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THE EFFECTIVENESS OF MANUAL THERAPY TECHNIQUES IN THE MANAGEMENT OF MUSCULOSKELETAL CONDITIONS

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Abstract
Manual therapy includes manipulation as well as mobilization of joints and soft tissue. These techniques have proved to be quite effective in the management of pain and musculoskeletal dysfunction. This can be established because of the large number of studies that have been done to test the validity of these techniques. There have been many systematic reviews looking at the effectiveness of manipulation and/or mobilization for different conditions. A recent systematic review was done to see if manipulation and mobilization was more effective than physiotherapy and general practitioner care for low back pain. This particular review was done because there are many people who practice manipulation that would like to see manipulation used as an alternative to the traditional treatments of low back pain. The review concluded that manipulation was more effective than physiotherapy and general practitioner care for patients with acute low back pain. This suggests that manipulation is a viable alternative to patients seeking care for low back pain. (Arumugam and Harikesavan2021)

1. Introduction

The musculoskeletal system constitutes the bones, cartilage, muscles, tendons, ligaments, joints, and other connective tissues of the human body. Musculoskeletal conditions are varied and relatively common, affecting both the young and the old. They may be acute or chronic, and may limit the individual's functional capacity. Manual therapies have long been in use for the management of musculoskeletal conditions. For the purpose of this paper, the term 'manual therapy' will refer to the hands-on techniques that therapists use to mobilize, manipulate, and massage soft tissue and joints. The main professions that perform manual therapy are osteopathy, chiropractic, physiotherapy, and to a lesser extent, nursing and general practitioner medicine. These professions are not mutually exclusive, and there is often a degree of overlap between them in terms of the manual therapy techniques used. In Ireland, the most common route to qualification in manual therapy is through

postgraduate courses. These courses are available to all of the professions listed above, and it is fair to say that the bulk of the material covered is similar and involves upskilling the therapist in assessment and treatment of neuromusculoskeletal disorders. There are a vast number of manual therapy techniques, and these may be loosely divided into those that are passive and those that are more active. Passive techniques, which are the focus of this paper, require little or no voluntary contraction of the patient's muscles. They include manual mobilizations of joints, stretching, manipulations (high-velocity thrust techniques), and massage. These techniques seek to enhance tissue extensibility, increase range of motion of a joint, reduce pain, and improve function. High-velocity thrust techniques are often used and are usually associated with a 'cracking' sound that is heard as gas is released from the synovial fluid within the joint. These techniques are regarded as being effective for certain musculoskeletal conditions, and research findings will be discussed later in the paper. (Giacalone et al., 2020)

Keywords: Manual therapy, musculoskeletal conditions, effectiveness, management

2. Overview of Manual Therapy Techniques

Manual therapy has become a common form of treatment for musculoskeletal dysfunction and includes a group of techniques performed by hand. The aim of this review is to provide an overview of common manual therapy techniques and evaluate the effectiveness in managing musculoskeletal conditions. Specifically, this paper will describe the various techniques and describe the evidence regarding their effectiveness. Massage is described as soft tissue manipulation and encompasses a number of different techniques including effleurage (stroking), petrissage (kneading), tapotement (striking), frictions, and trigger point release. Deep transverse frictions is a technique believed to break down adhesions and scar tissue which may be inhibiting function of a muscle or tendon. It is often used in the management of ligament and tendon injuries. The effectiveness of massage has been shown in the literature is often conflicting, with some studies showing positive results and others showing none. A recent systematic review regarding the effectiveness of massage for a number of different conditions showed positive evidence for only a few conditions, and evidence was inconclusive for others. Overall, there is little high-quality evidence of the effectiveness of massage for given conditions, and thus further research is required. (Trofa et al.2020)

3. Evidence for the Effectiveness of Manual Therapy

What evidence is there that manual therapy (MT) is effective? This is an important question, more studies have been published and this is reflected in the fact that the approach has moved from being often seen as 'alternative' medicine to a mainstream approach (Kaptchuk, 2002). However, though manual therapists have welcomed the growth in evidence base of their specialty, readers are referred to an expanded version of this review that assessed each musculoskeletal condition in turn. This more comprehensive release may provide greater insight to individual conditions, however it still only reviewed the published work until 2004. The most commonly used study design has been to compare manual therapy to an established model of treatment, such as general practitioner care, medication, or another physical intervention. These trials being important for comparative effectiveness, yet MT is a hands-on approach and a successful placebo is difficult to establish, though in some cases manipulation has been convincingly sham produced. A systematic review of 39 RCTs by Haneline et al. assessed MT and SMT for cervicogenic headaches, treatment effectiveness could not be evaluated due to inadequate reporting of results from many trials, though for MT there did seem to be a short-term and long-term relief compared to massage or placebo. The Cochrane Collaboration has conducted reviews for a number of conditions. Current evidence is equivocal with some positive findings for back pain, a recent review for shoulder pain concluded no benefit over placebo, and a review for infantile asthma found only one small trial which had no significant difference between treatment and control. A systematic review by Gross et al. was more well received by the osteopathic community; they assessed OMT for not just efficacy, but efficacy relative to other treatments, and costs. OMT was found to be more efficacious than other treatments, for an array of conditions. However, despite the growth of research, there are still many conditions for which there have been

