

fizjoterapia polska

POLISH JOURNAL OF PHYSIOTHERAPY

OFICJALNE PISMO POLSKIEGO TOWARZYSTWA FIZJOTERAPII

THE OFFICIAL JOURNAL OF THE POLISH SOCIETY OF PHYSIOTHERAPY

NR 1/2022 (22) DWUMIESIĘCZNIK ISSN 1642-0136

**The impact of high body weight on
children's aerobic capacity in the primary
school age**

**Wpływ nadmiernej masy ciała na
wydolność fizyczną
dzieci
w młodszym
wieku
szkolnym**

Physical activity and patients with frailty syndrome
Aktywność fizyczna u pacjentów z zespołem kruchości

ZAMÓW PRENUMERATĘ!

SUBSCRIBE!

www.fizjoterapiapolska.pl

www.djstudio.shop.pl

prenumerata@fizjoterapiapolska.pl



ULTRASONOGRAFIA W FIZJOTERAPII



Autoryzowani dystrybutorzy

Mar-Med

+48 22 853 14 11

info@mar-med.pl

Ado-Med

+48 32 770 68 29

adomed@adomed.pl



MAR-MED

OD 1995 ROKU



ADO-MED®

APARATURA MEDYCZNA



W programie Konferencji między innymi:

- sesje naukowe,
- warsztaty praktyczne,
- sala wystawiennicza,
- uroczysty bankiet.

PATRONAT NAUKOWY:



Wiceprezes Polskiej Akademii Nauk
prof. Stanisław J. Czuczwar

SREBRNY SPONSOR:



WYSTAWCY:



PATRONAT MEDIALNY:



www.konferencja-ptf.pl

Problem zaczyna się u podstawy, czyli od stóp.

Leczenie

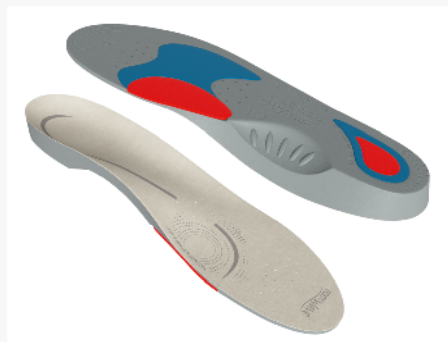
fizjoterapeutyczne bez uwzględnienia **zdrowia stóp** i **prawidłowej postawy** niesie ze sobą poważne ryzyko niepożądanych konsekwencji biomechanicznych.

Zaufaj FootMedical!

Jesteśmy producentem, dystrybutorem oraz ośrodkiem szkoleniowym specjalizującym się w biomechanice kończyny dolnej i jej zaopatrzeniu, szczególnie w dynamiczne wkładki ortopedyczne.



CERTYFIKOWANE WYROBY MEDYCZNE
O POTWIERDZONEJ NAUKOWO SKUTECZNOŚCI



FootWave™

Dynamiczne wkładki ortopedyczne dedykowane najczęstszym schorzeniom stóp (haluksy, płaskostopie, ostroga piętowa, itp.). Dostępne również dla dzieci!

www.footwave.pl



Vasyli Medical

Wkładki ortopedyczne indywidualnie dopasowywane do stopy pacjenta poprzez termoformowanie i precyzyjne kliny oraz peloty korekcyjne.

www.vasylimedical.pl



Digitsole Pro

Bezprzewodowe wkładki diagnostyczne badające chód i bieg pacjenta w całym cyklu (również fazy przenoszenia i lotu!), w naturalnych warunkach poruszania się, oparte o sztuczną inteligencję w chmurze.

www.digitsole.pl

NOWOŚĆ W OFERCIE

ASTAR.

PhysioGo.Lite SONO

**NIEWIELKIE URZĄDZENIE
EFEKTYWNA TERAPIA ULTRADŹWIEKOWA**

Zaawansowana technologia firmy Astar to gwarancja niezawodności i precyzji parametrów. Urządzenie, dzięki gotowym programom terapeutycznym, pomaga osiągać fizjoterapeucie możliwie najlepsze efekty działania fal ultradźwiękowych.

Głowica SnG to bezobrotowe akcesorium o dużej powierzchni czota (17,3 cm² lub 34,5 cm² w zależności od wybranego trybu działania). Znajduje zastosowanie w klasycznej terapii ultradźwiękami, fonoforezie, terapii LIPUS i zabiegach skojarzonych (w połączeniu z elektroterapią).



wsparcie merytoryczne
www.fizjotechnologia.com



ul. Świt 33
43-382 Bielsko-Biała

t +48 33 829 24 40
astarmed@astar.eu

**POLSKI
PRODUKT**  **WYBIERASZ
I WSPIERASZ**

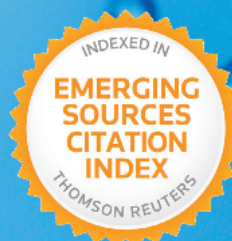
www.astar.pl

www.actabalneologica.pl

Acta Balneologica
jest naukowym czasopismem
Polskiego Towarzystwa Balneologii
i Medycyny Fizycznej.
Ukazuje się od 1905 roku.

Na łamach kwartalnika
publikowane są recenzowane
prace z zakresu
balneologii, bioklimatologii,
balneochemii, hydrogeologii
i medycyny fizycznej
– fizjoterapii, krioterapii,
kinezyterapii, presoterapii,
a także rehabilitacji.

Ze względu na poruszaną tematykę
jest wyjątkowym czasopismem
nie tylko w skali kraju,
ale i Europy.



Prenumerata roczna kosztuje 150 zł.
Dla członków PTBiMF obowiązuje cena obniżona - 60 zł.
Koszty wysyłki na terenie kraju wliczone w cenę prenumeraty.
Ceny zawierają 5% VAT.

Zamówienia prenumeraty i pytania prosimy kierować na adres:

prenumerata@wydawnictwo-aluna.pl

Wydawnictwo ALUNA

Z.M.Przesmyckiego 29

05-510 Konstancin-Jeziorna

tel. 22 245 10 55 w godz. 9-15



FUNKCYJNA BIELIZNA LECZNICZA

PRZECIWŻYLAKOWA

Przeciwwżylakowe wyroby pończosznice włoskich producentów, bardzo skuteczne i niezwykle eleganckie. Dostępne **w I, II oraz III klasie kompresji** w wielu modelach, w różnym stopniu przezroczystości (m. in. wyjątkowo przezroczyste w II kl. ucisku), w szerokiej gamie kolorystycznej, w różnych wersjach długości, z palcami zamkniętymi lub otwartymi

● podkolanówki ● pończochy ● legginsy ● rajstopy ● rękawy kompresyjne

ANTYCELLULITOWA, NA LIMFODEMIĘ I LIPODEMIĘ

Bielizna i odzież wykonana jest z mikrofibry. Unikalny splot nawet przy najmniejszym ruchu wywołuje **efekt masażu**. Dziańska stymuluje cyrkulację podskórną i drenaż limfatyczny. Prowadzi to do poprawy jakości skóry

- z włókna emana®
- z kofeiną i wit. E
- z nanosrebrem

NA NIETRZYMANIE MOCZU

Wyroby medyczne **wielokrotnego użytku** z dyskretną stałą wszywką o właściwościach chłonnych. Polecane jako codzienna bielizna gwarantująca ochronę przed przemakaniem - 100% absorpcji cieczy, zapewniająca całkowitą suchość warstw: zewnętrznej i wewnętrznej

- do wielokrotnego prania (min. 100 prań)

ART & COLL
M E D I C A L E

artcoll.pl

e-sklep@artcoll.pl

tel. 22 720 35 96

+48 510 160 100



Polski producent MASAŻERÓW do stóp i ciała



infolinia: 500 238 037

www.tylmed.pl



Najlepsze laski do chodzenia

Zamów on-line na: www.swiatlasek.pl
Wszelkie informacje pod numerem: 730 101 101

Dr. Comifort®

Nowy wymiar wygody.

