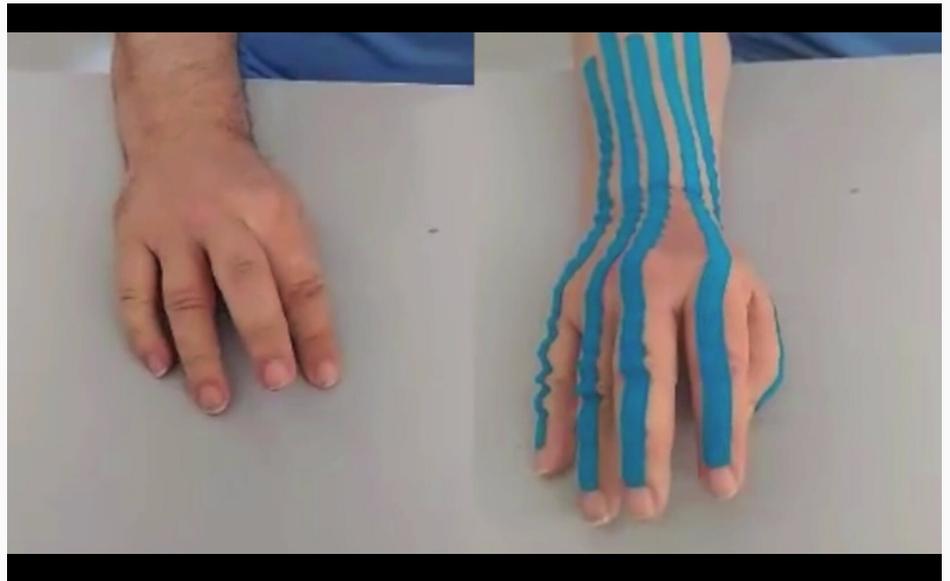




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THE HAND AS AN INSTRUMENT OF CEREBRAL PLASTICITY

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Abstract.

Why only the human hand is able to write, to draw and to play an instrument despite being anatomically equal to a monkey's hand? Why is so difficult, but also a real challenge for the rehabilitator, improve hand functioning after a lesion? In this paper we aim to describe proprioceptive and tactile upper limb information strategies given to patients in different conditions in order to improve upper limb function.

Keywords: Hand, Muscle Vibration, Neuromuscular Taping, Plasticity, Proprioception.

Evidence

Based Research and Clinical Effectiveness

The Research & Development aspect of the NMT institute is based upon the creation of clinical experiences and controlled treatment trials leading to research projects that eventually modify how we treat our patients.

PROFESSIONAL TRAINING IN HEALTH CARE

All training courses in the medical and health area of the NeuroMuscular Taping Institute are certified by Continuing Education Credits in the country where they are held.

NeuroMuscular Taping Institute is an activity of Savà rehabilitation LINK.



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Why the human hand? And why only the human hand is able to write, to draw and to play an instrument despite being anatomically equal to a monkey's hand? And why the hands' function is characterized by tactile perception? And why not only motor movement? And finally why is touch so important?

The hand represents an excellent model in which to study one of the most intriguing issues in motor control: simultaneous control of a large number of mechanical degrees of free range of movement. Human hand is able to grasp objects of all shapes and sizes, to write, to paint, to sculpture and to play musical instruments [1].



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The hand as an instrument of cerebral plasticity

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Abstract

Why only the human hand is able to write, to draw and to play an instrument despite being anatomically equal to a monkey's hand? Why is so difficult, but also a real challenge for the rehabilitator, improve hand functioning after a lesion? In this paper we aim to describe proprioceptive and tactile upper limb information strategies given to patients in different conditions in order to improve upper limb function.

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But these motor skills are also associated with high tactile discrimination, which is possible thanks to skin receptors. These receptors play an indispensable role in kinesthesia [2]. It's enough to think that finger movement is possible through the contraction of forearm muscles whose tendons cross more than one joint; in this situation the muscle afferent information is potentially ambiguous but the proximity of skin receptors adjacent to each joint allow them to provide joint specific information [3].

Beyond this we have prehension, that is the act of reaching to grasp an object, which is performed with little conscious effort and appears as a seamless act. Prehension actually consists of two distinct but temporally integrated movements, a Reach and a Grasp, each mediated by different neural pathways which project from visual to motor cortex via the parietal lobe [4].

The **reach** serves to bring the hand into contact with the target by transporting it to the appropriate location, whereas the Grasp serves to shape the hand for target purchase. As two distinct behaviors, the Reach and the Grasp may be subject to different evolutionary developments and adaptive specializations. The Reach is produced largely by proximal musculature of the upper arm and is guided by the extrinsic properties of the target (location and orientation), and is coded in egocentric coordinates relative to the reacher.

The Grasp is produced mainly by distal musculature of the hand and digits, while guided by the intrinsic properties of the target (i.e. size and shape), and can be coded in spatial coordinates intrinsic to the hand irrespective of the hand's location relative to the body.

Vedi articolo completo

Evidence Based Research and Clinical Effectiveness

Research and Clinical Effectiveness

The Research & Development aspect of the NMT institute is based upon the creation of clinical experiences and controlled treatment trials leading to research projects that eventually modify how we treat our patients. A good idea is not enough - it has to be substantiated using correct and precise treatment methodology.

The EB selection of clinical papers is an international open access to all areas in medicine and rehabilitation that underline possible advances in basic and advanced clinical medical research. Our objective is to create a platform for sharing correct NMT treatment methodology and result reciprocity which is the basis to all "good quality" evidence based research and clinical trials. This ongoing NeuroMuscular Taping EB selection newsletter will present research articles, reviews, short communications, patient testimonials and case reports which have been published and available from independent sources. Authors and trained NMT specialists are encouraged to publish their personal experience. Only through your personal effort to share your consolidated and sometimes experimental results you are able to positively influence "how we treat our patients" and to increase our understanding of fundamental principles in the treatment and rehabilitation progression.

Help us share your professional KNOW-HOW to others.

Regards, David Blow



ADVANCED TRAINING IN MEDICAL AND REHABILITATION AREAS

Rehabilitation specific Research Projects. The NMT Institute is committed to creating innovative and continuous training programs to help medical treatment rehabilitation services offer the best therapy possible and offer increasingly updated therapy.

The goal of the NMT Institute is to improve the overall results of patients' rehabilitation treatment and their quality of life by using standardized therapeutic protocols. The use of the technique allows you to reduce both pain and recovery times so that patients can quickly achieve psycho-motor health and well-being.

The NMT Institute's goal is to improve patients' overall treatment results and quality of life by using our treatment protocols to maximize patients' rehabilitation time, reduce pain, and enable patients to achieve active and healthy lifestyles. The comprehensive medical rehabilitation education program maintains high quality standards that will guide medical and rehabilitation staff in gaining new treatment skills to improve short and long-term rehabilitative care.

The NMT Volunteer Projects has the overall objective of breaking the vicious circle of poverty/disability, which is established in not only third world countries but in all countries, through protocols and research programs intended for local specialists who operate in the area.

HELP US TO SHARE YOUR NMT KNOW-HOW TO OTHERS



VOLUNTEER TRAINING PROJECTS ARE ORGANISED IN VARIOUS DEVELOPING COUNTRIES THAT OFFER SPECIFIC NMT KNOW-HOW FOR ORTHOPEDIC AND NEUROLOGICAL REHABILITATION

If you are in the NMT training, photo, tag yourself and follow us on the dedicated album on Facebook.

Your group photo is not there?

Share it or send it to us by email!

