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Masterclass

Articular dysfunction patterns in patients with mechanical neck pain: A clinical algorithm to guide specific mobilization and manipulation techniques

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ABSTRACT

In view of a didactical approach for teaching cervical mobilization and manipulation techniques to students as well as their use in daily practice, it is mandatory to acquire sound clinical reasoning to optimally apply advanced technical skills. The aim of this Masterclass is to present a clinical algorithm to guide (novice) therapists in their clinical reasoning to identify patients who are likely to respond to mobilization and/or manipulation. The presented clinical reasoning process is situated within the context of pain mechanisms and is narrowed to and applicable in patients with a dominant input pain mechanism. Based on key features in subjective and clinical examination, patients with mechanical nociceptive pain probably arising from articular structures can be categorized into specific articular dysfunction patterns. Pending on these patterns, specific mobilization and manipulation techniques are warranted. The proposed patterns are illustrated in 3 case studies. This clinical algorithm is the corollary of empirical expertise and is complemented by in-depth discussions and knowledge exchange with international colleagues. Consequently, it is intended that a carefully targeted approach contributes to an increase in specificity and safety in the use of cervical mobilizations and manipulation techniques as valuable adjuncts to other manual therapy modalities.

1. Introduction

For centuries, spinal mobilization and manipulation techniques have been passed down from one generation of manipulators to the next. Although these techniques have undoubtedly evolved over time, their progression has largely been a culmination of imitation and iterative adaptation, leading to a great variety of spinal manipulation techniques (Evans, 2010). Nowadays, an eclectic approach is used in most of the manual therapy courses, including aspects of Maitland, Kaltenborn–Evjenth, Hartman and other philosophies and principles.

Although recent systematic reviews (Gross et al., 2010; Bronfort et al., 2012; Chaibi and Russell, 2012) have demonstrated evidence (low to moderate quality) that cervical manipulation and mobilization are beneficial, these reviews highlight the lack of knowledge on optimal techniques and doses.

In view of a didactical approach for teaching students as well as for daily practice, it is mandatory not only to learn advanced technical skills, but also to acquire sound clinical reasoning skills (Gifford and Butler, 1997; Kelly, 2003; Puentedura et al., 2012). Only if both aspects are integrated, spinal manipulation and mobilization may be considered proficient. In 2003, Hing et al. (2003) published a comprehensive paper in Manual Therapy to discuss manipulation of the cervical spine, detailing the teaching strategies developed for cervical spine manipulation in New Zealand, outlining the clinical assessment and providing examples of the procedures in practice. What is missing in this article, and in a lot of handbooks on manual therapy, is the sound clinical reasoning behind manipulation. It is mandatory to 1) recognize key features in subjective examination and clinical examination to identify patients likely to benefit from cervical mobilization and manipulation, and 2) to define optimal techniques pending on the individual presentation of the patient.

Therefore, the aim of this Masterclass is to present a clinical algorithm for guiding therapists in their clinical reasoning to identify patients with predominantly mechanical nociceptive pain

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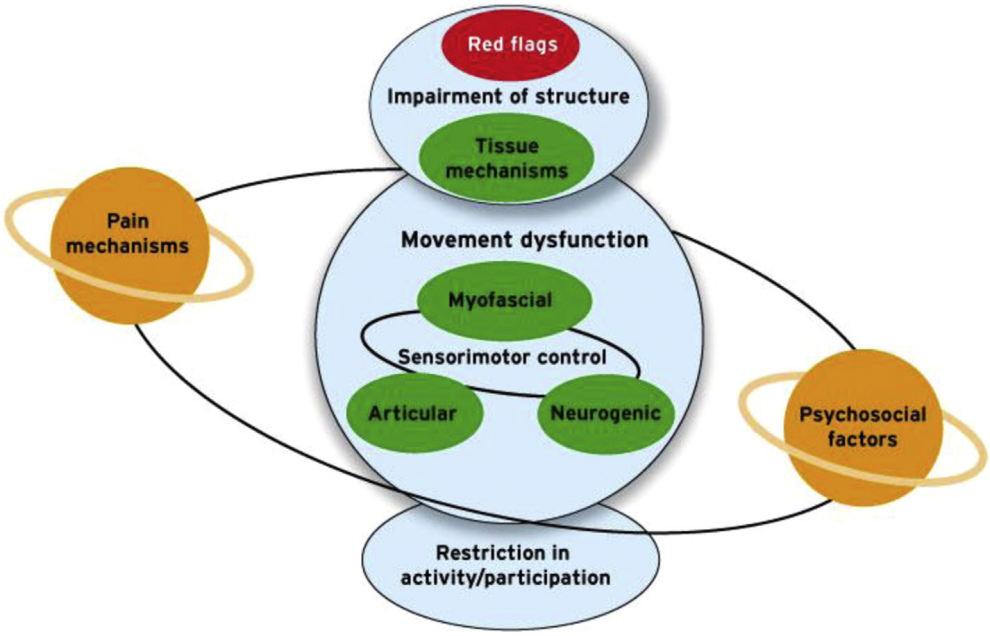

