THE DOUBLE MODALITY (Cryotherapy and Phonophoresis) THERAPY IN THE MANAGEMENT OF REPETITIVE STRAIN INJURY (RSI): A REVIEW OF LITERATURE

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Abstract:

BACKGROUND & INTRODUCTION:

<u>RSI</u> the only one largest class of workplace injuries and is amenable for almost 30% of all workers in different sectors like Athlete and academician. RSI is a general term used to describe the pain felt in muscles, nerves and tendons(low back pain and neck pain) caused by repetitive movement and overuse.

The most generic term used to depict these disorders is MSI.

OBJECTIVES:

The aim of this study is to evaluate therapeutic efficacy of DMT in the management of RSI.

METHODOLOGY:

- A. DATA SOURCE & LITERATURE SOURCE: relevant articles were identified by searching from: PUBMED, cohrane literacy, Google scholar.
- B. DATA SELECTION: Articles of <u>DMT (Cryotherapy & Phonophoresis)</u> therapy in management of RSI, the randomized control trial, systemic review with meta-analysis are included age group range 18-70 years with variable session of treatment (1-4 weeks).

Remedy was administered on disjunctive days and discharges were made when subjects were pain free.

RESULTS:

More than 45 articles are on DMT in which 10articles are matched with Phonophoresis and Cryotherapy in the management of RSI.

CONCLUSION:

The perusal has unwavering therapeutic efficacy of DMT, but it was not superior to the single remedy protocol of Phonophoresis or Cryotherapy. However, it might take fewer sessions in the DMT group to treat and make more than 90% of the patient's pain free and fit to return to active performance.

Keywords: Cryotherapy, double-modality therapy (DMT), musculoskeletal injury (MSI), Phonophoresis, repetitive strain injury (RSI).

CONFLICT OF INTEREST: Nil

Introduction:

Musculoskeletal injuries (MSIs) which are ordinarily due to diligent activity. Musculoskeletal problems forge the largest proportion of injuries among athletes.

Low backache (LBP) is not only one of the most usual MSIs in industrialized societies, but it is the most expensive, and it is the primary factor of disability in persons under age 45 years. In the United States more than 25,000 ankle sprains occur each day and the inmate indications (pains and swelling) leisure the individuals with few functional disability.

Physical treatments (i.e. Cryotherapy, Phonophoresis, other.) have been applied for numerous years and are currently being applied to reduce pain, control swelling or inflammation and improve or restore function in the management of MSIs. Phonophoresis which is the use of ultrasound (US) to add percutaneous absorption of topical drugs in the management of MSIs and dermatological prerequisite has been a widely applied clinical therapeutic procedure since the first time it was used in 1954 by Fellinger and Schmid to treat polyarthritis of the hand. It is believed to speed up functional recovery by decreasing pain and encouraging healing.

Definition:

- Cold Therapy (Cryotherapy) working based on the Lewis hunting reaction is a procedure of alternating vasoconstriction and vasodilation in extremities exposed to cold. The term Lewis reaction is used too, named after Thomas Lewis, who first described the effect in 1930. Vasoconstriction occurs first to reduce heat loss, but also results in strong cooling of the extremities. Approximately five to ten minutes after the start of cold exposure, the blood vessels in the extremities will suddenly vasodilate. This is probably caused by a sudden decrease in the release of neurotransmitters from the sympathetic nerves to the muscular coat of the arteriovenous anastomoses due to local cold. This cold-induced vasodilatation increases blood flow and subsequently the temperature of the fingers. A new phase of vasoconstriction follows the vasodilation, after which the process repeats itself.
- Phonophoresis is a procedure that delivers drugs via the skin (transdermally) via the use of ultrasound. Phonophoresis is sometimes called sonophoresis.

The application of cold for the remedy of injury or disease, particularly for increasing pain threshold, decreasing inflammatory reaction and spasm following MSIs has been plead by some researchers as the exclusive remedy to be used during all phases of soft tissue injury.

In an available literature like systematic review of some randomized controlled trials (RCTs) to indentify the efficacy of ice in the management of pain and swelling resulting from soft tissue injury, it is reported that Cryotherapy seems to be effective in decreasing pain and speeds return to full activity.

Phonophoresis or Cryotherapy in isolation or in mixed with other therapies has become widely used regimen for reducing pain, inflammation and improving or restoring function in managing MSIs.

Literature has indicated that cold application ago to Phonophoresis produces an intense hyperemia which may improve the absorption and dispensation of the medication to impact pain relief and resolution of inflammation.

The recognizance of the importance of pain control in the recovery from MSIs to enable the injured persons return to partaking (athletes) or return to work (typical population) has prompted clinicians to continue to explore more aggressive pain management strategies.

Some reports suggested that Phonophoresis and Cryotherapy can be mixed (double-modality therapy - DMT) in the management of MSIs for preferable outcome.

Consequence to this, pain clinics and sport centers have adopted as a tradition the remedy protocol of mixed form Cryotherapy and Phonophoresis (DMT) in the management of MSIs worldwide.

Nevertheless the general acceptance and the frequency at which this remedy approach (DMT) are being practiced, there is dearth in the literature to support the practice or demonstrate its efficacy or superiority over the single remedy, Efficacy of double modality, Phonophoresis and Cryotherapy protocol. Here upon, it is incumbent upon the clinician or the therapist to collect information or data to support clinical discretion making with something more than physiologic philosophy based on opinion.

Materials and Methods:

STUDY DESIGN: Literature Review /Narrative Study.

SOURCE OF DATA: Cohrane literacy, Google scholar, SCOPUS, academia, Shodhganga, PuBMed, Research Gate & Academia.

INCLUSION CRITERIA:

- The language of publication is English.
- The publication is published in journal of physiotherapy and science direct.
- Selected publication open-access free accessible.
- Protocol only for MSI (athletes and academicians) population.
- Approaches only used Phonophoresis and Cryotherapy.

EXCLUSION CRITERIA:

- The language of publication is not any-other.
- The publication is not an article in a peer-reviewed journal.
- Published article not payable.
- No Other cases.
- No Other approaches.

Results and Discussion:

- More than 45 articles are on DMT in which 10articles are matched with Phonophoresis and Cryotherapy in the management of RSI.
- Lack of data availability.

- The exploitage of Cryotherapy and Phonophoresis in isolation or in combination with variant therapies in the management of MSIs has been widely reported. They are widely used sobriety/regimen for reducing pain, inflammation and improving function (Palmer and Toombs, 2004; Wilson and Best, 2005). On the contrary, the use of Cryotherapy and Phonophoresis as combine therapy (DMT) protocol has gained general acceptance and popularity in the clinical setting, but there is no existing clinical trial in the literature to suggest or indicate its efficacy. This study is the first that has reported with empirical data the efficacy of DMT. The study has further indicated that DMT was not superior to the single treatment protocol of Phonophoresis or Cryotherapy which has debunked the belief that has been probably or largely based on anecdotal evidence.
- In this study should be comparative analysis in relation to gender and age of the population.

Conclusion:

• The study has unwavering therapeutic efficacy of DMT, but it was not superior to the single treatment protocol of Phonophoresis or Cryotherapy. However, it might take fewer sessions in the DMT group to treat and make more than 90% of the patient's pain free and fit to return to active performance.

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