Obuwie profilaktyczno-zdrowotne
o atrakcyjnym wzornictwie



APROBATA
AMERYKAŃSKIEGO
MEDYCZNEGO
STOWARZYSZENIA
PODIATRYCZNEGO



WYRÓB
MEDYCZNY

**Stabilny, wzmocniony
i wyściełany zapętek**
Zapewnia silniejsze
wsparcie łuku
podłużnego stopy

**Miękki, wyściełany
kołnierz cholewki**
Minimalizuje podrażnienia

Wyściełany język
Zmniejsza tarcie
i ulepsza dopasowanie

Lekka konstrukcja
Zmniejsza codzienne
zmęczenie

**Antypoślizgowa,
wytrzymała podeszwa
o lekkiej konstrukcji**
Zwiększa przyczepność,
amortyzuje i odciąża stopy

**Wysoka jakość materiałów
- oddychające siatki i naturalne skóry**
Dostosowują się do stopy,
utrzymują je w suchości
i zapobiegają przegrzewaniu

**Zwiększona
szerokość i głębokość
w obrębie palców
i przodostopia**
Minimalizuje ucisk
i zapobiega urazom

Trzy
rozmiary
szerokości

Podwyższona
tęgłość

Zwiększona
przestrzeń
na palce

**Ochronna przestrzeń
na palce - brak szwów
w rejonie przodostopia**
Minimalizuje możliwość zranień

WSKAZANIA

- haluksy • wkładki specjalistyczne • palce młotkowate, szponiaste • cukrzyca (stopa cukrzycowa) • reumatoidalne zapalenie stawów
- bóle pięty i podeszwy stopy (zapalenie rozciągniętej podeszwy - ostroga piętowa) • płaskostopie (stopa poprzecznie płaska)
- bóle pleców • wysokie podbicie • praca stojąca • nerwiak Mortona • obrzęk limfatyczny • opatrunki • ortezy i bandaż • obrzęki
- modzele • protezy • odciski • urazy wpływające na ścięgna, mięśnie i kości (np. ścięgno Achillesa) • wrastające paznokcie



ul. Wilczak 3
61-623 Poznań
tel. 61 828 06 86
fax. 61 828 06 87
kom. 601 640 223, 601 647 877
e-mail: kalmed@kalmed.com.pl
www.kalmed.com.pl

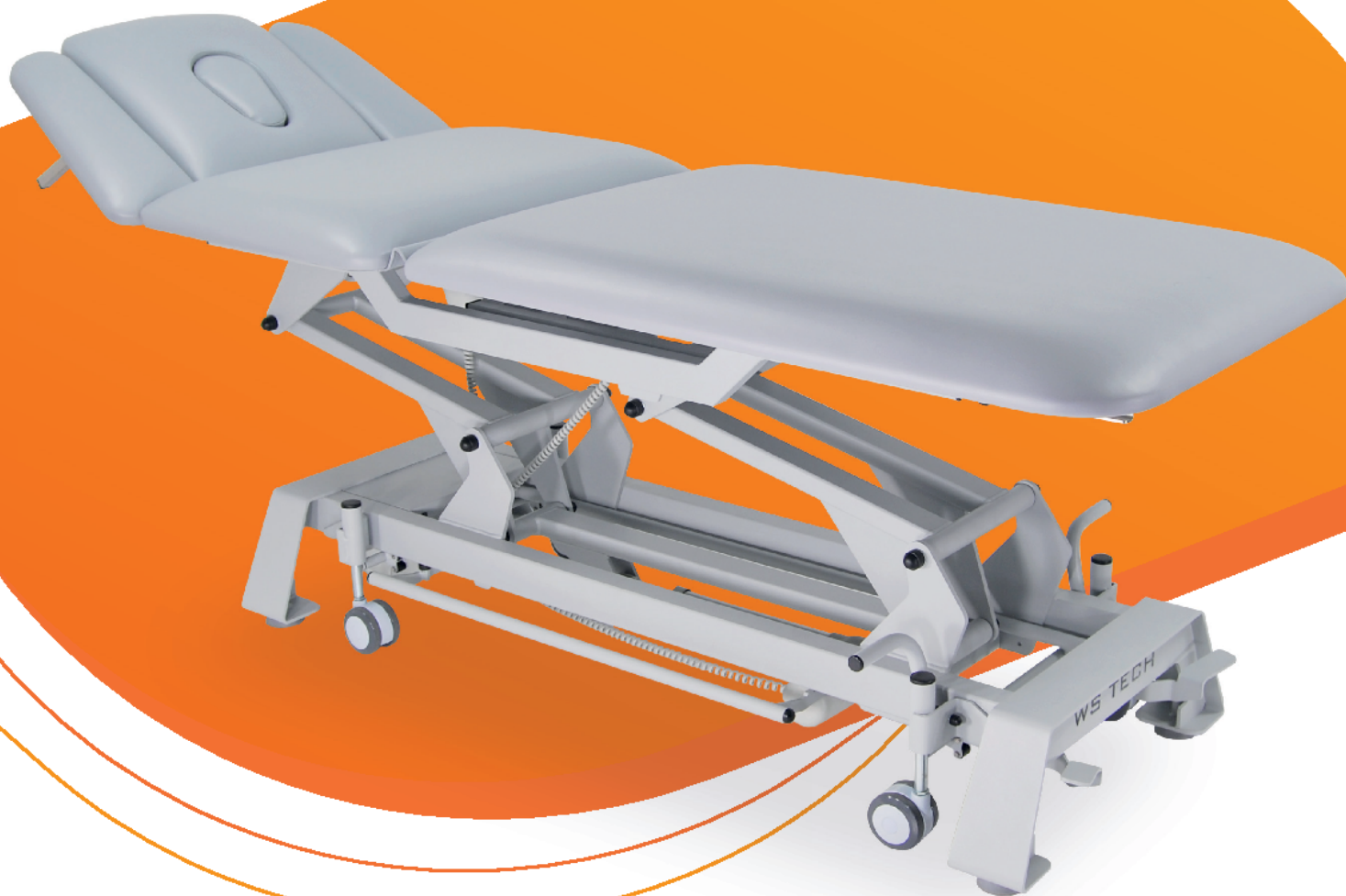


www.butyladzrowia.pl

www.dr-comifort.pl



Producent **sprzętu do rehabilitacji i masażu**
oraz **wyposażenia gabinetów medycznych**



WS TECH S.C.

ul. Okulickiego 43
38-500 Sanok

www.wstech.eu

biuro@wstech.eu

ZADZWOŃ



13 464 44 49

ZAMÓW ON-LINE



sklep.wstech.eu

REHA TRADE SHOW 3

14.04.2022 | PGE NARODOWY, WARSZAWA
TARGI I KONFERENCJA BRANŻY REHABILITACYJNEJ

- STREFA WYSTAWIENNICZA
- PONAD 60 FIRM Z BRANŻY REHABILITACYJNEJ
- 15 SEKTORÓW WYSTAWCÓW
- KONFERENCJA EDUKACYJNA
- WARSZTATY SPECJALISTYCZNE
- BUSINESS MATCHING

1 DZIEŃ BIZNESOWYCH SPOTKAŃ | PRESTIŻOWA LOKALIZACJA | 3 EDYCJA WYDARZENIA

WIĘCEJ INFORMACJI
WWW.REHATRADE.PL

ZŁOTY SPONSOR:

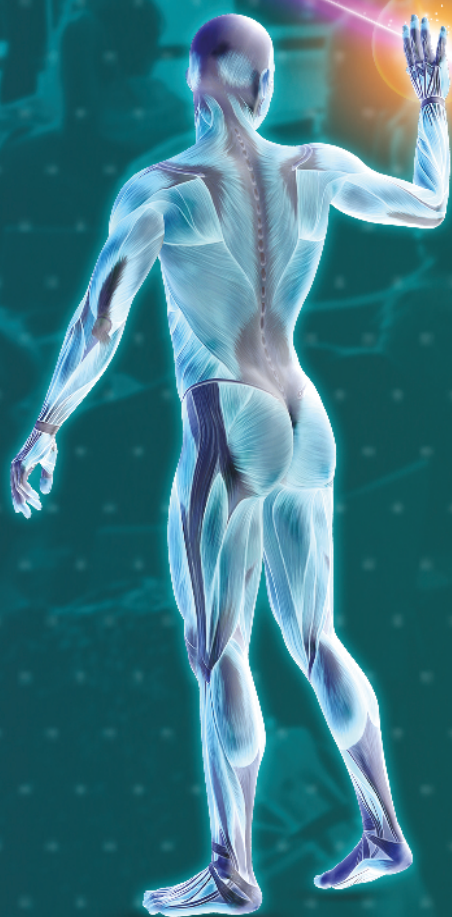
NORAX
medical

PARTNER STRATEGICZNY:

 Technomex

PARTNER MEDIALNY:

REHA  Biznes.pl



SPRZEDAŻ I WYPOŻYCZALNIA ZMOTORYZOWANYCH SZYN CPM ARTROMOT®

Nowoczesna rehabilitacja **CPM** stawu kolanowego, biodrowego, łokciowego, barkowego, skokowego, nadgarstka oraz stawów palców dłoni i kciuka.



