ALL IN ONE DAY SEMINAR, CLINICAL EVIDENCE BASED PRACTICE OF CHIROPRACTIC: ETHICS & LAW-CURRENT LAWS, REHABILITATION, AND CHIROPRACTIC ADJUSTIVE TECHNIQUE.

Presented by
Mark Cymerint D.C.

<u>California Approval Numbers:</u>
CA-D-24-06-05007 Rehabilitation
CA-D-24-06-05009 Ethics & Law Current Laws
CA-D-24-06-05008 Adjustive Technique

<u>Arizona Approval Number:</u>
AZCE23493
“All In One Day, Clinical Evidence Based Practice of Chiropractic: Principles of Practice, Ethics, and Chiropractic Adjustive Technique.”

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TriadSeminars@gmail.com

Office:

(949) 707-5785

Website:

TriadSeminars.com

Instagram:

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II. REHABILITATION RELATED TO DISEASES USING FUNCTIONAL MOVEMENT TECHNIQUES (TAPING)

A. PHYSIOLOGICAL EFFECTS OF TAPING ON THE HUMAN BODY WITH SUPPORTIVE RESEARCH AND LITERATURE.

B. DEMONSTRATE FUNCTIONAL MOVEMENT TECHNIQUES OF TAPING AND ITS ROLE FOR USE IN REHABILITATION, NEUROPATHIC PAIN, AND POSTURE MOVEMENT.

PRINCIPLES OF PRACTICE RELATED TO DISEASES USING FUNCTIONAL MOVEMENT TECHNIQUES (TAPING)

Physiological Effects of Taping on The Human Body

Purpose of Taping:

- Pain Mitigation
- Decompression
- Neurosensory Input

REHABILITATION TAPING

- As tape is placed on the skin, it causes an alteration of the afferent signals going from the taped area to the brain.
- The brain's response to the incoming information is to alter the efferent signals returning to the taped area.
- Taping alters proprioception, muscle contraction timing and forced output, as well as range of motion.

RESOURCES:

- Vercelli S, Sartorio F, Foti C et al. Immediate Effects of Kinesiotaping on Quadriceps Muscle Strength. *Clinical Journal of Sport Medicine*. 2012;22(4):319-326. doi:10.1097/jsm.0b013e31824c835d.

- Lumbroso D, Ziv E, Vered E, Kalichman L. The effect of kinesio tape application on hamstring and gastrocnemius muscles in healthy young adults. *Journal of Bodywork and Movement Therapies*. 2014;18(1):130-138. doi:10.1016/j.jbmt.2013.09.011.

- Callaghan M, McKie S, Richardson P, Oldham J. Effects of Patellar Taping on Brain Activity During Knee Joint Proprioception Tests Using Functional Magnetic Resonance Imaging. *Physical Therapy*. 2012;92(6):821-830. doi:10.2522/ptj.20110209.

- Wand B, Di Pietro F, George P, O'Connell N. Tactile thresholds are preserved yet complex sensory function is impaired over the lumbar spine of chronic non-specific low back pain patients: a preliminary investigation. *Physiotherapy*. 2010;96(4):317-323. doi:10.1016/j.physio.2010.02.005.

- 5. Lim ETay M. Kinesio taping in musculoskeletal pain and disability that lasts for more than 4 weeks: is it time to peel off the tape and throw it out with the sweat? A systematic review with meta-analysis focused on pain and also methods of tape application. *British Journal of Sports Medicine*. 2015;49(24):1558-1566. doi:10.1136/bjsports-2014-094151.

BEFORE TAPING YOUR PATIENTS

REMEMBER TO ASK THEM ABOUT:

- Previous history with an unpleasant reaction to adhesive or tapes
- Apply a small test patch on the inside of the forearm for 10-15 minutes to see skin reaction.
- Sensitive Skin Zones:
  - Posterior knee
  - Neck
  - Inside of the arm, axilla, & anterior elbow
  - Hands & feet

TAPING CONTRAINDICATIONS

Cautions:

- Infants
- Elderly
- Pregnant patients *(especially in last trimester)*

Remember:

- Don’t crank tape.
- Tape can cause skin irritations, contact dermatitis, or blisters.

Absolute Contraindications:

Open wounds, skin infection, active cancer, deep vein thrombosis, kidney disease, and congestive heart failure.

TAPING CARE

- Use soap and water, or mix rubbing alcohol with water to cleanse the area to be taped.
- Patient's skin must be clean and dry.
- Do NOT tape over hairy patients.
- Round all edges of tape with scissors to prevent peeling. Rub tape to activate adhesive.
- **Tape is water resistant and can last up to 5 days (NO LONGER).**
- **If tape gets wet, DO NOT use hair dryers. Simply pat dry with a towel.**
- To take off **DO NOT** rip off.

  Tape can be removed gently with:

  - Baby oil
  - Lathered soap
  - Hot water in shower

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PAIN TAPING METHOD

Pain taping requires 1-3 pieces of tape:

2 Stabilizing Pieces - Run along the length of the area being taped.

Applied with NO stretch

Apply with anchors on both top and bottom

1 Decompression Piece - Applied perpendicular (90°) to the stabilization strip.

Applied with 0-50% of stretch in the middle.

Applied over area of greatest pain.

No anchors should be torn in the middle of the tape.

Make sure *all tape endings are on skin, NOT tape.*

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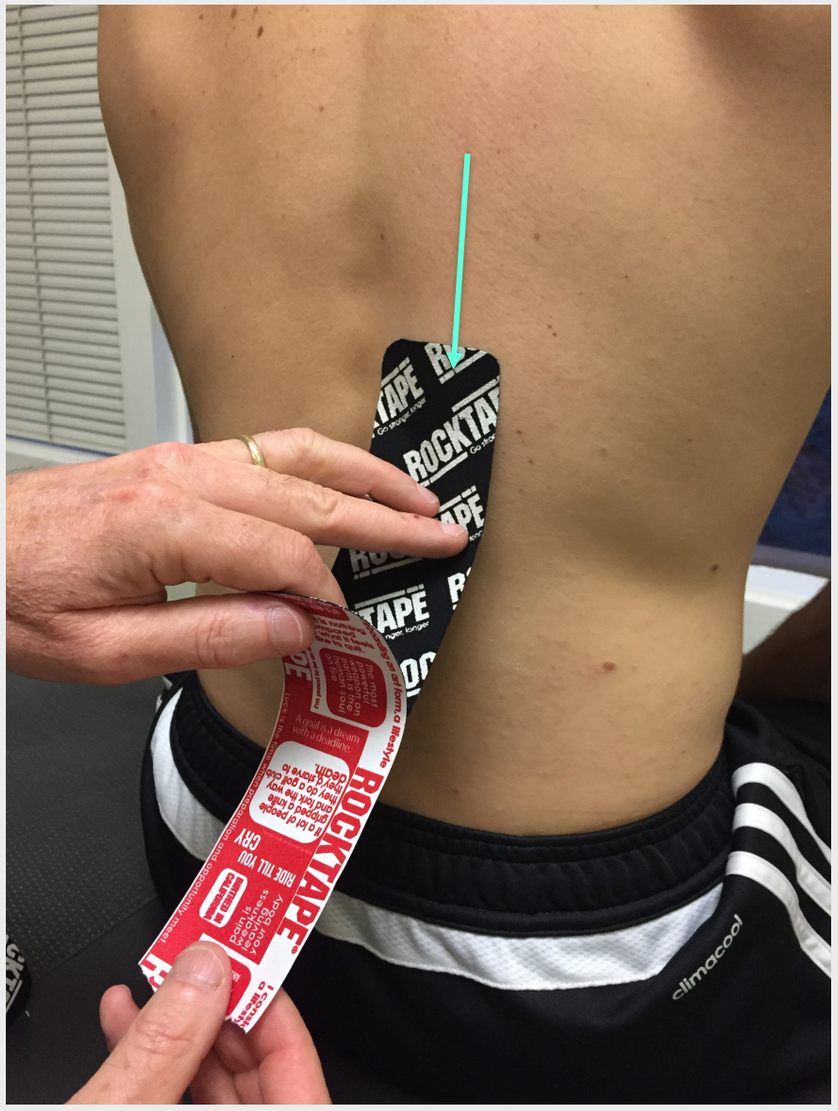
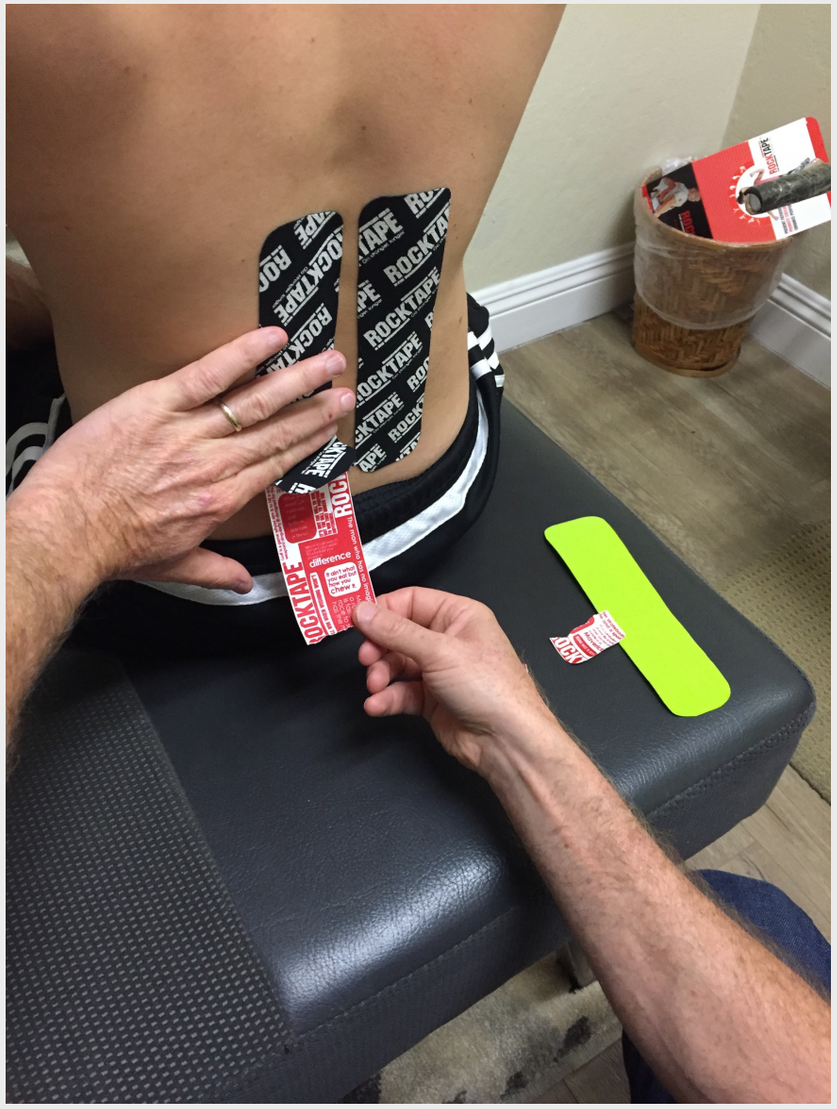
TWO STABILIZATION PIECES

Apply with anchor
& NO stretch.



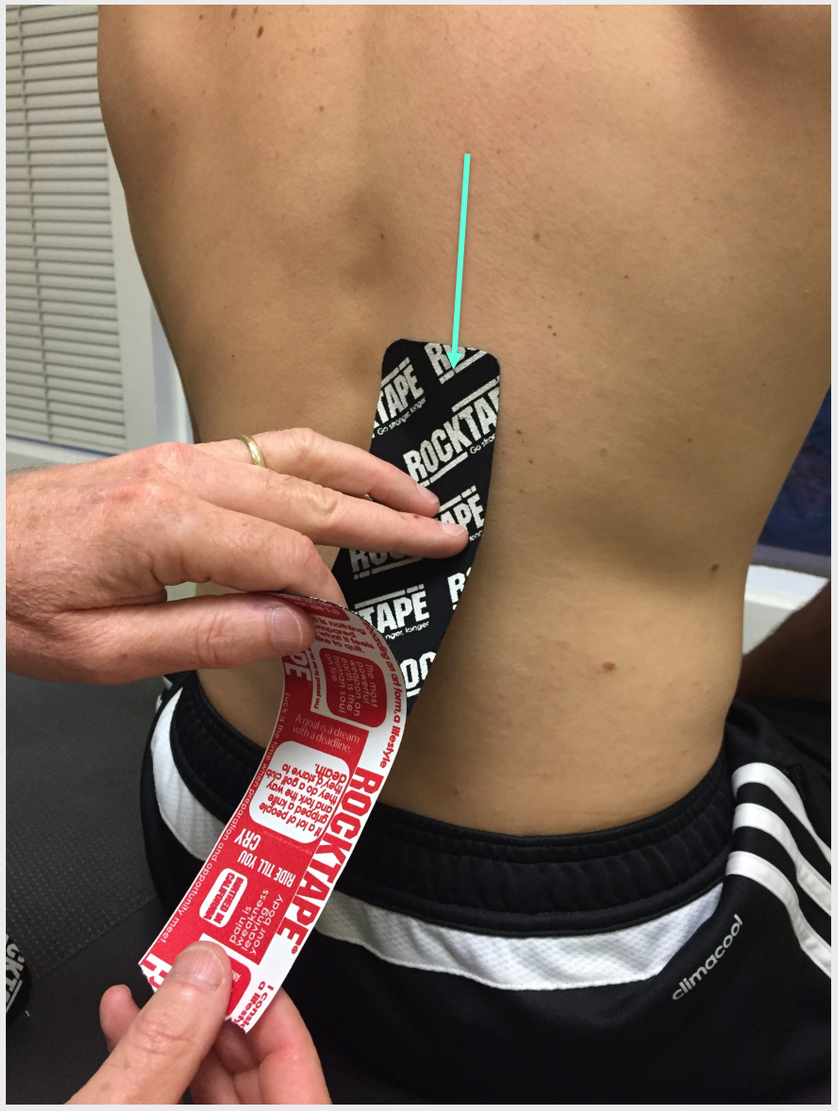


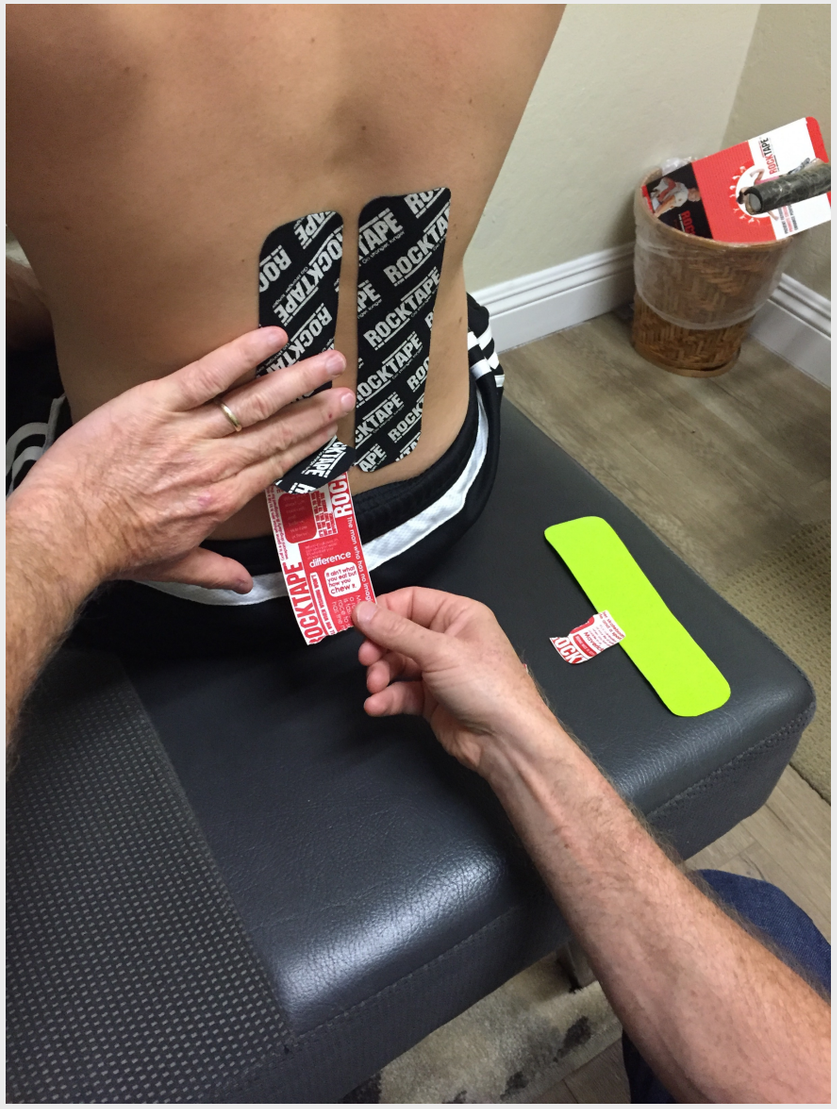
Measure, Cut, &
Round edges of
Stabilization pieces.

Same thing for the
second stabilizing piece.

TWO STABILIZATION PIECES

Apply with anchor
& NO stretch.





Measure, Cut, &
Round edges of
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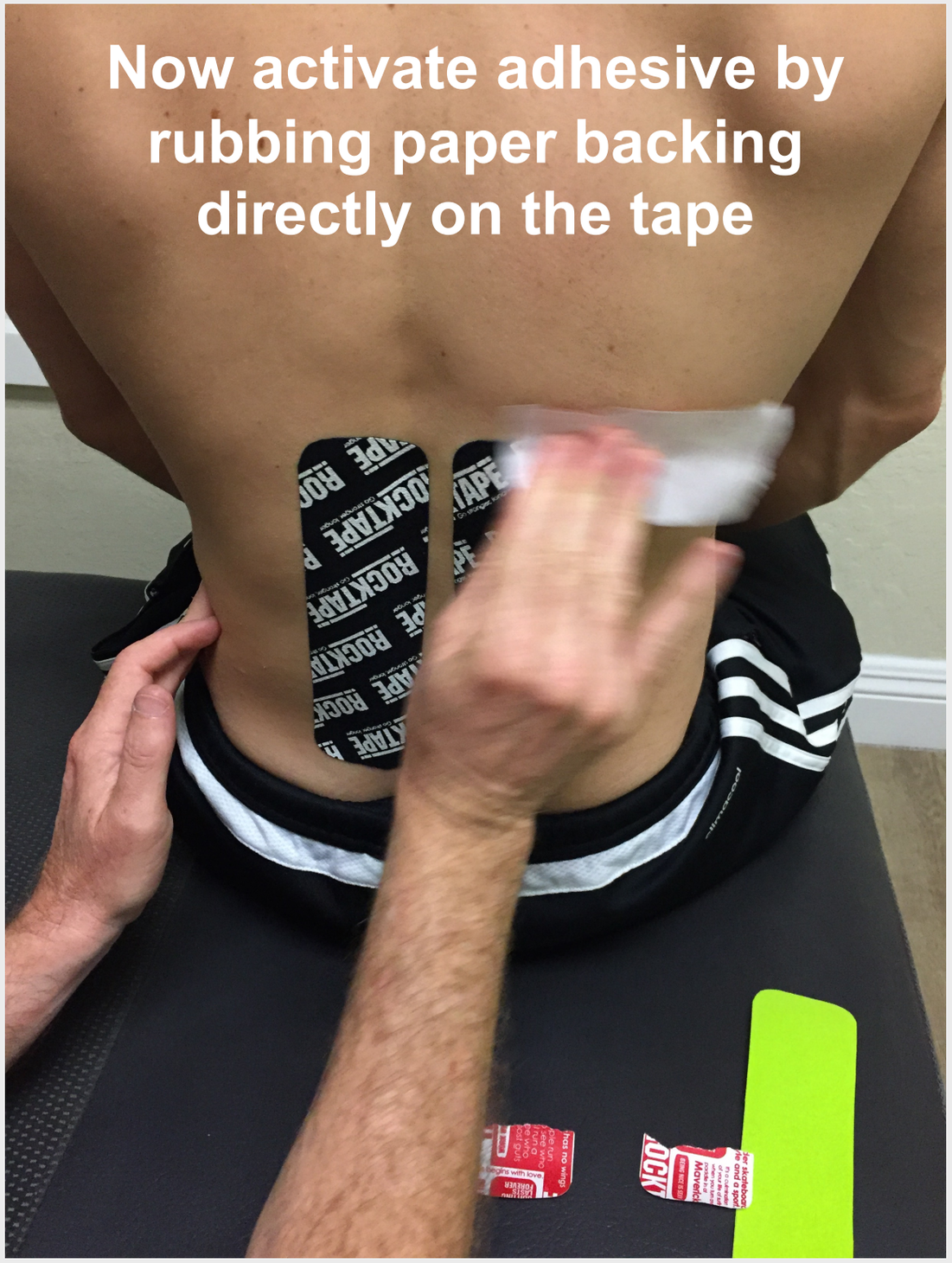
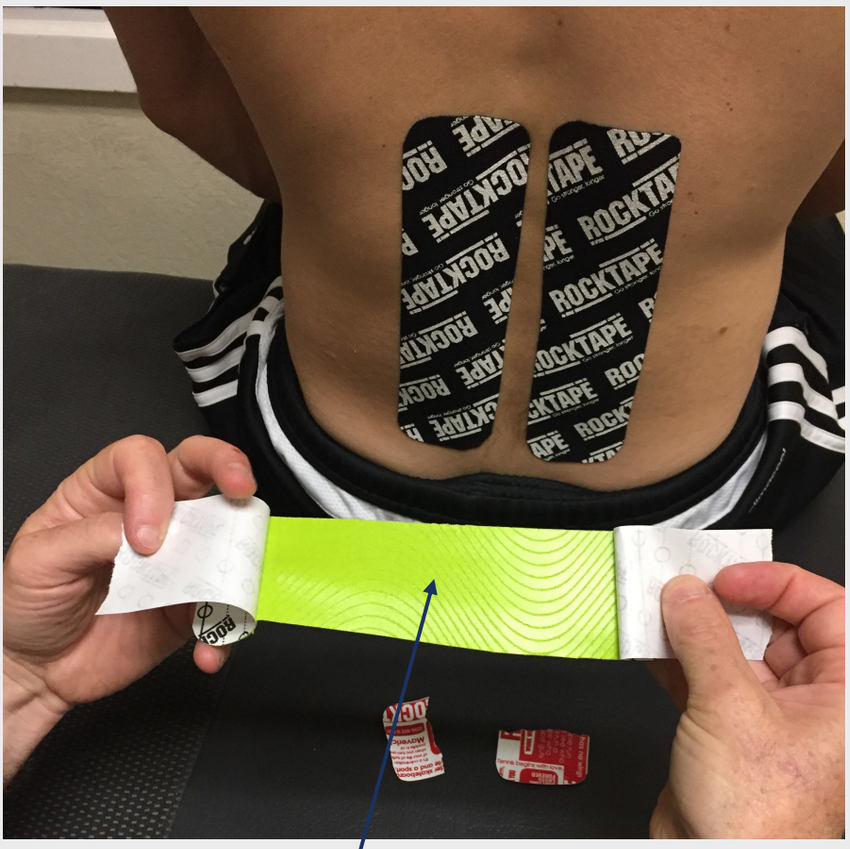
Same thing for the
second stabilizing piece.


Both pieces are on.


Now activate adhesive by rubbing paper backing directly on the tape

DECOMPRESSION PIECE FOR PAIN RELIEF

Pull apart WITH 50% stretch

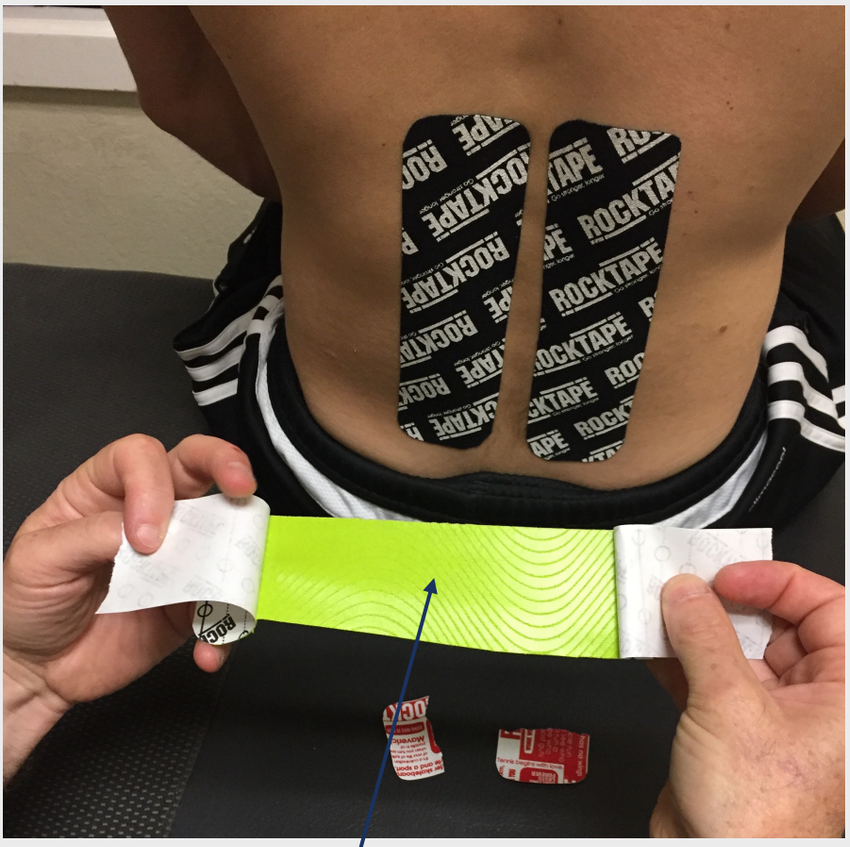


Tear paper backing down middle.

Apply directly over area of pain

DECOMPRESSION PIECE FOR PAIN RELIEF

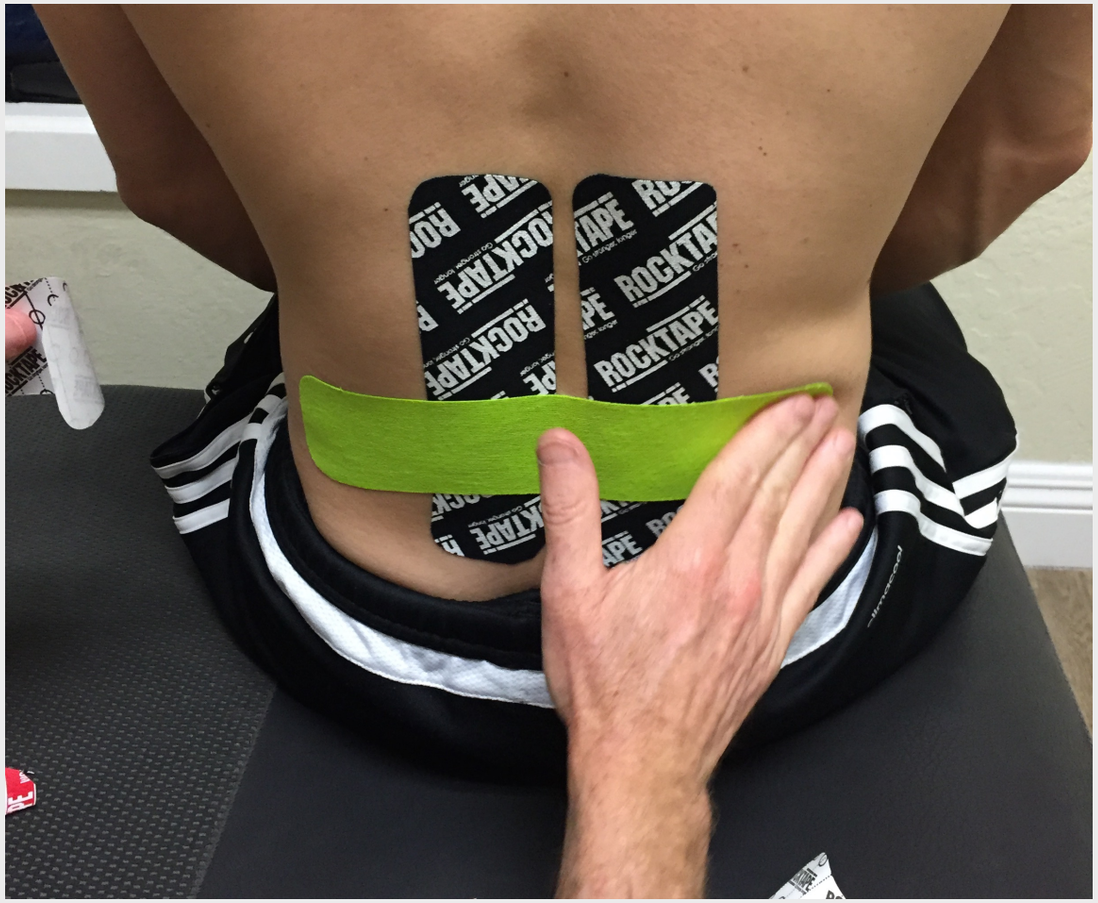
Pull apart WITH 50% stretch



Tear paper backing down middle.

Apply directly over area of pain

Decompression Piece for Pain Relief



Activate adhesive by rubbing paper backing over tape.

Final product!

FUNCTIONAL MOVEMENT TAPING TECHNIQUES FOR REHABILITATION & NEUROPATHIC PAIN

LIVE/VIDEO DEMONSTRATION

WITH MARK CYMERINT, DC

PAIN TAPING UPPER THORACIC REGION

Simply apply two stabilization strips to the mid- thoracic area and a decompression strip, across the area of greatest discomfort.

The same approach applies to neck pain. However, be aware that the skin in the cervical spine is more sensitive to taping, there may be a hairline that is sensitive to the stretch of the tape. Do not tape over the baroreceptors in the carotid arteries in the anterolateral neck.

1. Measure & place two stabilization pieces

2. Activate adhesive by rubbing the tape

Remember ***NO*** stretch!

Apply decompression piece over area of pain
Apply WITH 50% stretch

Rub paper backing over tape.

Final product!

KNEE PAIN TAPING

Measure two stabilization strips of tape that will curve around the inside and outside of the knee, essentially around knee cap. (Measure from tibial tuberosity to the quadratus tendon area). Make one piece longer than the other so that it anchors on SKIN not on the tape. Round corners

Make a decompression strip that will go across knee, usually below kneecap. (Make sure it is long enough to anchor on SKIN.

Stretch the tissues being taped by simply flexing the patient's knee to 90° during taping application

To apply first strip, remove that paper from one of the tape and anchor the strip at the top or bottom of the knee area. Peel back most of the paper backing and using paper off tension, use both hands to guide and curve the tape around the knee. Apply the second one the same and rub to activate adhesive. Apply the decompression strip.

KNEE PAIN TAPING

owing the basic application of the FMT knee pain framework with decompression of pat

☆ THE EFFECTIVENESS OF KINESIO TAPING ® FOR MOBILITY AND FUNCTIONING IMPROVEMENT IN KNEE OSTEOARTHRITIS: A RANDOMIZED, DOUBLE-BLIND, CONTROLLED TRIAL.

DATE & JOURNAL: CLIN REHABIL 2020 JUL

Abstract

Objective: To evaluate the effectiveness of the Kinesio Taping® method for mobility and functioning improvement for patients with knee osteoarthritis (KO).

Results: The mean age of participants was 68.7 ± 9.9 in intervention group and 70.6 ± 8.3 in control group. TImproved knee flexion and enhancement in functioning assessed by KOOS were noticed in both groups, with lasting improvement to follow up. No difference in the change in the above-mentioned outcomes was found between groups. Fewer subjects from Kinesio Taping group were unsure if taping alleviated their mobility and more intervention group patients indicated higher subjective satisfaction with the effect of knee taping to symptom and mobility alleviation than control group.

Conclusion: Investigated Kinesio Taping technique did not produce better results in mobility and functioning improvement over non-specific knee taping; however, it had higher patient-reported subjective value for symptom attenuation and experienced mobility enhancement.

Donec V, Kubilius R. The effectiveness of Kinesio Taping® for mobility and functioning improvement in knee osteoarthritis: a randomized, double-blind, controlled trial. Clin Rehabil. 2020 Jul;34(7):877-889. doi: 10.1177/0269215520916859. Epub 2020 May 6. PMID: 32372651; PMCID: PMC7376619.

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MOBILIZATION WITH MOVEMENT AND KINESIO TAPING IN KNEE ARTHRITIS-EVALUATION AND OUTCOMES.

