In addition, the similar nature of the gyms and areas in high schools means that sports branches can be implemented and promoted at a limited level. Therefore, introducing as many different sports branches as possible in high schools can help students choose a sports branch according to their abilities and interests and do physical exercise

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Araştırma Makalesi / Research Article

The Effect of Basic Gymnastics Training on Psychomotor Development in Children

Çocuklarda Temel Cimnastik Eğitiminin Psikomotor Gelişime Etkisi

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Abstract: Gymnastics, considered a technically rich discipline and practiced worldwide as a popular sport, is fundamentally characterized by the application of movements that demand a high level of physical and mental skills. The execution of gymnastic movements typically requires a combination of physical and mental prowess. In rhythmic gymnastics routines, body difficulties are often grouped as balances, rotations, and jumps. Basic gymnastics and rhythmic gymnastics training, particularly for children in their developmental stages, have been shown to have positive effects on motor skills and self-confidence. Therefore, gymnastics has gained importance in various social circles and has become integral in school curricula. It can be asserted that specific aerobic exercises within the gymnastics discipline also have positive effects on children. Gymnastics can contribute to the development of balance, coordination, flexibility, strength, and various motor skills in children. This enhancement of physical abilities can assist children in becoming more adept in their daily lives.

Keywords: Gymnastics, Motor Development, Psychomotor, Child

Özet: *Cimnastik, teknik açıdan zengin bir dal olarak kabul edilen ve dünya genelinde kitle sporu olarak uygulanan temel bir spordur. Cimnastik hareketlerinin uygulanması, yüksek düzeyde fiziksel ve zihinsel beceri gerektirmektedir. Ritmik cimnastik serisinde, vücut zorlukları genellikle dengeler, rotasyonlar ve sıçramalar şeklinde gruplandırlır. Özellikle gelişme çağındaki çocuklar için temel cimnastik ve ritmik cimnastik eğitimi, çocukların motor becerileri ve özgüvenlerinde olumlu etkiler yaratmaktadır. Bu nedenle, cimnastik sporu, çeşitli sosyal seviyelerde ve tüm okullarda önem kazanmıştır. Cimnastik branşına özgü aeorobik egzersizlerin de çocuklar üzerinde olumlu etkileri olduğu söylenebilir. Cimnastik, çocuklarda denge, koordinasyon, esneklik, kuvvet ve çeşitli motor becerilerin gelişimine katkıda bulunabilir. Bu, çocukların fiziksel yeteneklerini artırarak günlük yaşantılarında daha becerikli olmalarına yardımcı olabilir.*

Anahta Kelimeler: *Cimnastik, Motor Gelişim, Psikomotor, Çocuk.*

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GİRİŞ

The term "gymnastics" is derived from the Latin word "gymnos" (naked), and it was the Ancient Greeks who systematized physical training practices under the term "gymnastics" (Agopyan, 1993). The term gymnastics originally referred to exercises performed in the nude, but it now encompasses a wide range of movements and activities that do not require nudity.

The International Gymnastics Federation (FIG) was established in 1881, and the Turkish Gymnastics Federation (TCF), founded in 1957, was admitted to FIG in 1960 (Cihaner, 1998; TCF, 2023a). The TCF oversees several gymnastics disciplines, including Artistic Gymnastics, Rhythmic Gymnastics, Aerobic Gymnastics, Trampoline Gymnastics, and General Gymnastics. Additionally, the TCF has incorporated new sub-disciplines such as Pilates, Parkour, Zumba, Step, Step-Aerobics, Gymnastics Ballet, and EMS Systems (TCF, 2023b).

Each type of gymnastics has unique rules and competitive disciplines involving specific movements to achieve certain goals. For example, in Artistic Gymnastics, men and women compete on different apparatuses under separate competition rules. Women compete on four apparatuses (vault, uneven bars, balance beam, and floor), while men compete on six apparatuses (floor, pommel horse, rings, vault, parallel bars, and horizontal bar) (TCF, 2023c, 2023d, 2023e, 2023f).

Gymnastics is the art of systematically exercising the body to correct, strengthen, and enhance physical structure. It encompasses all exercises to increase agility and strength, including training and physical conditioning movements (Yel et al., 2023).

Gymnastics is a program that supports children's physical, social, cognitive, and psychomotor development, providing a foundation for athletic training. It is an educational activity that supports posture, balance, coordination, strength, and speed, tailored to children's developmental gains in the relevant age group. It enhances apparatus-based and apparatus-free athletic skills, ensuring children learn while having fun. Classes are conducted with our students aged 3-12 under the guidance of expert instructors.

Gymnastics is a fundamental sport that includes various movements and can be performed by individuals of all ages. It is a specialized sport requiring various motor skills (Albuquerque et al., 2007). This discipline encompasses a broad range of motor activities and demands that athletes

possess flexibility, strength, balance, coordination, and agility. Gymnasts must be adept at controlling their bodies, executing complex movements, and performing aesthetically. Consequently, gymnasts need high-level training in body awareness, physical conditioning, and technical knowledge.

Gymnastics can be practised individually and as a team, with performances typically presented as shows or competitions.

Children need to begin comprehensive and technically focused foundational training programs at an early age to facilitate the instruction of sports (Mengütay, 1988). The development of children's motor behaviours encompasses a continuum from rudimentary movements to basic skills and athletic abilities. Movement development involves the progression of children from reflexive actions to postural movements and subsequently to skills such as walking, running, and jumping (Coskuntürk et al., 2023a).

In gymnastics, motor attributes hold varying degrees of importance depending on the apparatus. Various movement groups, such as support, hanging, jumping, turning, kipping, leg swings, and static poses, are paramount in gymnastics. All motor attributes, including muscle strength, agility, flexibility, speed, and muscular endurance, must be advanced in gymnastics (Akdoğan, 2018; Akgün, 1989). Sayın (1993), in his research on the teaching of leg swing techniques in gymnastics, indicates that forward-learned leg swing movements have a positive transfer to backward-performed movements. Motor attributes, particularly flexibility, are essential in gymnastics (Akdoğan, 2018; Özer et al., 1995). Gymnastics is a sport that emphasizes aesthetics and incorporates techniques that evoke admiration from spectators. Gymnastic movements generally consist of sequences that involve natural body movements, thus engaging all muscles and generating excitement among viewers (Mengütay, 1988).

Why Gymnastics First

Every sport encompasses fundamental motor skills like balance, flexibility, strength, coordination, speed, agility, and endurance. Gymnastics is considered the foundation of all sports because it is the only discipline that incorporates and develops all motor skills. Gymnastics training begins at a young age because the joints and muscles of the body are more malleable during early childhood. Consequently, children who start with gymnastics possess a level of physical readiness that gives them a distinct advantage and high-performance potential in other sports compared to those who have not practised gymnastics.

Psychomotor Development

Psychomotor Development is defined as the organism's acquisition of voluntary movement capabilities in parallel with physical growth and the Development of the central nervous system.

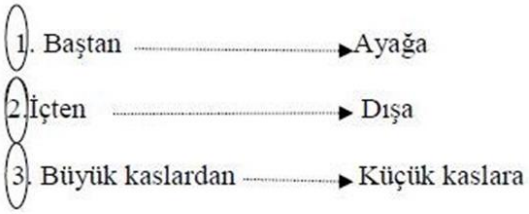

Figure 1: Psychomotor Development

It can be examined in two general areas:

- Gross motor skills (using the body)
- Fine motor skills (using the hands and feet)

Gross Motor Skills: Also referred to as 'large muscle motor skills' or 'use of large muscles.' These skills pertain to controlling movements such as crawling, standing, walking, running, swinging, turning, rolling, jumping, and balancing.

Fine Motor Development: Also known as 'fine motor skills,' these encompass the abilities to use the hands and feet and object manipulation skills. Examples include holding, grasping, writing, tearing, drawing, pasting, and cutting.

Psychomotor Development: Healthy psychomotor development significantly contributes not only to physical development but also to cognitive, emotional, and social growth.

Psychomotor Skills: The development of psychomotor behaviours continues throughout life. Psychomotor skills involve coordinated muscle activities directed by conscious mental efforts during task execution. Motor ability refers to muscle movements or processes involving one or more body organs. Psychomotor learning progresses after a child's birth, accelerating with age and contributing to the development of psychomotor abilities.

Attention

It is 'gathering thoughts and emotions on an event or object.'

Strength

It can also be defined as overcoming resistance or opposing force. The concentration of muscle strength in children depends on age, gender, maturity level, previous stages of physical activity, and physical dimensions. A child who effectively uses their body to resist force or overcome resistance performs activities such as walking, running, jumping, hitting a ball, and throwing with strength. Strength varies depending on the type of motor behaviour. From 4-5, children can push a wheelbarrow, participate in tug-of-war activities, lift objects such as boxes and blocks, and transport them from one place to another.

Balance

It can be defined as the ability to maintain a movement in a specific place.

Reaction Speed

Defined as the stimulus that triggers sensory organs and leads to a response in humans, it refers to the behavioural response shown by the organism against external or internal stimuli. Reaction speed, which can be expressed as 'being ready for action,' requires the body to respond to stimuli received from outside; psychomotor behaviours have their inherent speed of execution. If a behavior is performed at a speed either slower or faster than necessary, the organism may be at risk.