ARTROMOT-H



ARTROMOT-F



ARTROSTIM
FOCUS PLUS

ARTROMOT-K1 ARTROMOT-SP3 ARTROMOT-S3 ARTROMOT-E2

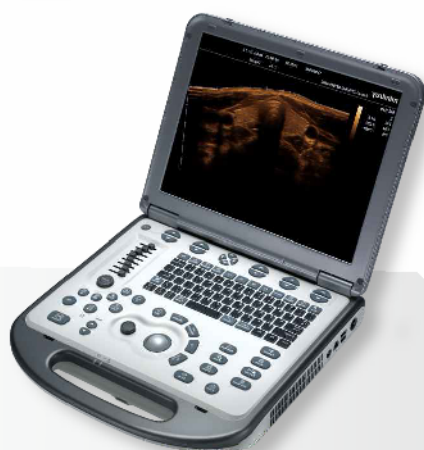
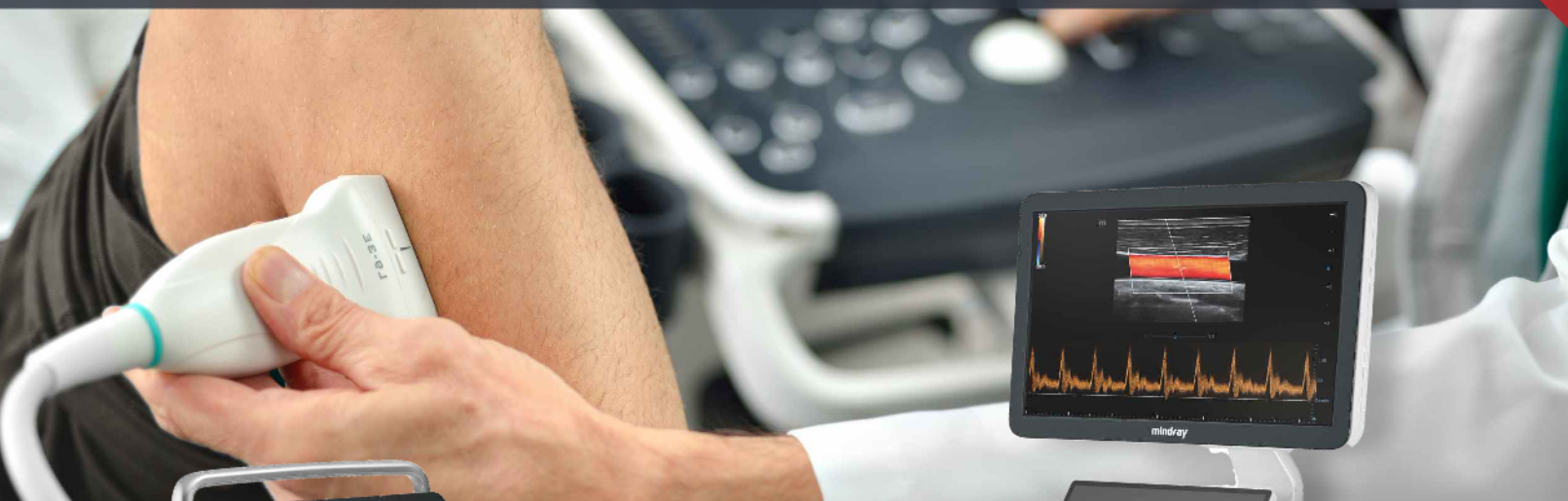
Najnowsze konstrukcje ARTROMOT zapewniają ruch bierny stawów w zgodzie z koncepcją **PNF** (Proprioceptive Neuromuscular Facilitation).

KALMED Iwona Renz
ul. Wilczak 3
61-623 Poznań
www.kalmed.com.pl

tel. 61 828 06 86
faks 61 828 06 87
kom. 601 64 02 23, 601 647 877
kalmed@kalmed.com.pl

Serwis i całodobowa
pomoc techniczna:
tel. 501 483 637
service@kalmed.com.pl

ULTRASONOGRAFIA W FIZJOTERAPII



Autoryzowani dystrybutorzy

Mar-Med

+48 22 853 14 11

info@mar-med.pl

Ado-Med

+48 32 770 68 29

adomed@adomed.pl


MAR-MED
OD 1995 ROKU

 **ADO-MED**
APARATURA MEDYCZNA

EIE

OTWOCK



PRODUCENT
NOWOCZESNEJ
FIZYKOTERAPII

Jesteśmy z Wami od 1986r.

Elektroterapia • Laseroterapia Magnetoterapia • Ultradźwięki Suche kąpiele CO₂

SKANER
LASEROWY
*nowej
generacji*



Sprawdź naszą ofertę na
www.eie.com.pl

Elektronika i Elektromedycyna Sp.J.
05-402 OTWOCK, ul. Zaciszna 2
tel./faks (22) 779 42 84, tel. (22) 710 08 39
malew@eie.com.pl, www.eie.com.pl



System
zarządzania
ISO 13485:2016

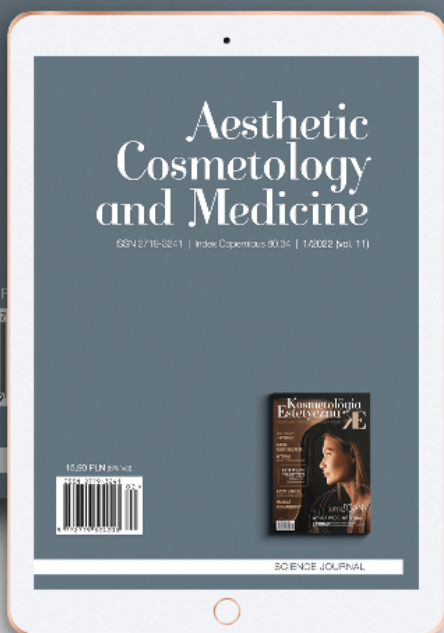
www.tuv.com
ID: 0000025935



Choose
your version
aestheticcosmetology.com

Aesthetic Cosmetology and Medicine

ISSN 2719-3241 | Index Copernicus 80.34 | 1/2022 (vol. 11)



AC&M
Aesthetic Cosmetology
and Medicine

Wybierz
wersję dla siebie
kosmetologiaestetyczna.com

Kosmetologia Estetyczna

Kosmetologia • Estetyka • Dermatologia • Zdrowie

KROK PIERWSZY
– WYWIAD

AKCJA
REWITALIZACJA

WYGRAJ
WALKĘ ZE...

EST
TRE
DO

KOSZT
BĘDZIE JES

MAKIAŻ
PERMAN

21,50 zł (w tym)
ISSN 2024-0101
9 772024 192001



KE
Kosmetologia
Estetyczna

Reha INNOVATIONS

13-14.05.2022,
Kraków



Fizjoterapia



Nowoczesna
diagnostyka



Odnowa
biologiczna

Zeskanuj kod



i kup bilet na targi!

Sprawdź także:

Reha A K A D E M I A
INNOVATIONS

Bezpłatne webinaria, podcasty,
wykłady otwarte oraz certyfikowane
warsztaty z ekspertami.

www.rehainnovations.pl




Targi
w Krakowie



Rok założenia firmy 1996
www.butterfly-mag.com
tel. 85 743 22 21
kom. 603 299 035



BIOMAGNETOTERAPIA W WYROBACH MEDYCZNYCH „ORT BUTTERFLY”

- BEZ BÓLU, STRESU I BEZ TABLETEK!
- LECZYSZ SIĘ NATURALNIE
- ŚPIĄC, PRACUJĄC, WYPOCZYWAJĄC...
- USUWASZ BÓL I JEGO PRZYCZYNĘ!
- TERAPIA STARA JAK ŚWIAT!
- SPRAWDZA SIĘ I DAJE RADĘ W NIERÓWNEJ WALCE Z PANDEMIĄ – COVID 19!

