ORIGINAL RESEARCH PAPER

Physiotherapy

EFFECTIVENESS OF THUMB MASSAGE AND THERAPEUTIC HAND EXERCISES AMONG VIDEO GAME PLAYERS.

KEY WORDS: De Quervain's tenosynovitis, Pain, Functional ability, Therapeutic hand exercises, Thumb massage.

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ABSTRACT

Background: Gamer's thumb is a condition for, those who are playing video games for a prolonged period, more than 4 hours. They have complaints of pain over the wrist and decreased functional ability of the hand. We can be reducing pain and improve functional ability over the wrist region by giving therapeutic hand exercises and thumb massages. **Methods:** 24 Subjects were selected between the ages 18 to 25 years, they were allocated into one group. Subjects were trained with therapeutic hand exercises and thumb massage. The study was conducted for 2 weeks. Pain and functional ability of the hand were assessed before and after treatment **Results:** The pre-test and post-test values of the Numerical pain rating scale show that the pain is reduced. According to the pre-test and post-test values of the patient-specific functional scale which shows that there was a significant improvement in functional ability.

INTRODUCTION

The hand and wrist have more bones these are arranged to roll, spin, and slide, allowing the hand to explore and control the environment and objects. Here the thumb plays a important role in the hand function. The thumb is a mechanical unit, consisting of strong ligaments and dynamic muscles providing resistance to the fingers and palm during pinch and grip. Each thumb joint has a mechanical equivalent that helps explains elements of thumb stability. It easily touch the other fingers allow humans to firmly grasp and manipulate objects of many different shapes. [27]

It has more strong ligaments called collateral ligaments of metacarpophalangeal joint, proper collateral ligaments of interphalangeal joint and accessory collateral ligaments, it's located obliquely from dorsolateral aspect of the metacarpal head to palmar lateral aspect of the base of proximal phalanx, then another ligament was originates on the proximal condyle insert onto the phalanx, another one originate with proper collateral ligaments inserts onto the volar plate. [30]

Gaming addiction or disorder occurs when adolescents play video games for long hours until it begins to impair in family, social, personal, educational, and other vital areas of life. Video gaming can become addiction that can damage your health and relationship. It also affects the frontal cortex of the brain, similar to the effects of cocaine. [13]

The natural gaming protocal required higher level of kinematic and muscular efforts which affect the tendon sheaths of the abductor pollicis longus, and extensor pollicis patient with De quervain's tenosynovitis have difficulty gripping objects and performing their daily activities. [13]

De quervain's tenosynovitis is often attributed to over use or repetitive movements of the wrist or the thumb.De quervain's tenosynovitis is the compression of the abductor pollicis longus and extensor pollicis brevis tendon in the first dorsal compartment of the wrist due to the thickening of their surrounding sheaths. These muscles are responsible for the abduction and extension of thumb. [6]

De quervain's tenosynovitis causes pain in the radial styloid region and dysfunction in the affected hand. This pain is aggravated by movement and activity that requires a first and ulnar deviation with thumb metacarpophalangeal joint flexion. [9]

Thumb massage is a simple comfort intervention that can be incorporated readily into routine physical care activities and conveys caring through touch, individual attention, and presence. As an intervention, thumb massage promotes comfort and facilitates communication between care recipient and caregivers, the purpose of this study was to improve the functional ability and pain over the wrist region by using thumb massage.

MATERIALS AND METHODOLOGY

The study design was quasi experimental study. Study population video game players among students. Study technique purposive sampling technique

Sample size 24 participants. Study setting KMCH College of allied health science. Treatment duration weekly 3 days for 2 weeks. Study duration six months. Criteria for selection person fulfilling the following inclusion and exclusion criteria were selected for this study.

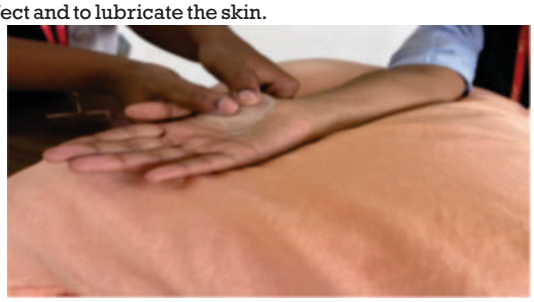
Inclusion criteria: Age – 18 to 25 years. Both males and females are included. Pain around the radial styloid process. A patient was diagnosed with a positive Finkelstein test. The person who is playing video games for a prolonged period in a day for more than 4hrs. Exclusion criteria: The patient who used drugs for the past 6 months. Un co- operative patients. Recent wrist fractures and distal radial fracture. Rheumatoid arthritis. Recent surgical history related to wrist and hand, Infection of the wrist joint, Gout, Pseudo gout, Psoriasis arthritis, Soft tissue injury around wrist joint, Gymnast's, Previous surgery on wrist joint, Hand osteoarthritis, Carpal tunnel syndrome, Guyon's cannel syndrome.