Coordination

It can be defined as the continuity of conscious motor movements to achieve a specific goal, working in harmony and synchronization. Much of psychomotor learning requires the cooperation of multiple organs. Even in the most straightforward behaviour, coordinating the eyes, hands, arms, feet, trunk, or both hands to work orderly is challenging.(Coskuntürk et al., 2023b). If a child cannot establish sufficient coordination between the organs needed to perform a behaviour, they cannot learn that behaviour.

Flexibility

It requires the body to bend forward, sideways, and backwards in desired directions. Especially in early childhood, bones are more cartilaginous, making the body more flexible. As bones develop, body flexibility decreases. Flexibility remains stable between ages 5-8 and peaks around 12-13. Gender plays a role in flexibility; girls tend to be more flexible than boys. Gymnastics training plays a significant role in enabling children to physically use their bodies to their maximum potential and helps them achieve an elastic structure (Pajek et al., 2010).

Stages of Psychomotor Development

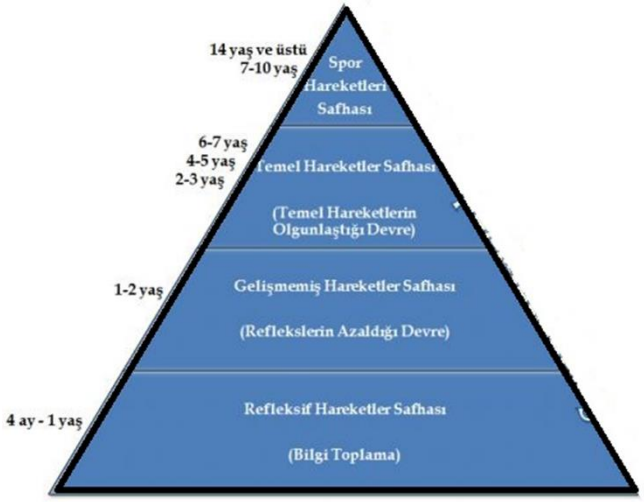

Figure 2: Stages of Psychomotor Development

Gallahue (1982) examined motor development by limiting it to childhood and explained his theory with a pyramid model. According to this model, each motor development period builds upon the previous one. The pyramid's base represents the reflexive movement period, followed by the period of primitive movements and fundamental movements. The top of the pyramid is formed by the period of sports movements.

Individual Differences and Importance in Psychomotor Development

Psychomotor development skills are generally observable, making differences in children more concretely noticeable. For instance, a child's late walking may raise questions among parents about whether there is a problem. However, if there is no physical issue, the child can develop independent walking skills a few months later.

Traits inherited from parents determine each child's growth and development rate, height, bone development, and gender-specific development.

Impact of Basic Gymnastics Training on Psychomotor Development

Children learn to recognize their bodies and gain control over large and small muscle groups. They develop optimal motor skills, including strength, power, flexibility, speed, endurance, and balance. Their walking, running, and jumping abilities reach ideal levels. They learn safe falling techniques to protect themselves. Postural and foot-base disorders are

corrected. Introverted children begin to socialize within groups. Their perception, listening, and decision-making abilities develop rapidly. They learn discipline, organization, and planning. They learn to meet their own needs. Confidence in themselves increases through aesthetic movements performed by their bodies. They become fearless, determined, and motivated. They develop regular eating habits. Their sensory organs develop, and they gain a sense of rhythm. With increased body resilience, they become resistant to illnesses. They take a step towards a healthy lifestyle.

Conclusion

The preschool period is a crucial stage in children's lives, and demonstrating healthy and balanced physical development during this period is very important (Evridiki et al., 2004). Gymnastics is considered a fundamental sport practised worldwide and rich in technical aspects (Morpa et al., 1977). The execution of gymnastic movements requires high levels of physical and mental skills. Body difficulties are typically grouped as balances, rotations, and jumps in rhythmic gymnastics routines. Especially for children in developmental stages, basic gymnastics and rhythmic gymnastics training have positive effects on children's motor skills and self-confidence. Therefore, gymnastics has gained importance at various social levels and schools (Güven, 2005; Mitchell et al., 2002). It can be said that aerobic exercises specific to gymnastics also positively affect children (Gökyürek et al., 2016).

Development of Motor Skills: Gymnastics can contribute to the development of balance, coordination, flexibility, strength, and various motor skills in children. This can help children become more skilful in their daily lives.

Muscle Development: Gymnastics can increase children's muscle strength and endurance, supporting their overall health and enabling them to perform daily activities more effectively. When examining the physical qualities of boys and girls who are interested and not interested in gymnastics, it has been observed that children involved in gymnastics are faster, stronger, and more elastic (Kesilmiş, 2012).

Flexibility: Gymnastics is an activity that requires flexibility. When practised regularly, it can increase children's muscle flexibility, reducing the risk of injuries and enhancing overall body mobility. It is known that children involved in gymnastics have higher body flexibility (Gallahue, 2003).

Concentration and Coordination: Gymnastics can enhance children's concentration skills while learning and executing specific movements. It can also improve their coordination by using various body parts together.

Social Skills: Gymnastics classes can enhance children's social skills such as teamwork, solidarity, making friends, and sharing. Moving as a group can strengthen children's social interaction abilities.

Self-Confidence and Self-Respect: Gymnastics can increase children's body awareness, strengthening their self-confidence. The ability to successfully perform specific skills can enhance children's self-respect.

Emotional Development: Physical activity can positively influence children's emotional state by increasing endorphin release. This can improve their coping skills and enhance their overall mood.

Recommendations

These effects can vary from individual to individual and depend on the design of the training program, the child's characteristics, and other environmental factors. It is essential for gymnastics programs for children to be appropriate for their ages and skill levels. Additionally, it is recommended that a healthcare professional evaluate your child before starting any physical activity program.

Gymnastics is a specialized sport that focuses on enhancing physical abilities and showcasing aesthetic movements, making it a significant discipline for the healthy development of children and adolescents. This sport not only improves various motor skills but also fosters positive effects in emotional, social, and cognitive domains among individuals. Therefore, it is a substantial responsibility of families to encourage and support children, especially from an early age, to engage regularly in gymnastics.

When started early in childhood, gymnastics has been shown to substantially contribute to motor skills such as muscle development, increased flexibility, coordination, and balance. Studies in the literature indicate that gymnastics also plays a pivotal role in enhancing social and emotional skills like self-confidence, discipline, and teamwork among children. Thus, promoting gymnastics from a young age is crucial for nurturing comprehensive development in children.

In this article, we will delve into the impacts of gymnastics on children's motor skills, physical health, and socio-emotional development. We will explore how early engagement in gymnastics can positively influence children's overall growth and well-being.

Conflict of Interest: There is no personal or financial conflict of interest between the authors within the scope of the research..

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The Place and Importance of Volleyball Teaching in Physical Education Classes

Beden Eğitimi Derslerinde Voleybol Öğretiminin Yeri Ve Önemi

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Abstract: Understanding the role and importance of volleyball in physical education classes in depth. A detailed examination of the effects of volleyball on physical, psychological, and social development. Physical education encompasses all activities carried out without competition, aiming to bring physical, mental, and cognitive qualities to the level of productivity required by age and genetic capacity. Sport, on the other hand, is a set of competitive, socializing, and integrative activities aimed at satisfying human instincts such as winning and being capable. A curriculum encompasses all activities provided by an educational institution aimed at realizing the objectives of the National Education institution for children, youth, and adults. Volleyball is a team sport played by two teams of six players on a court divided by a net. The objective is to hit the volleyball with hands and arms over the net to the opponent's court, aiming to make it land on the ground.

Keywords: Volleyball, Physical, Physical Education, Sport.

Özet: *Voleybolun beden eğitimi derslerindeki rolü ve önemini derinlemesine anlamak. Voleybolun fiziksel, psikolojik ve sosyal gelişim üzerindeki etkilerini detaylı olarak incelemek Beden Eğitimi, İnsan bütününü oluşturan fiziki,ruhi ve zihni niteliklerin bulunduğu yaşın ve genetik kapasitenin gerektirdiği verim gücüne ulaştırılabilmesi için rekabet olmaksızın yapılan faaliyetlerin bütünü olmakla beraber Spor,Yenme ve muktedir olma gibi insan içgüdüsünün tatminini amaç edinen,rekabete dayalı,sosyalleştirici ve bütünleştirici faaliyetlerin bütünüdür.Bir eğitim kurumunun çocuklar,gençler ve yetişkinler için sağladığı Milli Eğitim kurumunun amaçlarının gerçekleşmesine dönük bütün faaliyetleri kapsar. Voleybol, File ile ikiye bölünmüş bir oyun alanı üzerinde altı kişilik iki takım ile oynanan, voleybol topuna eller ve kollarla vurarak file üzerinden karşı tarafın oyun alanına gönderme ve yere değmesini sağlama esasına dayalı bir takım sporudur.*

Anahta Kelimeler: *Voleybol, Fiziksel, Beden Eğitimi, Spor*

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INTRODUCTION

The school period is a crucial stage where adolescents shape a significant part of their physical, mental, and social development. During this phase, sports activities, particularly volleyball, offer numerous benefits that contribute to their overall development and adoption of a healthy lifestyle. Engaging in volleyball during school years helps adolescents enhance their social skills, boost self-confidence, and alleviate stress. Therefore, including team sports like volleyball in school curricula and providing such opportunities to adolescents positively contributes to their general development.