REGULARNA BIOSTYMULACJA MAGNETYCZNA!

Ogromny potencjał Natury w zwalczaniu smogu energetycznego i autooksydacji, będącej główną przyczyną wszystkich chorób cywilizacyjnych!

Najstarsza Terapia Świata wspomagająca każdą formę leczenia!

Uważa się do dziś, że bez niej nie da się wyleczyć żadnej choroby do końca!

Naturalna Terapia Magnetyczna Twoje Zdrowie, Twoja Uroda, Odporność i Sprawność do późnej starości! **Wypróbuj** – gdy zawiodły już inne terapie!



Biomagnetoterapia inicjuje ożywienie komórkowe, oczyszcza i „odmładza” krew, podnosząc vitalność całego organizmu, który uruchamia intuicyjne procesy obronne, znosząc dyskomfort powodowany bólem, urazem lub stresem, bez konieczności ostrej dawki leków chemicznych...



DLACZEGO CHORUJEMY?

Natężenie sztucznych pól elektromagnetycznych zwiększyło się 100 tys. razy! Naturalne pole magnetyczne Ziemi zmniejszyło swą moc o połowę!



BIOMAGNETYZM - jako antidotum; jedyne i absolutne; na cancerogenną ekspansję „smogu energetycznego”!

ZŁOTE LOGO
Międzynarodowych Targów
Rehabilitacja
Łódź IX/2007



Jestem osobistym królikiem doświadczalnym! I żyję – realizując 25 lat wciąż nowe i śmielsze pomysły w wykorzystaniu tej **boskiej energii** naturalnych magnesów! Dzięki nim pokonuję dziś niezliczone przeszkody i przeciwności losu z nieznaną mi przedtem energią i determinacją! To moja pasja! I przeznaczenie!

Najnowsza opinia klienta:

Komentarz ten jest moim osobistym świadectwem zadowolenia z produktów biomagnetycznych „Ort Butterfly”, których używam od 20. lat! Zastanawiam się, zwłaszcza nad fenomenem poduszki (określenie nie jest przypadkowe) zwyczajnie; nie wyobrażam sobie snu i wypoczynku bez magnetycznej „Ort Butterfly” – pod głowę! Jej ergonomiczny, przyjazny dla głowy i szyi kształt sprawia, że wysypiam się „po królewsku”. Zabieram ją również ze sobą w bliższe i dalsze podróże! Czyż gdyby była to zwyczajna poduszka, fundowałbym sobie dodatkowy bagaż? Wychwalam więc ją od zarania, polecam i rekomenduję, bo jest tego warta! Bez niej nie wyobrażam sobie prawdziwie relaksacyjnego snu i błogiego, kojącego wypoczynku! Dziękuję, że ją Pani stworzyła!

J. Szw. Działdowo (maj 2020)

PS Poduszki „Ort Butterfly” to prawdziwe arcydziełka robione z wyczuciem i sercem... jak rzeźby Michała Anioła... Polecam wszystkim!

jednoosobowe lub dwuosobowe
kriokomory do terapii ogólnoustrojowej

icelab
VIP | VIP⁺



URZĄDZENIA DO REHABILITACJI, KRIOTERAPII, KINEZYTERAPII, FIZYKOTERAPII, HYDROTERAPII

W trosce o Seniora...

Naturalne Środki Czystości



PIELĘGNACJA / PROFESJONALIZM / ŚWIADOMOŚĆ
WSPARCIE / SZACUNEK



www.over-clean.pl

Effect of foot reflexology on perimenopausal mild hypertension

Wpływ refleksologii stóp na łagodne nadciśnienie okołomenopauzalne

**Hala M Hanfy^{1(A,D,E,F)}, Mohamed A. Awad^{1(A,B,C,D,E,F)}, Hossam El Dien H Kamel^{2(A,D,E,F)},
Nermeen K Eid^{3(A,B,C,D,E,F)}**

¹Department of Women Health, Faculty of Physical Therapy, Cairo University, Cairo, Egypt

²Faculty of Medicine, Al Azhar University, Cairo, Egypt

³Physical Therapy Department, Sinnors General Hospital, El-Fayoum, Egypt

Abstract

Purpose. to investigate the effect of foot reflexology on perimenopausal mild hypertension. **Methods.** Fifty perimenopausal women suffering from mild hypertension were selected randomly from the outpatient clinic of the gynecology department in Sayed Galal University Hospital in Cairo, Al Azhar University, shared in this study. Their ages were ranged from 48 to 50 years old. Their body mass index (BMI) did not exceed 30kg/m. The physician diagnosed them as mild hypertensive patients (stage 1). Patients with bronchial asthma, history of hypertension before the 4th decade, diabetes mellitus and mental health problems such as depression and anxiety are excluded from the study. The design of the study was an experimental study (two groups pre-test post-test design). The patients were divided randomly into two equal groups (A&B): Group A (Control group); consisted of twenty-five patients. They performed aerobic exercises only three times per week for 8 weeks. Group B (Study group); consisted of twenty-five patients. They performed aerobic exercises and received foot reflexology three times per week for 8 weeks. Body mass index was assessed using a standard weight and height scale. Blood pressure was assessed using a mercury sphygmomanometer, blood analysis for TC, TG, LDL and HDL for both groups A and B before and after treatment.

Results. showed that, within groups, there was a significant decrease in systolic blood pressure, diastolic blood pressure, cholesterol, triglyceride, LDL and a significant increase in HDL in both groups A and B post-treatment in comparison with pre-treatment values. Between groups, pre-treatment there was no significant difference in systolic blood pressure, diastolic blood pressure, cholesterol, triglyceride, LDL and HDL. While, post-treatment there was a significant difference between groups A and B in systolic blood pressure, diastolic blood pressure, cholesterol, triglyceride, LDL (more decrease in group B) and HDL (more increase in group B). **Conclusion.** Foot reflexology is an effective method in treating perimenopausal mild hypertension through decreasing SBP, DBP, cholesterol, TG, LDL and increasing HDL.

Key words:

foot reflexology, perimenopausal, hypertension

Streszczenie

Cel. Zbadanie wpływu refleksologii stóp na łagodne nadciśnienie okołomenopauzalne.

Metody. Pięćdziesiąt kobiet w okresie okołomenopauzalnym, u których zdiagnozowano łagodne nadciśnienie zostało losowo wybranych z przychodni oddziału ginekologicznego Szpitala Uniwersyteckiego Sayed Galal w Kairze na Uniwersytecie Al Azhar. Ich wiek wahał się od 48 do 50 lat. Ich wskaźnik masy ciała (BMI) nie przekraczał 30kg/m². Zdiagnozowano je jako pacjentki z łagodnym nadciśnieniem (stadium I). Z badania wykluczono pacjentki z astmą oskrzelową, nadciśnieniem tętniczym w wywiadzie przed 4. dekadą życia, cukrzycą oraz problemami psychicznymi, takimi jak depresja i stany lękowe. Badanie było badaniem eksperymentalnym (pomiar prowadzone przed i po badaniu). Pacjenci zostali losowo podzieleni na dwie równe grupy (A i B): Grupa A (grupa kontrolna) składała się z dwudziestu pięciu pacjentek. Pacjentki wykonywały ćwiczenia aerobowe trzy razy w tygodniu przez 8 tygodni. Grupa B (Grupa badawcza) składała się z dwudziestu pięciu pacjentek. Pacjentki wykonywały ćwiczenia aerobowe i były poddawane refleksologii stóp trzy razy w tygodniu przez 8 tygodni. Wskaźnik masy ciała oceniano za pomocą standardowej skali wagi i wzrostu. Ciśnienie krwi oceniano za pomocą sfigmomanometru rtęciowego, analizę krwi pod kątem TC, TG, LDL i HDL dla obu grup A i B wykonano przed i po leczeniu.