DATE & JOURNAL: INT ORTHOP. 2018 DEC

- INTRODUCTION: The aim of this study was to investigate the acute effects of Mulligan mobilization with movement (MwM) and taping on function and pain intensity in patients with osteoarthritis (OA).

- RESULTS: Performance in all tests improved significantly in the MwM + taping group, while only sit and stand-up, ten metres walk, and TUG test performances improved in the MwM + placebo taping group ($p < 0.05$). Pain intensity during the tests was also significantly better after intervention in those two groups ($p < 0.05$). Comparison between the groups showed that the pain intensity during all tests was less and functional test scores were better in sit and stand-up, ten metres walk, and walking down stairs in the MwM + taping group than the MwM + placebo taping group.

- CONCLUSIONS: MwM accompanied by taping improves pain during functional activities as well as the performance. MwM without taping may also improve pain intensity; however, it may be inadequate in increasing the performance.

Altmış H, Oskay D, Elbasan B, Düzgün İ, Tuna Z. Mobilization with movement and kinesio taping in knee arthritis-evaluation and outcomes. Int Orthop. 2018 Dec;42(12):2807-2815. doi: 10.1007/s00264-018-3938-3. Epub 2018 May 10. PMID: 29750315.

PLANTAR FASCIITIS PAIN TAPING

Measure stabilization strip from the heel to the base of the toes on the affected foot. Round corners.

Measure a decompression strip around the circumference of the patient's midfoot, accounting for a 2-3 in. of overlap for the second anchor. Round corners.

To stretch the plantar fascia and bottom of the foot, have the patient dorsiflex their ankle as much as possible to extend the toes back as much as they can.

Apply the stabilization strip with paper off to the bottom of the foot from the base of the toes to the heel. The direction of application doe not matter. Rub the strip to activate the adhesive.

Plantar Fasciitis Pain Taping

Photos showing the FMT pain taping framework applied to a patient with plantar fasciitis

PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION KINESIO TAPING IMPROVES RANGE OF MOTION OF ANKLE DORSIFLEXION AND BALANCE ABILITY IN CHRONIC STROKE PATIENTS

Date & Journal: Healthcare (Basel) . 2021 Oct 22.

Abstract

This study aimed to determine the effect of a proprioceptive neuromuscular facilitation (PNF) pattern Kinesio taping (KT) application on the ankle dorsiflexion range of motion (DF-ROM) and balance ability in patients with chronic stroke. This crossover study included 18 patients with stroke. The subjects were randomly assigned to three interventions: barefoot, ankle KT (A-KT), and PNF-KT. The A-KT was applied to the gastrocnemius and tibialis anterior (TA) muscles, and subtalar eversion. The PNF-KT was applied on the extensor hallucis, extensor digitorum, and TA muscles. DR-ROM was measured using the iSen™, a wearable sensor. Balance ability was assessed based on static balance, measured by the Biodex Balance System (BBS), and dynamic balance, measured by the timed up and go (TUG) test and dynamic gait index (DGI). Compared with the barefoot and A-KT interventions, PNF-KT showed significant improvements in the ankle DF-ROM and BBS scores, TUG, and DGI. PNF-KT, for functional muscle synergy, improved the ankle DF-ROM and balance ability in patients with chronic stroke. Therefore, the application of PNF-KT may be a feasible therapeutic method for improving ankle movement and balance in patients with chronic stroke. Additional research is recommended to identify the long-term effects of the PNF-KT.

Park D, Bae Y. Proprioceptive Neuromuscular Facilitation Kinesio Taping Improves Range of Motion of Ankle Dorsiflexion and Balance Ability in Chronic Stroke Patients. Healthcare (Basel). 2021 Oct 22;9(11):1426. doi: 10.3390/healthcare9111426. PMID: 348284

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DEVELOPMENT OF A CLINICAL PREDICTION RULE TO IDENTIFY PATIENTS WITH PLANTAR HEEL PAIN LIKELY TO BENEFIT FROM BIOMECHANICAL ANTI-PRONATION TAPING: A PROSPECTIVE COHORT STUDY.

DATE & JOURNAL: INT ORTHOP. 2018 DEC

- OBJECTIVES: To develop a clinical prediction rule (CPR) to identify patients with plantar heel pain (PHP) likely to benefit from biomechanical anti-pronation taping (BAPT).

- RESULTS: 28 patients achieved a successful outcome. A CPR with 6 significant variables was identified by a multivariate logistic regression: FFI score less than 33.3, hip adduction angle of the most affected side was greater than the contralateral side, ankle plantar-flexors and hip abductors on the most affected side were not weaker than those on the contralateral side, ankle invertors on the most affected side were weaker than the contralateral side, and having more than 2 painful sites in the low back and lower extremity regions.

- CONCLUSIONS: A CPR has been developed to identify patients with PHP likely to benefit from BAPT.

Wu FL, Shih YF, Lee SH, Luo HJ, Wang WT. Development of a clinical prediction rule to identify patients with plantar heel pain likely to benefit from biomechanical anti-pronation taping: A prospective cohort study. Phys Ther Sport. 2018 May;31:58-67. doi: 10.1016/j.ptsp.2018.01.010. Epub 2018 Feb 2. PMID: 29655069.

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SHOULDER PAIN TAPING

Basic framework for taping the shoulder is similar to the knee, with two stabilization strips surrounding the shoulder area and decompression strip focused over the area of greatest pain, usually the top of the glenohumeral joint area or across the acromioclavicular joint.

1. Two stabilization strips that will start on the upper shoulder/trapezius area and end around the bottom of the deltoid muscle. Measure one longer than the other so the anchor is on skin.

2. Measure a strip of decompression at the area of greatest pain. AVOID sensitive skin in the axilla and medial upper arm.

Shoulder Pain Taping

EFFECT OF KINESIO TAPING ON WRIST KINEMATICS AND FUNCTIONAL PERFORMANCE: A RANDOMIZED CONTROLLED TRIAL

Date & Journal: J Hand Ther . 2021 Oct 27.

Abstract

Background: Kinesio taping (KT) is a popular adjunct treatment modality for musculoskeletal injuries, hand and wrist injuries. The effectiveness of KT on wrist kinematics has been analyzed during single plane movements in general, and no study has investigated its effectiveness during dart throwing motion (DTM).

Purpose: To compare the effects of different KT techniques on wrist kinematics during DTM and functional performance of hand in healthy participants.

Results: DTM range increased (P = .0) and Minnesota Manual Dexterity Test time decreased (P = .0) after KT and PT applications on FCU and ECRB/L muscles. Amount of change in wrist kinematics (P = .0; effect size = 0.2 and 0.3) and functional performance (P = .0; effect size = 0.6 and 0.8) were more obvious with KT applications, independent from the muscles they were applied on (P = .2 for wrist kinematics and P = .7 for functional performance).

Conclusions: KT on either FCU or ECRB/L muscles improve wrist kinematics and functional performance, significantly. Further studies should investigate if these findings apply for the patients with different wrist injuries, for both immediate- and long-term effectiveness.

Oruk DÖ, Karakaya MG, Yenişehir S, Karakaya İÇ. Effect of Kinesio taping on wrist kinematics and functional performance: A randomized controlled trial. J Hand Ther. 2021 Oct 27:S0894-1130(21)00148-4. doi: 10.1016/j.jht.2021.09.005. Epub ahead of print. PM

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EFFECT OF KINESIOLOGY TAPING ON UPPER TORSO MOBILITY AND SHOULDER PAIN AND DISABILITY IN US MASTERS NATIONAL CHAMPIONSHIP SWIMMERS: AN EXPLORATORY STUDY.

DATE & JOURNAL: J MANIPULATIVE PHYSIOL THER. 2019 JUN 17

- OBJECTIVE: The purpose of this study was to observe changes in shoulder pain and upper-extremity functional movement after kinesiology taping (KT) in competitive swimmers.

- METHODS: 76 healthy participants competing in the US Masters Swimming 2017 National Championship participated in the study.

- RESULTS: A change in the functional movement assessment was observed after KT application when compared to the pre-KT application. A statistical significant change for pain and disability scores of 2.17 was observed.

- CONCLUSION: For the participants in this study, KT changed shoulder pain and active functional movement scores significantly in swimmers.

Hanson JH, Ostrem JD, Davies BL. Effect of Kinesiology Taping on Upper Torso Mobility and Shoulder Pain and Disability in US Masters National Championship Swimmers: An Exploratory Study. J Manipulative Physiol Ther. 2019 May;42(4):247-253. doi: 10.1016/j.jmpt.2018.11.009. Epub 2019 Jun 17. PMID: 31221494.

EFFECT OF KINESIOLOGY TAPING ON UPPER TORSO MOBILITY AND SHOULDER PAIN AND DISABILITY IN US MASTERS NATIONAL CHAMPIONSHIP SWIMMERS: AN EXPLORATORY STUDY.

DATE & JOURNAL: J MANIPULATIVE PHYSIOL THER. 2019 JUN 17

- OBJECTIVE: The purpose of this study was to observe changes in shoulder pain and upper-extremity functional movement after kinesiology taping (KT) in competitive swimmers.
- METHODS: 76 healthy participants competing in the US Masters Swimming 2017 National Championship participated in the study.
- RESULTS: A change in the functional movement assessment was observed after KT application when compared to the pre-KT application. A statistical significant change for pain and disability scores of 2.17 was observed.
- CONCLUSION: For the participants in this study, KT changed shoulder pain and active functional movement scores significantly in swimmers.

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COMPARISON OF THE EFFICACY OF CONVENTIONAL PHYSICAL THERAPY MODALITIES AND KINESIO TAPING TREATMENTS IN SHOULDER IMPINGEMENT SYNDROME.

DATE & JOURNAL: EURASIAN J MED. 2019 JUN

Abstract

Objective: The aim of the present study was to compare the effectiveness of kinesio taping (KT) treatments and conventional physical therapy (PT) modalities that are applied to reduce pain and improve physical movements and functions of patients with sub acromial impingement syndrome (SIS).

Results: Physical therapy was found to be more effective than KT when these two treatment modalities were assessed based on ASESS-100, WORC index values, night pain, and movement pain. PT and KT treatments have similar effects in active ROM, rest pain, and C-M scale. At the end of the study, they were found to have similar effects except the night pain value. PT was found to be more effective for night pain than KT.

Conclusion: Physical therapy was concluded to be more effective after treatment. The application of KT does not appear to be an alternative treatment method for SIS, but it can provide a potential supportive care for SIS. However, the outcomes suggest that KT can provide a remarkable benefit.

Kul A, Ugur M. Comparison of the Efficacy of Conventional Physical Therapy Modalities and Kinesio Taping Treatments in Shoulder Impingement Syndrome. Eurasian J Med. 2019 Jun;51(2):139-144. doi: 10.5152/eurasianjmed.2018.17421. Epub 2018 Nov 30. PMID: 31258353; PMCID: PMC6592440.

A TRIPLE APPLICATION OF KINESIO TAPING SUPPORTS REHABILITATION PROGRAM FOR ROTATOR CUFF TENDINOPATHY: A RANDOMIZED CONTROLLED TRIAL.

DATE & JOURNAL: ORTOP TRAUMATOL REHABIL. 2018 DEC 31

- BACKGROUND: Rotator cuff tendinopathy ***(RoCT)*** is a common pathology among adults. Kinesio-taping (KT) represents a possible rehabilitative treatment. The aim of the present study is to investigate the efficacy of a combination of three different applications of KT combined with a standardized protocol of rehabilitative exercises in reducing pain and in functional recovery in patients affected by RoCT.

- RESULTS: Within-group analysis for RG at T1 showed significant improvement in: NRS at-rest, during-movement; CMS; MRC shoulder flexion, extension, abduction, adduction, external rotation, internal rotation, elbow flexion and extension strength. Within-group analysis for SG at T1 showed significant improvement in: during-movement NRS; CMS.

- CONCLUSIONS: 1 KT application combined with conventional rehabilitative treatment can facilitate immediate pain reduction during rehabilitative treatment. 2. KT application combined with conventional rehabilitative treatment can increase function recovery. 3. KT application combined with conventional rehabilitative treatment can increase strength recovery. 4. Our findings however are not strong enough to recommend the application of KT during rehabilitative treatment for RoCT. 5. These results are the basis for future prospective, randomized controlled trials of larger samples of patients.

Miccinilli S, Bravi M, Morrone M, Santacaterina F, Stellato L, Bressi F, Sterzi S. A Triple Application of Kinesio Taping Supports Rehabilitation Program for Rotator Cuff Tendinopathy: a Randomized Controlled Trial. Ortop Traumatol Rehabil. 2018 Dec 31;20(6):499-505. PMID: 30676323.

TAPING FOR POSTURE MOVEMENT

Taping can be used to help with the correction of posture because it gives kinesthetic guidance to the body and can be used to give feedback using tension, whether it is consciously noticed or not, to promote better positions.

Thedon's study on the degradation of posture due to muscle fatigue showed that simply using a small piece of tape on the Achilles' tendon was enough stimulation to improve quiet standing posture in fatigued individuals. The study concluded that" when the muscular sensory input flow normally relevant for the postural system is impaired due to fatigue, the weight of cutaneous information increases for the successful representation of movements in space to adjust postural control. [1]

POSTURAL TAPING/ MIRROR IMAGE TAPING

As the patient falls into unwanted posture they will receive a conscious or subconscious cue from the tape as it increases tension, reminding them to return to a more desirable posture that places less tension on the tape.

1. Place the body into the position that is opposite of the unwanted posture, (but NOT overly exaggerated).

2. Apply the stabilization tape along the fascial line(s) that will facilitate the intended posture.

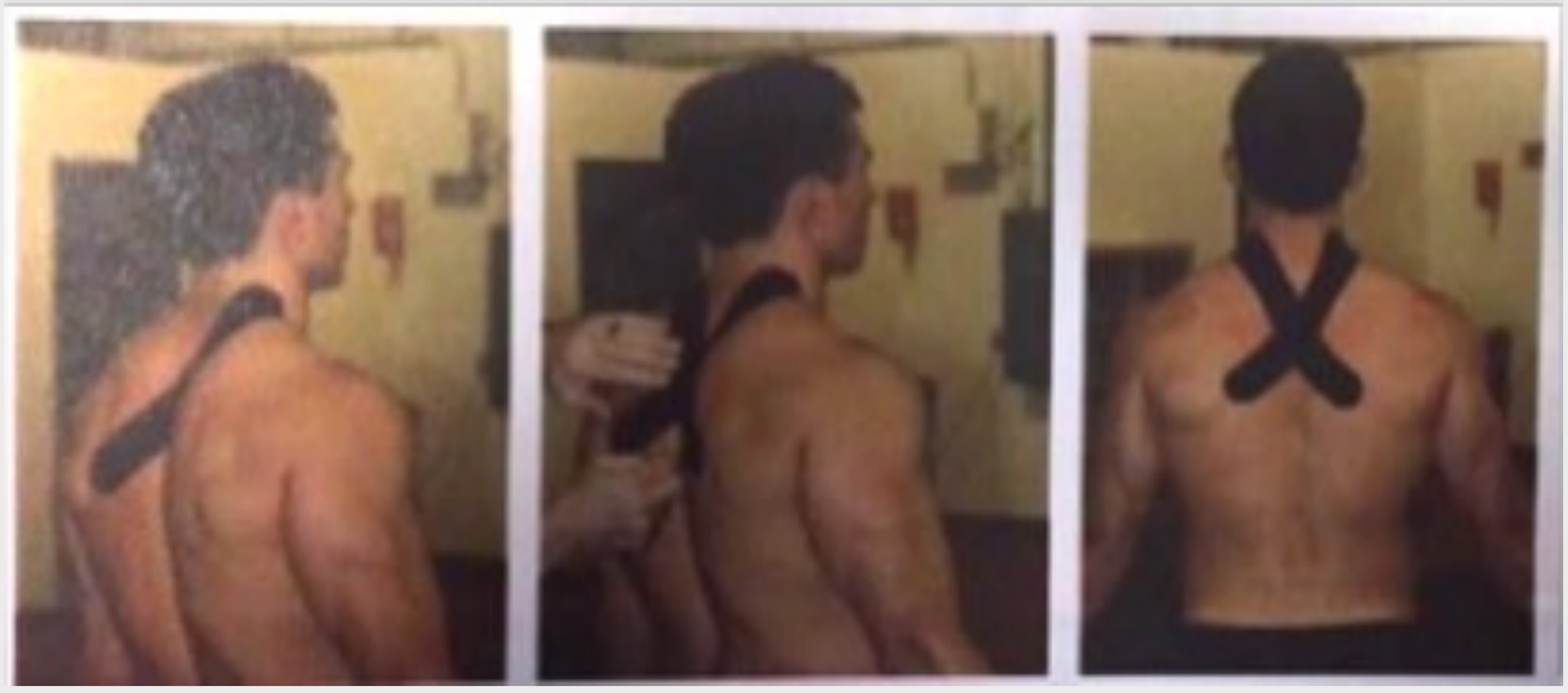
3. Apply the strips of tape with paper-off tension or light to moderate stretch (it is usually best to use less stretch on the tape initially and then apply more with subsequent taping applications if needed).

***** You are using long stabilization strips for posture taping.***

CERVICOTHORACIC FMT POSTURAL CONTROL TAPING

Basic postural faults that are noticed in this region are forward head posture, slumped and rounded shoulders, internal rotation, and/or un-leveling of the shoulders.

- 1. Position patient in the opposite (neutral), but NOT exaggerated, of their unwanted posture.
- 2. Simply position the patient where you want them and apply the tape.



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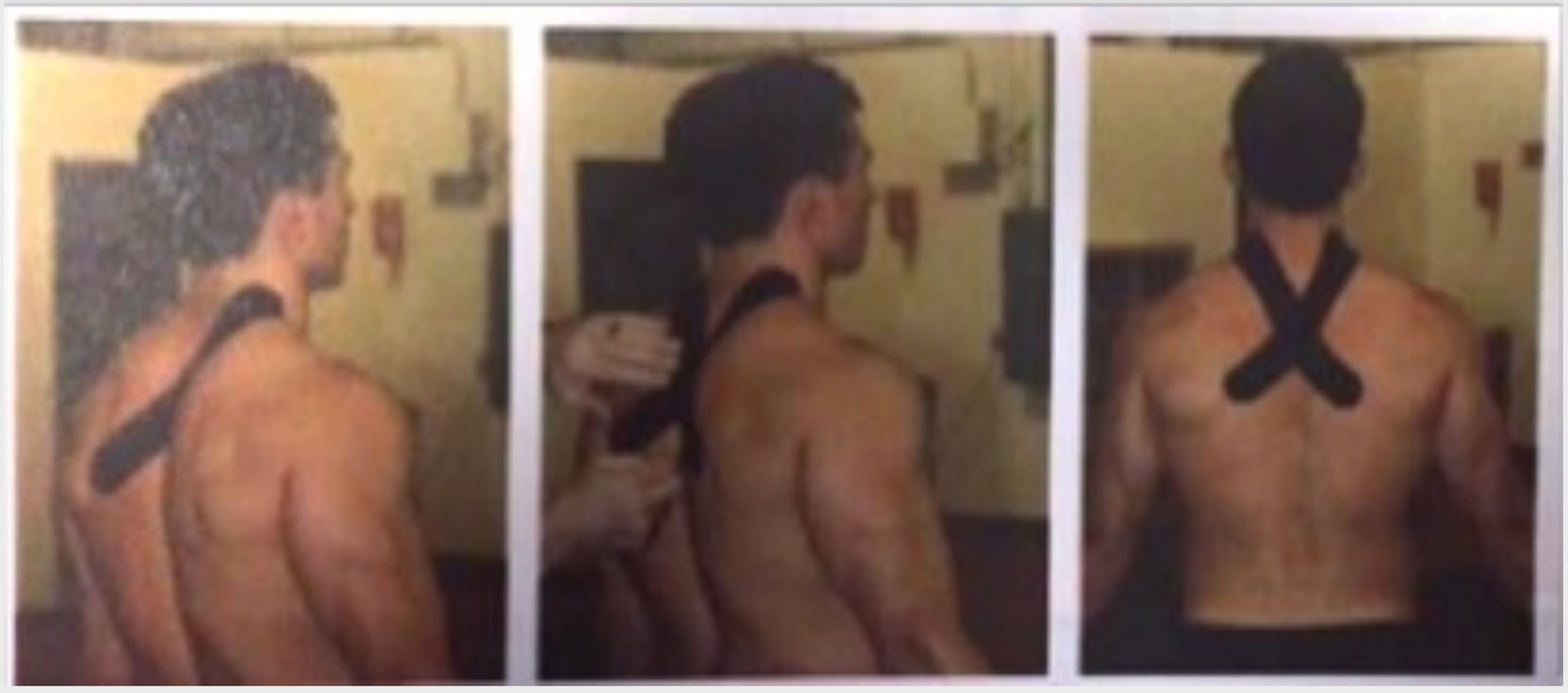

EFFECTS OF RIGID AND KINESIO TAPING ON SHOULDER ROTATION MOTIONS, POSTERIOR SHOULDER TIGHTNESS, AND POSTURE IN OVERHEAD ATHLETES: A RANDOMIZED CONTROLLED TRIAL.

DATE & JOURNAL: J SPORT REHABIL . 2019 MAR 1.

Abstract

Context: Alterations in posture and motion patterns are thought to play a role in developing shoulder injuries in overhead athletes. Taping is widely used in the sporting population, but there are limited empirical data regarding its effectiveness.

Objectives: To determine and compare the effects of rigid and kinesio taping on shoulder rotation motions, posterior shoulder tightness (PST), and posture in overhead athletes.

Results: Glenohumeral internal rotation increased immediately and at 60 to 72 hours after application in the KTG, whereas it decreased immediately after application in the RTG. Immediately after application, total rotation range of motion increased in the KTG and decreased in the RTG, and there was a difference between groups. Immediately after application, PST increased in the RTG; after 60 to 72 hours, it decreased in the KTG and increased in the RTG. Posture outcomes did not change significantly.

Conclusions: Kinesio taping may improve and rigid taping may worsen glenohumeral internal rotation and PST in overhead athletes. For increasing total rotation range of motion, kinesio taping is superior to rigid taping. Taping did not affect posture. Short-term kinesio taping in overhead athletes may be useful to improve glenohumeral internal rotation, total rotation range of motion, and PST.

Gulpinar D, Tekeli Ozer S, Yesilyaprak SS. Effects of Rigid and Kinesio Taping on Shoulder Rotation Motions, Posterior Shoulder Tightness, and Posture in Overhead Athletes: A Randomized Controlled Trial. J Sport Rehabil. 2019 Mar 1;28(3):256-265. doi: 10.1123/jsr.2017-0047. Epub 2018 Jul 14. PMID: 28714759.

DOES KINESIOLOGY TAPE COUNTER EXERCISE RELATED IMPAIRMENTS OF BALANCE IN THE ELDERLY?

Date & Journal: Gait Posture. 2018 May

- BACKGROUND: Maintaining balance is an essential requirement for the performance of daily tasks and sporting activities, particularly in older adults to prevent falls and associated injuries. Kinesiology tape has gained great popularity in sports and is frequently used as a tool for performance enhancement. However, there is little research investigating its influence on balance.

- METHODS: Twelve physically active, healthy men aged 63-77 years performed the test on two separate days, with and without Kinesiology tape at the knee joint.

- RESULTS: Factorial ANOVA revealed significant time × taping condition interaction effects on all performance parameters ($p < 0.05$), indicating that the exercise-related changes in dynamic balance, postural stability and knee proprioception differed between the two taping conditions. The deterioration of performance was always greater when no tape was used.

- SIGNIFICANCE: This study demonstrated that physical exercise significantly deteriorated dynamic balance, postural stability and knee proprioception in older men. These effects can be attenuated through the usage of Kinesiology tape. By preventing exercise-related impairments of balance, Kinesiology tape might help reduce the risk of sports-associated falls and associated injuries.

Hosp S, Csapo R, Heinrich D, Hasler M, Nachbauer W. Does Kinesiology tape counter exercise-related impairments of balance in the elderly? Gait Posture. 2018 May;62:167-172. doi: 10.1016/j.gaitpost.2018.03.022. Epub 2018 Mar 10. PMID: 29550696.

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- 5.Anadkumar S. Kinesio tape management for superficial radial nerve entrapment: a case report. Physiotherapy Therapy and Practice. 2013 Apr; 29(3):232-241.

III. PRINCIPLES OF REHABILITATION RELATED TO PAIN MANAGEMENT

A. INSTRUMENTATION, TECHNOLOGY RELATED TO REHABILITATION PRINCIPLES.

B. THERAPEUTIC LASERS RELATED TO PAIN MANAGEMENT OF ACUTE AND CHRONIC PAIN, AND REHABILITATION OF INJURIES.

C. MANAGING PAIN AND INFLAMMATION OF AN INJURED PATIENT THROUGH INSTRUMENTATION AND TECHNOLOGY.

D. INFLAMMATION AND ITS RELATIONSHIP TO DISEASE, AND PAIN MANAGEMENT PROTOCOLS FOR THE CHIROPRACTIC TREATMENT PLAN INCLUDING NUTRITIONAL OPTIONS

INSTRUMENTATION & TECHNOLOGY RELATED TO REHABILITATION PRINCIPLES.

- POSTURE BALANCING NEUROLOGY
- MASSAGE THERAPY
- LASER THERAPY
- TRACTION
- MASSAGE
- E-STIM
- FUNCTIONAL MOVEMENT TECHNIQUES (TAPING)
- SUPPLEMENTS

INTRODUCTION TO REHABILITATION PRINCIPLES RELATED TO PAIN MANAGEMENT & INFLAMMATION

- Chiropractic
- Nutritional Supplements
  Ex.) Turmeric, Collagen, Minerals
- Laser
- Cold Pack/ Ice
- Functional Movement Techniques (Taping)
- Pain Relief Creams

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THERAPEUTIC LASERS RELATED TO PAIN MANAGEMENT OF ACUTE AND CHRONIC PAIN, AND REHABILITATION OF INJURIES.

MILLENNIUM MUSCLE STRAIN PROTOCOL - NEW

Mobilization

Elevation

Laser

Taping

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LASER

THERAPEUTIC LASERS RELATED TO PAIN MANAGEMENT OF ACUTE AND CHRONIC PAIN, AND REHABILITATION OF INJURIES

WHAT IS LASER / LIGHT THERAPY?

Laser Therapy is the common term

used to describe any a modality that

utilizes photons of light (typically red and/or infrared light for the relief of pain, to accelerate healing and decrease inflammation

FDA CLEARED USES FOR LASER

- Temporary relief of minor muscle & joint pain
- Arthritis
- Muscle spasms
- Relieving stiffness
- Promoting relaxation of muscle tissue
- Temporarily increase local blood circulation where heat is indicated

510(k) Number (if known): __K123474_____ Page 1 of 1

Device Name: AVANT LASER MODEL LZ30 and LZ30-X

Indications for Use:

The Avant Laser Model LZ30 and LZ30-X are intended to emit energy in the visible and near infrared spectrum to provide topical heating for the purpose of elevating tissue temperature for a temporary relief of minor muscle and joint pain and stiffness, minor arthritis pain, or muscle spasm; the temporary increase in local blood circulation; and the temporary relaxation of muscles.

Prescription Use x (Part 21 CFR 801 Subpart D) Over-The-Counter Use _____ (Part 21 CFR 807 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE -CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of Device Evaluation (ODE)

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Division of Surgical Devices

510(k) Number K123474

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CONTRAINDICATIONS TO LASER THERAPY

Pregnancy

Cancer

Fever (body temperature higher than 100.4°f/38°c)

During stages of acute infection (including localized infections)

Over hemorrhages

In the vicinity of pacemakers

SOURCE: FDA

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THERAPEUTIC LASERS RELATED TO PAIN MANAGEMENT OF ACUTE & CHRONIC PAIN, AND REHABILITATION OF INJURIES

Laser Function

Light is absorbed through skin, and then absorbed by the mitochondria in the cell

Light energy is transformed into biochemical energy

Additional energy assist cells to enhance healing and assist to restore normal cell function

PHOTOBIOMODULATION

DEFINITION: (PBMT) IS A FORM OF LIGHT THERAPY THAT UTILIZES LIGHT SOURCES INCLUDING LASERS, LEDS, AND BROADBAND LIGHT FOR THE RELIEF OF PAIN AND INFLAMMATION.

Photon energy has been known to have a photophysical and photobiological effect at the cellular level to modulate healing and anti-inflammatory action within the cell.

No photo-therapeutic effects are seen when low level laser therapy was applied to uninjured muscle [2]

Injured cells & tissues emit enzymes that encourage the receipt of photons more readily than healthy cells and tissues.

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LASER CLASSIFICATIONS: 1, 2, 3, 4

Classification has nothing to do with effectiveness but what controls are needed to ensure safe operation

Classification is measured by how much injury a laser can cause to the eye.