Adolescence is often a stressful period marked by exams, assignments, and social pressures, which can heighten stress levels. Playing volleyball helps reduce stress by actively engaging in physical activity, increasing endorphin release and improving mood. Moreover, participating in volleyball enables adolescents to unwind mentally and find relief from stress, thereby promoting mental relaxation.

The term "volleyball" is derived from the English word "volley" and originates from the late 19th century. William G. Morgan developed the sport's modern form in 1895 in Massachusetts, USA. Initially named "Mintonette," the game was later rebranded as "volleyball." In English, the term "volley" means a series of rapid movements or exchanges, reflecting the game's fundamental characteristic of the ball being swiftly passed back and forth between teams. "Ball," on the other hand, refers to the object used in play.

Volleyball is a team sport played between two teams of six players on a court divided by a net. Each team aims to score points by sending the ball over the net into the opposing team's court. The game starts with a serve where the ball is hit over the net by hand or arm, and the opposing team attempts to return the ball in play. Points are scored when the ball lands in the opponent's court or when the opponent commits a fault. The game concludes when one team reaches a predetermined score limit (usually 25 or 21 points) or when the specified match time elapses.

Volleyball is characterized by its fast-paced and dynamic nature. Players swiftly transition between offensive and defensive positions, utilizing jumping and hitting abilities to score points. Both individual skills and team collaboration are essential, as successful play requires players to fulfil their roles effectively while communicating efficiently with teammates.

Volleyball is widely recognized as a popular sport globally, with numerous international competitions and tournaments organized at the highest levels. Significant events include the FIVB World Championships, the Olympic Games, the World Cup, and the European Championships.

Volleyball appeals to all age groups, from youth to adults, and is played competitively in leagues and recreationally at amateur levels. Its physical, psychological, and social benefits have led to widespread adoption in physical education programs at schools and community activities. The sport's inclusivity and versatility make it a valuable activity for promoting fitness and teamwork across various demographics.

The Purpose of the Research

This seminar aims to elucidate the place and significance of teaching volleyball in physical education classes and its general characteristics..

The Importance and Justification of the Study

Physical education classes are a crucial component that encourages students' participation in physical activity, teaches healthy lifestyles, and enhances their social skills. The content and practices of these classes are carefully planned to contribute to students' physical, mental, and social development. As a team sport, volleyball promotes collaboration and team spirit among young people. Skills such as playing together, supporting each other, communicating, and taking responsibility strengthen their social relationships. Additionally, team sports reinforce feelings of friendship and solidarity among young people.

Playing volleyball during school years significantly contributes to the physical development of young individuals. Constant movement, jumping, running, and hitting the ball increase muscle strength, endurance, and coordination. This helps young people adopt a healthy lifestyle and prevent health issues like obesity. Therefore, team sports like volleyball are significant in physical education classes and contribute to students' development. This study focuses on the place and importance of teaching volleyball in physical education classes.

Volleyball can be defined as a social sport that enhances the player's personality, intelligence, ability to work collectively, and desire to compete while also boosting self-confidence. It is versatile in its play locations—whether in fields, outdoors, or indoors—with equipment readily available. The sport engages the body, mind, and intellect in a balanced manner, making it suitable for all ages as it effectively utilizes leisure time. The simplicity and clarity of its rules further contribute to its universal appeal as a sport for everyone, irrespective of gender or age, thus also being considered a family sport.

Volleyball allows individuals of all genders and ages to play together, promoting physical and mental development through its multi-dimensional approach to fitness. Players must adhere to rules and adapt to different situations and tactics individually and as part of a team, which requires strategic thinking (Aslan, 1979).

Volleyball is a game where two teams compete by hitting a ball back and forth over a net that divides the court. Players use their hands or arms to spike the ball into the opponent's court. The primary objective is to score points by landing the ball in the opponent's area.

A volleyball match continues until one team reaches a specified score or until a predetermined time expires. Each team is allowed three touches of the ball: the first touch (pass), the second touch (set), and the third touch (spike or other game strategy).

Volleyball is fast-paced and requires constant transitions between offensive and defensive positions. Coordination and communication within the team are crucial. Players employ various skills such as serving, passing, spiking, blocking, and defence to control the game.

Volleyball can be played indoors (court volleyball) or outdoors (beach volleyball). Both versions adhere to similar rules, although beach volleyball involves fewer players and covers less area. Additionally, volleyball is famous internationally, with many countries hosting professional leagues and tournaments.

Benefits of Volleyball Training

Physical Health: Engaging in regular physical activities from childhood provides significant benefits later in life. The developmental path of young athletes should not be equated with that of adults. Volleyball enhances cardiovascular endurance, muscle strength, and overall body coordination and flexibility. Regular volleyball practice reduces the risk of obesity and enhances overall health levels. Today's criteria for success in sports require physical fitness, which the sport demands. Volleyball offers many benefits, such as physical health, social interaction, mental focus, and enjoyment (Hamilton et al., 1999; Crocker et al., 2000).

Social Development: As a team sport, volleyball fosters collaboration, communication, and team spirit among players. Players learn to work together to achieve a common goal, strengthening their daily social interactions and relationships. Social competence expectation is the belief in

how successful an individual can overcome difficult situations in the present and future.

Psychological Health: Playing volleyball reduces stress, enhances mood, and strengthens mental health. Players improve their concentration, quick decision-making, and problem-solving skills, becoming mentally resilient through the game. Sporting activities provide not only physiological benefits but also psychological relaxation. Sports activities can offer solutions to various psychological problems, including simple mood disorders and anxiety, and are crucial for reducing stress (Moses et al., 1989; Keskin et al., 2018).

Recreation and Leisure: Besides being an enjoyable activity, volleyball is ideal for socializing and having fun with friends. Competitive sports, recreational activities, and exercise training can be subclassified as leisure activities (Özer, 2010). Played at both amateur and competitive levels, volleyball strengthens social bonds and uplifts mood.

Education and Development: Volleyball contributes to the character development of young people. It teaches responsibility, discipline, and the effort required for success (Özlü et al., 2023). Additionally, it enhances leadership skills and boosts self-confidence. Researchers associate the concept of character with individuals' moral aspects, while stakeholders in the sporting environment, such as athletes, coaches, and administrators, associate it with individuals' social aspects (Doty, 2006).

International and Cultural Connection: The popularity of sports is increasing worldwide. They are recognized as a significant tool for character development across all ages, particularly volleyball, and due to their global popularity, they foster connections among different cultures. International tournaments and events unite people from various countries and enhance cultural understanding (Özlü et al., 2023). The International Volleyball Federation (FIVB) estimates that more than 500 million individuals worldwide engage in volleyball, professionally or recreationally (Reeser, 2003).

For all these reasons, volleyball contributes to individuals adopting a healthy lifestyle, improving their social interactions, enhancing psychological resilience, and fostering personal development. In these respects, volleyball positively impacts overall societal well-being and people's quality of life.

IMPORTANCE OF VOLLEYBALL

Physical education classes allow students to explore and learn different sports. Volleyball is one of these sports and is frequently taught as a team sport in physical education classes. Volleyball is a popular game among both men and women, offering numerous benefits through its gameplay.

In physical education classes, volleyball enhances students' teamwork skills and contributes to the development of physical abilities such as coordination, balance, and flexibility. Additionally, playing volleyball improves strategic thinking, decision-making, and communication skills. Therefore, volleyball significantly contributes to students' individual and team development in physical education classes. It is widely accepted that sports participation behaviour contributes to diverse development in many areas, improving individuals' physiological well-being (Gibbons et al., 1995).

IMPORTANCE OF VOLLEYBALL IN PHYSICAL EDUCATION CLASSES:

Physical Development: Volleyball ensures that students remain physically active. Continuous movement, jumping, and striking during the game contribute to muscle strengthening and endurance. This enhances students' overall health and physical fitness. Allison et al. (1999) examined the relationship between physical activity participation, physical education classes, activities with other schools, awareness of and ability to overcome barriers, and social competence expectations among students aged 9-11. They emphasized factors such as gender and age influencing participation in physical activity, highlighting a significant relationship between participation in physical activity and social competence expectations.

Development of Social Skills: Volleyball, being a team sport, requires students to interact with each other and collaborate. This fosters the development of teamwork and cooperation skills. Moreover, playing volleyball helps students motivate each other, enhance leadership skills, and improve communication abilities. In their social lives, individuals constantly interact with their environment by communicating emotions and thoughts (Uzamaz, 2000). The quality of this communication depends on social skills, defined as the ability to behave appropriately in the social context. Successful social interaction also requires various cognitive and behavioural skills (Erwin, 1999).