Wyniki. Wykazano, że w obrębie grup nastąpił znaczny spadek ciśnienia skurczowego i rozkurczowego, cholesterolu, triglicerydów, LDL oraz znaczny wzrost HDL w obu grupach A i B po leczeniu w porównaniu z wartościami sprzed leczenia. Pomiędzy grupami, przed leczeniem nie było znaczącej różnicy w ciśnieniu skurczowym, ciśnieniu rozkurczowym, cholesterolu, triglicerydach, LDL i HDL. Podczas gdy po leczeniu istniała istotna różnica między grupami A i B pod względem ciśnienia skurczowego, ciśnienia rozkurczowego, cholesterolu, triglicerydów, LDL (większy spadek w grupie B) i HDL (większy wzrost w grupie B).

Wniosek. Refleksologia stóp jest skuteczną metodą leczenia łagodnego nadciśnienia okołomenopauzalnego poprzez obniżenie SBP, DBP, cholesterolu, TG, LDL i zwiększenie HDL.

Słowa kluczowe

refleksologia stóp, okres okołomenopauzalny, nadciśnienie

Introduction

Hypertension is the most common chronic disease in industrialized countries, affecting one-quarter of the adult population. It is the most prevalent cardiovascular risk factor in men and women after the fifth decade [1].

Several epidemiological studies have shown a strong link between blood pressure, cerebral and cardiovascular risk [2]. Persistent elevation blood pressure in this situation is one of the risk factors of chronic stroke, arterial aneurysm, heart failure, and myocardial infarction [2].

The primary reason for heart failure, stroking, kidney failure, and other vascular diseases is high blood pressure. Hypertension occurs when it develops, and about 20% of the adult population comes from it [3].

Hypertension is a persistent increase in BP above 140 mmHg (SBP) and (90) mmHg DBP. HTN is a widespread health concern in Egypt, with 26.3 percent of the population suffering from it. Its prevalence rises with age; roughly half of Egyptians over 60 have been diagnosed with HTN [4].

Natural menopause is the permanent cessation of menstruation resulting from the loss of ovarian follicular activity. It is after 12 consecutive months of amenorrhea in the absence of other pathological or physiological causes, given that a woman who has experienced 12 months without flow has a 5% or lower chance of further flow [5].

Natural menopause, according to this definition, may only be determined with confidence in retrospect. There is currently no single biological signal that can be used to determine whether or not a woman has entered menopause [6].

For women in their early postmenopausal years, by far the most important risk factor is hypertension. About 30 to 50 percent of women have high blood pressure before they reach the age of 60, and high blood pressure can cause various adverse symptoms, many of which are associated with menopause [7].

People most often take medication to reduce blood pressure by prescription, but it seldom has a long-term or permanent effect in resolving the root cause of the problem. If lifestyles change and medicines do not work, people often need natural healthcare and natural healing therapies [8].

Reflexology is an alternative therapy that consists of massaging, pressing, or pushing specific areas of the body, especially the feet, to improve internal organs working and reduce the sensation of pain [9].

Reflexology helps relieve stress and anxiety by stimulating vasodilation, relaxation, blood pressure reduction, and oxygen-rich supplements in the cell and improving blood circulation [10].

Reflexology treats many common conditions, including back pain, digestive problems, migraines, menstrual problems, sinus problems, and overall tension and stress. It has also been used for more severe heart diseases and multiple sclerosis [11].

It is considered that pressing specific areas on the foot that correlate to specific glands or organs of the body will help them work at their best and allow the body to heal itself. The primary distinction between foot reflexology and massage is that foot reflexology offers massage or touch relaxation and the entire body immunity to the healing process [12].

Lu et al. [13] found that foot reflexology can enhance the therapeutic regime to reduce BP and increase vagal variation in both the healthy and coronary arts by studying the impacts of pedophlexology on autonomic nervous modulation.

Subjects and methods

Design

A randomized control trial was conducted to investigate the effect of foot reflexology on perimenopausal mild hypertension. The study was conducted from January 2019 to December 2019. This study was conducted under the acceptance of ethical committee NO: Faculty of Physical Therapy, Cairo University.

Participants

Fifty perimenopausal women suffering from mild hypertension were selected randomly from the outpatient clinic of the gynecology department in Sayed Galal University Hospital in Cairo, Al Azhar University, shared in this study. Their ages were ranged from 48 to 50 years old. Their body mass index (BMI) did not exceed 30kg/m². The physician diagnosed them as mild hypertensive patients (stage 1). Patients with bronchial asthma, history of hypertension before the 4th decade, diabetes mellitus and mental health problems such as depression and anxiety are excluded from the study.

Randomization

The recruited patients were randomly assigned, after signing consent form, into two equal groups. A single blind randomization was carried out by assigning the odd numbers 5 to group (A) (control group) and the even numbers were assigned to group (B) (experimental group). Following randomization, there was no dropping out of subjects from the study, Figure 1.

Interventions

Group A (Control group)

It consisted of twenty-five patients with perimenopausal mild hypertension (stage 1). They performed aerobic exercises only three times per week for eight weeks

Group B (Study group)

It consisted of twenty-five patients with mild perimenopausal hypertension (stage 1). They performed aerobic exercises and received foot reflexology three times per week for eight weeks.

The traditional program

Aerobic exercises

All women in groups A and B did 30 minutes of aerobic activities on the treadmill, including three phases:

1. The warming-up phase consisted of five minutes of low-intensity treadmill walking (40 percent of Maximum Heart Rate, MHR).
2. The real phase consisted of 20 minutes of moderate-intensity treadmill walking (60–75 percent of MHR).
3. The cooling phase consisted of five minutes of low-intensity treadmill walking (40 percent MHR).

MHR was estimated using the following formula: (210 – age in years).

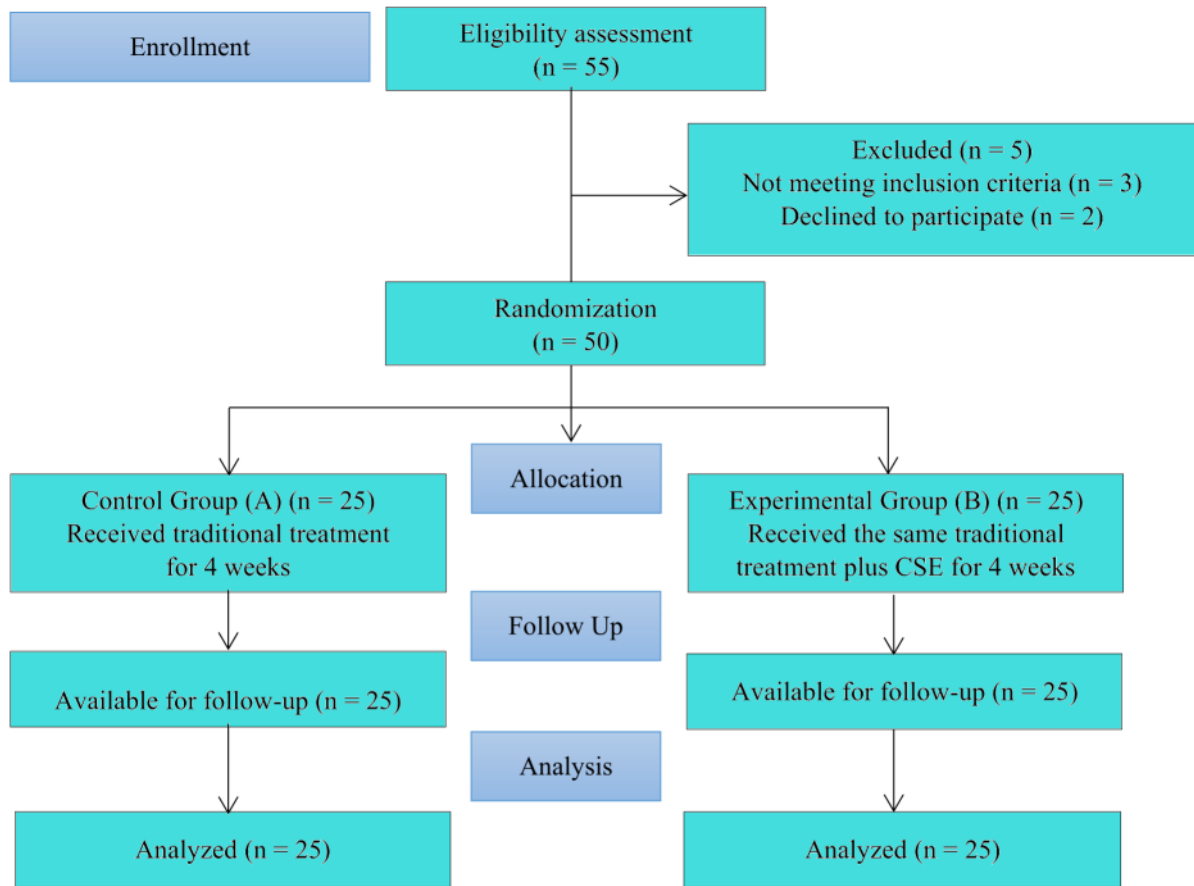


Fig. 1. Flow chart of the study

The workout was done three times a week for eight weeks in a row. During the training session, the therapist stood near the patient to observe and recognize symptoms of stopping the activity as dexterity. The therapist kept asking the patient if she was experiencing any discomfort, dizziness, or shortness of breath (Fig.2).