Safest Class: 1

Most Hazardous Class: 4

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EXAMPLE OF LASER THAT I USE IN MY OFFICE WITH DEMONSTRATION:

- Device Specs – LZ30Z
- High Power
- Dual Wavelength
- 1000mW Rd, 1400mW Infrared
- Preloaded with many protocols
- Compact, Cordless, & lightweight
- Fully Programmable
- Expandable- software upgrades available

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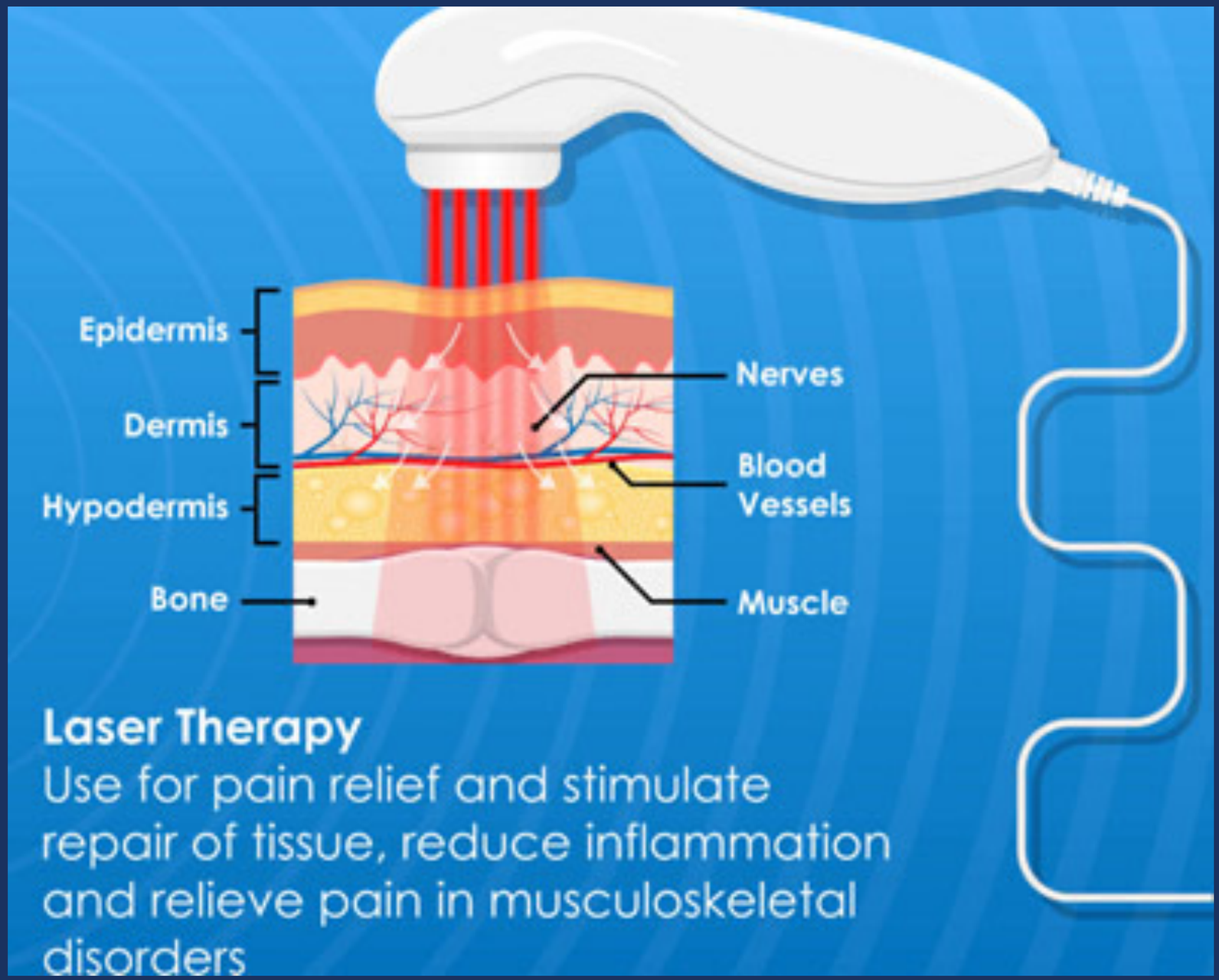
PHOTOBIOMODULATION RESEARCH:

LOW LEVEL LASER THERAPY

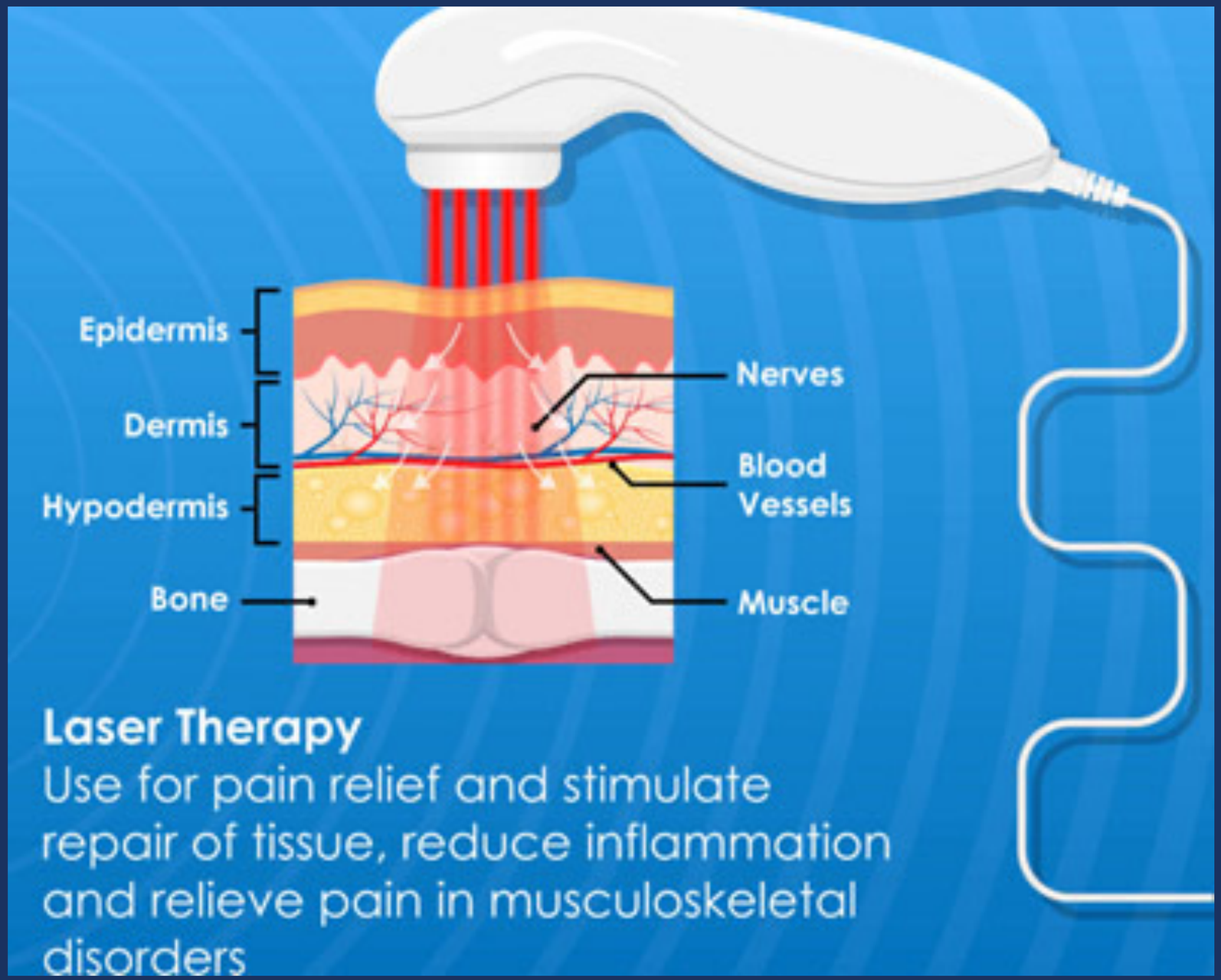


Laser Therapy

Use for pain relief and stimulate repair of tissue, reduce inflammation and relieve pain in musculoskeletal disorders

PHOTOBIOMODULATION RESEARCH:

LOW LEVEL LASER THERAPY



Laser Therapy
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EVIDENCE BASED REFERENCES & RESOURCES

RE: LASERS/PHOTOBIOMODULATION

LASERS VS. RED LIGHT LEDS
IS THERE A DIFFERENCE BESIDES PRICE?

The article compares the efficacy of lasers and red light LEDs in therapeutic settings, highlighting significant differences beyond cost. Research indicates that lasers provide superior long-term benefits, with patients showing sustained improvement post-treatment. In contrast, LEDs often fail to deliver lasting results, with symptoms re-emerging after treatment ends. Additionally, high-quality laser devices tend to offer more effective and safer outcomes compared to LEDs, which can potentially cause harm with excessive use. Clinical studies and expert opinions, including those from USA universities, support the use of lasers for their effectiveness and lasting benefits. The article concludes that practitioners should consider these findings to avoid introducing suboptimal treatments like low-cost LED devices that may not meet patient expectations or provide durable results.

Hamblin, Michael, and Viljami Heiskanen. "Lasers vs. Red Light LEDs: Is There a Difference Besides Price?" *Chiropractic Economics*, 14 Apr. 2024, p. 20.

PHOTOBIOMODULATION THERAPY FOR TREATMENT OLFACTORY AND TASTE DYSFUNCTION COVID-19-RELATED: A CASE REPORT

Date & Journal: J Biophotonics . 2022 Apr 2.

Abstract

It is postulated that the inflammatory process resulting from SARS-CoV-2 infection is the main cause of smell and taste dysfunctions in patients. In view of this, photobiomodulation, due to its anti-inflammatory and antioxidant effects, may be a promising therapeutic modality to treat these disorders. In the present case report, we observed clinical improvement in the symptoms of anosmia and ageusia related to COVID-19 after treatment with photobiomodulation. Due to the inflammatory nature of COVID-19 and the anti-inflammatory effects, photobiomodulation antioxidants already proven in the literature make it a promising therapeutic modality, especially sequela COVID-related, including olfactory (anosmia) and taste (ageusia) dysfunction. In the present case report, the patient's olfactory and gustatory functions were re-established after 10 treatment sessions with photobiomodulation.

J Biophotonics . 2022 Apr 21Brocca de Souza V, Ferreira LT, Sene-Fiorese M, Garcia V, Zuccolotto Rodrigues T, de Aquino Junior AE, Bagnato VS, Panhoca VH. Photobiomodulation therapy for treatment olfactory and taste dysfunction COVID-19-related: a case re

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PHOTOBIOMODULATION: EVOLUTION AND ADAPTATION

Date & Journal: Photobiomodul Photomed Laser Surg . 2022 Apr.

Abstract

Photobiomodulation (PBM) can be described as the *intentional* use of low-power laser or light-emitting diode light in the visible and near-infrared light spectra as a *medical treatment* to *living biological tissues*. This article describes the evolution of photochemical reactions on Earth, the mitochondria, and their implications in PBM; the science of light and energy (necessary to understand the mechanisms of PBM); and the clinical science of light as therapeutic medicine. Finally, selected reviews of current treatment protocols and ongoing research regarding the possibilities for the use of PBM in the human body are examined.

Lipko NB. Photobiomodulation: Evolution and Adaptation. Photobiomodul Photomed Laser Surg. 2022 Apr;40(4):213-233. doi: 10.1089/photob.2021.0145. Epub 2022 Mar 29. PMID: 35353639.

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COMPARATIVE EFFICACY OF LOW-LEVEL LASER THERAPY (LLLT) TO TENS AND THERAPEUTIC ULTRASOUND IN MANAGEMENT OF TMDS: A SYSTEMATIC REVIEW & META-ANALYSIS

Date & Journal: Cranio . 2022 Mar 22.

Abstract

Objective: To assess the reduction in pain, muscle tenderness, joint clicking, and improvement in mouth opening (MO) after low-level laser therapy (LLLT) compared to transcutaneous electrical nerve stimulation (TENS) and therapeutic ultrasound (US) among temporomandibular joint disorder (TMD) patients.

Results: Twelve RCTs were included in the systematic review, and 9 were included in the meta-analysis. For reduction in pain between LLLT and TENS, LLLT was found to be better than TENS, at 95% CI. LLLT was also proven to be better in reducing pain than therapeutic US, at 81% CI.

Conclusion: This systematic review and meta-analysis compared the effectiveness of LLLT, TENS, and therapeutic US in TMD. LLLT provided relatively more effective pain relief and improvement in MO.

Ansari S, Charantimath S, Lagali-Jirge V, Keluskar V. Comparative efficacy of low-level laser therapy (LLLT) to TENS and therapeutic ultrasound in management of TMDs: a systematic review & meta-analysis. Cranio. 2022 Mar 22:1-10. doi: 10.1080/08869634.202

EFFECTS OF PHOTOBIOMODULATION AND DEEP WATER RUNNING IN PATIENTS WITH CHRONIC NON-SPECIFIC LOW BACK PAIN: A RANDOMIZED CONTROLLED TRIAL

Date & Journal: Lasers Med Sci . 2022 Mar 4

Abstract

Photobiomodulation therapy (PBM) is often used to treat musculoskeletal disorders such as chronic non-specific low back pain (NSCLBP) as it can have positive effects on biomarkers-creatine kinase (CK) and serum cortisol levels-related to stress caused by physical exercise, such as deep water running (DWR) or by pain. The aim of this study was to evaluate the effects of the combination of PBM and aquatic exercise (DWR) on the intensity of pain, disability, 6-min walk test adapted (6WTA), and on cortisol and creatine kinase (CK) levels in a population with NSCLBP. The participants were allocated into three groups: TG_{PBM} (Photobiomodulation and Training Group), TG_{PLA} (Placebo Photobiomodulation and Training Group), and the G_{PBM} (Photobiomodulation Group). Information regarding anthropometric data, blood pressure, and heart rate were collected, and the questionnaires were applied: IPAQ-Short Form, Oswestry Disability Index, and the Visual Analog Scale for Pain. The submaximal exercise test (6WTA) was performed. Blood was collected for analysis of cortisol and CK levels. The training sessions were performed twice a week, for 4 weeks. In the intragroup comparisons, there were statistically significant changes in the TG_{PBM} and G_{PBM} groups in the outcomes pain intensity, disability (reductions in both groups), and in cortisol (increased in the TG_{PBM} and reduced in the G_{PBM}); in the TG_{PLA} group, there was a statistically significant reduction only in the outcome of pain intensity. In the intergroup comparison, in the comparison between TG_{PBM} and TG_{PLA}, there was a statistically significant difference in the level of cortisol, as well as in the comparison between TG_{PBM} and G_{PBM}, in which there was a statistically significant difference for this same outcome (cortisol) and for the 6WTA outcome. The effects of the combination of PBM and aquatic exercise have positive effects on reducing pain intensity, disability, and cortisol levels, but its effects on other variables (6WTA and CK) are too small to be considered significant.

Nardin DMK, Stocco MR, Aguiar AF, Machado FA, de Oliveira RG, Andraus RAC. Effects of photobiomodulation and deep water running in patients with chronic non-specific low back pain: a randomized controlled trial. Lasers Med Sci. 2022 Mar 4. doi: 10.1007/s1

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Date & Journal: Lasers Med Sci . 2022 Mar 4

Abstract

Photobiomodulation therapy (PBM) is often used to treat musculoskeletal disorders such as chronic non-specific low back pain (NSCLBP) as it can have positive effects on biomarkers-creatine kinase (CK) and serum cortisol levels-related to stress caused by physical exercise, such as deep water running (DWR) or by pain. The aim of this study was to evaluate the effects of the combination of PBM and aquatic exercise (DWR) on the intensity of pain, disability, 6-min walk test adapted (6WTA), and on cortisol and creatine kinase (CK) levels in a population with NSCLBP. The participants were allocated into three groups: TG_{PBM} (Photobiomodulation and Training Group), TG_{PLA} (Placebo Photobiomodulation and Training Group), and the G_{PBM} (Photobiomodulation Group). Information regarding anthropometric data, blood pressure, and heart rate were collected, and the questionnaires were applied: IPAQ-Short Form, Oswestry Disability Index, and the Visual Analog Scale for Pain. The submaximal exercise test (6WTA) was performed. Blood was collected for analysis of cortisol and CK levels. The training sessions were performed twice a week, for 4 weeks. In the intragroup comparisons, there were statistically significant changes in the TG_{PBM} and G_{PBM} groups in the outcomes pain intensity, disability (reductions in both groups), and in cortisol (increased in the TG_{PBM} and reduced in the G_{PBM}); in the TG_{PLA} group, there was a statistically significant reduction only in the outcome of pain intensity. In the intergroup comparison, in the comparison between TG_{PBM} and TG_{PLA}, there was a statistically significant difference in the level of cortisol, as well as in the comparison between TG_{PBM} and G_{PBM}, in which there was a statistically significant difference for this same outcome (cortisol) and for the 6WTA outcome. The effects of the combination of PBM and aquatic exercise have positive effects on reducing pain intensity, disability, and cortisol levels, but its effects on other variables (6WTA and CK) are too small to be considered significant.

Nardin DMK, Stocco MR, Aguiar AF, Machado FA, de Oliveira RG, Andraus RAC. Effects of photobiomodulation and deep water running in patients with chronic non-specific low back pain: a randomized controlled trial. Lasers Med Sci. 2022 Mar 4. doi: 10.1007/s1

★ A COMPARATIVE STUDY OF THE DOSE-DEPENDENT EFFECTS OF LOW LEVEL AND HIGH INTENSITY PHOTOBIOMODULATION (LASER) THERAPY ON PAIN AND ELECTROPHYSIOLOGICAL PARAMETERS IN PATIENTS WITH CARPAL TUNNEL SYNDROME.

DATE & JOURNAL: EUR J PHYS REHABIL MED. 2020 DEC

ABSTRACT

Background: Carpal tunnel syndrome (CTS) is a common peripheral nerve disorder of the wrist. Nonsurgical treatments e.g. laser therapy may cause potential beneficial effects.

Results: VAS was significantly lower in all groups after 3 weeks. CMAP latency decreased in all groups. The interaction of group and time (5×2) was significant for pain, the latency of CMAP and CMAP amplitude. The interaction of group and time was not significant for the CMAP conduction velocity, sensory nerve latency and amplitude.

Conclusions: HILT with a power of 1.6 W and low fluence of 8 J/cm2 was superior in reduction of pain and improvement of the median motor nerve electrophysiological studies compared to LLLT and exercise-only control groups.

Ezzati K, Laakso EL, Saberi A, Yousefzadeh Chabok S, Nasiri E, Bakhshayesh Eghbali B. A comparative study of the dose-dependent effects of low level and high intensity photobiomodulation (laser) therapy on pain and electrophysiological parameters in patients with carpal tunnel syndrome. Eur J Phys Rehabil Med. 2020 Dec;56(6):733-740. doi: 10.23736/S1973-9087.19.05835-0. Epub 2019 Nov 18. PMID: 31742366.

★ INFRARED LOW-LEVEL LASER THERAPY (PHOTOBIOMODULATION THERAPY) BEFORE INTENSE PROGRESSIVE RUNNING TEST OF HIGH-LEVEL SOCCER PLAYERS: EFFECTS ON FUNCTIONAL, MUSCLE DAMAGE, INFLAMMATORY, AND OXIDATIVE STRESS MARKERS-A RANDOMIZED CONTROLLED TRIAL.

DATE & JOURNAL: OXIF MED CELL LONGEV. 2019 NOV.

ABSTRACT: The effects of pre-exercise photobiomodulation therapy (PBMT) to enhance performance, accelerate recovery, and attenuate exercise-induced oxidative stress were still not fully investigated, especially in high-level athletes. The aim of this study was to evaluate the effects of PBMT (using infrared low-level laser therapy) applied before a progressive running test on functional aspects, muscle damage, and inflammatory and oxidative stress markers in high-level soccer players. A randomized, triple-blind, placebo-controlled crossover trial was performed. 22 high-level male soccer players from the same team were recruited and treated with active PBMT and placebo. The order of interventions was randomized. Immediately after the application of active PBMT or placebo, the volunteers performed a standardized high-intensity progressive running test until exhaustion. We analyzed rates of oxygen uptake, time until exhaustion, and aerobic and anaerobic threshold during the intense progressive running test. PBMT increased the VO2 max, time until exhaustion, time and volume in which anaerobic threshold happened, and volume in which aerobic threshold happened. Moreover, PBMT decreased CK and LDH activities. Regarding the cytokines, PBMT decreased only IL-6. Finally, PBMT decreased TBARS and carbonylated protein levels and increased SOD and CAT activities. The findings of this study demonstrate that pre-exercise PBMT acts on different functional aspects and biochemical markers. Moreover, preexercise PBMT seems to play an important antioxidant effect, decreasing exercise-induced oxidative stress and consequently enhancing athletic performance and improving postexercise recovery.

Tomazoni SS, Machado CDSM, De Marchi T, Casalechi HL, Bjordal JM, de Carvalho PTC, Leal-Junior ECP. Infrared Low-Level Laser Therapy (Photobiomodulation Therapy) before Intense Progressive Running Test of High-Level Soccer Players: Effects on Functional, Muscle Damage, Inflammatory, and Oxidative Stress Markers-A Randomized Controlled Trial. Oxid Med Cell Longev. 2019 Nov 16;2019:6239058.

★ INFRARED LOW-LEVEL LASER THERAPY (PHOTOBIOMODULATION THERAPY) BEFORE INTENSE PROGRESSIVE RUNNING TEST OF HIGH-LEVEL SOCCER PLAYERS: EFFECTS ON FUNCTIONAL, MUSCLE DAMAGE, INFLAMMATORY, AND OXIDATIVE STRESS MARKERS-A RANDOMIZED CONTROLLED TRIAL.

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PHOTOBIOMODULATION WITH LOW-LEVEL LASER THERAPY FOR TREATING ACHILLES TENDINOPATHY: A SYSTEMATIC REVIEW AND META-ANALYSIS.

DATE & JOURNAL: CLIN REHABIL. 2020 JUN.

ABSTRACT

Objective: The purpose of this study was to determine the benefits and harms of low-level laser therapy for Achilles tendinopathy.

Results: Four trials (119 participants) were analyzed. Laser therapy associated to eccentric exercises when compared to eccentric exercises and sham had very low to low certainty of evidence in pain and function assessment. Despite one trial favored laser therapy at two months. The function assessment showed an improvement favoring the placebo group at one month and non-significant difference between groups at 3 and 13 months. Adverse events were poorly reported but restricted to minor events related to the exercises.

Conclusion: The certainty of evidence was low to very low, and the results are insufficient to support the routine use laser therapy for Achilles tendinopathy.

Martimbianco ALC, Ferreira RES, Latorraca COC, Bussadori SK, Pacheco RL, Riera R. Photobiomodulation with low-level laser therapy for treating Achilles tendinopathy: a systematic review and meta-analysis. Clin Rehabil. 2020 Jun;34(6):713-722. doi: 10.1177/0269215520912820. Epub 2020 Mar 23. PMID: 32204620.

THE EFFECTIVENESS OF PHOTOBIOMODULATION THERAPY VERSUS CRYOTHERAPY FOR SKELETAL MUSCLE RECOVERY: A CRITICALLY APPRAISED TOPIC.

DATE & JOURNAL: J SPORT REHABIL. 2019 JAN 29

- Cryotherapy is one of the most commonly used modalities for postexercise muscle recovery despite inconsistencies in the literature validating its effectiveness. With the need to find a more effective modality, photobiomodulation therapy (PBMT) has gained popularity because of recent research demonstrating its ability to accelerate the muscle recovery process. Focused Clinical Question: Is PBMT more effective than cryotherapy at reducing recovery time and decreasing delayed onset muscle soreness after strenuous exercise? Summary of Key Findings: Three moderate- to high-quality double-blinded, randomized, placebo-controlled trials and 2 low- to moderate-quality translational studies performed on rats were included in this critically appraised topic. All 5 studies supported the use of PBMT over cryotherapy as a treatment for postexercise muscle recovery following exercise. PBMT was superior in reducing creatine kinase, inflammation markers, and blood lactate compared with cryotherapy, following strenuous/high intensity aerobic or strength muscular exercise. PBMT was also shown to improve postexercise muscle performance and function more than cryotherapy. Clinical Bottom Line: There is moderate evidence to suggest the use of PBMT over cryotherapy postexercise to enhance muscle recovery in trained and untrained athletes. Shorter recovery times and increased muscle performance can be seen 24 to 96 hours following PBMT application. Strength of Recommendation: Based on consistent findings from all 5 studies, there is grade B evidence to support the use of PBMT over cryotherapy for more effective postexercise recovery of skeletal muscle performance.

Fisher SR, Rigby JH, Mettler JA, McCurdy KW. The Effectiveness of Photobiomodulation Therapy Versus Cryotherapy for Skeletal Muscle Recovery: A Critically Appraised Topic. J Sport Rehabil. 2019 Jul 1;28(5):526-531. doi: 10.1123/jsr.2017-0359. Epub 2019 Jan 29. PMID: 29952693.

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PHOTOBIOMODULATION FOR TRAUMATIC BRAIN INJURY AND STROKE.

Date & Journal: J Neurosci Res . 2018 Apr.

- There is a notable lack of therapeutic alternatives for what is fast becoming a global epidemic of traumatic brain injury (TBI). Photobiomodulation (PBM) employs s red or near-infrared (NIR) light (600-1100nm) to stimulate healing, protect tissue from dying, increase mitochondrial function, improve blood flow, and tissue oxygenation. PBM can also act to reduce swelling, increase antioxidants, decrease inflammation, protect against apoptosis, and modulate microglial activation state. All these mechanisms of action strongly suggest that PBM delivered to the head should be beneficial in cases of both acute and chronic TBI. Most reports have used NIR light either from lasers or from light-emitting diodes (LEDs). Many studies in small animal models of acute TBI have found positive effects on neurological function, learning and memory, and reduced inflammation and cell death in the brain. There is evidence that PBM can help the brain repair itself by stimulating neurogenesis, upregulating BDNF synthesis, and encouraging synaptogenesis. In healthy human volunteers (including students and healthy elderly women), PBM has been shown to increase regional cerebral blood flow, tissue oxygenation, and improve memory, mood, and cognitive function. Clinical studies have been conducted in patients suffering from the chronic effects of TBI. There have been reports showing improvement in executive function, working memory, and sleep. Functional magnetic resonance imaging has shown modulation of activation in intrinsic brain networks likely to be damaged in TBI (default mode network and salience network).

Hamblin MR. Photobiomodulation for traumatic brain injury and stroke. J Neurosci Res. 2018 Apr;96(4):731-743. doi: 10.1002/jnr.24190. Epub 2017 Nov 13. Erratum in: J Neurosci Res. 2019 Mar;97(3):373. PMID: 29131369; PMCID: PMC5803455.

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III. PRINCIPLES OF REHABILITATION RELATED TO PAIN MANAGEMENT

A. INSTRUMENTATION, TECHNOLOGY RELATED TO REHABILITATION PRINCIPLES.

B. THERAPEUTIC LASERS RELATED TO PAIN MANAGEMENT OF ACUTE AND CHRONIC PAIN, AND REHABILITATION OF INJURIES.

C. MANAGING PAIN AND INFLAMMATION OF AN INJURED PATIENT THROUGH INSTRUMENTATION AND TECHNOLOGY.

D. INFLAMMATION AND ITS RELATIONSHIP TO DISEASE, AND PAIN MANAGEMENT PROTOCOLS FOR THE CHIROPRACTIC TREATMENT PLAN INCLUDING NUTRITIONAL OPTIONS

MANAGING PAIN AND INFLAMMATION OF AN INJURED PATIENT THROUGH INSTRUMENTATION AND TECHNOLOGY.

<u>The Efficacy of Laser Therapy for Musculoskeletal and Skin Disorders: A Criteria-Based Meta-analysis of Randomized Clinical Trials</u> by Beckerman et al

The efficacy of laser therapy for musculoskeletal disorders seems, on average, to be larger than the efficacy of a placebo treatment. More specifically, for rheumatoid arthritis, posttraumatic joint disorders, and myofascial pain, laser therapy seems to have a substantial specific therapeutic effect.

<u>Efficacy of low-level laser therapy in the management of neck pain: a systematic review and meta-analysis of randomised placebo or active-treatment controlled trials</u> by Chow et al

We show that LLLT reduces pain immediately after treatment in acute neck pain and up to 22 weeks after completion of treatment in patients with chronic neck pain.

<u>A systematic review with procedural assessments and meta-analysis of low level laser therapy in lateral elbow tendinopathy (tennis elbow</u>) by Bjordal et al

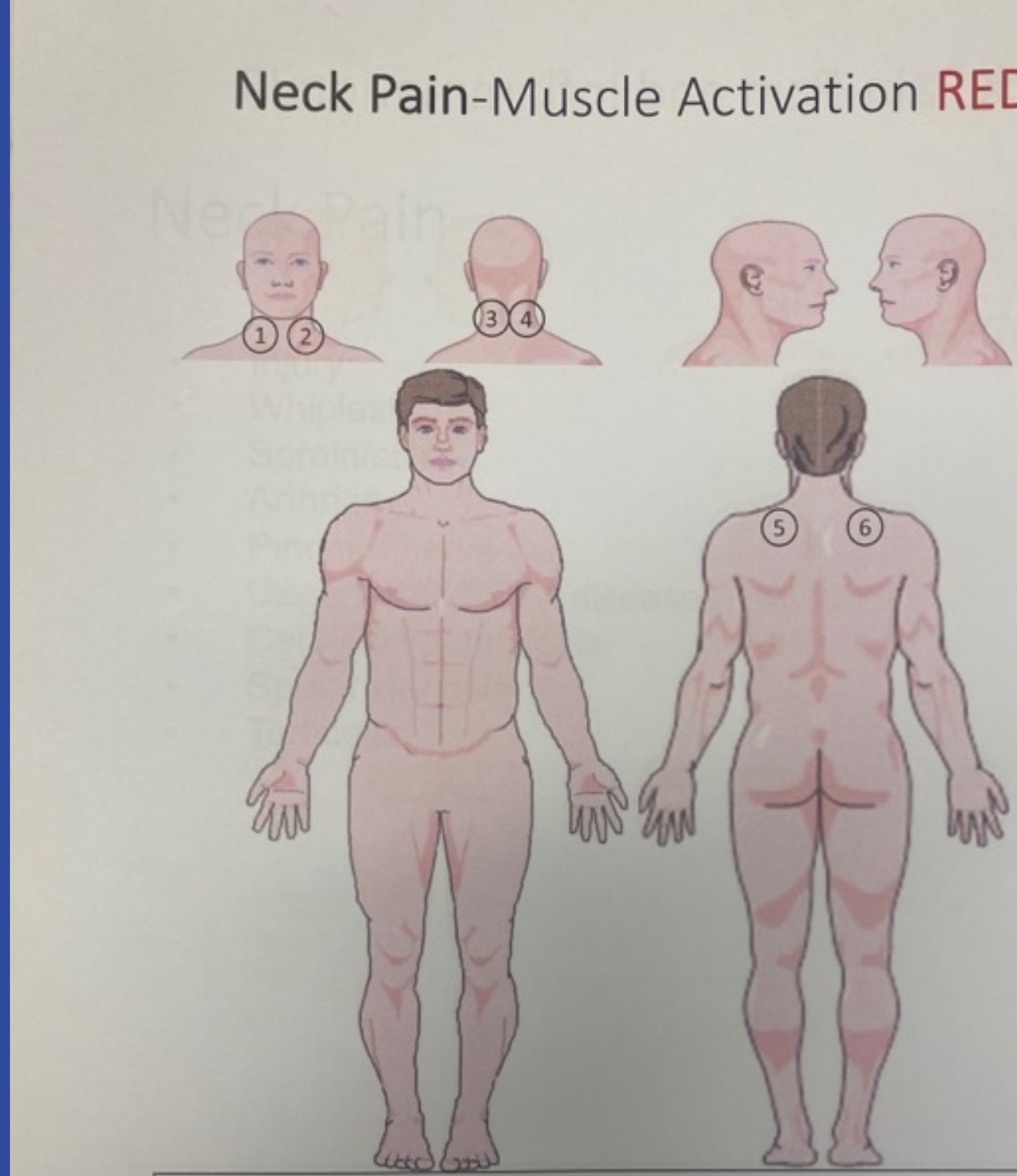
LLLT administered with optimal doses of 904 nm and possibly 632 nm wavelengths directly to the lateral elbow tendon insertions, seem to offer short-term pain relief and less disability in LET, both alone and in conjunction with an exercise regimen. This finding contradicts the conclusions of previous reviews which failed to assess treatment procedures, wavelengths and optimal doses.

<u>Chiropractic management of myofascial trigger points and myofascial pain syndrome: a systematic review of the literature</u> by Vernon and Schneider

Manual-type therapies and some physiologic therapeutic modalities have acceptable evidentiary support in the treatment of MPS and TrPs. Laser therapy (strong)

MANAGING PAIN AND INFLAMMATION OF AN INJURED PATIENT THROUGH INSTRUMENTATION AND TECHNOLOGY.

Example of Treatment Protocol for Neck Pain - Laser



1. 30 seconds-upper anterior cervical spine
2. 30 seconds-upper anterior cervical spine
3. 30 seconds-upper cervical spine
4. 30 seconds-upper cervical spine
5. 30 seconds-upper shoulder
6. 30 seconds-upper shoulder

MANAGING PAIN AND INFLAMMATION OF AN INJURED PATIENT THROUGH INSTRUMENTATION AND TECHNOLOGY.