STUDY METHOD:

Hand exercises: Opposition stretch – Rest your hand on a table palm up. Make a connection between the tip of your thumb and the tip of your little finger for a total of 6 sec stay in this position rep 10 times more. wrist stretch - Bend the opposite wrist with one hand by squeezing the back of your hand and holding it there for 15 to 30 sec after that stretch the hand backward by pressing the finger backward and holding for 15 to 30 sec. During this exercise, keep your elbow straight, repeat 3 sec on each hand. Wrist flexion – With your palm facing up hold a dumbbell or hammer handle in your hand. Raise your wrist to the sky and return to the starting position by slowly lowering the weight. Repeat 3 sets of 10. Gradually increase the weight. Wrist radial deviation - Place your thumb and your wrist in a sideway posture. Gently bend your wrist up, with your thumb reaching towards the ceiling while

holding a dumbbell or hammer handle. Return to the starting position slowly. Throughout this workout, do not move your forearm. Repeat 3 sets of 10. Wrist extension – With your palm facing down, hold a dumbbell handle in your hand, and bend your wrist slowly upward. Reduce the weight to the starting position slowly. Repeat 3 sets of 10 and increase the weight of the object you are holding gradually. Grip strengthening - Squeeze a rubber ball and hold for 5 seconds. Repeat 3 sets of 10. Finger spring - wrap the outside of your thumb and the rest of your fingers with a large rubber band to stretch the rubber band.

Thumb massage: patient position - High sitting and the patient elbow should be placed on the table and supported by pillows so the fingers remain in a free position. Therapist position - Therapist should stand in front of the patient. Massage technique – Thumb kneading is usually performed on the flatter or smaller muscle group of the upper limb. Here the thenar muscles are abductor pollicis longus and extensor pollicis brevis muscles are thumb kneaded by supinating the hand and either using both thumbs it should be done by standing in front of the patient. It can be done by our thumb pads or thumb tips for this manipulation. Before starting the procedure use some contact material like powder, oils, and water-based lubricants which helps to provide a gliding effect and to lubricate the skin.



Paired 't' Test:

Subjects Pre-test And Post-test Values Of Numerical Pain Rating Scale:-

5. Data Presentation

5.1. Data Tabulation:

Paired 't' Test:

Outcome Measure	Mean Value		Calculated T Value	Table T Value	P Value And Level Of Significance
	Pre-Test	Post-Test			
P Value And Level Of Significance	4.5	0.75	26.75	2.06	P<0.05 Significance

DATA ANALYSIS AND RESULTS

PAIRED't' TEST:

numerical pain rating scale: pre-test and post-test values of the pain subscale obtained from the numerical pain rating scale were analyzed using paired 't'-test. $p<0.05$ level of significance the table t value is 2.069 and the calculated value is 26.75 since the table t value is lesser than the calculated t value null hypothesis is rejected.

Patient-specific functional scale: pre-test and post-test values of functional ability obtained from the patient-specific functional scale were analyzed using a paired't' test. $p<0.05$ level of significance the table t value is 2.069 and the calculated t value is 27.57 since the table t value is lesser than the calculated t value null hypothesis is rejected.

DISCUSSION

Injuries of the hand and thumb can be challenging, since most patients frequently use them in their daily lives, thus delaying healing time. Predisposing factors include pregnancy, lactation, and newborn care, musicians, dental hygienists, assembly worker, golfers, machinists, mountain bikers, and video game playing. Risk factors include repetitive movements, hand position, frequency of movement, and static postures. They are many recommended conservative treatments, including rest, early immobilization and transverse friction massage, and exercise therapy East Asian therapeutic surface myofascial fractioning tool has been shown to increase microcirculation and decrease local and distal pain. Active treatment options include active pain-free range of motion exercises, tendon gliding, self- administered friction massage helps detect anatomic variations in De Quervain's cases by visualizing the intra-compartmental septum in the first extensor compartment.

Muscle strength and endurance are improved through functional activities. The level of those workouts increases week after week as you practice, and this defines the progress in thumb functioning ability. Massage may also affect pain as physiology is attributed to an increase in blood flow, increase in lymphatic drainage, neural stimulation, encouragement of venous return, relief of pain, and relaxation. These results are strengthened by the studies of Smith et al. (1994) and Hilbert et al. (2003). Thumb massage and therapeutic hand exercises, on the other hand, appear to be more effective for long-term video game players.

CONCLUSION

The statistical analysis from the paired't'-test concluded that there was a significant improvement in pain and functional ability in subjects with wrist pain. It was concluded that Thumb massage and therapeutic hand exercises were efficient in reducing pain and improving the functional ability of patients with wrist pain.

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