To minimize excessive loss of bodily fluids during the exercise session, the therapist encouraged all women to drink lots of water before and after the session. Each woman was told to dress comfortably and in light, flat shoes.

Foot reflexology technique

All of the women in the group (B) had foot reflexology from the same physiotherapist who was knowledgeable about the technique. Each woman was instructed to dress comfortably in light clothing and lie down in a tranquil, supine-lying position with her feet propped up on the plinth in a quiet room.

The woman was asked to remove her socks and shoes before starting the therapy, including a foot assessment to check for any damaged or irritated skin. A disinfectant wipe was used to clean the feet. Place both feet near each other to visualize the body's map [14].

Foot reflexology procedures

It began with a warm-up procedure that included cleaning the entire sole with warm water. This helped tone the whole body's energy, relax the muscles, and ready the feet for exercise. Then, to relax the foot and the patient, five minutes of



Fig. 2. Aerobic exercises on an electrical treadmill

soft pressure and mild massage with the entire hand were applied to each foot's dorsal and plantar areas. Using a mix of thumb walking and finger pivot techniques, reflexology was

applied to the base of the toes and the foot that matched the reflex zones (Fig.3).

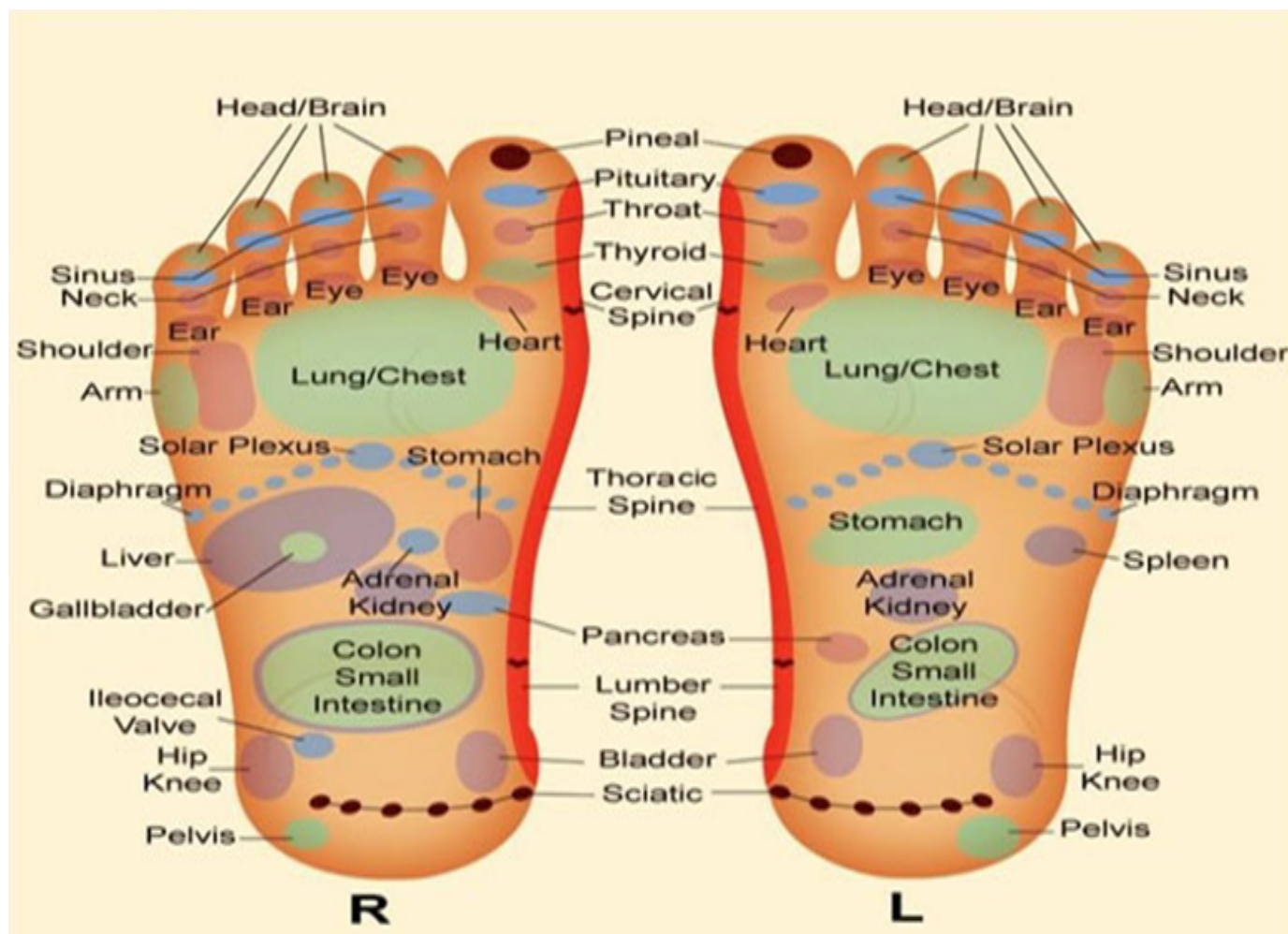


Fig. 3. Reflex Zones in the foot [11]

The pressure was applied gently to specific zones, with a focus on the following locations.:

1. Solar plexus point.
2. Pituitary reflex point.
3. Heart reflex point.
4. Liver reflex point.
5. Adrenal reflex point.
6. Kidney reflex point.

Outcome measures

Weight and height measurements

Before treatment, it was measured for each patient in both groups (A&B) to determine the body mass index (BMI) using the following equation:

BMI is calculated as follows: weight (kg) / height (m²) [15].

Blood pressure

The systolic and diastolic blood pressures were measured with a mercury sphygmomanometer (Model TXJ-10, Japan) for all women in both groups (A&B) pre and post-treatment

Blood analysis

Measurements of TC, TG, HDL, and LDL were included in the lipid profile examinations. Before and after the study, the test was done on each subject. A 12-hour fast was needed for the blood analysis.

Statistical analysis

The mean and standard deviation are used to express the results. The Kolmogorov-Smirnov test (test of normality) was used to determine the distribution of data collected before treatment. As a result, an unpaired t-test was used to compare the normally distributed variables in the two groups. The analysis of covariance (ANCOVA) test was used to compare the pre-treatment values of the two groups while also controlling the effect of pre-treatment values on post-treatment values. The paired t-test was used to compare pre-and post-treatment data in the same group. The Statistical Package for Social Sciences (SPSS) computer application (version 19 windows) was utilized for data analysis. Significant was defined as a P-value of less than 0.05.

Results

General characteristics of patients

As presented in table (1), the unpaired t-test revealed that there was no statistically significant difference between both groups

A and B in age, weight, height and BMI (t value = 0.167, 1.422, 0.448 and 1.810 respectively) (p = 0.868, 0.161, 0.656 and 0.077 respectively).