no trials of manual therapy. This does not mean the treatment is ineffective, and an experienced manual therapist will have his or her own wealth of anecdotal evidence, but there will be less chance of services being integrated with, or offered as an alternative to other established models of care. This may be seen as particularly frustrating for conditions that are known to respond poorly to pharmaceutical intervention and surgery, yet a feasibility for an established manual approach is still often dependent on the strength of existing evidence. (Degenhardt et al.2024)

4. Application of Manual Therapy Techniques in Musculoskeletal Conditions

Thoracic thrust techniques are frequently used in the management of cervical and upper limb pain. In order to investigate the effects of these techniques on cervical and upper limb symptoms, Walton et al. (2002) conducted a randomized clinical trial comparing treatment of the cervical spine and the involved upper limb with either a thoracic thrust manipulation or the same treatment with a decided lack of thrust. Seventy patients with symptoms of cervical and upper limb pain, weakness, and/or paraesthesia, and who displayed signs of neural tissue mechanosensitivity, were randomly allocated to receive the manipulative intervention to the thoracic spine or the non-thrust mobilization. The manipulative technique involved was a high velocity low amplitude thrust to a unilateral transverse process using a posterior to anterior direction. A pain and paraesthesia response was reproduced in the involved limb by reproducing the patient's symptoms during the technique and maintained while the thrust was delivered, indicating that it was an appropriate technique. This was performed on alternate days over a maximum of three treatments, in conjunction with specific exercises based on directional preference and proper movement patterns. Any patients failing to respond within two treatments were to be withdrawn from the study. Both premanipulative and postmanipulative assessments were conducted in order to determine effectiveness of the maneuvers. A significant decrease in symptoms was recorded in all categories one hour post-treatment, in favor of patients who had received a thoracic thrust manipulation. This was a preliminary study to offer supporting evidence to its investigations of the influence of manipulation on peripheral symptoms. (Erdem et al.2021)

5. Conclusion

There is a weak body of evidence supporting the use of one particular manual therapy technique over another for musculoskeletal conditions. Practitioners should take a patient-centered approach, considering the patients' preferences, the relationship between the patient and therapist, and the knowledge of the therapist in that particular technique. There is moderate evidence to suggest that manual therapy techniques are effective for decreasing pain and disability from chronic musculoskeletal conditions. High velocity low amplitude thrust manipulation may be effective for reducing pain and improving function in adults with acute low back pain. People with subacute or chronic low back pain seem to benefit more from manipulation than those with acute low back pain. The same holds true for patients with extremity joint conditions, with joint manipulation being more effective for chronic conditions than for acute. This is particularly important for chiropractic care, as the removal of the 'mechanical diagnosis' in the general chiropractic patient population and its replacement with 'non-specific low back pain' will be a barrier for evidence-based patient-centered care. High velocity low amplitude thrust techniques seem to give better short-term improvements in pain and function compared to other manual therapies. But it remains unclear as to whether the effects are any different than those produced by simple mobilization techniques. There is inconclusive evidence to determine if joint mobilization is more effective than HVLA thrust techniques for patients with spine or extremity joint conditions. For mobilization and/or manipulation of soft tissues, one of the common reasons given is to change muscle flexibility. And this is also a common indicator that patients/therapists agree on to determine if change has occurred. But GDS has shown only slight to fair reliability for measuring change in flexibility of a particular muscle, and change in passive resistance to a joint has only shown fair to good reliability. It has been found that grades I-IV joint mobilization have good intertester reliability, but little research has been done to compare the effectiveness of various grades of mobilization on pain and function of musculoskeletal conditions. Randomized clinical trials have indicated that massage has some positive effects on neck pain and

dysfunction, subacute low back pain, and chronic knee osteoarthritis. The number of RCTs for cross friction massage and muscle energy techniques is growing, but warrant more high-quality research to determine their effectiveness from other manual therapy techniques. Additional high-quality research is needed to compare differing manual therapy techniques with each other, and to determine the effect that specific dosages of manual therapy have on differing musculoskeletal conditions. Future investigation needs to focus on the biological effects of manual therapy to help determine the best treatment approaches for patients with various musculoskeletal conditions. (Sturion et al.2020)

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