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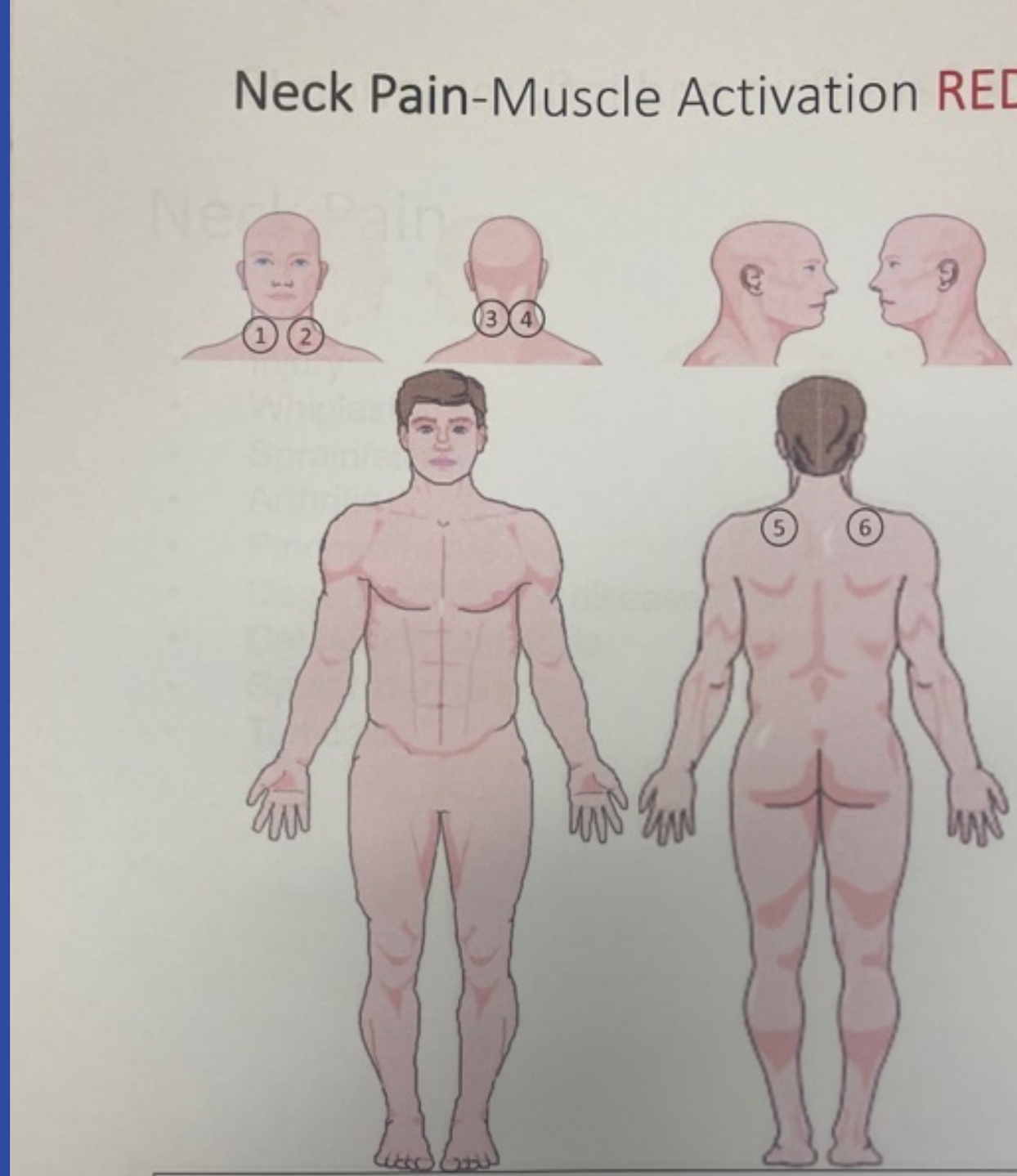

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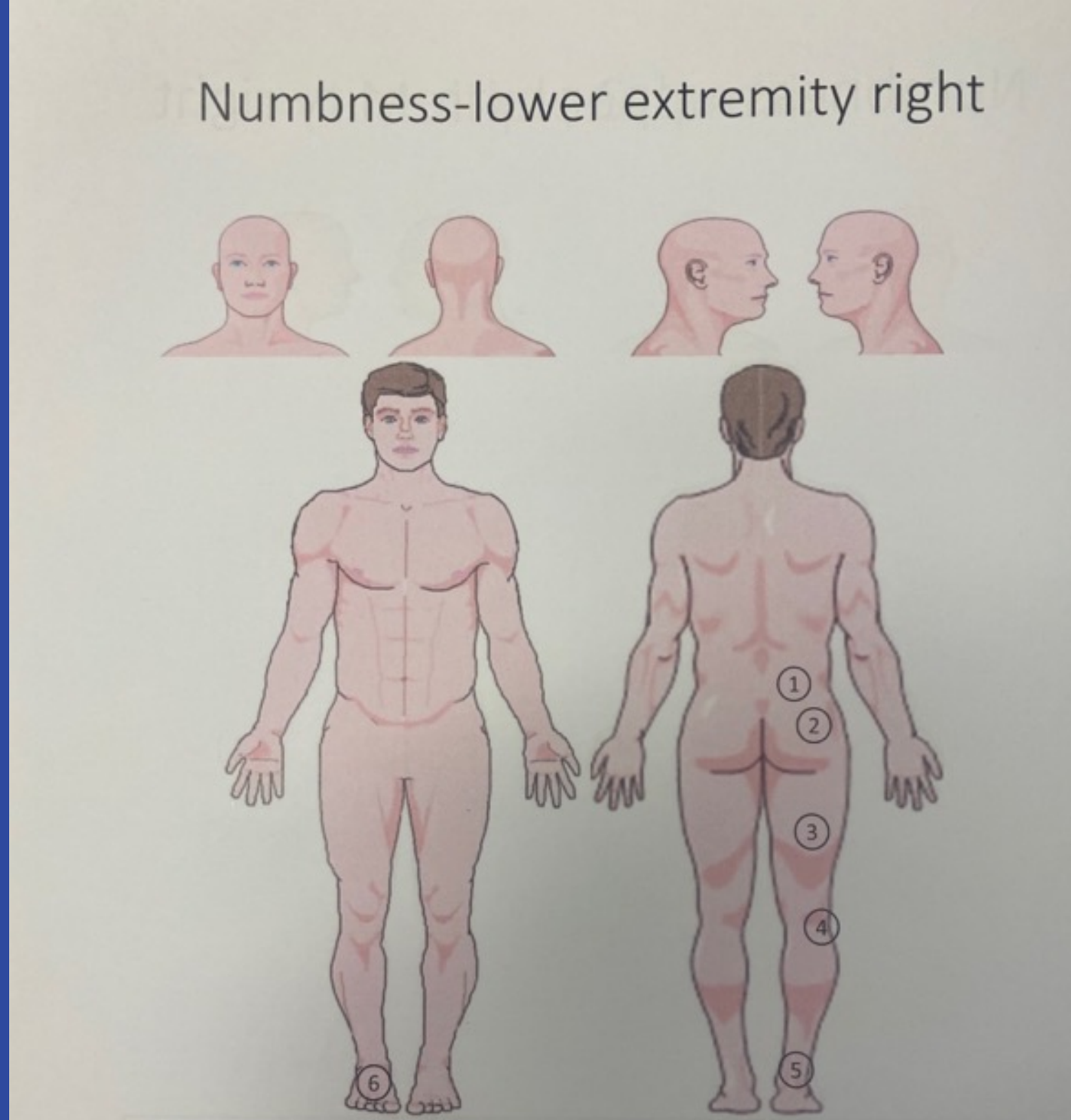
MANAGING PAIN AND INFLAMMATION OF AN INJURED PATIENT THROUGH INSTRUMENTATION AND TECHNOLOGY.

Example of Treatment Protocol for Numbness / Radiculopathy in the Lower Extremities - Laser



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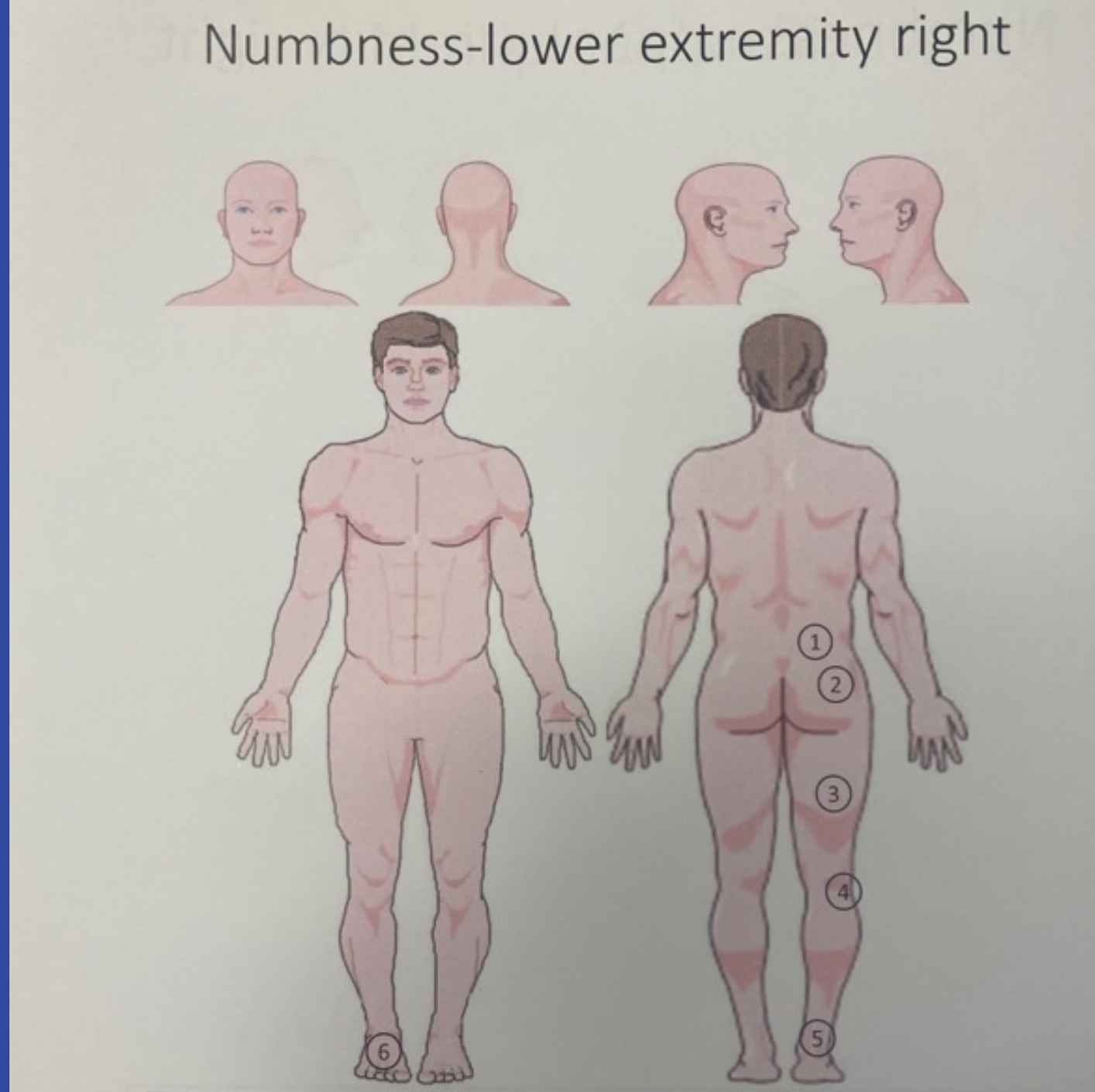
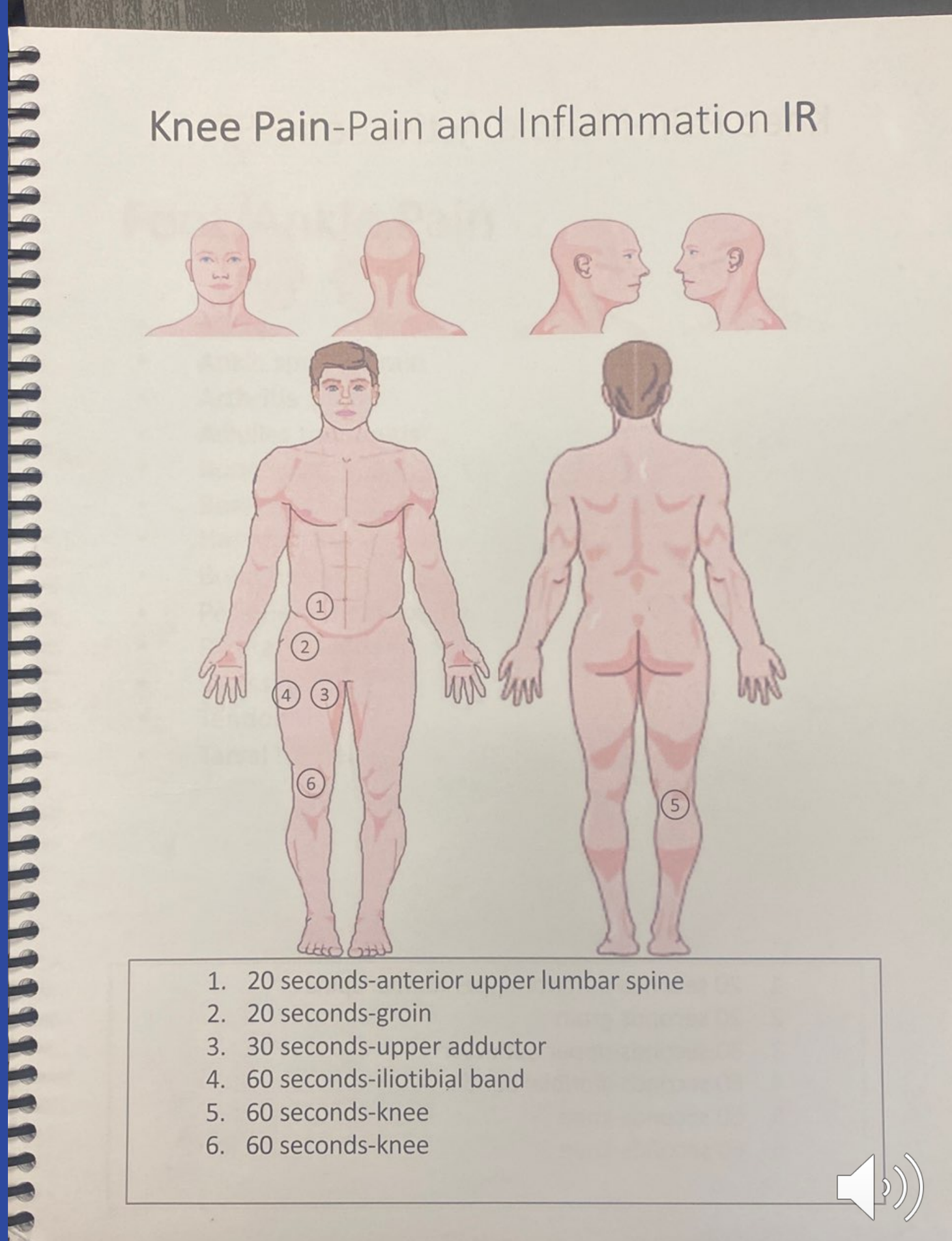


1° 30s IR and 30s RED upper lumbar nerves
2° 30s IR and 30s RED sciatic nerve
3° 30s IR and 30s RED back of the leg
4° 30s IR and 30s RED common peroneal nerve
5° 60s IR and 60s RED upper heel
6° 60s IR and 60s RED toes
*Flip sides for left

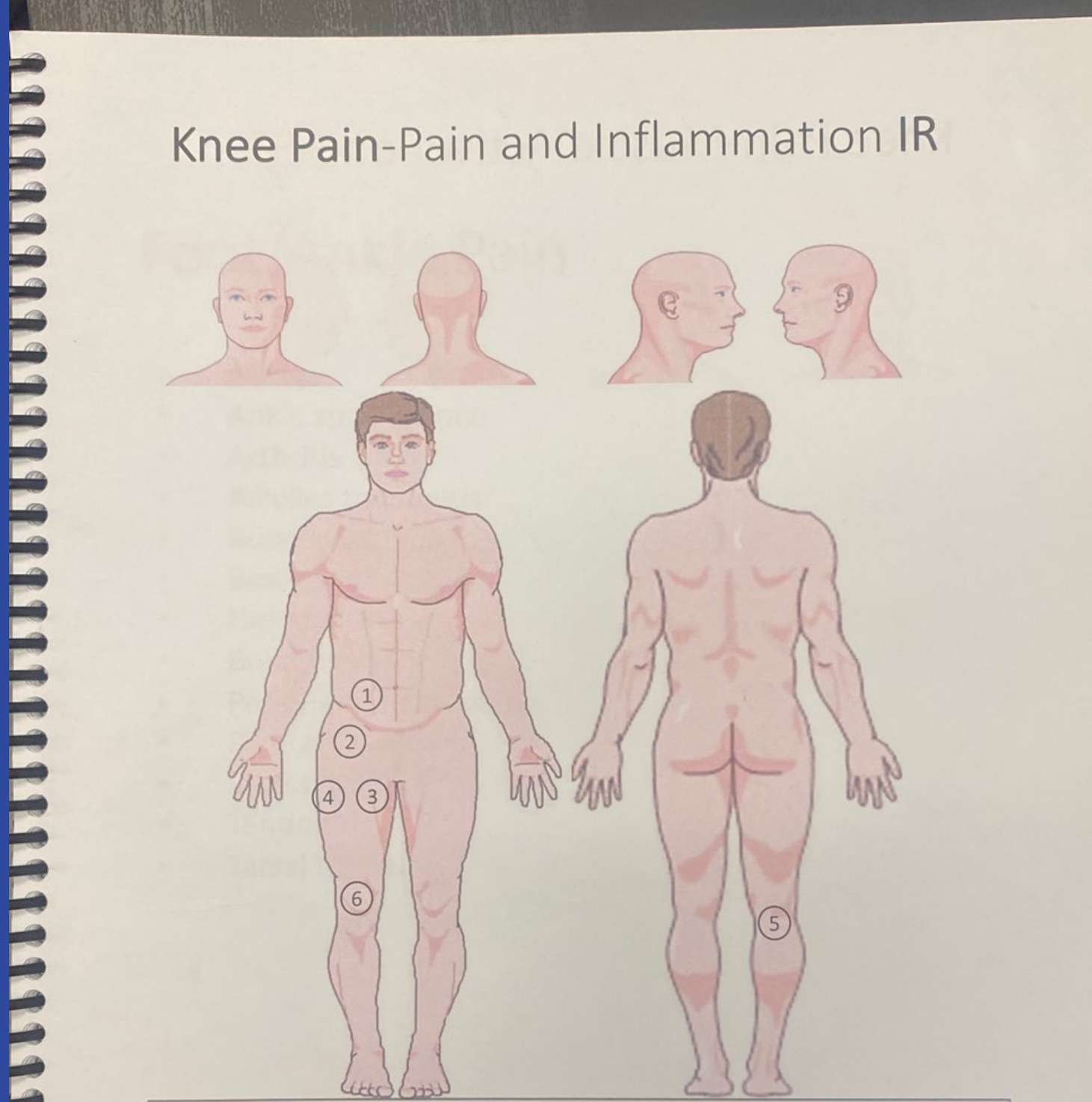
MANAGING PAIN AND INFLAMMATION OF AN INJURED PATIENT THROUGH INSTRUMENTATION AND TECHNOLOGY.

Example of Treatment Protocol for Knee Pain and Inflammation - Laser



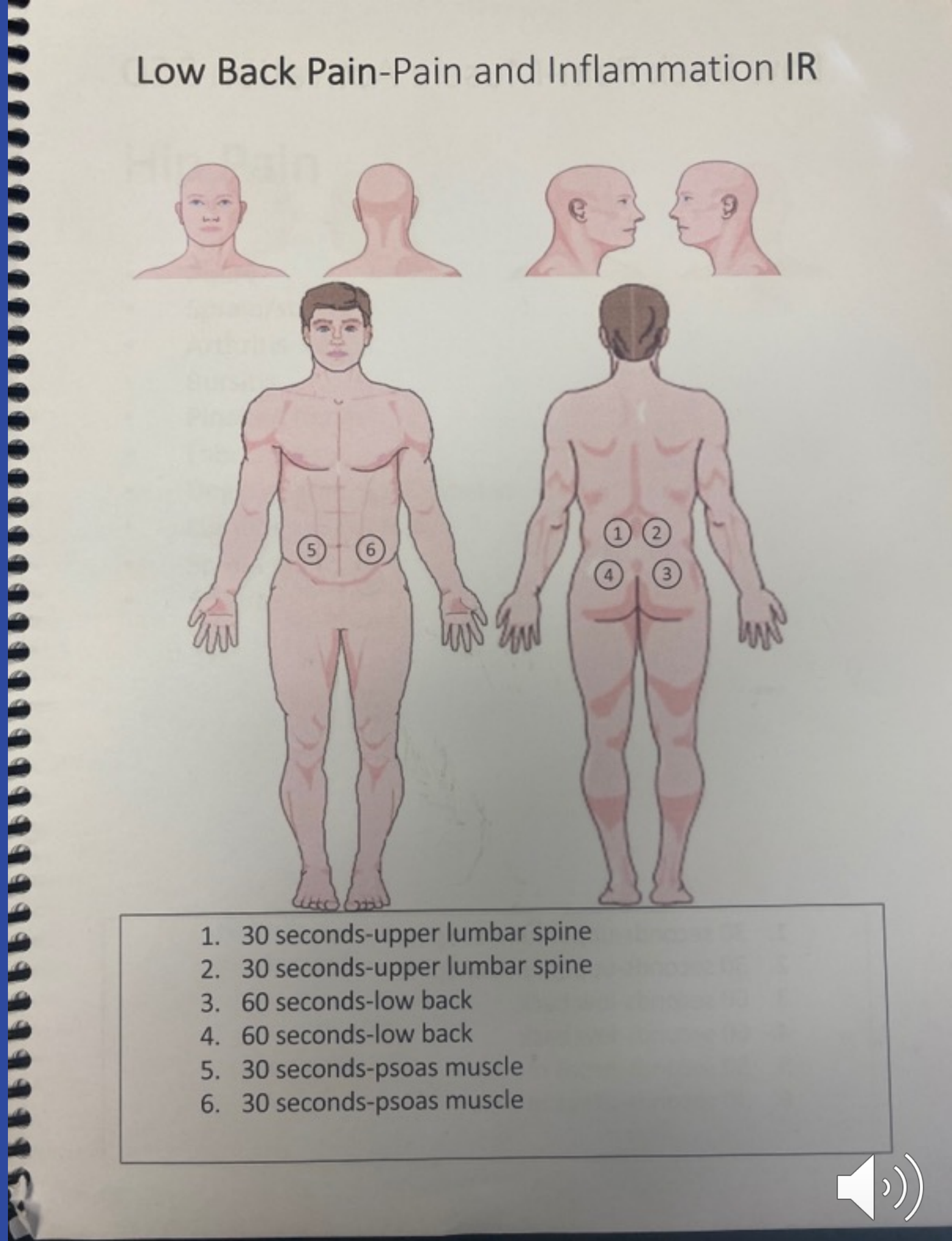
MANAGING PAIN AND INFLAMMATION OF AN INJURED PATIENT THROUGH INSTRUMENTATION AND TECHNOLOGY.

Example of Treatment Protocol for Knee Pain and Inflammation - Laser



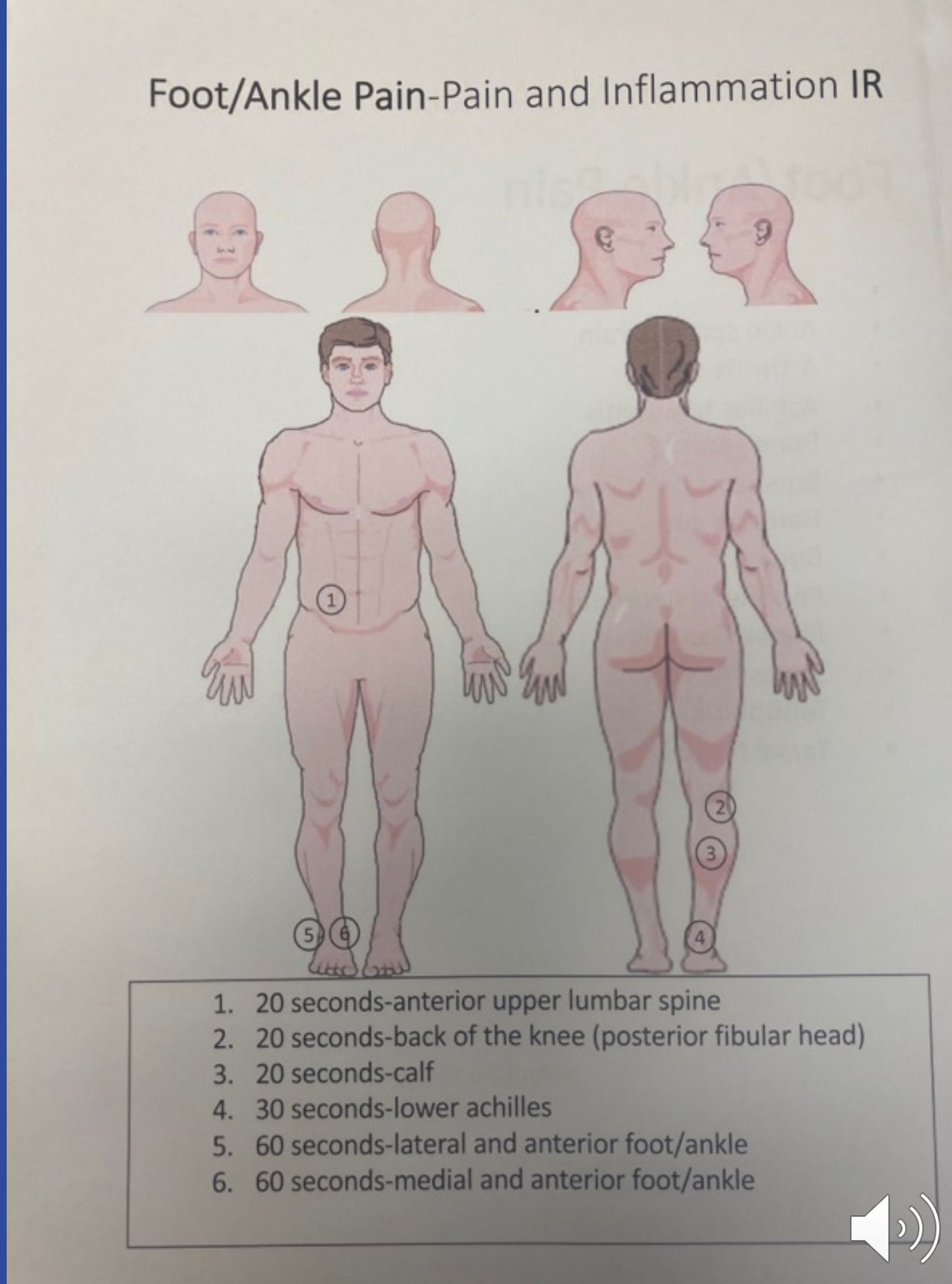
MANAGING PAIN AND INFLAMMATION OF AN INJURED PATIENT THROUGH INSTRUMENTATION AND TECHNOLOGY.

Example of Treatment Protocol for Low Back Pain and Inflammation - Laser



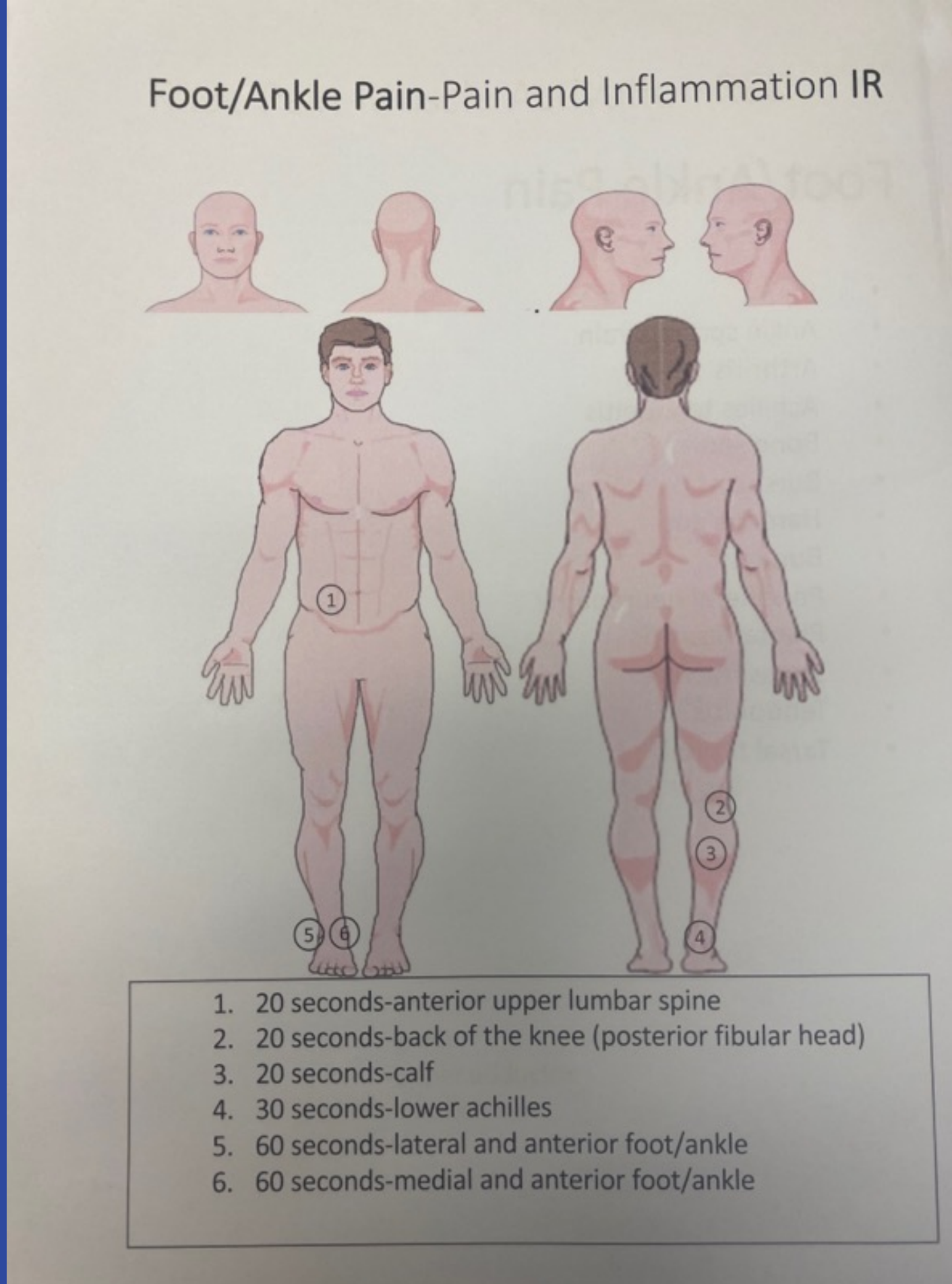
MANAGING PAIN AND INFLAMMATION OF AN INJURED PATIENT THROUGH INSTRUMENTATION AND TECHNOLOGY.

Example of Treatment Protocol for Foot/Ankle Pain and Inflammation - Laser



MANAGING PAIN AND INFLAMMATION OF AN INJURED PATIENT THROUGH INSTRUMENTATION AND TECHNOLOGY.

Example of Treatment Protocol for Foot/Ankle Pain and Inflammation - Laser



INFLAMMATION AND ITS RELATIONSHIP TO DISEASE, AND PAIN MANAGEMENT PROTOCOLS FOR THE CHIROPRACTIC TREATMENT PLAN INCLUDING NUTRITIONAL OPTIONS

Literature review

Natural inflammation reduction treatment options, including nutritional supplements and special dietary recommendations for an anti-inflammatory protocol.

1. What is an inflammation?. *Institute for Quality and Efficiency in Health Care (IQWiG)*. 2015. Available at: https://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0072482/. Accessed October 12, 2016

INFLAMMATION AND ITS RELATIONSHIP TO DISEASE, AND PAIN MANAGEMENT PROTOCOLS FOR THE CHIROPRACTIC TREATMENT PLAN INCLUDING NUTRITIONAL OPTIONS

Possible Causes of Inflammation:

- Pathogens (germs) like bacteria, viruses
- External injuries (i.e. Sports, Work-related, or Trauma)
- Chemicals found in OTC or prescription medications, environmental and product exposure
- Any disease, disorder, condition ending in “-itis.”

What is an inflammation?. Institute for Quality and Efficiency in Health Care (IQWiG). 2015. Available at: https://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0072482/. Accessed October 12, 2016.

INFLAMMATION AND ITS RELATIONSHIP TO DISEASE, AND PAIN MANAGEMENT PROTOCOLS FOR THE CHIROPRACTIC TREATMENT PLAN INCLUDING NUTRITIONAL OPTIONS

<u>Autoimmune Diseases:</u> The immune system attacks itself causing harmful inflammatory responses (*i.e. AIDS/HIV*)

- Rheumatoid arthritis | Inflammation of joints
  - mainly hands
- Psoriasis | Inflammation of skin
  - mainly elbow
- Crohn's/ ulcerative colitis | Inflammation of bowel

What is an inflammation?. Institute for Quality and Efficiency in Health Care (IQWiG). 2015. Available at: https://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0072482/. Accessed October 12, 2016.

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- Tilg H. Cruciferous vegetables: prototypic anti-inflammatory food components. *Clinical Phytoscience*. 2015;1:1-6.

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- Disease-modifying potential of Cinnamon extract in inflammation and arthritis. Australian Journal of Herbal Medicine. 2014;26:36.

NEW TECHNOLOGIES FOR REHABILITATION AND PAIN MANAGEMENT

EXTRACORPOREAL SHOCKWAVE THERAPY IN THE MANAGEMENT OF SPORTS MEDICINE INJURIES

DATE & JOURNAL: CURR SPORTS MED REP. 2021 JUN 1

Abstract

Treatment of musculoskeletal conditions in athletes with extracorporeal shockwave therapy (ESWT) is gaining popularity as greater evidence supports its use. ESWT protocols (describing energy flux density, number of impulses, type of shockwave (focused or radial), number/frequency/duration of treatment session, area of application, and postprocedural therapy protocols) can be adjusted in the clinical setting. Protocols vary across studies, and optimal protocols for most indications are yet to be determined. ESWT can safely be used to treat various musculoskeletal conditions in athletes, including rotator cuff tendinopathy, lateral elbow epicondlyopathy, greater trochanteric pain syndrome, hamstring tendinopathy, patellar tendinopathy, Achilles tendinopathy, other tendinopathies, plantar fasciopathy, bone stress injuries, and medial tibial stress syndrome. ESWT can be used to treat in-season athletes, as it often requires no/minimal time away from sport and may result in rapid benefits. ESWT should be used in conjunction with physical therapy to facilitate longer-term gains in function and to optimize healing.

Schroeder AN, Tenforde AS, Jelsing EJ. Extracorporeal Shockwave Therapy in the Management of Sports Medicine Injuries. Curr Sports Med Rep. 2021 Jun 1;20(6):298-305. doi: 10.1249/JSR.0000000000000851. PMID: 34099607.