Table 1. Comparison of subject characteristics between laser and control groups

	Group A	Group B	t value	P-value
Age [years]	48.72 ± 0.84	48.68 ± 0.85	0.167	0.868 ^{NS}
Weight [kg]	75.75 ± 8.87	72.28 ± 8.39	1.422	0.161 ^{NS}
Height [cm]	163.08 ± 8.13	162.16 ± 6.27	0.448	0.656 ^{NS}
BMI [kg/m ²]	28.44 ± 1.83	27.40 ± 2.22	1.810	0.077 ^{NS}

Data are expressed as mean ± SD or number (%). NS = p > 0.05 = not significant

Dependent variables (Systolic blood pressure (SBP), diastolic blood pressure (DBP), cholesterol (TC), triglyceride (TG), HDL and LDL)

Within groups, there was a significant decrease in systolic blood pressure, diastolic blood pressure, cholesterol, triglyceride, LDL and a significant increase in HDL in both groups A (p = 0.001) and B (p = 0.001) post-treatment in comparison with pre-treatment values.

Between groups, pre-treatment, there was no significant difference

in systolic blood pressure, diastolic blood pressure, cholesterol, triglyceride, LDL and HDL (p = 0.718, 0.279, 0.579, 0.518, 0.384 and 0.648 respectively).

While, post-treatment there was a significant difference between both groups A and B in systolic blood pressure, diastolic blood pressure, cholesterol, triglyceride, LDL (more decrease in group B) (p = 0.028, 0.023, 0.001, 0.044 and 0.001 respectively) and HDL (more increase in group B) (p = 0.040).

Table 2. Results of all dependent variables between tested groups A and B

Dependent variables		Pre-Treatment	Post-treatment	Mean Difference	% of change	p-value**	Significance
Systolic blood pressure	Group (A)	134.60 ± 3.80	125.60 ± 4.41	9.00	6.69%	0.001	S
	Group (B)	134.20 ± 4.00	122.80 ± 4.35	11.40	8.49%	0.001	S
	p-value*	0.718	0.028				
	Significance	NS	S				
Diastolic blood pressure	Group (A)	85.00 ± 3.54	82.00 ± 2.89	3.00	3.53%	0.001	S
	Group (B)	84.00 ± 2.89	80.04 ± 2.61	3.96	4.71%	0.001	S
	p-value*	0.279	0.023				
	Significance	NS	S				
Cholesterol	Group (A)	193.68 ± 30.79	189.24 ± 30.97	4.44	2.29%	0.001	S
	Group (B)	188.96 ± 28.92	180.00 ± 28.25	8.96	4.74%	0.001	S
	p-value*	0.579	0.001				
	Significance	NS	S				
Triglyceride	Group (A)	164.04 ± 30.52	160.28 ± 31.28	3.76	2.29%	0.001	S
	Group (B)	158.76 ± 26.72	152.72 ± 26.35	6.04	3.80%	0.001	S
	p-value*	0.518	0.044				
	Significance	NS	S				
HDL	Group (A)	36.04 ± 7.77	38.64 ± 7.19	2.60	7.21%	0.001	S
	Group (B)	34.28 ± 6.31	41.56 ± 6.59	7.28	21.24%	0.001	S
	p-value*	0.384	0.040				
	Significance	NS	S				
LDL	Group (A)	122.34 ± 25.08	119.66 ± 25.12	2.68	2.19%	0.001	S
	Group (B)	118.96 ± 26.92	114.40 ± 27.03	4.56	3.83%	0.001	S
	p-value*	0.648	0.001				
	Significance	NS	S				

* Inter-group comparison. ** intra-group comparison of the results pre-and post-treatment.

Data expressed by mean ± SD, NS p > 0.05 = non-significant, S p < 0.05 = significant, p = Probability

Discussion

Hypertension (HTN) is a significant global health challenge because of its high prevalence. It is a term referred to high blood pressure (BP); blood flow is based on the beat at which the heart pumps blood [16].

Moreover, Hypertension is defined as a persistent increase in systolic blood pressure of 140 mm Hg or more and diastolic blood pressure of 90 mm Hg or more, as measured by the average of two or more correct blood pressure measures [17].

The heart's pressure is not always at the same level; it has changed by activities and is caused by persistent abnormal pressure in the main arteries [18].

A couple of people with high BP can experience headaches, shortness of breath, or sickness of the nose, but these signs and symptoms do not occur until high BP is severe or life-threatening [18].

In Egypt, hypertension is a frequent health issue, with 26.3 percent of the Egyptian population. Its incidence increased with aging, with HTN diagnosed for approximately 50% of Egyptians over age 60. WHO results from a national step-by-step (2017) study indicating that around 24.8% of men and 25.0% of women in Egypt are affected by BP increased [19].

The group of diverse health and medical systems practices and products that are not usually considered to be part of conventional medicine has been defined as complementary and alternative medicine (CAM). CAM therapies are believed to play an essential role in health care in the 21st century and, particularly, the treatment of healthy and unhealthy people. These treatments include acupuncture, herbal medicine, dietary supplements, spirituality and faith cure, reflexology, and various other therapies [20].

The various CAMs, notably foot reflexology, should be known to hypertensive patients as a complementary treatment to play a major role in HTN control capacity. High blood pressure is the major cause of cardiovascular disease, and unmanaged conditions can result in various fatal complications [20].

In this study, the effect of foot reflexology on perimenopausal mild hypertension was investigated. Fifty perimenopausal women suffering from mild hypertension were selected randomly from the outpatient clinic of the gynecology department in Sayed Galal University Hospital in Cairo, Al Azhar University, shared in this study.

The patients were divided randomly into two equal groups (A&B): Group A (Control group); consisted of twenty-five patients. They performed aerobic exercises only three times per week for 8 weeks. Group B (Study group); consisted of twenty-five patients. They performed aerobic exercises and received foot reflexology three times per week for 8 weeks.

Foot reflexology began when the whole sole was washed with warm water. That contributed to toning the energy of the entire body, relaxing, and preparing the feet. Then the foot was massaged using all hands to the dorsal and plantar areas to relieve the light pressure and light stroking for five minutes and relax the patient [14].

The intervention was applied using thumb and finger pivoting mixtures at the reflex zones located at the base of the toes and on the bottom of the foot [14].

Body mass index was assessed using a standard weight and height scale. Blood pressure was assessed using a mercury

sphygmomanometer, blood analysis for TC, TG, LDL and HDL for both groups A and B before and after treatment.

Results showed that, within groups, there was a significant decrease in systolic blood pressure, diastolic blood pressure, cholesterol, triglyceride, LDL and a significant increase in HDL in both groups A and B post-treatment in comparison with pre-treatment values.

Between groups, pre-treatment, there was no significant difference in systolic blood pressure, diastolic blood pressure, cholesterol, triglyceride, LDL and HDL. While, post-treatment, there was a significant difference between groups A and B in systolic blood pressure, diastolic blood pressure, cholesterol, triglyceride, LDL (more decrease in group B) and HDL (more increase in group B).

Foot reflexology is one of the complementary therapy, which is linked to other treatments commonly used in palliative care and alleviates a problem without dealing with the underlying cause, to improve the psychological, physiological, and spiritual health of patients and to enhance the value of their lives [20].

Mechanical effects in foot reflexology improve blood circulation, remove waste products from the body, improve joint mobility, pain relief, and muscle tension reduction. It has psychological advantages like relaxation. In addition, reflexology has shown beneficial effects on the reflex sensitivity of the baroreceptors, sinus arrhythmia [13], and a positive influence on the physiological parameters, e.g., SBP, DBP, and heart rate (HR) [21].

The result of this study agreed with Vinaya and Shweta [22], who investigated the effect of foot reflexology on essential parameters in hypertensive patients and showed a significant reduction in all the vital parameters, such as pulse rate and breathing speed, and BP, with the application of foot reflexology.

The result of this study also agreed with Abdi. et al., [23], study also showed significant differences in the average SBP, DBP, and HR massage levels between patients in the experimental group before and after foot massage in pairs of critical treatment unit (CCU) patients. At the same time, the mean SBP and DBP, and HR in the control group did not differ significantly.

The result of this study also agreed with Khalili et al. [24]. The study also found that the mean SBP and DBP in both groups had a significant difference compared to earlier studies conducting a study on the impact of foot reflexology on physiological parameters.

The results of this study also agreed with Priyanka et al. [25], which carried out a study in a selected setting about the effectiveness of foot massage for BP modification among HTN patients. His findings proved that foot massage is the best solution for reducing blood pressure levels in hypertension patients.