Strategic Thinking Ability: Volleyball is a game that requires strategy and tactics. Students must analyze their opponents,

make correct moves, and make strategic decisions during the game. This enhances students' strategic thinking and problem-solving skills (Hakkinen, 1993).

Fun and Motivating Activity: With its dynamic structure and competitive nature, volleyball is fun and motivating for students and spectators. Professionals play volleyball to earn money and spend time in competitions. On the other hand, students release stress, expend energy, and have enjoyable moments while playing volleyball. This increases students' interest in physical education classes. Mental renewal is possible when one manages one's free time effectively and efficiently (Misra & McKean, 2000).

Cardiovascular Health: In team sports like volleyball, technical skills, anthropometric characteristics, and physical performance capacity are important factors that contribute to the overall success of the team (Hakkinen, 1993). Volleyball, a famous team sport that has been part of the Olympics since 1964, aims to improve athlete performance. One indicator of high-level performance in volleyball is jumping ability. Jumping ability is crucial as it forms the basis of spikes, blocks, and serves (Lidor & Ziv, 2010; Ikeda et al., 2018).

Continuous Movement: Volleyball requires constant movement due to the game's fast pace. Jumping high in spikes and blocks is crucial for success in Volleyball (Şimşek et al., 2007).

Heart Health: The dynamic nature of volleyball improves human heart health and strengthens the cardiovascular system.

Endurance: Playing volleyball increases endurance and enhances the capacity to sustain activities that require high effort for extended periods. In volleyball, a player's height and vertical jumping ability are important for defence and offence (This sen-Milder and Mayhev, 1991; Aksen Cengizhan et al., 2019; Okada et al., 2011).

Hand-Eye Coordination: Volleyball enhances hand-eye coordination by hitting the ball, passing, and blocking.

Balance and Agility:

In volleyball, sudden stops and quick direction changes improve balance and overall body coordination. Various jumps and sudden sprints are frequently repeated during the game (Hakkinen, 1993).

Muscle Strength: Actions like jumping, hitting, and blocking in volleyball strengthen leg, arm, and core muscles. Agility, another critical parameter in volleyball, refers to the body's ability to respond quickly and change direction in response to stimuli (Sheppard & Young, 2006). Agility is a significant determinant of performance in team sports (Drake et al., 2017). In-game, athletes must have significantly higher jumping skills than average to gain an advantage and succeed in volleyball. Therefore, jumping ability is unquestionably recognized by coaches and athletes as a necessity for success in Volleyball (Sheppard et al., 2007; Aksen Cengizhan et al., 2019).

Muscle Endurance: Extended gameplay in volleyball enhances muscle endurance and the ability of muscles to sustain prolonged effort (Adams, 1990). The concept of the core has gained increasing popularity among athletes as a centre of gravity (McGill, 2010). Core muscles play a role in transferring energy and facilitating movements between the lower and upper extremities. Literature review shows studies examining the relationship between core muscle endurance and agility (Doruk et al., 2019; Kocahan et al., 2022), core muscle endurance and vertical jump (Lee et al., 2024; Sharma et al., 2012), and studies investigating the relationship between core muscle endurance, vertical jump, and agility (Santos et al., 2019; Schilling et al., 2013). However, more studies must examine the relationship between core endurance, agility, and vertical jump performance in female volleyball players.

General Strength: Volleyball enhances students' overall muscle strength and physical endurance, enabling them to succeed in other sports activities. Volleyball is a high-tempo, dynamic physical game that emphasizes strength, agility, flexibility, jumping, and endurance, independent of time constraints (Puhl et al., 1982). Rapid reflexes promote the development of fine motor skills and muscle control. Competing with opponents in many sports involves reacting to opponents or the ball to deceive, capture, or outperform them, situations where athletes with better agility often excel (Paul et al., 2016).

The Importance of Teamwork in Volleyball and Its Benefits for Students

Volleyball is about sending the ball across the net and achieving success through cohesive teamwork with fellow players. Each player has a designated role and responsibility on the court, but true success comes from the team functioning as a unified whole. Volleyball teaches students the importance of working together, strategizing collectively, and understanding their roles within the team dynamics.

Known as a sport based on collaboration, volleyball requires players to synchronize their movements and play together. Several points underscore the significance of teamwork and collaboration in volleyball. Particularly critical is communication on the court, where players must signal

intentions to receive the ball or execute an attack. Effective communication ensures team coordination and minimizes errors. Working with teammates fosters the ability to achieve common goals through coordinated efforts.

In volleyball, each player has a specific role on the court. Players must focus on their designated roles and strive to perform their best for the team's success. A libero, for instance, must excel in defence, while attackers lead the offence, and players collaborate in blocking. Assuming different roles within the team enhances leadership and responsibility-taking skills.

In volleyball, trust and support among teammates are crucial for children who play the sport. While individual players may make mistakes, others must refrain from demoralizing them. The team wins and loses together. Consistent training and thorough preparation are vital for the team's success. Training sessions foster teamwork and mutual understanding among players.

There are numerous advantages to teamwork and collaboration in volleyball. Effective collaboration enhances team performance. With coordination and communication intact, the team plays more effectively and contributes to achieving stronger performances. Good teamwork helps reduce errors as players support each other and compensate for weaknesses. A strong team spirit maintains high morale and boosts motivation among players, considering the productivity that can be achieved through their efforts. Even in challenging situations, facing them together becomes more accessible.

Volleyball requires not only individual skills but also teamwork and collaboration. A team that moves together overcomes difficulties and achieves success. Each player should see themselves as part of the team and appreciate the power of working together.

Volleyball gives individuals a sense of achievement and recognition for their efforts, enhancing their self-confidence. The desire to win and improve increases people's motivation towards sports and their general life goals. The stress-reducing effect of sports helps individuals be more relaxed and focused.

During volleyball games, continuous communication is essential. This helps students develop practical communication skills. It enhances their ability to make quick decisions and communicate them rapidly to teammates. It also improves their ability to support teammates and empathize with their emotional states.

Volleyball contributes to the inclusion of different sports in physical education programs. The diversity of sports allows individuals to explore different interests and develop their talents. Learning various sports expands people's sports culture and understanding.

CONCLUSION AND DISCUSSION

The volleyball discipline increases physical activities and enhances students' teamwork, leadership, communication, and social skills. Teaching volleyball in physical education classes plays an active role in the specialization phase of students in choosing and exploring sports disciplines. Moreover, teaching the fundamental techniques of volleyball is crucial for enhancing its positive effects on human health.

Lifelong Sport: Sports like volleyball help students develop healthy lifestyle habits. Developing a habit of regular physical activity has long-term positive effects on health. Alongside physical exercise, emphasizing proper nutrition and adequate rest is crucial. Physical activity enhances the release of endorphins, reducing students' stress and anxiety levels. Engaging in sports supports students' mental health and improves their overall mood. Team sports strengthen social bonds, contributing to students feeling supported and secure.

Discipline and Responsibility: Volleyball is played within specific rules, fostering student discipline. The responsibilities inherent in the game help students learn both individual and team responsibilities. Regular training sessions and matches encourage students to adopt a disciplined lifestyle.

Social Integration: Volleyball enables students to interact with peers from diverse socio-cultural backgrounds. These interactions enhance students' empathy and understanding of different cultures. Sports contribute to students' social integration processes and support social harmony.

Teaching volleyball in physical education classes significantly improves students' physical, mental, and social development. This sport enhances students' teamwork, physical fitness, communication, and strategic thinking skills. Moreover, teaching volleyball increases students' interest in physical education classes and promotes healthy lifestyle habits. Therefore, volleyball holds a significant place and importance in physical education curricula.

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The Role of Conditioning Training in Preventing Injuries

Kondisyon Antrenmanlarının Sakatlıkları Önlemedeki Rolü

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Abstract: Sports hold an important place in human life with their positive contributions. Sports become an integral part of life in societies that prioritize physical and mental development. Sporting activities require structured training programs. The sustainability of these activities or training can be associated with fitness. Fitness involves planned and continuous loads to increase sports performance, enhance the athlete's capacity for work, and develop motor skills (Uluç, 2023). Sporting activities and training sessions also come with the risk of sports accidents and injuries. The negative consequences of these situations on individuals have been discussed. Looking at the literature, sports injuries in different disciplines have been linked to a lack of fitness, emphasizing the importance of fitness training.

Keywords: Conditioning Training, Sports Injuries, Conditioning

Özet: *Spor insan hayatına olan olumlu katkılarıyla önemli bir yere sahiptir. Fiziksel ve ruhsal gelişimini önemseyen toplumlarda spor hayatın bir parçasıdır. Sporsal faaliyetler, programlı antrenmanlar gerektirir. Yapılan bu faaliyet veya antrenmanların sürdürülebilirliği kondisyonla ilişkilendirilebilir. Kondisyon, sporsal verimliliği artırmak, sporcunun iş yapabilme kapasitesini arttırabilmek ve motorik özellikleri geliştirmek için yapılan planlı ve sürekli yüklenmelerdir (Uluç, 2023). Sporsal faaliyetler ve antrenmanlar spor kazalarını ve spor sakatlanmalarını beraberinde getirir. Oluşan bu durumların bireye olan olumsuz geri dönüşlerinden bahsedilmiştir. Literatüre bakıldığında farklı branşlarda yaşanan spor sakatlıkları kondisyon eksikliğiyle ilişkilendirilmiş, kondisyon antrenmanlarının önemi vurgulanmıştır.*

Anahta Kelimeler: *Kondisyon Antrenmanı, Spor Sakatlıkları, Kondisyon.*

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Introduction

Sport is defined as physical activities conducted according to specific rules, with or without equipment, individually or in teams, that promote socialization, benefit the mind and body, involve competition and cooperation, and are performed during leisure or as a full-time activity (Sunay, 2020). Sports hold an important place in human life due to their positive contributions. While sporting activities keep individuals physically fit and healthy, they also contribute to their socio-cultural development (Gönen et al., 2022). In societies prioritizing physical and mental development, sport is an integral part of life.