EFFICACY OF UNFOCUSED MEDIUM-INTENSITY EXTRACORPOREAL SHOCKWAVE THERAPY(MI-ESWT) FOR PLANTAR FASCIITIS

DATE & JOURNAL: J FOOT ANKLE SURG. 2021 MAY-JUN;60(3)

Abstract

Extracorporeal shock wave therapy (ESWT) is a promising treatment for plantar fasciitis (PF), however, treatment results have varied due to inconsistencies among types of shock wave treatment and devices used. This retrospective chart review includes patients who underwent ESWT using the OrthoGold 100™ shock wave device (MTS, Konstanz, Germany) for PF between January, 2013 and September, 2018. There were 108 patients (119 heels) identified, with a mean age of 51.7 ± 16.5 (Range 21-83) years. Patients were treated weekly for 3 weeks, with 2000 impulses per session at an energy flux density between 0.10 and 0.17 mJ/mm^2. Mean follow-up duration was 11.5 ± 9.7 (Range 3-51) months. Mean pre-ESWT pain visual assessment scale improved from 6.7 ± 1.7 to 2.6 ± 2.7 ($p < .001$). The Foot and Ankle Outcome Score subscales: pain, function of daily living, function of sports and recreational activities and quality of life domains improved from 53.7 ± 14.9 to 75.7 ± 16.7 ($p < .001$), from 38 ± 15.2 to 71.8 ± 23 ($p < .001$), from 55.8 ± 16.4 to 71.4 ± 18 ($p < .001$), from 42.4 ± 21.5 to 59.4 ± 20.3 ($p < .001$) and from 44.9 ± 16.4 to 69 ± 23.9 ($p < .001$), respectively. Eighty-eight (81.5%) patients were satisfied with the procedure at final follow-up. Treatment of PF with unfocused shock waves was well tolerated and led to significant pain reduction, functional improvement, and patient satisfaction.

Fansa A, Talsania AJ, Kennedy JG, O'Malley MJ. Efficacy of Unfocused Medium-Intensity Extracorporeal Shock Wave Therapy (MI-ESWT) for Plantar Fasciitis. J Foot Ankle Surg. 2021 May-Jun;60(3):471-476. doi: 10.1053/j.jfas.2020.08.027. Epub 2020 Sep 3. PMID:

EXTRACORPOREAL SHOCKWAVE THERAPY FOR TREATING CHRONIC LOW BACK PAIN: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

DATE & JOURNAL: JBIOMED RES INT. 2021 NOV 15;2021

Abstract

Objective: To assess the effectiveness and safety of extracorporeal shockwave therapy (ESWT) for the treatment of chronic low back pain (CLBP).

Methods: This was a systematic review and meta-analysis of randomized controlled trials (RCTs) designed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analysis statement standard. We identified relevant studies by searching multiple electronic databases, trial registries, and websites up to April 30, 2021, and examining reference lists. We selected RCTs that compared ESWT, in unimodal or multimodal therapeutic approaches, with sham ESWT or other active therapies. Two investigators independently extracted data and assessed the risk of bias and quality of the evidence. The main outcomes were pain intensity and disability status, examined as standardized mean differences (SMD) with 95% confidence intervals (CI). The risk of bias was assessed by using Cochrane Back and Neck (CBN) Group risk of bias tool and Jadad score, and GRADE was applied to determine the confidence in effect estimates. Heterogeneity was explored using sensitivity analysis and meta-regression.

Results: Ten RCTs, including a total of 455 young to middle-aged individuals (29.2-55.8 years), were identified. Compared with control, the ESWT group showed lower pain intensity at month 1 (SMD = -0.81, 95% CI -1.21 to -0.42), as well as lower disability score at month 1 (SMD = -1.45, 95% CI -2.68 to -0.22) and at month 3 (SMD = -0.69, 95% CI -1.08 to -0.31). No serious shockwave-related adverse events were reported.

Conclusion: The use of ESWT in CLBP patients results in significant and quantifiable reductions in pain and disability in the short term. However, further well-conducted RCTs are necessary for building high-quality evidence and promoting the application of ESWT in clinical practice.

Yue L, Sun MS, Chen H, Mu GZ, Sun HL. Extracorporeal Shockwave Therapy for Treating Chronic Low Back Pain: A Systematic Review and Meta-analysis of Randomized Controlled Trials. Biomed Res Int. 2021 Nov 15;2021:5937250. doi: 10.1155/2021/5937250. PMID: 34

INFLAMMATION AND ITS RELATIONSHIP TO DISEASE, AND PAIN MANAGEMENT PROTOCOLS FOR THE CHIROPRACTIC TREATMENT PLAN INCLUDING NUTRITIONAL OPTIONS

RESEARCH: CANNABIDIOL, CANNABINOL, & CANNABIGEROL FOR PAIN AND INFLAMMATION MANAGEMENT & REHABILITATION OF INJURY

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CBD: ANTI-INFLAMMATORY NUTRITIONAL OPTION

Cannabidiol: A Non-psychoactive cannabinoid

- *Analgesic*
- *Anti-inflammatory*
- *Neuroprotective*

Lucas, C. J., Galettis, P., & Schneider, J. (2018). The Pharmacokinetics and the Pharmacodynamics of Cannabinoids. *British Journal of Clinical Pharmacology*. doi:10.1111/bcp.13710

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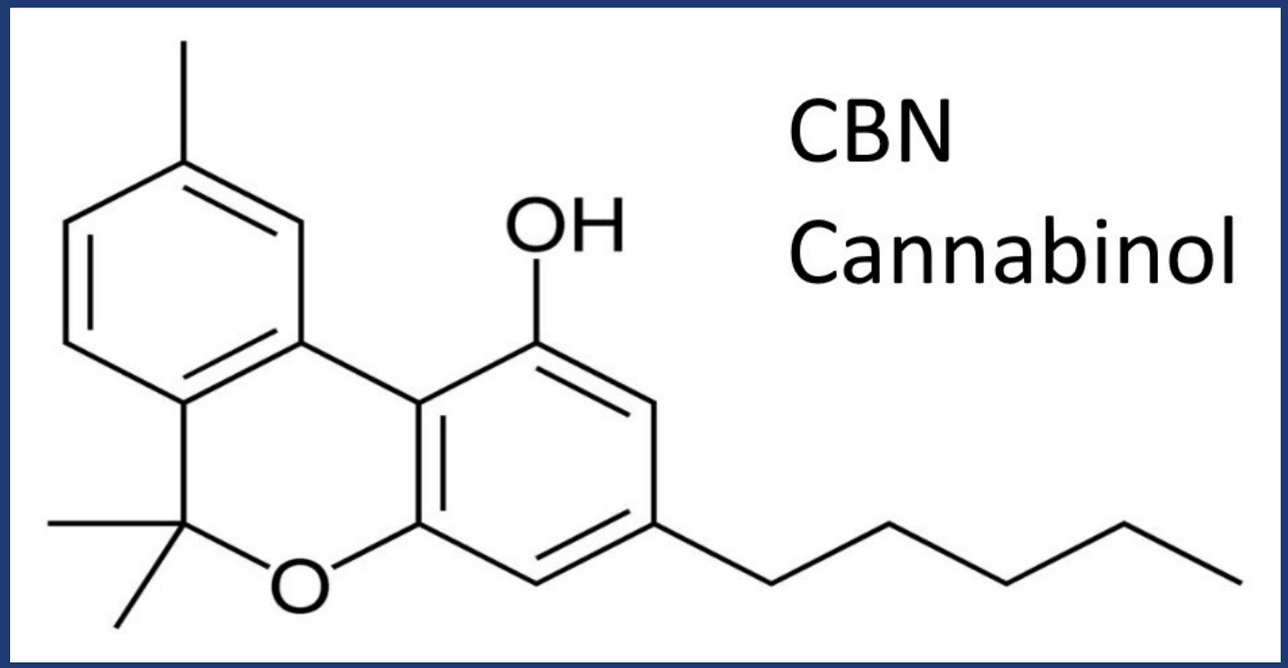
CBN: ANTI-INFLAMMATORY NUTRITIONAL OPTION

Cannabinol: A Non-psychoactive cannabinoid

- Sedative
- Anti-inflammatory



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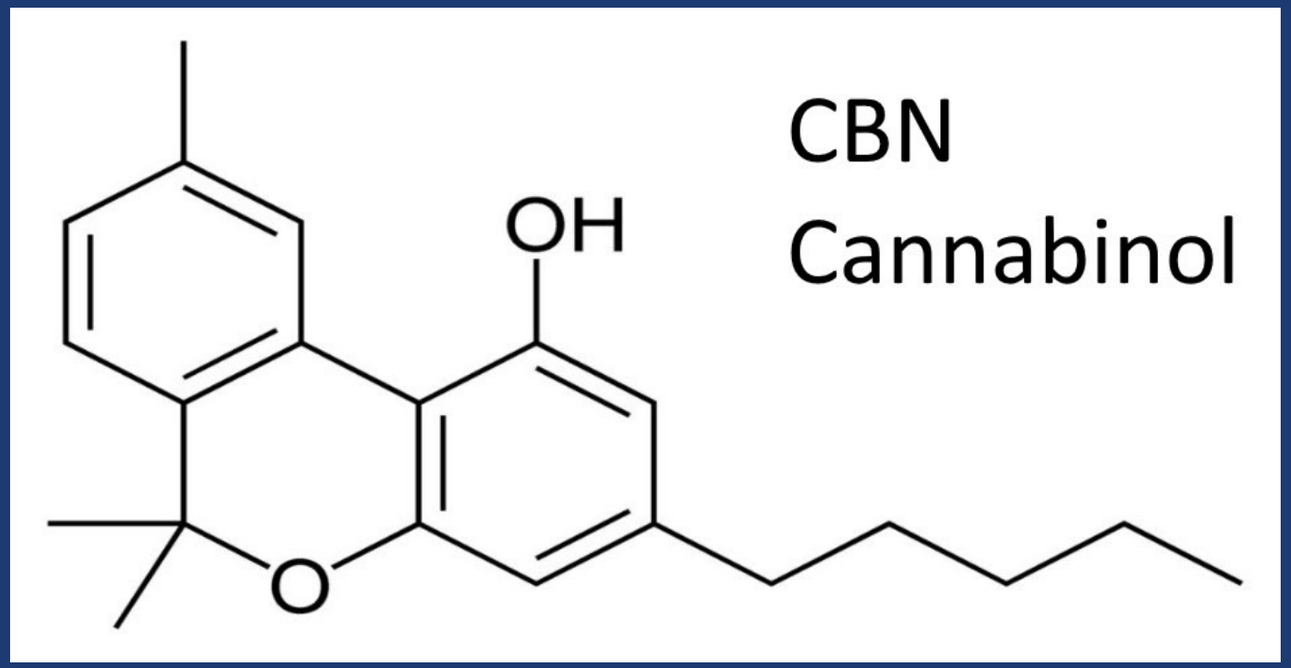

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CBG: AN ANTI-INFLAMMATORY NUTRITIONAL OPTION

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- Analgesic
- Effective for:
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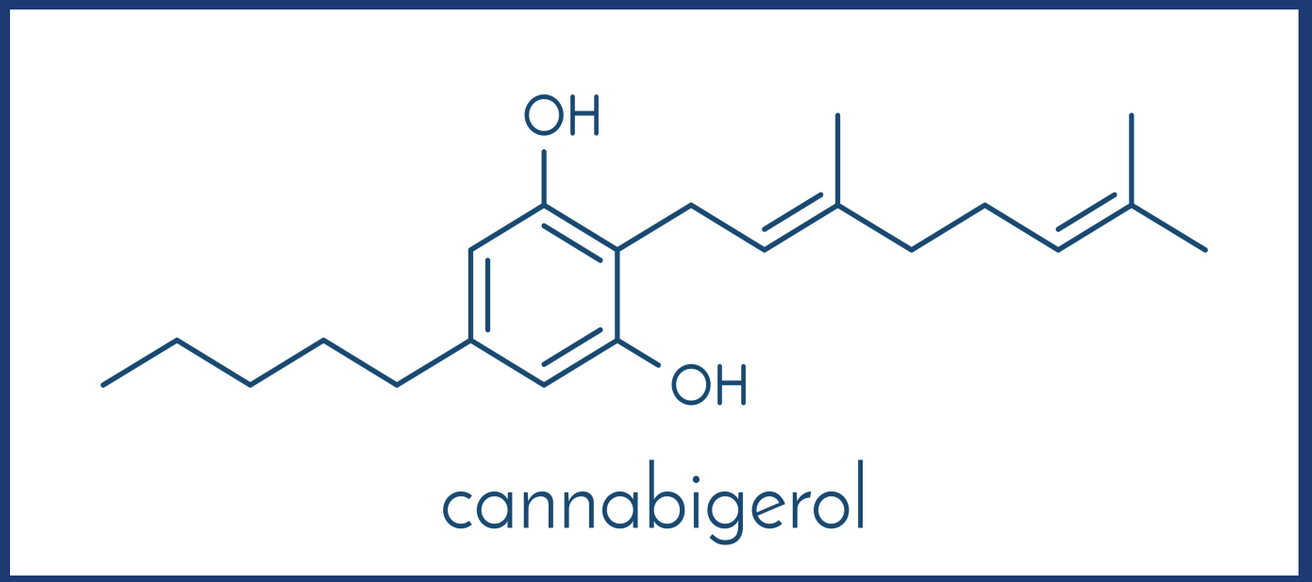
  - Neuropsychiatric Disorders (ADHD, PTSD)
  - Inflammatory Bowel Disease



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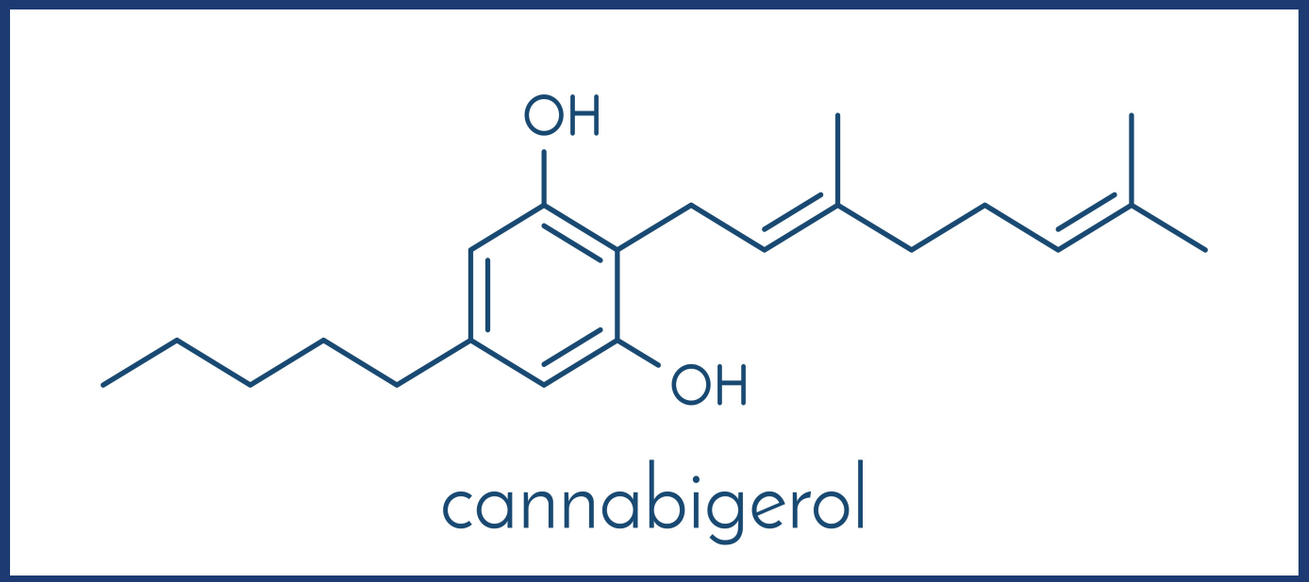

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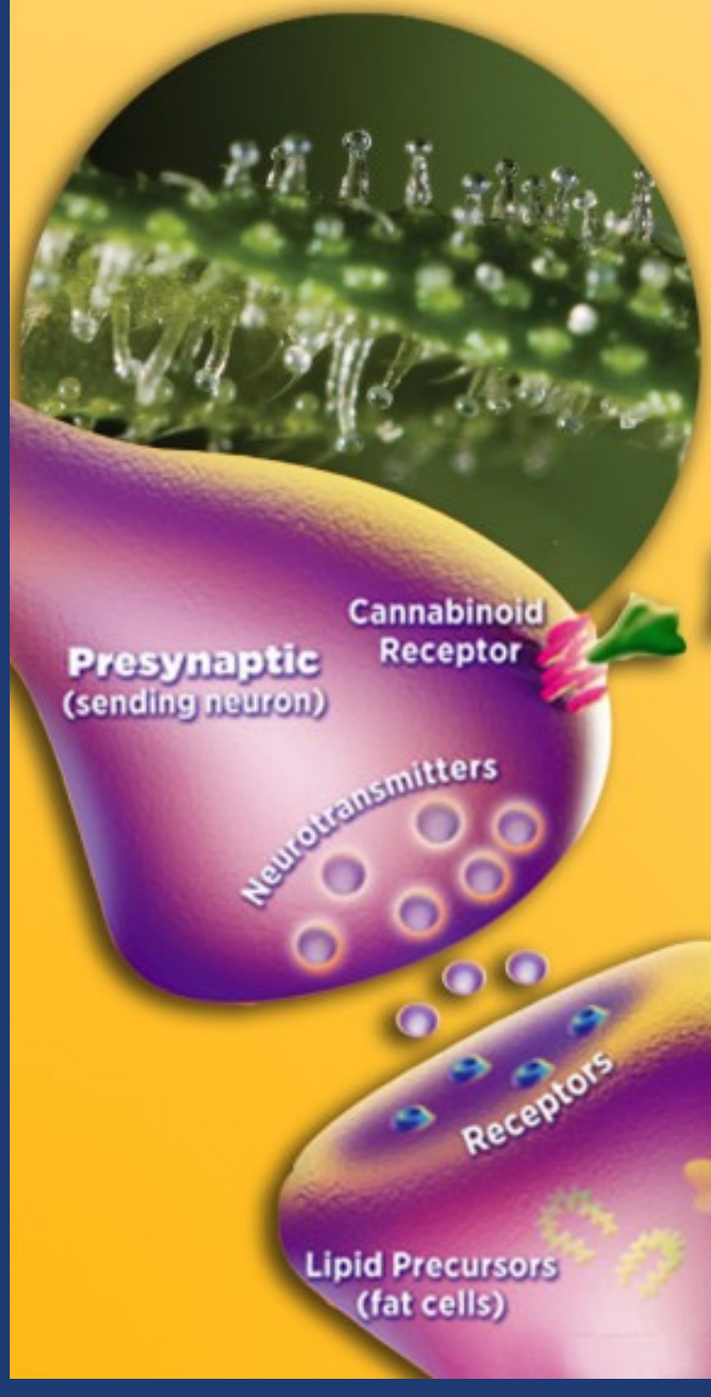
The Human Endocannabinoid System

THC and CBN are known to "fit" like lock and key into network of existing receptors . The Endocannabinoid System exists to receive cannabinoids produced inside the body called "Anadnamide" and "2-Arachidonyl-glycerol". Stimulating the ECS with plant-based cannabinoids restores balance and helps maintain symptoms.

CB1 receptors are concentrated in the brain and central nervous system but also sparsely populates other parts of the human body.



THC

Tetrahydrocannibinol

CB1

CBD

Cannabidiol

CBD does not directly "fit" CB1 or CB2 receptors but has powerful indirect effects still being studied.

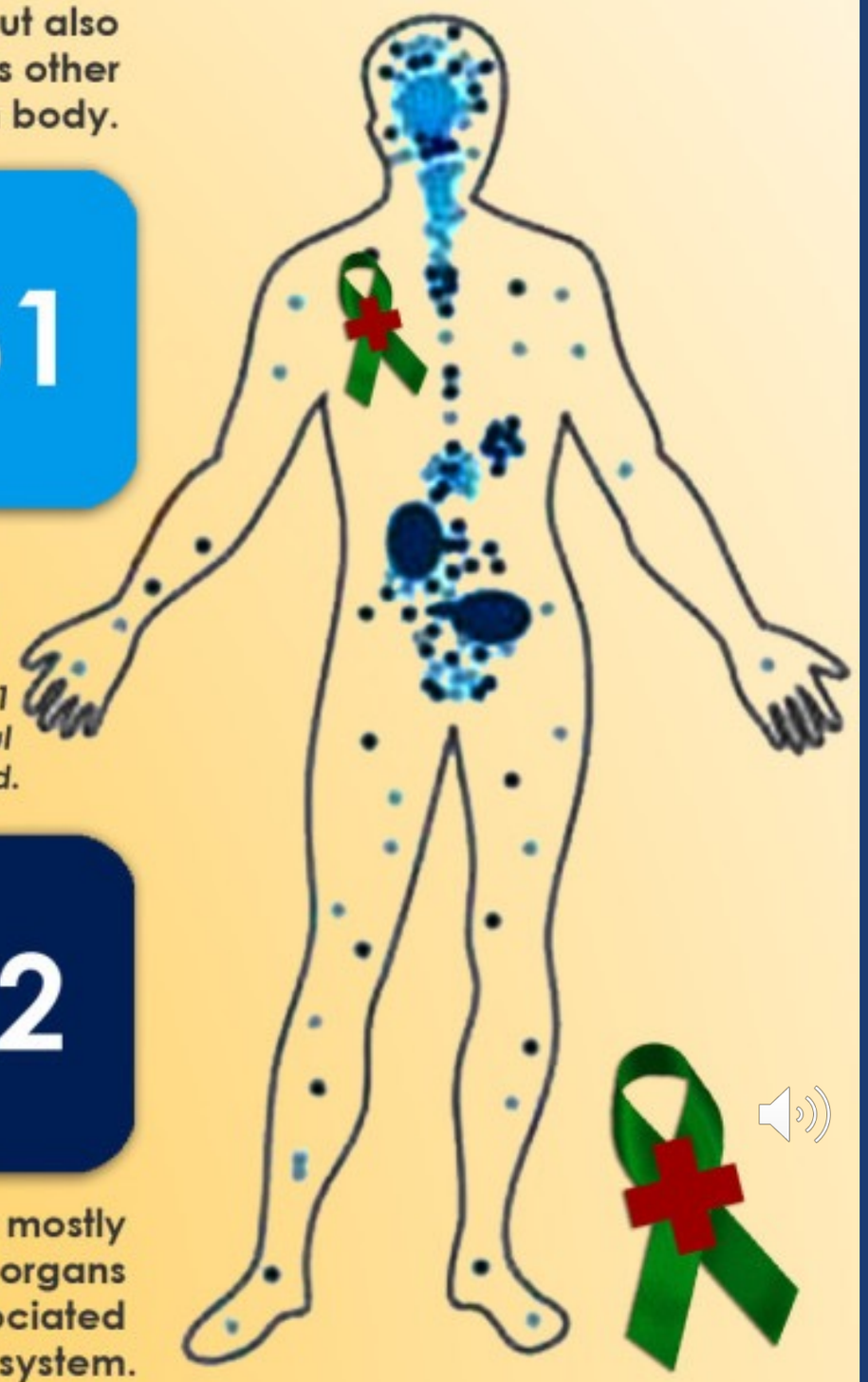
CBN

Cannabinol

CB2

CB2 receptors are mostly in the perepheral organs especially cells associated with the immune system.

Receptors are found on cell surfaces



www.the-human-solution.org

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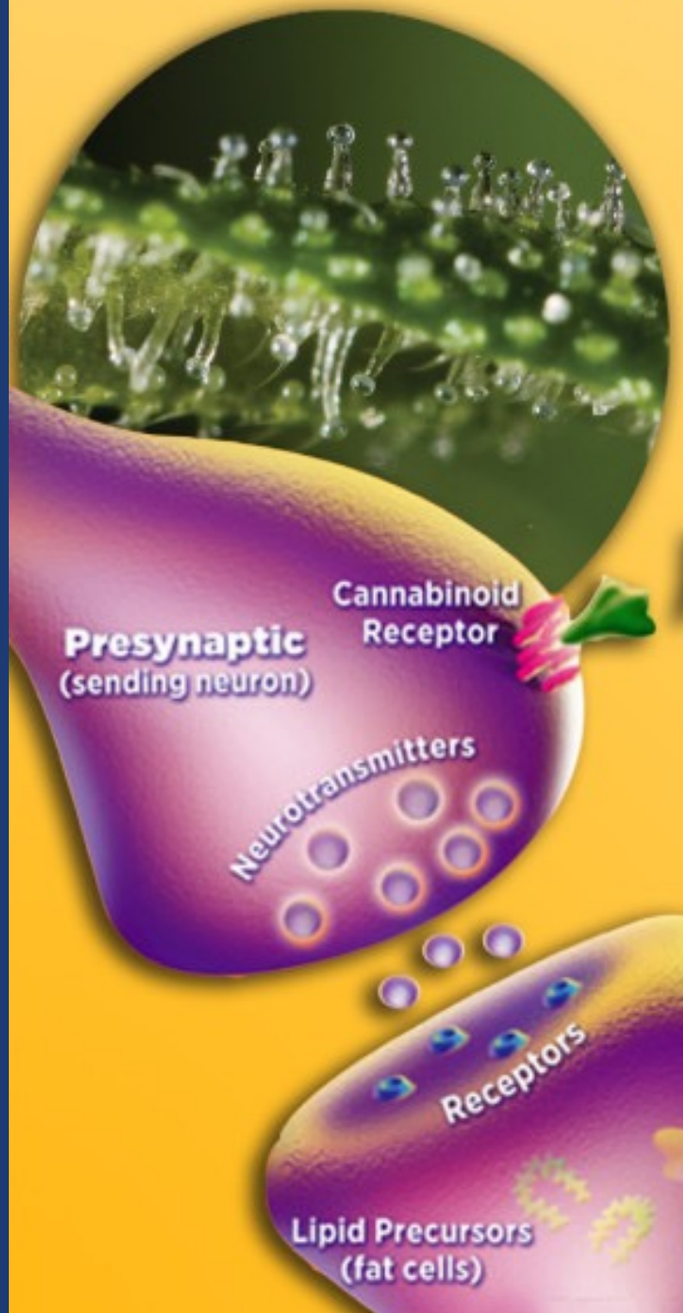

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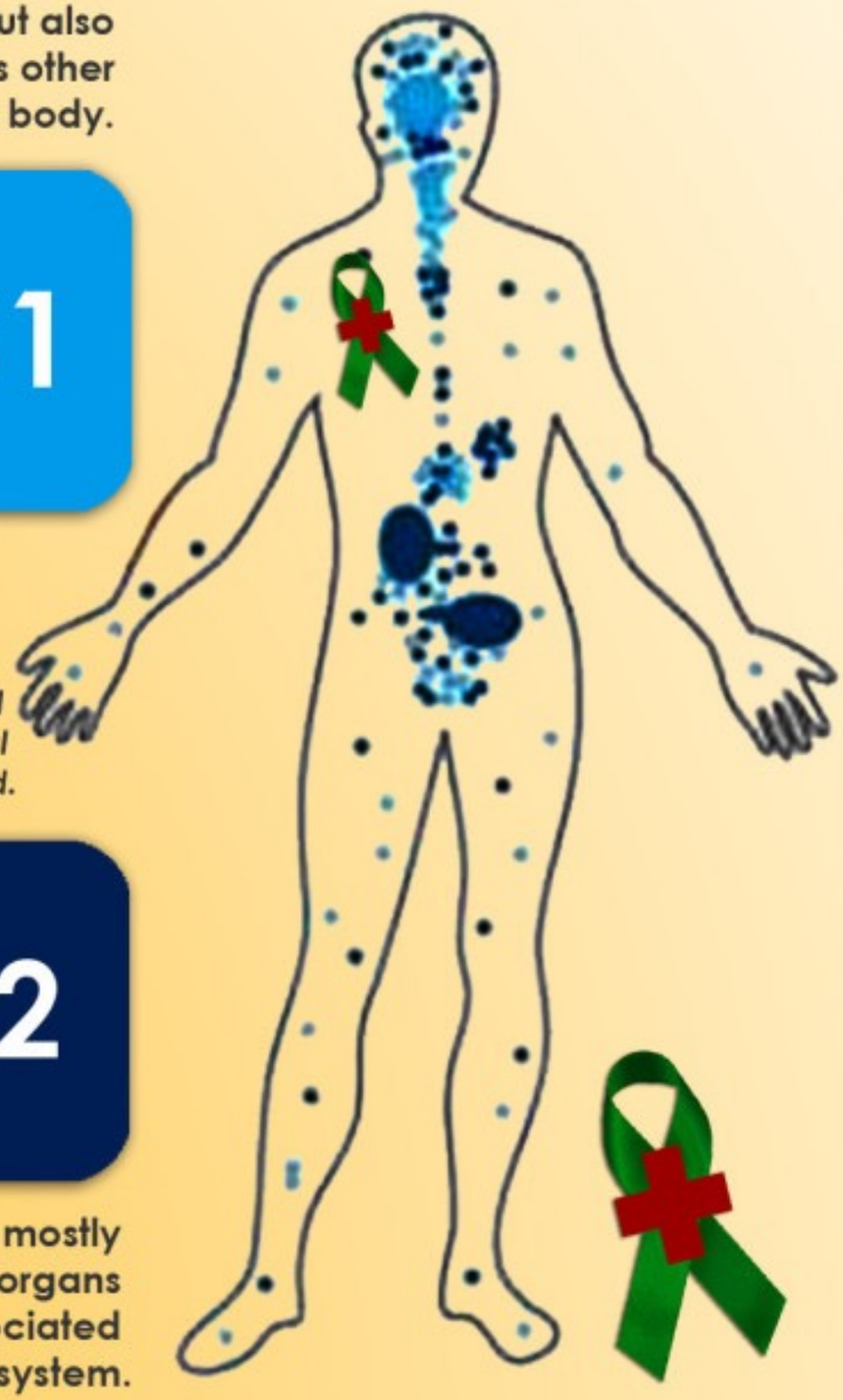

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WHAT SHOULD I LOOK FOR WHEN CONSIDERING CBD AS A NUTRITIONAL OPTION FOR INFLAMMATION?

- Consider extraction methods:
  - Alcohol/Solvent Extraction
  - CO_2 Extraction
- Be cautious of products with:
  - Flavors, sugars, unpronounceable ingredients

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ALCOHOL SOLVENT EXTRACTION (WORST METHOD)

Ethanol, low-grade alcohol & butane (most-commonly used)

Chlorophyll extracted together with cannabinoids & terpenes (leaves dark color and bitter flavor)

Additional post processing required to remove the chlorophyll reducing potency of the oil

Destroys plant waxes

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SUPERCRITICAL CO2 EXTRACTION

Most superior & expensive CBD extraction method

The pressure and temperature of carbon dioxide (CO2) is manipulated over time to reach supercritical phase

CO2 passed through high-quality hemp

CO2 extracts oils without denaturing the phytocannabinoids, terpenes & flavonoids

HOW MUCH CBD FOR INFLAMMATION MANAGEMENT?

- Start with minimum amount as directed on the bottle label, and, if needed, slowly increase for symptomatic relief
  - Assess how you feel after one week

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CBD SAFETY PROFILE

- CBD Does not alter heart rate, blood pressure, or body temperature
- No negative influence on food intake, gastrointestinal transit, psychomotor or psychological functions

Iffland, K., & Grotenhermen, F. (2017). An update on safety and side effects of cannabidiol: A review of clinical data and relevant animal studies. *Cannabis and Cannabinoid Research, 2*(1), 139-154. doi:10.1089/can.2016.0034

WHO REPORT ON CBD:

SAFETY / USE - 2017

“In humans, CBD exhibits no effects indicative of any abuse or dependence potential.”

CANNABIDIOL (CBD) Pre-Review Report Agenda Item 5.2 Geneva, 6-10 November 2017. Expert Committee on Drug Dependence Thirty-ninth Meeting. http://www.who.int/medicines/access/controlled-substances/5.2_CBD.pdf. Accessed October 7, 2018.

DIFFERENT OPTIONS OF DELIVERY & BIOAVAILABILITY FOR INFLAMMATION MANAGEMENT

Oral ~ 6% bioavailability
(gel capsules)

- Undergoes extensive hepatic first-pass metabolism
- Slow working & requires higher serving sizes

Inhalation ~ 31% bioavailability
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  (CBD Oil with dropper recommendations on bottle)
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  - Rapid absorption (useful for symptoms requiring rapid relief)
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  - HIGH ABSORPTION RATE

  - Avoids first-pass metabolism

  -- Used for:

  - Inflammation / pain

  --- Types:

    - Salve
    - Rollerball
    - Recovery stick

Most Popular with Chiropractors!