The result of this study was supported by Khaledifar et al. [26], who studied reflex therapy and massage treatment on vital signs and stress before coronary angiography, which supported the result of this study. They found that the reflex therapy group improved DBP, HR, and respiratory rates, and similar effects were observed after other operations, including massage and routine rest programs.

This study is also supported by Park and Cho [27]. They conducted research on the effects of foot reflexology on blood pressure, serum lipid levels, and life satisfaction in individuals

with essential HTN. Thirty-four participants were divided into two groups: an experimental group (18) and a control group (16). In the experimental group, foot reflexology was given twice a week for six weeks, and self-foot reflexology was given twice a week for four weeks. Foot reflexology was a beneficial nursing intervention for lowering SBP, triglycerides, and life satisfaction, but not for lowering DBP, LDL & HDL, or blood cholesterol.

The results of this study are also supported by Hayes and Cox [28]. Who found that foot reflexology reduces DBP and SBP significantly for study group patients compared to control group patients. Compared to those in the control group who did not receive an intervention, they found that HR, arterial BP, and respiration during foot massage intervention were significantly reduced in the foot massage group.

This study also came inconsistent with Somchock [29], who studied the effects of foot reflexology on reducing blood pressure in patients with HTN. The study that foot reflexology can decrease BP in patients with HTN.

The results of this study disagreed with Kaur [30], who investigated the effect on the physiological parameters of critically ill patients of foot massage and reflexology and reported that there was no significant difference in any of the physiological parameters during the controlled observations.

Acknowledgments

The authors would like to thank all individuals who participated in this study.

The SBP has decreased, the amount of DBP is increased, the number of HR has decreased, and some interventional observations after the intervention have improved oxygen saturation.

Study limitations

The study was limited by the following factors: The general physical and physiological state of the patient at the time of assessment or treatment may affect performance during the study. Cooperation of patients with the therapist is a vital factor of adequate performance.

Conclusion

It was concluded that, foot reflexology is an effective method in treating perimenopausal mild hypertension through decreasing SBP, DBP, cholesterol, TG, LDL, and increasing HDL.

Adres do korespondencji / Corresponding author

Nermeen Kareem Eid

E-mail: eidnermo@gmail.com

Piśmiennictwo/ References

- Wolf-Maier K, Cooper RS and Banegas JR: Hypertension prevalence and blood pressure levels in 6 European countries. Canada and the United States. JAMA. 2003; 289: 2363-9.
- Turnbull F, Neal B and Ninomiya T.: Effects of different regimens to lower blood pressure on major cardiovascular events in older and younger adults: meta-analysis of randomised trials. BMJ. 2008; 336: 1121-3.
- Ravindranath BW, Samuel F and Prajka A.: Effect of Foot Reflexology on Blood Pressure & level of Stress among hypertensive patients. 2017; 7(1):88-92.
- Chobanian AV, Bakris GL, Black HR, Cushman WC, and et al., The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: The JNC 7 report (Erratum in: JAMA,9; 290[2]:197). JAMA,2003; 289(19), 2560-2572.
- North American Menopause Society (NAMS): Clinical challenges of perimenopause: consensus opinion of the North American Menopause Society. Menopause, 2000; 7:5-13.
- Contestabile E and Derzko C.: Canadian consensus on menopause and perimenopause. J Obstet Gynaecol Can, 2001; 23(9):836-84.
- Wassertheil-Smoller S, Anderson G, Psaty BM, Black HR, and et al., Hypertension and its treatment in postmenopausal women: baseline data from the Women's Health Initiative. Hypertension.2000; 36:780-789.
- Whelton PK, Carey RM, Aronow WS, and et al.: ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults: a report of the American College of Cardiology/ American Heart Association task force on clinical practice guidelines. J Am Coll Cardiol; 2018;71: e127-248.
- Cressy S.: Reflexology. Textbook. 1st ed. Heinemann educational publisher. U.K. Italy. 2003;2-4.
- Byers DC.: Better health with foot reflexology. Textbook. 10th ed. Ingham Publishing Inc. Florida. 2001; 275-278.
- Jones S.: Simply Reflexology. Textbook. 1st ed. Sterling Publishing Company Inc. NewYork. 2009; 9-11.
- Das K and Sanyal K.: A study of on alternative therapy to overcome common health problems and high prevalence of hypertension in individuals. International Journal of Medical Sciences; 2007; 2:70-80.
- Lu WA, Chen GY and Kuo CD.: Foot Reflexology Can Increase Vagal Modulation, Decrease Sympathetic Modulation, and Lower Blood Pressure in Healthy Subjects and Patients with Coronary Artery Disease. Alternative Therapies in Health and Medicine, 2011;17(4), 8-14.
- Cole TJ, Freeman JV and Prece MA.: Body mass index reference curves for the UK, 1990, Archives of Disease in Childhood, Med. J. 1995;73:25-29.
- Dalal K and Das R.: Noninvasive characterization of foot reflexology areas by swept source-optical coherence tomography in patients with low back pain. Evidence-Based Complementary and Alternative Medicine. 2013; 213; 1-11.
- James PA, Oparil S, Carter BL, et al.: Evidence-Based Guideline for The Management of High Blood Pressure in Adults: Report from The Panel Members Appointed to the Eight Joint National Committee (JNC 8). JAMA, 2014; 311(5): 507-520.
- World Health Organization (WHO): Prevention and Control of Non-Communicable Diseases: Guidelines for Primary Health Care in Low Resource Settings. Geneva. 2012.
- Kaplan NM, Marc A and Pohl MD.: Overview of Hypertension in Adults. Available at <http://www.uptodate.com/home>. Accessed at March 19, 2015.
- World Health Organization.: Prevalence of hypertension WHO Global Infobase. Available at <https://apps.who.int/infobase/index.aspx>. 2017 Accessed at 12.02.17, 3pm.
- Hassan II, Abd Hadi NH and Soon LK.: Complementary and Alternative Medicine (CAM): A comparative Study Between Nursing and Medical Students. Educ Med J, 2012; 4(2).
- Moeini M, Kahangi LS, Valiani M and Heshmat R.: The Effect of Reflex-Therapy on Patients' Vital Signs Before Coronary Artery Bypass Graft Surgery. Iranian Journal of Nursing and Midwifery Research, 2011; 16(1), 8.
- Vinaya AT and Shweta P.: Effect of Foot Reflexology on Vital Parameters of Hypertensive Patients. Indian Journal of Nursing Studies,2017; 7(2): 52-56.
- Abdi S, Karampourian A, Oshvandi K, Moghimbagh A and et al.: The Effect of Foot Massage on Blood Pressure and Heart Rate of CCU patients. The Journal of Urmia Nursing and Midwifery Faculty, 2016; 14(1): 47-55.
- Khalili A, Mardani D, Bekhradani Pour N, Paymard A, and et al.: The Effect of Foot Reflexology on Physiological Parameters. International Journal of Medical Research & Health Sciences, 2016; 9(5): 50-54.
- Priyanka M, Aruna S and Gowri P.: Assess the Effectiveness of Foot Massage to Change in the Blood Pressure among Patients with Hypertension in Selected Setting, CHENNAI, Journal of Multidisciplinary Educational Research, 2014;4(9), 542-545.
- Khaledifar A, Nasiri M, Khaledifar B, Khaledifar A and et al.: The Effect of Reflex-Therapy and Massage Therapy on Vital Signs and Stress Before Coronary Angiography: An Open-Label Clinical Trial. ARYA Atherosclerosis, 2017; 13(2), 50.
- Park HS and Cho GY.: Effects of foot reflexology on essential hypertension patients. Taehan Kanho Hakhoe Chi.; 2004; 34 (5):739-750.
- Hayes JA and Cox C.: Immediate Effects of A five - Minute Foot Massage on Patients in Critical Care. Complementary Therapies in Nursing and Midwifery, 2000;6(1), 9-13.
- Somchock J.: Effects of Foot Reflexology on Reducing Blood Pressure in Patients with Hypertension. Flinders University, School of Nursing and Midwifery, 2006; 3(4), 654-665.
- Kaur J, Kaur S, and Bhardwaj N.: Effect of Foot Massage and Reflexology on Physiological Parameters of Critically Ill Patients. Nursing and Midwifery Research, 2012; 8(3), 223-33.