Sporting activities require structured training programs. Sevim (2001) defines the concept of training as "an educational process aimed at improving and maximizing physical and moral strength, technical and tactical skills through organic and psychological loads." Any damage occurring during sporting activities is referred to as a sports injury, and there are numerous causes for these injuries in athletes during activities (Kılıç et al., 2014). The increasing number of competitions and training sessions in many disciplines leads to a higher frequency of sports injuries (Uğur et al., 2010). Conditioning is necessary to sustain healthier and longer training sessions. Conditioning involves planned and timed loads to enhance sports efficiency, increase an athlete's work capacity, and develop motor skills (Uluç, 2023). Motor skills include strength, agility, endurance, speed, flexibility, and coordination. These parameters should form the foundation of every discipline. Balancing ability is crucial for success in many sports, especially gymnastics, and must include static and dynamic components (Yel et al., 2023a). Balance exercises should be considered a fundamental aspect of training and competitions.

Engaging in sporting activities and training inevitably leads to sports accidents and injuries. Athletes may suffer injuries during training or competition. Especially in combat sports and disciplines with high physical contact, adverse situations such as injuries and accidents are common. It can be said that sports activities generally have a higher risk of injuries, illnesses, and accidents compared to other fields (Çakır & Erbaş, 2021; Yel et al., 2023b). This subsequently becomes a factor that hinders training or competition.

Bavlı and Kozanoğlu (2008) categorize the causes of sports injuries into personal and environmental factors. Personal factors include age and gender, physical structure and suitability for the sport, psychomotor development, psychosocial reasons, past injuries, inadequate rehabilitation, insufficient sports techniques, and inadequate warm-up. These factors are directly related to the individual's biological and psychological characteristics and can increase the risk of injury. Environmental factors include the type of sport, the physical structure of the sports area, sports equipment, coach and training planning, climatic and environmental conditions, the duration of sporting activities, the role of opponents and teammates, and referee and game rules. These factors are related to the environment and organization of the sport, and if appropriate measures are not taken, they can increase the

risk of injury. Considering personal and environmental factors, adopting a multidisciplinary approach to prevent sports injuries is necessary.

The literature has examined sports injuries in specific disciplines (Çakır & Kısa, 2021; Shephard, 2003). The areas where injuries occur and their causes have been investigated. These situations have been associated with a lack of conditioning. The importance and necessity of conditioning training have been emphasized.

The objective of the Study

This Study presents a contemporary approach regarding "The Role of Conditioning Training in Preventing Injuries."

Significance and Justification of the Study

Sports injuries can decrease athletes' performance, restrict their athletic careers, and even cause permanent damage, potentially leading to early retirement. This situation can have severe consequences for both individual athletes and sports organizations. Therefore, preventing sports injuries is vital for athletes to maintain a healthy and sustainable career. Research is essential to understand the causes of injuries, risk factors, and protective measures. Developing strategies to prevent sports injuries is crucial. The association of injuries with a lack of or weakness in conditioning underscores the importance of incorporating this preventive measure into new programs. The Study by Akhmedov et al. (2016) addresses the negative impacts of sports injuries on athletes' health. Investigating sports injuries is a crucial step towards enhancing athletes' performance, ensuring the safety of sports activities, and maximizing the overall health benefits of sports.

1.2. Severity of Injuries

To fully understand the issue of sports injuries, it is necessary to have a good definition of the type and incidence of sports injuries and efficiently and practically grade the severity of the injuries. Sports injuries can be categorized into three levels of severity:

- **Mild - 1st degree**: Unable to participate in activities for 1-7 days,
- **Moderate - 2nd degree**: Unable to participate in activities for 7-21 days,
- **Severe - 3rd degree**: Unable to participate in activities for more than 21 days, resulting in permanent injury.

1.2.1. Factors Considered Important After Injury:

- The nature of the sports injury,
- The form and duration of treatment,
- The period of absence from the sport,
- Lost workdays,
- Permanent damage,
- Cost.

1.3. Internal and External Factors Affecting Sports Injuries

When adequate precautions are not taken, the high level of physical performance required by sports can lead to various sports injuries due to internal and external factors (Kanbir, 2005).

1.3.1. Internal Factors

1.3.1.1. **Level of Physical Fitness**: The strength, flexibility, endurance, and overall physical condition of athletes directly affect the risk of injury. Insufficient conditioning can lead to muscle and joint injuries (Radwan et al., 2014).

1.3.1.2. Biomechanical Factors: Body structure and biomechanical properties can influence injury risk. For example, biomechanical issues such as flat feet or leg length discrepancies can increase the likelihood of injuries.

1.3.1.3. Previous Injuries: Past injuries can increase the risk of new injuries in athletes. Returning to sports without fully recovering from a previous injury can lead to recurrent injuries.

1.3.1.4. Age and Gender: Age and gender are significant factors that affect injury risk. For instance, growth plates in young athletes are more susceptible to injury, while hormonal differences in female athletes may make them more prone to certain types of injuries.

1.3.1.5.Psychological State: For an individual to live a healthy life, physiological and psychological elements must coexist (Gönen & Ceyhan, 2022). Psychological factors such as stress, anxiety, and motivation can also affect injury risk. High-stress levels can lead to a lack of concentration and injuries associated with carelessness.

1.3.2. External Factors

1.3.2.1. **Training and Playing Conditions**: The intensity, duration, and frequency of training sessions significantly affect the risk of injury. Overtraining or insufficient rest can lead to overuse injuries (Leppanen et al., 2014). Proper training and education reduce these risks (Wilson, 2015).

1.3.2.2. Equipment and Clothing: Inappropriate or poor-quality sports equipment and clothing can increase the risk of

injury. Factors such as the correct choice of shoes and the use of appropriate protective gear are essential.

1.3.2.3. Playing Surface and Environmental Conditions: The condition of the playing surface (e.g., slippery or rugged surfaces) and environmental conditions (e.g., weather) can affect the risk of injury. Wet or uneven surfaces can increase the risk of slipping and falling. The hardness of the field and grass is believed to contribute to a higher risk of injury (Orchard, 2002).

1.3.2.4. Coaches and Medical Staff: The knowledge and experience of coaches and medical staff play a crucial role in reducing the injury risk of athletes. Incorrect technique instruction or inadequate first aid intervention can increase the risk of injury. According to scientific data, external factors are significant but modifiable risk factors that can cause sports injuries (Dobbinson et al., 2016; Donaldson et al., 2013).

1.3.2.5. Rules and Regulations: Sport-specific rules and regulations aim to ensure the safety of athletes. In contact sports, enforcing and monitoring rules related to protective gear, helmets, gloves, etc., play a critical role in reducing the risk of injury.

Each of these factors can affect the risk of injury for athletes. Therefore, it is essential to consider these factors to protect the health of athletes

SPORTS INJURIES IN DIFFERENT DISCIPLINES

The body parts affected by sports injuries vary depending on the characteristics of the sports discipline (Atay et al., 2017).

The structural characteristics of adolescent basketball players and the types of injuries they encounter based on their positions are shown in Table 1 (Bavlı & Kozanoğlu, 2008).

In the study conducted by Yünceviz et al. (1997), it was found that the most commonly injured body regions in wrestlers were the knee (26%) and the shoulder (20%). The least injured regions were the head and neck, with a rate of 4%.

As with any sport, wrestling injuries can be influenced by environmental and individual factors. If an athlete lacks sufficient strength, they may be unable to resist their opponent effectively, resulting in injury. Similarly, a lack of coordination may lead to an inability to perform movements at the required speed, increasing the risk of injury. Injuries during competitions may be related to the athlete's lack of conditioning. It is recommended that strength training and other relevant programs be implemented for the injured regions.

A study evaluating volleyball injuries and their causes found that the most significant injuries in volleyball were ankle sprains and shoulder and knee problems. The injury distribution was 50% ankle, 20% thumb and fingers, and 5% knee. Sprains accounted for 55% of all injuries, while fractures made up 3%. The most common injuries in volleyball occurred during blocking, stepping on an opponent's foot, and ball handling (Küçük, 2012).

In a study by Alp and colleagues on the injury regions of archers, it was found that the most common injuries were in the shoulder (27.5%, n=60), neck (18.3%, n=40), and back (16.1%, n=35) (Alp & Özdinç, 2020).