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WHAT CONCENTRATION OF CBD SHOULD BE CONSIDERED FOR INFLAMMATION MANAGEMENT?

500mg, 600mg, 750mg, 1000mg:

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CANNABIDIOL (CBD): A KILLER FOR INFLAMMATORY RHEUMATOID ARTHRITIS SYNOVIAL FIBROBLASTS

Date & Journal: Cell Death Dis . 2020 Sep 1.

Abstract

Cannabidiol (CBD) is a non-intoxicating phytocannabinoid from cannabis sativa that has demonstrated anti-inflammatory effects in several inflammatory conditions including arthritis. However, CBD binds to several receptors and enzymes and, therefore, its mode of action remains elusive. In this study, we show that CBD increases intracellular calcium levels, reduces cell viability and IL-6/IL-8/MMP-3 production of rheumatoid arthritis synovial fibroblasts (RASF). These effects were pronounced under inflammatory conditions by activating transient receptor potential ankyrin (TRPA1), and by opening of the mitochondrial permeability transition pore. Changes in intracellular calcium and cell viability were determined by using the fluorescent dyes Cal-520/PoPo3 together with cell titer blue and the luminescent dye RealTime-glo. Cell-based impedance measurements were conducted with the XCELLigence system and TRPA1 protein was detected by flow cytometry. Cytokine production was evaluated by ELISA. CBD reduced cell viability, proliferation, and IL-6/IL-8 production of RASF. Moreover, CBD increased intracellular calcium and uptake of the cationic viability dye PoPo3 in RASF, which was enhanced by pre-treatment with TNF. Concomitant incubation of CBD with the TRPA1 antagonist A967079 but not the TRPV1 antagonist capsazepine reduced the effects of CBD on calcium and PoPo3 uptake. In addition, an inhibitor of the mitochondrial permeability transition pore, cyclosporin A, also blocked the effects of CBD on cell viability and IL-8 production. PoPo3 uptake was inhibited by the voltage-dependent anion-selective channel inhibitor DIDS and Decynium-22, an inhibitor for all organic cation transporter isoforms. CBD increases intracellular calcium levels, reduces cell viability, and IL-6/IL-8/MMP-3 production of RASF by activating TRPA1 and mitochondrial targets. This effect was enhanced by pre-treatment with TNF suggesting that CBD preferentially targets activated, pro-inflammatory RASF. Thus, CBD possesses anti-arthritic activity and might ameliorate arthritis via targeting synovial fibroblasts under inflammatory conditions.

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Date & Journal: FASEB J . 2020 Nov

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Sunda F, Arowolo A. A molecular basis for the anti-inflammatory and anti-fibrosis properties of cannabidiol. FASEB J. 2020 Nov;34(11):14083-14092. doi: 10.1096/fj.202000975R. Epub 2020 Sep 3. PMID: 32885502.

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III. PRINCIPLES OF REHABILITATION RELATED TO PAIN MANAGEMENT – INFLAMMATION (NUTRITIONAL OPTIONS)

RESEARCH: TURMERIC, CURCUMIN, GINGER, BLACK PEPPER, SAFFRON, & BROMELAIN FOR PAIN AND INFLAMMATION MANAGEMENT & REHABILITATION OF INJURY

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RESEARCH: TURMERIC, CURCUMIN, GINGER, BLACK PEPPER, SAFFRON, & BROMELAIN FOR PAIN AND INFLAMMATION MANAGEMENT & REHABILITATION OF INJURY

CURCUMIN IN METABOLIC HEALTH AND DISEASE

Date & Journal: Nutrients . 2021 Dec 11.

Abstract

In recent years, epidemiological studies have suggested that metabolic disorders are nutritionally dependent. A healthy diet that is rich in polyphenols may be beneficial in the treatment of metabolic diseases such as polycystic ovary syndrome, metabolic syndrome, non-alcoholic fatty liver disease, cardiovascular disease, and, in particular, atherosclerosis. Curcumin is a polyphenol found in turmeric and has been reported to have antioxidant, anti-inflammatory, hepatoprotective, anti-atherosclerotic, and antidiabetic properties, among others. This review summarizes the influence of supplementation with curcumin on metabolic parameters in selected metabolic disorders.

Jabczyk M, Nowak J, Hudzik B, Zubelewicz-Szkodzińska B. Curcumin in Metabolic Health and Disease. Nutrients. 2021 Dec 11;13(12):4440. doi: 10.3390/nu13124440. PMID: 34959992; PMCID: PMC8706619.

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EFFECTS OF SAFFRON EXTRACT ON SLEEP QUALITY: A RANDOMIZED DOUBLE-BLIND CONTROLLED CLINICAL TRIAL.

Date & Journal: Nutrients. 2021 Apr 27.

Abstract

A saffron extract has been found to be effective in the context of depression and anxiety, but its effect on sleep quality has not been investigating yet using objective approaches. For this purpose, a randomized double-blind controlled study was conducted in subjects presenting mild to moderate sleep disorder associated with anxiety. Sixty-six subjects were randomized and supplemented with a placebo (maltodextrin) or a saffron extract (15.5 mg per day) for 6 weeks. Actigraphy was used to collect objective data related to sleep quality at baseline, at the middle and at the end of the intervention. Sleep quality was also assessed by completion of the LSEQ and PSQI questionnaires and quality of life by completion of the SF-36 questionnaire. Six weeks of saffron supplementation led to an increased time in bed assessed by actigraphy, to an improved ease of getting to sleep evaluated by the LSEQ questionnaire and to an improved sleep quality, sleep latency, sleep duration, and global scores evaluated by the PSQI questionnaire, whereas those parameters were not modified by the placebo. In conclusion, those results suggest that a saffron extract could be a natural and safe nutritional strategy to improve sleep duration and quality.

Pachikian BD, Copine S, Suchareau M, Deldicque L. Effects of Saffron Extract on Sleep Quality: A Randomized Double-Blind Controlled Clinical Trial. Nutrients. 2021 Apr 27;13(5):1473. doi: 10.3390/nu13051473. PMID: 33925432; PMCID: PMC8145009.

EFFICACY OF ARTICHOKE AND GINGER EXTRACTS WITH SIMETHICONE TO TREAT GASTROINTESTINAL SYMPTOMS IN ENDURANCE ATHLETES: A PILOT STUDY

Date & Journal: Minerva Gastroenterol (Torino) . 2022 Mar.

Abstract

Background: Exercise-induced gastrointestinal (GI) symptoms are frequently reported by athletes during training and competitions. A standardized combination of artichoke leaves and ginger root extracts has shown beneficial effects in managing GI discomfort in otherwise healthy subjects.

Results: Fifty endurance athletes took the extracts' combination 320 mg + simethicone 40 mg chewable pills. The extracts combination and simethicone were effective in reducing the mean intensity of upper GI (86.6%) lower GI (85.9%) and systemic symptoms (81.9%), with superior results compared to placebo. The most remarkable effects were reported in the lower GI tract, with a significant decrease in flatulence, intestinal cramps, loose stools and diarrhea. Athletes also benefited from a reduction in belching and bloating and in dizziness, headache and muscle cramps, although the decrease in systemic symptoms was not significant.

Conclusions: The supplementation of standardized artichoke and ginger extracts, combined with simethicone, may be effective in decreasing digestive discomfort and alteration of gastric motility not only in healthy subjects but also in endurance athletes.

Drobnic F, Fonts S, García-Alday I, Petrangolini G, Riva A, Frattini E, Allegrini P, Togni S, Vitale J. Efficacy of artichoke and ginger extracts with simethicone to treat gastrointestinal symptoms in endurance athletes: a pilot study. Minerva Gastroenter

HERBAL FORMULATION "TURMERIC EXTRACT, BLACK PEPPER, AND GINGER" VERSUS NAPROXEN FOR CHRONIC KNEE OSTEOARTHRITIS: A RANDOMIZED, DOUBLE-BLIND, CONTROLLED CLINICAL TRIAL.

DATE & JOURNAL: PHYTOTHER RES . 2020 AUG.

Abstract

Osteoarthritis is the most common articular disease that can lead to chronic pain and severe disability. Curcumin-an effective ingredient in turmeric with anti inflammatory property-plays an important role in protecting the joints against destructive factors. Gingerols and piperine, are the effective ingredients of ginger and black pepper, which may potentially enhance and sustain the effect of curcumin in this direction. To determine the effect of cosupplementation with turmeric extract, black pepper, and ginger on prostaglandin E2 (PGE2) in patients with chronic knee osteoarthritis, compared with Naproxen. Sixty patients with two different levels of knee osteoarthritis (Grade 2 and 3) were studied. Individuals were randomly assigned to receive daily turmeric extract, ginger, and black pepper together or Naproxen capsule for 4 weeks. PGE2 was evaluated by ELISA method. 24-hr recall was also assessed. All of participants completed the study. PGE2 decreased significantly in both groups ($p < .001$), but there was no significant differences between groups. The results of this study indicated that intake of the selected herbs twice a day for 4 weeks may improve the PGE2 levels in patients with chronic knee osteoarthritis similar to Naproxen drug.

Heidari-Beni M, Moravejolahkami AR, Gorgian P, Askari G, Tarrahi MJ, Bahreini-Esfahani N. Herbal formulation "turmeric extract, black pepper, and ginger" versus Naproxen for chronic knee osteoarthritis: A randomized, double-blind, controlled clinical tria

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Supplement Facts

Suggested Dosage: Up to 3 capsules per day or as recommended by your healthcare provider.

Servings per container: 30

Serving Size: 3 capsules

Ingredient	Amount Per Serving
Organic Turmeric Powder	1100mg*
95% Standardized Curcuminoid	200mg*
Black Pepper Fruit Extract (Piperine)	10mg*

A proprietary blend of the following natural ingredients: Organic ginger root extract; saffron powder; bromelain. Other ingredients: Vegetable cellulose capsule; EDTA. Made with 72% organic ingredients. Daily value not established.

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III. PRINCIPLES OF REHABILITATION RELATED TO PAIN MANAGEMENT – INFLAMMATION (MORE NUTRITIONAL OPTIONS)

RESEARCH: GREENS AND RELATED INGREDIENTS FOR PAIN AND INFLAMMATION MANAGEMENT & REHABILITATION OF INJURY

SPIRULINA SUPPLEMENTATION PREVENTS EXERCISE-INDUCED LIPID PEROXIDATION, INFLAMMATION AND SKELETAL MUSCLE DAMAGE IN ELITE RUGBY PLAYERS

Date & Journal: J Hum Nutr Diet . 2022 Apr 8.

Abstract

Background: The present study aimed to examine the effects of spirulina supplementation on pro/antioxidant status, inflammation and skeletal muscle damage markers immediately and 24 h after exhaustive exercise in elite rugby players.

Results: Our results showed that F2-Isop, CRP and CK levels significantly increased at T1 only in the PLA group ($p < 0.05$, $p < 0.05$ and $p < 0.001$, respectively) with no change in the SPI group, which reflects the effect of spirulina to prevent lipid peroxidation, inflammation and skeletal muscle damage induced by exhaustive exercise. Moreover, spirulina supplementation accelerated the return to baseline values given that F2-Isop, CRP and CK levels at T2 were significantly lower than at T0 in the SPI group ($p < 0.05$, $p < 0.01$ and $p < 0.001$, respectively).

Conclusions: Based on the markers used in the present study, our results show that spirulina supplementation potentially prevents exercise-induced lipid peroxidation, inflammation and skeletal muscle damage, and may also accelerate the recovery of some of these markers. Based on our findings, we recommend spirulina supplementation especially for those athletes who do not achieve the recommended antioxidant dietary intake and who perform a high training load aiming to reduce the magnitude of OS, inflammation and skeletal muscle damage, which could help to reduce performance losses and accelerate recovery after training/competitions throughout the season.

Chaouachi M, Gautier S, Carnot Y, Guillemot P, Pincemail J, Moison Y, Collin T, Groussard C, Vincent S. Spirulina supplementation prevents exercise-induced lipid peroxidation, inflammation and skeletal muscle damage in elite rugby players. J Hum Nutr Diet

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A 12-WEEK RANDOMIZED DOUBLE-BLIND PLACEBO-CONTROLLED CLINICAL TRIAL, EVALUATING THE EFFECT OF SUPPLEMENTATION WITH A SPINACH EXTRACT ON SKELETAL MUSCLE FITNESS IN ADULTS OLDER THAN 50 YEARS OF AGE

Date & Journal: Nutrients . 2021 Dec 6.

Abstract

The aim of a 12-week randomized double-blind placebo-controlled study was to assess the effect of daily supplementation with a natural extract of *Spinacia oleracea* L. (4 × 500 mg capsules/day; total 2 g per day) combined with a moderate-intensity training program (1 h session/3 times a week) on skeletal muscle fitness in adults over 50 years of age. Muscle strength assessed by isokinetic and isometric dynamometry improved significantly in the experimental (n = 23) and the placebo (n = 22) groups, but the magnitude of improvement was higher in the experimental group, with between-group differences in almost all variables, including isokinetic at 60° s^{-1} in knee extension, peak torque ($p < 0.007$); total work per repetition maximum ($p < 0.009$); isokinetic at 180°s^{-1} in knee extension, peak torque ($p < 0.002$); total work ($p < 0.007$); total work per repetition maximum ($p < 0.005$); average power ($p < 0.027$); isometric in knee extension, peak torque ($p < 0.005$); and average peak torque ($p < 0.002$). Similar findings were observed for muscle quality. Changes in quality of life (SF-36) were not found, except for improvements in the role physical ($p < 0.023$) and role emotional ($p < 0.001$) domains, likely as a result of the physical training sessions. A nutritional survey did not revealed changes in dietary habits. No adverse events were recorded. In subjects over 50 years of age, moderate-intensity strength training combined with daily supplementation for 12 weeks with a natural extract of *Spinacia oleracea* L. improved muscle-related variables and muscle quality. Maintaining muscle health is a key component of healthy aging.

Pérez-Piñero S, Ávila-Gandía V, Rubio Arias JA, Muñoz-Carrillo JC, Losada-Zafrilla P, López-Román FJ. A 12-Week Randomized Double-Blind Placebo-Controlled Clinical Trial, Evaluating the Effect of Supplementation with a Spinach Extract on Skeletal Muscle F

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EVALUATION OF DIET SUPPLEMENTATION WITH WHEAT GRASS JUICE ON GROWTH PERFORMANCE, BODY COMPOSITION AND BLOOD BIOCHEMICAL PROFILE OF CARP (*CYPRINUS CARPIO* L.)

Date & Journal: Animals (Basel) . 2021 Sep 3.

Abstract

Wheat grass juice (WGJ) is an extract of young wheat plantlets (*Triticum aetivum* L.) used worldwide for its health related properties. In this study, the following feeds containing WGJ were tested on common carp (*Cyprinus carpio* L.): Control (C), WGJ1% (V1), WGJ2% (V2) and WGJ4% (V3) *w/w*. Fish with an average initial weight of 102 g/individual were grown in a recirculating aquaculture system. The results showed that WGJ had stimulatory effects on growth performance. Accordingly, final body weight increased by 11% at V1, 39% at V2 and 23% at V3, while other indices (feed conversion ratio, specific growth rate, relative growth rate, protein efficiency ratio, and condition factor) were unaffected. Body composition analyses revealed a significant decrease in fat content at V2 and a significant increase in collagen and ash at the same variant, while the protein content was unmodified. Regarding the blood profile, significant increases in the content of albumin, globulin, total protein, and calcium were recorded in the variants with WGJ. The positive results of WGJ on carp can be attributed to its biochemical composition, which is rich in chlorophyll (4.71 mg mL^{-1}), total phenols (164 µg mL^{-1} gallic acid equivalents), and high antioxidant activity (67% inhibition of DPPH 2,2-diphenyl-1-picrylhydrazyl). The results suggest WGJ can be used as a promising feed additive for common carp.

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Servings per container: 30
Serving Size: 4 capsules

A proprietary blend of 3080 mg of the following natural ingredients:

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III. PRINCIPLES OF REHABILITATION RELATED TO PAIN MANAGEMENT – INFLAMMATION (MORE NUTRITIONAL OPTIONS)

RESEARCH: IMMUNE FUNCTION AND RELATED NUTRITIONAL INGREDIENTS FOR PAIN & INFLAMMATION MANAGEMENT & REHABILITATION OF INJURY

BROMELAIN FROM ANANAS COMOSUS (PINEAPPLE) STEM ATTENUATES OXIDATIVE TOXICITY AND TESTICULAR DYSFUNCTION CAUSED BY ALUMINUM IN RATS

Date & Journal: J Trace Elem Med Biol . 2020 Dec.

Abstract

Background: Aluminum (Al) has been reported to induce testicular injury via oxidative stress. Ananas comosus (pineapple) stem extract is an inexpensive byproduct waste rich in bromelain which is a group of sulfur-containing enzymes known for its biological activities and medicinal applications. So, the current investigation aims to evaluate the efficacy of bromelain in counteracting oxidative injury and testicular dysfunction stimulated by aluminum in rats.

Results: Al intoxicated animals revealed an elevation in lipid peroxidation level and lactate dehydrogenase activity. However, reduced glutathione and protein contents, antioxidant enzymes, phosphatases and aminotransferases activities were significantly reduced. Considerable amendments in hormonal levels (testosterone, luteinizing and follicle-stimulating hormone) and sperm characteristics were spotted. Further, histological variations in the testes section were detected and this supports the biochemical observations. Otherwise, rats supplemented with bromelain alone diminished TBARS and H_2O_2 and augmented mostly other parameters. Furthermore, supplementation with bromelain before Al intoxication in rats exhibited worthy betterment in oxidative stress markers, hormones, and sperm quality compared to Al treated group.

Conclusion: In conclusion, bromelain had a powerful protective role against aluminum-induced testicular dysfunction so, it represents a novel approach in metal toxicity processing.

Jebur AB, El-Demerdash FM, Kang W. Bromelain from Ananas comosus stem attenuates oxidative toxicity and testicular dysfunction caused by aluminum in rats. J Trace Elem Med Biol. 2020 Dec;62:126631. doi: 10.1016/j.jtemb.2020.126631. Epub 2020 Aug 1. PMID:

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Conclusion: In conclusion, bromelain had a powerful protective role against aluminum-induced testicular dysfunction so, it represents a novel approach in metal toxicity processing.

Jebur AB, El-Demerdash FM, Kang W. Bromelain from Ananas comosus stem attenuates oxidative toxicity and testicular dysfunction caused by aluminum in rats. J Trace Elem Med Biol. 2020 Dec;62:126631. doi: 10.1016/j.jtemb.2020.126631. Epub 2020 Aug 1. PMID:

CHEMICAL COMPOSITION AND CHROMATOGRAPHIC FINGERPRINT OF THREE STRAINS OF AGARICUS SUBRUFESCENS CULTIVATED WITH HANDMADE AND COMMERCIAL SUPPLEMENTS

Date & Journal: Food Chem . 2021 Nov 30.

Abstract

Exploratory factor analysis was applied to determine the chemical differences between fruitbodies of three Agaricus subrufescens mushroom strains [from Japan (JP), Brazil (ABZ), and Belgium (T2)] grown with handmade and commercial supplements. The composition of the ABZ strain cultivated with agro-industrial waste supplement presented a high nutritional composition regarding the amounts of fibre and protein, similar to mushrooms cultivated with the commercial supplement. The chromatographic fingerprints obtained for T2 and JP strains grown with commercial supplements presented similar profiles compared to those cultivated with the supplement based on peanut and the mix of supplements. The chromatographic analysis also showed that the similarities are correlated with the relative abundance of antioxidant compounds annotated by HPLC-MS, such as vanillic acid deoxyhexoside, caffeic acid hexoside, catechin hexosemalonate, digallic acid, cinnamic acid derivative, and p-coumaroylmalic acid. This study showed that handmade supplements based on agro-industrial waste could be viable alternatives for replacing high-cost supplements.

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EFFECT OF SUPPLEMENTATION WITH OLIVE LEAF EXTRACT ENRICHED WITH OLEUROPEIN ON THE METABOLOME AND REDOX STATUS OF ATHLETES' BLOOD AND URINE-A METABOLOMIC APPROACH

Date & Journal: Metabolites . 2022 Feb 20.

Abstract

Oleuropein (OE) is a secoiridoid glycoside occurring mostly in the Oleaceae family and presenting several pharmacological properties, including hypolipidemic and antioxidant properties. Based on these, several dietary supplements containing olive leaf extracts enriched with OE are commercially available in many countries. The current study aimed to examine the effect of supplementation with such an extract on the serum and urine metabolome of young healthy male athletes. For this purpose, applying a randomized, balanced, double-blind study, nine young, healthy males (physical education students) received either a commercially prepared extract or placebo for one week, followed by a two-week washout period; then, they were subsequently dosed with the alternate scheme (crossover design). Urine and serum samples were analyzed using UHPLC-HRMS, followed by evaluation with several multivariate methods of data analysis. The data were interpreted using a multilevel metabolomic approach (multilevel-sPLSDA) as it was found to be the most efficient approach for the study design. Metabolic pathway analysis of the most affected metabolites revealed that tryptophan and acylcarnitine's biochemistries were most influenced. Furthermore, several metabolites connected to indole metabolism were detected, which may indicate enhanced serotonin turnover. Phenylethylamine and related metabolites, as well as estrone, were connected to enhanced performance. In addition, possible changes to the lipidemic profile and the blood and urine redox statuses were investigated.

Lemonakis N, Mougios V, Halabalaki M, Dagla I, Tsarbopoulos A, Skaltsounis AL, Gikas E. Effect of Supplementation with Olive Leaf Extract Enriched with Oleuropein on the Metabolome and Redox Status of Athletes' Blood and Urine-A Metabolomic Approach.

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PHARMACOLOGICAL EFFECTS AND SAFETY OF ANDROGRAPHIS PANICULATA (BURM.F.) NEES

Date & Journal: J Food Sci. 2022 Mar.

Abstract

Andrographis paniculata (Burm.f.) Nees (AP) is widely used in most Asian and some Western countries. However, its main effects and underlying pharmacological mechanism have not been thoroughly characterized, and its safety has not been sufficiently investigated. The present study aimed to predict and visualize the potential targets and pathways, clarify the main pharmacological effects, and investigate the toxicological properties of AP extract (APE). First, ingenuity pathway analysis (IPA) was performed to directly predict AP's therapeutic targets and pathways; main pharmacological effects of AP were speculated based on IPA results and confirmed by pharmacodynamics experiments. Rodent toxicity studies were then performed through administration of a single dose of 10 g/kg or daily doses of 2, 1, or 0.5 g/kg for 8 weeks to evaluate the safety of APE, and a similar repeated-dose study was performed using dogs with doses equal to half of the above-mentioned doses. Thus, repeated-dose toxicity studies were performed with both rodents and nonrodents. The IPA analysis and confirmatory pharmacodynamics experiments revealed that the main pharmacological effect of APE was anti-inflammation, which might be achieved by influencing various targets (e.g., AR, AKT, and BAX) and pathways (IL-8). In the single-dose toxicity test, no death or abnormal consequences were observed, and maximum tolerated dose of APE was 10 g/kg. Results from the repeated-dose toxicity tests did not reveal any obvious toxic effects from the repeated daily intragastric administration of APE at 1 g/kg for 8 weeks. In conclusion, APE at a dose of 1 g/kg did not exert any adverse effects, and administration of APE could be beneficial for the inflammatory diseases' treatment. PRACTICAL APPLICATION: Andrographis paniculata (Burm.f.) Nees is a plant that exerts clearing and detoxification effects and is widely used around the world, but a comprehensive analysis of its efficacy and safety is needed.

Tian J, Li C, Meng J, Wang L, Tong Y, Zhao Y, Yi Y, Zhang Y, Xian Z, Pan C, Liu S, Han J, Liang A. Pharmacological effects and safety of Andrographis paniculata (Burm.f.) Nees. J Food Sci. 2022 Mar;87(3):1319-1330. doi: 10.1111/1750-3841.16079. Epub 2022

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EFFECT OF MUSHROOM AGARICUS BLAZEI ON IMMUNE RESPONSE AND DEVELOPMENT OF EXPERIMENTAL CEREBRAL MALARIA

Date and Journal: Malar J . 2015 Aug 1.

Background: Cerebral malaria (CM) is debilitating and sometimes fatal. Disease severity has been associated with poor treatment access, therapeutic complexity and drug resistance and, thus, alternative therapies are increasingly necessary. In this study, the effect of the administration of Agaricus blazei, a mushroom of Brazilian origin in a model of CM caused by Plasmodium berghei, strain ANKA, was investigated in mice.

Results: Mice treated with A. blazei aqueous extract or fraction C, that shows antioxidant activity, displayed lower parasitaemia, increased survival, reduced weight loss and protection against the development of CM. The administration of A. blazei resulted in reduced levels of TNF, IL-1β and IL-6 production when compared to untreated P. berghei-infected mice. Agaricus blazei (aqueous extract or fraction C) treated infected micedisplayed reduction of brain lesions. Although chloroquine treatment reduced parasitaemia, there was increased production of proinflammatory cytokines and damage in the CNS not observed with A. blazei treatment. Moreover, the in vitro pretreatment of infected erythrocytes followed by in vivo infection resulted in lower parasitaemia, increased survival, and little evidence of clinical signs of disease.

Conclusions: This study strongly suggests that the administration of A. blazei (aqueous extract or fraction C) was effective in improving the consequences of CM in mice and may provide novel therapeutic strategies.

Val, C.H., Brant, F., Miranda, A.S. et al. Effect of mushroom Agaricus blazei on immune response and development of experimental cerebral malaria. Malar J [illegible] 311 (2015). https://doi.org/10.1186/s12936-015-0832-y

ARTICLE TITLE: OLIVE LEAF EXTRACTS ACT AS MODULATORS OF THE HUMAN IMMUNE RESPONSE

Journal & Date: Endocr Metab Immune Disord Drug Targets . 2018

Abstract

Background: Olive tree leaves have been used in the Mediterranean area as traditional medicine in virtue of their healthy effects. Olive leaf extracts (OLEs) contain higher amounts of polyphenols than those detected in the extra virgin olive oil and fruit. Several lines of evidence support the cardioprotective, anti-oxidant and anti-inflammatory activities exerted by OLEs.

Results: Both extracts, but especially extract A, increased absolute numbers of CD8+ and natural killer (NK) cells. In addition, an increased production of interferon (IFN)-γ by both extracts as an expression of T helper (h)1 activation was observed. Finally, both extracts enhanced NO release.

Conclusion: OLEs, and mostly extract A, are able to in vitro modify healthy human immune response by increasing IFN-γ production which seems to be associated to the higher absolute numbers of CD8+ and NK cells and this may suggest a reinforcement of the anti-tumor activity. Furthermore, increased levels of NO may indicate the potential cardioprotective effects exerted by OLEs in virtue of their vasodilation dependent activity. Finally, OLEs are able to maintain the equilibrium between T regulatory cells and Th17 cells as evidenced by unmodified levels of interleukin (IL)-IL-10 and IL-17, respectively. In the light of these results, OLEs are potential therapeutic compounds for the treatment of chronic inflammatory disease, also preventing cardiovascular event outcome.

Magrone T, Spagnoletta A, Salvatore R, et al. Olive Leaf Extracts Act as Modulators of the Human Immune Response. Endocr Metab Immune Disord Drug Targets. 2018;18(1):85-93.doi:10.2174/1871530317666171116110537

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Supplement Facts

Suggested Dosage: Up to 3 capsules per day or as recommended by your healthcare provider.

Servings per container: 30
Serving Size: 3 capsules

Ingredient	Amount Per Serving	% Daily Value
Vitamin B6 (as pyridoxine HCL)	50 mg	2941%
Vitamin D3 (as cholecalciferol)	5000 IU	1250%
Vitamin C (as ascorbyl palmitate)	300 mg	333%
Magnesium BisGlycinate Chelate TRAACS®	500 mg (90 mg elemental)	21%
Selenium Glycinate TRAACS®	200 mcg	1110%
Zinc Bisglycinate Chelate TRAACS®	26 mg	236%

A proprietary blend of 900 mg the following natural ingredients: Organic olive leaf powder, Organic maitake mushroom powder, Shiitake mushroom powder, Reishi mushroom powder, Agaricus blazei mushroom powder, Organic ginger root powder, Organic licorice root powder, Andrographis powder, Arabinogalactan powder, Ashwagandha powder, and Astragalus powder. Other ingredients: Silicon dioxide, Magnesium stearate, vegetable capsule. Made with organic ingredients when possible.

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CASE REPORT

CHIROPRACTIC PATIENT
JAN. 2016

- COMORBIDITIES –
HEIGHT: 5’8”
WEIGHT: 225LBS (OBESITY)
MEDS: 5 DIFFERENT CARDIOVASCULAR MEDS.
LIFESTYLE: SEDENTARY
DIET: POOR
MENTAL HEALTH: DEPRESSION

CASE REPORT

CHIROPRACTIC PATIENT
DEC. 2016

- COMORBIDITIES –
HEIGHT: 5’8”
WEIGHT: 153LBS (WNL)
MEDS: REPLACED WITH 6 DIETARY SUPPLEMENTS DAILY
LIFESTYLE: ACTIVE (WALKS 3-4 MILES PER DAY)
DIET: VERY GOOD. REDUCED SUGAR, DAIRY, CARBS.
MENTAL HEALTH: STABLE AND HEALTHY

IV. REHABILITATION RELATED TO MUSCLE & TISSUE STRENGTHENING

A. NUTRITIONAL OPTIONS TO HELP STRENGTHEN MUSCLES FOR THE CHIROPRACTIC PATIENT

B. EXERCISE OPTIONS TO HELP REHABILITATE MUSCLES & TISSUES.

IV. REHABILITATION RELATED TO MUSCLE & TISSUE STRENGTHENING (NUTRITIONAL OPTIONS)

RESEARCH: AMINO ACIDS AND RELATED INGREDIENTS FOR CARDIOVASCULAR HEALTH, MUSCLE & TISSUE STRENGTHENING MANAGEMENT, & REHABILITATION OF INJURY

ISOLATED LEUCINE AND BRANCHED-CHAIN AMINO ACID SUPPLEMENTATION FOR ENHANCING MUSCULAR STRENGTH AND HYPERTROPHY: A NARRATIVE REVIEW

Date & Journal: Int J Sport Nutr Exerc Metab . 2021 May 1

- Branched-chain amino acids (BCAA) are one of the most popular sports supplements, marketed under the premise that they enhance muscular adaptations. Despite their prevalent consumption among athletes and the general public, the efficacy of BCAA has been an ongoing source of controversy in the sports nutrition field. Early support for BCAA supplementation was derived from extrapolation of mechanistic data on their role in muscle protein metabolism. Of the three BCAA, leucine has received the most attention because of its ability to stimulate the initial acute anabolic response. However, a substantial body of both acute and longitudinal research has now accumulated on the topic, affording the ability to scrutinize the effects of BCAA and leucine from a practical standpoint. This article aims to critically review the current literature and draw evidence-based conclusions about the putative benefits of BCAA or leucine supplementation on muscle strength and hypertrophy as well as illuminate gaps in the literature that warrant future study.

Plotkin DL, Delcastillo K, Van Every DW, Tipton KD, Aragon AA, Schoenfeld BJ. Isolated Leucine and Branched-Chain Amino Acid Supplementation for Enhancing Muscular Strength and Hypertrophy: A Narrative Review. Int J Sport Nutr Exerc Metab. 2021 May 1;31(3

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EFFECTS OF DIETARY SUPPLEMENTATION IN SPORT AND EXERCISE: A REVIEW OF EVIDENCE ON MILK PROTEINS AND AMINO ACIDS

Date & Journal: Crit Rev Food Sci Nutr . 2021

Abstract

Dietary supplements, especially protein, are used by athletes to achieve the exercise and training daily demands, and have been receiving research focus on their role regarding recovery and performance. Protein supplements are preferred over traditional protein sources because of their ease of availability and use. In addition to consuming a complete protein supplement, such as whey protein, the ingestion of a supplement containing only amino acids has been of interest for promoting skeletal muscle anabolism and high-quality weight loss. The aim of this study was to review the existing evidence on the effects of protein and amino acid supplementation on exercise. The preponderance of evidence suggests that protein supplementation, especially milk proteins, potentiate muscle protein synthesis, lean mass and exercise recovery. Unlike proteins, amino acids supplementation (branched-chain amino acids, glutamine or leucine) results from research are equivocal and are not warranted.