Fig. 1. Planetary model.

arising from the articular structures, who are likely to respond to mobilization and/or manipulation. This clinical algorithm is mainly based on many years of clinical experience using a standardized way in assessing and treating neck pain patients. According to Jones, a form of pattern recognition sprouts, when a well-structured approach is obeyed, and this for many years of clinical practice (Jones, 1992, 1995; Doody and McAteer, 2002). Considering the empirical foundation of this process, the desire to communicate these prototypes to (international) colleagues arose so that definition and interpretation of similar patterns could be modeled into a more comprehensive and refined form. To our knowledge these symptoms have not been clustered before in distinct dysfunction patterns along with specific treatment recommendations. Therefore the authors tried to describe specific findings per dysfunction pattern and, where possible, complemented them with the limited evidence available.

First the reasoning framework of interest to (articular) mechanical neck pain is outlined. In light of this reasoning process, an attempt is made to categorize subjects into a specific articular dysfunction pattern based on the characteristics identified during subjective examination and clinical examination. This is then linked to specific mobilization and manipulation techniques, which are summarized in a clinical algorithm to guide specific treatment. In the last part of this Masterclass, this clinical algorithm is illustrated by different case studies.

2. Articular dysfunctions in a broader perspective

Fig. 1 represents a model, that enables the therapist to systematically analyze and appraise the impact of the different components as a basis for clinical decisions and aims to contribute to a more efficient way of managing patients (Danneels et al., 2011). This planetary model is not a new model, but is a didactic representation mainly inspired by an adapted model of the International Classification of Functioning, Disability and Health (ICF). The structure of the ICF is reflected in a vertical plan, whereas the pain mechanisms and psychosocial factors surround this vertical structure reflecting their continuous interaction with the different components of the vertical axis. As musculoskeletal pain is multidimensional in nature (Smart and Doody, 2006, 2007) this planetary representation endeavors to capture the dynamic character of the reasoning process.

The process of clinical decision-making is preferably well structured and stepwise instead of vague and global. If a structured path is followed you can avoid gaps and enhance efficiency in the patient approach (Petty and Moore, 2001). After subjective examination different features should be interpreted. First of all, the importance of excluding red flags prior to further investigation to prevent misdirection and enhance safety is warranted (Barker et al., 2000; Childs et al., 2005; Alexander, 2011; Puentedura et al., 2012). Subsequently, the dominant pain mechanism should be defined (Gifford and Butler, 1997; Gifford, 1998; Jones et al., 2002). Pain mechanisms have been broadly categorized into: 1) input mechanisms, including nociceptive pain and peripheral neurogenic pain; 2) processing mechanisms, including central pain and central sensitization, and the cognitive–affective mechanisms of pain; and 3) output mechanisms, including autonomic, motor, neuroendocrine and immune system (Gifford and Butler, 1997; Gifford, 1998). In case of a dominant input component, hypotheses about the possible nociceptive sources of symptoms can be formulated (Alexander, 2011; Bogduk, 2011). Identifying impairments in activity and participation as well as contributing psychosocial factors are also an essential part to give the clinician a fairly comprehensive understanding of the patient's signs and symptoms. Clinical examination is mainly important to further confirm or reject the former formulated hypotheses regarding impairment in structure and function. From a compilation of the subjective examination analysis and the relevant clinical findings emerging from the examination, therapeutic goals and tools can be determined (Jones, 1995). Reassessment at subsequent treatment sessions is necessary to evaluate treatment progression and to readjust the treatment plan if needed. Moreover, the evaluation of perceived treatment effects is an integral part of the reflective reasoning process (Jones, 1992; Doody and McAteer, 2002; Smart and Doody, 2006).