In other studies, it has been found that the most common injury sites in handball are the ankle and knee (Pirly et al., 2011). The incidence of injuries occurring during competitions in handball is higher (Olsen et al., 2006, pp. 426-432).

More than half (55-60%) of injuries in adolescents are sports-related injuries. The most significant portion of these injuries is overuse-related musculoskeletal injuries. When looking at the injury rates in adolescents, the most commonly affected body regions are, in order: ankle and knee, hand, wrist, elbow, front and back of the calf, head, neck and clavicle, shoulder, foot, back, hip, and hamstring muscles (Nazan et al., 2006; Emin, 2004).

Scientific research demonstrates the effectiveness of various preventive programs in reducing sports injuries. Comprehensive programs that enhance athletes' muscle strength, flexibility, and balance are recommended to decrease overall sports injuries. These programs aim to prevent trauma and strains during sports activities. To preventTo prevent ankle sprains, orthotics and balance and coordination exercises that stimulate proprioception has been noted to increase ankle stability and reduce injury risk. Research on anterior cruciate ligament (ACL) and knee injuries indicates the effectiveness of neuromuscular training and plyometric exercises, which improve muscle agility and strength to ensure knee stability. Eccentric training, which focuses on lengthening the muscle and enhancing its contraction, is preferred to prevent hamstring injuries. These exercises improve control over muscle lengthening and contraction, playing a protective role in sports prone to hamstring injuries. In conclusion, the methods highlighted in these scientific studies constitute a significant resource for reducing sports injuries and contribute to athletes maintaining their performance over the long term (Koz & Ersöz, 2004).

Injury concerns adversely affect athletes' morale, motivation, and financial stability. Athletes may experience sports

injuries due to unfortunate events, negatively impacting their careers. Despite precautions, injuries requiring prolonged treatment and mandatory breaks from sports are common (Öztemur, 2017). Many athletes have been forced to retire from professional sports due to injuries (Thatcher et al., 2011), underscoring the need to prevent sports injuries (Akhmedov et al., 2016). Strengthening muscle and explosive power can reduce injury risks, particularly in preventing lower extremity injuries (Meylan & Malatesta, 2009). In contact sports, injuries are more frequent In competitive sports, injuries are observed more frequently than in recreational activities. Participation in sports without coach supervision carries higher risks.

Sports significantly positively affect physical health, cognitive function, and quality of life. However, improper training habits, nutritional deficiencies, and psychological factors pose severe risks for young athletes concerning sports injuries (Karabörklü et al., 2018). Statistics show a higher incidence of injuries in the lower extremities, particularly in the knee, ankle, and hip regions, commonly involving muscle strains, tears, tendon or ligament ruptures, and fractures (Kocaman et al., 2018). These injuries can lead to negative consequences such as prolonged absence from sports and social life.

Internal factors like muscle strength, endurance, flexibility, core stability, balance, and proprioception are crucial in assessing injury risks. Conditioning exercises that enhance muscle strength contribute to overall body resilience, supporting joints and bones and reducing injury risks. Coaches should design balanced training programs that target all muscle groups equally, minimizing muscle imbalances and injury risks (Laursen & Jenkins, 2002). Balance and coordination exercises enable athletes to perform sports-specific techniques more controlled and accurately, thus lowering the risks of falls and collisions. Conditioning training enhances aerobic and anaerobic endurance across different sports, reducing the likelihood of technical errors and injuries.

Pre-exercise and post-exercise dynamic warm-ups and cool-downs prepare muscles and reduce injury risks. Flexibility is crucial in reducing the risk of injuries among athletes (Young et al., 2002). Conditioning exercises improve muscle and joint flexibility, preventing injuries from sudden movements or overstretching. Adequate muscle strength, flexibility, and endurance specific to the type of sport are fundamental factors in preventing injuries and ensuring successful athletic performance (Karabörklü et al., 2018).

Controlled strengthening and stretching exercises during rehabilitation contribute to recovery and prevent future injuries. Coaches must ensure athletes have sufficient rest and recovery periods, as excessive training and inadequate rest significantly increase injury risks (Halson, 2014).

In conclusion, studies confirm the effectiveness of conditioning training in preventing injuries. Addressing external factors contributing to injuries and improving preventive measures are recommended. Additionally, the importance and impact of sports massage in preventing athlete injuries and facilitating their return to sports cannot be overlooked (Aydoğan, 2014). Conditioning training enhances athletes' physical and mental resilience, minimizing injury risks.

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The Effect of Pilates Training on Body Composition

Pilates Eğitiminin Vücut Kompozisyonuna Etkisi

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Abstract: In today's context, Pilates stands out as a prevalent exercise approach among women. Developed by Joseph Hubertus Pilates (1880-1967), this method draws inspiration from both Eastern and Western philosophies, blending yoga's mental focus and specialized breathing techniques with the physical elements of gymnastics and other sports. Pilates offers various benefits as an exercise method. It can enhance flexibility, strength, and endurance while benefiting from one of its principles, emphasizing the importance of full and deep breathing. Maintaining a healthy body includes losing body fat, maintaining an ideal balance, and having elastic muscle strength and a flexible spine, all of which the Pilates method effectively addresses as a means to achieve these goals. Hence, the significance of consistently engaging in Pilates exercises becomes apparent. This study aims to provide general information about Pilates and examine the impact Pilates exercises have on body composition when performed regularly, based on studies that elucidate this aspect.

Keywords: Pilates, Body Composition, Sports, Exercise

Özet: *Günümüzde, Pilates, kadınlar arasında oldukça popüler bir egzersiz yaklaşımı olarak öne çıkmaktadır. Joseph Humbertus Pilates (1880-1967) tarafından geliştirilen bu metod, Doğu ve Batı felsefelerinden esinlenerek yoga'nın zihinsel odaklanma ve özel nefes alma teknikleri ile jimnastik ve diğer sporların fiziksel öğelerini birleştirmiştir. Pilates, bir egzersiz yöntemi olarak çeşitli faydalar sunmaktadır. Esneklik, güç ve dayanıklılığı artırabilir ve tam ve derin nefes almanın önemini vurgulayan prensiplerinden birinden yararlanılabilir. Sağlıklı bir vücuda sahip olmanın prensipleri arasında, vücut yağını kaybetmek, ideal dengeyi korumak, elastik kas kuvvetine ve esnek bir omurgaya sahip olmak yer alır ve Pilates yöntemi bu hedefe ulaşmada etkili bir yol sunar. Bu nedenle, sürekli olarak yapılan Pilates egzersizlerinin önemi ortaya çıkmaktadır. Bu kapsamda yapılanın bu çalışmanın amacı Pilates hakkında genel bilgi vermek ve pilates egzersizlerinin düzenli olarak yapıldığı durumlarda vücut kompozisyonu üzerindeki ne düzeyde etki oluşturmakta olduğunu belirten çalışmalar çerçevesinde incelemektir.*

Anahta Kelimeler: *Pilates, Vücüt Kompozisyonu, Spor, Egzersiz.*

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Introduction

The development of computers and technology began with the creation of personal computers, followed by the advancement of the Internet and mobile devices (Çakır et al., 2022). Today, there is an increase in technological developments that allow individuals to perform many activities more efficiently and with less energy expenditure, aiming to enhance their quality of life. However, it is observed that the free time provided by these new technologies is often not utilized to improve individuals' quality of life. The lack of physical activity during the day, brought about by a sedentary lifestyle, negatively affects individuals' bodies. Numerous impacts of a sedentary lifestyle on individuals can be mentioned. Mainly, individuals who live a sedentary (inactive) lifestyle are at risk of developing hypokinetic diseases such as hypertension, high cholesterol, coronary heart diseases, obesity, cancer, and musculoskeletal disorders. Individuals who spend long hours working intensively at desks in enclosed spaces face various health issues caused by a sedentary lifestyle (Bravata & Smith-Spangler, 2000; Coşkuntürk et al., 2022). Therefore, regular physical activity reduces the risk of these diseases, prevents premature deaths, and supports maintaining quality of life. It can be said that people participate in daily physical activities for various purposes, such as skill mastery, joy, acceptance, achievement, self-esteem, and enjoyment (Lakmali et al., 2021). Physical activity and exercise improve body composition, reduce the risk of diabetes and coronary artery disease, alleviate joint pain and depression, enhance individuals' quality of life, contribute to the extension of life expectancy, and prevent obesity (Bek, 2008; Biçer et al., 2005; Şavkın, 2014).

Pilates has become a very popular exercise approach among women today. Developed by Joseph Hubertus Pilates (1880-1967), Pilates combines the mental focus and specific breathing techniques of yoga with the physicality of gymnastics and other sports, inspired by Eastern and Western philosophies (Muscolino & Cipriani, 2004; Kloubec & Banks, 2013; Şavkın, 2014). Pilates exercises aim to create a solid skeletal structure in the upper body by equally strengthening the abdominal and back regions. In Pilates, the body's centre consists of deep muscles closest to the spine.

In traditional exercises, weak muscles tend to become weaker, and strong muscles tend to become stronger. This leads to an imbalanced muscle structure in the body, causing chronic back pain and injuries. In Pilates, the muscle structure is integrated as a whole (Segal et al., 2004; Ersoy, 2008).