Master PBZ, Macedo RCO. Effects of dietary supplementation in sport and exercise: a review of evidence on milk proteins and amino acids. Crit Rev Food Sci Nutr. 2021;61(7):1225-1239. doi: 10.1080/10408398.2020.1756216. Epub 2020 May 2. PMID: 32363897.

EFFECT OF EXERCISE THERAPY COMBINED WITH BRANCHED-CHAIN AMINO ACID SUPPLEMENTATION ON MUSCLE STRENGTH IN ELDERLY WOMEN AFTER TOTAL HIP ARTHROPLASTY: A RANDOMIZED CONTROLLED TRIAL

Date & Journal: Asia Pac J Clin Nutr . 2019

Abstract

Background and objectives: Many patients develop a prolonged decrease of muscle strength after total hip arthroplasty (THA) despite their reconstructed hip joint. Physical exercise combined with branched-chain amino acid (BCAA) supplementation has been reported to improve muscle strength in elderly persons with sarcopenia. However, the effect of BCAA supplementation in patients after THA is unknown. This study examined the effects of BCAA supplementation combined with exercise therapy on the improvement of physical function in elderly patients after THA.

Methods and study design: The subjects were 31 elderly women who underwent THA. The participants were randomly assigned to two groups: BCAA (n=18) and control (n=13). The combined therapy was carried out for one month after THA. For the exercise intervention, a 3-set physical exercise program was conducted. For the nutritional intervention, the participants consumed 3.4 g of BCAA supplement or 1.2 g of starch immediately after the exercise intervention.

Results: BCAA supplementation combined with muscle strengthening exercises had a significant effect on knee extension strength of the contralateral side and on upper arm cross-sectional area. The improvement ratio of knee extension strength before and after intervention on the operated side was also significantly higher in the BCAA group.

Conclusions: BCAA supplementation is effective for patients to improve the strength of some muscles when combined with physical exercises, but hip abductor muscle strength of the operated leg did not improve. A future study is needed to determine the efficacy of this combined therapy for hip abductor muscle strength.

Ikeda T, Matsunaga Y, Kanbara M, Kamono A, Masuda T, Watanabe M, Nakanishi R, Jinno T. Effect of exercise therapy combined with branched-chain amino acid supplementation on muscle strength in elderly women after total hip arthroplasty: a randomized contro…

FUNCTIONAL NITRIC OXIDE NUTRITION TO COMBAT CARDIOVASCULAR DISEASE

Date & Journal: Curr Atheroscler Rep . 2018 Mar 17.

Purpose of review: To reveal the mechanisms of nitric oxide (NO) production in humans and how lifestyle, drug therapy, and hygienic practices can decrease NO production. Furthermore, to show how functional nitric oxide nutrition can overcome these limitations to restore endogenous NO production and combat cardiovascular disease.

Recent findings: Research over the past decade has revealed that inorganic nitrate and nitrite found naturally in green leafy vegetables and other vegetables such as beets can provide the human body with a source of bioactive nitric oxide. NO is one of the most important molecules produced within the cardiovascular system that maintains normal blood pressure and prevents inflammation, immune dysfunction, and oxidative stress, hallmarks of cardiovascular disease. This pathway is dependent upon the amount of inorganic nitrate and nitrite in the foods we eat, the presence of oral nitrate-reducing bacteria, and sufficient stomach acid production. The concept of food being medicine and medicine being food has lost its place in the practice and implementation of modern medicine over the past century. Certain dietary patterns and specific foods are known to confer very significant protective effects for many human diseases, including cardiovascular disease, the number one killer of men and women in the developed world. However, identification of single or multiple bioactive molecules that are responsible for these effects has escaped scientists and nutritionists for many years. This review will highlight the biochemical, physiological, and epidemiological basis for functional nitric oxide nutrition that can be safely and effectively utilized in patients.

Bryan NS. Functional Nitric Oxide Nutrition to Combat Cardiovascular Disease. Curr Atheroscler Rep. 2018;20(5):21. Published 2018 Mar 17. doi:10.1007/s11883-018-0723-0

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Supplement Facts

Suggested Dosage: Up to 4 capsules per day or as recommended by your healthcare provider.

Servings per container: 30
Serving Size: 4 capsules

Ingredient	Amount Per Serving	% Daily Value
Vitamin C (Ascorbic Acid)	100mg	167%
Vitamin B1 Thiamine	20 mg	1333%
Vitamin B2 Riboflavin	40 mg	1765%
Vitamin B3 Niacinimide	65 mg	325%
Pantothenic Acid	10 mg	100%
Vitamin B6 Pyridoxine HCL	20 mg	1000%
Folic Acid	400 mcg	100%

A proprietary blend of 3955 mg total of the following ingredients: L-Arginine; L-Taurine, L-Lysine, L-Glutamine; L-Leucine; L-Isoleucine; L-Valine; Green tea leaf extract (Camelia sinensis); Organic American Ginseng (Panax ginseng); Organic Maca Root Powder (Lipidium Meyenii); L-Phenylalanine; N-Acetyl Tyrosine; L-Phenylethylamine; Caffeine from Coffee Bean (natural source) 150mg. Made with organic ingredients when possible.
Other ingredients: Vegetable capsule.

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Vitamin B1 Thiamine	20 mg	1333%
Vitamin B2 Riboflavin	40 mg	1765%
Vitamin B3 Niacinimide	65 mg	325%
Pantothenic Acid	10 mg	100%
Vitamin B6 Pyridoxine HCL	20 mg	1000%
Folic Acid	400 mcg	100%

A proprietary blend of 3955 mg total of the following ingredients: L-Arginine; L-Taurine, L-Lysine, L-Glutamine; L-Leucine; L-Isoleucine; L-Valine; Green tea leaf extract (Camelia sinensis); Organic American Ginseng (Panax ginseng); Organic Maca Root Powder (Lipidium Meyenii); L-Phenylalanine; N-Acetyl Tyrosine; L-Phenylethylamine; Caffeine from Coffee Bean (natural source) 150mg. Made with organic ingredients when possible.
Other ingredients: Vegetable capsule.

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CAFFEINE-FREE AMINO ENERGY

ALL-NATURAL INGREDIENTS HELPING TO AID IN ENERGY, CARDIO, & BRAIN HEALTH

120 VEGGIE CAPSULES

"A dietary supplement"

Supplement Facts

Suggested Dosage: Up to 4 capsules per day or as recommended by your healthcare provider.

Servings per container: 30
Serving Size: 4 capsules

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A proprietary blend of 2225 mg total of the following ingredients: L-Arginine; L-Taurine, L-Lysine, L-Glutamine; L-Leucine; L-Isoleucine; L-Valine; Korean Ginseng (Panax ginseng); Eleutherococcus Senticosus; Maca Root extract; L-Phenylalanine; L-Tyrosine; Phenylethylamine. Made with organic ingredients when possible.
Other ingredients: HPMC vegetable capsule.

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* These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.

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IV. REHABILITATION RELATED TO MUSCLE & TISSUE STRENGTHENING (NUTRITIONAL OPTIONS)

RESEARCH: COLLAGEN AND RELATED INGREDIENTS FOR MUSCLE CRAMPING, BONE DENSITY, MUSCLE & TISSUE STRENGTHENING MANAGEMENT & REHABILITATION OF INJURY

A WHITE PAPER ON COLLAGEN HYDROLYZATES AND ULTRAHYDROLYZATES: POTENTIAL SUPPLEMENTS TO SUPPORT JOINT HEALTH IN OSTEOARTHRITIS?

Date & Journal: Curr Rheumatol Rep . 2021 Oct 30.

Abstract

Purpose of review: Osteoarthritis (OA) is the most common forms of arthritis in the general population, accounting for more pain and functional disability than any other musculoskeletal disease. There are currently no approved disease modifying drugs for OA. In the absence of effective pharmacotherapy, many patients with OA turn to nutritional supplements and nutraceuticals, including collagen derivatives. Collagen hydrolyzates and ultrahydrolyzates are terms used to describe collagens that have been broken down into small peptides and amino acids in the presence of collagenases and high pressure.

Recent findings: This article reviews the relevant literature and serves as a White Paper on collagen hydrolyzates and ultrahydrolyzates as emerging supplements often advertised to support joint health in OA. Collagen hydrolyzates have demonstrated some evidence of efficacy in a handful of small scale clinical trials, but their ability to treat and reverse advanced joint disease remains highly speculative, as is the case for other nutritional supplements. The aim of this White Paper is to stimulate research and development of collagen-based supplements for patients with OA and other musculoskeletal diseases at academic and industrial levels. This White Paper does not make any treatment recommendations for OA patients in the clinical context, but simply aims to highlight opportunities for scientific innovation and interdisciplinary collaboration, which are crucial for the development of novel products and nutritional interventions based on the best available and published evidence.

Mobasheri A, Mahmoudian A, Kalvaityte U, Uzieliene I, Larder CE, Iskandar MM, Kubow S, Hamdan PC, de Almeida CS Jr, Favazzo LJ, van Loon LJC, Emans PJ, Plapler PG, Zuscik MJ. A White Paper on Collagen Hydrolyzates and Ultrahydrolyzates: Potential Supplements to Support Joint Health in Osteoarthritis? Curr Rheumatol Rep. 2021 Oct 30;23(11):78. doi: 10.1007/s11926-021-01042-6. PMID: 34716494; PMCID: PMC8556166.

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DAILY ORAL SUPPLEMENTATION WITH COLLAGEN PEPTIDES COMBINED WITH VITAMINS AND OTHER BIOACTIVE COMPOUNDS IMPROVES SKIN ELASTICITY AND HAS A BENEFICIAL EFFECT ON JOINT AND GENERAL WELLBEING

Date & Journal: Nutr Res . 2018 Sep.

Abstract

Aging is a multifactorial and natural process that causes physiological changes in organs, tissues and cells over time. In the skin and cartilage, aging leads to a decrease in the synthesis and changes in the arrangement of proteoglycans and collagen, in addition to the loss of glycosaminoglycans, which are responsible for the integrity and health of these tissues. We hypothesized that daily oral supplementation with a liquid nutraceutical containing hydrolyzed fish collagen, vitamins, antioxidants and other active ingredients could improve skin texture and elasticity, and in addition have a protective effect on joint health. A double-blind, randomized, placebo-controlled clinical trial was conducted on 120 subjects who consumed either the test product or placebo on a daily basis for 90 days. Subjects consuming the test product had an overall significant increase in skin elasticity (+40%; $P < .0001$) when compared to placebo. Histological analysis of skin biopsies revealed positive changes in the skin architecture, with a reduction in solar elastosis and improvement in collagen fiber organization in the test product group. As reported in the self-perception questionnaires, these results were confirmed by the subjects' own perceptions in that participants agreed their skin was more hydrated and more elastic. In addition, the consumption of the test product reduced joint pain by -43% and improved joint mobility by +39%. Oral supplementation with collagen bioactive peptides combined with chondroitin sulphate, glucosamine, L-carnitine, vitamins, and minerals significantly improved the clinical parameters related to skin aging and joint health, and therefore, might be an effective solution to slow down the hallmarks of aging.

Czajka A, Kania EM, Genovese L, Corbo A, Merone G, Luci C, Sibilla S. Daily oral supplementation with collagen peptides combined with vitamins and other bioactive compounds improves skin elasticity and has a beneficial effect on joint and general wellbeing. Nutr Res. 2018 Sep;57:97-108. doi: 10.1016/j.nutres.2018.06.001. Epub 2018 Jun 9. PMID: 30122200.

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RESEARCH: COLLAGEN PROTEIN FOR PAIN MANAGEMENT & REHABILITATION OF INJURY

Arginine L-alpha-ketoglutarate, methylsulfonylmethane, hydrolyzed type I collagen and bromelain in rotator cuff tear repair: a prospective randomized study.

Gumina S[1], Passaretti D, Gurzì MD, Candela V.

⊕ Author information

Abstract

OBJECTIVE: Arthroscopic rotator cuff repair generally provides satisfactory result, in terms of decreasing shoulder pain, resulting in improvement in range of motion. Unfortunately, imaging studies have shown that after surgical repair re-rupture rate is potentially high. Literature data indicate that each of the components present in a commercial supplement sold in Italy as Tenosan * (arginine L-alpha-ketoglutarate, methylsulfonylmethane, hydrolyzed type I collagen and bromelain) have a potential role in tendon healing and mitigating the pain due to tendonitis. We evaluated the clinical and MRI results of rotator cuff repair with and without the employment of this oral supplement in patients with a large, postero-superior rotator cuff tear (RCT).

RESEARCH DESIGN AND METHODS: We enrolled 90 consecutive patients who had a large, postero-superior RCT. All the lesions were managed with an arthroscopic repair. Patients were randomized and treated either with (Group I) or without (Group II) the supplement. The primary outcomes were the difference between the pre- and post-operative Constant score and repair integrity assessed by MRI according to Sugaya's classification. The secondary outcome was the pre- and post-operative Simple Shoulder Test.

RESULTS: No statistically significant differences were identified between the two groups for each considered variable, except for shoulder pain (follow-up: 6 months) and repair integrity (final follow-up). Intensity of shoulder pain was lower in the Group I patients ($p < 0.001$). Analogously, in Group I, the percentage of patients with a better repair integrity result was significantly higher than Group II.

CONCLUSION: The use of the supplement for 3 months after cuff repair decreases shoulder post-operative pain and leads to a slight improvement in repair integrity. This improvement does not seem to correlate with an better objective functional outcome. However, these effects could facilitate and abbreviate the post-operative rehabilitation program and reduce re-rupture rate. The main limitations of this study are the relative short follow-up period and small number of patients studied.

PMID: 23043451 DOI: 10.1185/03007995.2012.737772

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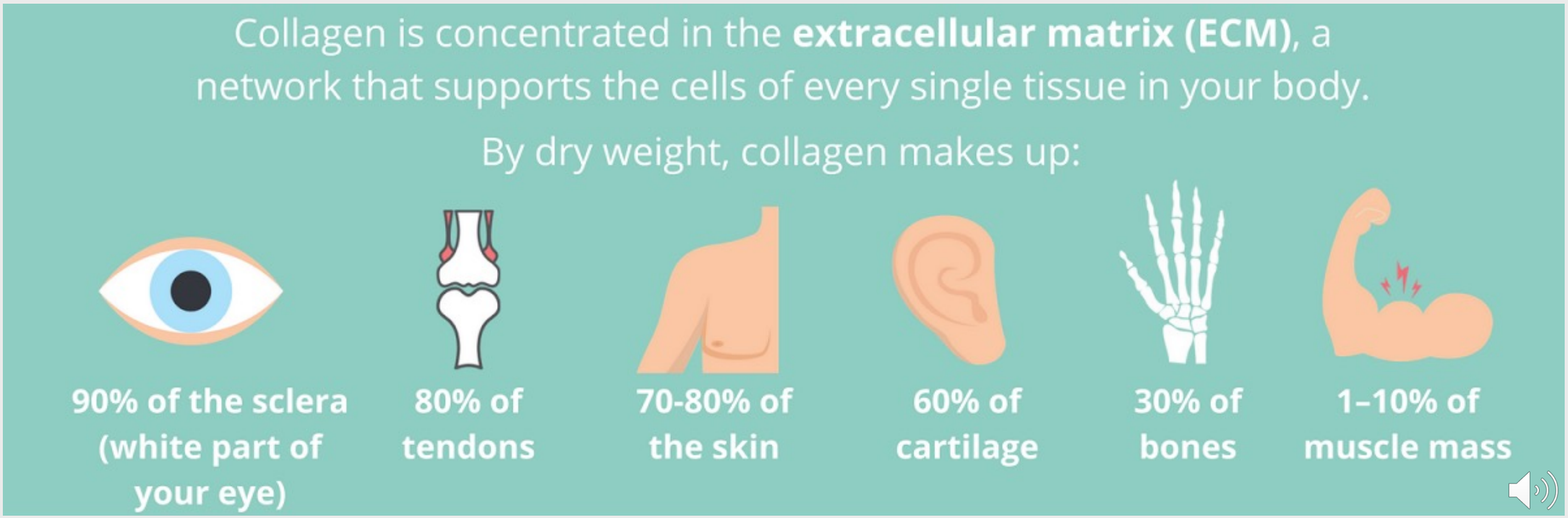
WHAT IS COLLAGEN PROTEIN?

- Largest Protein in our body. 70% of our total protein.
- Collagen Protein make up heart, lungs, blood vessels, discs, muscle, bone, internal organs.
- Ptosis: Defined as ”loss of collagen, droopy organs and skin”.

Caused by hormonal changes, drugs, alcohol, processed foods, white sugar, hydrogenated oils, fluoridated water, dehydration, stress, and trauma.



COLLAGEN TYPES USED IN NUTRITIONAL PRODUCTS FOR PAIN MANAGEMENT & INFLAMMATION REDUCTION

SEVERAL DIFFERENT TYPES OF PROTEIN HAVE BEEN IDENTIFIED, BUT MOST OF THE COLLAGEN IN THE BODY IS TYPE I, II, OR III.

TYPE I – Most Common. In the bones, teeth, ligaments, & tendons.
Also present in skin and is responsible for the skin's elasticity & strength.
Loss of Type I Collagen results in wrinkles & aged appearance.

Source: Hides of Organic Grass Fed Cows

TYPE II – Found in the cartilage.

Source: Feet of GMO Fed Chickens or Hooves of GMO Fed Cows

TYPE III - Most prevalent in skin, blood vessels, and internal organs.

Source: Feet of Caged, GMO Fed Chickens

León-López, Arely et al. "Hydrolyzed Collagen-Sources and Applications." *Molecules (Basel, Switzerland)* vol. 24,22 4031. 7 Nov. 2019, doi:10.3390/molecules24224031

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WHY HYDROLYZED COLLAGEN TYPE-I FOR REHABILITATION FOR MUSCLES AND TISSUES?

- The body can't absorb collagen in whole form.
- This protein must be broken down during the digestive process before it can be absorbed.
- To increase bioavailability, we use *Hydrolyzed* collagen
- Collagens long amino acid chain is broken down into peptides
- Resulting in a much easier absorption process in the GI tract.
- Capsules are better for this digestion process than powder due to the lack of clumping.

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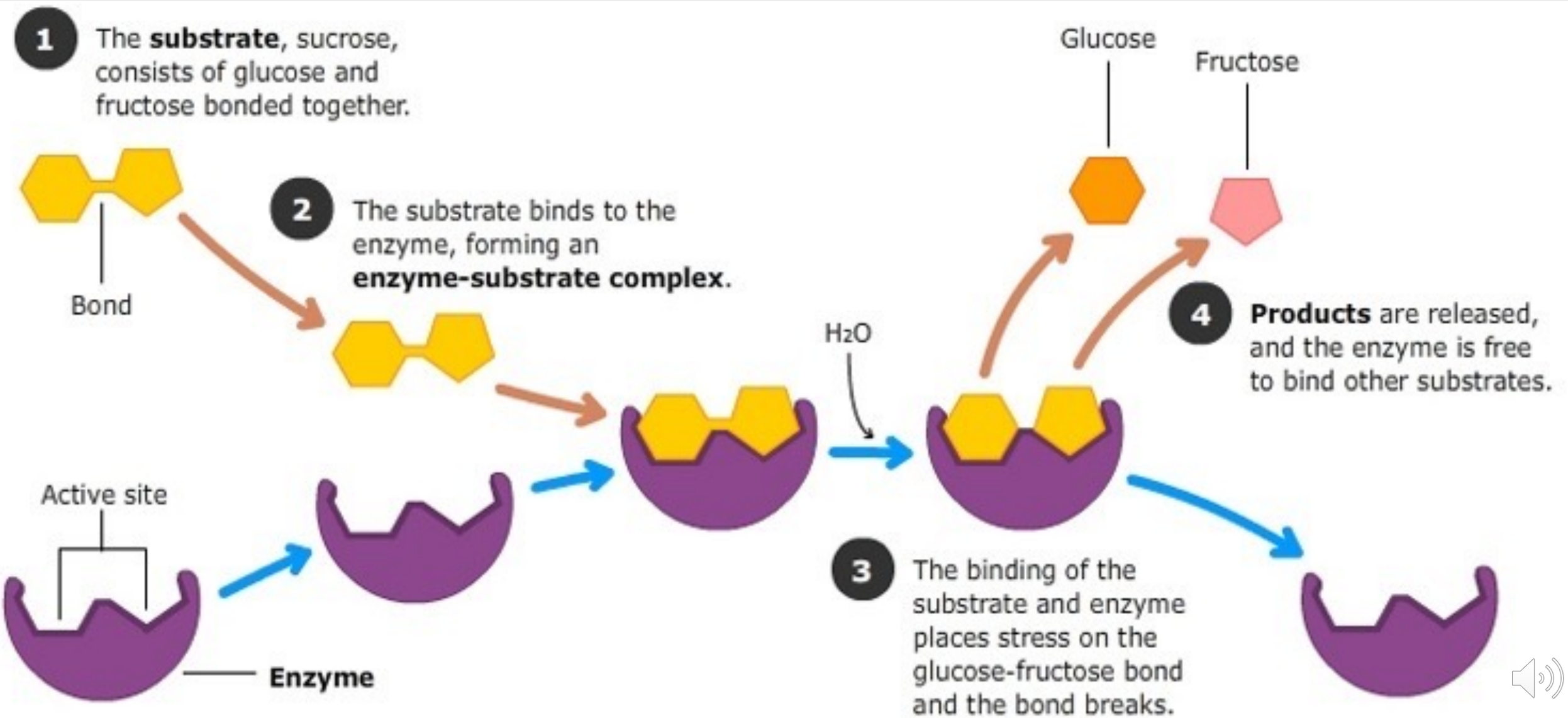
PROCESS OF ENZYMATIC HYDROLYSIS

Definition: Catalytic decomposition of a chemical compound by reaction with water.

In supplements it is used for the breakdown of proteins into amino acids by the addition of the enzyme protease.



WHAT IS HYDROLYZED COLLAGEN TYPE I?

- Results of Clinical Studies Suggest:
  - Increase of lean muscle, muscle tone, skin tone, joint rebuilding, stronger arteries, increased energy, and organ rebuilding.
  - Long Term Improvements Suggest:
    - Reduction in: Osteoporosis, high blood pressure, arthritis, weak bladder, obesity, chronic fatigue, and autoimmune diseases.

Nutritional option that I use in my practice for Rehabilitation of Injuries, and Muscle & Tissue Strengthening.

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ALL-NATURAL AID FOR STRENGTHENING HAIR, SKIN, NAILS, MUSCLES & JOINTS

180 VEGGIE CAPSULES

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" A dietary supplement"

Supplement Facts

Suggested Dosage: Up to 6 capsules per day or as recommend by your healthcare provider.

Servings per container: 30
Serving Size: 6 capsules

Ingredient	Amount Per Serving	% Daily Value
Type 1 Hydrolyzed Collagen Kosher(Bovine)	3000 mg	120%
Vitamin C (Ascorbic Acid)	200 mg	333%

A proprietary blend of 320 mg of the following natural ingredients:
Glucosamine sulfate; Horsetail herb; Citrus Bioflavonoids. Made with organic ingredients when possible.

Other ingredients: Vegetable capsule.

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IV. REHABILITATION RELATED TO MUSCLE & TISSUE STRENGTHENING (NUTRITIONAL OPTIONS)

RESEARCH: MINERALS AND RELATED INGREDIENTS FOR MUSCLE CRAMPING, BONE DENSITY, MUSCLE & TISSUE STRENGTHENING MANAGEMENT & REHABILITATION OF INJURY

EFFECT OF MAGNESIUM SUPPLEMENTATION ON CHRONIC KIDNEY DISEASE-MINERAL AND BONE DISORDER IN HEMODIALYSIS PATIENTS: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

Date & Journal: J Ren Nutr . 2022 Jan.

Abstract

Objectives: Research about the effects of magnesium (Mg) supplementation on chronic kidney disease-mineral bone disorder (CKD-MBD) among hemodialysis (HD) patients is controversial. Thus, we conducted a meta-analysis to examine Mg supplementation's effects on CKD-MBD in patients requiring dialysis.

Results: Eight eligible studies comprising 309 HD patients were included in our meta-analysis. Mg supplementation alone produced a negative effect on serum PTH levels (WMD = -236.56; 95% CI -349.71 to -123.41) and CIMT (WMD = -0.18; 95% CI -0.34 to -0.01). A subgroup analysis based on intervention type showed a significant improvement in serum Mg and Ca levels when Mg was administered via dialysate and oral medication, respectively. Different intervention durations had no effect on serum Mg levels. Mg supplementation had no significant effect on serum phosphate and C-reactive protein levels.

Conclusions: Our results showed that Mg supplementation alone could improve CKD-MBD by regulating serum Ca and PTH metabolism and decreasing CIMT among HD patients.

Guo G, Zhou J, Xu T, Sheng Z, Huang A, Sun L, Yao L. Effect of Magnesium Supplementation on Chronic Kidney Disease-Mineral and Bone Disorder in Hemodialysis Patients: A Meta-Analysis of Randomized Controlled Trials. J Ren Nutr. 2022 Jan;32(1):102-111. doi

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INVITED REVIEW: MINERAL ABSORPTION MECHANISMS, MINERAL INTERACTIONS THAT AFFECT ACID-BASE AND ANTIOXIDANT STATUS, AND DIET CONSIDERATIONS TO IMPROVE MINERAL STATUS.

DATE & JOURNAL: J DAIRY SCI. 2018 APR

Several minerals are required for life to exist. In animals, 7 elements (Ca, P, Mg, Na, K, Cl, and S) are required to be present in the diet in fairly large amounts (grams to tens of grams each day for the dairy cow) and are termed macrominerals. Several other elements are termed microminerals or trace minerals because they are required in much smaller amounts (milligrams to micrograms each day). In most cases the mineral in the diet must be absorbed across the gastrointestinal mucosa and enter the blood if it is to be of value to the animal. The bulk of this review discusses the paracellular and transcellular mechanisms used by the gastrointestinal tract to absorb each of the various minerals needed. Unfortunately, particularly in ruminants, interactions between minerals and other substances within the diet can occur within the digestive tract that impair mineral absorption. The attributes of organic or chelated minerals that might permit diet minerals to circumvent factors that inhibit absorption of more traditional inorganic forms of these minerals are discussed. Once absorbed, minerals are used in many ways. One focus of this review is the effect macrominerals have on the acid-base status of the animal. Manipulation of dietary cation and anion content is commonly used as a tool in the dry period and during lactation to improve performance. A section on how the strong ion theory can be used to understand these effects is included. Many microminerals play a role in the body as cofactors of enzymes involved in controlling free radicals within the body and are vital to antioxidant capabilities. Those same minerals, when consumed in excess, can become pro-oxidants in the body, generating destructive free radicals. Complex interactions between minerals can compromise the effectiveness of a diet in promoting health and productivity of the cow. The objective of this review is to provide insight into some of these mechanisms.

Goff JP. Invited review: Mineral absorption mechanisms, mineral interactions that affect acid-base and antioxidant status, and diet considerations to improve mineral status. J Dairy Sci. 2018 Apr;101(4):2763-2813. doi: 10.3168/jds.2017-13112. Epub 2018 Fe

Nutritional option that I use in my practice for muscle cramping & bone loss prevention

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CHELATED MINERALS

ALL-NATURAL AID TO HELP
PREVENT BONE LOSS
& MUSCLE CRAMPING

90
VEGGIE
CAPSULES

MADE IN USA

" A dietary supplement"

Supplement Facts

Suggested Dosage: Up to 3 capsules per day or as recommended by your healthcare provider.

Servings per container: 30
Serving Size: 3 capsules

Ingredient	Amount Per Serving	% Daily Value
Calcium Bisglycinate Chelate TRAACS®	600mg	60%
Magnesium Bisglycinate Chelate TRAACS®	500mg	125%
Potassium Glycinate complex TRAACS®	300mg	6%
Calci-K® (Calcium Potassium Phosphate Citrate)TRAACS®	50mg	1%
Ferrochel® (Ferrous Bisglycinate Chelate)TRAACS®	5mg	2%
Vitamin D3 (Cholecalciferol)	400 IU	100%
Sodium (as bicarbonate)	100 mg	4%
Zinc Bisglycinate Chelate TRAACS®	15mg	136%

A proprietary blend of 500 mg of the following natural ingredients: Raspberry Leaf extract 4:1; Corydalis; Organic Wild Yam; Cramp Bark; Organic Ginger root. Bioavailable naturally occurring minerals: Calcium; Magnesium; Potassium; Manganese; Copper; Iron; Zinc; Vitamins A, C, & E; Vitamin B complex.
Other Ingredients: Glucose; Silicon dioxide; Vegetable capsule.
Made with organic ingredients when possible.

Distributed by:
Organiccs Absolutely Pure, LLC
Laguna Hills, CA. 92653
(949) 707-5785
USP Inc. Facility Code 20181

Lot:

Exp:

Manufactured by PHS Oxnard CA

Nutritional option that I use in my practice for muscle cramping & bone loss prevention

Scan with your smartphone!

ORGANICCS
ABSOLUTELY PURE®

CHELATED MINERALS

ALL-NATURAL AID TO HELP
PREVENT BONE LOSS
& MUSCLE CRAMPING

90
VEGGIE
CAPSULES

MADE IN USA

" A dietary supplement"

Supplement Facts

Suggested Dosage: Up to 3 capsules per day or as recommended by your healthcare provider.

Servings per container: 30
Serving Size: 3 capsules

Ingredient	Amount Per Serving	% Daily Value
Calcium Bisglycinate Chelate TRAACS®	600mg	60%
Magnesium Bisglycinate Chelate TRAACS®	500mg	125%
Potassium Glycinate complex TRAACS®	300mg	6%
Calci-K® (Calcium Potassium Phosphate Citrate)TRAACS®	50mg	1%
Ferrochel® (Ferrous Bisglycinate Chelate)TRAACS®	5mg	2%
Vitamin D3 (Cholecalciferol)	400 IU	100%
Sodium (as bicarbonate)	100 mg	4%
Zinc Bisglycinate Chelate TRAACS®	15mg	136%

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IV. REHABILITATION RELATED TO MUSCLE & TISSUE STRENGTHENING

A. NUTRITIONAL OPTIONS TO HELP STRENGTHEN MUSCLES FOR THE CHIROPRACTIC PATIENT

B. EXERCISE OPTIONS TO HELP REHABILITATE MUSCLES & TISSUES.

REHABILITATION PRINCIPLES RELATED TO MUSCLE & TISSUE STRENGTHENING

20 minutes of strength training exercises
2-3 week with AT LEAST 1 day off between workouts for muscles to recover & grow!