Pilates exercises are classified into three main forms. First, there is Classical/Traditional Pilates, which includes J. Pilates' original 40 high-load exercises performed on a mat with tools such as mini balls and Swiss balls. Second, there is modified/adapted Pilates, which uses reformer machines and other Pilates equipment, combining both high and low-load exercises; this form is fitness-based and may include various

apparatus. Third, there is clinical Pilates, used by physiotherapists for therapeutic purposes (Isacowitz, 2006; Purdy, 2009; Şimsek & Katırcı, 2011). Pilates exercises are particularly implemented to improve body posture and achieve a healthy body through movements that require concentration (Selby, 2002). It is one of the rare types of exercise that can enhance coordination, balance, flexibility, and muscular endurance (Cozen, 2000). Furthermore, there are few studies in the literature that examine the effects of Pilates exercises on anthropometric characteristics such as body weight, body mass index, and body composition (Segal et al., 2004; Touche et al., 2008).

The Pilates exercise method, developed by Joseph Hubertus Pilates, originated in Germany approximately one hundred years ago during World War I. It is a mind and body-centering technique based on achieving lumbopelvic stability (Muscolino & Cipriani, 2004). In 1923, Joseph Pilates brought this exercise method to America and expanded it, drawing influence from gymnastics, yoga, and dance (Segal et al., 2004). Initially, he named his method the "art of control", or muscle control (Kloubec, 2010). He was inspired by and combined elements from philosophy, gymnastics, martial arts, yoga, dance, Zen meditation, and Greek and Roman exercises (Kloubec, 2010; Cruz-Ferreira et al., 2011). The main goal of Pilates exercises is to strengthen the abdominal and back regions equally, creating a solid skeletal structure for the body. This exercise system, which does not strain the body, is particularly beneficial for individuals with joint problems as it increases flexibility. It also significantly prevents the decline in muscle strength and mass associated with ageing (Tekin Demir, 2013).

Pilates is not merely an exercise approach involving randomly selected movements. It is suitable for people of all ages, from 7 to 70. Physical and mental training increases physical strength, flexibility, and coordination while reducing stress, enhancing well-being, and improving mental focus (Isacowitz & Clippinger, 2011). Pilates exercises have positive effects on physical, psychological (mood, attention, motivation), and motor functions (balance, static and dynamic posture, general coordination) (Lange et al., 2000). It is claimed that Pilates improves muscular strength and flexibility, reduces fat percentage in muscles, enhances core muscle strength, mobility, the functionality of movement, body awareness, and sports performance, helps prevent injuries, and positively affects balance, coordination, and blood circulation (Segal et al., 2004).

Pilates uses gentle resistance to develop muscle strength. This is crucial for adults aged 30-80 who have lost 50% of their strength due to inactivity. However, there is always time to benefit from strength training (Segal et al., 2004).

Pilates Mat Work

Pilates mat work is a type of Pilates performed on a gymnastics mat or mat without any equipment. This practice is the foundation of Pilates and is excellent for a complete body workout. With mat exercises, the abdominal and back regions can be worked and strengthened equally, helping to build a solid skeletal structure (Isacowitz, 2006).

BASIC PRINCIPLES OF PILATES EXERCISE

The basic principles of Pilates exercise are crucial for obtaining both physical and mental benefits.

Breathing

Breathing is one of the critical elements of Pilates training. It facilitates the stabilization and movement of the spine and extremities. Pilates movements enhance the effect of breathing changes, increase lung capacity, and facilitate changes in chest posture, which are significant factors in general cervical and lumbar pathologies (Anderson, 2001).

Moira Stott, who adapted the traditional Pilates movements to the present day, modified the original model of the exercise. When exhaling, the spine undergoes slight flexion; when inhaling, the spine undergoes slight extension, and deep abdominal muscles are engaged during exhalation. It is easier to engage these muscles when exhaling (Boles, 2000).

Core Control

Many studies have shown that the transversus abdominis, multifidus, diaphragm, and abdominal oblique muscles are the key muscles for movement in healthy individuals with a history of lower back pain. Motor control studies and theories related to trunk integrity and stabilization indicate that the contraction threshold of stabilizing muscles ensures safe movement during daily activities (Anderson, 2001).

Effective Integration of Head, Neck, and Shoulder Regions

Increasing awareness of the head, face, neck, and shoulder regions related to the trunk significantly enhances the movement's effectiveness and reduces unwanted energy expenditure. Proper placement of the upper extremities prevents harmful pressures that cause injuries originating from the shoulder joint and surrounding structures (Yakut et al., 2006).

Spinal Alignment

Currently, the hypothesis that well-functioning areas of the body can reduce the stress on regions exposed to both micro

and macro traumas may be supported by the lack of comprehensive research on the balanced distribution of movement between vertebrae. This indicates a need for more research to better understand the complexity of body mechanics and the functioning of the spine (Katayıfçı et al., 2014; Bernardo, 2007).

Correct Position and Posture

Walking while looking down consumes more energy than walking while looking forward. Pilates emphasizes not only maintaining a correct static position but also the importance of performing movements with proper positioning and posture (Aka et al., 2020; Baltacı & Aytar, 2017; Kılıç et al., 2018).

Movement Integrity

In Pilates exercise, correct movement integrity allows the musculoskeletal system to move flexibly while simultaneously balancing the effects on the digestive, circulatory, respiratory, and reproductive systems, as well as mental and emotional health. This holistic approach considers the human body as a complementary whole, contributing to the integrated functioning of physical and mental health. Therefore, in Pilates, correct movement integrity is a concept that encompasses the entire being of a person, including not just the physical body but also the mental and emotional aspects (Rogers & Gibson, 2009; Sekendiz et al., 2007; Boles, 2000).

Body Composition

Body composition can be generally defined as the proportional combination of body fat, muscle cells, skeleton, other organic substances in the body, and extracellular fluids (Zorba & Ziyagil, 1998). While each person has a unique composition, the factors affecting an individual's body composition include gender, age, frequency or lack of physical activity, diseases, muscle structure, and nutrition (Zorba, 2004).

Body Composition

Body composition comprises a proportional combination of fat, bone, muscle cells, other organic substances, and extracellular fluids (Sönmez, 2006). In 1992, Wang et al. divided the organism into five levels: atomic, molecular, cellular, tissue system, and whole body (Figure 1). According to this approach, one can gain insights into body composition by attempting to measure body components at each classification level.

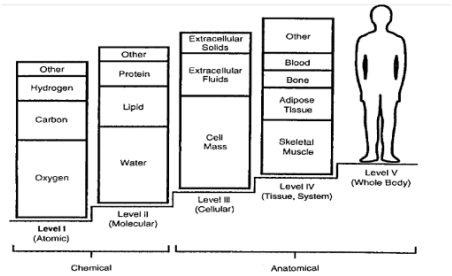

Figure 1: Five-Level Model of Body Composition (Eston et al., 2009)

Atomic Level

The atomic level approach is based on the fact that 98% of the total body mass comprises oxygen, carbon, hydrogen, nitrogen, calcium, and phosphorus. In comparison, less than 2% comprises the remaining 44 elements. Methods used to determine composition at this level include total body potassium counting (K40), neutron activation analysis, and dilution techniques. Due to the exposure to ionizing radiation during measurement in neutron activation analysis, this method is not widely used (Eston et al., 2009).

Molecular Level

The approach to human body composition at the molecular level is based on dividing over 100,000 chemical compounds found in the human body into five fundamental groups: lipids, water, proteins, carbohydrates, and minerals (Eston et al., 2009). Body fat is typically categorized into essential fat and storage fat. Essential fat, constituting approximately 12% of body weight in women and 3% in men, represents the minimum amount of body fat necessary for sustaining physical functions. Storage fat consists of subcutaneous fat under the skin and visceral fat around organs (Dunford & Doyle, 2012). The American Council on Exercise defines *obesity* as body fat percentage, with levels above 32% for women and 25% for men considered obese, while average body fat percentages should ideally range from 25-31% in women and 18-24% in men.

Approximately 60% of total body weight in an average adult is comprised of body water. Total body water is theoretically divided into two compartments: intracellular (within the cells) and extracellular (outside the cells). Thirty-three per cent of total body water is found in the extracellular area outside the cell membrane (8% plasma and 25% interstitial fluid). In contrast, 67% is enclosed within the intracellular area surrounded by the cell membrane (Gropper & Smith, 2013). Despite significant variations in fat and carbohydrate ratios across different populations worldwide, proteins generally provide between 8% and 16% of dietary energy. In healthy adults, proteins constitute approximately 15.1% of body mass (Wang et al., 2003). In more affluent societies, dietary energy typically consists of about 12% to 15% from

proteins, 30% to 40% from fats, and 50% to 60% from carbohydrates (WEB1, 2024).

While the molecular level categorizes human body composition into five fundamental groups, practical methods used to evaluate body composition often combine these groups. A two-component body model examines body weight as the total fat tissue and fat-free body mass. In contrast, in a three-component model, body weight includes fat tissue, fat-free body mass, and bone mineral content (Sitil et al., 2002).