Exercises:
Sets: 1-3 | Reps: 8-15 | Rest Intervals: 45sec

- Squats - Buttocks & Thighs
- Modified Push Up – Chest, abs, shoulders, & arms
- Shoulder Press - Shoulders & arms
- Biceps Curls - Biceps
- Plank - Abdominals, shoulders, chest, lower back, buttocks, thighs

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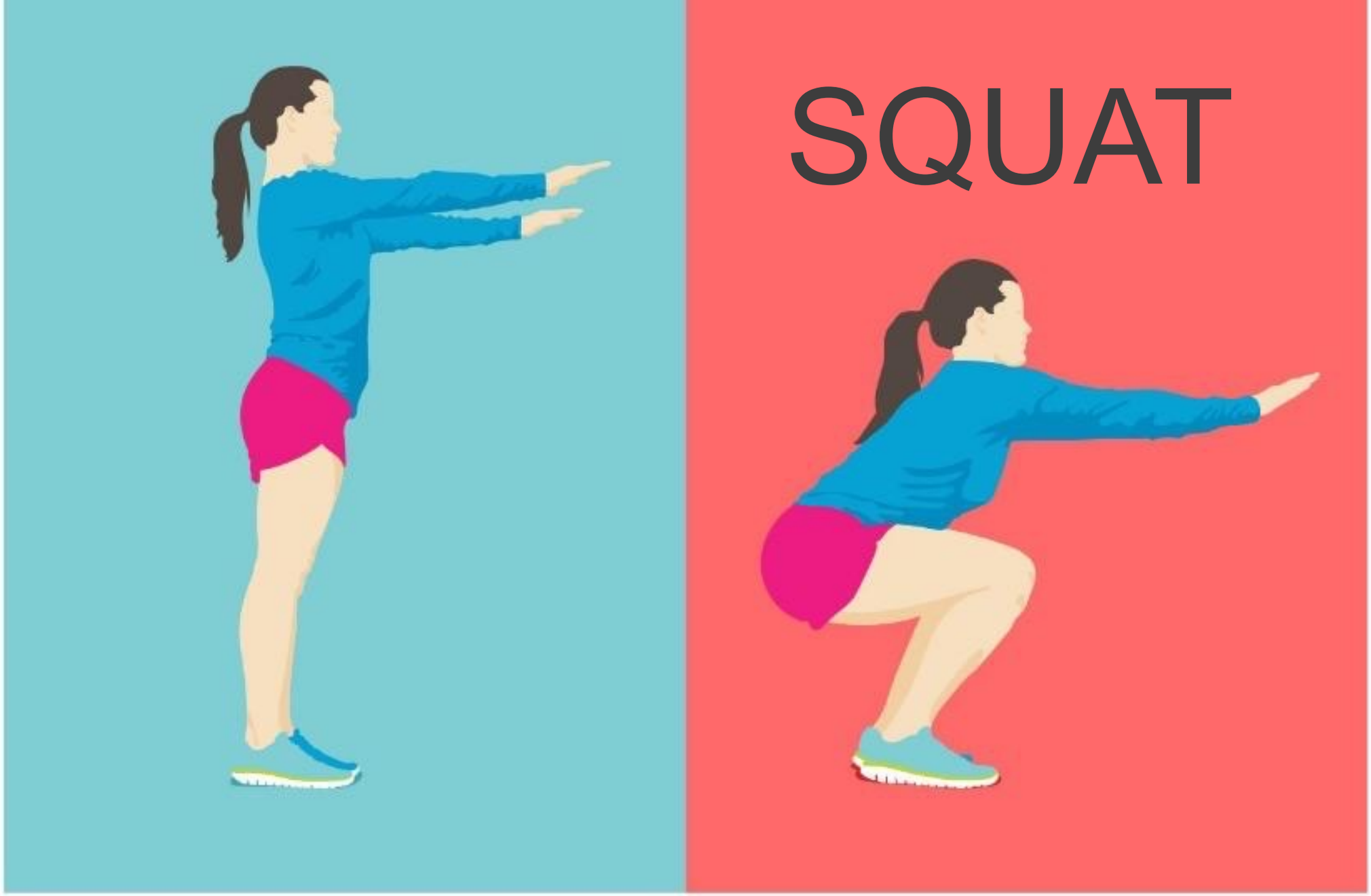
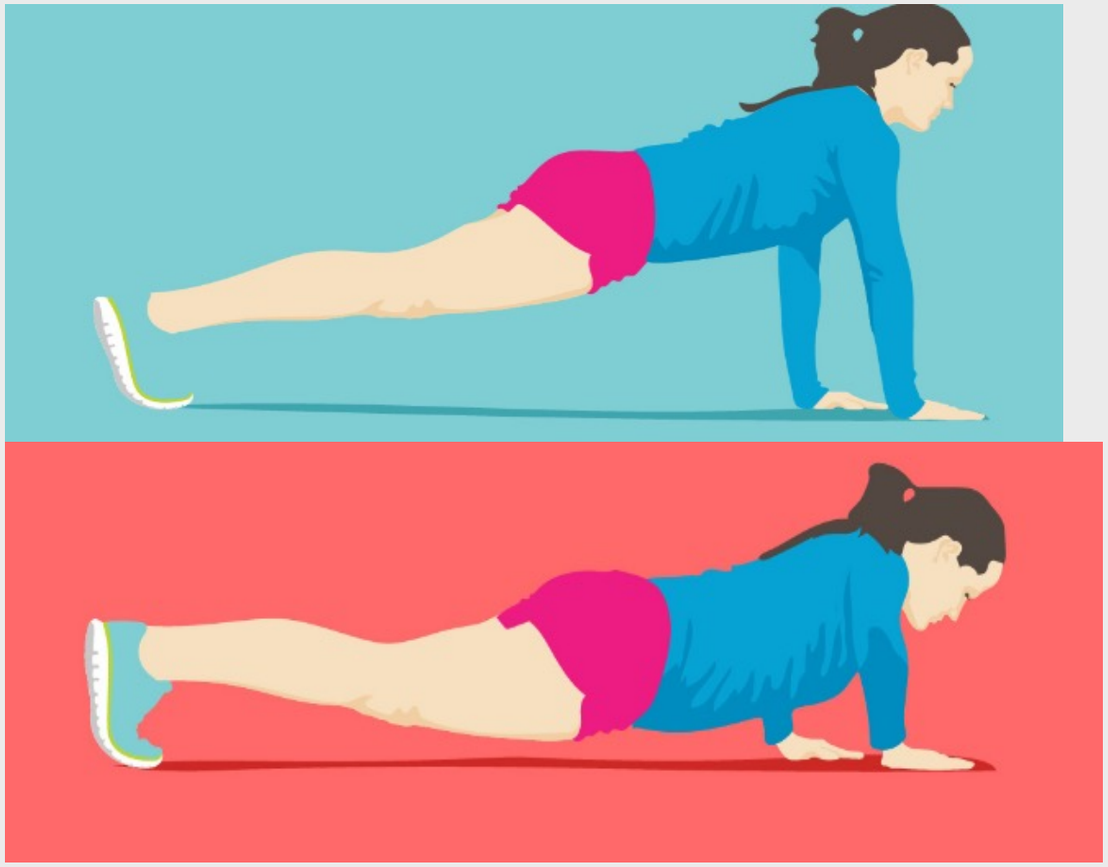
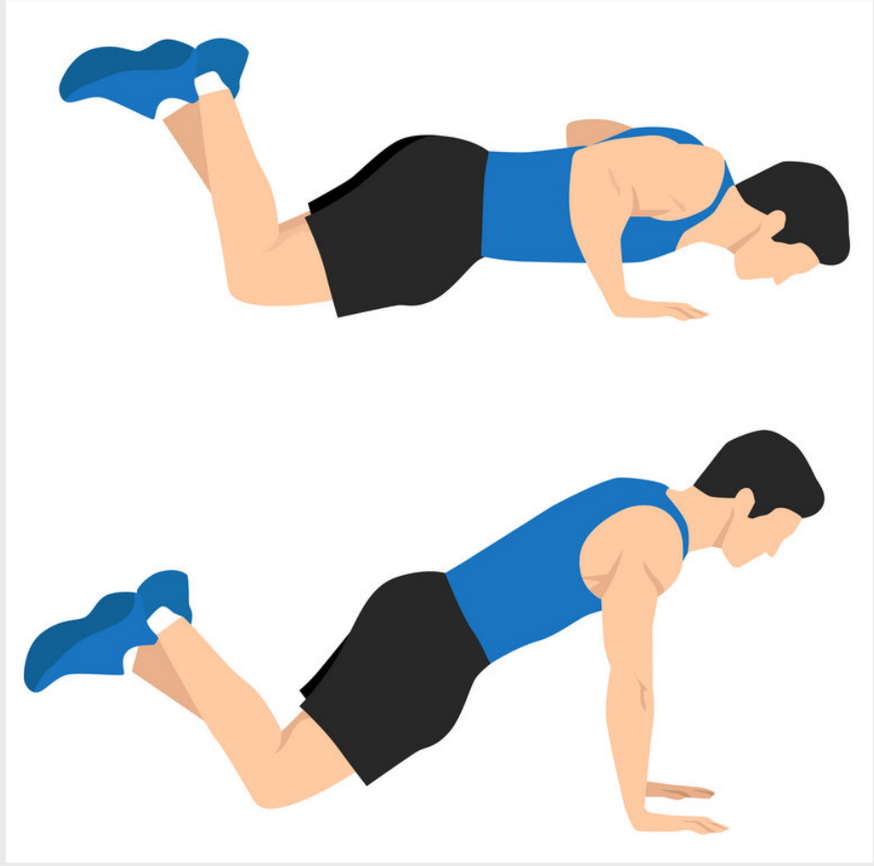


- Start by standing upright with your feet placed in a position slightly wider than shoulder-width apart, and your toes pointed straight ahead.
- Bend your legs and drop your buttocks down to the height of your knees. Your legs should form a 90-degree angle when you're at the bottom of the movement.
- With your weight on your heels, push yourself back upright, squeezing through your glutes (buttock muscles) on the way up.
- Perform 5 sets of 25 repetitions. Adjust this rep number if you feel you can do more at the end of each set.

Push Up



Modified Push Up:

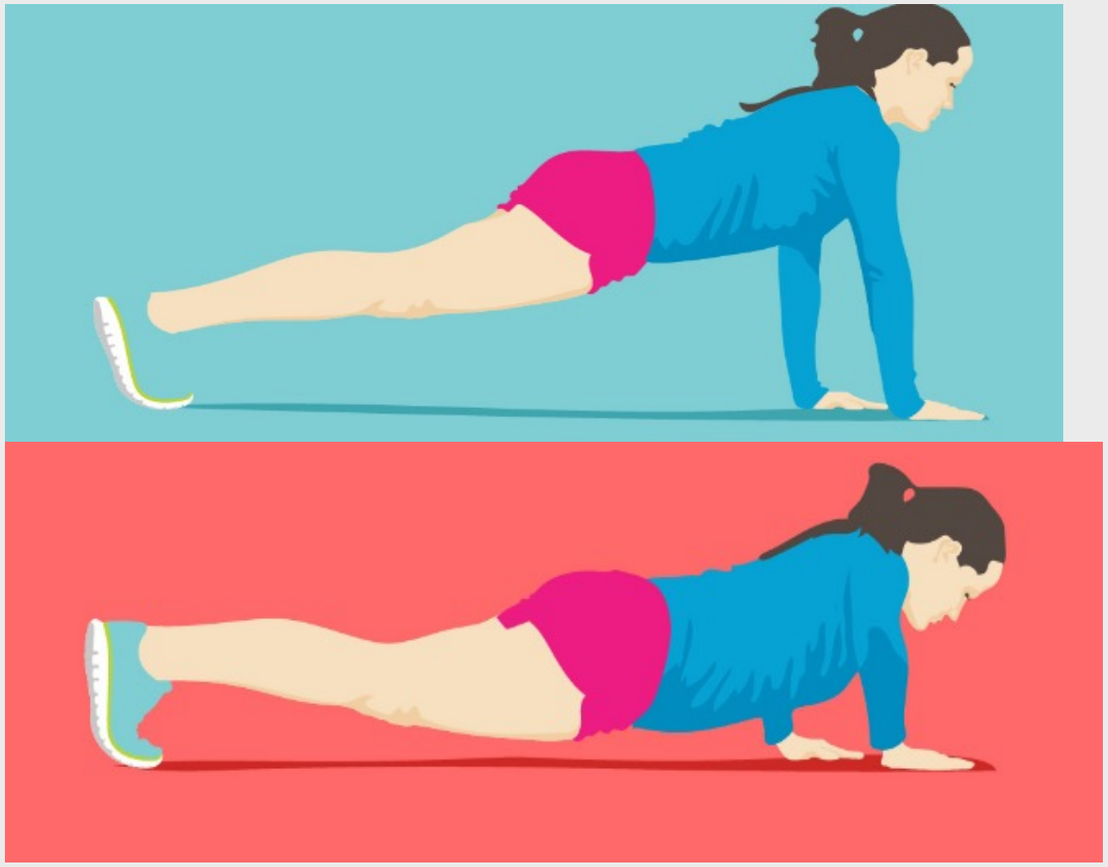


- Lie on your stomach, knees bent and ankles crossed. Place your palms on the floor a bit to the side and in front of your shoulders. Tuck your chin a few inches into your chest so your forehead faces the floor.

- Straighten your arms and lift your body so you are balanced on your palms and knees, abdominals tight. Be careful not to lock your elbows.

- Bend your elbows and lower your entire body at once. Rather than trying to touch your chest to the floor, lower just until your upper arms are parallel to the floor. Push back up.

Push Up



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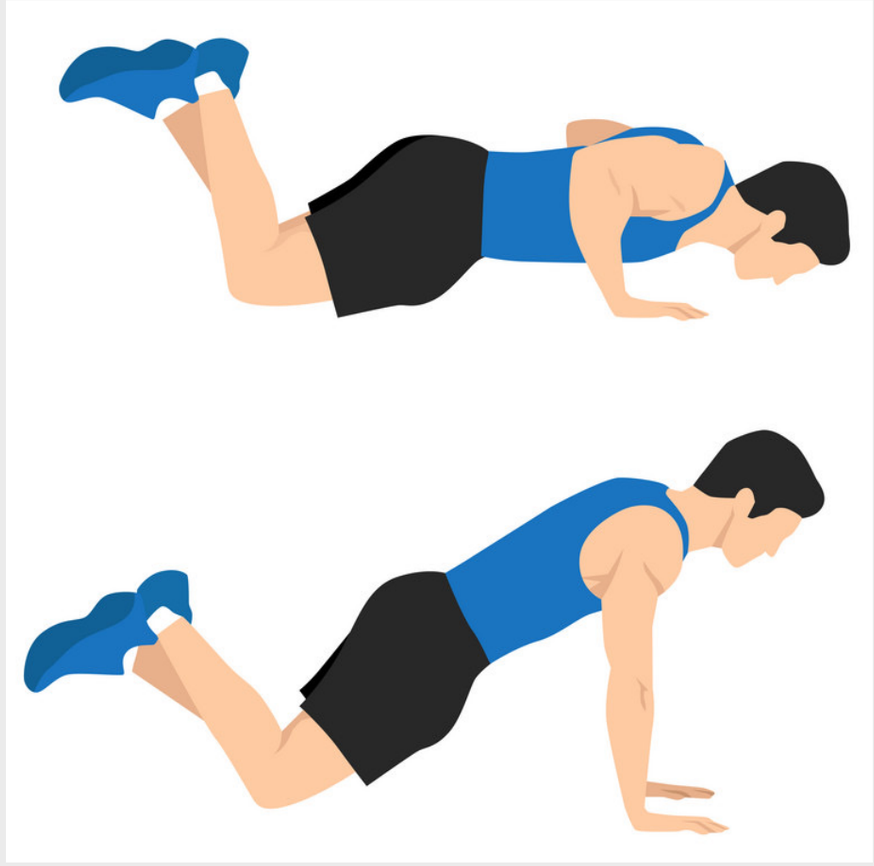

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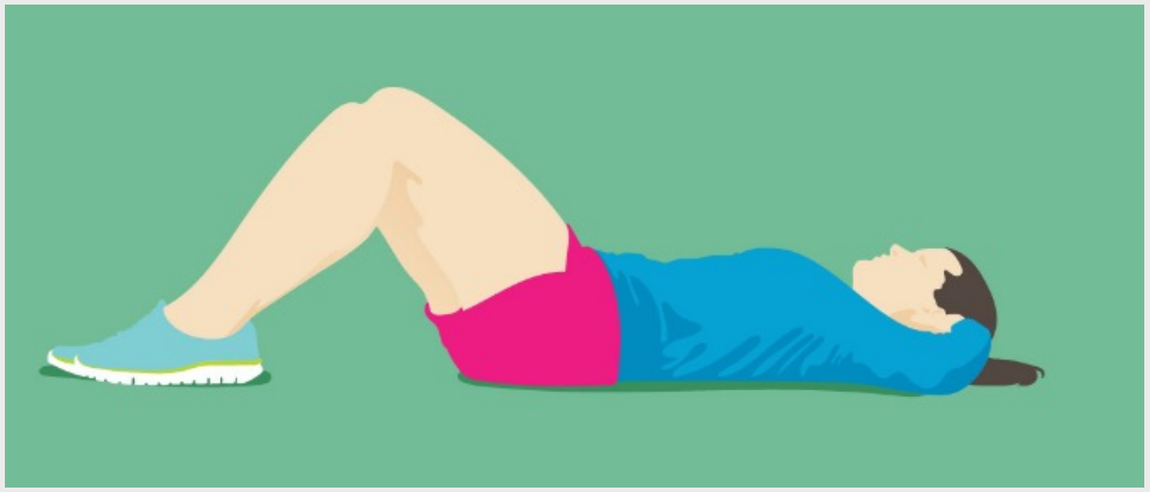
Crunches

100 crunches:

- 50 to the left
- 50 to the right

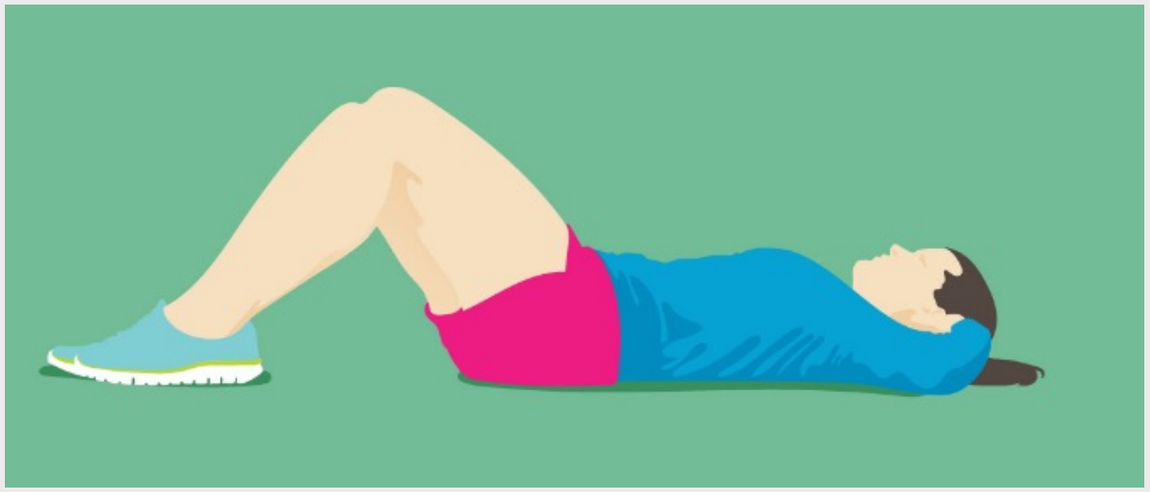


- Start by lying flat on your back, with your legs bent and your feet flat on the ground. Place your hands beneath your neck, with your elbows out to the sides.
- Clench your stomach muscles and bring your torso up so that it’s flush with your thighs. Resist the urge to use momentum, rather than your muscles, to bring your body up.
- Guide your body down in a controlled motion to maximize your muscle use.
- Perform 5 sets of 25 repetitions.

Crunches

100 crunches:

- 50 to the left
- 50 to the right



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- Perform 5 sets of 25 repetitions.

Plank

- To start, lie flat on your stomach (hips touching the ground) with your legs flat and upper body propped up by your forearms.
- Tightening your lower back and shoulder muscles, raise your hips off the ground.
- Hold for as long as you can (aim for intervals of 30 to 45 seconds) and then relax. That completes one repetition (rep).

Plank

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- Hold for as long as you can (aim for intervals of 30 to 45 seconds) and then relax. That completes one repetition (rep).

REFERENCES:

- http://physioworks.com.au/treatments-1/core-stability-exercises
- https://www.realsimple.com/health/fitness-exercise/workouts/exercises-muscle-maintenance

FORMS RELATED TO REHABILITATION PRACTICE AND NUTRITIONAL RECOMMENDATIONS

YOU MAY PERSONALIZE THESE FORMS FOR YOUR PRACTICE REGARDING TREATMENT PLAN:

- LASER
- EXERCISE
- TAPING
- NUTRITIONAL RECOMMENDATIONS

D.C. Treatment Plan

PATIENT INFORMATION

Name:
Address:

DOB:
Gender:

Treatment Plan

☐ Initial Care (M,W,F)
☐ Continuing Care (M,W,F)

Date of First Treatment in this office for condition:
Anticipated Release Date:

Subjective Complaint:

Lost Days of Work:
Days of Work Restriction:
Mechanism of Injury:
☐ Acute Trauma
☐ Worsening Of Prior Condition
☐ Repetitive Motion
☐ Gradual Onset
☐ Chronic
☐ Other
Date of Onset:
Date of Initial Evaluation:

Treatment Goals: (Functional Improvement and Expected outcome ie-able to sit 30 minutes with pain decreased by 50%)

Treatment Type:

☐ Posture Correction/ Neuro
☐ Chiropractic Adjustments
☐ Cold Laser Therapy
☐ Infrared Pain Mgt.
☐ Functional Movement Taping
☐ Electric Massage/ Muscle Stim.
☐ Acute Trauma
☐ Flexion/ Distraction- Disc

Treatment Schedule: (Frequency and time frame)

Anticipated No. of Treatments Until next evaluation:

Objective Findings

Inspection:

Palpation:

Summary of Clinical Findings (Ortho. and neuro. tests used to support diagnosis) :

Home Care:

☐ Stretching
☐ Exercise
☐ Hot/Cold
☐ Dietary instructions
☐ Referral:
_____

☐ Supplements
  ☐ Turmeric
  ☐ Minerals
  ☐ Collagen
  ☐ Amino Acids
  ☐ Greens

Diagnosis:

Complicating Factors:

☐ Surgery
☐ Diabetes
  ☐ Medications
☐ Obesity
☐ Inflammation

☐ Other: _____
☐ Other Diagnostic Testing Suggested:
_____
_____

Doctor Signature: _____ Date: _____

Patient Signature: _____ Date: _____

Objective Nutritional / Metabolic Questionnaire

Name: _____ **Date:** _____

Do you Eat:	
Do you eat 5 or more servings of vegetables in a day?	Yes or No
Do you eat 4 or more servings of fruit in a day?	Yes or No
Do you drink more than 1 sugar sweetened beverage (sodas energy drinks, sweetened tea) in a day?	Yes or No
Do you drink more than 2 cups of coffee in a day?	Yes or No
Do you eat more than 3 servings candy, cookies, cakes, sweetened rolls in a week?	Yes or No
Do you eat bread all 7 days of the week?	Yes or No
Do you eat whole grain bread & pasta?	Yes or No
Do you eat more than 2 servings a day of packaged snack foods i.e.-potato chips, crackers, corn chips, Cheetos etc. daily?	Yes or No
Do you eat more than 2 packaged entrees and side dishes do you eat daily?	Yes or No
Do you purchase/eat regular store bought meat (not grass-fed)?	Yes or No
Do you purchase/eat farm raised fish (not wild caught)?	Yes or No
Do you eat almonds, walnuts, cashews, pistachio, macadamia, pecans more than 2 times a week?	Yes or No
Do you eat chia, flaxseed, or hempseed more than 5 times week?	Yes or No
Total Yes's :	

Cooking	
What oils do you cook with? □ olive oil □ coconut oil □ grass-fed butter □ corn oil □ sunflower oil □ vegetable oil	
Do you cook at home more than 5 times in a week?	Yes or No
Total Yes's :	

Objective Nutritional / Metabolic Questionnaire

Do you feel?	
Do you have muscle cramping?	Yes or No
Do you have restless leg syndrome?	Yes or No
Are you nervous or have anxiety?	Yes or No
Do you get headaches often?	Yes or No
Are you constipated frequently?	Yes or No
Do you suffer from osteoporosis or osteopenia?	Yes or No
Do you suffer from chronic pain?	Yes or No
Have you been diagnosed with an autoimmune disease?	Yes or No
Do you have muscle stiffness or pain?	Yes or No
Total Number of Yes':	

Exercise	
Do you exercise?	Yes or No
Do you exercise 5 days a week?	Yes or No
What types of exercises ?	
Do you ever get sore from exercising?	Yes or No
Total Number of Yes':	

Immune	
Do you get a cold or the flue each season?	Yes or No
Do you believe that you have a strong immune system?	Yes or No
Do you have more than 1 bowl movement in a day?	Yes or No
Do you have allergies ?	Yes or No
Do you get a sore throat and/or stuffy/runny nose more than once a month?	Yes or No
Would you like to strength your immune response?	Yes or No
Total Number of Yes':	

Objective Nutritional / Metabolic Questionnaire

Cardio-Metabolic Health	
Are you currently diagnosed with ?	
Cholesterol Problems?	Yes or No
High Blood Pressure	Yes or No
Diabetes ?	Yes or No
Pre-diabetes ?	Yes or No
Metabolic Syndrome?	Yes or No
Any other diagnosis please list below:	

Do you take medications for:	
Cholesterol	Yes or No
High Blood Pressure	Yes or No
Diabetes / Pre-diabetes?	Yes or No
Total Yes's :	
Please list all medications:	
Are you under the care of a physician for these conditions?	
If yes, who is your physician currently managing these conditions?(Name, Address, Phone #)	

Objective Nutritional / Metabolic Questionnaire

How important is it to you function at your optimum 100% health? On a scale of 1-10 (10 being ready to change today) _____
How ready are to change? On a scale of 1-10 (10 being ready to change today) _____ _____ Your Diet _____ Supplementation _____ Consistent Chiropractic Care _____ Exercise

For Practitioner Use Only:

Note- Yes = 1 point No= 0 points (ex. 5 yes' = 5 points)

	Totals:	**Supplement Recommendations**
Do you eat?		> 5 **Greens- If yes is the primary answer this shows that the diet may be a very acidic diet. To counter balance the acidity, we recommend the Greens product which is an alkaline superfood which will help improve digestion, immunity, inflammation, energy, and aiding in weight loss.** **Turmeric- With the increased amount of processed foods and sugary foods the body is undergoing an overwhelming amount of inflammation which could lead to pain, chronic disease, or autoimmune disease. Turmeric helps the body fight inflammation with the curcuminoids, bromelain, and saffron. Turmeric will also help if the patient has any current pain or chronic conditions by supporting the body with an anti-inflammatory product.**
Cooking		> 1 & corn oil & vegetable oil are chosen **With the increase in saturated fats, eating out, and the need for energy the patient is a great candidate for the Ultra Amino Energy.** **Why? This supplement is full of amino acids specifically L-arginine which is a vasodilator. This is why it is great for our cardiovascular system. It is also full of B- vitamins that will supply the patients with energy & no crash. Educate patient on cooking methods to incorporate more healthy fats.**

Objective Nutritional / Metabolic Questionnaire

Do you feel		>1 **Minerals Chelated-** This formula uses chelated minerals with Albion and TRACCS (The Real Amino Acid Chelate System) a highly bioavailable and absorptive form of the minerals. This supplement is formulated with ferrous gluconate (iron) to aid with hemoglobin formation, an oxygen carrier, muscle function, and brain function. This supplement has magnesium which helps prevent muscle aches and spasms, helps increase energy, calms nerves and anxiety, aids digestion by relieving constipation, important in heart health, and helps prevent migraine headaches. These minerals are also essential in building & maintaining strong bones. **Turmeric-** Turmeric helps the body fight inflammation which is the underlying root of a lot of diseases. Patients who suffer from chronic pain, autoimmune disease, and muscle stiffness/pain may benefit from this supplement by adding in an anti-inflammatory product like our Turmeric product.
Exercise		>2 **Turmeric-** With turmeric being an anti-inflammatory supplement, it can be great for post work out inflammation and recovery/ soreness . **Type One Collagen-** Working out helps strengthen our muscles, tendons, and ligaments. Type One Collagen Protein is important for growth and maintenance of tendons and ligaments. It also helps with joint health and improves our muscle mass. **Ultra Amino Energy-** Aminos are a great aid for the cardiovascular system. By adding these into your daily supplement regiment it can be a great aid in improving stamina during a working out and provide you sustained energy throughout the day without any crash or added sugars! **Minerals -** Helps with cramping during and after exercise. Great for bone health to keep bones strong!
Immune		< 2 **Killer Immune T-** This is a daily immune product that helps maintain the integrity of the immune system by a synergistic blend of ingredients. This product is a great immune support supplement to keep the immune system strong all year long.

Objective Nutritional / Metabolic Questionnaire

Cardio-Metabolic Health		> 1 **ALL (Greens, Minerals, Turmeric, Type 1 Collagen Protein, & Ultra Amino Energy) SUPPLEMENTS TO SUPPORT THE BODY & CURRENT DISEASES.**

Dr. Mark Cymerint D.C. Recommendations:

For Patient: _____

Supplement Recommendations:

- □ **Turmeric - _____**
- □ **Minerals - _____**
- □ **Collagen - _____**
- □ **Ultra Amino Energy - _____**
- □ **Greens - _____**
- □ **Immune Killer T - _____**

Exercise Recommendations:

Dietary Recommendations:

DID YOU KNOW?

- Vitamin C and Molecular Hydrogen can BOTH neutralize free radicals. However, studies show that Molecular Hydrogen provides greater protection than Vitamin C because ONLY Molecular Hydrogen can increase powerful antioxidant enzymes in the body.

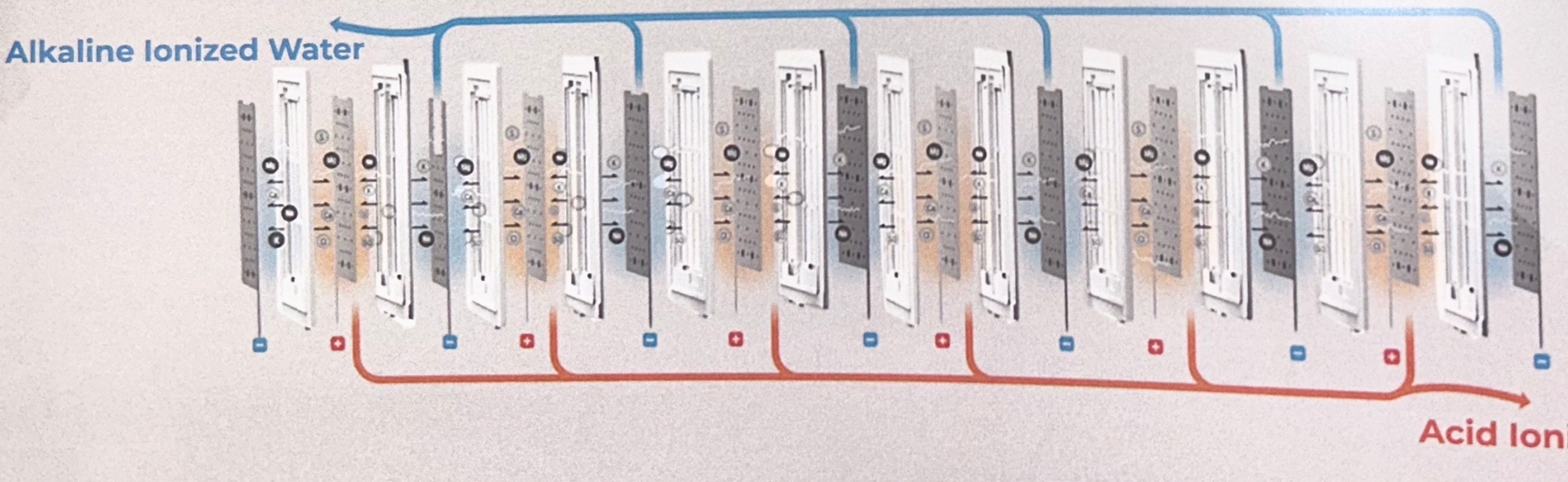
HOW IT WORKS

The secret is the water cell...

When your tap water enters the Tyent water ionizer, it runs through two filters and is filtered to 99% purity.

Next, it runs through our proprietary electrolysis process where “free” and available hydrogen gas (H2 molecular hydrogen) is dissolved into the water. Then, the water molecules are split into two unique streams of water. One stream becomes acidic, which is great for your skin and hair. We call it Beauty Water!

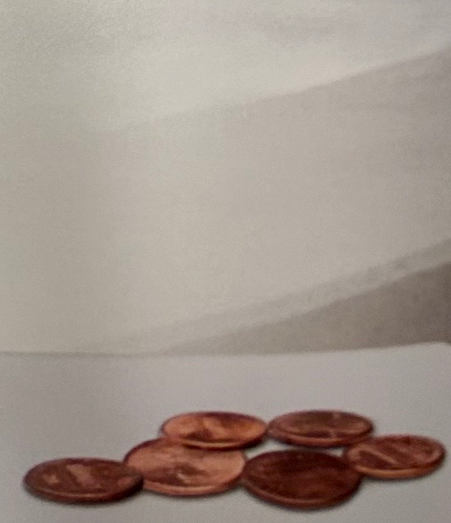
The other water stream becomes the perfect drinking water! It’s alkaline, ultra-hydrating and filled with therapeutic antioxidants called molecular hydrogen.



BOTTLED WATER VS. TYENT WATER
DOES IT MAKE CENT$?

Bottled Alkaline Water costs between **$2.00 to $5.00 on average!**

Tyent water ONLY costs about **6¢ a glass!**



Thank you, Docs!

A brief evaluation survey will be emailed to you in the coming days.
Please fill out the evaluation ASAP & press “submit”.

Hope you enjoyed the seminar and I thank you for your continued support!
We really appreciate all of you!

Mark Cymerint D.C. | TriadSeminars

Email:
TriadSeminars@gmail.com

Office:
(949) 707-5785

Website:
TriadSeminars.com

Instagram:
@OrganiccsAbsolutelyPure

Facebook:
TriadSeminars

Podcast:
DrMCOrganiccsHealthPodcast