Methods Used for Determining Body Composition at the Molecular Level include body density, skinfold thickness measurement, DEXA (Dual-energy X-ray absorptiometry), BIA (Bioelectrical impedance analysis), and nitrogen neutron activation analysis (total body protein), isotopic dilution (total body water) method (Eston et al., 2009).

Cellular Level

The approach that the human body consists of cells, extracellular fluid, and extracellular dissolved substances (solid) is based on (Kir et al., 2000). Cells consist of different groups, such as adipocytes, myocytes, and osteocytes. There is no direct method to measure total cell mass. Extracellular fluid consists of intravascular plasma and extracellular fluid (interstitial fluid). This is mainly made up of water and functions as a medium where gases, nutrients, and waste products are exchanged. This can be measured by the isotope dilution method. Dissolved extracellular substances, such as collagen and elastin fibres, contain organic and inorganic matter found mainly in the bone. Although there is no direct measurement method, many components can be measured with neutron activation analysis (Eston et al., 2009)

Whole Body Approach

The whole-body approach considers the body a single unit characterized by its overall size, shape, surface area, and density, which are most readily measurable (Eston et al., 2009). This approach divides the body into segments: limbs, trunk, and head. Anthropometric measurements such as circumferential measures, skinfold thickness, and length measurements determine the trunk and limbs. Waist circumference measurement is a significant anthropometric measure closely associated with morbidity and mortality related to obesity (Shen et al., 2005). The American National Health and Nutrition Examination Survey (NHANES) highlighted the use of waist circumference data in assessing cardiovascular disease risks, emphasizing that abdominal fat accumulation is linked to hypertension, type 2 diabetes, cardiovascular diseases, gallstones, arthritis, and certain types of cancer. According to World Health Organization (WHO) data from 2008, a waist-to-hip ratio exceeding 0.83 in women and 0.96 in men indicates increased overall disease risk and obesity (World Health Organization, WHO, 2024).

Body Mass Index (BMI), calculated by dividing body weight in kilograms by height in meters squared, is a simple, inexpensive, and non-invasive method commonly used to classify underweight, overweight, and obesity in adults (O'Donnell, 2008). The WHO classification of adults based on BMI is provided in Table 1.

Table 1. Assessment of body weight according to BMI (kg/m2)

BMI Range	Category
Below 18.5	Underweight
18.5 – 24.9	Normal weight
25.0 – 29.9	Overweight
30.0 and above	Obesity

Factors influencing body composition include age, gender, muscle, physical activity, diseases, and nutrition (Karlı, 2006). In other words, the relationship of body composition components varies with age, gender, ethnic origin, and body shape (Norgan, 2005). Regular physical activity is crucial in maintaining health and preventing chronic diseases. Numerous adaptive responses occur with regular physical exercise, resulting in more efficient oxygen delivery to muscles and substituting carbohydrates with lipids. Reduction in adipose tissue mass increases the mechanical efficiency of movements (Görner et al., 2009).

Physical activity leads to positive changes in body weight and composition. It plays a crucial role in preserving lean body mass, which consists of fat-free body mass and essential fats, by reducing body fat (Peterson & Tucker, 2008). Conversely, physical inactivity significantly increases body fat (Kemmler, 2010). Exercising education is an economically feasible, non-pharmacological approach that promotes beneficial effects on body composition and reduces the risk of cardiometabolic diseases (Irving et al., 2008).

Used Tools And Equipment

Reformer: The Reformer, invented by Joseph Pilates, is a sliding carriage with bars and ropes that works against spring resistance. Joseph Pilates aimed to achieve safe and effective body workouts without exerting pressure on the joints. One of the advantages of the Reformer is its ability to perform a wide range of exercises with a full range of motion. It is used not only by rehabilitation of injuries but also by seasonal athletes (Grootenhuis et al., 2004). Real Pilates reformers

have four springs, each capable of adding 25 pounds of resistance (Siler, 2006).

Ring: The Ring is the most commonly used equipment to increase exercise intensity and involve upper and lower body resistance in floor work. For example, in the half roll-up exercise, placing the Ring between the knees greatly engages the adductors and makes it difficult to keep the pelvis stable (Stott Pilates, 2004a).

Band: The Band is widely used equipment designed to improve the stability and strength of target muscle groups, increase muscle strain in various modifications, and facilitate body movement in some exercises. It also facilitates the transfer of the body in some movements (Stott Pilates, 2004c).

Mat Pilates: Mat Pilates is an exercise form that utilizes the basic principles of Pilates, typically performed on a Pilates mat. It aims to strengthen the body, increase flexibility, improve balance, and enhance posture. Mat Pilates generally utilizes body weight and can be supported using small equipment (e.g., resistance bands or balls). These exercises strengthen muscle groups while targeting deep stabilization muscles. Mat Pilates can be suitable for every fitness level and offers various applications, from studio classes to home practice (Stott Pilates, 2004a).

Conclusion and Discussion

Pilates exercises can reduce chronic pain and discomfort and enhance strength and flexibility, making it not just a fitness exercise performed in specialized centres but a lifestyle. Starting with a solid foundation, Pilates involves posture assessments, addressing problematic areas of the body, and progressively increasing the difficulty level through various exercise series.

In a study by Blum (2002), Pilates exercises were administered to a 39-year-old female participant with scoliosis who had previously limited physical activity. The study demonstrated that while some symptoms persisted, they did not hinder physical activity. Additionally, research conducted by Jago et al. (2006) involving 30 girls aged 11 who performed Pilates exercises for 1 hour, five days a week for four weeks, showed significant reductions in their body mass index.

Pilates routines focus on core conditioning and muscle stretching and strengthening. Core conditioning, known for improving trunk stability and balance, holds particular importance for the elderly, considering that one in three individuals over 65 are prone to falls (Stott Pilates, 2004c; Merrithew et al., 2004). Another study by Segal et al. (2004) involving 45 women and two men performing Pilates mat exercises for 2, 4, and 6 months found increased flexibility but no significant change in body composition.

Research led by Michele Olson, PhD, supported by the American College of Sports Medicine (ACSM) Health & Fitness Summit, highlighted the health benefits of Pilates techniques and aimed to increase knowledge about them. According to a study from Tufts University published in the New England Journal of Medicine in 1994, elderly individuals following such an exercise program increased their strength by 113% in just ten weeks (Stott Pilates, 2004c; Merrithew et al., 2004).

Pilates is beneficial for improving flexibility, muscular fitness, and endurance, particularly for intermediate and advanced practitioners. However, it may have limited potential for increasing cardiovascular fitness and reducing body weight (Dickey & Henkel, 2005). In another phase of Olson and colleagues' study, abdominal muscle activity during Pilates mat exercises was measured. Participants performed 5 Pilates abdominal exercises followed by simple crunch movements for comparison. The results indicated that most Pilates exercises engaged the rectus abdominis muscle similarly in the central abdomen. However, the teaser and roll-up exercises significantly challenged this abdominal muscle more than the crunch. The external oblique muscles on both sides of the abdomen were notably more engaged in all Pilates exercises than the simple crunch, with the cris-cross exercise proving most effective for the external obliques. Additionally, the teaser exercise involved significant activation of hip flexors, making it a preferred exercise for advanced individuals or athletes (Dickey & Henkel, 2005).

In another study by Herrington and Davies (2005), 12 asymptomatic female participants performed Pilates exercises, while another 12 did abdominal curls, with 12 serving as a control group. Those engaged in Pilates exercises showed better results in the Transversus Abdominus (TrA) isolation and lumbopelvic stability tests.

Ersoy (2008) investigated the effects of walking and Pilates on middle-aged women's body composition. Eight subjects in the Pilates group performed exercises twice a week for one hour, significantly reducing weight, body mass index, body fat percentage, waist circumference, and hip circumference after eight weeks.

Baylan (2008) explored the effects of Pilates exercises on basal metabolism and body composition in different age groups (40-50 years, 18-25 years). Significant decreases were observed in circumferential measurements, waist-hip ratio,

and skinfold subcutaneous fat values among the 40-50 age group, while changes were not significant in the 18-25 age group.

Studies evaluating the effects of Pilates exercises on body composition in larger populations are warranted. Furthermore, the late-stage effectiveness of Pilates exercises can be explored. Additionally, investigations into the impact of Pilates on body composition or metabolism in individuals with musculoskeletal problems or metabolic diseases other than healthy subjects could provide further insights. Populations with varying levels of body fat accumulation, such as the elderly, athletes, and obese individuals, could also be studied. Nonetheless, physiotherapists can implement Pilates training as a preventive and health-enhancing approach, considering its positive effects on body composition.

Recommendations

Further research is needed to examine the effects of Pilates exercises on body composition in larger population groups. Additionally, the late-stage effectiveness of Pilates exercises should be explored. Moreover, similar studies can investigate the impact of Pilates on body composition or metabolism in individuals with musculoskeletal problems or metabolic diseases other than healthy subjects. Additionally, populations with different levels of body fat accumulation, such as the elderly, athletes, and obese individuals, should be studied. Despite these considerations, physiotherapists can implement Pilates training as a preventive and health-enhancing approach, considering its positive effects on body composition.

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